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Tuesday, November 4, 2025

Kentucky Division for Air Quality
 Attn: Permit Support Section
 300 Sower Boulevard, Second Floor
 Frankfurt, KY 40601

Attention: Mr. Michael Kennedy
 Director

Via EEC eForms

Subject: Operating Permit Modification Application
 Altec Industries, Inc.
 200 Altec Drive, Elizabethtown, Kentucky
 Agency Interest 1644; Permit No. S-22-006

Dear Mr. Kennedy:

Altec Industries, Inc. (Altec) is submitting a copy of this air permit application for two projects at its Elizabethtown, Kentucky facility – (1) addition of a new fiberglass process; and (2) expansion of the final assembly process. Based on the total sitewide potential emissions resulting from these projects, styrene emissions may exceed the Title V major source threshold of 10 tons per year. Therefore, to avoid Title V permitting, Altec is requesting Conditional Major limits for styrene and to be permitted under 401 KAR 52:030.

If after reviewing the enclosed you have questions or need any additional information, please contact Ms. Tausha Richardson, EHS Manager at the facility at (270) 734-3833 or Ms. Kim Schappaugh, Corporate Environmental Regulatory Manager at (770) 901-1264.

Regards,
 ALTEC INDUSTRIES, INC.


 Daniel Flory
 General Manager

Enclosures: Conditional Major permit application

cc: Ms. Kim Schappaugh – Altec, Inc.
 Ms. Tausha Richardson – Altec Industries, Inc.

Operating Permit Modification Application

for

Altec Industries, Inc.
200 Altec Drive
 Elizabethtown, Kentucky 42701



Date: November 2025

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1.0 INTRODUCTION

Altec Industries, Inc. (Altec) manufactures hydraulic lift trucks for use by utility companies. Operations at the facility consist of the fabrication and assembly of hydraulic booms, assembly of fabricated components and box beds onto truck chassis, and painting of aerial device components and completed trucks to customer specifications. The truck chassis, box beds, and hydraulic components are manufactured off-site by a third party. Altec also performs service operations including the installation, repair, and rebuilding of Altec equipment already owned by customers.

Altec is currently operating under State Origin Air Permit Number S-22-006 which was issued to the facility on March 13, 2022 and expires on March 13, 2032. Fiberglass platforms and booms assembled onto trucks are currently manufactured at other Altec locations. Due to an increase in customer demand, Altec is proposing to expand operations by manufacturing fiberglass platforms on site. In addition, the facility is proposing to expand its final assembly process. Through this application, Altec requests that its operating permit be modified to include the following changes:

- Addition of Gelcoat Spray Booth GC-1;
- Addition of Infusion Molding and Other Fugitive FRP Activities IM-1;
- Modification to Miscellaneous Chemical Usage (EP 13);
- Addition of and modifications to insignificant emission sources; and
- Modification of permit status to Conditional Major source of hazardous air pollutants.

A site location map of the facility and proposed site layout are provided in Figure 1 and Figure 2, respectively.

The completed construction permit application forms are provided in Appendix A. The following report and attached forms constitute an air permit application. The report contains the following:

- Section 2.0 provides descriptions of proposed modifications.
- Section 3.0 presents the results of the emission inventory.
- Section 4.0 presents the results of a regulatory review.

2.0 PROPOSED MODIFICATIONS

Descriptions of the proposed new sources and modifications are provided in this Section.

2.1 Proposed Gelcoat Spray Booth GC-1 (EP 15)

Altec is proposing to install a gelcoat spray booth (Source ID GC-1). The gelcoat operation is an open molding process where the surface of a mold is manually coated with a release agent (outside of the booth – see IM-1 below) that allows for easy removal of the finished project from the mold after curing. Gelcoat, consisting of a styrene-based resin and catalyst, is then sprayed using a spray gun. The gelcoat will be allowed to briefly cure and then the part will be transferred to IM-1. Parts to be sprayed include platforms and platform brackets. Tooling gelcoat may also be sprayed in GC-1 as part of manufacturing molds. After application, spray guns are cleaned in the booth using acetone.

Emissions from GC-1 will consist of volatile organic compounds (VOC) and hazardous air pollutants (HAP) that result from evaporation of the unreacted monomers and catalyst during the spraying and curing processes. Particulate matter (PM) will also be generated. PM emissions will be low, since the overspray consists of large sticky droplets that quickly fall out of the booth air stream. PM that remains aloft will be removed by the booth's dry filters. Emissions will vent through the booth's stack to the atmosphere.

A process flow chart for GC-1 is shown in Figure 3.

2.2 Proposed Infusion Molding and Other Fugitive FRP Activities IM-1 (EP 16)

Source ID IM-1 will consist of multiple activities related to the production of fiberglass reinforced plastic (FRP) platforms, brackets, and molds. These activities include closed molding, tooling, mold repair, spray touch-up, and mold/platform preparation and will occur within the building but not in a spray booth. Emissions from IM-1 will be fugitive. Below is a brief description of each activity.

- Closed Molding: During closed molding, a fiberglass reinforcement will be laid over a cured gelcoat and mold layer (produced in GC-1) and an outer mold will be placed over the material and sealed against the gelcoat mold. High vacuum will be used to evacuate the air from the part, and a mixture of resin and catalyst will be pulled into the part by the vacuum. The resin will be allowed to cure and then released from the molds.
- Tooling (Mold Preparation): Tooling in IM-1 will be an open molding process where resin is manually applied onto a fiberglass reinforcement that is laid over the mold gelcoat shell that is produced in GC-1.
- Mold Repair and Touch-up: These two activities will involve manual or spray application of gelcoats. Since the quantities used will be small, they do not need to be conducted in the booth. No PM will be emitted to ambient air, since the transfer efficiency is high and the building will provide capture.

- **Mold and Platform Preparation:** Prior to gelcoat application in GC-1, molds will occasionally be cleaned and treated with a mold sealant or release agent. These materials will be hand-applied.

A process flow chart for IM-1 is shown in Figure 4.

2.3 Final Assembly Expansion

Altec is proposing to expand its Final Assembly process in the future. As a result, usage of materials in emission unit EP 13 is anticipated to increase. Revised potential emissions for these activities are provided in Appendix B.

2.4 Flexibility Request

Changes in formulation from the manufacturer may occur, and/or changes in chemicals used in GC-1 and IM-1 due to pricing or performance may be proposed. As a result, Altec is requesting flexibility to make these changes without the requirement to modify the facility's air permit or notify the Kentucky Department of Air Quality (KYDAQ). When such changes occur, the facility will update the chemical data in the emissions tracking software it uses and apply the appropriate emission factors using similar methods as described in this application. New emission factors from the processes will be reported in the annual KYDAQ Emissions Survey where applicable.

2.5 Activities Exempt from Permitting

Below are the proposed new sources to be added or modified, which are exempt from the requirement to obtain a permit under 401 KAR 52:030 Section 6. These units will each have the potential to emit less than or equal to 1,000 pounds of combined HAPs per year, or five tons per year (tpy) of any nonhazardous regulated air pollutant and will not be subject to a federally enforceable requirement. Where applicable, see Appendix B for emission calculation details.

- As noted in Section 2.3, Altec is proposing an expansion of its Final Assembly process. Welding activities (IA 2) are expected to increase; however, this emissions source will continue to be an insignificant activity.
- IA 22, currently known as "EP15 CNC Routers", includes two fiberglass routers and an associated dust collector. These two routers will be relocated to the new Fiberglass building. Because the two machines will not be co-located, another dust collector will be installed so that each has its own control system. Altec proposes the following changes and additions:
 - Please rename IA 22 from "EP15 CNC Routers" to "Fiberglass Router(s)". This may consist of up to two machines – the one being relocated from the old building plus a potential for another one in the future. The potential to emit for IA 22 assumes two machines are installed.
 - Please add a new source, "Gantry Mill". This unit was part of EP15 CNC Routers, but because it will be located in a different area of the building and will have its own dust collector, the facility is requesting a new ID.

- Shot Blasting SB-2: A review of the permit and permitting history indicates that shot blasting SB-2 was mistakenly removed in permit S-12-037 R5. In the 2017 GEN II expansion project, a new shot blasting operation, SB-2, was proposed to replace shot blasting operation SB-1. In 2018, Altec reported that SB-2 was uninstalled, when it should have reported that SB-1 was uninstalled. Altec requests that Shot Blasting SB-2 is added back to the permit.
- Natural Gas Combustion Units: The facility proposes to install the following natural gas combustion units:
 - Natural Gas-Fired Make-up Air Unit for Spray Booth GC-1: The maximum heat input capacity for the unit will be 1.425 million British thermal units per hour (MMBtu/hr).
 - Natural Gas-Fired Comfort Heaters: The facility proposes to install approximately 21 new natural gas-fired units to provide additional comfort heat throughout the Altec campus. The combined total of the maximum heat input capacity for the new units is estimated to be 9.72 MMBtu/hr.
- Washer System (Source ID WS-1): Metal parts from shot blasting system SB-2 travel on a monorail into a washer system cabinet, where the parts undergo seven different wash stages. The seven-stage spray pre-treatment washer system (Source ID WS-1) is used to remove steel contaminants and add corrosion protection to metal parts prior to powder coating. Various pre-treatment chemicals and water rinses are applied to the metal parts as they are processed through the seven stages within an enclosed pre-treatment cabinet. A recent review of safety data sheets for chemicals used in this process indicate that VOCs may be emitted. Chemical concentrates used in the pre-treatment process are diluted with water, so actual VOC emissions are expected to be low.

2.6 Other Changes

The following changes are provided below:

- EP12, Make-Up Air Unit (Large): Please remove this from the permit. This unit is no longer installed.
- IA 23, EP16 CNC Router: Please rename this from “EP16 CNC Router” to “Plastics Router”.
- Laser and plasma cutters: Altec is revising its potential to emit calculation methodology for laser and plasma cutters IA 16, 17, 18, 19, and/or 21 for the reasons listed below. Each unit continues to be an insignificant activity, since potential emissions are below the thresholds listed in 401 KAR 52:030 Section 6.
 - Update dust collector control efficiencies for IA 17 and 19 due to replacement of each dust collector. Notifications regarding these changes were submitted to KYDAQ in January 2025 and May 2025, respectively.
 - Account for 70 percent building capture efficiency for PM, since all dust collectors vent back into the building for IA 16, 17, 18, 19, and 21.
- New building spaces are proposed for warehousing and offices. Altec does not anticipate emission units in these areas other than the natural gas comfort heating units (included in Section 2.5).

3.0 EMISSION INVENTORY

Air emissions from the facility were calculated to support the regulatory conclusions documented in this permit application. These calculations were prepared using operational data from the facility, vendor equipment specifications, vendor Safety Data Sheets (SDS), fiberglass composites industry emission factors, and United States Environmental Protection Agency (USEPA) AP-42 emission factors. Detailed emission calculations are provided in Appendix B. Potential emissions from the facility are summarized in Tables 1 and 2.

As detailed in the emission inventory, controlled emissions of VOC, NO_x, CO, SO₂, and PM₁₀ are less than 100 tpy. Total HAPs are less than 25 tpy. Because potential emissions of individual HAP are greater than 10 tpy, the facility is requesting conditional major limits for HAPs to avoid Title V permitting.

4.0 REGULATORY REVIEW

4.1 Air Pollution Attainment Status

The Altec facility is located in Elizabethtown, Hardin, Kentucky. Hardin County is designated (40 CFR 81.334) as an area that is in attainment, or unclassifiable, or not designated for CO, lead (Pb), PM less than 2.5 microns and 10 microns (PM_{2.5} and PM₁₀), NO_x, ozone (O₃), and SO₂ ambient air standards.

4.2 State Regulations

The following Kentucky DAQ rules were reviewed to evaluate air quality rule applicability and the basis for expected compliance:

Rule

401 KAR

Requirement/Applicability

52:030

Federally-Enforceable Permits for Nonmajor Sources – This regulation applies to sources that accept permit conditions that are legally and practically enforceable to limit their potential to emit below the major source threshold that would make them subject to 401 KAR 52:020.

To avoid Title V permitting, the facility is requesting to be covered under this regulation.

59:010

New Process Operations Processes – The allowable rate of particulate emissions is limited to $E = 3.59 P^{0.62}$ for process input weight rates up to and including 30 tons per hour or $E = 17.31 P^{0.16}$ for process input weight rates above 30 tons per hour, where E is the allowable emission rate in pounds per hour and P is the process input rate in tons per hour. The opacity of visible emissions from each stack shall not equal or exceed 20 percent opacity.

GC-1, the Gantry mill, EP 13, welding, and shot blasting are expected to meet the requirements of this regulation since they are equipped with integral PM removal devices and/or vent indoors.

59:225

New Miscellaneous Metal Parts and Products Surface Coating Operations – This regulation applies to manufacturers of original equipment and other industrial categories not otherwise subject to administrative regulation. Since Altec's operations would be considered commercial motor vehicle and mobile equipment refinishing, this rule does not apply.

59:315

Specific New Sources – This rule does not apply to the facility, since it is located in Hardin County which is not designated as nonattainment for ozone and the facility is a true minor source for HAPs.

59:760

Commercial Motor Vehicle and Mobile Equipment Refinishing Operations - This regulation applies to facilities only in Boone, Campbell, and Kenton counties. Since the Altec facility is located in Hardin County, this rule does not apply.

Rule

401 KAR

Requirement/Applicability

63:020

Potentially Hazardous Matter or Toxic Substances – No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals, and plants.

The facility will operate its processes in manner that adheres to this requirement.

4.3 Federal Requirements

The following federal regulations were reviewed to evaluate air quality issues and applicability to this project.

- Non-attainment Area Major Source Review – 40 CFR 51 (NSR): Major new source review permitting requirements are applicable to major new sources or significant modifications to existing major sources in non-attainment areas. This facility is not a major source of criteria pollutants and is not located in a non-attainment area; therefore, these requirements do not apply.
- Prevention of Significant Deterioration – 40 CFR 52.21 (PSD): Prevention of Significant Deterioration (PSD) as defined in 40 CFR 52.21 applies to major stationary sources located in areas that are in compliance with the National Ambient Air Quality Standards (NAAQS). Major stationary sources under PSD are defined as follows: any source that emits, or has the potential to emit, 250 tpy of a pollutant regulated under NSR; or any source that emits, or has the potential to emit, 100 tpy of a pollutant regulated under NSR for the listed types of processes. The major source threshold for this facility is 250 tpy. Since the potential emissions from this facility are less than the major source threshold, this facility is not subject to review under the PSD regulations.
- New Source Performance Standards 40 CFR 60 (NSPS): Based upon our understanding of the operations at the facility, the following are comments on the applicability of NSPS to the equipment addressed in this application:
 - Subpart MM – NSPS for Automobile and Light Duty Truck Surface Coating Operations: Altec does not coat automobiles or light duty trucks. Therefore, the facility is not subject to Subpart MM.
- National Emission Standards for Hazardous Air Pollutants 40 CFR 61 and 40 CFR 63 (NESHAPs): There are no emissions of pollutants regulated under 40 CFR 61. The facility is also not a major source of HAPs (potential emissions of individual and total HAPs are less than 10 tpy and 25 tpy, respectively). Therefore, major source NESHAPs are not applicable to the facility. Based upon our understanding of the operations at the facility, the following are comments on the applicability of NESHAPs to the equipment addressed in this application:
 - Subpart WWWW – Major Source NESHAP for Reinforced Plastic Composites Production: The facility is requesting conditional major limits that will preclude applicability to this regulation.
 - Subpart HHHHHH - Area Source NESHAP for Paint Stripping and Miscellaneous Surface Coating Operations: In-mold coatings that are spray-applied in the manufacture of reinforced plastic composite parts are not covered under this regulation; therefore, this regulation does not apply to GC-1 or IM-1.

- Chemical Accident Prevention 40 CFR 68 (RMP): The facility does not store more than the threshold quantity of a regulated material; therefore, it is not subject to the requirements of this rule.

TABLES

TABLE 1
SUMMARY OF FACILITY-WIDE POTENTIAL EMISSIONS
 Altec Industries, Inc. - Elizabethtown, Kentucky

Pollutant	CAS Number	Uncontrolled Potential		Controlled Potential	
		Emissions		Emissions	
		lbs/yr	tons/yr	lbs/yr	tons/yr
PM	---	497,620	248.81	12,474	6.24
PM ₁₀	---	292,636	146.32	12,269	6.13
PM _{2.5}	---	133,690	66.84	11,587	5.79
VOC	---	96,648	48.32	96,648	48.32
CO	630-08-0	36,703	18.35	36,703	18.35
NO _x	---	55,405	27.70	55,405	27.70
SO ₂	7446-09-5	262	0.13	262	0.13
HAPs only					
1,6-Diisocyanatohexane	822-06-0	0.27	0.00	0.27	0.00
2-Propoxyethanol	2807-30-9	0.30	0.00	0.30	0.00
2,2,4-trimethylpentane	540-84-1	3.77	0.00	3.77	0.00
Acetaldehyde	75-07-0	6.90	0.00	6.90	0.00
Benzene	71-43-2	7.18	0.00	7.18	0.00
Chromium	7440-47-3	33.74	0.02	0.40	0.00
Cobalt Cmpds	N/A	16.39	0.01	13.38	0.01
Copper Cmpds	N/A	2.46	0.00	2.46	0.00
Cumene	98-82-8	16.51	0.01	16.51	0.01
Diethanolamine	111-42-2	0.16	0.00	0.16	0.00
Dimethyl Phthalate	131-11-3	1.76	0.00	1.76	0.00
Ethylbenzene	100-41-4	174.73	0.09	174.73	0.09
Formaldehyde	50-00-0	3.04	0.00	3.04	0.00
Hexane, normal	110-54-3	321.38	0.16	321.38	0.16
Manganese Cmpds	N/A	972.43	0.49	79.84	0.04
Methanol	67-56-1	1,395.52	0.70	1,395.52	0.70
Methyl Isobutyl Ketone	108-10-1	1.37	0.00	1.37	0.00
Methyl Methacrylate	80-62-6	6,020.78	3.01	6,020.78	3.01
Naphthalene	91-20-3	6.90	0.00	6.90	0.00
Nickel Cmpds	N/A	25.66	0.01	0.33	0.00
Styrene	100-42-5	24,561.44	12.28	<20,000	<10.00
Toluene	108-88-3	1,751.64	0.88	1,751.64	0.88
Xylene, mixed	1330-20-7	839.15	0.42	839.15	0.42
Xylene, ortho	95-47-6	63.09	0.03	63.09	0.03
TOTAL HAPs		37,051.5	18.5	36,097.2	18.0

See note 1

See note 2

NOTES:

0.00" represents values less than 0.005 tons per year.

1 - The facility is requesting conditional major limits for styrene.

2 - Total HAPs also includes total HAPs value from combustion on Table 2 and does not consider styrene limits.

TABLE 2
SUMMARY OF FACILITY-WIDE POTENTIAL EMISSIONS - DETAILED
 Altec Industries, Inc. - Elizabethtown, Kentucky

This table provides a summary of emissions from each emission unit at the facility. Detailed emission calculations are only provided if the emission unit has been modified.

Pollutant	Source Description	Uncontrolled Potential Emissions		Controlled Potential Emissions	
		lbs/yr	tons/yr	lbs/yr	tons/yr
PM	Paint Booths (EP 3, 4, 5, and 6)	4,401.90	2.20	44.02	0.02
PM	Miscellaneous Chemical Usage (EP 13)	1,193.82	0.60	1,193.82	0.60
PM	Emergency Generator (EU 14)	2.53	0.00	2.53	0.00
PM	Gelcoat Spray Booth (EU 15)	8,409.34	4.20	0.84	0.00
PM	Powder Coating (IA 1)	83,513.24	41.76	83.51	0.04
PM	Welding Operations (IA 2)	1,365.88	0.68	1,365.88	0.68
PM	Sheet Metal Sanding Operations (IA 3) ¹	136,656.00	68.33	136.66	0.07
PM	Fiberglass Sanding Operations (IA 10)	3,300.00	1.65	165.00	0.08
PM	Laser Cutter 6kW (IA 16)	5,556.98	2.78	6.67	0.00
PM	Laser Cutter 10kW (IA 17)	5,275.62	2.64	79.13	0.04
PM	Plasma Cutter (IA 18)	68,021.29	34.01	1.02	0.00
PM	Laser Cutter 10kW (IA 19)	5,275.62	2.64	79.13	0.04
PM	Fluidized Bed (IA 20)	9,636.00	4.82	4,818.00	2.41
PM	Laser Cutter 15kW (IA 21)	10,321.22	5.16	154.82	0.08
PM	Fiberglass Routers (IA 22)	5,856.69	2.93	292.83	0.15
PM	Plastics Router (IA 23)	3,000.00	1.50	300.00	0.15
PM	Gantry Mill (IA 24)	5,856.69	2.93	292.83	0.15
PM	Shot Blasting	136,656.00	68.33	136.66	0.07
PM	Natural Gas Combustion	3,320.75	1.66	3,320.75	1.66
Total		497,619.56	248.81	12,474.11	6.24
PM ₁₀	Paint Booths (EP 3, 4, 5, and 6)	4,401.90	2.20	44.02	0.02
PM ₁₀	Miscellaneous Chemical Usage (EP 13)	1,193.82	0.60	1,193.82	0.60
PM ₁₀	Emergency Generator (EU 14)	2.53	0.00	2.53	0.00
PM ₁₀	Gelcoat Spray Booth (EU 15)	8,409.34	4.20	0.84	0.00
PM ₁₀	Powder Coating (IA 1)	83,513.24	41.76	83.51	0.04
PM ₁₀	Welding Operations (IA 2)	1,365.88	0.68	1,365.88	0.68
PM ₁₀	Sheet Metal Sanding Operations (IA 3) ¹	34,164.00	17.08	34.16	0.02
PM ₁₀	Fiberglass Sanding Operations (IA 10)	3,300.00	1.65	165.00	0.08
PM ₁₀	Laser Cutter 6kW (IA 16)	5,556.98	2.78	6.67	0.00
PM ₁₀	Laser Cutter 10kW (IA 17)	5,275.62	2.64	79.13	0.04
PM ₁₀	Plasma Cutter (IA 18)	68,021.29	34.01	1.02	0.00
PM ₁₀	Laser Cutter 10kW (IA 19)	5,275.62	2.64	79.13	0.04
PM ₁₀	Fluidized Bed (IA 20)	9,636.00	4.82	4,818.00	2.41
PM ₁₀	Laser Cutter 15kW (IA 21)	10,321.22	5.16	154.82	0.08
PM ₁₀	Fiberglass Routers (IA 22)	5,856.69	2.93	292.83	0.15
PM ₁₀	Plastics Router (IA 23)	3,000.00	1.50	300.00	0.15
PM ₁₀	Gantry Mill (IA 24)	5,856.69	2.93	292.83	0.15
PM ₁₀	Shot Blasting	34,164.00	17.08	34.16	0.02
PM ₁₀	Natural Gas Combustion	3,320.75	1.66	3,320.75	1.66
Total		292,635.56	146.32	12,269.13	6.13

TABLE 2
SUMMARY OF FACILITY-WIDE POTENTIAL EMISSIONS - DETAILED
 Altec Industries, Inc. - Elizabethtown, Kentucky

This table provides a summary of emissions from each emission unit at the facility. Detailed emission calculations are only provided if the emission unit has been modified.

Pollutant	Source Description	Uncontrolled Potential Emissions		Controlled Potential Emissions	
		lbs/yr	tons/yr	lbs/yr	tons/yr
PM _{2.5}	Paint Booths (EP 3, 4, 5, and 6)	4,401.90	2.20		
PM _{2.5}	Miscellaneous Chemical Usage (EP 13)	1,193.82	0.60	1,193.82	0.60
PM _{2.5}	Emergency Generator (EU 14)	2.53	0.00	2.53	0.00
PM _{2.5}	Gelcoat Spray Booth (EU 15)	8,409.34	4.20	0.84	0.00
PM _{2.5}	Powder Coating (IA 1)	83,513.24	41.76	83.51	0.04
PM _{2.5}	Welding Operations (IA 2)	1,365.88	0.68	1,365.88	0.68
PM _{2.5}	Sheet Metal Sanding Operations (IA 3) ¹	3,416.40	1.71	3.42	0.00
PM _{2.5}	Fiberglass Sanding Operations (IA 10)	3,300.00	1.65	165.00	0.08
PM _{2.5}	Fluidized Bed (IA 20)	9,636.00	4.82	4,818.00	2.41
PM _{2.5}	Fiberglass Routers (IA 22)	5,856.69	2.93	292.83	0.15
PM _{2.5}	Gantry Mill (IA 24)	5,856.69	2.93	292.83	0.15
PM _{2.5}	Shot Blasting	3,416.40	1.71	3.42	0.00
PM _{2.5}	Natural Gas Combustion	3,320.75	1.66	3,320.75	1.66
Total		133,689.64	66.84	11,586.86	5.79
VOC	Paint Booths (EP 3, 4, 5, and 6)	2,747.74	1.37	2,747.74	1.37
VOC	Miscellaneous Chemical Usage (EP 13)	39,783.51	19.89	39,783.51	19.89
VOC	Emergency Generator (EU 14)	0.17	0.00	0.17	0.00
VOC	Gelcoat Spray Booth (EU 15)	17,849.45	8.92	17,849.45	8.92
VOC	Infusion Molding and FRP Acts (EU 16)	33,638.92	16.82	33,638.92	16.82
VOC	Storage Tanks - Hydraulic Oil (IA 4)	0.28	0.00	0.28	0.00
VOC	Fluidized Bed (IA 20)	2,628.00	1.31	2,628.00	1.31
VOC	Natural Gas Combustion	2,403.17	1.20	2,403.17	1.20
VOC	Washer System WS-1	8,262.58	4.13	8,262.58	4.13
Total		96,648.07	48.32	96,648.07	48.32
CO	Emergency Generator (EU 14)	8.43	0.00	8.43	0.00
CO	Fluidized Bed (IA 20)	9,636.00	4.82	9,636.00	4.82
CO	Natural Gas Combustion	36,702.98	18.35	36,702.98	18.35
Total		36,702.98	18.35	36,702.98	18.35
NO _x	Emergency Generator (EU 14)	0.34	0.00	0.34	0.00
NO _x	Plasma Cutter (IA 18)	8,207.17	4.10	8,207.17	4.10
NO _x	Fluidized Bed (IA 20)	3,504.00	1.75	3,504.00	1.75
NO _x	Natural Gas Combustion	43,694.02	21.85	43,694.02	21.85
Total		55,405.19	27.70	55,405.19	27.70
SO ₂	Emergency Generator (EU 14)	0.08	0.00	0.08	0.00
SO ₂	Fluidized Bed (IA 20)	4.49	0.00	4.49	0.00
SO ₂	Natural Gas Combustion	262.16	0.13	262.16	0.13
Total		262.16	0.13	262.16	0.13

TABLE 2
SUMMARY OF FACILITY-WIDE POTENTIAL EMISSIONS - DETAILED
 Altec Industries, Inc. - Elizabethtown, Kentucky

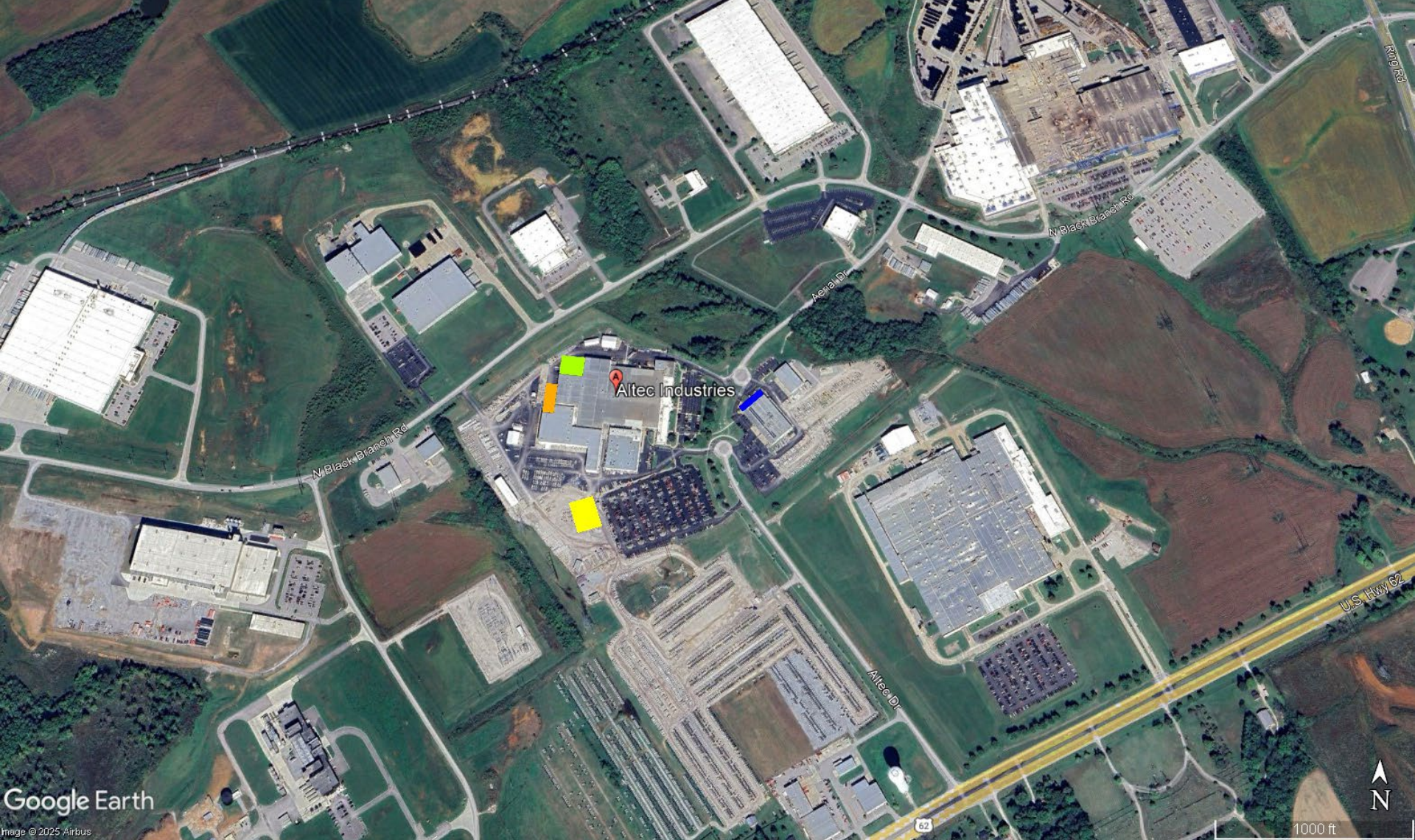
This table provides a summary of emissions from each emission unit at the facility. Detailed emission calculations are only provided if the emission unit has been modified.

Pollutant	Source Description	Uncontrolled Potential Emissions		Controlled Potential Emissions	
		lbs/yr	tons/yr	lbs/yr	tons/yr
HAPs only					
1,6-Diisocyanatohexane	Paint Booths (EP 3, 4, 5, and 6)	0.27	0.00	0.27	0.00
2-Propoxyethanol	Miscellaneous Chemical Usage (EP 13)	0.30	0.00	0.30	0.00
2,2,4-trimethylpentane	Miscellaneous Chemical Usage (EP 13)	3.77	0.00	3.77	0.00
Acetaldehyde	Miscellaneous Chemical Usage (EP 13)	6.90	0.00	6.90	0.00
Benzene	Miscellaneous Chemical Usage (EP 13)	7.18	0.00	7.18	0.00
Chromium	Welding Operations	0.29	0.00	0.29	0.00
Chromium	All Laser Cutters	9.36	0.00	0.11	0.00
Chromium	Plasma Cutter (IA 18)	24.09	0.01	0.00	0.00
Cobalt Cmpds	Fiberglass Production GC-1 and IM-1	3.00	0.00	0.00	0.00
Cobalt Cmpds	Miscellaneous Chemical Usage (EP 13)	13.38	0.01	13.38	0.01
Copper Cmpds	Miscellaneous Chemical Usage (EP 13)	2.46	0.00	2.46	0.00
Cumene	Paint Booths (EP 3, 4, 5, and 6)	3.91	0.00	3.91	0.00
Cumene	Fiberglass Production GC-1 and IM-1	9.80	0.00	9.80	0.00
Cumene	Miscellaneous Chemical Usage (EP 13)	2.81	0.00	2.81	0.00
Diethanolamine	Paint Booths (EP 3, 4, 5, and 6)	0.16	0.00	0.16	0.00
Dimethyl Phthalate	Fiberglass Production GC-1 and IM-1	1.76	0.00	1.76	0.00
Ethylbenzene	Paint Booths (EP 3, 4, 5, and 6)	2.99	0.00	2.99	0.00
Ethylbenzene	Miscellaneous Chemical Usage (EP 13)	171.73	0.09	171.73	0.09
Formaldehyde	Emergency Generator (EU 14)	2.68	0.00	2.68	0.00
Formaldehyde	Paint Booths (EP 3, 4, 5, and 6)	0.37	0.00	0.37	0.00
Hexane, normal	Miscellaneous Chemical Usage (EP 13)	321.38	0.16	321.38	0.16
Manganese Cmpds	Welding Operations	76.80	0.04	76.80	0.04
Manganese Cmpds	All Laser Cutters	250.62	0.13	3.03	0.00
Manganese Cmpds	Plasma Cutter (IA 18)	645.01	0.32	0.01	0.00
Methanol	Miscellaneous Chemical Usage (EP 13)	1,332.43	0.67	1,332.43	0.67
Methanol	Fiberglass Production GC-1 and IM-1	63.09	0.03	63.09	0.03
Methyl Isobutyl Ketone	Miscellaneous Chemical Usage (EP 13)	1.37	0.00	1.37	0.00
Methyl Methacrylate	Fiberglass Production GC-1 and IM-1	5,998.60	3.00	5,998.60	3.00
Methyl Methacrylate	Miscellaneous Chemical Usage (EP 13)	22.17	0.01	22.17	0.01
Naphthalene	Miscellaneous Chemical Usage (EP 13)	6.90	0.00	6.90	0.00
Nickel Cmpds	Welding Operations	0.24	0.00	0.24	0.00
Nickel Cmpds	All Laser Cutters	7.11	0.00	0.09	0.00
Nickel Cmpds	Plasma Cutter (IA 18)	18.31	0.01	0.00	0.00
Styrene	Fiberglass Production GC-1 and IM-1	24,555.45	12.28	24,555.45	12.28
Styrene	Miscellaneous Chemical Usage (EP 13)	5.99	0.00	5.99	0.00
Toluene	Paint Booths (EP 3, 4, 5, and 6)	0.97	0.00	0.97	0.00
Toluene	Miscellaneous Chemical Usage (EP 13)	770.58	0.39	770.58	0.39
Toluene	Fiberglass Production GC-1 and IM-1	980.10	0.49	980.10	0.49
Xylene, mixed	Paint Booths (EP 3, 4, 5, and 6)	13.65	0.01	13.65	0.01
Xylene, mixed	Miscellaneous Chemical Usage (EP 13)	818.63	0.41	818.63	0.41
Xylene, mixed	Fiberglass Production GC-1 and IM-1	6.86	0.00	6.86	0.00
Xylene, ortho	Fiberglass Production GC-1 and IM-1	63.09	0.03	63.09	0.03
Total HAPs	Natural Gas Combustion	824.92	0.41	824.92	0.41
TOTAL HAPs		37,051.51	18.53	36,097.24	18.05

Notes:

1 - Emission factors for sheet metal sanding operations are unavailable. Since the actual sanding machine will be mostly enclosed, equipped with catch boxes for grinding dust, and installed with a separate dust collector that will vent inside the building, PM emissions will be negligible.

FIGURES



Google Earth

Image © 2025 Airbus

1000 ft

- = proposed fiberglass building
- = proposed new warehouse
- = proposed Final Assembly expansion
- = proposed new office space



ALTEC INDUSTRIES, INC.
ELIZABETHTOWN, KY

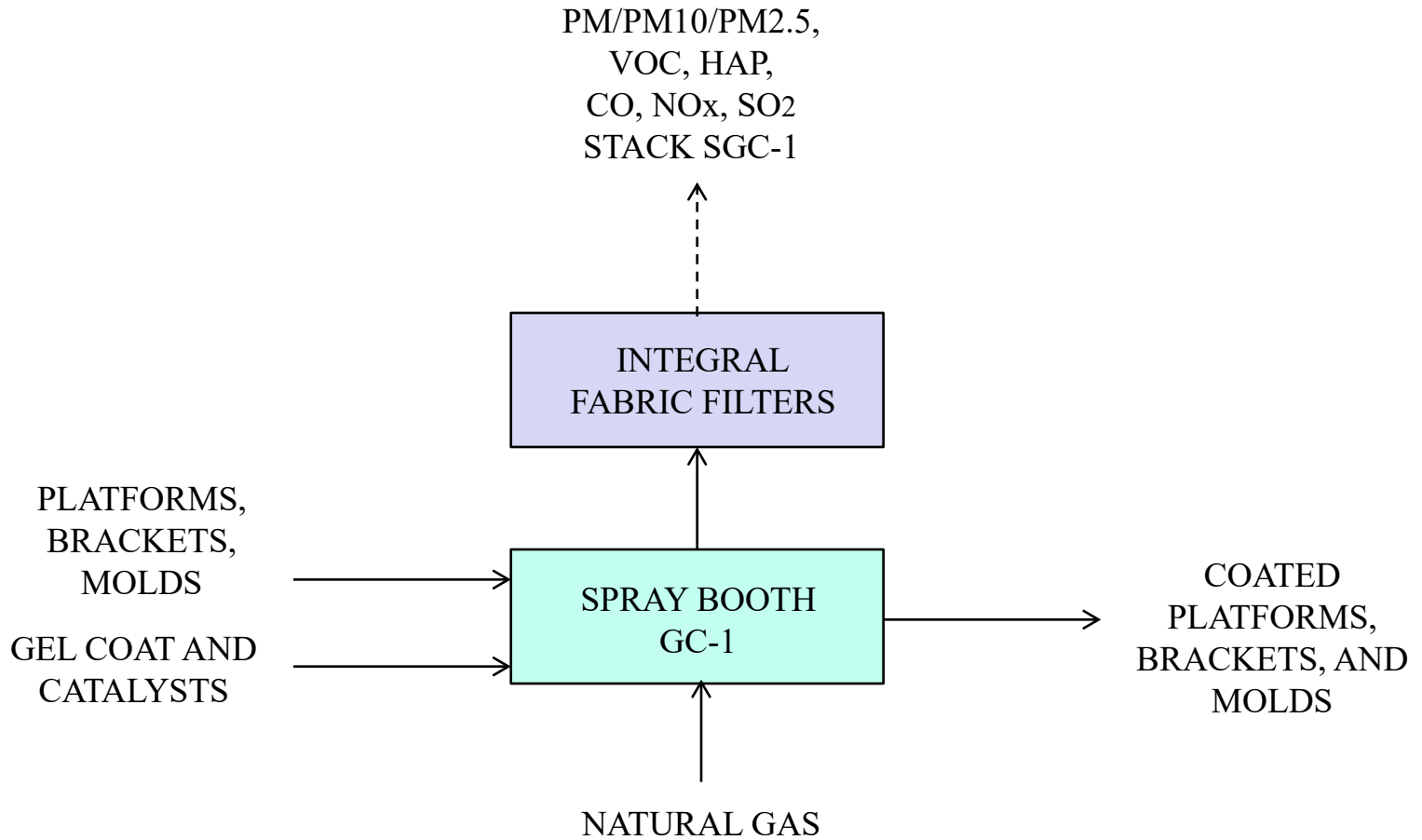
SITE LOCATION MAP WITH
PROPOSED NEW BUILDING
LOCATIONS

FIGURE 1



ALTEC INDUSTRIES, INC.
ELIZABETHTOWN, KY

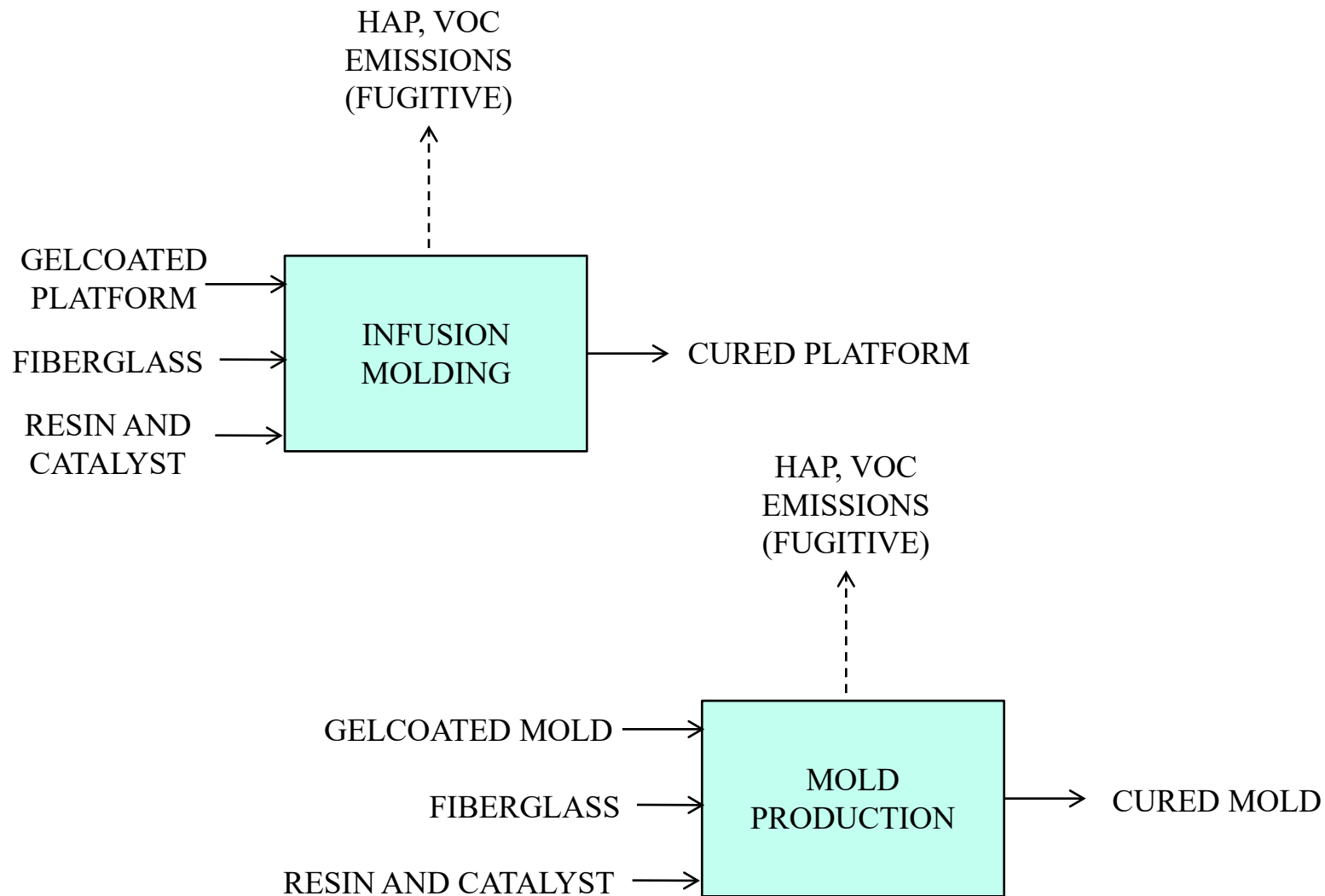
PROPOSED FIBERGLASS
BUILDING LAYOUT



ALTEC INDUSTRIES, INC.
ELIZABETHTOWN, KY

PROCESS FLOW DIAGRAM -
SPRAY BOOTH GC-1

FIGURE 3



ALTEC INDUSTRIES, INC.
ELIZABETHTOWN, KY

PROCESS FLOW DIAGRAM -
INFUSION MOLDING AND
OTHER FRP ACTIVITIES IM-1

FIGURE 4

APPENDIX A
AIR PERMIT APPLICATION FORMS

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007AI

Administrative Information

- Section AI.1: Source Information
- Section AI.2: Applicant Information
- Section AI.3: Owner Information
- Section AI.4: Type of Application
- Section AI.5: Other Required Information
- Section AI.6: Signature Block
- Section AI.7: Notes, Comments, and Explanations

Additional Documentation

Additional Documentation attached

Source Name: Altec Industries, Inc.

KY EIS (AFS) #: 21- 093-00081

Permit #: S-22-006

Agency Interest (AI) ID: 1644

Date: November 2025

Section AI.1: Source Information

Physical Location	Street:	<u>200 Altec Drive</u>		
Address:	City:	<u>Elizabethtown</u>	County:	<u>Hardin</u>
			Zip Code:	<u>42701</u>
Mailing Address:	Street or P.O. Box:	<u>200 Altec Drive</u>		
	City:	<u>Elizabethtown</u>	State:	<u>Kentucky</u>
			Zip Code:	<u>42701</u>

Standard Coordinates for Source Physical Location

Longitude: -85.9303 (decimal degrees) **Latitude:** 37.6726 (decimal degrees)

Primary (NAICS) Category: Motor Vehicle Body Manufacturing **Primary NAICS #:** 336211

Classification (SIC) Category: Truck and Bus Bodies **Primary SIC #:** 3713

Briefly discuss the type of business conducted at this site:
 Fabrication, assembly, and repair of utility trucks

Description of Area Surrounding Source:
 Rural Area Industrial Park Residential Area **Is any part of the source located on federal land?** Yes
 Urban Area Industrial Area Commercial Area No **Number of Employees:** 1,065

Approximate distance to nearest residence or commercial property: 430 feet **Property Area:** 45 acres **Is this source portable?** Yes No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES: Currently Hold Need N/A

Solid Waste: Currently Hold Need N/A

RCRA: Currently Hold Need N/A

UST: Currently Hold Need N/A

Type of Regulated Waste Activity:
 Mixed Waste Generator Generator Recycler Other: _____
 U.S. Importer of Hazardous Waste Transporter Treatment/Storage/Disposal Facility N/A

Section AI.2: Applicant Information

Applicant Name: Altec Industries, Inc.

Title: (if individual) _____

Mailing Address: **Street or P.O. Box:** 200 Altec Drive
City: Elizabethtown **State:** Kentucky **Zip Code:** 42701

Email: (if individual) _____

Phone: 270-360-0600

Technical Contact

Name: Tausha Richardson

Title: EHS Manager

Mailing Address: **Street or P.O. Box:** 200 Altec Drive
City: Elizabethtown **State:** Kentucky **Zip Code:** 42701

Email: tausha.richardson@altec.com

Phone: 270-734-3833

Air Permit Contact for Source

Name: Kim Schappaugh

Title: Corporate Environmental Regulatory Manager

Mailing Address: **Street or P.O. Box:** 210 Inverness Center Drive
City: Birmingham **State:** Alabama **Zip Code:** 35242

Email: kim.schappaugh@altec.com

Phone: 770-901-1264

Section AI.3: Owner Information

Owner same as applicant

Name: Altec Industries, Inc.

Title: _____

Mailing Address: **Street or P.O. Box:** 210 Inverness Center Drive
City: Birmingham **State:** Alabama **Zip Code:** 35242

Email: _____

Phone: 205-991-7733

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name

Position

Section AI.4: Type of Application

Current Status: Title V Conditional Major State-Origin General Permit Registration None

Name Change Initial Registration Significant Revision Administrative Permit Amendment

Requested Action: Renewal Permit Revised Registration Minor Revision Initial Source-wide Operating Permit

(check all that apply) 502(b)(10)Change Extension Request Addition of New Facility Portable Plant Relocation Notice

Revision Off Permit Change Landfill Alternate Compliance Submittal Modification of Existing Facilities

Ownership Change Closure

Requested Status: Title V Conditional Major State-Origin PSD NSR Other: _____

Is the source requesting a limitation of potential emissions? Yes No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
<input type="checkbox"/> Particulate Matter	_____	<input checked="" type="checkbox"/> Single HAP	<u>10 tons per year</u>
<input type="checkbox"/> Volatile Organic Compounds (VOC)	_____	<input type="checkbox"/> Combined HAPs	_____
<input type="checkbox"/> Carbon Monoxide	_____	<input type="checkbox"/> Air Toxics (40 CFR 68, Subpart F)	_____
<input type="checkbox"/> Nitrogen Oxides	_____	<input type="checkbox"/> Carbon Dioxide	_____
<input type="checkbox"/> Sulfur Dioxide	_____	<input type="checkbox"/> Greenhouse Gases (GHG)	_____
<input type="checkbox"/> Lead	_____	<input type="checkbox"/> Other	_____

For New Construction:

Proposed Start Date of Construction: **Proposed Operation Start-Up Date:** *(MM/YYYY)*

(MM/YYYY) _____ _____

For Modifications:

Proposed Start Date of Modification: **Proposed Operation Start-Up Date:** *(MM/YYYY)*

(MM/YYYY) 02/2026 01/2027

Applicant is seeking coverage under a permit shield. Yes No **Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.**

Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- | | |
|--|---|
| <input type="checkbox"/> DEP7007A Indirect Heat Exchangers and Turbines | <input type="checkbox"/> DEP7007CC Compliance Certification |
| <input checked="" type="checkbox"/> DEP7007B Manufacturing or Processing Operations | <input checked="" type="checkbox"/> DEP7007DD Insignificant Activities |
| <input type="checkbox"/> DEP7007C Incinerators and Waste Burners | <input type="checkbox"/> DEP7007EE Internal Combustion Engines |
| <input type="checkbox"/> DEP7007F Episode Standby Plan | <input type="checkbox"/> DEP7007FF Secondary Aluminum Processing |
| <input type="checkbox"/> DEP7007J Volatile Liquid Storage | <input checked="" type="checkbox"/> DEP7007GG Control Equipment |
| <input checked="" type="checkbox"/> DEP7007K Surface Coating or Printing Operations | <input type="checkbox"/> DEP7007HH Haul Roads |
| <input type="checkbox"/> DEP7007L Mineral Processes | <input type="checkbox"/> Confidentiality Claim |
| <input type="checkbox"/> DEP7007M Metal Cleaning Degreasers | <input type="checkbox"/> Ownership Change Form |
| <input checked="" type="checkbox"/> DEP7007N Source Emissions Profile | <input type="checkbox"/> Secretary of State Certificate |
| <input type="checkbox"/> DEP7007P Perchloroethylene Dry Cleaning Systems | <input checked="" type="checkbox"/> Flowcharts or diagrams depicting process |
| <input type="checkbox"/> DEP7007R Emission Offset Credit | <input type="checkbox"/> Digital Line Graphs (DLG) files of buldings, roads, etc. |
| <input type="checkbox"/> DEP7007S Service Stations | <input checked="" type="checkbox"/> Site Map |
| <input type="checkbox"/> DEP7007T Metal Plating and Surface Treatment Operations | <input checked="" type="checkbox"/> Map or drawing depicting location of facility |
| <input checked="" type="checkbox"/> DEP7007V Applicable Requirements and Compliance Activities | <input checked="" type="checkbox"/> Safety Data Sheet (SDS) |
| <input type="checkbox"/> DEP7007Y Good Engineering Practice and Stack Height Determination | <input type="checkbox"/> Emergency Response Plan |
| <input type="checkbox"/> DEP7007AA Compliance Schedule for Non-complying Emission Units | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> DEP7007BB Certified Progress Report | |

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

Daniel Flory

Authorized Signature

Daniel Flory

Type or Printed Name of Signatory

11/04/2025

Date

General Manager

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999	<h2 style="margin: 0;">DEP7007B</h2> <h3 style="margin: 5px 0 0 0;">Manufacturing or Processing Operations</h3> <p style="margin: 5px 0 0 20px;"> <input type="checkbox"/> Section B.1: Process Information <input type="checkbox"/> Section B.2: Materials and Fuel Information <input type="checkbox"/> Section B.3: Notes, Comments, and Explanations </p>	<h4 style="text-align: center; margin: 0;">Additional Documentation</h4> <p style="margin: 5px 0 0 0;"> <input type="checkbox"/> Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG. <input type="checkbox"/> Attach a flow diagram <input type="checkbox"/> Attach SDS </p>
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Source Name: Altec Industries, Inc.
KY EIS (AFS) #: 21- 093-00081
Permit #: S-22-006
Agency Interest (AI) ID: 1644
Date: November 2025

Section B.1: Process Information

Emission Unit #	Emission Unit Name	Describe Emission Unit	Process ID	Process Name	Manufacturer	Model No.	Proposed/Actual Date of Construction Commencement	Is the Process <u>Continuous</u> or <u>Batch</u> ?	Number of Batches per 24 Hours	Hours per Batch <i>(if applicable)</i>
GC-1	Gelcoat Spray Booth	Gelcoat Spray Booth	1	Platform Gelcoat	FLI Holdings	HDM-16-09-44-P-DT	02/2026	Batch	3	1.2
GC-1	Gelcoat Spray Booth	Gelcoat Spray Booth	2	Tooling Gelcoat			02/2026	Batch	1 (infrequent)	25
IM-1	Infusion Molding, Tooling, and Mold Prep	Resin application and Mold Prep Areas	1	Platform/ Bracket Infusion	N/A	N/A	02/2026	Batch	3	1
IM-1	Infusion Molding, Tooling, and Mold Prep	Resin application and Mold Prep Areas	2	Platform Mold Production	N/A	N/A	02/2026	Batch	Once per 3 days (infrequent)	8
IM-1	Infusion Molding, Tooling, and Mold Prep	Resin application and Mold Prep Areas	3	Mold Repair	N/A	N/A	02/2026	Batch	Varies	Varies

Section B.1: Process Information										
Emission Unit #	Emission Unit Name	Describe Emission Unit	Process ID	Process Name	Manufacturer	Model No.	Proposed/Actual Date of Construction Commencement	Is the Process <u>Continuous</u> or <u>Batch</u>?	Number of Batches per 24 Hours	Hours per Batch <i>(if applicable)</i>
IM-1	Infusion Molding, Tooling, and Mold Prep	Resin application and Mold Prep Areas	4	Gelcoat Touch-up	N/A	N/A	02/2026	Batch	Varies	Varies
IM-1	Infusion Molding, Tooling, and Mold Prep	Resin application and Mold Prep Areas	5	Mold Prep	N/A	N/A	02/2026	Batch	Varies	Varies

Section B.2: Materials and Fuel Information

*Maximum yearly fuel usage rate only applies if applicant requests operating restrictions through federally enforceable limitations.

Emission Unit #	Emission Unit Name	Name of Raw Materials Input	Maximum Quantity of Each Raw Material Input		Total Process Weight Rate for Emission Unit (tons/hr)	Name of Finished Materials	Maximum Quantity of Each Finished Material Output		Fuel Type	Maximum Hourly Fuel Usage Rate		Maximum Yearly Fuel Usage Rate		Sulfur Content (%)	Ash Content (%)
				(Specify Units/hr)				(Specify Units/hr)			(Specify Units)		(Specify Units)		
GC-1	Gelcoat Spray Booth	Gelcoat	139.19	lb/hr	0.07	Platforms and brackets shells	143	lb/hr	N/A						
GC-1	Gelcoat Spray Booth	Catalyst	3.5	lb/hr	0.002										
GC-1	Gelcoat Spray Booth	Tooling Gelcoat	33.4	lb/hr	0.017	Tool shell	34	lb/hr	N/A						
GC-1	Gelcoat Spray Booth	Catalyst	0.83	lb/hr	0.0004										
GC-1	Gelcoat Spray Booth	Acetone	1.5	lb/day	0.00005	N/A		N/A							
IM-1	Infusion Molding, Tooling, and Mold Prep	Infusion Resin for Platforms/ Brackets	350	lb/hr	0.175	Finished platforms, brackets	359	lb/hr	N/A						
IM-1	Infusion Molding, Tooling, and Mold Prep	Catalyst for Platforms/ Brackets	8.75	lb/hr	0.004										

Section B.2: Materials and Fuel Information

**Maximum yearly fuel usage rate only applies if applicant requests operating restrictions through federally enforceable limitations.*

Emission Unit #	Emission Unit Name	Name of Raw Materials Input	Maximum Quantity of Each Raw Material Input		Total Process Weight Rate for Emission Unit (tons/hr)	Name of Finished Materials	Maximum Quantity of Each Finished Material Output		Fuel Type	Maximum Hourly Fuel Usage Rate		Maximum Yearly Fuel Usage Rate		Sulfur Content (%)	Ash Content (%)
				(Specify Units/hr)				(Specify Units/hr)			(Specify Units)		(Specify Units)		
IM-1	Infusion Molding, Tooling, and Mold Prep	Resin for Tooling	18.0	lb/hr	0.009	Finished tools	18	lb/hr	N/A						
IM-1	Infusion Molding, Tooling, and Mold Prep	Catalyst for Tooling	0.4	lb/hr	0.0002										
IM-1	Infusion Molding, Tooling, and Mold Prep	Gelcoat for tool repairs	5.22	lb/hr	0.0026	Tools	Included in finished tool total above	N/A	N/A						
IM-1	Infusion Molding, Tooling, and Mold Prep	Catalyst for tool repairs	0.11	lb/hr	0.00006										
IM-1	Infusion Molding, Tooling, and Mold Prep	Gelcoat for touch-up	5.80	lb/hr	0.0029	Platforms and brackets	Included in finished platforms and brackets total above	N/A	N/A						
IM-1	Infusion Molding, Tooling, and Mold Prep	Catalyst for touch-up	0.11	lb/hr	0.00006										
IM-1	Infusion Molding, Tooling, and Mold Prep	Mold cleaners, sealants, and release agents	22.13	lb/hr	0.011	N/A		N/A	N/A						
IM-1	Infusion Molding, Tooling, and Mold Prep	Acetone	1	lb/day	0.00003	N/A		N/A	N/A						

DEP7007K

Surface Coating or Printing Operations

Additional Documentation

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

- Section K.1: Process Information
- Section K.2: Coating Operations
- Section K.3: Other Operations
- Section K.4: Coatings/Printing Materials as Applied
- Section K.5: HAP-containing Coatings/Printing Materials
- Section K.6: Notes, Comments, and Explanations

- Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.
- Attach SDS or Technical Sheets for all Coating/Printing Materials
- Attach a flow diagram

Source Name: Altec Industries, Inc.

KY EIS (AFS) #: 21- 093-00081

Permit #: S-22-006

Agency Interest (AI) ID: 1644

Date: November 2025

Section K.1: Process Information

Emission Unit #: GC-1

Emission Unit Name: Gelcoat Spray Booth

Coating/Printing Line Name: _____

Proposed/Actual Date of Construction: (MM/YYYY) February 2026

List Applicable Regulations: See Section 4.0 of Report narrative.

Describe Overall Process: See Section 2.0 of Report narrative.

Describe Coatings/Printing Materials: Polyester gelcoats and associated catalysts. Acetone for cleaning.

Identify the Material that is Coated/Printed: Metal Vinyl Plastics Wood Foil Paper Other Substrate

Provide detailed description of material coated/printed: Gelcoat will be sprayed on top of a FRP mold using an airless HVLP gun. Gelcoat used for mold production will either be sprayed on top of a foam plug or FRP plug using an airless HVLP gun.

Provide approximate dimensions and range of sizes of parts being coated or printed: Platforms will measure either 25.85" x 25.92" x 42.38" or 29" x 23" x 41". Brackets will measure 22.38" x 12.04" x 12.31"

Identify the Type of Operation: Continuous Batch Other:

Describe Surface Preparation/Pretreatment Steps: The mold will be cleaned, sealed, and then a release agent applied in IM-1 prior to application of gelcoat in GC-1.

For Coating Operations: Spray Flow Dip tank Electrodeposition Brush Powder Roller Coat Other:

For Printing Operations: *(Select all that apply)* Web Rotogravure Heatset Lithographic Sheetfed Letterpress Non-heatset Flexographic Other:

Describe Final Product: The gelcoat is the outer layer of the platforms and brackets. It is also the outer layer for the molds.

Check the category that most closely describes this unit:

<input type="checkbox"/> Large Appliance Coating	<input type="checkbox"/> Auto or Light-Duty Truck Coating	<input type="checkbox"/> Metal Furniture Coating	<input type="checkbox"/> Metal Coil Coating
<input type="checkbox"/> Beverage Can Coating	<input type="checkbox"/> Miscellaneous Metal Parts Coating	<input type="checkbox"/> Magnet Wire Insulation Coating	<input type="checkbox"/> Flat Wood Panel Coating
<input type="checkbox"/> Fabric, Vinyl, or Paper Coating	<input type="checkbox"/> Boat Manufacturing/ Ship Repair	<input type="checkbox"/> Pressure Sensitive Tape and Label Coating	<input type="checkbox"/> Magnet Tape Coating
<input type="checkbox"/> Publication Rotogravure Printing	<input type="checkbox"/> Coating of Plastic Parts for Business Machines	<input type="checkbox"/> Flexible Vinyl and Urethane Coating and Printing	
<input type="checkbox"/> Graphic Arts using Rotogravure and Flexographic Printing			<input checked="" type="checkbox"/> Other: Reinforced Fiberglass Products

DEP7007K

Surface Coating or Printing Operations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.

___ Attach SDS or Technical Sheets for all Coating/Printing Materials

___ Attach a flow diagram

- ___ Section K.1: Process Information
- ___ Section K.2: Coating Operations
- ___ Section K.3: Other Operations
- ___ Section K.4: Coatings/Printing Materials as Applied
- ___ Section K.5: HAP-containing Coatings/Printing Materials
- ___ Section K.6: Notes, Comments, and Explanations

Source Name: Altec Industries, Inc.

KY EIS (AFS) #: 21- 093-00081

Permit #: S-22-006

Agency Interest (AI) ID: 1644

Date: November 2025

Section K.1: Process Information

Emission Unit #: IM-1

Emission Unit Name: Infusion Molding, Tooling, and Mold Prep Areas

Coating/Printing Line Name: _____

Proposed/Actual Date of Construction: (MM/YYYY) February 2026

List Applicable Regulations: See Section 4.0 of Report narrative.

Describe Overall Process: See Section 2.0 of Report narrative.

Describe Coatings/Printing Materials: Polyester gelcoats/resins and associated catalysts. Mold cleaners, sealants, and release agents. Acetone for cleaning.

Identify the Material that is Coated/Printed: Metal Vinyl Plastics Wood Foil Paper Other Substrate

Provide detailed description of material coated/printed: Resin will be vacuum infused using a closed molding process for platforms, brackets, and tips. Resin will be hand-applied for platform molds. Gelcoat will be hand-applied or sprayed using small cup guns for touchup or mold repair.

Provide approximate dimensions and range of sizes of parts being coated or printed: Platforms will measure either 25.85" x 25.92" x 42.38" or 29" x 23" x 41". Brackets will measure 22.38" x 12.04" x 12.31"

Identify the Type of Operation: Continuous Batch Other:

Describe Surface Preparation/Pretreatment Steps: The mold will be cleaned, sealed, and then a release agent applied in IM-1 prior to application of gelcoat in GC-1.

For Coating Operations: Spray Flow Dip tank Electrodeposition Brush Powder Roller Coat Other: Vacuum infusion for closed molding operations. Spray or hand-applied for touch-up and repair.

For Printing Operations: (Select all that apply) Web Rotogravure Heatset Lithographic Sheetfed Letterpress Non-heatset Flexographic Other:

Describe Final Product: Finished platforms and brackets. Finished molds for platforms.

Check the category that most closely describes this unit:

<input type="checkbox"/> Large Appliance Coating	<input type="checkbox"/> Auto or Light-Duty Truck Coating	<input type="checkbox"/> Metal Furniture Coating	<input type="checkbox"/> Metal Coil Coating
<input type="checkbox"/> Beverage Can Coating	<input type="checkbox"/> Miscellaneous Metal Parts Coating	<input type="checkbox"/> Magnet Wire Insulation Coating	<input type="checkbox"/> Flat Wood Panel Coating
<input type="checkbox"/> Fabric, Vinyl, or Paper Coating	<input type="checkbox"/> Boat Manufacturing/ Ship Repair	<input type="checkbox"/> Pressure Sensitive Tape and Label Coating	<input type="checkbox"/> Magnet Tape Coating
<input type="checkbox"/> Publication Rotogravure Printing	<input type="checkbox"/> Coating of Plastic Parts for Business Machines	<input type="checkbox"/> Flexible Vinyl and Urethane Coating and Printing	<input checked="" type="checkbox"/> Other: Reinforced Fiberglass Products
<input type="checkbox"/> Graphic Arts using Rotogravure and Flexographic Printing			

DEP7007K

Surface Coating or Printing Operations

Additional Documentation

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

- Section K.1: Process Information
- Section K.2: Coating Operations
- Section K.3: Other Operations
- Section K.4: Coatings/Printing Materials as Applied
- Section K.5: HAP-containing Coatings/Printing Materials
- Section K.6: Notes, Comments, and Explanations

- Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.
- Attach SDS or Technical Sheets for all Coating/Printing Materials
- Attach a flow diagram

Source Name: Altec Industries, Inc.

KY EIS (AFS) #: 21- 093-00081

Permit #: S-22-006

Agency Interest (AI) ID: 1644

Date: November 2025

Section K.1: Process Information

Emission Unit #: MCU (EP13)

Emission Unit Name: Miscellaneous Chemical Usage

Coating/Printing Line Name: N/A

Proposed/Actual Date of Construction: (MM/YYYY) N/A

List Applicable Regulations: See Section 4.0 of Report narrative.

Describe Overall Process: See Section 2.0 of Report narrative.

Describe Coatings/Printing Materials: Aerosol and brush/roll-on paints, primers, adhesives, greases, sealants, non-skid coatings and other miscellaneous materials.

Identify the Material that is Coated/Printed:

- Metal
 Vinyl
 Plastics
 Wood
 Foil
 Paper
 Other Substrate

Provide detailed description of material coated/printed:

The miscellaneous chemicals may be applied to truck bodies, parts, and equipment.

Provide approximate dimensions and range of sizes of parts being coated or printed:

Varies depending on whether a truck body, part of piece of equipment is being painted.

Identify the Type of Operation:

- Continuous
 Batch
 Other:

Describe Surface Preparation/Pretreatment Steps:

Parts will be manually wiped down using an acetone-based cleaner.

For Coating Operations:

- Spray
 Flow
 Dip tank
 Electrodeposition
 Brush
 Powder
 Roller Coat
 Other:

For Printing Operations:
(Select all that apply)

- Web
 Rotogravure
 Heatset
 Lithographic
 Other:
 Sheetfed
 Letterpress
 Non-heatset
 Flexographic

Describe Final Product:

Painted truck bodies, parts, and equipment.

Check the category that most closely describes this unit:

- | | | | |
|---|---|---|--|
| <input type="checkbox"/> Large Appliance Coating | <input type="checkbox"/> Auto or Light-Duty Truck Coating | <input type="checkbox"/> Metal Furniture Coating | <input type="checkbox"/> Metal Coil Coating |
| <input type="checkbox"/> Beverage Can Coating | <input checked="" type="checkbox"/> Miscellaneous Metal Parts Coating | <input type="checkbox"/> Magnet Wire Insulation Coating | <input type="checkbox"/> Flat Wood Panel Coating |
| <input type="checkbox"/> Fabric, Vinyl, or Paper Coating | <input type="checkbox"/> Boat Manufacturing/ Ship Repair | <input type="checkbox"/> Pressure Sensitive Tape and Label Coating | <input type="checkbox"/> Magnet Tape Coating |
| <input type="checkbox"/> Publication Rotogravure Printing | <input type="checkbox"/> Coating of Plastic Parts for Business Machines | <input type="checkbox"/> Flexible Vinyl and Urethane Coating and Printing | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Graphic Arts using Rotogravure and Flexographic Printing | | | |

Section K.2: Coating Operations						
K.2A: For Spray Coating						
Gun/Booth ID	Describe Function	Type	Mode	Maximum Design Application Rate <i>(gal/hr or lb/hr)</i>		Describe how maximum rate was determined
GC-1	Gelcoat spray application	<input type="checkbox"/> Conventional Air Gun <input checked="" type="checkbox"/> Airless <input type="checkbox"/> HVLP <input type="checkbox"/> Electrostatic <input type="checkbox"/> LVLP <input type="checkbox"/> Aerosol Spray Can <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Manual <input type="checkbox"/> Automatic	178	lb/hr	<input checked="" type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation
IM-1, Process 3	Mold Repairs	<input type="checkbox"/> Conventional Air Gun <input checked="" type="checkbox"/> Airless <input type="checkbox"/> HVLP <input type="checkbox"/> Electrostatic <input type="checkbox"/> LVLP <input type="checkbox"/> Aerosol Spray Can <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Manual <input type="checkbox"/> Automatic	138	lb/hr	<input checked="" type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation
IM-1, Process 4	Gelcoat Touch-up	<input type="checkbox"/> Conventional Air Gun <input checked="" type="checkbox"/> Airless <input type="checkbox"/> HVLP <input type="checkbox"/> Electrostatic <input type="checkbox"/> LVLP <input type="checkbox"/> Aerosol Spray Can <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Manual <input type="checkbox"/> Automatic	138	lb/hr	<input checked="" type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation
MCU	Miscellaneous Chemical Usage (EP13)	<input type="checkbox"/> Conventional Air Gun <input type="checkbox"/> Airless <input type="checkbox"/> HVLP <input type="checkbox"/> Electrostatic <input type="checkbox"/> LVLP <input checked="" type="checkbox"/> Aerosol Spray Can <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Manual <input type="checkbox"/> Automatic	Varies	lb/hr	<input type="checkbox"/> Testing <input type="checkbox"/> Equipment Specification Sheet <input type="checkbox"/> Estimation
If spray guns are used simultaneously, describe:		Only one gun will be used at a time in GC-1. Only one gun will be used for mold repair in IM-1 and only one gun will be used in spray touch-up in IM-1; however, those two may be used simultaneously.				

K.2B: For Brush Coating

Describe Function:

IM-1 Process 2 (tooling/mold production) will use hand-held brushes or rollers. Some materials used in EP13 will be hand applied.

Maximum Coating Application Rate:
(gal/hr)

Anticipated usage for IM-1 Process 2 is 2 gallons per hour. Varies for EP13.

K.2C: For Roller Coating

Roller Coat ID	Describe Function	Maximum Coating Application Rate (gal/hr)	Describe how maximum rate was determined
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet

K.2D: For Powder Coating

Powder Coat ID	Describe Function	Maximum Coating Application Rate <i>(gal/hr or lb/hr)</i>	Describe how maximum rate was determined
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet

If powder coating material is recycled, describe:

--

K.2E: For Flow Coating

Flow Coat ID	Describe Function	Maximum Coating Application Rate <i>(gal/hr or lb/hr)</i>	Describe how maximum rate was determined
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet

K.2F: For Dip Tank/Electrodeposition Coating

Tank ID	Describe Function	Maximum Make-up Rate <i>(gal/hr or lb/hr)</i>	Describe how maximum rate was determined
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet
			<input type="checkbox"/> Testing <input type="checkbox"/> Estimation <input type="checkbox"/> Equipment Specification Sheet

Section K.3: Other Operations

K.3A: For Finishing

Describe Finishing Processes:
 Complete Form DEP7007B as applicable

K.3B: For Curing/Drying

Describe Curing/Drying Processes:	Description	Rated Capacity (MMBtu/hr)	Fuel	Control Device/Stack ID
N/A. Air dried.				

K.3C: For Purge

Type: _____ N/A _____
 Daily Usage: _____ gal/day

K.3D: For Clean-up

Type: Manual Automatic
 Daily Usage: Acetone 2.5 gal/day hrs/day
 Operating Hours: For fiberglass operations, two 8-hour shifts/day.

K.3E: For Other Equipment

Describe Processes:

Section K.4: Coatings/Printing Materials As Applied

Include SDS or Technical Sheets for all coating/printing materials used.

Trade Name of Material	Description <i>(Identify as coating, ink, fountain solution, blanket wash, cleaning solvent, thinning solvent, auto wash, manual wash, etc.)</i>	Emission Unit/Coating ID where material is used	SCC Code	SCC Code Units	Density (lb/gal)	Solid Content (lb/gal)	VOC Content (lb/gal)	Emission Factor for PM* (lb/SCC)	Transfer Efficiency (%)	Emission Factor for VOC (lb/SCC)	Capture Efficiency (%)	Control Device/ Stack ID
LHA-2900	Gelcoat	GC-1	30800722	ton gelcoat	11.6	7.83	1.53	1,350	90%	262.93	100%	SGC-1
G262AA30209	Gelcoat	GC-1	30800722	ton gelcoat	10.43	5.55	2.24	1,064	90%	429.5	100%	SGC-1
NOROX MEKP-9H	Catalyst for LHA-2900 and G262AA30209	GC-1	30800722	ton catalyst	9.18	0	0.34	0	90%	74	100%	SGC-1
LUPEROX DDM-9	Catalyst for G262AA30209	GC-1	30800722	ton catalyst	8.41	0	8.41	0	90%	2,000	100%	SGC-1
RTM & Cold Molding Resin	Resin	IM-1	30800736	ton resin	9.18	N/A (closed molding)	0.09	N/A (closed molding)	N/A (closed molding)	19.04	N/A	Fugitive
NOROX MEKP-9H	Catalyst for RTM & Cold Molding Resin	IM-1	30800736	ton catalyst	9.18	N/A (closed molding)	0.34	N/A (closed molding)	N/A (closed molding)	74	N/A	Fugitive
AME 6441 T-40	Resin	IM-1	30800723	ton resin	9.00	N/A (hand-applied)	0.74	N/A (hand-applied)	N/A (hand-applied)	163.6	N/A	Fugitive
NOROX MEKP-9H	Catalyst for AME 6441 T-40	IM-1	30800723	ton catalyst	9.18	N/A (hand-applied)	0.34	N/A (hand-applied)	N/A (hand-applied)	74	N/A	Fugitive
LUPEROX DDM-9	Catalyst for AME 6441 T-40	IM-1	30800723	ton catalyst	8.41	N/A (hand-applied)	8.41	N/A (hand-applied)	N/A (hand-applied)	2,000	N/A	Fugitive
G262AA30209	Gelcoat	IM-1	30800722	ton gelcoat	10.43	N/A (PM not emitted to atm.)	2.24	N/A (PM not emitted to atm.)	N/A (PM not emitted to atm.)	429.5	N/A	Fugitive
NOROX MEKP-9H	Catalyst for G262AA30209	IM-1	30800722	ton catalyst	9.18	N/A (PM not emitted to atm.)	0.34	N/A (PM not emitted to atm.)	N/A (PM not emitted to atm.)	74	N/A	Fugitive
LUPEROX DDM-9	Catalyst for G262AA30209	IM-1	30800722	ton catalyst	8.41	N/A (PM not emitted to atm.)	8.41	N/A (PM not emitted to atm.)	N/A (PM not emitted to atm.)	2,000	N/A	Fugitive

Section K.4: Coatings/Printing Materials As Applied

Include SDS or Technical Sheets for all coating/printing materials used.

Trade Name of Material	Description <i>(Identify as coating, ink, fountain solution, blanket wash, cleaning solvent, thinning solvent, auto wash, manual wash, etc.)</i>	Emission Unit/Coating ID where material is used	SCC Code	SCC Code Units	Density (lb/gal)	Solid Content (lb/gal)	VOC Content (lb/gal)	Emission Factor for PM* (lb/SCC)	Transfer Efficiency (%)	Emission Factor for VOC (lb/SCC)	Capture Efficiency (%)	Control Device/ Stack ID
LHA-2900	Gelcoat	IM-1	30800722	ton gelcoat	11.60	N/A (PM not emitted to atm.)	1.53	N/A (PM not emitted to atm.)	N/A (PM not emitted to atm.)	262.9	N/A	Fugitive
NOROX MEKP-9H	Catalyst for LHA-2900	IM-1	30800722	ton catalyst	9.18	N/A (PM not emitted to atm.)	0.34	N/A (PM not emitted to atm.)	N/A (PM not emitted to atm.)	74	N/A	Fugitive
Frekote PMC Mold Cleaner	Mold Cleaner	IM-1	30800703	ton cleaner	5.94	N/A (hand-applied)	5.94	N/A (hand-applied)	N/A (hand-applied)	2,000	N/A	Fugitive
Zyvax Sealer GP	Mold Sealant	IM-1	30800704	ton sealant	7.26	N/A (hand-applied)	7.00	N/A (hand-applied)	N/A (hand-applied)	1,928	N/A	Fugitive
Chemlease 41-90 EZ	Mold Release Agent	IM-1	30800702	ton release agent	6.01	N/A (hand-applied)	6.01	N/A (hand-applied)	N/A (hand-applied)	2,000	N/A	Fugitive
Chemlease R&B EZ	Mold Release Agent	IM-1	30800702	ton release agent	6.34	N/A (hand-applied)	6.18	N/A (hand-applied)	N/A (hand-applied)	1,950	N/A	Fugitive
Chemlease MPP 2180	Mold Release Agent	IM-1	30800702	ton release agent	7.01	N/A (hand-applied)	6.29	N/A (hand-applied)	N/A (hand-applied)	1,794	N/A	Fugitive
Everstrong	Adhesive Spray	IM-1	30800702	ton adhesive spray	6.25	N/A (PM not emitted to atm.)	4.06	N/A (PM not emitted to atm.)	N/A (PM not emitted to atm.)	1,300	N/A	Fugitive

For EP-13 Altec may use a variety of aerosols and hand-applied materials for paint touch-up, sealing, glueing, marking, and other uses; therefore, names of the materials are too numerous to list. Altec maintains Safety Data Sheets (SDS) and VOC/PM information for each material it uses in an Automated Chemical Information Management System (ACIMS). See "ACIMS VOC and PM Emissions Summary" in Attachment A for the Miscellaneous Chemical Usage emissions calculations in Appendix B. Specific SDSs will be provided to the agency upon request.

Altec assumes a transfer efficiency of 40% for aerosols, 100% transfer for brush/roll-on, and 70% building capture efficiency.

*Emission factor for particulate matter (PM) should not include transfer efficiency.

Section K.5: Hazardous Air Pollutant-containing Coatings/Printing Materials

List each individual hazardous air pollutant (HAP) contained in each material.

Trade Name of Material	HAP Name	HAP CAS #	Identify Solid (S) or Volatile (V)	HAP % by weight	HAP Emission Factor (lb/SCC)	Control Device/ Stack ID
LHA-2900	Styrene	100-42-5	V	27.22	176.9 lb/ton gelcoat	SGC-1
LHA-2900	Methyl Methacrylate	80-62-6	V	3.92	58.8 lb/ton gelcoat	SGC-1
NOROX MEKP-9H for use with LHA-2900	Dimethyl Phthalate	131-11-3	V	42.5	0.6 lb/ton catalyst	SGC-1
G262AA30209	Styrene	100-42-5	V	46.8	423.5 lb/ton gelcoat	SGC-1
G262AA30209	Cobalt Borate Neodecanoate	68457-13-6	S	0.3	6 lb/ton gelcoat	SGC-1
NOROX MEKP-9H for use with G262AA30209	Dimethyl Phthalate	131-11-3	V	42.5	0.85 lb/ton catalyst	SGC-1
RTM & Cold Molding Resin	Styrene	100-42-5	V	47.59	19.04 lb/ton resin	Fugitive
NOROX MEKP-9H for use with RTM & Cold Molding Resin	Dimethyl Phthalate	131-11-3	V	42.5	0.0374 lb/ton catalyst	Fugitive
AME 6441 T-40	Styrene	100-42-5	V	31.5079	79.40 lb/ton resin	Fugitive
AME 6441 T-40	Cobalt 2-Ethylhexanoate	136-52-7	S	0.1021	0 (material is hand-applied)	Fugitive

Section K.5: Hazardous Air Pollutant-containing Coatings/Printing Materials

List each individual hazardous air pollutant (HAP) contained in each material.

Trade Name of Material	HAP Name	HAP CAS #	Identify Solid (S) or Volatile (V)	HAP % by weight	HAP Emission Factor (lb/SCC)	Control Device/ Stack ID
NOROX MEKP-9H for use with AME 6441 T-40	Dimethyl Phthalate	131-11-3	V	42.5	0.24 lb/ton catalyst	Fugitive
G262AA30209	Styrene	100-42-5	V	46.8	423.5 lb/ton gelcoat	Fugitive
G262AA30209	Cobalt Borate Neodecanoate	68457-13-6	S	0	0 (bldg will provide capture)	Fugitive
NOROX MEKP-9H for use with G262AA30209	Dimethyl Phthalate	131-11-3	V	42.5	0.8 lb/ton catalyst	Fugitive
LHA-2900	Styrene	100-42-5	V	27.22	176.9 lb/ton gelcoat	Fugitive
LHA-2900	Methyl Methacrylate	80-62-6	V	3.92	58.8 lb/ton gelcoat	Fugitive
NOROX MEKP-9H for use with LHA-2900	Dimethyl Phthalate	131-11-3	V	42.5	0.6 lb/ton catalyst	Fugitive
Frekote PMC Mold Cleaner	Toluene	108-88-3	V	55	1100 lb/ton cleaner	Fugitive
Zyvax Sealer GP	Xylene	1330-20-7	V	2.1	42 lb/ton sealer	Fugitive
Zyvax Sealer GP	Cumene	98-82-8	V	3	60 lb/ton sealer	Fugitive

Section K.5: Hazardous Air Pollutant-containing Coatings/Printing Materials

List each individual hazardous air pollutant (HAP) contained in each material.

Trade Name of Material	HAP Name	HAP CAS #	Identify Solid (S) or Volatile (V)	HAP % by weight	HAP Emission Factor (lb/SCC)	Control Device/ Stack ID
Chemlease MPP 2180	Methanol	67-56-1	V	20	400 lb/ton release agent	Fugitive
Chemlease MPP 2180	o-Xylene	95-47-6	V	20	400 lb/ton release agent	Fugitive
<p>For EP-13 Altec may use a variety of aerosols and hand-applied materials for paint touch-up, sealing, glueing, marking, and other uses; therefore, names of the materials are too numerous to list. Altec maintains Safety Data Sheets (SDS) and HAP information for each material it uses in an Automated Chemical Information Management System (ACIMS). See "ACIMS HAP Emissions Summary" in Attachment B for the Miscellaneous Chemical Usage emissions calculations in Appendix B. Specific SDSs will be provided to the agency upon request.</p>						

Section K.6: Notes, Comments, and Explanations

Section K.4: VOC content for LHA-2900 is 32.5% prior to any reaction. It is 13.15% as-applied.

Section K.4: VOC content for G262AA30209 is 47.1% prior to any reaction. It is 21.47% as-applied.

Section K.4: VOC content for MEKP-9H is 3.7% "as-applied" per manufacturer.

Section K.4: VOC content for RTM & Cold Molding Resin is 47.9% prior to any reaction. It is 0.95% as-applied.

Section K.4: VOC content for AME 6441 T-40 is 35.72% prior to any reaction. It is 8.18% as-applied.

Section K.5: Styrene emission factor for LHA-2900 (lb/ton) = 0.325 (lb styrene emitted/lb styrene) x styrene% (lb styrene/lb gelcoat) x 2000 (lb gelcoat/ton gelcoat)

Section K.5: MMA emission factor for LHA-2900 (lb/ton) = 0.75 (lb MMA emitted/lb MMA) x MMA% (lb MMA/lb gelcoat) x 2000 (lb gelcoat/ton gelcoat)

Section K.5: DMP emission factor for MEKP-9H for use with LHA-2900 (lb/ton) = 0.325 (lb DMP emitted/lb DMP) x DMP% (lb DMP/lb catalyst) x 2000 (lb catalyst/ton catalyst) x 0.0022

Section K.5: Styrene emission factor for G262AA30209 (lb/ton) = 0.73 (lb styrene emitted/lb styrene) * ((1.03646 * DMP%) - 0.195)(lb styrene/lb gelcoat) * 2000 (lb gelcoat/ton gelcoat)

Section K.5: DMP emission factor for MEKP-9H for use with G262AA30209 (lb/ton) = 0.73 (lb DMP emitted/lb DMP) * ((1.03646 * DMP%) - 0.195)(lb DMP/lb catalyst) * 2000 (lb resin/ton catalyst)

Section K.6: Notes, Comments, and Explanations
Section K.5: Styrene emission factor for RTM & Cold Molding Resin (lb/ton) = 0.02 (lb styrene emitted/lb styrene) x styrene% (lb styrene/lb resin) x 2000 (lb resin/ton resin)
Section K.5: DMP emission factor for MEKP-9H for use with RTM & Cold Molding Resin (lb/ton) = 0.02 (lb DMP emitted/lb DMP) x styrene% (lb DMP/lb catalyst) x 2000 (lb resin/ton resin)
Section K.5: Styrene emission factor for AME 6441 T-40 (lb/ton) = 0.126 (lb styrene emitted/lb styrene) x styrene% (lb styrene/lb resin) x 2000 (lb resin/ton resin)
Section K.5: DMP emission factor for MEKP-9H for use with AME 6441 T-40 (lb/ton) = 0.126 (lb DMP emitted/lb DMP) x DMP% (lb DMP/lb catalyst) x 2000 (lb catalyst/ton catalyst) x 0.0022
HAP emissions from Mold Preparation are assumed to be 100 percent.
Because PM on Form K.4 does not include transfer efficiency, solid HAPs on Form K.5 do not include transfer efficiency as well.

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999	<h2 style="margin: 0;">DEP7007GG</h2> <h3 style="margin: 0;">Control Equipment</h3>	<p style="text-align: center; margin: 0;">Additional Documentation</p> <p>___ Complete Sections GG.1 through GG.12, as applicable</p> <p>___ Attach manufacturer's specifications for each control device</p> <p>___ Complete DEP7007AI</p>
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Source Name: Altec Industries, Inc.

KY EIS (AFS) #: 21- 093-00081

Permit #: S-22-006

Agency Interest (AI) ID: 1644

Date: Noember 2025

Section GG.1: General Information - Control Equipment																
Control Device ID #	Control Device Name	Cost	Manufacturer	Model Name/ Serial #	Date Installed	Inlet Gas Stream Data For <u>All</u> Control Devices					Inlet Gas Stream Data For Condensers, Adsorbers, Afterburners, Incinerators, Oxidizers Only			Equipment Operational Data For <u>All</u> Control Devices		
						Temperature (°F)	Flowrate (scfm @ 68°F)	Average Particle Diameter (µm)	Particle Density (lb/ft ³) or Specific Gravity	Gas Density (lb/ft ³)	Gas Moisture Content (%)	Gas Composition	Fan Type	Pressure Drop Range (in. H ₂ O)	Pollutants Collected/ Controlled	Pollutant Removal (%)
CGC-1A	GC-1 Panel Filter	\$125/case	Koch	SprayStop S	TBD	75-82	14,400	Unknown.	Unknown.	0.0735 at 78 F	N/A	N/A	N/A	1.0	PM	99.8
CGC-1B	GC-1 Pocket Filter	\$235/case	Koch	SprayStop HC Duo-Pak	TBD	75-82	14,400	Unknown.	Unknown.	0.0735 at 78 F	N/A	N/A	N/A	1.0	PM	99.8

Section GG.6: Filter														
Control Device ID #	Identify all Emission Units and Control Devices that Feed to Filter	Identify Type of Filter Unit: Baghouse, Cartridge Collector, or Other (specify)	Identify Type of Filtering Material: Fabric, Paper, Synthetic, or Other (specify)	Total Filter Area (ft ²)	Effective Air-to-Filter Ratio (acfm/ft ²)	Continuous Monitoring Instrumentation (e.g. COMS, BLDS, none)	Additional Materials Introduced into the Control System (e.g. lime, carbon)		Identify Cleaning Method: Shaker, Pulse Air, Reverse Air, Pulse Jet, or Other (specify)	Identify Gas Cooling Method: Ductwork, Heat Exchanger, Bleed-in Air, Water Spray, or Other (specify)	For Ductwork:		For Bleed-in Air:	For Water Spray:
							Material	Injection Rate (lb/hr)			Length (ft)	Diameter (ft)	Flowrate (scfm @ 68°F)	Flowrate (gal/min)
CGC-1A	GC-1	Panel filter	Synthetic	57.6	355	N/A	N/A	N/A	Replacement	N/A	TBD	TBD	N/A	N/A
CGC-1B	GC-1, CGC-1A	Pocket filter	Synthetic	57.6	355	N/A	N/A	N/A	Replacement	N/A	TBD	TBD	N/A	N/A

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999	DEP7007V Applicable Requirements and Compliance Activities	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">Additional Documentation</th> </tr> <tr> <td style="padding: 5px;"> <input type="checkbox"/> Complete DEP7007AI </td> </tr> </table>	Additional Documentation	<input type="checkbox"/> Complete DEP7007AI
Additional Documentation				
<input type="checkbox"/> Complete DEP7007AI				

- Section V.1: Emission and Operating Limitation(s)
- Section V.2: Monitoring Requiremer
- Section V.3: Recordkeeping Require
- Section V.4: Reporting Requirement:
- Section V.5: Testing Requirements
- Section V.6: Notes, Comments, and Explanations

Source Name: Altec Industries, Inc.

KY EIS (AFS) #: 21- 093-00081

Permit #: S-22-006

Agency Interest (AI) ID: 1644

Date: November 2025

Section V.1: Emission and Operating Limitation(s)

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
N/A	Sitewide	401 KAR 52:030	Styrene		10 tpy		Recordkeeping
GC-1	Gelcoat Spray Booth	401 KAR 59:010	PM	3.59 P ^{0.62}		Filter system in place while operating	Proper operation.
GC-1	Gelcoat Spray Booth	401 KAR 59:010	Opacity	20 percent			Monitoring, Recordkeeping
GC-1	Gelcoat Spray Booth	401 KAR 63:020	TAP			Filter system in place while operating; natural gas to fuel makeup air unit.	Air dispersion modeling; Recordkeeping
IM-1	Gelcoat Spray Booth	401 KAR 63:020	TAP				Air dispersion modeling

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
EP13	Misc Chemical Usage	401 KAR 59:010	PM	3.59 P ^{0.62}			Proper operation.
EP13	Misc Chemical Usage	401 KAR 59:010	Opacity	20 percent			Proper operation.
EP13	Misc Chemical Usage	401 KAR 63:020	TAP				Air dispersion modeling

Section V.2: Monitoring Requirements					
Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Monitored	Description of Monitoring
GC-1	Gelcoat Spray Booth	PM	401 KAR 59:010	Opacity	Conduct weekly visual observations; Inspect filter system daily.

Section V.3: Recordkeeping Requirements					
Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Recorded	Description of Recordkeeping
N/A	Sitewide	Styrene	401 KAR 52:030	Material Usage	Keep records of the amounts of all coatings, additives, and solvents used per month and the VOC and HAP content of each material. Determine 12-month rolling emissions of styrene.
GC-1	Gelcoat Spray Booth	PM	401 KAR 59:010	Opacity	Maintain a log of the visual observations noting date, time, initials of observers, and records of corrective actions taken as a result of visible emissions.
GC-1	Gelcoat Spray Booth	PM	401 KAR 59:010	Opacity	Keep a log of filter inspections and replacement including the date. Note if the booth was not in operation during a given date.
GC-1	Gelcoat Spray Booth	TAPs	401 KAR 63:020	Natural Gas	Keep monthly records of natural gas.
GC-1	Gelcoat Spray Booth	TAPs	401 KAR 63:020	Filter efficiency	Keep manufacturer's filter specifications on site.

Section V.4: Reporting Requirements					
Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Reported	Description of Reporting
GC-1	Gelcoat Spray Booth	Opacity	401 KAR 52:030	Description of deviation	Submit a report when corrective actions are required due to an opacity exceedance. Submit a copy of these records as part of the semiannual report.

Section V.5: Testing Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Tested	Description of Testing
N/A					

Section V.6: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

- ___ Section N.1: Emission Summary
- ___ Section N.2: Stack Information
- ___ Section N.3: Fugitive Information
- ___ Section N.4: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI

Source Name:	Altec Industries, Inc.
KY EIS (AFS) #:	21- 093-00081
Permit #:	S-22-006
Agency Interest (AI) ID:	1644
Date:	November 2025

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions (See N.4)	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
GC-1	Coating Spray Booth GC-1	1	Platforms and Brackets	Filters	CGC1	SGC1	0.071	PM/PM10/PM2.5	131.71	Mass Balance	100.00%	99.99%	9.40	0.00	3.94	0.000
GC-1	Coating Spray Booth GC-1	1	Platforms and Brackets	Filters	CGC1	SGC1	0.071	VOC	258.32	Industry, Engineering Judgement, Manufacturer	100.00%	0.00%	18.43	18.43	7.72	7.72
GC-1	Coating Spray Booth GC-1	1	Platforms and Brackets	Filters	CGC1	SGC1	0.071	Dimethyl Phthalate	0.0148	AP-42, Engineering Judgement	100.00%	0.00%	0.0011	0.0011	0.0004	0.0004
GC-1	Coating Spray Booth GC-1	1	Platforms and Brackets	Filters	CGC1	SGC1	0.071	Methyl Methacrylate	57.37	Industry	100.00%	0.00%	4.09	4.09	1.72	1.72
GC-1	Coating Spray Booth GC-1	1	Platforms and Brackets	Filters	CGC1	SGC1	0.071	Styrene	172.61	Industry	100.00%	0.00%	12.31	12.31	5.16	5.16
GC-1	Coating Spray Booth GC-1	2	Tooling	Filters	CGC1	SGC1	0.017	PM/PM10/PM2.5	103.80	Mass Balance	100.00%	99.99%	1.78	0.00	0.27	2.66E-05
GC-1	Coating Spray Booth GC-1	2	Tooling	Filters	CGC1	SGC1	0.017	VOC	467.80	Industry, Engineering Judgement, Manufacturer	100.00%	0.00%	8.00	8.00	1.20	1.20

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions (See N.4)	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
GC-1	Coating Spray Booth GC-1	2	Tooling	Filters	CGC1	SGC1	0.017	Cobalt Cmpd	0.59	Mass Balance	100.00%	99.99%	0.01	1.00E-06	0.0015	1.50E-07
GC-1	Coating Spray Booth GC-1	2	Tooling	Filters	CGC1	SGC1	0.017	Dimethyl Phthalate	0.02	AP-42, Engineering Judgement	100.00%	0.00%	0.0004	0.0004	5.30E-05	5.30E-05
GC-1	Coating Spray Booth GC-1	2	Tooling	Filters	CGC1	SGC1	0.017	Styrene	413.16	Industry	100.00%	0.00%	7.07	7.07	1.06	1.06
IM-1	Infusion Molding and other Fugitive FRP Activities	1	Platforms and Brackets Infusion	N/A	N/A	N/A	0.179	VOC	20.38	Industry, Engineering Judgement, Manufacturer	N/A	N/A	3.66	3.66	1.66	1.66
IM-1	Infusion Molding and other Fugitive FRP Activities	1	Platforms and Brackets Infusion	N/A	N/A	N/A	0.179	Dimethyl Phthalate	0.0009	AP-42, Engineering Judgement	N/A	N/A	0.0002	0.0002	0.0001	0.0001
IM-1	Infusion Molding and other Fugitive FRP Activities	1	Platforms and Brackets Infusion	N/A	N/A	N/A	0.179	Styrene	18.57	Industry	N/A	N/A	3.33	3.33	1.51	1.51
IM-1	Infusion Molding and other Fugitive FRP Activities	2	Tooling	N/A	N/A	N/A	0.009	VOC	208.44	Industry, Engineering Judgement, Manufacturer	N/A	N/A	1.92	1.92	1.48	1.48
IM-1	Infusion Molding and other Fugitive FRP Activities	2	Tooling	N/A	N/A	N/A	0.009	Dimethyl Phthalate	0.0057	AP-42, Engineering Judgement	N/A	N/A	0.0001	0.0001	0.00004	0.00004
IM-1	Infusion Molding and other Fugitive FRP Activities	2	Tooling	N/A	N/A	N/A	0.009	Styrene	77.46	Industry	N/A	N/A	0.71	0.71	0.55	0.55
IM-1	Infusion Molding and other Fugitive FRP Activities	3	Mold Repairs	N/A	N/A	N/A	0.003	VOC	459.69	Industry, Engineering Judgement, Manufacturer	N/A	N/A	1.23	1.23	0.14	0.14
IM-1	Infusion Molding and other Fugitive FRP Activities	3	Mold Repairs	N/A	N/A	N/A	0.003	Dimethyl Phthalate	0.0182	AP-42, Engineering Judgement	N/A	N/A	4.85E-05	4.85E-05	5.68E-06	5.68E-06
IM-1	Infusion Molding and other Fugitive FRP Activities	3	Mold Repairs	N/A	N/A	N/A	0.003	Styrene	414.38	Industry	N/A	N/A	1.10	1.10	0.13	0.13

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions (See N.4)	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
IM-1	Infusion Molding and other Fugitive FRP Activities	4	Gelcoat Touchup	N/A	N/A	N/A	0.003	VOC	259.26	Industry, Engineering Judgement, Manufacturer	N/A	N/A	0.77	0.77	5.77	5.77
IM-1	Infusion Molding and other Fugitive FRP Activities	4	Gelcoat Touchup	N/A	N/A	N/A	0.003	Dimethyl Phthalate	0.01	AP-42, Engineering Judgement	N/A	N/A	3.49E-05	3.49E-05	0.0003	0.0003
IM-1	Infusion Molding and other Fugitive FRP Activities	4	Gelcoat Touchup	N/A	N/A	N/A	0.003	Methyl Methacrylate	57.66	Industry	N/A	N/A	0.17	0.17	1.28	1.28
IM-1	Infusion Molding and other Fugitive FRP Activities	4	Gelcoat Touchup	N/A	N/A	N/A	0.003	Styrene	173.50	Industry	N/A	N/A	0.51	0.51	3.86	3.86
IM-1	Infusion Molding and other Fugitive FRP Activities	5	Mold and Platform Prep	N/A	N/A	N/A	0.011	VOC	1578.72	Mass Balance	N/A	N/A	17.46	17.46	7.76	7.76
IM-1	Infusion Molding and other Fugitive FRP Activities	5	Mold and Platform Prep	N/A	N/A	N/A	0.011	Cumene	4.92	Mass Balance	N/A	N/A	0.05	0.05	0.005	0.005
IM-1	Infusion Molding and other Fugitive FRP Activities	5	Mold and Platform Prep	N/A	N/A	N/A	0.011	Methanol	31.68	Mass Balance	N/A	N/A	0.35	0.35	0.03	0.03
IM-1	Infusion Molding and other Fugitive FRP Activities	5	Mold and Platform Prep	N/A	N/A	N/A	0.011	Toluene	147.66	Mass Balance	N/A	N/A	1.63	1.63	0.49	0.49
IM-1	Infusion Molding and other Fugitive FRP Activities	5	Mold and Platform Prep	N/A	N/A	N/A	0.011	Xylene, mixed	3.45	Mass Balance	N/A	N/A	0.04	0.04	0.003	0.003
IM-1	Infusion Molding and other Fugitive FRP Activities	5	Mold and Platform Prep	N/A	N/A	N/A	0.011	Xylene, ortho	31.68	Mass Balance	N/A	N/A	0.35	0.35	0.032	0.032
MCU	Miscellaneous Chemical Usage	N/A	N/A	N/A	N/A	N/A	N/A	See calculations in Appendix B. Emissions are determined using mass balance and engineering judgement.								

Section N.2: Stack Information

UTM Zone: 16

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter <i>(ft)</i>	Height <i>(ft)</i>	Base Elevation <i>(ft)</i>	Northing <i>(m)</i>	Easting <i>(m)</i>	Flowrate <i>(acfm)</i>	Temperature <i>(°F)</i>	Exit Velocity <i>(ft/sec)</i>
SGC1	GC-1, Process IDs 1 and 2	3.5	31	740	4,169,797	594,287	20,435	102	35.4

Section N.3: Fugitive Information

UTM Zone: 16

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data ¹		Area UTM Coordinates ²		Area Release Data	
			Length of the X Side <i>(ft)</i>	Length of the Y Side <i>(ft)</i>	Northing <i>(m)</i>	Easting <i>(m)</i>	Release Temperature <i>(°F)</i>	Release Height ³ <i>(ft)</i>
IM-1	Infusion Molding and other Fugitive FRP Activities	Process IDs 1 through 5	135	117	4,169,803	594,297	ambient	30
MCU	Miscellaneous Chemical Usage	N/A	385	596	4,169,946	597,706	ambient	30
			1 - building dimensions		2 -assumed as center of building		3 -assumed as building height	

Section N.4: Notes, Comments, and Explanations

The processes in GC-1 and IM-1 are batch; therefore, annual emissions are not equal to hourly emissions x 8760 hr/yr. See calculations in Appendix B for how annual emissions are determined.

Stack coordinates for SGC1 are approximate.

The emission factors for IM-1 Process 5 may vary year-to-year depending on the actual usage of each individual component.

Division for Air Quality
 300 Sower Boulevard
 Frankfort, KY 40601
 (502) 564-3999

DEP7007DD

Insignificant Activities

- Section DD.1: Table of Insignificant Activities
- Section DD.2: Signature Block
- Section DD.3: Notes, Comments, and Explanations

Source Name: Altec Industries, Inc.

KY EIS (AFS) #: 21- 093-00081

Permit #: S-22-006

Agency Interest (AI) ID: 1644


Date: November 2025

Section DD.1: Table of Insignificant Activities

*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3... etc.

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
IA 2	Welding		401 KAR 59:010	PM emissions = 0.68 ton/yr (est.)
IA 15	Comfort Heating (11.31 MMBtu/hr)			Potential tpy, VOC = 0.27, PM = 0.37, NOx = 4.86, CO = 4.08, SOx = 0.03
IA 16	Laser Cutter (6kW)		401 KAR 59:010	PM emissions = 0.003 ton/yr (est.)
IA 17	Laser Cutter (10kW)		401 KAR 59:010	PM emissions = 0.04 ton/yr (est.)
IA 18	Plasma Cutter (110 Amps)		401 KAR 59:010	PM emissions = 0.001 ton/yr (est.)
IA 19	Laser Cutter (10kW)		401 KAR 59:010	PM emissions = 0.04 ton/yr (est.)
IA 21	Laser Cutter (15kW)		401 KAR 59:010	PM emissions = 0.08 ton/yr (est.)
IA 22	Fiberglass Router(s)		401 KAR 59:010	PM emissions = 0.15 ton/yr (est.)
IA 23	Plastics Router		401 KAR 59:010	PM emissions = 0.15 ton/yr (est.)
TBD	Gantry Mill		401 KAR 59:010	PM emissions = 0.15 ton/yr (est.)
TBD	Washer System			VOC emissions = 4.13 ton/yr (est.)

Section DD.1: Table of Insignificant Activities				
*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3... etc.				
Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
TBD	Shot Blast		401 KAR 59:010	PM emissions = 0.07 ton/yr (est.)
TBD	Makeup Air Unit for GC-1 (1.425 MMBtu/hr)			Potential tpy, VOC = 0.03, PM = 0.05, NOx - 0.61, CO = 0.51, SOx = 0.004

Section DD.2: Signature Block		
<p>I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ITS ATTACHMENTS. BASED ON MY INQUIRY OF THOSE INDIVIDUALS WITH PRIMARY RESPONSIBILITY FOR OBTAINING THE INFORMATION, I CERTIFY THAT THE INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.</p>		
By:	 <hr style="width: 100%;"/> <p style="text-align: center;">Authorized Signature</p>	<p style="text-align: center; color: blue;">11/10/2025</p> <hr style="width: 100%;"/> <p style="text-align: center;">Date</p>
	<hr style="width: 100%;"/> <p style="text-align: center;">Daniel Flory</p> <p style="text-align: center;">Type/Print Name of Signatory</p>	<hr style="width: 100%;"/> <p style="text-align: center;">General Manager</p> <p style="text-align: center;">Title of Signatory</p>

**APPENDIX B
EMISSION CALCULATION**



Section I. General Information

Project: Attec Industries, Inc. - Elizabethtown, KY
Calculations for Permit Modification Application

Subject: Air Emissions from Gelcoat Spray Booth GC-1

Section II. Source Description

A. The purpose of this calculation is to determine air pollutant emissions from gelcoat spray booth GC-1.

Section III. Data

- A. Spray booth GC-1 will be used to spray gelcoats for platform production as well as platform brackets. On occasion, application of gelcoat for molds will also occur. Gelcoating is a batch process. Potential usage is based on 3 shifts (8760 hours); however, the facility will operate two 8-hour shifts per day and approximately 300 days per year to comply with the conditional major limits.
- B. Platforms and brackets will be made using a gelcoat, typically LHA-2900 and a catalyst, typically NOROX MEKP-9H.

LHA-2900

Gelcoat per hour: 12 gallons
 Gelcoat per annum: 10,060 gallons
 Gelcoat density: 11.60 lb/gal, average

VOC: 13.15% Effective¹
 Solids: 67.5% Assumed
 Methyl Methacrylate: 3.92%
 Styrene: 27.22%

VOC emission factor = 262.93 lb VOC/ton gelcoat
 PM emission factor = 1350.00 lb PM/ton gelcoat³
 HAP emission factor = 58.80 lb MMA/ton gelcoat
 176.93 lb styrene/ton gelcoat

NOROX MEKP-9H

Catalyst per hour: 0.38 gallons
 Catalyst per annum: 318 gallons
 Catalyst density: 9.18 lb/gal

VOC: 3.70% Effective
 Solids: 0% Assumed
 DMP: 42.50%

VOC emission factor = 74.0 lb VOC/ton catalyst
 PM emission factor = 0 lb PM/ton gelcoat³
 DMP emission factor = 0.61 lb DMP/ton catalyst

As Applied

Maximum Design Capacity = 0.0713 ton/hr

- C. Platform molds (aka "tools") will typically be produced with G262AA30209 and either NOROX MEKP-9H or Luperox DDM-9.

G262AA30209

Gelcoat per hour: 33.4 pounds
 Gelcoat per annum: 10,014 pounds

VOC: 21.47% As applied*
 Solids: 53.20% Assumed
 Styrene: 46.80%
 Cobalt cmpd²: 0.30%

VOC emission factor = 429.5 lb VOC/ton gelcoat
 PM emission factor = 1,064.0 lb PM/ton gelcoat³
 Styrene emission factor = 423.5 lb styrene/ton gelcoat
 Cobalt cmpd emission factor = 6.0 lb cobalt cmpd/ton gelcoat³

NOROX MEKP-9H

Catalyst per hour: 0.83 pounds
 Catalyst per annum: 250 pounds

VOC: 3.7% Effective
 Solids: 0% Assumed
 DMP: 42.5%

VOC emission factor = 74 lb VOC/ton catalyst
 PM emission factor = 0 lb PM/ton gelcoat³
 DMP emission factor = 0.85 lb DMP/ton catalyst

LUPEROX DDM-9

Catalyst per hour: 0.83 pounds
 Catalyst per annum: 250 pounds
 Catalyst density: 8.41 lb/gal

VOC: 100% Assumed
 Solids: 0%

VOC emission factor = 2,000 lb VOC/ton catalyst
 PM emission factor = 0 lb PM/ton gelcoat³

As Applied

Maximum Design Capacity = 0.0171 ton/hr

Section III. Data (Cont'd)

D. Coatings will be applied using an airless spray gun and the booth is equipped with fabric filters. See Attachment D.

Booth Capture Efficiency:	100%
Gelcoat Transfer Efficiency:	90.0% for PM
Filter Efficiency:	99.8% Control Efficiency, mat pre-filter
	99.8% Control Efficiency, pocket secondary filter
	99.9996% for PM = 1 - ((1 - prefilter) * (1 - pocket filter))
	99.99% Use to be conservative

NOTES:

DMP = Dimethyl Phthalate PM = Particulate Matter VOC = Volatile Organic Compounds

- 1 - VOC percentage considers emission factors for consumed and polymerized components (i.e., styrene, MMA, DMP).
- 2 - Cobalt compound for G262AA30209 is cobalt borate neodecanoate (CAS 68457-13-6).
- 3 - Per Form DEP7007K.4, PM emission factor should not include transfer efficiency. Solid HAPs also exclude transfer efficiency on Form DEP7007K.5. See Attachment A for coating and catalyst Safety Data Sheets and other data from manufacturers.

Section IV. Approach

A. Styrene emission factor (lb/ton) determined using gelcoat controlled spray application formulas developed by American Composites Manufacturers Association (ACMA) - document ANSI/ACMA/ICPA UEF-1-2011a. (See Attachment B.)

For gelcoat applications where the styrene concentration is less than 33 percent, use the following formula:

$$EF \text{ (lb styrene/ton gelcoat)} = 0.325 * \text{styrene\%} * 2000$$

For gelcoat applications where the styrene concentration is greater than or equal to 33 percent, use the following formula:

$$EF \text{ (lb styrene/ton gelcoat)} = 0.73 * (1.03646 * \text{styrene\%} - 0.195) * 2000$$

B. MMA emission factor (lb/ton) was determined using information from the American Composites Manufacturers Association (ACMA) - document ANSI/ACMA/ICPA UEF-1-2011a. (See Attachment B).

For gelcoat applications that contain MMA, use the following formula:

$$EF \text{ (lb MMA/ton gelcoat)} = 0.75 * \text{MMA\%} * 2000$$

C. Dimethyl phthalate is used as a stabilizing agent in the catalyst. It has an extremely low vapor pressure and its emissions are expected to follow the same evaporation mechanisms as for the styrene monomer. DMP emissions are assumed as a fraction of styrene emissions based on the ratio of vapor pressures for DMP to styrene (0.01 mmHg / 4.5 mmHg = 0.0022). (See Attachment C).

$$EF \text{ (lb DMP/ton catalyst)} = \text{styrene EF\%} * \text{DMP\%} * 2000 * 0.0022$$

D. Other pollutant emission factors (lb/ton) = Constituent% (lb/lb) * 2000 (lb/ton)

E. VOC and volatile HAP emissions (ton/yr) = { [coating per year (gal/yr) * density (lb/gal)] OR [coating per year (lb/yr)] } * Emission Factor (lb pollutant/ton coating) * capture eff.% / 2000 (lb/ton) / 2000 (lb/ton)

Uncontrolled PM and solid HAP emissions (ton/yr) = {[coating per year (gal/yr) * density (lb/gal)] OR [coating per year (lb/yr)] } * Emission Factor (lb pollutant/ton coating) * capture eff.% * (1-transfer eff.%) / 2000 (lb/ton) / 2000 (lb/ton)

Controlled PM emissions (ton/yr) = Uncontrolled PM emissions (ton/yr) * (1-filter eff.%)
PM includes HAPs that are solids such as cobalt borate neodecanoate.

F. Assume PM = PM10 = PM2.5

G. As applied emission factor (lb/ton) = Uncontrolled emissions (lb/hr) / As applied Max Design Capacity (ton/hr) / Capture eff.

Section V. Results

A. Estimated emissions are shown in Tables V-1 through V-5 below.

Table V-1. Summary of Potential Emissions for Platforms and Brackets in GC-1 using LHA-2900 and NOROX MEKP-9H
GC-1, Process 1

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	131.71	9.40	0.00	3.94	0.000
PM ₁₀	NA	131.71	9.40	0.00	3.94	0.000
PM _{2.5}	NA	131.71	9.40	0.00	3.94	0.000
VOC	NA	258.32	18.43	18.43	7.72	7.72
HAPs	NA	230.00	16.41	16.41	6.88	6.88
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	0.0148	0.0011	0.0011	0.0004	0.0004
Ethylbenzene	100-41-4	-	-	-	-	-
Methyl Methacrylate	80-62-6	57.37	4.09	4.09	1.72	1.72
Styrene	100-42-5	172.61	12.31	12.31	5.16	5.16
Toluene	108-88-3	-	-	-	-	-
Xylene	1330-20-7	-	-	-	-	-

Table V-2. Summary of Potential Emissions for Tooling in GC-1 using G262AA30209 and NOROX MEKP-9H
GC-1, Process 2

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	103.80	1.78	0.00	0.27	0.00
PM ₁₀	NA	103.80	1.78	0.00	0.27	0.00
PM _{2.5}	NA	103.80	1.78	0.00	0.27	0.00
VOC	NA	420.82	7.20	7.20	1.08	1.08
HAPs	NA	413.77	7.08	7.07	1.06	1.06
Cobalt Cmpds	NA	0.59	0.01	0.00	0.00	0.00
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	0.02	0.00	0.00	0.00	0.00
Ethylbenzene	100-41-4	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	413.16	7.07	7.07	1.06	1.06
Toluene	108-88-3	-	-	-	-	-
Xylene	1330-20-7	-	-	-	-	-

Table V-3. Summary of Potential Emissions for Tooling in GC-1 using G262AA30209 and Luperox DDM-9
GC-1, Process 2

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	103.80	1.78	0.00	0.27	0.00
PM ₁₀	NA	103.80	1.78	0.00	0.27	0.00
PM _{2.5}	NA	103.80	1.78	0.00	0.27	0.00
VOC	NA	467.80	8.00	8.00	1.20	1.20
HAPs	NA	413.75	7.08	7.07	1.06	1.06
Cobalt Cmpds	NA	0.59	0.01	0.00	0.00	0.00
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	413.16	7.07	7.07	1.06	1.06
Toluene	108-88-3	-	-	-	-	-
Xylene	1330-20-7	-	-	-	-	-

Section V. Results (cont'd)

Table V-4. Summary of Potential Emissions for Tooling in GC-1 (Maximum using G262AA30209 and NOROX MEKP-9H or Luperox DDM-9 GC-1, Process 2 (Maximum of Tables V-2 and V-3)

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	103.80	1.78	0.00	0.27	0.00
PM ₁₀	NA	103.80	1.78	0.00	0.27	0.00
PM _{2.5}	NA	103.80	1.78	0.00	0.27	0.00
VOC	NA	467.80	8.00	8.00	1.20	1.20
HAPs	NA	413.77	7.08	7.07	1.06	1.06
Cobalt Cmpds	NA	0.59	0.01	0.00	0.00	0.00
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	0.02	0.0004	0.0004	0.00	0.00
Ethylbenzene	100-41-4	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	413.16	7.07	7.07	1.06	1.06
Toluene	108-88-3	-	-	-	-	-
Xylene	1330-20-7	-	-	-	-	-

Table V-5. Summary of Potential Emissions for GC-1 (Total of Platforms, Brackets, and Tooling)
(Sum of Tables V-1 and V-4)

Constituent	CAS No.	Potential Emissions	
		Uncontrolled tons/yr	Controlled tons/yr
PM	NA	4.20	0.000
PM ₁₀	NA	4.20	0.000
PM _{2.5}	NA	4.20	0.000
VOC	NA	8.92	8.92
HAPs	NA	7.94	7.94
Cobalt Cmpds	NA	0.00	0.00
Cumene	98-82-8	-	-
Dimethyl Phthalate	131-11-3	0.00	0.00
Ethylbenzene	100-41-4	-	-
Methyl Methacrylate	80-62-6	1.72	1.72
Styrene	100-42-5	6.22	6.22
Toluene	108-88-3	-	-
Xylene	1330-20-7	-	-

Section VI. Attachments

- A. Coating and Catalyst Safety Data Sheets, Environmental Data Sheets, Technical Data Sheets, and Other Manufacturer Information
- B. American Composites Manufacturers Association (ACMA) - document ANSI/ACMA/ICPA UEF-1-2011a
- C. Dimethyl Phthalate Emission Factor Basis
- D. Filter Manufacturer's Efficiency Data



Attachment A
Coating and Catalyst Safety Data Sheets, Environmental Data Sheets, Technical Data Sheets, and Other Manufacturer Information

SAFETY DATA SHEET

LOW HAP FDA WHITE GEL COAT



Section 1. Identification

GHS product identifier : LOW HAP FDA WHITE GEL COAT
Product code : LHA2900
Other means of identification : Unsaturated Polyester Resin Gel Coat
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Industrial applications.

Supplier's details : HK Research Corporation
PO Box 1809
908 Old Lenoir Road
Hickory, NC 28603 USA
+1 828.328.1721

Emergency telephone number (with hours of operation) : CHEMTREC 24-Hour Emergency Telephone
US and Canada 800.424.9300
Outside US and Canada +1 703.741.5970

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
ACUTE TOXICITY (inhalation) - Category 4
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (hearing organs) - Category 1
 Percentage of the mixture consisting of ingredient(s) of unknown oral toxicity: 21.5%
Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 48.7%
Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 21.5%

GHS label elements

Hazard pictograms :



Signal word : Danger

Section 2. Hazards identification

- Hazard statements** : **F** Highly flammable liquid and vapor.
 Harmful if inhaled.
 Causes serious eye irritation.
 Causes skin irritation.
 May cause an allergic skin reaction.
 May cause respiratory irritation.
 Causes damage to organs through prolonged or repeated exposure. (hearing organs)
- Precautionary statements**
- Prevention** : **F** Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.
- Response** : **F** Get medical attention if you feel unwell. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
- Storage** : Store in a well-ventilated place. Keep cool. Store containers in a safe place.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
- Hazards not otherwise classified** : None known.

Section 3. Composition/information on ingredients

- Substance/mixture** : Mixture
- Other means of identification** : Unsaturated Polyester Resin Gel Coat

Ingredient name	%	CAS number
F styrene	<= 28.0	100-42-5
talc (none asbestiform)	<= 22.0	14807-96-6
Titanium dioxide	<= 15.0	13463-67-7
methyl methacrylate	<= 5.0	80-62-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Any concentration shown as exact is based on formula.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

VOC content is listed in Section 9.

Environmental composition is shown in Section 15.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention. Buffered baby shampoo will aid in removal of resin.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Remove contaminated clothing and shoes. Wash with plenty of soap and water. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Harmful if inhaled. May cause respiratory irritation.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.

Section 4. First aid measures

- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.

- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Absorb with an inert material and transfer the spilled material and absorbent to an appropriate waste disposal container. Wear appropriate respirator when ventilation is inadequate. Wear eye/face protection.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal. Wear appropriate respiratory protection. Wear protective clothing and eye or face protection:

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Do not store above the following temperature: 38°C (100.4°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. Store containers in a safe place.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
styrene	<p>ACGIH TLV (United States, 3/2019). TWA: 20 ppm 8 hours. STEL: 40 ppm 15 minutes.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 50 ppm 8 hours. TWA: 215 mg/m³ 8 hours. STEL: 100 ppm 15 minutes. STEL: 425 mg/m³ 15 minutes.</p> <p>OSHA PEL Z2 (United States, 2/2013). TWA: 100 ppm 8 hours. CEIL: 200 ppm AMP: 600 ppm 5 minutes.</p> <p>NIOSH REL (United States, 10/2016). TWA: 50 ppm 10 hours. TWA: 215 mg/m³ 10 hours. STEL: 100 ppm 15 minutes. STEL: 425 mg/m³ 15 minutes.</p>
talc (none asbestiform)	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 2 mg/m³ 8 hours. Form: Respirable dust</p> <p>NIOSH REL (United States, 10/2016). TWA: 2 mg/m³ 10 hours. Form: Respirable fraction</p> <p>ACGIH TLV (United States, 3/2019). TWA: 2 mg/m³ 8 hours. Form: Respirable fraction</p>
Titanium dioxide	<p>ACGIH TLV (United States, 3/2019). TWA: 10 mg/m³ 8 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 5/2018). TWA: 15 mg/m³ 8 hours. Form: Total dust</p>
methyl methacrylate	<p>ACGIH TLV (United States, 3/2019). Skin sensitizer. TWA: 50 ppm 8 hours. STEL: 100 ppm 15 minutes.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 100 ppm 8 hours. TWA: 410 mg/m³ 8 hours.</p> <p>NIOSH REL (United States, 10/2016). TWA: 100 ppm 10 hours. TWA: 410 mg/m³ 10 hours.</p> <p>OSHA PEL (United States, 5/2018). TWA: 100 ppm 8 hours. TWA: 410 mg/m³ 8 hours.</p>

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Section 8. Exposure controls/personal protection

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid.
- Color** : White.
- Odor** : Aromatic. Sweetish.
- Odor threshold** : 0.1 ppm
- pH** : Not applicable.
- Melting point** : Not available.
- Boiling point** : 100 to 145°C (212 to 293°F)
- Flash point** : Closed cup: 10 to 31°C (50 to 87.8°F)
- Evaporation rate** : 0.5 to 3.1 (butyl acetate = 1)
- Lower and upper explosive (flammable) limits** : Lower: 0.9%
Upper: 12.5%
- Vapor pressure** : 0.67 to 3.7 kPa (5 to 28 mm Hg) [room temperature]
- Vapor density** : 3.5 to 3.6 [Air = 1]
- Relative density** : 1.378003642 to 1.401968923
- Solubility** : Not available.
- Solubility in water** : Not applicable.
- Partition coefficient: n-octanol/water** : Not available.

Section 9. Physical and chemical properties

Auto-ignition temperature	: Not available.
Viscosity	: Not available.
VOC content	: 32.5 % (w/w) As shipped, including monomers and additives.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Hazardous reactions or instability may occur under certain conditions of storage or use.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. Hazardous polymerization may occur under certain conditions of storage or use. Keep away from heat and direct sunlight. Keep away from heat and flame. Keep away from oxidizing agents.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials Reactive or incompatible with the following materials: metals, acids and alkalis. Incompatible with alkali metals. Incompatible with some alkalis. Incompatible with some strong acids. Incompatible with copper alloys, brass.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
styrene	LC50 Inhalation Gas.	Rat	2770 ppm	4 hours
	LC50 Inhalation Vapor	Rat	11800 mg/m ³	4 hours
	LD50 Oral	Rat	2650 mg/kg	-
methyl methacrylate	LC50 Inhalation Vapor	Rat	78000 mg/m ³	4 hours
	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	7872 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
styrene	Eyes - Mild irritant	Human	-	50 ppm	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Severe irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	500 mg	-
talc (none asbestiform)	Skin - Moderate irritant	Rabbit	-	100 %	-
	Skin - Mild irritant	Human	-	72 hours 300 ug l	-
Titanium dioxide	Skin - Mild irritant	Human	-	72 hours 300 ug l	-

Sensitization

Section 11. Toxicological information

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Conclusion/Summary : Styrene manufacturers have determined that the weight of evidence for the carcinogenicity of this substance does not meet the criteria for classification.

In 2018, styrene was listed by IARC as a probable carcinogen to humans (Group 2A) based on hazard assessment data. The United States NTP listed styrene as reasonably anticipated to be a human carcinogen based on "limited evidence" from studies in humans, "sufficient evidence" from studies in experimental animals, and supporting data on mechanisms of carcinogenesis. The significance of these results for humans has not been established through risk assessment.

Titanium dioxide manufacturers have determined that the weight of evidence for the carcinogenicity of this substance does not meet the criteria for classification.

Exposure to respirable particles of this substance from the product as shipped is not likely. Exposure to respirable dust is possible when cutting, grinding, or sanding a cured item.

Titanium Dioxide is listed as IARC Group 2B possible carcinogen to humans is based on "sufficient evidence" in experimental animals and "inadequate evidence" in humans and respiratory tract exposure to very high concentrations of dust containing titanium dioxide.

Classification

Product/ingredient name	OSHA	IARC	NTP
styrene	-	2A	Reasonably anticipated to be a human carcinogen.
talc (none asbestiform)	-	3	-
Titanium dioxide	-	2B	-
methyl methacrylate	-	3	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
styrene	Category 3	Not applicable.	Respiratory tract irritation
methyl methacrylate	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
styrene	Category 1	Inhalation	hearing organs
talc (none asbestiform)	Category 2	Inhalation	Not determined

Section 11. Toxicological information

A study of long term effects of workers exposed to styrene levels in the range of 25-35 ppm for an 8-hour TWA indicated a possible mild hearing loss.

Aspiration hazard

Name	Result
styrene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Harmful if inhaled. May cause respiratory irritation.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

Not available.

- General** : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

Numerical measures of toxicity

Section 11. Toxicological information

Acute toxicity estimates

Route	ATE value
Oral	7642.4 mg/kg
Inhalation (gases)	7988.5 ppm
Inhalation (vapors)	34.03 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
styrene	Acute EC50 1400 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 720 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 4700 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 52 mg/l Marine water	Crustaceans - Artemia salina	48 hours
	Acute LC50 4020 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 63 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
Titanium dioxide	Acute LC50 3 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute LC50 6.5 mg/l Fresh water	Daphnia - Daphnia pulex - Neonate	48 hours
	Acute LC50 >1000000 µg/l Marine water	Fish - Fundulus heteroclitus	96 hours
methyl methacrylate	Acute LC50 130000 µg/l Fresh water	Fish - Pimephales promelas - Adult	96 hours

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
styrene	OECD	70 % - Readily - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
styrene	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
styrene	0.35	13.49	low
methyl methacrylate	1.38	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.






Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Methyl methacrylate (I,T); 2-Propenoic acid, 2-methyl-, methyl ester (I,T)	80-62-6	Listed	U162

Section 14. Transport information

	DOT Classification	Mexico Classification	TDG Classification	IATA	IMDG
UN number	UN1866	UN1866	UN1866	UN1866	UN1866
UN proper shipping name	RESIN SOLUTION	RESIN SOLUTION	RESIN SOLUTION	RESIN SOLUTION	RESIN SOLUTION
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	III	III	III	III	III
Environmental hazards	No.	No.	No.	No.	No.

Additional information

DOT Classification : **Reportable quantity** 3674.3 lbs / 1668.1 kg [317.04 gal / 1200.1 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

- U.S. Federal regulations** : **TSCA 8(a) PAIR**: 2-methoxy-1-methylethyl acetate; (2-methoxymethylethoxy)propanol; 4-tert-butylpyrocatechol; mequinol
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
Clean Water Act (CWA) 307: 2-ethylhexanoic acid, copper salt; Naphthenic acids, copper salts
Clean Water Act (CWA) 311: styrene; methyl methacrylate

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Listed

If components are "Listed", and additional information is required, contact Supplier using email in Section 16.

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : **FLAMMABLE LIQUIDS - Category 2**
ACUTE TOXICITY (inhalation) - Category 4
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (hearing organs) - Category 1

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	styrene	100-42-5	<= 28.0
	methyl methacrylate	80-62-6	<= 4.0
Supplier notification	styrene	100-42-5	27.22
	methyl methacrylate	80-62-6	3.92

State regulations

- Massachusetts** : The following components are listed: TALC; SOAPSTONE; STYRENE; PHENYLETHYLENE; METHYL METHACRYLATE; TITANIUM DIOXIDE; TIN DIOXIDE DUST
- New York** : The following components are listed: Styrene; Methyl methacrylate; 2-Propenoic acid, 2-methyl-, methyl ester
- New Jersey** : The following components are listed: SOAPSTONE; STYRENE MONOMER; BENZENE, ETHENYL-; METHYL METHACRYLATE; 2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER; TITANIUM DIOXIDE; TITANIUM OXIDE (TiO2)
- Pennsylvania** : The following components are listed: TALC; SOAPSTONE DUST; BENZENE, ETHENYL-; 2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER; TITANIUM OXIDE
- California Prop. 65** : The following components are listed. For more information go to www.P65Warnings.ca.gov.
 Styrene
 Titanium dioxide
 Methanol

Section 15. Regulatory information

Inventory list

Australia	: Not determined.
Canada	: At least one component is not listed in DSL but all such components are listed in NDSL.
China	: Not determined.
Europe	: Not determined.
Japan	: Japan inventory (ENCS): Not determined. Japan inventory (ISHL): Not determined.
Malaysia	: Not determined.
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: Not determined.
Taiwan	: Not determined.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	*	2
Flammability		3
Physical hazards		1

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Section 16. Other information

Classification	Justification
FLAMMABLE LIQUIDS - Category 2 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SKIN SENSITIZATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (hearing organs) - Category 1	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method

History

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Version	: 2 New form 08-2018
Prepared by	: Health, Safety and Environmental Department
For questions about the SDS, contact	: salesinfo@hkresearch or techinfo@hkresearch.com

Key to abbreviations

: ATE = Acute Toxicity Estimate
: BCF = Bioconcentration Factor
: GHS = Globally Harmonized System of Classification and Labelling of Chemicals
: IATA = International Air Transport Association
: IBC = Intermediate Bulk Container
: IMDG = International Maritime Dangerous Goods
: LogPow = logarithm of the octanol/water partition coefficient
: MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
: UN = United Nations

References

: 29 CFR 1910.1200 Hazard Communication Standard, March 2012
: CCR Title 27 Division 4 Office of Environmental Health Hazard Assessment (California Prop. 65)
: American Composites Manufacturers Association
: Styrene Information and Research Center

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Section 1. Identification

Product name G262AA30209
Product type Gel Coat
Chemical family Aromatic.
SDS No. NA-1504:1389 (Version: 4.2)

Relevant identified uses of the substance or mixture and uses advised against

Identified uses Used in the manufacture of thermoset plastic parts.
Uses advised against No additional information.

Supplier's details

<u>United States:</u>	<u>Canada:</u>
AOC	AOC
955 Highway 57 East	38 Royal Road
Collierville, TN 38017	Guelph, Ontario Canada N1H 1G3
Phone Number: (901) 854-2800	Phone Number: (519) 821-5180
Hours: 8AM-5pm (Central Time) Mon-Fri	Hours: 8am-5pm (Eastern) Mon-Fri
E-Mail: aoc.sds@aocresins.com	
Website: www.aocresins.com	

Emergency telephone number

CHEMTREC Within USA and Canada	+1 (800) 424-9300	CCN1023
CHEMTREC Outside USA and Canada	+1 (703) 527-3887	
CANUTEC Within Canada	+1 (613) 996-6666	

Section 2. Hazards identification

OSHA/HCS status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

FLAMMABLE LIQUIDS – Category 3 – H226
 ACUTE TOXICITY (Inhalation) – Category 4 – H332
 SKIN IRRITATION – Category 2 – H315
 EYE IRRITATION – Category 2A – H319
 CARCINOGENICITY – Category 2 – H351
 REPRODUCTIVE TOXICITY – Category 2 – H361d
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) – Category 3 – H335
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) – Category 1 – H372
 ASPIRATION HAZARD – Category 1 – H304

GHS label elements

Hazard pictograms



Signal word

Danger

Hazard statements

H226: Flammable liquid and vapor.
 H332: Harmful if inhaled.
 H319: Causes serious eye irritation.
 H315: Causes skin irritation.
 H361d: Suspected of damaging the unborn child.
 H351: Suspected of causing cancer.
 H304: May be fatal if swallowed and enters airways.
 H335: May cause respiratory irritation.
 H372: Causes damage to organs through prolonged or repeated exposure. (hearing organs, kidneys)

Precautionary statements

General

Section 2. Hazards identification

P101: If medical advice is needed, have product container or label at hand.

P102: Keep out of reach of children.

Prevention

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P210: Keep away from heat, sparks and hot surfaces. - No smoking.

P240: Ground/bond container and receiving equipment.

P241: Use explosion-proof electrical/ventilating/lighting/material-handling equipment.

P242: Use only non-sparking tools.

P243: Take precautionary measures against static discharge.

P233: Keep container tightly closed.

P271: Use only outdoors or in a well-ventilated area.

P260: Do not breathe vapor or mist.

P270: Do not eat, drink or smoke when using this product.

P264: Wash hands thoroughly after handling.

Response

P314: Get medical attention if you feel unwell.

P308+P313: IF exposed or concerned: Get medical attention.

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312: Call a POISON CENTER or physician if you feel unwell.

P370+P378: In case of fire: Use dry chemical, CO₂, water spray (fog) or foam.

P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P331: Do NOT induce vomiting.

P308+P313: IF exposed or concerned: Get medical advice/attention.

P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

P362+P364: Take off contaminated clothing and wash it before reuse.

P332+P313: If skin irritation occurs: Get medical attention.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313: If eye irritation persists: Get medical attention.

P391: Collect spillage.

Storage

P405: Store locked up.

P403+P235: Store in a well-ventilated place. Keep cool.

P233: Keep container tightly closed.

Disposal

P501: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified

None known.

Section 3. Composition/information on ingredients

Substance/mixture

Mixture.

Ingredient name	CAS number	%
styrene	100-42-5	46.8
Cobalt, borate neodecanoate complexes	68457-13-6	≤0.3
Solvent naphtha (petroleum), light arom.	64742-95-6	≤0.3

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Use of buffered baby shampoo will aid in removal. If irritation persists, get medical attention.

Inhalation

Move the victim to a safe area as soon as possible. Allow the victim to rest in a well-ventilated area. If breathing is difficult, give oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Skin contact

Section 4. First aid measures

In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. If irritation persists, seek medical attention. Wash contaminated clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion

Wash out mouth with water. Remove dentures if any. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Seek immediate medical attention.

Most important symptoms/effects, acute and delayed

Eye contact

Causes serious eye irritation.

Inhalation

Harmful if inhaled. May cause respiratory irritation. May cause drowsiness or dizziness.

Skin contact

Causes skin irritation.

Ingestion

Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact

Adverse symptoms may include the following: pain or irritation, watering, redness.

Inhalation

Adverse symptoms may include the following: respiratory tract irritation, coughing.

Skin contact

Adverse symptoms may include the following: irritation, redness.

Ingestion

Adverse symptoms may include the following: Irritating to mouth, throat and stomach.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician

Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media

Do not use water jet.

Specific hazards arising from the chemical

Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products

Decomposition products may include the following materials: carbon dioxide

Special protective actions for fire-fighters

Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation.

For emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Segregate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Refer to the product label and/or technical data sheet for further information.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
styrene	ACGIH TLV (United States, 3/2019). Absorbed through skin. TWA: 20 ppm 8 hours. STEL: 40 ppm 15 minutes. OSHA PEL Z2 (United States, 2/2013). TWA: 100 ppm 8 hours. CEIL: 200 ppm AMP: 600 ppm 5 minutes. NIOSH REL (United States, 10/2016). TWA: 50 ppm 10 hours. TWA: 215 mg/m ³ 10 hours. STEL: 100 ppm 15 minutes.

Section 8. Exposure controls/personal protection

Cobalt, borate neodecanoate complexes

STEL: 425 mg/m³ 15 minutes.

ACGIH TLV (United States, 3/2019). Skin sensitizer. Inhalation sensitizer.

TWA: 0.02 mg/m³, (as Co) 8 hours.

Appropriate engineering controls

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Color	Orange.
Odor	Aromatic.
Odor threshold	0.01 - 0.1 ppm (<i>Styrene</i>)
pH	<i>Not applicable.</i>
Melting point	-23.8°F / -30.6°C (<i>Styrene</i>)
Boiling point	293°F / 145°C (<i>Styrene</i>)
Flash point	88°F / 31°C (<i>Styrene</i>)
Evaporation rate	< 1 (Butyl acetate = 1)
Flammability (solid, gas)	<i>Not applicable.</i>
Lower and upper explosive (flammable) limits	Lower: 1.1% Upper: 6.1% (<i>Styrene</i>)
Vapor pressure	5.0 mm Hg@ 68°F / 20°C (<i>Styrene</i>)
Vapor density	3.6 (Air = 1) (<i>Styrene</i>)
Relative density	1.1 to 1.4 (Water = 1)
Solubility	Slight.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	914°F / 490°C (<i>Styrene</i>)
Decomposition temperature	Not available.
Viscosity	Not available.
Molecular weight	Not available.

Section 10. Stability and reactivity

Reactivity

No specific test data related to reactivity available for this product or its ingredients.

Chemical stability

The product is stable. Stable under recommended storage and handling conditions (see Section 7).

Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid

Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials

Reactive or incompatible with the following materials: oxidizing materials

Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Ingredient name	Result	Species	Dose	Exposure
styrene	LC50 Inhalation Gas.	Rat	2770 ppm	4 hours
	LC50 Inhalation Vapor	Rat	11800 mg/m ³	4 hours
	LC50 Inhalation Vapor	Rat	5634.2 ppm	4 hours
	LD50 Oral	Rat	2650 mg/kg	-
	LD50 Oral	Rat	8400 mg/kg	-
Solvent naphtha (petroleum), light arom.				

Irritation/Corrosion

Ingredient name	Result	Species	Score	Exposure	Observation
styrene	Eyes - Mild irritant	Human	-	50 ppm	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Severe irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	500 mg	-
	Skin - Moderate irritant	Rabbit	-	100 %	-
	Eyes - Mild irritant	Rabbit	-	24 hours 100 UI	-
Solvent naphtha (petroleum), light arom.					

Sensitization

May cause sensitization by skin contact.

Carcinogenicity

Classification

Ingredient name	ACGIH	IARC	NTP
styrene	-	2A	Reasonably anticipated to be a human carcinogen.
Cobalt, borate neodecanoate complexes	-	2B	Reasonably anticipated to be a human carcinogen.

- 1) **Negative Study** A published study concluded that the mechanism for producing cancer in mice exposed to styrene is not applicable in human metabolism. (June 2013 Pharmacology & Toxicology 66 (2013))
- 2) **Negative Study** A recent update to an extensive study of reinforced plastic workers from 1948-1977 concluded that there was no coherent evidence that styrene exposure increased risk of cancer (March 2013 Epidemiology Vol. 24 Issue 2)
- 3) **Positive Study** Styrene induced pulmonary toxicity and carcinogenicity in mice was shown to be caused by a metabolite of styrene, probably styrene oxide. (Dec.2001 Toxicology Vol.169 Issue 2)

Mutagenicity

No known significant effects or critical hazards.

Reproductive toxicity

Suspected of damaging the unborn child.

Teratogenicity

No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

May cause respiratory irritation.

Specific target organ toxicity (repeated exposure)

A study of long term effects of workers exposed to styrene levels in the range of 25-35 ppm, 8 hour TWA, indicated a possible mild hearing loss.

Section 11. Toxicological information

Aspiration hazard

May be fatal if swallowed and enters airways.

Potential acute health effects

Eye contact

Causes serious eye irritation.

Inhalation

Harmful if inhaled. May cause respiratory irritation. May cause drowsiness or dizziness.

Skin contact

Causes skin irritation.

Ingestion

Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact

Adverse symptoms may include the following: pain or irritation, watering, redness.

Inhalation

Adverse symptoms may include the following: respiratory tract irritation, coughing.

Skin contact

Adverse symptoms may include the following: irritation, redness.

Ingestion

Adverse symptoms may include the following: Irritating to mouth, throat and stomach.

Section 12. Ecological information

Toxicity

Ingredient name	Result	Species	Exposure
styrene	Acute EC50 1400 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 720 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 4700 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 52 mg/l Marine water	Crustaceans - Artemia salina	48 hours
	Acute LC50 4020 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 63 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Ingredient name	LogP _{ow}	BCF	Potential
styrene	0.35	13.49	low
Cobalt, borate neodecanoate complexes	-	15600	high
Solvent naphtha (petroleum), light arom.	-	10 to 2500	high

Mobility in soil

Soil/water partition coefficient (K_{oc})

Not available.

Other adverse effects

No known effect according to our database.

Section 13. Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Disposal methods

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid disposal. Attempt to use product completely in accordance with intended use. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Section 13. Disposal considerations

Special precautions

This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

DOT /TDG / IMDG/IMO / ICAO/IATA and National regulations.

UN number UN1866
Proper shipping name Resin Solution
Transport hazard class(es) 3



Packing group III

Additional information US regulations require the reporting of spills when the amount exceeds the Reportable Quantity (RQ) for specific components of this material. See CERCLA in Section 15, Regulatory Information, for the Reportable Quantities.

IMDG **Emergency schedules (EmS):** F-E, S-E
Remarks: FP- 31°C

IATA No additional information.

Environmental hazards Marine pollutant: No.

Special precautions for user **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

International regulations lists

United States inventory (TSCA 8b)	All components are active or exempted.
Australia (AICS)	All components are listed or exempted.
Canada (DSL)	All components are listed or exempted.
China (IECSC)	All components are listed or exempted.
Europe (EINECS)	Not determined.
New Zealand (NZIoC)	All components are listed or exempted.
Philippines (PICCS)	At least one component is not listed .
Japan (ENCS)	At least one component is not listed .
Republic of Korea (KECI)	All components are listed or exempted.
Taiwan (CSNN)	All components are listed or exempted.

U.S. Federal regulations

SARA 311/312

Per the June 13, 2016 Federal Register notice, EPA harmonized the EPCRA 311/312 hazard categories with the 2012 OSHA hazard communication standard for classifying and labeling of chemicals (i.e. GHS). Please refer to Section 2 of the SDS to identify the appropriate hazard categories for reporting purposes.

SARA 313

	Ingredient name	CAS number
Form R - Reporting requirements	styrene Cobalt, borate neodecanoate complexes	100-42-5 68457-13-6

CERCLA RQ - styrene - 1000 lbs. (453.6 kg)

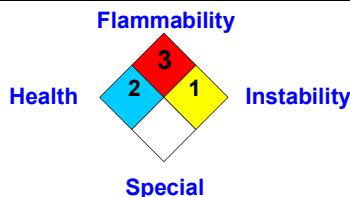
State regulations

California Prop. 65

WARNING: This product can expose you to chemicals including Styrene, which is known to the State of California to cause cancer, and Ethylene Glycol and Methanol, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Section 16. Other information

[National Fire Protection Association \(U.S.A.\)](#)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

[History](#)

Date of issue	05/22/2020
Date of previous issue	03/01/2020
Version	4.2
Prepared by	AOC Corporate Regulatory Affairs
Key to abbreviations	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations

▣ Indicates information that has changed from previously issued version.

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SECTION 1. IDENTIFICATION

Trade name : NOROX[®] MEKP-9H

Manufacturer or supplier's details

Company name of supplier : United Initiators, Inc.

Address : 555 Garden Street
Elyria OH 44035 USA

Telephone : +1-440-323-3112

Telefax : +1-440-323-2659

Emergency telephone : CHEMTREC US (24h): +1-800-424-9300
CHEMTREC WORLD (24h): +1-703-527-3887

E-mail address of person responsible for the SDS : cs-initiators.nafta@united-in.com

Recommended use of the chemical and restrictions on use

Recommended use : Hardener

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids : Category 4
Organic peroxides : Type D
Acute toxicity (Oral) : Category 4
Acute toxicity (Inhalation) : Category 4
Skin corrosion : Category 1B
Serious eye damage : Category 1
Reproductive toxicity : Category 2
Short-term (acute) aquatic hazard : Category 2

GHS label elements

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Hazard pictograms

:



Signal Word

:

Danger

Hazard Statements

:

H227 Combustible liquid.
H242 Heating may cause a fire.
H302 + H332 Harmful if swallowed or if inhaled.
H314 Causes severe skin burns and eye damage.
H361d Suspected of damaging the unborn child.
H401 Toxic to aquatic life.

Precautionary Statements

:

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P220 Keep/Store away from clothing/ strong acids, bases, heavy metal salts and other reducing substances /combustible materials.
P234 Keep only in original container.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

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Storage:

P405 Store locked up.
P410 Protect from sunlight.
P411 + P235 Store at temperatures not exceeding < 100 °F/ < 38 °C. Keep cool.
P420 Store away from other materials.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
Chemical nature : Organic Peroxide
Liquid mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
dimethyl phthalate	131-11-3	>= 40 - < 45
2-Butanone, peroxide	1338-23-4	>= 30 - < 35
Trimethylpentanediol isobutyrate	6846-50-0	>= 20 - < 25
Butanone	78-93-3	>= 1 - < 5
Hydrogen peroxide	7722-84-1	>= 1 - < 5

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
Symptoms of poisoning may appear several hours later.
Call a physician immediately.

If inhaled : Call a physician or poison control center immediately.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
Call a physician immediately.
If breathed in, move person into fresh air.

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- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash contaminated clothing before re-use.
If on skin, rinse well with water.
If on clothes, remove clothes.
If symptoms persist, call a physician.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Call a physician immediately.
Rinse mouth thoroughly with water.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed or if inhaled.
Causes serious eye damage.
Suspected of damaging the unborn child.
Causes severe burns.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
- Notes to physician : Treat symptomatically and supportively.
-

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray jet
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire fighting : Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may auto-ignite.

Flash back possible over considerable distance.
Vapors may form explosive mixtures with air.
Cool closed containers exposed to fire with water spray.
-

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- Specific extinguishing methods : Do not use a solid water stream as it may scatter and spread fire.
Remove undamaged containers from fire area if it is safe to do so.
Use water spray to cool unopened containers.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Remove all sources of ignition.
Follow safe handling advice and personal protective equipment recommendations.
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Never return spills in original containers for re-use.
Treat recovered material as described in the section "Disposal considerations".
- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Contact with incompatible substances can cause decomposition at or below SADT.
Clear spills immediately.
Suppress (knock down) gases/vapors/mists with a water spray jet.
To clean the floor and all objects contaminated by this material, use plenty of water.
Soak up with inert absorbent material.
Isolate waste and do not reuse.
Non-sparking tools should be used.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

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SECTION 7. HANDLING AND STORAGE

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
Use only explosion-proof equipment.
Keep away from combustible material.
- Advice on safe handling : Do not swallow.
Do not breathe vapors/dust.
Avoid contact with skin and eyes.
Avoid formation of aerosol.
Take precautionary measures against static discharges.
Never return any product to the container from which it was originally removed.
Provide sufficient air exchange and/or exhaust in work rooms.
Avoid confinement.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Smoking, eating and drinking should be prohibited in the application area.
Wash thoroughly after handling.
For personal protection see section 8.
Protect from contamination.
- Conditions for safe storage : Avoid impurities (e.g. rust, dust, ash), risk of decomposition.
Electrical installations / working materials must comply with the technological safety standards.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Store in original container.
Keep containers tightly closed in a cool, well-ventilated place.
Store in accordance with the particular national regulations.
- Materials to avoid : Keep away from strong acids, bases, heavy metal salts and other reducing substances.
- Recommended storage temperature : < 100 °F
< 38 °C
- Further information on storage stability : No decomposition if stored normally.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of	Control parameters / Permissible	Basis
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		exposure)	concentration	
dimethyl phthalate	131-11-3	TWA	5 mg/m3	ACGIH
		TWA	5 mg/m3	NIOSH REL
		TWA	5 mg/m3	OSHA Z-1
		TWA	5 mg/m3	OSHA P0
2-Butanone, peroxide	1338-23-4	C	0.2 ppm	ACGIH
		C	0.2 ppm 1.5 mg/m3	NIOSH REL
		C	0.7 ppm 5 mg/m3	OSHA P0
Butanone	78-93-3	TWA	200 ppm	ACGIH
		STEL	300 ppm	ACGIH
		TWA	200 ppm 590 mg/m3	NIOSH REL
		ST	300 ppm 885 mg/m3	NIOSH REL
		TWA	200 ppm 590 mg/m3	OSHA Z-1
		TWA	200 ppm 590 mg/m3	OSHA P0
Hydrogen peroxide	7722-84-1	STEL	300 ppm 885 mg/m3	OSHA P0
		TWA	1 ppm	ACGIH
		TWA	1 ppm 1.4 mg/m3	NIOSH REL
		TWA	1 ppm 1.4 mg/m3	OSHA Z-1
		TWA	1 ppm 1.4 mg/m3	OSHA P0

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sam-pling time	Permissible concentra-tion	Basis
Butanone	78-93-3	methyl ethyl ketone	Urine	End of shift (As soon as possible after exposure ceases)	2 mg/l	ACGIH BEI

Engineering measures : Minimize workplace exposure concentrations.

Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Filter type : ABEK-filter

Hand protection

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Material : butyl-rubber
Break through time : 480 min
Glove thickness : 0.5 mm

Material : Nitrile rubber
Break through time : < 30 min
Glove thickness : 0.4 mm

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work.
For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Eye protection : Tightly fitting safety goggles
Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.
Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.

Hygiene measures : Keep away from food and drink.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and immediately after handling the product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : colorless

Odor : slight

pH : No data available

Melting point/range : No data available

Boiling point/boiling range : Decomposition: Decomposes below the boiling point.

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Flash point : > 76 °C

Evaporation rate : No data available

Flammability (solid, gas) : Not applicable

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapor pressure : No data available

Relative vapor density : > 1

Density : 1.1 g/cm³

Solubility(ies)
Water solubility : soluble

Partition coefficient: n-octanol/water : No data available

Self-Accelerating decomposition temperature (SADT) : 60 °C
SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.

Viscosity
Viscosity, dynamic : No data available

Viscosity, kinematic : not determined

Oxidizing properties : The substance or mixture is not classified as oxidizing.
Organic peroxide

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Stable under recommended storage conditions.

Chemical stability : Stable under recommended storage conditions.

Possibility of hazardous reactions : Vapors may form explosive mixture with air.

Conditions to avoid : Protect from contamination.
Contact with incompatible substances can cause decomposition at or below SADT.
Heat, flames and sparks.

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Avoid confinement.

Incompatible materials : Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if swallowed or if inhaled.

Product:

Acute oral toxicity : Acute toxicity estimate: 1,411 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 4.29 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Components:

dimethyl phthalate:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : (Rat): > 10.4 mg/l
Exposure time: 6 h
Test atmosphere: vapor
Remarks: No mortality observed at this dose.

Acute dermal toxicity : LD50 (Rabbit): > 12,000 mg/kg

2-Butanone, peroxide:

Acute oral toxicity : Acute toxicity estimate: 500 mg/kg
Method: Expert judgment

Acute inhalation toxicity : Acute toxicity estimate: 1.5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Expert judgment
Assessment: The component/mixture is moderately toxic after short term inhalation.
Remarks: Based on data from similar materials

Acute dermal toxicity : Acute toxicity estimate: 2,500 mg/kg
Method: Expert judgment

Trimethylpentanediol isobutyrate:

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- Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: Expert judgment
Assessment: The substance or mixture has no acute oral toxicity
- Acute inhalation toxicity : LCLo (Rat): > 0.12 mg/l
Exposure time: 6 h
Test atmosphere: dust/mist
Method: Expert judgment
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: No mortality observed at this dose.
- Acute dermal toxicity : LD50 (Guinea pig): > 2,000 mg/kg
Method: Expert judgment
Assessment: The substance or mixture has no acute dermal toxicity

Butanone:

- Acute oral toxicity : LD50 (Rat): 2,193 mg/kg
Method: OECD Test Guideline 423
- Acute inhalation toxicity : Remarks: No data available
- Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg
Method: OECD Test Guideline 402
Remarks: Based on available data, the classification criteria are not met.

Hydrogen peroxide:

- Acute oral toxicity : Acute toxicity estimate: 500.0 mg/kg
Method: Converted acute toxicity point estimate
Assessment: The component/mixture is moderately toxic after single ingestion.
- Acute inhalation toxicity : LC50 (Rat): > 0.17 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The component/mixture is moderately toxic after short term inhalation.
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI
- Acute dermal toxicity : LD50 (Rabbit): > 6,500 mg/kg

Skin corrosion/irritation

Causes severe burns.

Product:

- Remarks : Extremely corrosive and destructive to tissue.

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Components:

dimethyl phthalate:

Species : Rabbit
Method : Draize Test
Result : No skin irritation

2-Butanone, peroxide:

Species : Rabbit
Result : Causes burns.

Trimethylpentanediol isobutyrate:

Species : Guinea pig
Exposure time : 24 h
Result : No skin irritation
Remarks : Based on available data, the classification criteria are not met.

Butanone:

Species : Rabbit
Assessment : Repeated exposure may cause skin dryness or cracking.
Method : OECD Test Guideline 404
Result : No skin irritation

Hydrogen peroxide:

Result : Corrosive after 3 minutes or less of exposure

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Remarks : May cause irreversible eye damage.

Components:

dimethyl phthalate:

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405

2-Butanone, peroxide:

Result : Irreversible effects on the eye

Trimethylpentanediol isobutyrate:

Species : Rabbit
Result : No eye irritation

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Butanone:

Species : Rabbit
Result : Eye irritation
Method : OECD Test Guideline 405

Hydrogen peroxide:

Result : Irreversible effects on the eye

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Components:

dimethyl phthalate:

Species : Mouse
Method : OECD Test Guideline 429
Result : Does not cause skin sensitization.

2-Butanone, peroxide:

Species : Guinea pig
Method : OECD Test Guideline 406
Result : Does not cause skin sensitization.

Assessment : Harmful if swallowed., Harmful if inhaled.

Trimethylpentanediol isobutyrate:

Species : Guinea pig
Result : Does not cause skin sensitization.

Butanone:

Routes of exposure : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Does not cause skin sensitization.

Germ cell mutagenicity

Not classified based on available information.

Components:

dimethyl phthalate:

Genotoxicity in vitro : Method: OECD Test Guideline 471
Result: negative

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Method: OECD Test Guideline 473
Result: negative

Method: OECD Test Guideline 476
Result: positive

Genotoxicity in vivo : Test Type: Chromosomal aberration
Species: Rat
Application Route: Intraperitoneal
Result: negative

Test Type: Micronucleus test
Species: Mouse
Application Route: Intraperitoneal injection
Result: negative

2-Butanone, peroxide:

Genotoxicity in vitro : Method: OECD Test Guideline 473
Result: negative

Method: OECD Test Guideline 471
Result: negative

Method: OECD Test Guideline 476
Result: negative

Trimethylpentanediol isobutyrate:

Genotoxicity in vitro : Method: OECD Test Guideline 476
Result: negative

Test Type: Ames test
Result: negative

Method: OECD Test Guideline 473
Result: negative

Butanone:

Genotoxicity in vitro : Method: OECD Test Guideline 471
Result: negative

Method: OECD Test Guideline 476
Result: negative

Method: OECD Test Guideline 473
Result: negative

Genotoxicity in vivo : Species: Mouse
Application Route: Intraperitoneal
Method: OECD Test Guideline 474
Result: negative

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Hydrogen peroxide:

Genotoxicity in vitro : Test Type: Ames test
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Result: negative

Carcinogenicity

Not classified based on available information.

Components:

dimethyl phthalate:

Species : Rat
Application Route : Skin contact
Method : OECD Test Guideline 451
Result : negative
Remarks : Based on data from similar materials

2-Butanone, peroxide:

Remarks : This information is not available.

Hydrogen peroxide:

Carcinogenicity - Assessment : Carcinogenicity classification not possible from current data.

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Suspected of damaging the unborn child.

Components:

dimethyl phthalate:

Effects on fertility : Species: Rat
Application Route: oral (gavage)
Method: OECD Test Guideline 440
Result: negative

Effects on fetal development : Species: Rat
Application Route: Ingestion
General Toxicity Maternal: NOAEL: 840 mg/kg body weight

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Developmental Toxicity: NOAEL: 3,570 mg/kg body weight
Method: OECD Test Guideline 414

2-Butanone, peroxide:

Effects on fertility : Species: Rat
Application Route: oral (gavage)
General Toxicity Parent: NOAEL: 50 mg/kg body weight
Method: OECD Test Guideline 421
Result: negative

Trimethylpentanediol isobutyrate:

Effects on fetal development : Test Type: One-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: negative

Reproductive toxicity - Assessment : Suspected of damaging the unborn child., Some evidence of adverse effects on development, based on animal experiments.

Butanone:

Effects on fertility : Species: Rat
Application Route: oral (drinking water)
General Toxicity Parent: NOAEL: 10,000 mg/l
General Toxicity F1: NOAEL: 10,000 mg/l
Method: OECD Test Guideline 416
Remarks: Based on data from similar materials

Species: Rat
Application Route: oral (drinking water)
General Toxicity Parent: LOAEL: 20,000 mg/l
Method: OECD Test Guideline 416
Remarks: Based on data from similar materials

Effects on fetal development : Species: Rat
Application Route: Inhalation
General Toxicity Maternal: NOAEC: ca. 1,002 mg/kg body weight
Teratogenicity: NOAEC Parent: ca. 1,002 mg/kg body weight
Method: OECD Test Guideline 414
Result: negative

STOT-single exposure

Not classified based on available information.

Components:

Butanone:

Assessment : May cause drowsiness or dizziness.

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Hydrogen peroxide:

Assessment : May cause respiratory irritation.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

dimethyl phthalate:

Species : Rat
NOAEL : 770 mg/kg
Application Route : Oral
Exposure time : 16 w
Method : OECD Test Guideline 408

2-Butanone, peroxide:

Species : Rat
NOAEL : 200 mg/kg
Application Route : oral (gavage)
Exposure time : 28 d
Method : OECD Test Guideline 407

Repeated dose toxicity - Assessment : Harmful if swallowed., Harmful if inhaled.

Hydrogen peroxide:

Species : Mouse
Application Route : Ingestion
Exposure time : 90 d
Symptoms : No adverse effects.

Aspiration toxicity

Not classified based on available information.

Components:

dimethyl phthalate:

No aspiration toxicity classification

Trimethylpentanediol isobutyrate:

Not classified due to data which are conclusive although insufficient for classification.

Further information

Product:

Remarks : No data available

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Components:

dimethyl phthalate:

Remarks : No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

dimethyl phthalate:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 39 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 52 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 260 mg/l
Exposure time: 72 h

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 11 mg/l
Exposure time: 102 d
Method: OECD Test Guideline 210

LOEC (Oncorhynchus mykiss (rainbow trout)): 24 mg/l
Exposure time: 102 d
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 9.6 mg/l
Exposure time: 21 d

LOEC (Daphnia magna (Water flea)): 23 mg/l
Exposure time: 21 d

Toxicity to microorganisms : EC50: 4,100 mg/l
Exposure time: 0.5 h
Method: OECD Test Guideline 209

2-Butanone, peroxide:

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 44.2 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

NOEC (Poecilia reticulata (guppy)): 18 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 39 mg/l
Exposure time: 48 h

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Method: OECD Test Guideline 202

NOEC (Daphnia magna (Water flea)): 26.7 mg/l
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 5.6 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 2.1 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (Bacteria): 48 mg/l
Exposure time: 0.5 h
Method: OECD Test Guideline 209

Trimethylpentanediol isobutyrate:

Toxicity to fish : NOEC (Fish): ≥ 6 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia): ≥ 1.46 mg/l
Exposure time: 48 h

NOEC (Daphnia): 0.7 mg/l
Exposure time: 21 d

Toxicity to algae/aquatic plants : EC50 (Chlorella pyrenoidosa): > 7.49 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : LOEC (Daphnia magna (Water flea)): 0.7 mg/l
Exposure time: 21 d

Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Butanone:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2,993 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 308 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

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Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 2,029 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC (Pseudomonas putida): 1,150 mg/l
Exposure time: 16 h
Method: DIN 38 412 Part 8

Hydrogen peroxide:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 16.4 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia pulex (Water flea)): 2.4 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Skeletonema costatum (marine diatom)): 1.38 mg/l
Exposure time: 72 h
NOEC (Skeletonema costatum (marine diatom)): 0.63 mg/l
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.63 mg/l
Exposure time: 21 d

Persistence and degradability

Components:

dimethyl phthalate:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301E

2-Butanone, peroxide:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301D

Trimethylpentanediol isobutyrate:

Biodegradability : Result: rapidly biodegradable
Exposure time: 28 d
Method: OECD Test Guideline 301B

Butanone:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301D

Hydrogen peroxide:

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Biodegradability : Result: Readily biodegradable.

Bioaccumulative potential

Components:

dimethyl phthalate:

Bioaccumulation : Bioconcentration factor (BCF): 57
Method: OECD Test Guideline 305

Partition coefficient: n-octanol/water : log Pow: 1.54

2-Butanone, peroxide:

Partition coefficient: n-octanol/water : log Pow: < 0.3 (25 °C / 25 °C)

Trimethylpentanediol isobutyrate:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 1.95

Partition coefficient: n-octanol/water : log Pow: 4.91 (25 °C / 25 °C)

Butanone:

Partition coefficient: n-octanol/water : log Pow: 0.3 (40 °C / 40 °C)

Hydrogen peroxide:

Partition coefficient: n-octanol/water : log Pow: -1.57
Remarks: Calculation

Mobility in soil

No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.

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Components:

dimethyl phthalate:

Additional ecological information : No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Dispose of wastes in an approved waste disposal facility.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.
Dispose of in accordance with local regulations.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 3105
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID
(METHYL ETHYL KETONE PEROXIDE(S))
Class : 5.2
Packing group : Not assigned by regulation
Labels : 5.2

IATA-DGR

UN/ID No. : UN 3105
Proper shipping name : Organic peroxide type D, liquid
(Methyl ethyl ketone peroxide(s))
Class : 5.2
Packing group : Not assigned by regulation
Labels : Organic Peroxides, Keep Away From Heat
Packing instruction (cargo aircraft) : 570
Packing instruction (passenger aircraft) : 570

IMDG-Code

UN number : UN 3105
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID
(METHYL ETHYL KETONE PEROXIDE(S))
Class : 5.2
Packing group : Not assigned by regulation

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Labels : 5.2
EmS Code : F-J, S-R
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 3105
Proper shipping name : Organic peroxide type D, liquid
(Methyl ethyl ketone peroxide(s), <=45%)
Class : 5.2
Packing group : Not assigned by regulation
Labels : ORGANIC PEROXIDE
ERG Code : 145
Marine pollutant : no

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
2-Butanone, peroxide	1338-23-4	10	29

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Hydrogen peroxide	7722-84-1	1000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

Components	CAS-No.	Component TPQ (lbs)
Hydrogen peroxide	7722-84-1	1000

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Organic peroxides
Acute toxicity (any route of exposure)
Reproductive toxicity
Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

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dimethyl phthalate 131-11-3

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

dimethyl phthalate 131-11-3

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Butanone 78-93-3

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

dimethyl phthalate 131-11-3

This product contains the following priority pollutants related to the U.S. Clean Water Act:

dimethyl phthalate 131-11-3

Maine Chemicals of High Concern

This product does not contain any chemicals that are listed as Maine Chemicals of High Concern.

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

International Regulations

The ingredients of this product are reported in the following inventories:

- TCSI (TW) : On the inventory, or in compliance with the inventory
- TSCA (US) : All substances listed as active on the TSCA inventory
- AICS (AU) : On the inventory, or in compliance with the inventory
- DSL (CA) : All components of this product are on the Canadian DSL
- ENCS (JP) : On the inventory, or in compliance with the inventory
- ISHL (JP) : On the inventory, or in compliance with the inventory
- KECI (KR) : On the inventory, or in compliance with the inventory
- PICCS (PH) : On the inventory, or in compliance with the inventory

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IECSC (CN) : On the inventory, or in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Further information

This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.
These safety instructions also apply to empty packaging which may still contain product residues.

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 06/30/2021

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8

Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
OSHA P0	: USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	: USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	: 8-hour, time-weighted average
ACGIH / STEL	: Short-term exposure limit
ACGIH / C	: Ceiling limit
NIOSH REL / TWA	: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	: STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
NIOSH REL / C	: Ceiling value not be exceeded at any time.
OSHA P0 / TWA	: 8-hour time weighted average
OSHA P0 / STEL	: Short-term exposure limit

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OSHA P0 / C : Ceiling limit
OSHA Z-1 / TWA : 8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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US / Z8

Gretchen Douglas

From: Jones Susan <Susan.Jones@united-in.com>
Sent: Wednesday, July 20, 2022 5:04 PM
To: Gretchen Douglas
Subject: FW: Request for VOC information

Gretchen,

Please see below from our US Safety and Regulatory Specialist. Let me know if you need anything further.

AZOX FRED - Using ASTM Test Method D-2369-87, but at 40°C (since AAP decomposes rapidly above 100°C and is not a VOC), Norox[®] Azox contains 19.4% VOC, by weight, or 223 grams per liter.

NOROX CHM-50 - Using ASTM Test Method D-2369-87, but at 40°C (since CHP decomposes rapidly above 100°C and is not a VOC), Norox[®] CHM-50 contains 41.2% VOC, by weight, or 438 grams per liter.

NOROX MCP - Using ASTM Test Method D-2369-87, but at 40°C (since MEKP and CHP decompose rapidly above 100°C and are not VOCs), MCP contains 6.0% VOC, by weight, or 65 grams per liter.

NOROX MCP RED - Using ASTM Test Method D-2369-87, but at 40°C (since MEKP and CHP decompose rapidly above 100°C and are not VOCs), Norox[®] MCP Red contains 4.9% VOC, by weight, or 53 grams per liter.

NOROX MCP-75 - Using ASTM Test Method D-2369-87, but at 40°C (since MEKP and CHP decompose rapidly above 100°C and are not VOCs), MCP-75 Red contains 5.4% VOC, by weight, or 58 grams per liter.

NOROX MEKP-9 - Using ASTM Test Method D-2369-87, but at 40°C (since MEKP decomposes rapidly above 100°C and is not a VOC), MEKP-9 contains 2.4% VOC, by weight, or 27 grams per liter.

NOROX MEKP-9 FRED - Using ASTM Test Method D-2369-87, but at 40°C (since MEKP decomposes rapidly above 100°C and is not a VOC), MEKP-9 FRED contains 9.8 % VOC, by weight, or 108 grams per liter.

NOROX MEKP-9H - Using ASTM Test Method D-2369-87, but at 40°C (since MEKP decomposes rapidly above 100°C and is not a VOC), MEKP-9H contains 3.7% VOC, by weight, or 41 grams per liter.

NOROX MEKP-925 - Using ASTM Test Method D-2369-87, but at 40°C (since MEKP decomposes rapidly above 100°C and is not a VOC), MEKP-925 contains 5.0% VOC, by weight, or 55 grams per liter.

Best Regards,
Stay safe and healthy!

Customer Service Representative
Export Coordinator
Mob +1 440 328-5717
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LUPEROX® DDM-9**1. PRODUCT AND COMPANY IDENTIFICATION****Company**

Arkema Inc.
900 First Avenue
King of Prussia, Pennsylvania 19406

Functional Additives

Customer Service Telephone Number: (800) 331-7654
(Monday through Friday, 8:00 AM to 5:00 PM EST)

Emergency Information

Transportation: CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (866) 767-5089
(24 hrs., 7 days a week)

Product Information

Product name: LUPEROX® DDM-9
Synonyms: Not available
Molecular formula: Complex mixture
Chemical family: Organic peroxide - ketone peroxides
Product use: initiator/catalyst

2. HAZARDS IDENTIFICATION**Emergency Overview**

Color: colourless
Physical state: liquid
Form: oily
Odor: sweet

***Classification of the substance or mixture:**

Organic peroxides, Type D, H242
Inhalation: Acute toxicity, Category 4, H332
Skin corrosion, Category 1B, H314
Serious eye damage, Category 1, H318
Reproductive toxicity, Category 2, H361
Chronic aquatic toxicity, Category 2, H411

*For the full text of the H-Statements mentioned in this Section, see Section 16.

LUPEROX® DDM-9**GHS-Labeling**

Hazard pictograms:



Signal word:

Danger**Hazard statements:**

- H242 : Heating may cause a fire.
- H314 : Causes severe skin burns and eye damage.
- H332 : Harmful if inhaled.
- H361 : Suspected of damaging fertility or the unborn child.
- H411 : Toxic to aquatic life with long lasting effects.

Supplemental Hazard Statements:

- Organic peroxide.
- Hazardous decomposition may occur.

LUPEROX® DDM-9**Precautionary statements:****Prevention:**

- P201 : Obtain special instructions before use.
P202 : Do not handle until all safety precautions have been read and understood.
P210 : Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P220 : Keep/Store away from clothing/ combustible materials.
P234 : Keep only in original container.
P261 : Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 : Wash skin thoroughly after handling.
P271 : Use only outdoors or in a well-ventilated area.
P273 : Avoid release to the environment.
P280 : Wear protective gloves and protective clothing and eye protection and face protection.
P281 : Use personal protective equipment as required.

Response:

- P301 + P330 + P331 : IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 : IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 : IF exposed or concerned: Get medical advice/ attention.
P310 : Immediately call a POISON CENTER/doctor.
P363 : Wash contaminated clothing before reuse.
P391 : Collect spillage.

Storage:

- P405 : Store locked up.
P410 : Protect from sunlight.
P411 + P235 : Maximum storage temperature is specified on label and in section 7 of SDS. Keep cool.
P420 : Store away from other materials.

Disposal:

- P501 : Dispose of contents or container to an approved waste disposal plant.

Supplemental information:**Potential Health Effects:**

If swallowed, may cause severe irritation and injury to the mouth, throat and digestive tract.

3. COMPOSITION/INFORMATION ON INGREDIENTS

LUPEROX® DDM-9

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester	6846-50-0	>= 57 - < 59 %	H361, H411
2-Butanone, peroxide	1338-23-4	>= 32 - < 34 %	H242, H302, H332, H314, H318
2,4-Pentanediol, 2-methyl-	107-41-5	>= 5.5 - < 6.5 %	H319
2-Butanone	78-93-3	>= 1 - < 2 %	H225, H319, H336

**For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1. Description of necessary first-aid measures:

Inhalation:

If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

Ingestion:

If swallowed, DO NOT induce vomiting. Get medical attention immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms/effects, acute and delayed:

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For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information if applicable) and Section 11 (Toxicology Information) of this SDS.

4.3. Indication of immediate medical attention and special treatment needed, if necessary:

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

5. FIREFIGHTING MEASURES**Extinguishing media (suitable):**

Water spray, Carbon dioxide (CO₂), Foam, Dry chemical

Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:

Fight fire with large amounts of water from a safe distance.

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.

Do not allow run-off from fire fighting to enter drains or water courses.

Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:

Contact with incompatible materials or exposure to temperatures exceeding the SADT may result in a self accelerating decomposition reaction with release of flammable vapors which may autoignite.

When burned, the following hazardous products of combustion can occur:

Carbon oxides

Hazardous organic compounds

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:**

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel.

Ventilate the area. Eliminate all ignition sources. Avoid generation of vapors. Contain and collect spillage with non-combustible absorbent material such as clean sand, earth, diatomaceous earth or non-acidic clay and place into suitable properly labeled containers for prompt disposal. DO NOT USE peat moss. DO NOT USE vermiculite.

Sweep or scoop up using non-sparking tools and place into suitable properly labeled containers for prompt disposal.

The sweepings should be wetted down further with water. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Add inhibitor to prevent polymerization.

Protective equipment:

Appropriate personal protective equipment is set forth in Section 8.

LUPEROX® DDM-9**7. HANDLING AND STORAGE****Handling****General information on handling:**

Contact with materials to avoid or exposure to temperatures exceeding the SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may autoignite.

Do not taste or swallow.

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Keep away from heat, sparks and flames.

No smoking.

Use only with adequate ventilation.

Wash thoroughly after handling.

Prevent product contamination.

Keep container tightly closed and away from combustible materials.

Keep only in the original container.

Do not reuse container as it may retain hazardous product residue.

Emptied container retains vapor and product residue.

Container hazardous when empty.

Improper disposal or reuse of this container may be dangerous and/or illegal.

Storage**General information on storage conditions:**

Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity.

Store in closed containers, in a secure area to prevent container damage and subsequent spillage. Segregated or detached storage is preferred. Store out of direct sunlight in a cool well-ventilated place. Store in original container.

Store away from combustibles and materials to avoid. Refer also to National Fire Protection Association (NFPA) Code 400, Hazardous Materials Code.

Storage stability – Remarks:

Follow the recommended storage temperatures provided in this Section in order to maintain stability and oxygen content.

Storage incompatibility – General:

Store away from excessive heat, sources of ignition, and reactive materials.

Store separate from:

Strong acids

Strong bases

Strong oxidizing agents

Reducing agents

Accelerators

Friedel - Crafts reaction catalyst

transition metal salts

metal ions

Brass

Copper

Iron

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For all Organic Peroxides, compatible materials of contact are stainless steel 304 or 316 (preferred), high-density polyethylene (HDPE), polytetrafluoroethylene or glass linings.

Temperature tolerance – Do not store below:
50 °F (10 °C)

Temperature tolerance – Do not store above:
100 °F (38 °C)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

2-Butanone, peroxide (1338-23-4)

US. ACGIH Threshold Limit Values

Ceiling Limit Value	0.2 ppm
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2,4-Pentandiol, 2-methyl- (107-41-5)

US. ACGIH Threshold Limit Values

Form:	Aerosol, inhalable.
Short Term Exposure Limit (STEL):	10 mg/m ³
Form:	Vapor fraction
Short Term Exposure Limit (STEL):	50 ppm
Form:	Vapor fraction
Time weighted average	25 ppm

2-Butanone (78-93-3)

US. ACGIH Threshold Limit Values

Time weighted average	200 ppm
Short Term Exposure Limit (STEL):	300 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

PEL:	200 ppm (590 mg/m ³)
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Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

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Engineering controls:

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Respiratory protection:

Do not breathe vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing immediately and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Eye protection:

Where there is potential for eye contact, wear a face shield, chemical goggles, and have eye flushing equipment immediately available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	colourless
Physical state:	liquid
Form:	oily
Odor:	sweet
Odor threshold:	No data available
Flash point	203 °F (95 °C) (Setaflash closed cup)
Auto-ignition temperature:	No data available.

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Lower flammable limit (LFL):	No data available
Upper flammable limit (UFL):	No data available
pH:	No data available
Density:	1.0077 g/cm ³ (68 °F (20 °C))
Specific Gravity (Relative density):	1.0088 (68 °F (20 °C))Water=1 (liquid)
Vapor pressure:	5.20 mmHg (66 °F (19 °C))
Boiling point/boiling range:	Decomposes before boiling. Rate of decomposition increases with rising temperature.
Melting point/range:	No data available.
Freezing point:	No data available
Evaporation rate:	No data available
Solubility in water:	slightly soluble
Refractive index:	1.4356
Viscosity, dynamic:	17.30 mPa.s 68 °F (20 °C)
Oil/water partition coefficient:	No data available.
Self-Accelerating Decomposition Temperature (SADT):	167 °F (75 °C) 45 pound container
Thermal decomposition:	Decomposes on heating.
Active oxygen content:	8.7 - 9.0 %
Flammability:	See GHS Classification in Section 2 if applicable

10. STABILITY AND REACTIVITY

LUPEROX® DDM-9**Stability:**

This material is chemically unstable and should only be handled under specified conditions. See HANDLING AND STORAGE section of this MSDS for specified conditions.

Hazardous reactions:

Hazardous polymerization does not occur.

Materials to avoid:

Strong acids
Strong bases
Strong oxidizing agents
Reducing agents
Accelerators
Friedel - Crafts reaction catalyst
transition metal salts
metal ions
Brass
Copper
Iron

For all Organic Peroxides, compatible materials of contact are stainless steel 304 or 316 (preferred), high-density polyethylene (HDPE), polytetrafluoroethylene or glass linings.

Conditions / hazards to avoid:

SADT - Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction. This reaction will generate flammable vapors which may autoignite. The length of time to generate a decomposition reaction, after the SADT has been reached or exceeded, is dependent upon how much the SADT has been exceeded and the length of time needed for the reaction exotherm (heat spike from increasing decomposition rate) to initiate a rapid decomposition reaction. Typically, SADT is inversely proportional to package size. Larger packages will have a lower SADT due to smaller ratio to heat transfer area to volume of product. See HANDLING AND STORAGE section of this MSDS for specified conditions. See Hazardous Decomposition Products below.

Hazardous decomposition products:

Temperatures at or above SADT can result in the release of hazardous decomposition products which are flammable and may autoignite.

Thermal decomposition giving flammable and toxic products :

Carbon oxides
Hazardous organic compounds

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for LUPEROX® DDM-9**Acute toxicity****Oral:**

Acute toxicity estimate 3,039 mg/kg.

LUPEROX® DDM-9**Dermal:**

Acute toxicity estimate > 5,000 mg/kg.

Inhalation:

4 h Acute toxicity estimate 4.55 mg/l. (dust/mist)

Data for Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester (6846-50-0)**Acute toxicity****Oral:**

No deaths occurred. (rat) LD0 > 2,000 mg/kg.

Dermal:

No deaths occurred. (rabbit) LD0 > 2,000 mg/kg.

Inhalation:

No deaths occurred. (rat) 6 h LC0 > 5.3 mg/l. (saturated vapor)

Skin Irritation:

Not irritating. (rabbit) (4 h)

Eye Irritation:

Not irritating. (rabbit)

Skin Sensitization:

Not a sensitizer. Repeated skin exposure. (guinea pig) No skin allergy or irritation was observed.

Repeated dose toxicity

Subchronic dietary administration to rat / affected organ(s): kidney / signs: hyaline droplet nephropathy / (not considered relevant in humans)

Subchronic dietary administration to Dog / No adverse systemic effects reported.

Genotoxicity**Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells

Developmental toxicity

Reproductive/Developmental Effects Screening Assay. dietary (rat) / Birth defects were observed.

Reproductive effects

Reproductive/Developmental Effects Screening Assay. dietary (rat) / At high dose : levels produced toxic effects in the mothers and offspring

Human experience**Skin contact:**

No skin allergy was observed.. (studied using human volunteers)

Data for 2-Butanone, peroxide (1338-23-4)

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Acute toxicity**Oral:**

Harmful if swallowed. (rat) LD50 = 1,017 mg/kg. (35 - 39 %) (In solution in Dimethyl phthalate)

Dermal:

May be harmful in contact with skin. (rabbit) LD50 = 4,000 mg/kg. (35 - 39 %) (In solution in Dimethyl phthalate)

Inhalation:

Harmful if inhaled. (rat) 4 h LC50 = 1.5 mg/l. (40 %) (dust/mist, data for a similar material)

Skin Irritation:

Causes severe skin burns. (rabbit) (4 h) (33 %) (occluded exposure, In solution in Dimethyl phthalate)

Eye Irritation:

Causes serious eye damage. (rabbit) (33 - 39 %) (In solution in Dimethyl phthalate)

Skin Sensitization:

Not a sensitizer. Guinea pig maximization test. No skin allergy was observed. (40 %) (In solution in Dimethyl phthalate)

Repeated dose toxicity

Repeated oral administration to rat / affected organ(s): Stomach, liver / signs: Irritation of the gastric mucosa, increased organ weight

Subchronic oral administration to rat / No adverse systemic effects reported.

Genotoxicity**Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells

Genotoxicity**Assessment in Vivo:**

No genetic changes were observed in laboratory tests using: mice

Developmental toxicity

Exposure during pregnancy. Oral (rat) / No birth defects were observed.

Reproductive effects

Reproductive/Developmental Effects Screening Assay. Oral (rat) / No toxicity to reproduction.

Human experience**Skin contact:**

No skin allergy was observed. (studied using human volunteers)

Skin allergy was observed. Isolated case reports after exposure to a mixture containing this substance.

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Human experience**Eye contact:**

Eyes: Pain, tearing, sensitivity to light, irritation. Mist and/or vapor are reported to cause irritation when proper industrial hygiene controls/procedures are not used. (based on reports of occupational exposure to workers) (severity of effects depends on extent of exposure)

Eyes: Pain, causes severe burns. (accidental exposure to concentrated solutions) (based on reports of occupational exposure to workers) (severity of effects depends on extent of exposure)

Human experience**Ingestion:**

Esophagus: Severe irritation, burns. (accidental exposure to concentrated solutions)

Data for 2,4-Pentanediol, 2-methyl- (107-41-5)**Acute toxicity****Oral:**

No deaths occurred. (rat) LD₀ > 2,000 mg/kg. signs: GI tract irritation, central nervous system depression

Dermal:

No deaths occurred. (rat) LD₀ > 2,000 mg/kg.

Inhalation:

No deaths occurred. (rat) 8 h LC₀ = 0.34 mg/l. (saturated vapor)

Skin Irritation:

Practically non-irritating. (rabbit) (4 h)

Eye Irritation:

Causes serious eye irritation.

Skin Sensitization:

Not a sensitizer. Guinea pig maximization test. No skin allergy was observed.

Repeated dose toxicity

Subchronic oral administration to rat / affected organ(s): kidney, liver, Stomach / signs: Irritation of the gastric mucosa / No significant impairment of function.

Repeated inhalation administration to rat / affected organ(s): upper respiratory tract / Local irritation (Aerosol)

Genotoxicity**Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells

Developmental toxicity

Exposure during pregnancy. Oral (rat) / No birth defects were observed. (delays in development, at doses that produce effects in mothers)

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Reproductive effects

Reproductive/Developmental Effects Screening Assay. Oral (rat) / No toxicity to reproduction. At high dose :
Effects on offspring / (increased mortality in the offspring, decreased growth rate)

Human experience**Inhalation:**

Discomfort. (severity of effects depends on extent of exposure) (studied using human volunteers)

Human experience**Skin contact:**

No skin allergy was observed.. (studied using human volunteers)

Local irritation, redness, swelling. (subjects with dermatitis or eczema)

Central nervous system depression. (severity of effects depends on extent of exposure)

Human experience**Eye contact:**

Discomfort, slightly irritating. (liquid or aerosol) (studied using human volunteers) (severity of effects depends on extent of exposure)

Data for 2-Butanone (78-93-3)**Acute toxicity****Oral:**

May be harmful if swallowed. (rat) LD50 = 2,193 mg/kg.

Dermal:

Practically nontoxic. (rabbit) LD50 > 8,100 mg/kg.

Inhalation:

Practically nontoxic. (rat) 4 h LC50 = 34.5 mg/l. (vapor)

Specific target organ toxicity - single exposure:

May cause drowsiness or dizziness.

Skin Irritation:

Not irritating. (rabbit) (4 h)

Eye Irritation:

Causes serious eye irritation. (rabbit)

Skin Sensitization:

Not a sensitizer. Buehler method. (guinea pig) No skin allergy was observed.

Repeated dose toxicity

Subchronic inhalation administration to rat / affected organ(s): liver / signs: blood chemistry changes, changes in organ weights

LUPEROX® DDM-9**Genotoxicity****Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells, yeast

Genotoxicity**Assessment in Vivo:**

No genetic changes were observed in laboratory tests using: mice

Developmental toxicity

Exposure during pregnancy. inhalation (mouse) / No birth defects were observed. (skeletal variations, delays in development)

Exposure during pregnancy. inhalation (rat) / No birth defects were observed. (delays in development, at doses that produce effects in mothers)

Reproductive effects

Reproduction test. drinking water (rat) / No toxicity to reproduction / (similar material)

Human experience**Inhalation:**

Upper respiratory tract: irritation. (vapor)

Central nervous system: drowsiness, dizziness. Exposure to other materials makes the association questionable. (based on reports of occupational exposure to workers)

Nervous system: altered reflexes, changes in motor activity. Exposure to other materials makes the association questionable. (based on reports of occupational exposure to workers)

Human experience**Skin contact:**

Skin: No skin allergy was observed.. (studied using human volunteers)

Skin: dermatitis, cracking. Has a degreasing effect on the skin. (repeated or prolonged exposure)

Human experience**Eye contact:**

Eyes: irritating. (vapor)

12. ECOLOGICAL INFORMATION**Chemical Fate and Pathway**

Data on this material and/or its components are summarized below.

Data for Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester (6846-50-0)**Biodegradation:**

Not readily biodegradable. (aerobic, 28 d) biodegradation 71 % / The 10 day time window criterion is not fulfilled.

LUPEROX® DDM-9**Bioaccumulation:**

= 195 (Lepomis macrochirus (Bluegill sunfish))

Octanol Water Partition Coefficient:

log Pow: = 4.04 - 4.91(Method: calculated)

Data for 2-Butanone, peroxide (1338-23-4)**Biodegradation:**

Readily biodegradable. (28 d) biodegradation 87 % / OECD guideline 301D (Closed bottle test)

Octanol Water Partition Coefficient:

log Pow: < 2.04, at 77 °F (25 °C) (Method: OECD Test Guideline 117)

Data for 2,4-Pentanediol, 2-methyl- (107-41-5)**Biodegradation:**

Readily biodegradable. (28 d) biodegradation 81 % / OECD Test Guideline 301 F

Octanol Water Partition Coefficient:

log Pow: = -0.14(Method: calculated)

Data for 2-Butanone (78-93-3)**Biodegradation:**

Readily biodegradable. (28 d) biodegradation 98 % / OECD Test Guideline 301 D

Octanol Water Partition Coefficient:

log Pow: = 0.3, at 104 °F (40 °C) pH = 7

Photodegradation:

Half-life direct photolysis: = 6.9 d
(is rapidly degraded in air by OH radicals.)

Ecotoxicology

Data on this material and/or its components are summarized below.

Data for Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester (6846-50-0)**Aquatic toxicity data:**

No effect up to the limit of solubility. Lepomis macrochirus (Bluegill sunfish) 96 h NOEC > 6 mg/l

Aquatic invertebrates:

No effect up to the limit of solubility. Daphnia magna (Water flea) 48 h EC50 > 1.46 mg/l

Algae:

No effect up to the limit of solubility. Pseudokirchneriella subcapitata (green algae) 72 h EC50 (growth rate) > 7.49 mg/l

Chronic toxicity to aquatic invertebrates:

Toxic. Daphnia magna (Water flea) 21 d NOEC (reproduction) = 0.7 mg/l

LUPEROX® DDM-9**Chronic toxicity to aquatic plants:**

Practically nontoxic. Pseudokirchneriella subcapitata (green algae) 72 h NOEC (growth rate) = 3.56 mg/l

Data for 2-Butanone, peroxide (1338-23-4)**Aquatic toxicity data:**

Harmful. Poecilia reticulata (guppy) 96 h LC50 = 44.2 mg/l (In solution in Dimethyl phthalate)

Aquatic invertebrates:

Harmful. Daphnia (water flea) 48 h EC50 = 39 mg/l (In solution in Dimethyl phthalate)

Algae:

Toxic. Pseudokirchneriella subcapitata (green algae) 72 h ErC50 = 5.6 mg/l (In solution in Dimethyl phthalate)

Microorganisms:

Respiration inhibition / Activated sludge 30 min EC50 = 48 mg/l (In solution in Dimethyl phthalate)

Chronic toxicity to aquatic plants:

Pseudokirchneriella subcapitata (green algae) 72 h ErC10 2.1 mg/l

Data for 2,4-Pentanediol, 2-methyl- (107-41-5)**Aquatic toxicity data:**

Practically nontoxic. Gambusia affinis (Mosquito fish) 96 h LC50 = 8,510 mg/l

Aquatic invertebrates:

Practically nontoxic. Daphnia magna (Water flea) 48 h EC50 = 5,410 mg/l

Algae:

Practically nontoxic. Pseudokirchneriella subcapitata (green algae) 72 h EC50 > 429 mg/l

Microorganisms:

Bacteria 10 d NOEC > 1,000 mg/l

Chronic toxicity to aquatic plants:

Practically nontoxic. Pseudokirchneriella subcapitata (green algae) 72 d NOEC = 429 mg/l

Data for 2-Butanone (78-93-3)**Aquatic toxicity data:**

Practically nontoxic. Pimephales promelas (fathead minnow) 96 h LC50 = 2,993 mg/l

Aquatic invertebrates:

Practically nontoxic. Daphnia magna (Water flea) 48 h EC50 = 308 mg/l

Algae:

Practically nontoxic. Pseudokirchneriella subcapitata (green algae) 72 h EC50 = 1,972 mg/l

Microorganisms:

Pseudomonas putida 16 h Toxicity threshold = 1,150 mg/l

Chronic toxicity to aquatic plants:

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Practically nontoxic. Pseudokirchneriella subcapitata (green algae) 96 h ErC10 = 1289 mg/l

13. DISPOSAL CONSIDERATIONS

Waste disposal:

Dilution followed by incineration is the preferred method. Dilution ratio of 10:1 in a clean, compatible, combustible solvent (i.e., Fuel Oil #2, mineral oil) will reduce reactivity hazard during incineration and transportation. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

Take appropriate measures to prevent release to the environment.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT)

UN Number : 3105
Proper shipping name : Organic peroxide type D, liquid
Technical name : (Methyl ethyl ketone peroxide(s), <= 45%)
Class : 5.2
Marine pollutant : yes
Reportable quantity : 10 lbs (Methyl ethyl ketone peroxide(s))

International Maritime Dangerous Goods Code (IMDG)

UN Number : 3105
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID
Technical name : (METHYL ETHYL KETONE PEROXIDE, <= 45%)
Class : 5.2
Marine pollutant : yes
Flash point : 203 °F (95 °C) Setflash closed cup

15. REGULATORY INFORMATION

Chemical Inventory Status

United States TSCA Inventory	TSCA	The components of this product are all on the TSCA Inventory.
Canadian Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL

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China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	Conforms to
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	Conforms to
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	Conforms to
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	Conforms to
Australia Inventory of Chemical Substances (AICS)	AICS	Conforms to

United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:

<u>Chemical name</u>	<u>CAS-No.</u>	<u>SARA Reportable Quantities</u>	<u>SARA Threshold Planning Quantity</u>
Hydrogen peroxide	7722-84-1	1000 lbs	1000 lbs

SARA Title III - Section 311/312 Hazard Categories:
Acute Health Hazard, Reactivity Hazard, Chronic Health Hazard

SARA Title III – Section 313 Toxic Chemicals:
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

<u>Chemical name</u>	<u>CAS-No.</u>	<u>Reportable quantity</u>
2-Butanone, peroxide	1338-23-4	10 lbs
2-Butanone	78-93-3	5000 lbs

United States – State Regulations

New Jersey Right to Know

<u>Chemical name</u>	<u>CAS-No.</u>
2-Butanone, peroxide	1338-23-4

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2,4-Pentanediol, 2-methyl-	107-41-5
2-Butanone	78-93-3

New Jersey Right to Know – Special Health Hazard Substance(s)

<u>Chemical name</u>	<u>CAS-No.</u>
2-Butanone, peroxide	1338-23-4
2-Butanone	78-93-3

Pennsylvania Right to Know

<u>Chemical name</u>	<u>CAS-No.</u>
Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester	6846-50-0
2-Butanone, peroxide	1338-23-4
2,4-Pentanediol, 2-methyl-	107-41-5
2-Butanone	78-93-3
Hydrogen peroxide	7722-84-1

Pennsylvania Right to Know – Environmentally Hazardous Substance(s)

<u>Chemical name</u>	<u>CAS-No.</u>
2-Butanone, peroxide	1338-23-4
2-Butanone	78-93-3
Hydrogen peroxide	7722-84-1

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

16. OTHER INFORMATION

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Full text of H-Statements referred to under sections 2 and 3.

H225	Highly flammable liquid and vapour.
H242	Heating may cause a fire.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H361	Suspected of damaging fertility or the unborn child.
H411	Toxic to aquatic life with long lasting effects.

Latest Revision(s):

Reference number:	200014107
Date of Revision:	10/29/2020
Date Printed:	10/30/2020

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Arkema has implemented a Medical Policy regarding the use of Arkema products in Medical Devices applications that are in contact with the body or circulating bodily fluids (<http://www.arkema.com/en/social-responsibility/responsible-product-management/medical-device-policy/index.html>) Arkema has designated Medical grades to be used for such Medical Device applications. Products that have not been designated as Medical grades are not authorized by Arkema for use in Medical Device applications that are in contact with the body or circulating bodily fluids. In addition, Arkema strictly prohibits the use of any Arkema products in Medical Device applications that are implanted in the body or in contact with bodily fluids or tissues for greater than 30 days. The Arkema trademarks and the Arkema name shall not be used in conjunction with customers' medical devices, including without limitation, permanent or temporary implantable devices, and customers shall not represent to anyone else, that Arkema allows, endorses or permits the use of Arkema products in such medical devices.

It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade Arkema products, in order to ensure that the final end-use product is safe for its end use; performs or functions as intended; and complies with all applicable legal and regulatory requirements (FDA or other national drug agencies) It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections and to evaluate the medical device under actual end-use requirements and to adequately advise and warn purchasers, users, and/or learned intermediaries (such as physicians) of pertinent risks and fulfill any postmarket surveillance obligations. Any decision regarding the appropriateness of a particular Arkema material in a particular medical device should be based on the judgment of the manufacturer, seller, the competent authority, and the treating physician.

Attachment B
American Composites Manufacturers Association (ACMA) - document ANSI/ACMA/ICPA UEF-1-2011a

EF Table 1: Unified Emission Factors for Open Molding of Composites

Revised and Approved: 10/13/2009

Emission Rate in Pounds of Styrene Emitted per Ton of Resin or Gelcoat Processed

Styrene content in resin/gelcoat, % ⁽¹⁾	<33 ⁽²⁾	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	>50 ⁽²⁾
Manual	0.126 x %styrene x 2000	83	89	94	100	106	112	117	123	129	134	140	146	152	157	163	169	174	180	((0.286 x %styrene) - 0.0529) x 2000
Manual w/ Vapor Suppressed Resin VSR ⁽³⁾	Manual emission factor [listed above] x (1 - (0.50 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Atomized	0.169 x %styrene x 2000	111	126	140	154	168	183	197	211	225	240	254	268	283	297	311	325	340	354	((0.714 x %styrene) - 0.18) x 2000
Mechanical Atomized with VSR ⁽³⁾	Mechanical Atomized emission factor [listed above] x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Atomized Controlled Spray ⁽⁴⁾	0.130 x %styrene x 2000	86	97	108	119	130	141	152	163	174	185	196	207	218	229	240	251	262	273	0.77 x ((0.714 x %styrene) - 0.18) x 2000
Mechanical Controlled Spray with VSR	Mechanical Atomized Controlled Spray emission factor [listed above] x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Non-Atomized	0.107 x %styrene x 2000	71	74	77	80	83	86	89	93	96	99	102	105	108	111	115	118	121	124	((0.157 x %styrene) - 0.0165) x 2000
Mechanical Non-Atomized with VSR ⁽³⁾	Mechanical Non-Atomized emission factor [listed above] x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Non-Atomized application of resins that contain Methyl Styrene monomer ⁽¹⁰⁾	Mechanical Non-Atomized Styrene monomer emission Factor (listed above) x .55																			
Mechanical Non-Atomized Filled DCPD resins ⁽¹¹⁾	0.144 x % styrene x 2000	95	98	101	104	108	111	114	117	120	124	127	130	133	136	140	143	146	149	((0.1603 x % styrene)-0.0055) x 2000
Filament application	0.184 x %styrene x 2000	122	127	133	138	144	149	155	160	166	171	177	182	188	193	199	204	210	215	((0.2746 x %styrene) - 0.0298) x 2000
Filament application with VSR ⁽³⁾	0.120 x %styrene x 2000	79	83	86	90	93	97	100	104	108	111	115	118	122	125	129	133	136	140	0.65 x ((0.2746 x %styrene) - 0.0298) x 2000
Gelcoat Application	0.445 x %styrene x 2000	294	315	336	358	377	398	418	439	460	481	501	522	543	564	584	605	626	646	((1.03646 x %styrene) - 0.195) x 2000
Gelcoat Controlled Spray Application ⁽⁴⁾	0.325 x %styrene x 2000	215	230	245	260	275	290	305	321	336	351	366	381	396	411	427	442	457	472	0.73 x ((1.03646 x %styrene) - 0.195) x 2000
Gelcoat Non-Atomized Application ⁽⁸⁾	SEE Note 9 below	196	205	214	223	232	241	250	259	268	278	287	296	305	314	323	332	341	350	((0.4506 x %styrene) - 0.0505) x 2000
Lesser Atomized Gelcoat Application ⁽¹²⁾	for < 30 : 0.323 x % styrene x 2000	229	241	252	264	276	287	299	311	322	334	346	357	369	381	392	404	416	428	((0.5842 x % styrene)-0.07825) x 2000
Covered-Cure after Roll-Out	Non-VSR process emission factor [listed above] x (0.80 for Manual <or> 0.85 for Mechanical)																			
Covered-Cure without Roll-Out	Non-VSR process emission factor [listed above] x (0.50 for Manual <or> 0.55 for Mechanical)																			

Emission Rate in Pounds of Methyl Methacrylate Emitted per Ton of Gelcoat Processed

MMA content in gelcoat, % ⁽⁵⁾	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	≥20
Gel coat application ⁽⁷⁾	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	0.75 x %MMA x 2000

Notes

- 1 Including styrene monomer content as supplied, plus any extra styrene monomer added by the molder, but before addition of other additives such as powders, fillers, glass,...etc.
- 2 Formulas for materials with styrene content < 33% are based on the emission rate at 33% (constant emission factor expressed as percent of available styrene), and for styrene content > 50% on the emission rate based on the extrapolated factor equations; these are not based on test data but are believed to be conservative estimates. The value for "% styrene" in the formulas should be input as a fraction. For example, use the input value 0.30 for a resin with 30% styrene content by wt.
- 3 The VSR reduction factor is determined by testing each resin/suppressant formulation according to the procedures detailed in the *CFA Vapor Suppressant Effectiveness Test*.
- 4 SEE the *CFA Controlled Spray Handbook* for a detailed description of the controlled spray procedures.
- 5 The effect of vapor suppressants on emissions from filament winding operations is based on the *Dow Filament Winding Emissions Study*.
- 6 Including MMA monomer content as supplied, plus any extra MMA monomer added by the molder, but before addition of other additives such as powders, fillers, glass,...etc.
- 7 Based on gelcoat data from *NMMA Emission Study*.
- 8 SEE the July 17, 2001 EECs report *Emission Factors for Non-Atomized Application of Gel Coats used in the Open Molding of Composites* for a detailed description of the non-atomized gelcoat testing.
- 9 Use the equation ((0.4506 x %styrene) - 0.0505) x 2000 for gelcoats with styrene contents between 19% and 32% by wt.; use the equation 0.185 x %styrene x 2000 for gelcoats with less than 19% styrene content by wt.
- 10 Refer to Section 3.0, Instructions and Examples for the Emission Factor table, 3.2 Calculation of the methyl styrene factor
- 11 Use this factor for the non-atomized application of DCPD or DCPD-blend resin, when filled to 30% or more by weight
- 12

Table from 30% TO 32% styrene content :	30	31	32
	194	208	217

Attachment C
Dimethyl Phthalate Emission Factor Basis

Emission Factors for Liquid Organic Peroxide Catalysts used in the Open Molding of Composites

Robert A. Haberlein, Ph.D., QEP

Introduction

Small quantities of highly reactive liquid organic peroxide solutions are used by the reinforced plastics industry to initiate the polymerization reaction (also referred to as “curing”) in the resin or gelcoat material. These solutions are commonly called “catalysts,” and are known by the commercial trade names Butanox™, Lupersol™, Thermacure™ or Hi-Point™. In order to start the curing reaction, enough catalyst solution is added to the resin or gelcoat material until about 1% to 2% of the material weight consists of catalyst. The catalyst solution is either sprayed together with the resin or gelcoat during spray lay-up (Mechanical), or a carefully measured amount of catalyst is stirred into a pail or bucket of resin for hand lay-up (Manual).

Most organic peroxide catalysts consist of a 30% to 47% solution of methyl ethyl ketone peroxide (MEKP) dissolved in dimethyl phthalate (DMP). The DMP acts as a stabilizing agent to prevent the spontaneous detonation of the MEKP at room temperature. A trace amount of methyl ethyl ketone (MEK) may also be present as a contaminant byproduct left over from the manufacture of the MEKP.

MEKP

MEKP is a highly reactive, colorless liquid organic oxidizer, with a pungent burning odor, which has the following properties:

CAS registry number	1338-23-4
molecular formula	CH ₃ COCH ₂ CH ₃ O ₂ .
vapor pressure	less than 0.1 mm Hg at room temperature

Contrary to a popular misconception, MEKP does not decompose into MEK after being sprayed together with resin or gelcoat. Instead, the MEKP is immediately consumed by the resin to initiate the curing process, so no MEKP is released. If a trace amount of MEKP does not fully react with the resin or gelcoat, a small amount of acetic acid droplets may be formed due to reactions with moisture present in the air - but not MEK. Acetic acid droplets are neither a HAP nor a VOC. Therefore, the normal usage of MEKP at reinforced plastics facilities will not result in any measurable VOC or HAP emissions whatsoever.

DMP

DMP is a colorless, oily, viscous organic liquid with a faintly sweet, ester-like odor, which has the following properties:

CAS registry number	131-11-3
molecular formula	$C_{10}H_{10}O_4$
vapor pressure	less than 0.01 mm Hg at room temperature

DMP is both a VOC and a listed HAP. Fortunately, DMP has an extremely low vapor pressure resulting in practically no evaporation at room temperature. DMP vapor emissions from catalyst solutions are probably extremely small, but are still non-zero. The following five-step theoretical approach is employed to determine a reasonable non-zero emission factor for DMP:

1. According to the UEF model, a 50% styrene-content resin applied by spray gun will emit about 18.1% of the available styrene monomer before the resin cures. After curing, these emissions from the resin essentially stop.
2. DMP emissions will also emit a trace amount of vapor before the resin cures, and will follow the same general evaporation mechanisms as for the styrene monomer.
3. The ratio of vapor pressures for DMP to styrene is $0.01 \text{ mmHg} \div 4.5 \text{ mmHg} = 0.0022$.
4. The evaporation rate for typical VOC species is proportional to the VOC vapor pressure.
5. Hence, the emission factor for DMP will be $0.0022 \times 18.1\% = \mathbf{0.040\% \text{ of available DMP by weight}}$.

Note that DMP emissions will be practically negligible at nearly all reinforced plastics facilities in the USA. For example, a plant using one million pounds of resin (which is a relatively large amount) would only emit the following amount of DMP vapor:

$$1,000,000 \text{ lb/yr resin} \times 1.5\% \text{ catalyst} \times 60\% \text{ DMP} \times 0.04\% = \mathbf{3.6 \text{ lb/yr DMP emissions}}$$

This amount of DMP will be very small, so record-keeping and reporting requirements for DMP emissions from catalyst usage do not seem to be warranted.

MEK

MEK is another VOC and listed HAP, which may be a trace contaminant byproduct of the precursor chemical reactions employed to produce MEKP. However, the amount of contamination is reportedly very small - normally from about 50 ppm to a maximum of 1% by weight of MEK may be present in the raw MEKP feedstock used to make commercially-available catalyst formulations. Presumably, all of this trace amount of MEK will be released during the lamination process, because the MEK will neither react nor combine with the polyester resin during curing. However, as in the case of DMP emissions discussed above, these MEK emissions will be insignificant at nearly all reinforced plastics facilities in the USA. For example, a plant using one million pounds of resin would emit no more than the following amount of MEK vapor at a maximum contamination level of 1% MEK in the MEKP feedstock and assuming a 40% MEKP concentration in the catalyst:

$$1,000,000 \text{ lb/yr resin} \times 1.5\% \text{ catalyst} \times 1\% \text{ MEK} \times 40\% \text{ MEKP} = \mathbf{60 \text{ lb/yr MEK emissions}}$$

The actual emission of MEK would probably be lower, because most catalysts formulations use MEKP with much less than 1% MEK contamination. The actual MEK contamination in a specific catalyst formulation can be obtained from the catalyst supplier. The amount of MEK emissions will be so small that record-keeping and reporting requirements for MEK emissions from catalyst usage do not seem to be warranted.

The above information regarding MEKP, DMP, and MEK emissions may be confirmed by contacting Dr. Frank Long, a leading authority on organic peroxides, who works for the Norac Company, one of the two major manufacturers of catalyst materials for the reinforced plastics industry. Dr. Long may be reached at (626) 334-2908, or at info@norac.com. The information provided by Dr. Long can be verified by contacting Mr. Brice Milleville, another authority on MEKP catalysts, who works for Akzo Nobel, the second major manufacturer of MEKP catalysts.

Mr. Milleville may be reached at (914) 674-5099, or by email at bryce.milleville@akzo-nobel.com.



Attachment D
Filter Manufacturer's Efficiency Data



Koch Filter Corporation
Filtration Products Crafted with Pride

Bulletin No. PB 798-1

*SprayStop S*TM

Standard Capacity Synthetic Overspray Media



SprayStop S is designed for applications where high initial efficiency is required to control overspray emissions.

Features

- excellent paint arrestor for all types of liquid coating materials
- effectively removes overspray solids from lacquers, air dry enamels, and thermo-reactive coatings.
- economical alternative to paper/poly style products
- protects against contamination and provides maximum control of overspray discharge over a wide range of coating materials.
- full depth loading provides up to 99.8% removal efficiency, with a service life longer than most high capacity products.

Description

SprayStop S has a white air-entering layer, while the downstream is tinted green to ensure correct installation. SprayStop S utilizes an exclusive media configuration composed of multi-denier synthetic fibers. These fibers are arranged in a progressively dense configuration, coarse on the air entering and becoming finer toward the air exiting side of the media. The binders used in SprayStop S are acrylic; no harmful halogens are utilized.

Optional Configurations

SprayStop S is available in thick pre-cut pads or blankets, service rolls, and economical bulk rolls. The DUO-CUBE, in single pocket style, and DUO-PAK versions, in two or three pocket styles, are available in all standard sizes in 10" or 15" depths.

Product Performance Data

TEST AIR FLOW	150 fpm
INITIAL RESISTANCE @ 150 fpm	0.08" wg
PAINT HOLDING CAPACITY @ FINAL RESISTANCE	2790GM@1.0" wg
RATED REMOVAL EFFICIENCY @ 150 fpm	99.80%
MEDIA CONFIGURATION	NON-WOVEN MULTI-DENIER POLYESTER

Corporate Offices

P.O. Box 3186 • 625 West Hill Street (40208) • Louisville, KY 40201 • 502.634.4796 • Fax: 502.637.2280 • E mail: info@kochfilter.com • www.kochfilter.com

Local Sales Offices/ Distribution Centers

Louisville • Charlotte • Cincinnati • Denver • Houston • Indianapolis • Kansas City • Nashville • St. Louis

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Koch Filter Corporation
Filtration Products Crafted with Pride



SprayStop HC Duo-Pak™

High Capacity Two Pocket Overspray Filter



SprayStop HC Duo-Pak is designed for applications that require high efficiency and longer filter life cycles to ensure maximum production and painting efficiency for high volume coating operations.

Features and Benefits

- Utilizes multi-denier synthetic fibers progressively layered to promote “depth loading” and long filter life
- Efficiently removes overspray solids from all types of coatings
- Provides 99.8% removal efficiency
- Increased service life as compared to other competitive high capacity products

Applications

- Aerospace
- Automotive Manufacturing
- Automotive Aftermarket
- Furniture Manufacturing
- Appliance Manufacturing
- Contract Coaters

Features

- 99.8% removal efficiency
- Self-Seal header eliminates overspray bypass
- High capacity media allows for extended filter life cycle
- Exceeds *New* NESHAP* regulations and MACT** standards

Product Performance Data

Initial Resistance	0.06" w.g. @ 150 fpm
Paint Holding Capacity	1385 grams (for every sq.ft. of media area)
Rated Removal Efficiency	99.80%
Final Recommended Pressure Drop	1.0" w.g.

* NESHAP (National Emission Standards for Hazardous Air Pollutants – 40 CFR 63)

** MACT (Maximum Achievable Control Technology)



Koch Filter Corporation...Durable. Reliable. Versatile.

Bulletin No. SS-HCDP

Section I. General Information

Project: Altec Industries, Inc. - Elizabethtown, KY
Calculations for Permit Modification Application

Subject: Air Emissions from Infusion Molding and other Fugitive FRP Activities IM-1

Section II. Source Description

A. The purpose of this calculation is to determine air pollutant emissions from the infusion molding operations and other fiberglass reinforced plastics (FRP) manufacturing activities.

Section III. Data

A. IM-1 operations may consist of multiple activities for FRP production. Each process is a batch process. These operations will not be conducted in a booth; therefore, VOC and HAP emissions from IM-1 will be emitted to the atmosphere through building vents. Potential usage is based on 3 shifts (8760 hours); however, the facility will operate two 8-hour shifts per day and approximately 300 days per year to comply with the conditional major limits. Assume that all activities in IM-1 can happen simultaneously.

B. Platforms and brackets will be produced using a closed molding process typically with RTM and Cold Molding Resin and a catalyst, typically NOROX MEKP-9H.

RTM & Cold Molding Resin

Resin per hour:	350 pounds
Resin per annum:	317,824 pounds
VOC:	0.95% Effective ¹
Styrene:	47.59% Assumed
VOC emission factor =	19.04 lb VOC/ton resin
Styrene emission factor =	0.02 lb styrene/lb styrene
	19.04 lb styrene/ton resin

NOROX MEKP-9H

Catalyst per hour:	8.8 pounds
Catalyst per annum:	7,946 pounds
VOC:	3.70% Effective
DMP:	42.50%
VOC emission factor =	74.0 lb VOC/ton catalyst
DMP emission factor =	0.00004 lb DMP/lb DMP
	0.0374 lb DMP/ton catalyst

As Applied

Maximum Design Capacity = 0.179 ton/hr

C. Molds (aka tools) will typically be produced with AME 6441 T-40 and a catalyst, typically NOROX MEKP-9H or Luperox DDM-9. The resin will be manually applied.

AME 6441 T-40

Resin per hour:	18 pounds
Resin per annum:	27,750 pounds
Resin density:	9.00 lb/gal
VOC:	8.18% Effective ¹
Styrene:	31.5079%
Cobalt cmpd ²	0.1021%
VOC emission factor =	163.65 lb VOC/ton resin
Styrene Emission Factor =	79.40 lb styrene/ton resin
Cobalt cmpd emission factor =	0 (hand-applied)

NOROX MEKP-9H

Catalyst per hour:	0.45 pounds
Catalyst per annum:	694 pounds
VOC:	3.70% Effective
DMP:	42.50%
VOC emission factor =	74.00 lb VOC/ton catalyst
DMP emission factor =	0.24 lb DMP/ton catalyst

LUPEROX DDM-9

Catalyst per hour:	0.45 pounds
Catalyst per annum:	694 pounds
VOC:	100% Assumed
VOC emission factor =	2,000 lb VOC/ton catalyst

As Applied

Maximum Design Capacity = 0.009 ton/hr

Section III. Data (Cont'd)

D. Molds (aka tools) will be repaired typically with gelcoat G262AA30209 and either NOROX MEKP-9H or Luperox DDM-9.

G262AA30209

Gelcoat density:	10.43 lb/gal
Gelcoat per hour:	0.50 gallons
Gelcoat per annum:	117 gallons
VOC:	21.47% Effective ¹
Solids*:	53.20% Assumed
Styrene:	46.8%
Cobalt cmpd ³	0.30%
VOC emission factor =	429.5 lb VOC/ton resin
Styrene emission factor =	423.5 lb styrene/ton gelcoat
Cobalt cmpd emission factor =	0 *

NOROX MEKP-9H

Catalyst density:	9.18 lb/gal
Catalyst per hour:	0.01 gallons
Catalyst per annum:	3 gallons
VOC:	3.7% Effective
Solids*:	0% Assumed
DMP:	42.5%
VOC emission factor =	74.0 lb VOC/ton catalyst
DMP emission factor =	0.85 lb DMP/ton catalyst

LUPEROX DDM-9

Catalyst density:	8.41 lb/gal
Catalyst per hour:	0.01 gallons
Catalyst per annum:	3 gallons
VOC:	100% Assumed
VOC emission factor =	2,000 lb VOC/ton catalyst

As Applied

Maximum Design Capacity = 0.003 ton/hr

* During repairs, only a small amount will be used. The gelcoat may be hand applied or sprayed. If sprayed, the building will provide capture; therefore, PM emissions are not expected.

E. Some gelcoat spray touch-up of the platforms and brackets may occur in this area using LHA-2900 and a catalyst, typically NOROX MEKP-9H.

LHA-2900

Gelcoat per hour:	1 gallons
Gelcoat per annum:	7,530 gallons
Gelcoat density:	11.60 lb/gal, average
VOC:	13.15% Effective ¹
Solids*:	67.5% Assumed
MMA	3.92%
Styrene:	27.22%
VOC emission factor =	262.9 lb VOC/ton gelcoat
HAP emission factor =	58.8 lb MMA/ton gelcoat
	176.9 lb styrene/ton gelcoat

NOROX MEKP-9H

Catalyst per hour:	0.01 gallons
Catalyst per annum:	188 gallons
Catalyst density:	9.18 lb/gal
VOC:	3.70% Effective
Solids*:	0% Assumed
DMP:	42.50%
VOC emission factor =	74 lb VOC/ton catalyst
DMP emission factor =	0.61 lb DMP/ton catalyst

As Applied

Maximum Design Capacity = 0.003 ton/hr

* During touch-up, only a small amount will be used. The gelcoat may be hand applied or sprayed. If sprayed, the building will provide capture; therefore, PM emissions are not expected.

F. Prior to gelcoat application in GC-1, molds will occasionally be cleaned and treated with a mold sealant or release agent. Prior to infusion, fiberglass will be laid into the platform shell. An adhesive will be used to help the fiberglass adhere during layout. Except for the adhesive spray, these materials will be hand-applied.

Frekote PMC Mold Cleaner

Cleaner per hour:	0.5 gallons =	0.00149 ton/hr
Cleaner per annum:	300 gallons	
Cleaner density:	5.94 lb/gal	

VOC:	100.0%	VOC emission factor =	2000 lb VOC/ton cleaner
Toluene:	55.0%	Toluene emission factor =	1100 lb toluene/ton cleaner

Zyvax Sealer GP

Sealant per hour:	0.25 gallons =	0.00091 ton/hr
Sealant per annum:	45 gallons	
Sealant density:	7.26 lb/gal	

Section III. Data (Cont'd)

VOC:	96.4%	VOC emission factor =	1928 lb VOC/ton sealer
Xylene:	2.1%	Xylene emission factor =	42 lb xylene/ton sealer
Cumene :	3.0%	Cumene emission factor =	60 lb cumene/ton sealer

Chemlease 41-90 EZ

Release agent per hour:	0.25 gallons =	0.00075 ton/hr
Release agent per annum:	45 gallons	
Release agent density:	6.01 lb/gal	

VOC:	100.0%	VOC emission factor =	2000 lb VOC/ton release agent
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Chemlease R&B EZ

Release agent per hour:	0.25 gallons =	0.00079 ton/hr
Release agent per annum:	45 gallons	
Release agent density:	6.34 lb/gal	

VOC:	97.5%	VOC emission factor =	1950 lb VOC/ton release agent
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Chemlease MPP 2180

Release agent per hour:	0.25 gallons =	0.00088 ton/hr
Release agent per annum:	45 gallons	
Release agent density:	7.01 lb/gal	

VOC:	89.7%	VOC emission factor =	1794 lb VOC/ton release agent
Methanol:	20.0%	Methanol emission factor =	400 lb Methanol/ton release agent
Xylene, ortho	20.0%	o-Xylene emission factor =	400 lb o-Xylene/ton release agent

Everstrong Adhesive Spray

Adhesive per hour:	2 gallons =	0.00625 ton/hr
Adhesive per annum:	3100 gallons	
Adhesive density:	6.25 lb/gal	

VOC:	65.0%	VOC emission factor =	1300 lb VOC/ton release agent
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Maximum Design Capacity for Mold and Platform Prep = 0.0111 ton/hr

NOTES:

DMP = Dimethyl Phthalate MMA = Methyl Methacrylate VOC = Volatile Organic Compounds

- 1 - VOC percentage considers emission factors for consumed and polymerized components (i.e., styrene, MMA, DMP)
 - 2 - Cobalt compound for AME 6441 T-40 Resin is cobalt 2-ethylhexanoate (CAS 136-52-7)
 - 3 - Cobalt compound for G262AA30209 is cobalt borate neodecanoate (CAS 68457-13-6)
- See Attachment A for coating and catalyst Safety Data Sheets and other data from manufacturers.
See also Attachment A in Calc. GC-1 for materials used in both GC-1 and IM-1.

Section IV. Approach

A. Styrene emission factor for platforms and brackets vacuum infusion molding (lb/lb):
A closed molding emission factor has not been developed by the Composite Fabricators Association; therefore, data from USEPA's AP-42 document were used. The AP-42 emission factor for closed molding is 1 - 3% of monomer used. **Use 2%.** This is conservative, since information from the Minnesota Technical Assistance program notes that emissions from closed molding are on the low end of the AP-42 range (see Attachment B).

B. Styrene emission factor for mold production (lb/ton):
Styrene emission factor (lb/ton) determined using manual application of resin formulas developed by American Composites Manufacturers Association (ACMA) - document ANSI/ACMA/ICPA UEF-1-2011a. (See Attachment B of Calc GC-1)

For resin applications where the styrene concentration is 33 percent or greater, use the following formula:

$$EF \text{ (lb styrene/ton resin)} = ((0.286 * \text{styrene}\%) - 0.0529) * 2000$$

For resin applications where the styrene concentration is less than 33 percent, use the following formula:

$$EF \text{ (lb styrene/ton resin)} = 0.126 * \text{styrene}\% * 2000$$

Section IV. Approach (Cont'd)

- C. Styrene emission factor for mold repair and touch-up (lb/ton):
 Styrene emission factor (lb/ton) determined using gelcoat controlled spray application formulas developed by American Composites Manufacturers Association (ACMA) - document ANSI/ACMA/ICPA UEF-1-2011a. (See Attachment B of Calc GC-1)
- For gelcoat applications where the styrene concentration is less than 33 percent, use the following formula:
 $EF \text{ (lb styrene/ton gelcoat)} = 0.325 * \text{styrene\%} * 2000$
- For gelcoat applications where the styrene concentration is 33 percent or greater, use the following formula:
 $EF \text{ (lb styrene/ton gelcoat)} = 0.73 * ((1.03646 * \text{styrene\%}) - 0.195) * 2000$
- D. MMA emission factor (lb/ton) was determined using information from the American Composites Manufacturers Association (ACMA) - document ANSI/ACMA/ICPA UEF-1-2011a. (See Attachment B of Calc GC-1).
- For gelcoat applications that contain MMA, use the following formula:
 $EF \text{ (lb MMA/ton gelcoat)} = 0.75 * \text{MMA\%} * 2000$
- E. Dimethyl phthalate is used as a stabilizing agent in the catalyst. It has an extremely low vapor pressure and its emissions are expected to follow the same evaporation mechanisms as for the styrene monomer. DMP emissions are assumed as a fraction of styrene emissions based on the ratio of vapor pressures for DMP to styrene (0.01 mmHg / 4.5 mmHg = 0.0022). (See Attachment C in Calc. GC-1).
- $EF \text{ (lb DMP/ton catalyst)} = \text{styrene EF\%} * \text{DMP\%} * 2000 * 0.0022$
- F. Other pollutant emission factors (lb/ton) = Constituent% (lb/lb) * 2000 (lb/ton)
- G. VOC and volatile HAP emissions (ton/yr) = { [coating per year (gal/yr) * density (lb/gal)] OR [coating per year (lb/yr)] } *
 Emission Factor (lb pollutant/ton coating) / 2000 (lb/ton) / 2000 (lb/ton)
- H. PM emissions, including HAPs that are solids, from mold repair and spray touch-up are assumed zero, since they will be conducted in the interior of the building and the building will provide capture.
- I. Potential emissions = sum (platform emissions, mold repair emissions, touch-up emissions, mold prep emissions)

Section V. Results

- A. Estimated emissions are shown in Tables V-1 through V-15 below.

Table V-1. Summary of Potential Emissions for IM-1 from Platforms/Brackets using RTM & Cold Molding Resin and NOROX MEKP-9H IM-1, Process 1

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	20.38	3.66	3.66	1.66	1.66
HAPs	NA	18.57	3.33	3.33	1.51	1.51
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	0.0009	0.0002	0.0002	0.0001	0.0001
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	18.57	3.33	3.33	1.51	1.51
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Section V. Results (Cont'd)

Table V-2. Summary of Potential Emissions for IM-1 from Tooling using AME 6441 T-40 and NOROX MEKP-9H
IM-1, Process 2

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	161.46	1.49	1.49	1.15	1.15
HAPs	NA	77.47	0.71	0.71	0.55	0.55
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	0.01	0.0001	0.0001	0.00004	0.00004
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	77.46	0.71	0.71	0.55	0.55
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Table V-3. Summary of Potential Emissions for IM-1 from Tooling using AME 6441 T-40 and Luperox DDM-9
IM-1, Process 2

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	208.44	1.92	1.92	1.48	1.48
HAPs	NA	77.46	0.71	0.71	0.55	0.55
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	77.46	0.71	0.71	0.55	0.55
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Table V-4. Summary of Potential Emissions for IM-1 from Tooling (Maximum using AME 6441 T-40 and NOROX MEKP-9H or Luperox DD
IM-1, Process 2 (Maximum of Tables V-2 and V-3)

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	208.44	1.92	1.92	1.48	1.48
HAPs	NA	77.47	0.71	0.71	0.55	0.55
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	0.006	0.0001	0.0001	0.00004	0.00004
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	77.46	0.71	0.71	0.55	0.55
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Section V. Results (Cont'd)

Table V-5. Summary of Potential Emissions for IM-1 from Mold Repairs using G262AA30209 and NOROX MEKP-9H
IM-1, Process 3

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	421.84	1.12	1.12	0.13	0.13
HAPs	NA	414.39	1.10	1.10	0.13	0.13
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	0.02	0.0000	0.0000	0.00001	0.00001
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	414.38	1.10	1.10	0.13	0.13
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Table V-6. Summary of Potential Emissions for IM-1 from Mold Repairs using G262AA30209 and Luperox DDM-9
IM-1, Process 3

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	459.69	1.23	1.23	0.14	0.14
HAPs	NA	414.38	1.10	1.10	0.13	0.13
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	414.38	1.10	1.10	0.13	0.13
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Table V-7. Summary of Potential Emissions for IM-1 from Mold Repair (Maximum G262AA30209 and NOROX MEKP-9H or Luperox DDM-9)
IM-1, Process 3 (Maximum of Tables V-5 and V-6)

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	459.69	1.23	1.23	0.14	0.14
HAPs	NA	414.39	1.10	1.10	0.13	0.13
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	0.0182	0.000049	0.000049	0.00001	0.00001
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	414.38	1.10	1.10	0.13	0.13
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Section V. Results (Cont'd)

Table V-8. Summary of Potential Emissions for IM-1 from Gelcoat Touchup using LHA-2900 and NOROX MEKP-9H
IM-1, Process 4

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	259.26	0.77	0.77	5.77	5.77
HAPs	NA	231.17	0.68	0.68	5.15	5.15
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	0.0118	0.00003	3.49E-05	0.0003	0.0003
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	57.66	0.17	0.17	1.28	1.28
Styrene	100-42-5	173.50	0.51	0.51	3.86	3.86
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Table V-9. Summary of Potential Emissions for Frekote PMC Mold Cleaner

IM-1, Process 5

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	2,000	2.97	2.97	0.89	0.89
HAPs	NA	1,100	1.63	1.63	0.49	0.49
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	-	-	-	-	-
Toluene	108-88-3	1,100	1.6335	1.6335	0.49	0.49
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Table V-10. Summary of Potential Emissions for Zyvax Sealer GP

IM-1, Process 5

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	1,928	1.75	1.74966	0.16	0.16
HAPs	NA	102	0.09	0.09	0.01	0.01
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	60	0.05	0.05	0.005	0.005
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	-	-	-	-	-
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	42	0.038	0.038	0.003	0.003
Xylene, ortho	95-47-6	-	-	-	-	-

Section V. Results (Cont'd)

Table V-11. Summary of Potential Emissions for Chemlease 41-90 EZ

IM-1, Process 5

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	2,000	1.50	1.50	0.14	0.14
HAPs	NA	-	-	-	-	-
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	-	-	-	-	-
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Table V-12. Summary of Potential Emissions for Chemlease R&B EZ

IM-1, Process 5

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	1,950	1.55	1.55	0.14	0.14
HAPs	NA	-	-	-	-	-
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	-	-	-	-	-
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Table V-13. Summary of Potential Emissions for Chemlease MPP 2180

IM-1, Process 5

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	1,794	1.57	1.57	0.14	0.14
HAPs	NA	800	0.70	0.70	0.06	0.06
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	400	0.35	0.35	0.03	0.03
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	-	-	-	-	-
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	400	0.35	0.35	0.03	0.03

Table V-14. Summary of Potential Emissions for Everstrong Adhesive
IM-1, Process 5

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	1,300	8.13	8.13	6.30	6.30
HAPs	NA	-	-	-	-	-
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	-	-	-	-	-
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	-	-	-	-	-
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	-	-	-	-	-
Toluene	108-88-3	-	-	-	-	-
Xylene, mixed	1330-20-7	-	-	-	-	-
Xylene, ortho	95-47-6	-	-	-	-	-

Table V-15. Summary of Potential Emissions from Mold and Platform Prep
IM-1, Process 5 (Sum of Tables V-9 through V-14)

Constituent	CAS No.	As Applied Emission Factor lb/ton	Potential Emissions		Potential Emissions	
			Uncontrolled lb/hr	Controlled lb/hr	Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-	-	-	-
PM ₁₀	NA	-	-	-	-	-
PM _{2.5}	NA	-	-	-	-	-
VOC	NA	1,578.72	17.46	17.46	7.76	7.76
HAPs	NA	219.39	2.43	2.43	0.56	0.56
Cobalt Cmpds	NA	-	-	-	-	-
Cumene	98-82-8	4.92	0.05	0.05	0.00	0.00
DMP	131-11-3	-	-	-	-	-
Ethylbenzene	100-41-4	-	-	-	-	-
Methanol	67-56-1	31.68	0.35	0.35	0.03	0.03
Methyl Methacrylate	80-62-6	-	-	-	-	-
Styrene	100-42-5	-	-	-	-	-
Toluene	108-88-3	147.66	1.63	1.63	0.49	0.49
Xylene, mixed	1330-20-7	3.45	0.04	0.04	0.00	0.00
Xylene, ortho	95-47-6	31.68	0.35	0.35	0.03	0.03

Table V-16. Summary of Potential Emissions for IM-1 (Sum of all Processes)
(Sum of Tables V-1, V-4, V-7, V-8, and V-15)

Constituent	CAS No.	Potential Emissions	
		Uncontrolled tons/yr	Controlled tons/yr
PM	NA	-	-
PM ₁₀	NA	-	-
PM _{2.5}	NA	-	-
VOC	NA	16.82	16.82
HAPs	NA	7.90	7.90
Cobalt Cmpds	NA	-	-
Cumene	98-82-8	0.00	0.00
DMP	131-11-3	0.00	0.00
Ethylbenzene	100-41-4	-	-
Methanol	67-56-1	0.03	0.03
Methyl Methacrylate	80-62-6	1.28	1.28
Styrene	100-42-5	6.06	6.06
Toluene	108-88-3	0.49	0.49
Xylene, mixed	1330-20-7	0.00	0.00
Xylene, ortho	95-47-6	0.03	0.03



CALCULATION SHEET

Calc No.

IM-1

Section VI. Attachments

- A. Coating and Catalyst Safety Data Sheets, Technical Data Sheets, and Manufacturer Information
(See GC-1 Calculations for Safety Data Sheets, Technical Data Sheets, and Manufacturer Information for previously used gelcoat and catalysts)
- B. HAP Emission Factor Basis for Closed Molding



Attachment A

Coating and Catalyst Safety Data Sheets, Technical Data Sheets, and Manufacturer Information

SAFETY DATA SHEET



RTM & Cold Molding Resin

Section 1. Identification

GHS product identifier : RTM & Cold Molding Resin
Product code : SIL44BA-2164W
Other means of identification : Unsaturated Polyester Resin
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Industrial applications.

Supplier's details : INTERPLASTIC CORPORATION
1225 Willow Lake Boulevard
St. Paul, MN 55110-5145
651.481.6860

Emergency telephone number (with hours of operation) : CHEMTREC 24-Hour Emergency Telephone
US and Canada 800.424.9300
Outside US and Canada +1 703.741.5970

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : **FLAMMABLE LIQUIDS** - Category 3
ACUTE TOXICITY (inhalation) - Category 4
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (hearing organs) - Category 1
Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 47.6%

GHS label elements

Hazard pictograms :



Signal word :



Danger

Hazard statements :

Flammable liquid and vapor.
Harmful if inhaled.
Causes serious eye irritation.
Causes skin irritation.
May cause respiratory irritation.
Causes damage to organs through prolonged or repeated exposure. (hearing organs)


Precautionary statements

Section 2. Hazards identification

- Prevention** :  Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.
- Response** :  Get medical attention if you feel unwell. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
- Storage** : Store in a well-ventilated place. Keep cool. Store containers in a safe place.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
- Hazards not otherwise classified** : None known.

Section 3. Composition/information on ingredients

- Substance/mixture** : Mixture
- Other means of identification** : Unsaturated Polyester Resin

Ingredient name	%	CAS number
 styrene	<= 48.0	100-42-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Any concentration shown as exact is based on formula.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

VOC content is listed in Section 9.

Environmental composition is shown in Section 15.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention. Buffered baby shampoo will aid in removal of resin.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First aid measures

- Skin contact** : Remove contaminated clothing and shoes. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Harmful if inhaled. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

Section 5. Fire-fighting measures

- Specific hazards arising from the chemical** : Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Absorb with an inert material and transfer the spilled material and absorbent to an appropriate waste disposal container. Wear appropriate respirator when ventilation is inadequate. Wear eye/face protection.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal. Wear appropriate respiratory protection. Wear protective clothing and eye or face protection:

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Do not store above the following temperature: 38°C (100.4°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. Store containers in a safe place.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
styrene	<p>ACGIH TLV (United States, 3/2019). TWA: 20 ppm 8 hours. STEL: 40 ppm 15 minutes.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 50 ppm 8 hours. TWA: 215 mg/m³ 8 hours. STEL: 100 ppm 15 minutes. STEL: 425 mg/m³ 15 minutes.</p> <p>OSHA PEL Z2 (United States, 2/2013). TWA: 100 ppm 8 hours. CEIL: 200 ppm AMP: 600 ppm 5 minutes.</p> <p>NIOSH REL (United States, 10/2016). TWA: 50 ppm 10 hours. TWA: 215 mg/m³ 10 hours. STEL: 100 ppm 15 minutes. STEL: 425 mg/m³ 15 minutes.</p>

Section 8. Exposure controls/personal protection

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Individual protection measures**
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid.
- Color** : Various
- Odor** : Sweetish.
- Odor threshold** : 0.1 ppm
- pH** : Not applicable.
- Melting point** : Not available.
- Boiling point** : 145°C (293°F)
- Flash point** : losed cup: 31.1°C (88°F)
- Evaporation rate** : <1 (butyl acetate = 1)

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits	: Lower: 0.9% Upper: 6.8%
Vapor pressure	: 0.67 kPa (5 mm Hg) [room temperature]
Vapor density	: 3.6 [Air = 1]
Relative density	: 0.9 to 1.3
Solubility	: Not available.
Solubility in water	: Not applicable.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Viscosity	: Not available.
VOC content	: 47.9 % (w/w) As shipped, including monomers and additives.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Hazardous reactions or instability may occur under certain conditions of storage or use.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. Hazardous polymerization may occur under certain conditions of storage or use. Keep away from heat and direct sunlight. Keep away from heat and flame. Keep away from oxidizing agents.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials Reactive or incompatible with the following materials: metals, acids and alkalis. Incompatible with alkali metals. Incompatible with some alkalis. Incompatible with some strong acids. Incompatible with copper alloys, brass.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
styrene	LC50 Inhalation Gas.	Rat	2770 ppm	4 hours
	LC50 Inhalation Vapor	Rat	11800 mg/m ³	4 hours
	LD50 Oral	Rat	2650 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
styrene	Eyes - Mild irritant	Human	-	50 ppm	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Severe irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	500 mg	-
	Skin - Moderate irritant	Rabbit	-	100 %	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Conclusion/Summary : Styrene manufacturers have determined that the weight of evidence for the carcinogenicity of this substance does not meet the criteria for classification.

In 2018, styrene was listed by IARC as a probable carcinogen to humans (Group 2A) based on hazard assessment data. The United States NTP listed styrene as reasonably anticipated to be a human carcinogen based on "limited evidence" from studies in humans, "sufficient evidence" from studies in experimental animals, and supporting data on mechanisms of carcinogenesis. The significance of these results for humans has not been established through risk assessment.

Classification

Product/ingredient name	OSHA	IARC	NTP
styrene	-	2A	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
styrene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
styrene	Category 1	Inhalation	hearing organs

A study of long term effects of workers exposed to styrene levels in the range of 25-35 ppm for an 8-hour TWA indicated a possible mild hearing loss.

Aspiration hazard

Name	Result
styrene	ASPIRATION HAZARD - Category 1

Section 11. Toxicological information

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.
Inhalation : Harmful if inhaled. May cause respiratory irritation.
Skin contact : Causes skin irritation.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
 pain or irritation
 watering
 redness
Inhalation : Adverse symptoms may include the following:
 respiratory tract irritation
 coughing
Skin contact : Adverse symptoms may include the following:
 irritation
 redness
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : Causes damage to organs through prolonged or repeated exposure.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	5567.9 mg/kg
Inhalation (gases)	5820 ppm
Inhalation (vapors)	24.79 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
styrene	Acute EC50 1400 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 720 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 4700 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 52 mg/l Marine water	Crustaceans - Artemia salina	48 hours
	Acute LC50 4020 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 63 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
styrene	OECD	70 % - Readily - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
styrene	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
styrene	0.35	13.49	low

Mobility in soil






Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	Mexico Classification	TDG Classification	IATA	IMDG
UN number	UN1866	UN1866	UN1866	UN1866	UN1866
UN proper shipping name	RESIN SOLUTION	RESIN SOLUTION	RESIN SOLUTION	RESIN SOLUTION	RESIN SOLUTION
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	III	III	III	III	III
Environmental hazards	No.	No.	No.	No.	No.

Additional information

- DOT Classification** : **Reportable quantity** 2101.1 lbs / 953.89 kg [229.08 gal / 867.18 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
- TDG Classification** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

- U.S. Federal regulations** :
- TSCA 4(a) proposed test rules:** Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides
 - TSCA 5(a)2 final significant new use rules:** pentane-2,4-dione
 - TSCA 8(a) PAIR:** pentane-2,4-dione; 4-tert-butylpyrocatechol; triethyl phosphate
 - TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
 - TSCA 8(c) calls for record of SAR:** triethyl phosphate
 - Clean Water Act (CWA) 307:** Naphthenic acids, copper salts; 2-ethylhexanoic acid, copper salt
 - Clean Water Act (CWA) 311:** styrene; propionic acid

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Listed

If components are "Listed", and additional information is required, contact Supplier using email in Section 16.

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

Section 15. Regulatory information

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : FLAMMABLE LIQUIDS - Category 3
 ACUTE TOXICITY (inhalation) - Category 4
 SKIN IRRITATION - Category 2
 EYE IRRITATION - Category 2A
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (hearing organs) - Category 1

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	<input checked="" type="checkbox"/> styrene	100-42-5	<= 48.0
Supplier notification	<input checked="" type="checkbox"/> styrene	100-42-5	47.59

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

Any concentration shown as exact is based on formula.

State regulations

Massachusetts : The following components are listed: STYRENE; PHENYLETHYLENE
New York : The following components are listed: Styrene
New Jersey : The following components are listed: STYRENE MONOMER; BENZENE, ETHENYL-
Pennsylvania : The following components are listed: BENZENE, ETHENYL-
California Prop. 65 : The following components are listed. For more information go to www.P65Warnings.ca.gov.
 Styrene

Inventory list

Australia : Not determined.
Canada : All components are listed or exempted.
China : All components are listed or exempted.
Europe : Not determined.
Japan : **Japan inventory (ENCS):** Not determined.
Japan inventory (ISHL): Not determined.
Malaysia : Not determined.
New Zealand : All components are listed or exempted.
Philippines : Not determined.
Republic of Korea : All components are listed or exempted.
Taiwan : All components are listed or exempted.
Thailand : Not determined.
Turkey : Not determined.
United States : All components are listed or exempted.
Viet Nam : All components are listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	*	2
Flammability		3
Physical hazards		1

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (hearing organs) - Category 1	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method

History

Date of printing	:	7/14/2021
Date of issue/Date of revision	:	7/14/2021
Date of previous issue	:	10/11/2018
Version	:	2 New form 08-2018
Prepared by	:	Health, Safety and Environmental Department
For questions about the SDS, contact	:	iasafety@ip-corporation.com

Section 16. Other information

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References

: 29 CFR 1910.1200 Hazard Communication Standard, March 2012
CCR Title 27 Division 4 Office of Environmental Health Hazard Assessment (California Prop. 65)
American Composites Manufacturers Association
Styrene Information and Research Center

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



Safety Data Sheet

FOR INDUSTRIAL USE ONLY

UNSATURATED POLYESTER RESIN IN MONOMER

Revision Date 3/3/2025

1. Identification

Product Name: UNSATURATED POLYESTER RESIN IN MONOMER

STYPOL RGPS-1700

SDS Number: RGPS1700

Product Use: Industrial

Manufacturer, Importer, Supplier Polynt Composites USA, Inc.
99 East Cottage Avenue
Carpentersville IL 60110

E-Mail: MSDS@polynt.com

Telephone **For Emergency Transportation Information**
CHEMTREC US Domestic (800) 424-9300
CHEMTREC International (703) 741-5970

For additional health, safety or regulatory information, call (847) 836-3659

2. Hazard identification

EMERGENCY OVERVIEW: May cause sensitization by inhalation and skin contact. Risk of serious damage to the lungs (by aspiration).

GHS Classification

Carc. 2, Eye Irrit. 2A, Flam. Liq. 3, Skin Irrit. 2, STOT RE 1, STOT SE 3 NE, STOT SE 3 RTI

Symbol(s) of Product



Signal Word

Danger

GHS HAZARD STATEMENTS

Flammable Liquid, category 3	H226	Flammable liquid and vapour.
Skin Irritation, category 2	H315	Causes skin irritation.
Eye Irritation, category 2A	H319	Causes serious eye irritation.
STOT, single exposure, category 3, RTI	H335	May cause respiratory irritation.
STOT, single exposure, category 3, NE	H336	May cause drowsiness or dizziness.
Carcinogenicity, category 2	H351	Suspected of causing cancer.

STOT, repeated exposure, category 1 H372 Causes damage to organs through prolonged or repeated exposure.

GHS LABEL PRECAUTIONARY STATEMENTS

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P264	Wash ... thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P321	Specific treatment (see ... on this label).
P405	Store locked up.
P501	Dispose of contents/container to in accordance with local/regional/national/international regulations.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use dry chemical, foam, water spray to extinguish.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P403+P235	Store in a well-ventilated place. Keep cool.

GHS SDS PRECAUTIONARY STATEMENTS

P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/.../ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P270	Do not eat, drink or smoke when using this product.

3. Composition/Information on ingredients

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>
Styrene	100-42-5	40 - 50

4. First-aid measures

FIRST AID - EYE CONTACT: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.

FIRST AID - INGESTION: If ingested, consult a physician. Do NOT induce vomiting. Aspiration hazard if swallowed - can enter lungs and cause damage.

FIRST AID - INHALATION: Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.

FIRST AID - SKIN CONTACT: Wash with soap and water. Remove contaminated clothes and shoes. Get medical attention if irritation develops.

5. Fire-fighting measures**Extinguishing Media:**

Suitable	Carbon Dioxide, Dry Chemical, Foam, Water Fog
Not suitable	Water Jet

SPECIAL FIREFIGHTING PROCEDURES: Use full protective clothing. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Vapors may be ignited by heat, pilot lights, other flames and ignition sources. Do not use a solid water stream as it may scatter and spread fire. Cool containers / tanks with water spray. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).

UNUSUAL FIRE AND EXPLOSION HAZARDS: This material may polymerize (react) when its container is exposed to heat (as

during a fire). This polymerization increases pressure inside a closed container and may result in the violent rupture of the container. Empty containers may retain product residue or vapor. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose container to heat, flame, sparks, static electricity, or other sources of ignition. Any of these actions can potentially cause an explosion that may lead to injury.

6. Accidental release measures

ENVIRONMENTAL MEASURES: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Prevent entry into waterways, sewers, basements or confined areas.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Dike to prevent entering any sewer or waterway. Transfer liquid to a holding container. Ensure adequate ventilation. Evacuate personnel to safe areas. Remove all sources of ignition. Do not flush into surface water or sanitary sewer system. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Use non-sparking tools and equipment. Avoid breathing vapors or mists.

PRECAUTIONARY MEASURES: No Information

7. Handling and storage



HANDLING: Wear personal protective equipment. Use only in well-ventilated areas. Keep away from heat and sources of ignition. Do not breathe vapors, mist or gas. Ground/bond container and equipment. Avoid contact with skin, eyes and clothing. Wash contaminated clothing before reuse.

STORAGE: Keep container closed when not in use. Store and dispose according to national, state and local regulations. Store in cool well ventilated space away from incompatible materials. Store contents under 100F (37.8C). Store drums with bung in the upright position. Electrical equipment must be grounded; suitable for the classification of the area where it is installed and conform to the National Electric Code (see NFPA 70).

HYGIENIC PRACTICES: When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

WORK PRACTICES: Put on appropriate personal protective equipment. Wash hands after handling chemicals and before eating, drinking, or smoking. Read and understand entire SDS before handling chemical.

SPECIAL HANDLING PROCEDURES: Put on appropriate personal protective equipment. Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.

8. Exposure controls/personal protection

Ingredients with Occupational Exposure Limits

<u>Chemical Name</u>	<u>ACGIH TLV-TWA</u>	<u>ACGIH-TLV STEL</u>	<u>OSHA PEL-TWA</u>	<u>OSHA CEILING</u>
Styrene	10 ppm	20 ppm	100 ppm	200 ppm

Further Advice: MEL = Maximum Exposure Limit OES = Occupational Exposure Standard SUP = Supplier's Recommendation
Sk = Skin Sensitizer N.E. = Not Established

Personal Protection

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RESPIRATORY PROTECTION: When concentrations exceed the exposure limits specified, use of a NIOSH-approved dust, mist and fume respirator is recommended. Where the protection factor of the respirator may be exceeded, use of a full facepiece, supplied air, or Self Contained Breathing Apparatus (SCBA) may be necessary. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

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SKIN PROTECTION: Wear suitable protective equipment. Wear chemical resistant footwear and clothing such as gloves, an apron or a whole body suit as appropriate.

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EYE PROTECTION: Ensure that eyewash stations and safety showers are close to the workstation location. Safety glasses with side-shields. Wear chemical-resistant glasses and/or goggles and a face shield when eye and face contact is possible due to splashing or spraying of material.

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OTHER PROTECTIVE EQUIPMENT: Use good hygiene practices. Wash face and hands before eating, drinking, and smoking. Eye wash and safety showers should be readily available.

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HYGIENIC PRACTICES: When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

9. Physical and chemical properties

Color:	Amber	Physical State:	Liquid
Odor:	Styrene	Odor Threshold:	No Information Available
Density, g/cm³:	1.072	pH:	No Information Available
Freeze Point, °C:	No Information Available	Viscosity:	No Information Available
Solubility in Water:	Insoluble	Partition Coefficient, n-octanol/water:	No Information Available
Decomposition Temp., °C:	No Information Available	Flash Point, °C / F°	31 / 88
Boiling Range, °C:	145	Explosive Limits, vol%:	No Information Available
Vapor Pressure:	No Information Available	Auto-ignition Temp., °C:	No Information Available

(See "Other information" Section for abbreviation legend)

10. Stability and reactivity

STABILITY: The product is normally supplied in a stabilized form. If the permissible storage period and/or storage temperature is noticeably exceeded, the product may polymerise with heat evolution. Stable under normal conditions.

CONDITIONS TO AVOID: Burning may produce obnoxious and toxic fumes. Hazardous polymerization may occur. Keep product away from heat, sparks, pilot lights, static electricity, and open flame. Avoid improper addition of promotor and/or catalyst. Avoid direct contact of MEKP catalyst with accelerator. If adding accelerator like cobalt drier, mix accelerator with base material before adding catalyst.

INCOMPATIBILITY: Copper. Strong acids. Strong oxidizing and reducing agents. Free radical initiators. Metal salts.

HAZARDOUS DECOMPOSITION PRODUCTS: None under normal use.

11. Toxicological information



Practical Experiences

EFFECT OF OVEREXPOSURE - EYE CONTACT: Exposure may cause mild irritation. Symptoms may include stinging, tearing, and redness.

EFFECT OF OVEREXPOSURE - INGESTION: May cause severe gastrointestinal disturbance with headache, nausea, vomiting and diarrhea.

EFFECT OF OVEREXPOSURE - INHALATION: Inhalation may cause irritation to the respiratory tract (nose, mouth, mucous membranes). Prolonged, repeated or high exposures may cause central nervous system depression leading to headaches, nausea, drowsiness, dizziness, and possibly narcosis. In extreme cases, may cause loss of consciousness. Ingestion of large doses may cause headaches, dizziness, nausea, vomiting, and drowsiness. Exposure to component solvent vapor concentrations in excess of the stated occupational exposure limit may result in adverse health effect, such as mucous membrane and respiratory system irritation and adverse effect on kidney, liver and central nervous system. Irritating to skin.

EFFECT OF OVEREXPOSURE - SKIN CONTACT: Prolonged skin contact may defat the skin and produce dermatitis.

EFFECT OF OVEREXPOSURE - CHRONIC HAZARDS: Prolonged or repeated exposure may cause liver and kidney effects. Repeated or prolonged exposure may cause central nervous system damage. Prolonged skin contact may defat the skin and produce dermatitis.

CARCINOGENICITY: This product contains styrene classified by the International Agency for Research on Cancer (IARC) as 2A carcinogen.

This product contains styrene, which is listed in the NTP report on carcinogens.

This product contains chemical(s) categorized as ACGIH A3 - Confirmed animal carcinogen with unknown relevance to humans.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Contact

Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Name according to EEC</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
100-42-5	Styrene	5000 mg/kg Rat	2000 mg/kg Rat	11.8 mg/L Rat

N.I. = No Information

12. Ecological information

ECOLOGICAL INFORMATION: Discharge into the environment must be avoided. Ecological evaluation of this material has not been performed; however, do not allow the product to be released to the environment without governmental approval/permits.

13. Disposal considerations



DISPOSAL METHOD: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should always comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

14. Transport information

SPECIAL TRANSPORT PRECAUTIONS: No Information

International transport regulations

Regulatory Information:	UN/NA Number	Proper Shipping Name	Classes / PG	Reportable Quantity (RQ)
CFR	UN1866	RESIN SOLUTION	Class 3 PGIII	
IMO/IMDG	UN1866	RESIN SOLUTION, flammable	Class 3 PGIII	
IATA	UN1866	RESIN SOLUTION, flammable	Class 3 PGIII	

15. Regulatory information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Flammable (gases, aerosols, liquids, or solids), Carcinogenicity, Skin Corrosion or Irritation, Serious eye damage or eye irritation, Specific target organ toxicity (single or repeated exposure)

Chemical Name

Styrene

CAS-No.

100-42-5

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name

Styrene

CAS-No.

100-42-5

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) regulated components exist in this product.

CALIFORNIA PROPOSITION 65 CARCINOGENSWARNING: Cancer - www.P65Warnings.ca.gov**Chemical Name**Styrene
Ethylbenzene**CAS-No.**100-42-5
100-41-4**International Regulations**

Chemical Inventories	Australia inventory (AICS)	All components are listed or exempted
	Canada inventory (DSL)	All components are listed or exempted
	Canada inventory (NDSL)	Not listed
	Japan Inventory (ENCSC)	Not listed
	China Inventory (IECSC)	All components are listed or exempted
	Korea Inventory (KECI)	All components are listed or exempted
	New Zealand (NZIoC)	All components are listed or exempted
	Philippines (PICCS)	Not listed
	United States Inventory (TSCA 8b)	All components are listed or exempted

16. Other information

Revision Date:	3/3/2025	Supersedes Date:	3/22/2024
Reason for revision:	Updated SDS Information		
Datasheet produced by:	Regulatory Department		

HMIS Ratings:

Health:	2*	Flammability:	3	Reactivity:	1	Personal Protection:	N.I.	Chronic Rating:	*
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Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined, N.I. - No Information

The information provided herein was believed by Polynt Composites USA, Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Polynt Composites USA, Inc. are subject to Polynt Composites USA, Inc terms and conditions of sale. Polynt Composites USA, Inc. MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY Polynt Composites USA, Inc, except that the product shall conform to Polynt Composites USA, Inc. specifications. Nothing contained herein constitutes an offer for the sale of any product.



Environmental Data Sheet

Polynt RGPS1700

Description	STYPOL RGPS-1700 UNSATURATED POLYESTER RESIN IN MONOMER
--------------------	--

Environmental Data	HAP (wt %)	46.70
	VOC (wt %)	48.33
	DENSITY (lb/gal)	8.943
	STYRENE (wt %)	46.62
	METHYL METHACRYLATE (wt %)	0.00
	ETHYLBENZENE (wt %)	0.02
	COBALT COMPOUNDS (wt %)	0.02

Disclaimer	The product composition and ingredient information presented herein is based upon Polynt's knowledge of this product as it is manufactured and shipped. Please use appropriate caution (and consult with air permitting experts) when relying upon this product data to calculate actual or potential air contaminant emissions. Due to variations in each individual customer's processes and conditions of usage, air emissions stack testing remains the most accurate means of determining emissions.
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Not emitted since resin is not sprayed.

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29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**Product identifier**

Trade name : AME™ 6441 T-40
RESIN
™ Trademark, INEOS or its subsidiaries, registered in
various countries

Relevant identified uses of the substance or mixture and uses advised against

Recommended use : RESIN

Details of the supplier of the safety data sheet

INEOS Composites US LLC
5220 Blazer Parkway
Dublin, OH 43017
United States of America (USA)
+1-614-790-9299 (in US)

sds.composites@ineos.com

Emergency telephone number

1-800-424-9300 (+1-703-527-3887 for direct dial)

Regulatory Information Number

+1-614-790-9299 (in US), or contact your local customer service representative

Product Information

+1-614-790-9299 (in US)

SECTION 2. HAZARDS IDENTIFICATION**GHS Classification**

Flammable liquids : Category 3
Combustible Dust :
Skin irritation : Category 2
Eye irritation : Category 2A
Skin sensitization : Category 1
Reproductive toxicity : Category 1B
Specific target organ toxicity : Category 3 (Respiratory system)
- single exposure
Specific target organ toxicity : Category 1 (Auditory system)

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- repeated exposure
 (Inhalation)

GHS label elements

Hazard pictograms



Signal Word : Danger

Hazard Statements : Flammable liquid and vapor.
 May form combustible dust concentrations in air.
 Causes skin irritation.
 May cause an allergic skin reaction.
 Causes serious eye irritation.
 May cause respiratory irritation.
 May damage fertility or the unborn child.
 Causes damage to organs (Auditory system) through prolonged or repeated exposure if inhaled.

Precautionary Statements : **Prevention:**
 Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
 Keep container tightly closed.
 Ground/bond container and receiving equipment.
 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
 Use only non-sparking tools.
 Take precautionary measures against static discharge.
 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
 Wash skin thoroughly after handling.
 Do not eat, drink or smoke when using this product.
 Use only outdoors or in a well-ventilated area.
 Contaminated work clothing must not be allowed out of the workplace.

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Wear protective gloves/ protective clothing/ eye protection/ face protection.

Keep dust/air mixtures away from ignition sources.

Hazardous polymerization can occur under certain conditions.

Avoid excessive heat, direct sunlight, peroxides, and other polymerization catalysts. Store in a cool place and maintain proper concentrations of inhibitor and oxygen.

Response:

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF exposed or concerned: Get medical advice/ attention.

If skin irritation or rash occurs: Get medical advice/ attention.

If eye irritation persists: Get medical advice/ attention.

Take off contaminated clothing and wash before reuse.

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Store locked up.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

Static Accumulating liquid

Hazardous polymerization may occur.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Classification	Concentration (%)
Styrene	100-42-5	Flam. Liq. 3; H226 Acute Tox. 4; H332	31.5079

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		Skin Irrit. 2; H315 Eye Irrit. 2A; H319 STOT SE 3; H335 STOT RE 1; H372 Asp. Tox. 1; H304	
DIVINYLBENZENE	1321-74-0	Flam. Liq. 4; H227 Skin Irrit. 2; H315 Eye Irrit. 2A; H319 Skin Sens. 1; H317 Repr. 2; H361 STOT SE 3; H335	2.6768
ETHYLETHENYL BENZENE	28106-30-1	Skin Irrit. 2; H315 Eye Irrit. 2A; H319 Skin Sens. 1; H317 STOT SE 3; H335	1.5355
cobalt bis (2-ethylhexylethanoate)	136-52-7	Eye Irrit. 2A; H319 Skin Sens. 1A; H317 Repr. 1B; H360Fd	0.1021

Not emitted since not sprayed.

SECTION 4. FIRST AID MEASURES

General advice

: Move out of dangerous area.
 Call a POISON CENTRE or doctor/physician if exposed or

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you feel unwell.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

- If inhaled : Move to fresh air.
IF INHALED: Call a POISON CENTER/ doctor if you feel unwell.
Keep patient warm and at rest.
If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : Remove contaminated clothing. If irritation develops, get medical attention.
If on skin, rinse well with water.
Wash contaminated clothing before re-use.
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
- If swallowed : Obtain medical attention.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:
stomach or intestinal upset (nausea, vomiting, diarrhea)
irritation (nose, throat, airways)
confusion
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause respiratory irritation.
May damage fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure if inhaled.
- Notes to physician : No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local

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circumstances and the surrounding environment.

Water spray

Foam

Alcohol-resistant foam

Carbon dioxide (CO₂)

Dry chemical

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : Organic dusts at sufficient concentration can form explosive mixtures in air.
 Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.
 Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
 Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Carbon dioxide (CO₂)
 Carbon monoxide
 Hydrocarbons
 Burning produces noxious and toxic fumes.
 Formaldehyde

Specific extinguishing methods :

Product is compatible with standard fire-fighting agents.

Further information : Do not use a solid water stream as it may scatter and spread fire.
 Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
 Use a water spray to cool fully closed containers.

Polymerization will take place under fire conditions. If polymerization occurs in a closed container, there is a possibility it will rupture violently. Cool storage container with water, if exposed to fire.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | |
|---|--|
| Personal precautions, protective equipment and emergency procedures | : Evacuate personnel to safe areas.
Remove all sources of ignition.
Use personal protective equipment.
Ensure adequate ventilation.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. |
| Environmental precautions | : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up | : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). |
| Other information | : Comply with all applicable federal, state, and local regulations.
Suppress (knock down) gases/vapours/mists with a water spray jet. |

SECTION 7. HANDLING AND STORAGE

- | | |
|---|--|
| Advice on protection against fire and explosion | : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).
No sparking tools should be used.
Keep away from open flames, hot surfaces and sources of ignition.
Use only explosion-proof equipment.

Static ignition hazard can result from handling and use. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Special precautions may be necessary to dissipate static electricity for non-conductive containers. Use proper bonding and grounding during product transfer as described in National Fire Protection Association document NFPA 77. |
| Advice on safe handling | : Open drum carefully as content may be under pressure.
Avoid formation of aerosol. |

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Provide sufficient air exchange and/or exhaust in work rooms.
 Do not breathe vapours/dust.
 Do not smoke.
 Persons susceptible to skin sensitisation problems or asthma,
 allergies, chronic or recurrent respiratory disease should not
 be employed in any process in which this mixture is being
 used.
 Container hazardous when empty.
 Take precautionary measures against static discharges.
 Avoid exposure - obtain special instructions before use.
 Avoid contact with skin and eyes.
 Smoking, eating and drinking should be prohibited in the
 application area.
 For personal protection see section 8.
 Dispose of rinse water in accordance with local and national
 regulations.
 Secondary operations, such as grinding and sanding, may
 produce dust.
 Maintain good housekeeping. Do not permit dust layers to
 accumulate, for example, on floors, ledges, and equipment, in
 order to avoid any potential for dust explosion hazards.

For further guidance on prevention of dust explosions, refer to
 National Fire Protection Association (NFPA) 654: "Standard
 for the Prevention of Fire and Dust Explosions, from the
 Manufacturing, Processing and Handling of Combustible
 Particulate Solids".

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated
 place.
 Containers which are opened must be carefully resealed and
 kept upright to prevent leakage.
 Observe label precautions.
 No smoking.

Further information on storage stability : No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Styrene	100-42-5	TWA	50 ppm	NIOSH REL

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			215 mg/m ³	
		ST	100 ppm 425 mg/m ³	NIOSH REL
		TWA	100 ppm	OSHA Z-2
		CEIL	200 ppm	OSHA Z-2
		Peak	600 ppm	OSHA Z-2
		TWA	50 ppm 215 mg/m ³	OSHA P0
		STEL	100 ppm 425 mg/m ³	OSHA P0
		C	500 ppm	CAL PEL
		PEL	50 ppm 215 mg/m ³	CAL PEL
		STEL	100 ppm 425 mg/m ³	CAL PEL
		TWA	10 ppm	ACGIH
		STEL	20 ppm	ACGIH
DIVINYLBENZENE	1321-74-0	TWA	10 ppm	ACGIH
		TWA	10 ppm 50 mg/m ³	OSHA P0
		PEL	10 ppm 50 mg/m ³	CAL PEL
		TWA	10 ppm 50 mg/m ³	NIOSH REL

Hazardous components without workplace control parameters

Components	CAS-No.
ETHYLETHENYL BENZENE	28106-30-1
cobalt bis (2-ethylhexylethanoate)	136-52-7

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Styrene	100-42-5	Mandelic acid plus phenylglyoxylic acid	Urine	End of shift (As soon as possible after exposure ceases)	400 mg/g Creatinine	ZUS_A CGIHB
Remarks:	Nonspecific, See notice of Intended Changes (NIC), Adopted values or notations enclosed are those for which changes are proposed in the NIC					
		Styrene	Urine	End of shift (As	40 µg/l	ZUS_A CGIHB

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				soon as possible after exposure ceases)		
Remarks:	See notice of Intended Changes (NIC), Adopted values or notations enclosed are those for which changes are proposed in the NIC					

Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.
 Provide appropriate exhaust ventilation at places where dust is formed.

Personal protective equipment

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Filter type : Organic vapour type

Hand protection

Material : Laminate (Barrier© or Silvershield©)
 Break through time : 480 min
 Glove thickness : > 0.5 mm

Remarks : The exact break through time can be obtained from the protective glove producer and this has to be observed. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

Skin and body protection : Wear as appropriate:
 Impervious clothing
 Safety shoes
 Flame-resistant clothing
 Choose body protection according to the amount and concentration of the dangerous substance at the work place.
 Discard gloves that show tears, pinholes, or signs of wear.
 Wear resistant gloves (consult your safety equipment supplier).

Hygiene measures : Wash hands before breaks and at the end of workday.
 When using do not eat or drink.
 When using do not smoke.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Odour	: aromatic
Odour Threshold	: No data available
pH	: Not applicable
Melting point/freezing point	: not determined
Initial boiling point and boiling range	: 293 °F / 145 °C Value for Component
Flash point	: 29.4 °C Method: Seta closed cup
Evaporation rate	: 1 Ethyl Ether = 1
Flammability (solid, gas)	: May form combustible dust concentrations in air (during processing).
Flammability (liquids)	:
Flammability (liquids)	: Static Accumulating liquid
Upper explosion limit	: 6.1 %(V) Value for Component
Lower explosion limit	: 1.1 %(V) Value for Component
Vapour pressure	: 6 hPa (20 °C)
Relative vapour density	: > 1(Air = 1.0)
Relative density	: No data available
Density	: 1.078 g/cm ³ (25 °C)
Solubility(ies)	
Water solubility	: insoluble

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- Solubility in other solvents : No data available
- Partition coefficient: n-octanol/water : No data available
- Thermal decomposition : No data available
- Viscosity
 - Viscosity, dynamic : 635 - 750 mPa.s (25 °C)
 - Viscosity, kinematic : > 20.5 mm²/s (40 °C)
- Oxidizing properties : No data available

SECTION 10. STABILITY AND REACTIVITY

- Reactivity : No decomposition if stored and applied as directed.
- Chemical stability : Stable under recommended storage conditions.
- Possibility of hazardous reactions : Hazardous polymerisation may occur.
 Vapours may form explosive mixture with air.
 This product does not present a dust explosion hazard as delivered. However, fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source, is a potential dust explosion hazard.
- Conditions to avoid : excessive heat
 Exposure to air.
 Exposure to sunlight.
 Heat, flames and sparks.
- Incompatible materials : Acids
 aluminum
 aluminum chloride
 Bases
 brass
 Copper
 Copper alloys
 halogens
 iron chloride
 metal chlorides

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metal salts
Oxidizing agents
Peroxides

Hazardous decomposition
products

Hydrocarbons
Acetone
Carbon dioxide (CO₂)
Carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation
Skin contact
Eye Contact
Ingestion

Acute toxicity

Not classified based on available information.

Components:

Styrene:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 11.8 mg/l, 2770 ppm
Exposure time: 4 h
Test atmosphere: vapour

No observed adverse effect level (Humans): 100 ppm
Exposure time: 7 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: No adverse effect has been observed in acute dermal toxicity tests.

DIVINYLBENZENE:

Acute oral toxicity : LD50 (Rat): 9.3 g/kg

Acute inhalation toxicity : LC50 (Rat): > 30.8 mg/l
Exposure time: 4 h
Test atmosphere: vapour

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ETHYLETHENYL BENZENE:

Acute oral toxicity : LD50 (Rat): 9.3 g/kg

Acute inhalation toxicity : LC50 (Rat): > 30.8 mg/l
Exposure time: 4 h
Test atmosphere: vapour

LC50 (Rat): > 30.8 mg/l
Exposure time: 4 h
Test atmosphere: vapour

cobalt bis (2-ethylhexylethanoate):

Acute oral toxicity : LD50 (Rat, female): ca. 3,129 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 10 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist
Assessment: Not classified as acutely toxic by inhalation
under GHS., No adverse effect has been observed in acute
inhalation toxicity tests.

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Product:

Result: Repeated exposure may cause skin dryness or cracking.

Remarks: May cause skin irritation and/or dermatitis.

Components:

Styrene:

Species: Rabbit

Result: Irritating to skin.

Species: human skin

Result: No skin irritation

DIVINYLBENZENE:

Result: Irritating to skin.

ETHYLETHENYL BENZENE:

Result: Irritating to skin.

cobalt bis (2-ethylhexylethanoate):


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Result: No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Product:

Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin., Causes serious eye irritation.

Components:

Styrene:

Result: Irritating to eyes.

Remarks: Vapour during processing may be irritating to the respiratory tract and to the eyes.

DIVINYLBENZENE:

Result: Irritating to eyes.

ETHYLETHENYL BENZENE:

Result: Irritating to eyes.

cobalt bis (2-ethylhexylethanoate):

Species: Rabbit

Result: Irritating to eyes.

Method: OECD Test Guideline 405

Respiratory or skin sensitisation

Skin sensitisation: May cause an allergic skin reaction.

Respiratory sensitisation: Not classified based on available information.

Components:

Styrene:

Exposure routes: Skin contact

Species: Guinea pig

Assessment: Does not cause skin sensitisation.

Result: negative

Exposure routes: inhalation (vapour)

Species: Humans

Assessment: Does not cause respiratory sensitisation.

Result: negative

DIVINYLBENZENE:

Assessment: May cause sensitisation by skin contact.

ETHYLETHENYL BENZENE:

Assessment: May cause sensitisation by skin contact.

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cobalt bis (2-ethylhexylethanoate):

Test Type: Local lymph node assay

Species: Mouse

Assessment: The product is a skin sensitizer, sub-category 1A.

Method: OECD Test Guideline 429

Germ cell mutagenicity

Not classified based on available information.

Components:

cobalt bis (2-ethylhexylethanoate):

Genotoxicity in vitro : Test Type: Ames test

Result: negative

Genotoxicity in vivo

: Test Type: In vivo micronucleus test

Result: negative

Carcinogenicity

Not classified based on available information.

Product:

Carcinogenicity -

: Styrene has been tested for carcinogenicity in rats and mice.

Assessment

Styrene caused lung tumors in mice only. These tumors are not considered to be relevant to humans.

Reproductive toxicity

May damage fertility or the unborn child.

Components:

DIVINYLBENZENE:

Reproductive toxicity -

: Some evidence of adverse effects on development, based on

Assessment

animal experiments.

cobalt bis (2-ethylhexylethanoate):

Reproductive toxicity -

: Clear evidence of adverse effects on sexual function and

Assessment

fertility, based on animal experiments., Some evidence of adverse effects on development, based on animal experiments.

STOT - single exposure

May cause respiratory irritation.

Components:

Styrene:

Assessment: May cause respiratory irritation.

DIVINYLBENZENE:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.


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ETHYLETHENYL BENZENE:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

STOT - repeated exposure

Causes damage to organs (Auditory system) through prolonged or repeated exposure if inhaled.

Components:

Styrene:

Exposure routes: inhalation (vapour)

Target Organs: Auditory system

Assessment: Causes damage to organs through prolonged or repeated exposure.

Repeated dose toxicity
Components:

Styrene:

Species: Human

85 mg/m³

Application Route: inhalation (vapour)

Species: Human

615 mg/kg

Application Route: Skin contact

Aspiration toxicity

Not classified based on available information.

Components:

Styrene:

May be fatal if swallowed and enters airways.

Further information
Product:

Remarks: Solvents may degrease the skin.

Components:

DIVINYLBENZENE:

Remarks: Ingestion

Remarks: Skin and/or eye contact

Remarks: Inhalation

Carcinogenicity:

IARC

Group 2A: Probably carcinogenic to humans

Styrene

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OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	Reasonably anticipated to be a human carcinogen
	Styrene 100-42-5

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Ecotoxicology Assessment
 Short-term (acute) aquatic hazard : Acute aquatic toxicity Category 1; Very toxic to aquatic life.

Long-term (chronic) aquatic hazard : Chronic aquatic toxicity Category 1; Very toxic to aquatic life with long lasting effects.

Components:

Styrene:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 4.02 mg/l
 Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 4.7 mg/l
 Exposure time: 48 h

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 4.9 mg/l
 Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 1.01 mg/l
 Exposure time: 21 d

Toxicity to bacteria : EC50 (activated sludge): ca. 500 mg/l
 Exposure time: 0.5 h

Toxicity to soil dwelling organisms : NOEC (Eisenia fetida (earthworms)): 34 mg/kg
 Exposure time: 14 d
 Method: OECD Test Guideline 207

DIVINYLBENZENE:

Toxicity to fish : LC50 (Fish): 0.1 - 1 mg/l
 Exposure time: 96 h

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Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.69 mg/l
 Exposure time: 48 h
 Test Type: flow-through test
 Method: OECD Test Guideline 202

ETHYLETHENYL BENZENE:

Toxicity to fish : LC50 (Fish): 0.1 - 1 mg/l
 Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.69 mg/l
 Exposure time: 48 h
 Test Type: flow-through test
 Method: OECD Test Guideline 202

cobalt bis (2-ethylhexylethanoate):
 M-Factor (Short-term (acute) aquatic hazard) : 1

Ecotoxicology Assessment
 Short-term (acute) aquatic hazard : Very toxic to aquatic life.

Long-term (chronic) aquatic hazard : Harmful to aquatic life with long lasting effects.

Persistence and degradability

Components:

Styrene:

Biodegradability : Result: Readily biodegradable.
 Biodegradation: > 60 %
 Exposure time: 10 d

DIVINYLBENZENE:

Biodegradability : Result: Not readily biodegradable.
 Biodegradation: 0 %
 Exposure time: 35 d
 Method: OECD Test Guideline 301F

ETHYLETHENYL BENZENE:

Biodegradability : Result: Not readily biodegradable.
 Biodegradation: 0 %
 Exposure time: 35 d
 Method: OECD Test Guideline 301F

cobalt bis (2-ethylhexylethanoate):
 Biodegradability : Result: Readily biodegradable.

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Biodegradation: 60 %
 Exposure time: 10 d
 Method: OECD Test Guideline 301B

No data available

Bioaccumulative potential

Components:

Styrene:

Bioaccumulation : Bioconcentration factor (BCF): < 100

Partition coefficient: n-octanol/water : log Pow: 2.96 (25 °C)

DIVINYLBENZENE:
 Partition coefficient: n-octanol/water : log Pow: 3.59

No data available

Mobility in soil

Components:

Styrene:

Distribution among environmental compartments : Koc: 352

No data available

Other adverse effects

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Very toxic to aquatic life with long lasting effects.

Components:

Styrene:

Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

cobalt bis (2-ethylhexylethanoate):
 Results of PBT and vPvB assessment : Remarks: Not applicable

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice : The product should not be allowed to enter drains, water

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courses or the soil.

Do not contaminate ponds, waterways or ditches with chemical or used container.

Send to a licensed waste management company.

Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION**International transport regulations****REGULATION**

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
-----------	----------------------	---------------	--------------------	---------------	------------------------------

MX_DG

UN 1866	RESIN SOLUTION	3		III	
---------	----------------	---	--	-----	--

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

UN 1866	Resin solution	3		III	
---------	----------------	---	--	-----	--

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

UN 1866	Resin solution	3		III	
---------	----------------	---	--	-----	--

INTERNATIONAL MARITIME DANGEROUS GOODS

UN 1866	RESIN SOLUTION	3		III	MARINE POLLUTANT:(DIVINYLBENZENE, ETHYLETHENYL BENZENE)
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TDG_INWT_C

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UN	1866	RESIN SOLUTION	3	III	MARINE POLLUTANT:(DIVINYLBENZ ENE, ETHYLETHEN YL BENZENE)
----	------	----------------	---	-----	--

TDG_RAIL_C

UN	1866	RESIN SOLUTION	3	III	
----	------	----------------	---	-----	--

TDG_ROAD_C

UN	1866	RESIN SOLUTION	3	III	
----	------	----------------	---	-----	--

U.S. DOT - INLAND WATERWAYS

UN	1866	Resin solution	3	III	MARINE POLLUTANT:(DIVINYLBENZ ENE, ETHYLETHEN YL BENZENE)
----	------	----------------	---	-----	--

CFR_RAIL_C

UN	1866	Resin solution	3	III	MARINE POLLUTANT:(DIVINYLBENZ ENE, ETHYLETHEN YL BENZENE)
----	------	----------------	---	-----	--

U.S. DOT - ROAD

UN	1866	Resin solution	3	III	MARINE POLLUTANT:(DIVINYLBENZ ENE, ETHYLETHEN YL BENZENE)
----	------	----------------	---	-----	--

*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID

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Marine pollutant	yes
------------------	-----

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15. REGULATORY INFORMATION**TSCA list**

The following substance(s) is/are subject to TSCA 12(b) export notification requirements:

ETHYLETHENYL BENZENE 28106-30-1

The following substance(s) is/are subject to a Significant New Use Rule:

ETHYLETHENYL BENZENE 28106-30-1

EPCRA - Emergency Planning and Community Right-to-Know Act**CERCLA Reportable Quantity**

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Styrene	100-42-5	1000	3173

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
HYDROQUINONE	123-31-9	100	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 311/312 Hazards

: Flammable (gases, aerosols, liquids, or solids)
 Combustible Dust
 Hazard not otherwise classified (physical hazards)
 Skin corrosion or irritation
 Serious eye damage or eye irritation
 Respiratory or skin sensitisation
 Reproductive toxicity
 Specific target organ toxicity (single or repeated exposure)

SARA 302

: This material does not contain any components with a section 302 EHS TPQ.

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SARA 313The following components are subject to reporting levels
established by SARA Title III, Section 313:

Styrene 100-42-5 31.50 %

California Prop. 65

WARNING: This product can expose you to chemicals including styrene, ethylbenzene, naphthalene, cumene, benzene, which is/are known to the State of California to cause cancer, and ethylene glycol, benzene, toluene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

The components of this product are reported in the following inventories:

DSL	: This product contains one or several components that are not on the Canadian DSL and have annual quantity limits.
AICS	: Not in compliance with the inventory
ENCS	: Not in compliance with the inventory
KECI	: Not in compliance with the inventory
PICCS	: Not in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: On or in compliance with the active portion of the TSCA inventory

Inventories

AIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TECI (Thailand), TSCA (USA)

SECTION 16. OTHER INFORMATION**Further information**

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NFPA:	HMIS III:						
<p>The diagram is a diamond shape divided into four quadrants. The top quadrant is red with the number '3'. The left quadrant is blue with the number '2'. The right quadrant is yellow with the number '2'. The bottom quadrant is white and empty. Labels 'Flammability', 'Health', 'Instability', and 'Special hazard' are placed around the diamond.</p>	<table border="1"> <tr> <td style="background-color: blue; color: white;">HEALTH</td> <td style="text-align: center;">2*</td> </tr> <tr> <td style="background-color: red; color: white;">FLAMMABILITY</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="background-color: yellow; color: black;">PHYSICAL HAZARD</td> <td style="text-align: center;">2</td> </tr> </table> <p>0 = not significant, 1 = Slight, 2 = Moderate, 3 = High 4 = Extreme, * = Chronic</p>	HEALTH	2*	FLAMMABILITY	3	PHYSICAL HAZARD	2
HEALTH	2*						
FLAMMABILITY	3						
PHYSICAL HAZARD	2						

NFPA Flammable and Combustible Liquids Classification

Flammable Liquid Class IC

Full text of H-Statements

- | | |
|--------|--|
| H226 | Flammable liquid and vapor. |
| H227 | Combustible liquid. |
| H304 | May be fatal if swallowed and enters airways. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H319 | Causes serious eye irritation. |
| H332 | Harmful if inhaled. |
| H335 | May cause respiratory irritation. |
| H360Fd | May damage fertility. Suspected of damaging the unborn child. |
| H361 | Suspected of damaging fertility or the unborn child. |
| H372 | Causes damage to organs through prolonged or repeated exposure if inhaled. |

Sources of key data used to compile the Safety Data Sheet
 INEOS internal data including own and sponsored test reports
 The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the


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information is current, applicable, and suitable to their circumstances. This SDS has been prepared by INEOS's Environmental Health and Safety Department +1-614-790-9299 (in US).

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative



Revision Number: 008.0

Issue date: 01/05/2018

1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	LOCTITE FREKOTE PMC KNOWN AS LOCTITE FREKOTE PM CL	IDH number:	420461
Product type:	Solvent cleaner	Item number:	83562
Restriction of Use:	None identified	Region:	United States
Company address:	Henkel Corporation One Henkel Way Rocky Hill, Connecticut 06067	Contact information:	Telephone: +1 (860) 571-5100 MEDICAL EMERGENCY Phone: Poison Control Center 1-877-671-4608 (toll free) or 1-303-592-1711 TRANSPORT EMERGENCY Phone: CHEMTREC 1-800-424-9300 (toll free) or 1-703-527-3887 Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER: HIGHLY FLAMMABLE LIQUID AND VAPOR.
MAY BE FATAL IF SWALLOWED AND ENTERS AIRWAYS.
CAUSES SKIN IRRITATION.
CAUSES SERIOUS EYE IRRITATION.
MAY CAUSE DROWSINESS OR DIZZINESS.
SUSPECTED OF DAMAGING FERTILITY OR THE UNBORN CHILD.
MAY CAUSE DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE.

HAZARD CLASS	HAZARD CATEGORY
FLAMMABLE LIQUID	2
SKIN IRRITATION	2
EYE IRRITATION	2A
REPRODUCTIVE TOXICITY	2
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	3
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE	2
ASPIRATION HAZARD	1

PICTOGRAM(S)



Precautionary Statements

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, sparks, open flames, hot surfaces - no smoking. Keep container tightly closed. No release into water. Use explosion-proof equipment. Use non-sparking tools. Take action to prevent static discharges. Do not breathe vapors, mist, or spray. Wash affected area thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves, clothing, eye and face protection.

Response: IF SWALLOWED: Immediately call a physician or poison control center. If on skin (or hair): Take off immediately all contaminated clothing. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical attention. Do NOT induce vomiting. If skin irritation occurs: Get medical attention. If eye irritation persists: Get medical attention. Take off contaminated clothing. In case of fire: Use foam, dry chemical or carbon dioxide to extinguish.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Toluene	108-88-3	50 - 60
Methyl ethyl ketone	78-93-3	40 - 50

* Exact percentages may vary or are trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Skin contact: Remove contaminated clothing and footwear. Immediately flush skin with plenty of water (using soap, if available). If symptoms develop and persist, get medical attention. Wash clothing before reuse.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get immediate medical attention.

Ingestion: Keep individual calm. Do not induce vomiting: contains petroleum distillates and/or aromatic solvents. Never give anything by mouth to an unconscious person. If vomiting occurs, prevent aspiration by keeping the patient's head below the knees. Get immediate medical attention.

Symptoms: See Section 11.

Notes to physician: This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity when deciding whether to induce vomiting.

5. FIRE FIGHTING MEASURES

Extinguishing media: Water spray (fog), foam, dry chemical or carbon dioxide. In case of fire, keep containers cool with water spray.

Special firefighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Unusual fire or explosion hazards: Closed containers may rupture (due to build up of pressure) when exposed to extreme heat. Vapors are heavier than air and may travel along floor to an ignition source.

Hazardous combustion products:

Oxides of carbon. Acrid smoke and fumes.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:

Do not allow product to enter sewer or waterways.

Clean-up methods:

Ensure adequate ventilation. Remove all sources of ignition. Keep upwind of the spilled material and isolate exposure. Spilled liquid is combustible and can be ignited by heat, flames, sparks, or other sources of ignition. Use non-sparking tools for clean-up. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Store in a partly filled, closed container until disposal. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up.

7. HANDLING AND STORAGE

Handling:

Remove all sources of ignition. During use and until all vapors are gone: Keep area ventilated - do not smoke; extinguish all flames, pilot lights, and heaters; turn off stoves, electrical tools and appliances, and any other sources of ignition. Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Do not taste or swallow. Make sure containers are properly grounded before use or transfer of material. For operations where eye or face contact could occur, provide safety shower and eyewash fountain. Refer to Section 8.

Storage:

Keep in a cool, well ventilated area away from heat, sparks and open flame. Keep container tightly closed until ready for use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Toluene	20 ppm TWA	200 ppm TWA 300 ppm Ceiling 500 ppm MAX. CONC 10 minutes	None	None
Methyl ethyl ketone	200 ppm TWA 300 ppm STEL	200 ppm (590 mg/m3) PEL	None	None

Engineering controls:

Use explosion-proof mechanical ventilation and local exhaust to control contaminants to within their occupational exposure limits during the use of this product.

Respiratory protection:

Use a NIOSH approved air-purifying respirator if the potential to exceed established exposure limits exists.

Eye/face protection:

Safety goggles or safety glasses with side shields. Full face protection should be used if the potential for splashing or spraying of product exists. Safety showers and eye wash stations should be available.

Skin protection:

Use chemical resistant, impermeable clothing including gloves and either an apron or body suit to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Colorless
Odor:	Solvent
Odor threshold:	Not available.
pH:	Not applicable
Vapor pressure:	267 mbar
Boiling point/range:	79.0 - 110.0 °C (174.2 - 230°F)
Melting point/ range:	Not available.
Specific gravity:	0.712
Vapor density:	Heavier than air
Flash point:	0 °C (32°F) HST-US E39F; PENSKY-MARTENS CLOSED CUP FLASH POINT
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Autoignition temperature:	480 °C (896°F) Estimated
Flammability:	Not applicable
Evaporation rate:	Slower than ether.
Solubility in water:	Slightly soluble
Partition coefficient (n-octanol/water):	Not available.
VOC content:	100 %
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of storage and use.
Hazardous reactions:	Will not occur.
Hazardous decomposition products:	Oxides of carbon.
Incompatible materials:	Reducing agents. Strong alkalis. Strong bases. Aldehydes. Hydrogen peroxide. Amines. Halogens. Ammonia.
Reactivity:	Not available.
Conditions to avoid:	Keep away from open flames, hot surfaces and sources of ignition. Store away from incompatible materials.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure:	Skin, Inhalation, Eyes, Ingestion
-------------------------------------	-----------------------------------

Potential Health Effects/Symptoms

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation. High vapor concentrations may cause central nervous system depression (headache, nausea, dizziness). Continued exposure may cause increased light-headedness, staggering, unconsciousness and even death.

Skin contact: Causes skin irritation. Solvent action can dry and defat the skin, causing the skin to crack, leading to dermatitis.

Eye contact: Causes serious eye irritation.

Ingestion: This product may be fatal if it is swallowed. Principal hazard of ingestion is aspiration into the lungs and subsequent pneumonitis. May cause central nervous system depression.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Toluene	Oral LD50 (Rat) = 2.6 g/kg Oral LD50 (Rat) = 5,000 mg/kg Dermal LD50 (Rabbit) = 12,124 mg/kg Inhalation LC50 (Rat, 4 h) = 8000 ppm	Behavioral, Cardiac, Central nervous system, Developmental, Ear, Irritant
Methyl ethyl ketone	Oral LD50 (Mouse) = 670 mg/kg Oral LD50 (Rat) = 2,300 - 3,500 mg/kg Oral LD50 (Rat) = 4,500 - 6,800 mg/kg Dermal LD50 (Rabbit) = > 8,000 mg/kg Inhalation LC50 (Rat, 4 h) = 11700 ppm	Irritant, Central nervous system

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Toluene	No	No	No
Methyl ethyl ketone	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: D001: Ignitable. D035: Methyl Ethyl Ketone.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Flammable liquids, n.o.s. (Toluene, Methyl ethyl ketone)
Hazard class or division: 3
Identification number: UN 1993
Packing group: II
DOT Hazardous Substance(s): Toluene, Methyl ethyl ketone

International Air Transportation (ICAO/IATA)

Proper shipping name: Flammable liquid, n.o.s. (Toluene, Methyl ethyl ketone)
Hazard class or division: 3
Identification number: UN 1993
Packing group: II

Water Transportation (IMO/IMDG)

Proper shipping name: FLAMMABLE LIQUID, N.O.S. (Toluene, Methyl ethyl ketone)
Hazard class or division: 3
Identification number: UN 1993
Packing group: II

15. REGULATORY INFORMATION**United States Regulatory Information**

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.

TSCA 12 (b) Export Notification: None above reporting de minimis

CERCLA/SARA Section 302 EHS: None above reporting de minimis.
CERCLA/SARA Section 311/312: Immediate Health, Delayed Health, Fire
CERCLA/SARA Section 313: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Toluene (CAS# 108-88-3). Methyl ethyl ketone (CAS# 78-93-3).

CERCLA Reportable quantity: Toluene (CAS# 108-88-3) 1,000 lbs. (454 kg)
Methyl ethyl ketone (CAS# 78-93-3) 5,000 lbs. (2,270 kg)

California Proposition 65: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Canada Regulatory Information

CEPA DSL/NDL Status: All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: Product Safety and Regulatory Affairs

Issue date: 01/05/2018

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SAFETY DATA SHEET

Zyvax® Sealer GP™



Section 1. Identification

Product name : Zyvax® Sealer GP™

Relevant identified uses of the substance or mixture and uses advised against

Mold Sealer

Supplier's details : Chem-Trend LP
1445 W McPherson Park Dr
PO Box 860, Howell MI 48844-0860
517-546-4520

Emergency telephone number and Telephone number : +1 517 546 4520

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms



Signal word : Danger

Hazard statements : Flammable liquid and vapor.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Causes serious eye irritation.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash thoroughly after handling.

Section 2. Hazards identification

- Response** : IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.
- Storage** : Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Hazards not otherwise classified** : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Solvent naphtha (petroleum), light arom.	≥50 - ≤75	64742-95-6
1,2,4-trimethylbenzene	≥25 - ≤50	95-63-6
xylene	≤2.1	1330-20-7
cumene	≤3	98-82-8

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Fire-fighting measures

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
1,2,4-trimethylbenzene	ACGIH TLV (United States, 3/2020). TWA: 25 ppm 8 hours.
xylene	ACGIH TLV (United States, 3/2020). TWA: 123 mg/m ³ 8 hours. ACGIH TLV (United States, 3/2020). TWA: 100 ppm 8 hours. TWA: 434 mg/m ³ 8 hours. STEL: 150 ppm 15 minutes. STEL: 651 mg/m ³ 15 minutes. OSHA PEL (United States, 5/2018). TWA: 100 ppm 8 hours. TWA: 435 mg/m ³ 8 hours.
cumene	ACGIH TLV (United States, 3/2020). TWA: 50 ppm 8 hours. OSHA PEL (United States, 5/2018). Absorbed through skin. TWA: 50 ppm 8 hours. TWA: 245 mg/m ³ 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Physical state	Liquid. [Clear sparkling liquid.]	Color	Colorless to light yellow.
Odor	Hydrocarbon.	Odor threshold	Not available.
pH	Not applicable.	Melting point	Not available.
Boiling point	100°C (212°F)	Flash point	Closed cup: 38°C (100.4°F) [Seta Flash]
Burning time	Not applicable.	Burning rate	Not applicable.
Evaporation rate	Not available.	Flammability (solid, gas)	Not available.
Lower and upper explosive (flammable) limits	Not available.	Vapor pressure	0.27 kPa (2.02 mm Hg) [room temperature]
Vapor density	>1 [Air = 1]	Relative density	0.87
Solubility	Insoluble in the following materials: cold water.	Solubility in water	Not available.
Partition coefficient: n-octanol/water	Not available.	Auto-ignition temperature	Not available.
Decomposition temperature	Not available.	SADT	Not available.
Viscosity	Kinematic (40°C (104°F)): <0.2 cm ² /s (<20 cSt)	Volatility	96.4

Lower and upper explosive (flammable) limits

xylene	Lower: 0.8% Upper: 6.7%
cumene	Lower: 0.9% Upper: 6.5%
1,2,4-trimethylbenzene	Lower: 0.9% Upper: 6.4%
Solvent naphtha (petroleum), light arom.	Lower: 1.4% Upper: 7.6%

Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
- Incompatible materials** : Reactive or incompatible with the following materials: oxidizing materials
- Hazardous decomposition products** : Formaldehyde and silicon dioxide may be evolved at elevated temperatures.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Solvent naphtha (petroleum), light arom.	LD50 Oral	Rat	8400 mg/kg	-
1,2,4-trimethylbenzene	LC50 Inhalation Vapor LD50 Oral	Rat Rat	18000 mg/m ³ 5 g/kg	4 hours -
xylene	LC50 Inhalation Gas. LD50 Oral	Rat Rat	5000 ppm 4300 mg/kg	4 hours -
cumene	LC50 Inhalation Vapor LD50 Oral	Rat Rat	39000 mg/m ³ 2.9 g/kg	4 hours -

- Irritation/Corrosion** : Causes serious eye irritation. Causes skin irritation. May cause respiratory irritation.
- Sensitization** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Carcinogenicity** : Suspected of causing cancer.
- Reproductive toxicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Name	Target organs
Solvent naphtha (petroleum), light arom.	Respiratory tract irritation Narcotic effects
1,2,4-trimethylbenzene	Respiratory tract irritation
xylene	Respiratory tract irritation
cumene	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Target organs
Solvent naphtha (petroleum), light arom.	-
xylene	-

Aspiration hazard

Section 11. Toxicological information

Name	Result
Solvent naphtha (petroleum), light arom. 1,2,4-trimethylbenzene xylene cumene	ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

<p>Eye contact</p> <p>Adverse symptoms may include the following: pain or irritation watering redness</p> <p>Inhalation</p> <p>Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness</p>	<p>Skin contact</p> <p>Adverse symptoms may include the following: irritation redness</p> <p>Ingestion</p> <p>Adverse symptoms may include the following: nausea or vomiting</p>
---	--

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	12852.08 mg/kg
Dermal	2615.96 mg/kg
Inhalation (gases)	312504.82 ppm
Inhalation (vapors)	52.5 mg/l

Section 11. Toxicological information

Section 12. Ecological information

No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification : D001 Because of its ignitability if the product is disposed of in its original form.

Section 14. Transport information

	DOT Classification	Bulk	TDG Classification	IATA	IMDG
UN number	UN1866	UN1866	UN1866	UN1866	UN1866
UN proper shipping name	Resin Solution	Resin solution	RESIN SOLUTION	Resin solution	RESIN SOLUTION (1,2,4-trimethylbenzene)
Transport hazard class(es)	3	3	3	3	3
Packing group	III	III	III	III	III
Environmental hazards	No.	Yes.	No.	No.	Yes.

Emergency Response Guidebook (ERG): 127

Additional information

Section 14. Transport information

- DOT Classification** : This product may be re-classified as "Combustible Liquid," unless transported by vessel or aircraft. Non-bulk packages (less than or equal to 119 gal) of combustible liquids are not regulated as hazardous materials in package sizes less than the product reportable quantity.
Reportable quantity 6018.7 lbs / 2732.5 kg [829.71 gal / 3140.8 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
Limited quantity Yes.
Packaging instruction Exceptions: 150. Non-bulk: 173. Bulk: 242.
Quantity limitation Passenger aircraft/rail: 60 L. Cargo aircraft: 220 L.
Special provisions B1, B52, IB3, T2, TP1
- TDG Classification** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).
Explosive Limit and Limited Quantity Index 5
Passenger Carrying Road or Rail Index 60
- IMDG** : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Emergency schedules F-E, _S-E_
Special provisions 223, 955
- IATA** : The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: 60 L. Packaging instructions: 355. Cargo Aircraft Only: 220 L. Packaging instructions: 366. Limited Quantities - Passenger Aircraft: 10 L. Packaging instructions: Y344.
Special provisions A3
- Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

Inventory list

- Australia** : All components are listed or exempted.
- Canada** : At least one component is not listed in DSL but all such components are listed in NDSL.
- China** : All components are listed or exempted.
- Europe** : Contact local supplier or distributor.
- Japan** : **Japan inventory (ENCS):** All components are listed or exempted.
Japan inventory (ISHL): All components are listed or exempted.
- New Zealand** : Not determined.
- Philippines** : All components are listed or exempted.
- Republic of Korea** : All components are listed or exempted.
- Taiwan** : All components are listed or exempted.
- United States** : All components are active or exempted.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)

Ingredient name	Status
xylene	Listed
cumene	Listed
ethylbenzene	Listed

SARA 302/304

Section 15. Regulatory information

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : FLAMMABLE LIQUIDS - Category 3
 SKIN IRRITATION - Category 2
 EYE IRRITATION - Category 2A
 CARCINOGENICITY - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
 ASPIRATION HAZARD - Category 1

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	1,2,4-trimethylbenzene	95-63-6	≥25 - ≤50
	xylene	1330-20-7	≤2.1
	cumene	98-82-8	≤3
	ethylbenzene	100-41-4	<1
Supplier notification	1,2,4-trimethylbenzene	95-63-6	≥25 - ≤50
	xylene	1330-20-7	≤2.1
	cumene	98-82-8	≤3
	ethylbenzene	100-41-4	<1

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts

: The following components are listed: PSEUDOCUMENE; XYLENE; DIMETHYLBENZENE; CUMENE; 1-METHYLETHYLBENZENE

New York

: The following components are listed: Xylene mixed; Cumene; Benzene, 1-methylethyl-; Ethylbenzene

New Jersey

: The following components are listed: PSEUDOCUMENE; 1,2,4-TRIMETHYL BENZENE; XYLENES; BENZENE, DIMETHYL-; CUMENE; BENZENE, (1-METHYLETHYL)-; ETHYL BENZENE; BENZENE, ETHYL-

Pennsylvania

: The following components are listed: PSEUDOCUMENE; BENZENE, DIMETHYL-; BENZENE, (1-METHYLETHYL)-; BENZENE, ETHYL-

California Prop. 65

⚠ WARNING: This product can expose you to chemicals including cumene and Ethylbenzene, which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health : 3 * Flammability : 2 Physical hazards : 0 Personal protection Code : H

National Fire Protection Association (U.S.A.)

Health : 1 Flammability : 2 Instability/Reactivity : 0 Special : -

History

Date of issue/Date of revision : 11/30/2020
Date of previous issue : 10/7/2020
Version : 3.06
Prepared by : Chem-Trend Regulatory Affairs Department.
Key to abbreviations : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations

✔ Indicates information that has changed from previously issued version.

Notice to reader

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SECTION 1. IDENTIFICATION

Product name : Chemlease® 41-90 EZ

Manufacturer or supplier's details

Company name of supplier : Chem-Trend LP
1445 W McPherson Park Dr
PO Box 860, Howell MI 48844-0860
United States
+1 517 546 4520

E-mail address of person responsible for the SDS : SDS-NA@chemtrend.com
Emergency telephone number : +1 517 545 7070

Recommended use of the chemical and restrictions on use

Recommended use : Release agent
Restrictions on use : For industrial use only.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids : Category 2
Skin irritation : Category 2
Specific target organ toxicity - single exposure : Category 3 (Central nervous system)
Aspiration hazard : Category 1

GHS label elements

Hazard pictograms :   

Signal word : Danger

Hazard statements : Highly flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.

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May cause drowsiness or dizziness.

Precautionary statements :

Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response:

IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Do NOT induce vomiting.
In case of fire: Use alcohol-resistant foam, carbon dioxide or water mist to extinguish.

Storage:

Store in a well-ventilated place. Keep cool.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Naphtha (petroleum), hydrotreated light	64742-49-0	Trade secret ($\geq 60 - < 80$)
Distillates (petroleum), hydrotreated light	64742-47-8	Trade secret ($\geq 10 - < 30$)
Naphtha (petroleum), hydrotreated heavy	64742-48-9	Trade secret ($\geq 5 - < 10$)

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

If inhaled :

Call a physician or poison control centre immediately.
Remove person to fresh air. If signs/symptoms continue, get medical attention.
Keep patient warm and at rest.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
If breathing is irregular or stopped, administer artificial

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- respiration.
- In case of skin contact : Take off all contaminated clothing immediately.
Wash off immediately with soap and plenty of water.
Get medical attention immediately if irritation develops and persists.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes.
If eye irritation persists, consult a specialist.
- If swallowed : Move the victim to fresh air.
If accidentally swallowed obtain immediate medical attention.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
Do NOT induce vomiting.
Rinse mouth with water.
Never give anything by mouth to an unconscious person.
Aspiration hazard if swallowed - can enter lungs and cause damage.
- Most important symptoms and effects, both acute and delayed : Central nervous system depression
Can be absorbed through skin.
Risk of product entering the lungs on vomiting after ingestion.
Health injuries may be delayed.
Causes skin irritation.
Inhalation may provoke the following symptoms:
Unconsciousness
Dizziness
Drowsiness
Headache
Nausea
Tiredness
Skin contact may provoke the following symptoms:
Erythema
Aspiration may cause pulmonary oedema and pneumonitis.
- Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Unsuitable extinguishing media : High volume water jet

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- Specific hazards during firefighting : Fire may cause evolution of:
Carbon oxides
- Do not let product enter drains.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
- Hazardous combustion products : Carbon oxides
- Further information : Standard procedure for chemical fires.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Cool containers/tanks with water spray.
- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.
Exposure to decomposition products may be a hazard to health.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas.
Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
Do not breathe vapours or spray mist.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Do not allow contact with soil, surface or ground water.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Non-sparking tools should be used.

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
- Advice on safe handling : Use only in an area containing explosion proof equipment.
Do not use in areas without adequate ventilation.

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Do not breathe vapours or spray mist.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin and eyes.
For personal protection see section 8.
Keep away from fire, sparks and heated surfaces.
Smoking, eating and drinking should be prohibited in the application area.
Wash hands and face before breaks and immediately after handling the product.
Ensure all equipment is electrically grounded before beginning transfer operations.
Do not get in eyes or mouth or on skin.
Do not get on skin or clothing.
Do not ingest.
Do not use sparking tools.
Do not enter areas where used or stored until adequately ventilated.
Do not repack.
Do not re-use empty containers.
These safety instructions also apply to empty packaging which may still contain product residues.
Keep container closed when not in use.

Conditions for safe storage : Store in original container.
Keep container closed when not in use.
Keep in a cool place away from oxidizing agents.
Keep in a dry, cool and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Store in accordance with the particular national regulations.
Keep in properly labelled containers.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Naphtha (petroleum), hydrotreated light	64742-49-0	TWA	500 ppm 2,000 mg/m ³	OSHA Z-1 (2007-01-01)
		TWA (Mist)	5 mg/m ³	OSHA Z-1 (2018-03-15)
		TWA (Mist)	5 mg/m ³	NIOSH REL (2019-10-04)
		ST (Mist)	10 mg/m ³	NIOSH REL (2019-10-04)
Distillates (petroleum),	64742-47-8	TWA (Mist)	5 mg/m ³	OSHA Z-1

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hydrotreated light				(2011-07-01)
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH (2010-03-01)
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH (2010-03-01)
		TWA (Mist)	5 mg/m3	OSHA P0 (1989-01-19)
		TWA (Mist)	5 mg/m3	NIOSH REL (2013-10-08)
		TWA (Mist)	5 mg/m3	OSHA Z-1 (2018-03-15)
		ST (Mist)	10 mg/m3	NIOSH REL (2013-10-08)
		TWA (Mist)	5 mg/m3	NIOSH REL (2019-10-04)
		ST (Mist)	10 mg/m3	NIOSH REL (2019-10-04)
Naphtha (petroleum), hydrotreated heavy	64742-48-9	TWA	500 ppm 2,000 mg/m3	OSHA Z-1 (2007-01-01)
		TWA	500 ppm 2,000 mg/m3	OSHA Z-1 (2007-01-01)
		TWA	400 ppm 1,600 mg/m3	OSHA P0 (1989-01-19)

Engineering measures : Use only in an area equipped with explosion proof exhaust ventilation.
 Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Hand protection

Remarks : Protective gloves The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case.

Eye protection : Safety glasses with side-shields

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : The type of protective equipment must be selected according

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to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures : Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : colourless

Odour : characteristic

Odour Threshold : No data available

pH : Not applicable

Melting point/range : No data available

Boiling point/boiling range : 219 °F / 104 °C

Flash point : 19 °F / -7 °C
Method: Pensky-Martens closed cup

Evaporation rate : No data available

Flammability (solid, gas) : Not applicable

Self-ignition : No data available

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapour pressure : No data available

Relative vapour density : No data available

Relative density : 0.72 (68 °F / 20 °C)

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Bulk density : No data available

Solubility(ies)
Water solubility : insoluble

Solubility in other solvents : No data available

Partition coefficient: n-octanol/water : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Viscosity
Viscosity, dynamic : No data available

Viscosity, kinematic : < 20.5 mm²/s (104 °F / 40 °C)

Explosive properties : Not explosive

Oxidizing properties : No data available

Sublimation point : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No hazards to be specially mentioned.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.

Conditions to avoid : Heat, flames and sparks.
Strong sunlight for prolonged periods.

Incompatible materials : Oxidizing agents

Hazardous decomposition products : >150 °C small quantities of formaldehyde may be formed.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

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Acute oral toxicity : Remarks: Effects due to ingestion may include:
Symptoms: Central nervous system depression

Acute inhalation toxicity : Remarks: Respiration of solvent vapour may cause dizziness.
Symptoms: Inhalation may provoke the following symptoms:,
Dizziness, Drowsiness, Vomiting, Fatigue, Vertigo, Central
nervous system depression

Acute dermal toxicity : Symptoms: Redness, Local irritation

Components:

Naphtha (petroleum), hydrotreated light:

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401

Distillates (petroleum), hydrotreated light:

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg

Naphtha (petroleum), hydrotreated heavy:

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg

Skin corrosion/irritation

Product:

Remarks : Irritating to skin.

Components:

Naphtha (petroleum), hydrotreated light:

Species : Rabbit
Result : Skin irritation

Naphtha (petroleum), hydrotreated heavy:

Result : Repeated exposure may cause skin dryness or cracking.

Serious eye damage/eye irritation

Product:

Remarks : Contact with eyes may cause irritation.

Respiratory or skin sensitisation

Product:

Remarks : This information is not available.

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Germ cell mutagenicity

Product:

Genotoxicity in vitro : Remarks: No data available

Genotoxicity in vivo : Remarks: No data available

Carcinogenicity

Product:

Remarks : No data available

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**IARC
OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Product:

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

STOT - single exposure

Components:

Naphtha (petroleum), hydrotreated light:

Assessment : May cause drowsiness or dizziness.

Distillates (petroleum), hydrotreated light:

Exposure routes : Inhalation

Assessment : May cause drowsiness or dizziness.

Repeated dose toxicity

Product:

Remarks : This information is not available.

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Aspiration toxicity

Product:

May be fatal if swallowed and enters airways.

Components:

Naphtha (petroleum), hydrotreated light:

May be fatal if swallowed and enters airways.

Distillates (petroleum), hydrotreated light:

May be fatal if swallowed and enters airways.

Naphtha (petroleum), hydrotreated heavy:

May be fatal if swallowed and enters airways.

Further information

Product:

Remarks : Ingestion causes irritation of upper respiratory system and gastrointestinal disturbance.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish :
Remarks: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Toxicity to daphnia and other aquatic invertebrates :
Remarks: No data available

Toxicity to algae/aquatic plants :
Remarks: No data available

Toxicity to microorganisms :
Remarks: No data available

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Components:

Naphtha (petroleum), hydrotreated light:

Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Distillates (petroleum), hydrotreated light:

Ecotoxicology Assessment

Acute aquatic toxicity : Harmful to aquatic life.

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Naphtha (petroleum), hydrotreated heavy:

Ecotoxicology Assessment

Acute aquatic toxicity : Toxic to aquatic life.

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Physico-chemical
removability : Remarks: No data available

Components:

Naphtha (petroleum), hydrotreated light:

Biodegradability : Remarks: No data available

Distillates (petroleum), hydrotreated light:

Biodegradability : Result: rapidly biodegradable

Naphtha (petroleum), hydrotreated heavy:

Biodegradability : Result: Readily biodegradable.

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Bioaccumulative potential

Product:

Bioaccumulation : Remarks: This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT). This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

Components:

Naphtha (petroleum), hydrotreated light:

Bioaccumulation : Bioconcentration factor (BCF): 10 - 2,500

Partition coefficient: n-octanol/water : log Pow: 2.2 - 5.2

Distillates (petroleum), hydrotreated light:

Bioaccumulation : Remarks: No data available

Partition coefficient: n-octanol/water : Remarks: No data available

Naphtha (petroleum), hydrotreated heavy:

Bioaccumulation : Remarks: No data available

Partition coefficient: n-octanol/water : Remarks: No data available

Mobility in soil

Product:

Mobility : Remarks: No data available

Distribution among environmental compartments : Remarks: No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was

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manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : Toxic to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not dispose of with domestic refuse.
Dispose of as hazardous waste in compliance with local and national regulations.

Contaminated packaging : Packaging that is not properly emptied must be disposed of as the unused product.
Dispose of waste product or used containers according to local regulations.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 1866
Proper shipping name : RESIN SOLUTION
Class : 3
Packing group : II
Labels : 3

IATA-DGR

UN/ID No. : UN 1866
Proper shipping name : Resin solution
Class : 3
Packing group : II
Labels : Flammable Liquids
Packing instruction (cargo aircraft) : 364
Packing instruction (passenger aircraft) : 353

IMDG-Code

UN number : UN 1866
Proper shipping name : RESIN SOLUTION
(Light aliphatic naphtha, distillates (petroleum), hydrotreated light)

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Class : 3
Packing group : II
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

49 CFR

UN/ID/NA number : UN 1866
Proper shipping name : Resin solution

Class : 3
Packing group : II
Labels : FLAMMABLE LIQUID
ERG Code : 127
Marine pollutant : yes(Light aliphatic naphtha, distillates (petroleum), hydrotreated light)

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Aspiration hazard
Skin corrosion or irritation
Specific target organ toxicity (single or repeated exposure)

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

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California Prop. 65

WARNING: This product can expose you to chemicals including Toluene, n-hexane, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

The components of this product are reported in the following inventories:

TSCA : All substances listed as active on the TSCA inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA P0 : USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA : 8-hour, time-weighted average
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST : STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA P0 / TWA : 8-hour time weighted average
OSHA Z-1 / TWA : 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50

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- Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 02/06/2023

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SAFETY DATA SHEET



Chemlease® R&B EZ

Section 1. Identification

Product name : Chemlease® R&B EZ

Relevant identified uses of the substance or mixture and uses advised against

**Use of the Substance/
Mixture** : Release Agent

Supplier's details : Chem-Trend LP
1445 W McPherson Park Dr
PO Box 860, Howell MI 48844-0860
517-546-4520

**Emergency telephone
number and Telephone
number** : +1 517 546 7070

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Classification of the
substance or mixture** : FLAMMABLE LIQUIDS - Category 2
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) -
Category 3
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Causes serious eye irritation.
May cause drowsiness or dizziness.

Precautionary statements

Prevention : Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash thoroughly after handling.

Section 2. Hazards identification

Response	: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.
Storage	: Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified	: None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Light aliphatic naphtha nonane	≥50 - ≤75	-
Naphtha (petroleum), hydrotreated heavy	≥10 - ≤16	111-84-2
Naphtha (petroleum), light alkylate	≥10 - ≤25	64742-48-9
Hydrocarbon naphthas	≤10	64741-66-8
	≤10	-

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact	: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Fire-fighting measures

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not swallow. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
nonane	ACGIH TLV (United States, 3/2020). TWA: 200 ppm 8 hours.
Naphtha (petroleum), light alkylate	TWA: 1050 mg/m ³ 8 hours. ACGIH TLV (United States).
Hydrocarbon naphthas	TWA: 1200 mg/m ³ ACGIH TLV (United States, 3/2020). Absorbed through skin. TWA: 200 mg/m ³ , (as total hydrocarbon vapor) 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Physical state	Liquid.	Color	Clear. Colorless
Odor	Solvent Amine-like.	Odor threshold	Not available.
pH	Not applicable.	Melting point	Not available.
Boiling point	137.8°C (280°F)	Flash point	Closed cup: -2.8°C (27°F) [Setaflash.]
Burning time	Not applicable.	Burning rate	Not applicable.
Evaporation rate	Not available.	Flammability (solid, gas)	Not available.
Lower and upper explosive (flammable) limits	Not available.	Vapor pressure	Not available.
Vapor density	>1 [Air = 1]	Relative density	0.76
Solubility	Insoluble in the following materials: cold water.	Solubility in water	Not available.
Partition coefficient: n-octanol/water	Not available.	Auto-ignition temperature	Not available.
Decomposition temperature	Not available.	SADT	Not available.
Viscosity	Kinematic (40°C (104°F)): <0.2 cm ² /s (<20 cSt)	Volatility	97.5

Lower and upper explosive (flammable) limits

Distillates (petroleum), hydrotreated light nonane	Lower: 0.6% Upper: 5.5%
Naphtha (petroleum), hydrotreated light	Lower: 0.8% Upper: 2.9%
Naphtha (petroleum), light alkylate	Lower: 1.05% Upper: 7.6%
Naphtha (petroleum), hydrotreated heavy	Lower: 1.4% Upper: 7.6%

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Section 10. Stability and reactivity

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials

Hazardous decomposition products : Formaldehyde and silicon dioxide may be evolved at elevated temperatures.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
nonane	LC50 Inhalation Gas.	Rat	3200 ppm	4 hours
	LC50 Inhalation Vapor	Rat	17000 mg/m ³	4 hours
Naphtha (petroleum), hydrotreated heavy	LD50 Oral	Rat	>6 g/kg	-
Naphtha (petroleum), light alkylate	LC50 Inhalation Vapor	Rat	21 mg/l	4 hours
	LD50 Oral	Rat	>5000 mg/kg	-

Irritation/Corrosion : Causes serious eye irritation. Causes skin irritation.

Sensitization : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Name	Target organs
Light aliphatic naphtha	Narcotic effects
Naphtha (petroleum), light alkylate	Narcotic effects
Hydrocarbon naphthas	Narcotic effects

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Name	Result
Light aliphatic naphtha	ASPIRATION HAZARD - Category 1
nonane	ASPIRATION HAZARD - Category 1
Naphtha (petroleum), hydrotreated heavy	ASPIRATION HAZARD - Category 1
Naphtha (petroleum), light alkylate	ASPIRATION HAZARD - Category 1
Hydrocarbon naphthas	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Section 11. Toxicological information

- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

<p>Eye contact</p> <p>Adverse symptoms may include the following: pain or irritation watering redness</p> <p>Inhalation</p> <p>Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness</p>	<p>Skin contact</p> <p>Adverse symptoms may include the following: irritation redness</p> <p>Ingestion</p> <p>Adverse symptoms may include the following: nausea or vomiting</p>
---	--

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Inhalation (gases)	21951.64 ppm
Inhalation (vapors)	71.84 mg/l

Section 12. Ecological information

No known significant effects or critical hazards.

Section 13. Disposal considerations

- Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a

Section 13. Disposal considerations

safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification : D001 Because of its ignitability if the product is disposed of in its original form.

Section 14. Transport information

	DOT Classification	Bulk	TDG Classification	IATA	IMDG
UN number	UN1993	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	Flammable liquids, n.o.s. (Light aliphatic naphtha, Hydrocarbon naphthas)	FLAMMABLE LIQUIDS, N.O.S. (Hydrocarbon naphthas, Light aliphatic naphtha)	FLAMMABLE LIQUID, N.O.S. (Light aliphatic naphtha, Hydrocarbon naphthas)	Flammable liquid, n.o.s. (Light aliphatic naphtha, Hydrocarbon naphthas)	FLAMMABLE LIQUID, N.O.S. (Light aliphatic naphtha, Hydrocarbon naphthas)
Transport hazard class(es)	3	3	3	3	3
Packing group	II	II	II	II	II
Environmental hazards	No.	Yes.	No.	No.	Yes.

Emergency Response Guidebook (ERG): 128

Additional information

DOT Classification : **Limited quantity** Yes.

Packaging instruction Exceptions: 150. Non-bulk: 202. Bulk: 242.

Quantity limitation Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.

Special provisions IB2, T7, TP1, TP8, TP28

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).

Explosive Limit and Limited Quantity Index 1

Passenger Carrying Road or Rail Index 5

Special provisions 16, 150

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

Emergency schedules F-E, _S-E_

Special provisions 274

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.

Quantity limitation Passenger and Cargo Aircraft: 5 L. Packaging instructions: 353.

Cargo Aircraft Only: 60 L. Packaging instructions: 364. Limited Quantities - Passenger Aircraft: 1 L. Packaging instructions: Y341.

Special provisions A3

Section 14. Transport information

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

Inventory list

Canada : At least one component is not listed in DSL but all such components are listed in NDSL.

United States : All components are active or exempted.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)

Not applicable.

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : FLAMMABLE LIQUIDS - Category 2
 SKIN IRRITATION - Category 2
 EYE IRRITATION - Category 2A
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
 ASPIRATION HAZARD - Category 1

State regulations

Massachusetts : The following components are listed: NONANE

New York : None of the components are listed.

New Jersey : The following components are listed: NONANE

Pennsylvania : The following components are listed: NONANE

California Prop. 65

 **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

U.S. Federal regulations : **TSCA 12(b) one-time export:** nonane

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health : 3 / **Flammability :** 3 **Physical hazards :** 0 **Personal protection Code :** H

History

Date of issue/Date of revision : 3/10/2021

Date of previous issue : No previous validation

Version : 0.01

Prepared by : Chem-Trend Regulatory Affairs Department.

Section 16. Other information

Key to abbreviations

- : ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations

✔ Indicates information that has changed from previously issued version.

Notice to reader

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SECTION 1. IDENTIFICATION

Product name : Chemlease® MPP 2180

Manufacturer or supplier's details

Company name of supplier : Chem-Trend LP
1445 W McPherson Park Dr
PO Box 860, Howell MI 48844-0860
United States
+1 517 546 4520

E-mail address of person responsible for the SDS : SDS-NA@chemtrend.com
Emergency telephone number : +1 517 545 7070

Recommended use of the chemical and restrictions on use

Recommended use : Sealant
Restrictions on use : For industrial use only.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids : Category 2
Acute toxicity (Oral) : Category 4
Acute toxicity (Inhalation) : Category 4
Acute toxicity (Dermal) : Category 4
Skin irritation : Category 2
Eye irritation : Category 2A
Skin sensitisation : Category 1
Reproductive toxicity : Category 1B
Specific target organ toxicity - single exposure : Category 1
Specific target organ toxicity : Category 3 (Respiratory system)

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- single exposure

Aspiration hazard : Category 1

GHS label elements

Hazard pictograms :   

Signal word : Danger

Hazard statements : Highly flammable liquid and vapour.
Harmful if swallowed, in contact with skin or if inhaled.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause respiratory irritation.
May damage fertility or the unborn child.
Causes damage to organs.

Precautionary statements : **Prevention:**
Obtain special instructions before use.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water.
IF exposed or concerned: Call a POISON CENTER/ doctor.
Do NOT induce vomiting.
In case of fire: Use alcohol-resistant foam, carbon dioxide or water mist to extinguish.

Storage:
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Benzene, 1,2-dimethyl-	95-47-6	Trade secret ($\geq 10 - < 30$)
Naphtha (petroleum), light alkylate	64741-66-8	Trade secret ($\geq 10 - < 30$)
Methanol	67-56-1	Trade secret ($\geq 10 - < 30$)
3-butoxypropan-2-ol	5131-66-8	Trade secret ($\geq 1 - < 5$)
dibutyltin dilaurate	77-58-7	Trade secret ($\geq 0.1 - < 1$)

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

- If inhaled : Call a physician or poison control centre immediately.
Remove person to fresh air. If signs/symptoms continue, get medical attention.
Keep patient warm and at rest.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
If breathing is irregular or stopped, administer artificial respiration.
- In case of skin contact : Take off all contaminated clothing immediately.
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
Get medical attention immediately if irritation develops and persists.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes.
Get medical attention immediately.
- If swallowed : Move the victim to fresh air.
If accidentally swallowed obtain immediate medical attention.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
Do NOT induce vomiting.
Rinse mouth with water.
Never give anything by mouth to an unconscious person.
Aspiration hazard if swallowed - can enter lungs and cause damage.
- Most important symptoms and effects, both acute and : Inhalation may provoke the following symptoms:
Unconsciousness

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delayed

Dizziness
Drowsiness
Headache
Nausea
Tiredness
Skin contact may provoke the following symptoms:
Erythema
Allergic appearance
Aspiration may cause pulmonary oedema and pneumonitis.
Central nervous system depression
Can be absorbed through skin.
Risk of product entering the lungs on vomiting after ingestion.
Health injuries may be delayed.
Causes skin irritation.
May cause an allergic skin reaction.

Notes to physician : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.
Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : Do not let product enter drains.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Hazardous combustion products : Carbon oxides
Metal oxides

Further information : Standard procedure for chemical fires.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Cool containers/tanks with water spray.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.
Exposure to decomposition products may be a hazard to health.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and : Evacuate personnel to safe areas.
Use personal protective equipment.

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- emergency procedures Ensure adequate ventilation.
Remove all sources of ignition.
Do not breathe vapours or spray mist.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Do not allow contact with soil, surface or ground water.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform
respective authorities.
- Methods and materials for
containment and cleaning up : Contain spillage, and then collect with non-combustible
absorbent material, (e.g. sand, earth, diatomaceous earth,
vermiculite) and place in container for disposal according to
local / national regulations (see section 13).
Non-sparking tools should be used.

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
- Advice on safe handling : Use only in an area containing explosion proof equipment.
Do not use in areas without adequate ventilation.
Do not breathe vapours or spray mist.
In case of insufficient ventilation, wear suitable respiratory
equipment.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Keep away from fire, sparks and heated surfaces.
Persons with a history of skin sensitisation problems or
asthma, allergies, chronic or recurrent respiratory disease
should not be employed in any process in which this mixture is
being used.
Smoking, eating and drinking should be prohibited in the
application area.
Wash hands and face before breaks and immediately after
handling the product.
Ensure all equipment is electrically grounded before beginning
transfer operations.
Do not get in eyes or mouth or on skin.
Do not get on skin or clothing.
Do not ingest.
Do not use sparking tools.
Do not enter areas where used or stored until adequately
ventilated.
Do not repack.
Do not re-use empty containers.
These safety instructions also apply to empty packaging which

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may still contain product residues.
Keep container closed when not in use.

Conditions for safe storage : Store in original container.
Keep container closed when not in use.
Keep in a cool place away from oxidizing agents.
Keep in a dry, cool and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Store in accordance with the particular national regulations.
Keep in properly labelled containers.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Benzene, 1,2-dimethyl-	95-47-6	TWA	100 ppm 435 mg/m3	NIOSH REL (2013-10-08)
		ST	150 ppm 655 mg/m3	NIOSH REL (2013-10-08)
		TWA	100 ppm 435 mg/m3	OSHA Z-1 (2012-07-01)
		TWA	100 ppm	ACGIH (2021-01-01)
		STEL	150 ppm	ACGIH (2021-01-01)
Naphtha (petroleum), light alkylate	64741-66-8	TWA	500 ppm 2,000 mg/m3	OSHA Z-1 (2007-01-01)
		TWA (Mist)	5 mg/m3	OSHA Z-1 (2018-03-15)
		TWA (Mist)	5 mg/m3	NIOSH REL (2019-10-04)
		ST (Mist)	10 mg/m3	NIOSH REL (2019-10-04)
Methanol	67-56-1	TWA	200 ppm	ACGIH (2013-03-01)
		STEL	250 ppm	ACGIH (2013-03-01)
		TWA	200 ppm 260 mg/m3	NIOSH REL (2013-10-08)
		ST	250 ppm 325 mg/m3	NIOSH REL (2013-10-08)
dibutyltin dilaurate	77-58-7	TWA	200 ppm 260 mg/m3	OSHA Z-1 (1997-08-04)
		TWA	0.1 mg/m3	OSHA Z-1

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			(Tin)	(1997-08-04)
		TWA	0.1 mg/m ³ (Tin)	ACGIH (2013-03-01)
		STEL	0.2 mg/m ³ (Tin)	ACGIH (2013-03-01)
		TWA	0.1 mg/m ³ (Tin)	NIOSH REL (2013-10-08)

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Benzene, 1,2-dimethyl-	95-47-6	Methylhippuric acids	Urine	End of shift (As soon as possible after exposure ceases)	1.5 g/g creatinine	ACGIH BEI (2013-03-01)
Methanol	67-56-1	Methanol	Urine	End of shift (As soon as possible after exposure ceases)	15 mg/l	ACGIH BEI (2007-01-01)

Engineering measures : Use only in an area equipped with explosion proof exhaust ventilation.
Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Hand protection

Material : Nitrile rubber
Break through time : > 10 min
Protective index : Class 1

Remarks : Wear protective gloves. The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case.

Eye protection : Safety glasses with side-shields

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

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Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures : Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid (68 °F / 20 °C)

Colour : colourless

Odour : solvent-like

Odour Threshold : No data available

pH : Not applicable

Melting point/range : No data available

Boiling point/boiling range : 142 °F / 61 °C

Flash point : 28 °F / -2 °C
Method: Tag open cup

Evaporation rate : No data available

Flammability (solid, gas) : Not applicable

Self-ignition : No data available

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapour pressure : No data available

Relative vapour density : No data available

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Relative density : 0.84 (68 °F / 20 °C)
Reference substance: Water
The value is calculated

Bulk density : No data available

Solubility(ies)
Water solubility : insoluble

Solubility in other solvents : No data available

Partition coefficient: n-octanol/water : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Viscosity
Viscosity, dynamic : No data available

Viscosity, kinematic : < 20.5 mm²/s (104 °F / 40 °C)

Explosive properties : Not explosive

Oxidizing properties : No data available

Sublimation point : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No hazards to be specially mentioned.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.

Conditions to avoid : Heat, flames and sparks.
Strong sunlight for prolonged periods.

Incompatible materials : Oxidizing agents

Hazardous decomposition products : >150 °C small quantities of formaldehyde may be formed.

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SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity : Acute toxicity estimate: 830.42 mg/kg
Method: Calculation method

Remarks: Effects due to ingestion may include:
Harmful if swallowed.

Symptoms: Central nervous system depression

Acute inhalation toxicity : Acute toxicity estimate: 14.99 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Remarks: Respiration of solvent vapour may cause dizziness.
Harmful by inhalation.
Toxic by inhalation.
Irritating to respiratory system.

Symptoms: Inhalation may provoke the following symptoms:,
Local irritation, Respiratory disorders, Dizziness, Drowsiness,
Vomiting, Fatigue, Vertigo, Central nervous system
depression

Acute dermal toxicity : Acute toxicity estimate: 1,354 mg/kg
Method: Calculation method

Remarks: Harmful in contact with skin.

Symptoms: Redness, Local irritation

Components:

Benzene, 1,2-dimethyl-:

Acute oral toxicity : LD50 Oral (Rat, male): 6,602 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 10 - 20 mg/l
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): > 1,000 - 2,000 mg/kg

Naphtha (petroleum), light alkylate:

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

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Method: OECD Test Guideline 402

Methanol:

Acute oral toxicity : Assessment: The component/mixture is toxic after single ingestion.

Acute inhalation toxicity : LC50 (Rat): 131.25 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Assessment: The component/mixture is toxic after short term inhalation.

Acute dermal toxicity : Assessment: The component/mixture is toxic after single contact with skin.

3-butoxypropan-2-ol:

Acute oral toxicity : LD50 Oral (Rat): > 2,000 mg/kg

dibutyltin dilaurate:

Acute oral toxicity : LD50 Oral (Rat): > 2,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Skin corrosion/irritation

Product:

Remarks : Irritating to skin.

Components:

Benzene, 1,2-dimethyl-:

Result : Skin irritation

Naphtha (petroleum), light alkylate:

Result : Skin irritation

3-butoxypropan-2-ol:

Result : Skin irritation

Serious eye damage/eye irritation

Product:

Remarks : Irritating to eyes.

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Components:

Benzene, 1,2-dimethyl-:

Result : Eye irritation

3-butoxypropan-2-ol:

Result : Eye irritation

dibutyltin dilaurate:

Result : Eye irritation

Respiratory or skin sensitisation

Product:

Remarks : This information is not available.

Components:

dibutyltin dilaurate:

Result : May cause sensitisation by skin contact.

Germ cell mutagenicity

Product:

Genotoxicity in vitro : Remarks: No data available

Genotoxicity in vivo : Remarks: No data available

Components:

dibutyltin dilaurate:

Germ cell mutagenicity - Assessment : In vitro tests showed mutagenic effects

Carcinogenicity

Product:

Remarks : No data available

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**IARC
OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is

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identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Product:

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

Components:

dibutyltin dilaurate:

Reproductive toxicity - Assessment : - Fertility -
Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

STOT - single exposure

Components:

Benzene, 1,2-dimethyl-:

Assessment : May cause respiratory irritation.

Naphtha (petroleum), light alkylate:

Assessment : May cause drowsiness or dizziness.

Methanol:

Assessment : Causes damage to organs.

dibutyltin dilaurate:

Assessment : Causes damage to organs.

STOT - repeated exposure

Components:

dibutyltin dilaurate:

Exposure routes : Inhalation
Assessment : Causes damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Product:

Remarks : This information is not available.

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Aspiration toxicity

Product:

May be fatal if swallowed and enters airways.

Components:

Benzene, 1,2-dimethyl-:

May be fatal if swallowed and enters airways.

Naphtha (petroleum), light alkylate:

May be fatal if swallowed and enters airways.

Further information

Product:

Remarks : Ingestion causes irritation of upper respiratory system and gastrointestinal disturbance.
Danger of very serious irreversible effects.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae/aquatic plants : Remarks: No data available

Toxicity to microorganisms : Remarks: No data available

Components:

Benzene, 1,2-dimethyl-:

Ecotoxicology Assessment

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

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Naphtha (petroleum), light alkylate:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.4 mg/l
Exposure time: 48 h

dibutyltin dilaurate:

M-Factor (Acute aquatic toxicity) : 1

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Physico-chemical removability : Remarks: No data available

Components:

Benzene, 1,2-dimethyl-:

Biodegradability : Result: Not readily biodegradable.

Naphtha (petroleum), light alkylate:

Biodegradability : Result: Not readily biodegradable.

Methanol:

Biodegradability : Result: Readily biodegradable.

3-butoxypropan-2-ol:

Biodegradability : Result: Readily biodegradable.

dibutyltin dilaurate:

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Biodegradability : Result: Not readily biodegradable.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).
This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

Components:

Benzene, 1,2-dimethyl-:

Bioaccumulation : Remarks: No bioaccumulation is to be expected (log Pow <= 4).

Partition coefficient: n-octanol/water : log Pow: 3.12

Naphtha (petroleum), light alkylate:

Bioaccumulation : Bioconcentration factor (BCF): 105

Partition coefficient: n-octanol/water : log Pow: 3.52

Methanol:

Bioaccumulation : Bioconcentration factor (BCF): 1.0

3-butoxypropan-2-ol:

Bioaccumulation : Bioconcentration factor (BCF): < 100

Partition coefficient: n-octanol/water : log Pow: 1.2

dibutyltin dilaurate:

Bioaccumulation : Bioconcentration factor (BCF): 31

Partition coefficient: n-octanol/water : Pow: ca. 3

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Mobility in soil

Product:

Mobility : Remarks: No data available

Distribution among environmental compartments : Remarks: No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82
Protection of Stratospheric Ozone - CAA Section 602 Class I
Substances
Remarks: This product neither contains, nor was
manufactured with a Class I or Class II ODS as defined by the
U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A +
B).

Additional ecological information : Toxic to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water
courses or the soil.
Do not dispose of with domestic refuse.
Dispose of as hazardous waste in compliance with local and
national regulations.

Contaminated packaging : Packaging that is not properly emptied must be disposed of as
the unused product.
Dispose of waste product or used containers according to
local regulations.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 1993
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
(o-xylene, hexamethyldisiloxane)
Class : 3
Packing group : II

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Labels : 3

IATA-DGR

UN/ID No. : UN 1993

Proper shipping name : Flammable liquid, n.o.s.
(o-xylene, hexamethyldisiloxane)

Class : 3

Packing group : II

Labels : Flammable Liquids

Packing instruction (cargo aircraft) : 364

Packing instruction (passenger aircraft) : 353

IMDG-Code

UN number : UN 1993

Proper shipping name : FLAMMABLE LIQUID, N.O.S.
(o-xylene, hexamethyldisiloxane)

Class : 3

Packing group : II

Labels : 3

EmS Code : F-E, S-E

Marine pollutant : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

49 CFR

UN/ID/NA number : UN 1993

Proper shipping name : Flammable liquids, n.o.s.
(o-xylene, hexamethyldisiloxane)

Class : 3

Packing group : II

Labels : FLAMMABLE LIQUID

ERG Code : 128

Marine pollutant : yes

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Respiratory or skin sensitisation

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1.1	03/05/2023	Date of first issue: 02/03/2023	07/18/2023

Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Aspiration hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Benzene, 1,2-dimethyl- 95-47-6 >= 20 - < 30 %

Methanol 67-56-1 >= 10 - < 20 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

Benzene, 1,2-dimethyl-	95-47-6	>= 20 - < 30 %
Methanol	67-56-1	>= 10 - < 20 %

California Prop. 65

WARNING: This product can expose you to chemicals including Cumene, ETHYLBENZENE, Benzene, Styrene, which is/are known to the State of California to cause cancer, and Methanol, Toluene, Benzene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

The components of this product are reported in the following inventories:

TSCA : All substances listed as active on the TSCA inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1
Limits for Air Contaminants
ACGIH / TWA : 8-hour, time-weighted average

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ACGIH / STEL : Short-term exposure limit
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST : STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA Z-1 / TWA : 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 03/05/2023

This safety data sheet applies only to products as originally packed and labelled. The information contained therein may not be reproduced or modified without our express written permission. Any forwarding of this document is only permitted to the extent required by law. Any further, in particular public, dissemination of the safety data sheet (e.g. as a document for download from the Internet) is not permitted without our express written consent. We provide our customers with amended safety data sheets as prescribed by law. The customer is responsible for passing on safety data sheets and any amendments contained therein to its own customers, employees and

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other users of the product. We provide no guarantee that safety data sheets received by users from third parties are up-to-date. All information and instructions in this safety data sheet have been compiled to the best of our knowledge and are based on the information available to us on the day of publication. The information provided is intended to describe the product in relation to the required safety measures; it is neither an assurance of characteristics nor a guarantee of the product's suitability for particular applications and does not justify any contractual legal relationship. The existence of a safety data sheet for a particular jurisdiction does not necessarily mean that import or use within that jurisdiction is legally permitted. If you have any questions, please contact your responsible sales contact or authorized trading partner.

Safety Data Sheet

ES91

Date Issued: February 15, 2023

Revision No: a

Supersedes Date: New

Section 1. Product Description

1.1 Product Name: EverStrong ES91 Adhesive

1.2 Recommended Use: Industrial adhesive applications

1.3 Manufacturer: and address: NewStar Adhesives Inc
66 Gilreath Rd SE
Cartersville, GA 30121

Information Contact: PH 866-735-9876 FX 770-607-3637

Emergency Contact: 800-424-9300 (CHEMTREC- Transportation Spill Response 24 hours)

Section 2. Hazard Identification

2.1 Hazard Classification

Flammable Liquid: Category 1

Serious Eye Damage/Irritation: Category 2A

Skin Corrosion/Irritation: Category 2

Simple Asphyxiant

Specific Target Organ Toxicity (single exposure): Category 3

2.2.1 Label elements

Signal Word: Danger

DANGER

Symbols



Hazard Statements:

Extremely flammable liquid and vapor.

Causes serious eye irritation.

Causes skin irritation.

May cause drowsiness or dizziness.

May displace oxygen and cause rapid suffocation.

Causes damage of organs: Cardiovascular system.

PRECAUTIONARY STATEMENTS:

Prevention:

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat/sparks/open flames/hot surfaces – No smoking.
- Ground/bond container and receiving equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Keep containers tightly closed.
- Use explosion proof electrical/ventilating/lighting equipment.
- Do not breathe dust/fumes/gas/vapor/mist/spray.
- Use only outdoors or in well ventilated areas.
- Wear protective clothing and eye/face protection.
- Do not eat, drink, or smoke when using this product.
- Wash thoroughly after handling.

Response

IF INHALED: Remove to fresh air and keep comfortable for breathing.

IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with water and shower. If irritation persists, seek medical attention. Continue to rinse.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lens if present and easy to do. Continue rinsing. If irritation persists, seek medical attention.

STORAGE

- Protect from sunlight.
- Keep cool.
- Keep container tightly closed.
- Store locked up in a well-ventilated place.

DISPOSAL

Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 3. Composition/ Information on Ingredients

Chemical Name	C.A.S. Number	%
Methyl Acetate	79-20-9	20 – 30 %
Heptane	142-82-5	10 - 20 %
Dimethyl Ether	115-10-6	15 - 25 %
Isobutane	75-28-5	10 – 20 %
Propane	74-98-6	10 – 20 %

Section 4. First Aid Measures

Skin Contact: Wash with plenty of water. Wash contaminated clothing after use.

Inhalation: Remove person to fresh air and keep comfortable for breathing. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek medical assistance. If breathing has stopped, give artificial respiration.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

Ingestion: Rinse mouth. If you feel unwell get medical advice/attention.

Section 5. Firefighting Procedures

Extinguishing Media: Use water spray, dry chemical, CO₂, or appropriate foam.

In case of fire, use a firefighting agent for flammable liquid.

Hazardous decomposition or by product: Aldehydes, hydrocarbons, carbon monoxide and carbon dioxide, ketones, oxides of nitrogen, sulfur and other toxic vapor, gas, and particulate.

Special protective actions for fire-fighters: Keep containers cool and prevent explosive rupture. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, bunker coat and pants, face mask, and protective covering for exposed area of head.

Section 6. Accidental Release Measures

Personal Precautions: Use personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapors can accumulate in low areas.

Environmental Precautions: Prevent further leakage or spillage if safe to do so.

Clean-Up: Cover with commercially available nonflammable inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Collect as much of the spilled material as possible. Collect waste and dispose of in accordance with all applicable local/state/federal regulations.

SECTION 7. Handling and Storage

Handling: Avoid breathing vapors. Use personal protection equipment as required. In case of inadequate ventilation wear respiratory protection. Do not eat, drink, or smoke when using this product. Wash contaminated clothing and skin after use.

Storage: Store in a well-ventilated space. Protect from direct sunlight.

SECTION 8. Protection Information

Hazardous Component	Authority	Type	Limit
Methyl Acetate	ACGIH	TWA	200 ppm
Methyl Acetate	ACGIG	STEL	250 ppm
Methyl Acetate	OSHA	TWA	200 ppm
Methyl Acetate	OSHA	STEL	250 ppm
Heptane	ACGIH	TWA	400 ppm
Heptane	ACGIH	STEL	500 ppm
Heptane	OSHA	TWA	400 ppm
Acetone	ACGIH	TWA	750 ppm
Acetone	NIOSH	TWA	250 ppm
Dimethyl Ether	CMRG	TWA	1000 ppm
Propane	OSHA	TWA	1000 ppm
Isobutane	OSHA	TWA	1000 ppm

SOURCES OF EXPOSURE LIMIT DATA:

ACGIH: American Conference of Governmental Industrial Hygienists

IARC: International Agency for the Research on Cancer

NIOSH: National Institute for Occupational Safety and Health

NTP: National Toxicology Program

OSHA: Occupational Safety and Health Administration

WEEL: Workplace Environmental Exposure Level

Control Parameters

Engineering Measures: Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment (PPE):

Eyes/Face: Safety goggles or safety glasses with side shields.

Skin: Protective gloves such as Viton, PVA or equivalent and impervious clothing.

Respiratory: In operations where exposure limits are exceeded, use a NIOSH approved respirator suitable for the specific work conditions.

Hygiene: Avoid contact with skin, eyes, and clothing. Wash promptly with soap and water if skin is contaminated. Remove and wash contaminated clothing. Do not eat, drink, or smoke when using.

SECTION 9. Physical Data

Odor, Color: Organic solvent odor, clear or red in color

Boiling point: -44° F

Vapor Pressure: Not Determined

Vapor Density: Not Determined

Specific Gravity: .70 – .80 g/cc

Solubility in Water: Negligible

Volatile Organic Compounds: 60 – 70 % by weight

Volatile Organic Compounds: 430 – 440 g/L

Flash Point: -156° F (-104 ° C)

LEL: 1.8 % by volume

UEL: 18.0 % by volume

SECTION 10. Stability and Reactivity

Chemical Stability: Stable under normal conditions.

Conditions to Avoid: Avoid high temperatures.

Incompatible Materials: None known.

Hazardous Polymerization: Will not occur.

Hazardous By-Products: Combustion may result in formation of aldehydes, hydrocarbons, carbon monoxide and carbon dioxide.

SECTION 11. Toxicological Information

Typical Routes of Entry: Inhalation, skin absorption, eye contact

Aspiration Hazard: No data

Acute toxicity: No data

Irritation: No data

Corrosivity: No data

Sensitization: No data

SECTION 12. Ecological Data

Overview: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife.

SECTION 13. Disposal Considerations

Waste Disposal Method:

Dispose of in accordance with all applicable local/regional/national/international/state/federal regulations.

SECTION 14. Transportation Information

DOT Proper Shipping Name:

Aerosols – Domestic
Aerosol Cans, Limited Quantity

Aerosols – Air and Ocean
UN1950, Aerosols, Flammable, 2.1

Canisters - Chemicals Under Pressure, Flammable, N.O.S., (Dimethyl Ether, Heptane)
Hazard Class: 2.1
UN #: UN3501
Packing Group: None
Label: DOT Red Diamond 2

SECTION 15. Regulatory Information

311/312 Hazard Categories:

Fire Hazard – Yes

Pressure Hazard – Yes

Reactivity Hazard – No

Immediate Hazard – Yes

Delayed Hazard – Yes

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65: None known.

HMS Hazard Rating – NFPA Hazard classification

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Health: 2

Flammability: 3

Reactivity: 0

Special Hazard: None

SECTION 16. Other Information

DISCLAIMER: The information in this Material Safety Data Sheet (SDS) is believed to be correct as of the date issued. NEWSTAR MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. The user is responsible for determining whether the NEWSTAR product is fit for a particular purpose and suitable for users' method of use or application, given the variety of factors that can affect the use and application of a NEWSTAR product, many of which are solely within the user's knowledge and control. It is essential that the user evaluate the NEWSTAR product to determine whether it is fit for a particular purpose and suitable for users' method of use or application.

Attachment B
HAP Emission Factor Basis for Closed Molding



Fiber Reinforced Plastics Shop Implements Light RTM to Produce Parts

Minnesota Technical Assistance Program ■ CASE STUDY

Company	Phoenix Industries Crookston, MN
Change	Converted 60 percent of molded part production to closed molding. Light RTM is used for a quarter of that (15 percent).
Cost	\$10,000 for new equipment. Cost per part reduced by ten percent. Payback was less than two years.
Benefits	Reduced 80,000 pounds of styrene emissions over two years. 20,000 of this was due to Light RTM. Cleaner production. Better material efficiency.

Phoenix Industries, in Crookston, Minnesota, produces fiber reinforced plastic (FRP) parts in a 100-person job shop. The parts, produced by open and closed molding techniques, vary in shape, size and end use.

Reducing styrene emissions was a priority at Phoenix Industries for a number of years, primarily driven by worker exposure and air permitting requirements. The U.S. Environmental Protection Agency (EPA) classifies styrene as a hazardous air pollutant (HAP). The National Emission Standards for Hazardous Air Pollutants (NESHAP) for the reinforced plastic composites industry became effective August 2001, limiting styrene emissions from FRP shops.

Converting to nonatomized spray resin application equipment and using low styrene resins in its open mold process quickly reduced the company's emissions. Although these efforts reduced emissions significantly, Phoenix Industries saw closed molding as an opportunity to further reduce emissions, enhance the efficiency of material use in FRP manufacturing and improve part quality.

Closed Molding Replaces Open Molding

Converting from open-mold to closed-mold processes reduces emissions and optimizes the glass-resin ratio, producing a higher quality laminate, and allowing both sides of the part to have a finished appearance. With advancements in FRP materials in recent years, closed molding has become a viable technology, finding renewed interest as it demonstrates success. Vacuum molding is one relatively simple and affordable means for open molders to move to closed molding.

In two years, Phoenix Industries converted 60 percent of its open molded parts production to closed molding. The company selected Resin Transfer Molding (RTM) and Light RTM technology as its vacuum molding systems. The conversion reduced 80,000 pounds of styrene emissions during 2000 and 2001. Light RTM is used for a quarter of the closed molding (15 percent overall). Phoenix uses Light RTM when a part is produced less frequently because it is less costly to use on a smaller scale than RTM. The company plans to continue the conversion to closed molding, anticipating additional significant bottomline benefits.

Light RTM

Light RTM is a vacuum-assisted, low-pressure, resin injection system. The vacuum draws the resin through the mold, limiting the pressure needed for injecting the resin. Because limited pressure is used, the molds do not require extra engineering, helping to keep costs down. Light RTM results in lower environmental emissions, improved quality and part-to-part consistency, and reduced per part cost. Light RTM has nearly universal application. If a part can be "pulled"—part configuration allows molds to easily separate—it is a candidate for Light RTM.

Three major components make up this molding system: a two-part mold, a vacuum source and a low-pressure resin injection pump.

The general steps to producing a Light RTM part are:

1. Gelcoat as normal.
2. Manually place the reinforcing media in the mold.
3. Bring together the two halves of the mold and draw a vacuum to seal their contact areas.
4. Inject resin to coat the part's perimeter. Then apply vacuum near the mold's center to draw resin through the glass media towards the vacuum source.
5. Cure, demold and finish the part as usual.

Jeff Burgess, Phoenix Industry's CEO, was brought into the company because of his experience with closed molding. The following information is based on his knowledge and on his experience at Phoenix Industries.

Equipment Basics

The cost to investigate and use Light RTM on a small scale can be minimal. Small, simple parts currently open molded are ideal candidates for testing closed molding and seeing quicker successes. Starting with smaller parts of a non-technical configuration allows experience to be gained without major risk.

Molds

If an FRP shop has internal expertise building open mold tooling, it can quickly learn to build Light RTM molds. Having in-house capability to make molds holds down Light RTM mold cost. Most open molds can be modified into Light RTM molds. Among other minor changes, mold flanges need to be widened to six inches so the countermold—the second half or top mate to the mold—can be securely held in place. Light RTM and open molding place a similar level of stress on the mold, unlike conventional RTM which puts the molds under greater pressure when injecting the resin. This means that molds for Light RTM have similar strength requirements as open molds, allowing the same construction materials to be used.

Counter molds can be built using a number of techniques. One technique uses calibrated wax which comes in sheets and rolls to help build the countermold. Two layers of wax are pressed into the mold, matching the part's thickness. The sheets of the bottom layer are spaced with small gaps between them to function as vacuum channels. A second continuous layer of wax is positioned over the first. The original mold is connected to a vacuum source which pulls the two layers of wax together, holding them in place while the countermold is cast over

them. Gaskets, gauges, and resin and vacuum ports are installed to complete the countermold. Because both a mold and countermold are needed, building tools for Light RTM costs about two to two-and-a-half times more than open molding.

FRP material suppliers have videos demonstrating the basic steps of this and other mold building techniques. More extensive formal training for mold building and process training is available. The cost for two operators over five days is around \$10,000.

Positioning resin and vacuum ports

Injection pushes resin into the mold, but its flow through the media is due mostly to the vacuum's pull. The level of vacuum limits the flow rate. Resin injection ports are positioned on the mold to obtain adequate initial wetting. Good resin flow through the media depends on properly positioning the vacuum ports in relation to the resin injection ports. To ensure that the resin travels through the media at a constant rate, vacuum ports should be spaced at an equal distance from the resin injection ports, this distance is measured along the mold's contour. Multiple resin injection and vacuum ports may be necessary to achieve this.

Vacuum source

Systems capable of attaining a vacuum of around 30 inches of mercury are required for Light RTM. A number of low cost vacuum options are available. If the plant has compressed air, a venturi vacuum generator can meet the requirements of small molds. It costs less than \$100. For larger molds, rotary vane vacuum pumps are available for about \$300. For full-scale production, portable vacuum systems rigged to handle Light RTM are available for \$5,000 and higher.

Low-pressure resin injection pump

A pumping system is required to feed resin to the mold. With minimal expense, FRP shops may be able to modify existing resin application equipment for use as a pump while they experiment with Light RTM. Equipment specific to Light RTM costs around \$5,000.

Implementation Issues

Good process control

Process control is absolutely necessary to produce consistent, quality parts. Key factors include:

- Tightly controlling the temperature and viscosity of the resin used because they both affect how the

resin flows through the media. Bad parts can result if these variables fluctuate significantly.

- Thoroughly checking the mold setup for vacuum leaks before injecting resin. Leaks dramatically impact how the resin flows through the media and will cause bad parts.
- Selecting and placing glass reinforcing media. A conformable, advanced reinforcement media may be required for complex parts. Improperly placed media can lead to mischanneling of the resin and poor mating of the mold and countermold. These both result in non-wetted areas and a bad part.

Reinforcing media for complex parts

Conventional glass reinforcement works fine for parts of simple configuration, especially if mating the mold and countermold requires little effort. Because conventional glass materials do not readily conform to a part's shape, complex parts can be very tedious and challenging to load. Advanced reinforcing medias have a sandwich construction with glass on the outside and a synthetic interior which allows resin to flow easily. Its conformable "memory" helps control placement. Its compressibility makes building variations in part thickness easy. This newer generation of materials reduces the amount of labor involved with media placement, especially in complex parts. But, it costs twice as much as conventional reinforcement media.

Finishing work

In Light RTM, pulled parts require trimming of cured flashing material, which can be labor intensive, noisy and dusty. In open molding, although some part designs require cutting of cured material, cutting away excess uncured flashing material is relatively simple. Overspray and trim waste can account for ten percent or more of the materials used in open molding. These waste costs counter the extra post cure finish requirements of Light RTM.

Styrene Emissions

Because parts are removed from the Light RTM mold as soon as they are structurally sound, some styrene may be released to the environment during final curing of the part. Compared to open molding, Light RTM releases virtually no styrene because the entire system is closed and even the gases evacuated from the mold can be passed through a small carbon adsorption bed to eliminate any release during part processing.

Using the Composites Fabricators Association's (CFA) *Unified Emission Factors*, the emission factor for open molding is about 11 percent of the resin's available styrene. The EPA's *Compilation of Air Pollutant Emission Factors*, commonly referred to as "AP-42," lists the emission factor for closed molding as one to three percent of the styrene available. The AP-42 range is based on semi-closed processes (i.e., marble casting). Because Light RTM is a closed process, its emission factor should fall in the lower end of this range. The table below compares open molding using a low-styrene resin (38 percent) and nonatomized application equipment against closed molding using resin with a slightly higher styrene level (42 percent) to benefit from its lower viscosity. Closed molding shows a ten-fold reduction in styrene emissions over open molding.

Emission factor comparison.

	Open molding*	Closed molding
Resin applied	1,000 lbs.	1,000 lbs.
Styrene in resin	38%	42%
Emission factor	11%	1%
Total styrene emissions from resin application	42 lbs.	4.2 lbs.

* Compliant with the NESHAP's requirements for low styrene resin and nonatomized application.

Note: Light RTM parts are gelcoated in the conventional manner used in open molding. Styrene emissions from gelcoating remain a significant fraction of total styrene emissions.

Costs and Benefits

The following cost-and-benefit analysis summarizes the success Phoenix Industries has had with Light RTM.

- **Lower cost per part.** Per part cost reduced 10 percent. Productivity of the molds increased with shorter cycle times. Material use improved and the bill of materials became more consistent. Part quality was enhanced, while less labor per part was needed.
- **Reasonable capital investment.** Phoenix had a payback of less than two years. One Light RTM station, including a vacuum source and resin injection system, cost under \$10,000, excluding the tooling costs. Closed molding experience can be gained with less than \$1,000 if simple and small parts are addressed first.
- **Quality improvements.** The day-to-day inconsistencies of open mold operators were minimized. Light RTM enhanced part consistency,

gave better control over part thickness improving dimensional tolerance, and offered a two-sided finish.

- **Reduced manufacturing wastes.** Styrene emissions were reduced ten-fold. Per part material use was reduced by 10 percent or more because open molding wastes—like overspray—were eliminated. This further reduced styrene emissions.
- **Employee retention.** A much cleaner work setting and a more desirable job reduces worker turnover.

For More Information

Other MnTAP publications for the FRP industry:

- Controlled Spraying and Laser Touch® in the Fiber Reinforced Plastics Industry [#89]
- Fiberglass Fabricators Upgrades Open Mold Processing Equipment [#61]
- Fiber Reinforced Plastic Shop Complies with New Air Permit Regulations [#83]
- Reducing Volatile Emissions in the Fiber Reinforced Plastics Industry [#75]

MnTAP has a variety of technical assistance services available to help Minnesota Businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution and reduce costs. Our information resources are available online at <www.mntap.umn.edu>. Or, call MnTAP at 612/624-1300 or 800/247-0015 from greater Minnesota for personal assistance.

Section I. General Information

Project: Altec Industries, Inc. - Elizabethtown, KY

Subject: Emission calculations for Miscellaneous Chemical Usage MCU (EP 13)

Section II. Source Description

- A. The purpose of this calculation is to estimate emissions from sealants, caulks, adhesives, greases, lubricants, and other chemicals used throughout the facility for as part of the assembly processes. Emissions are fugitive.
- B. Potential emissions are revised to account for future expansion in Final Assembly.

Section III. Data

- A. Actual emissions obtained from chemical usage / emission tracking program (ACIMS) for January through September CY2025 and scaled to the end of the year (12 months/9 months). See Attachments A and B.

Pollutant	CAS Number	Actual Emissions (tpy)
PM	---	0.26
VOC	---	8.72
Individual HAP		
2-Propoxyethanol	2807-30-9	0.0001
2,2,4-trimethylpentane	540-84-1	0.001
Acetaldehyde	75-07-0	0.002
Benzene	71-43-2	0.002
Cobalt 2-ethylhexanoate	136-52-7	0.003
Copper Cmpds		0.001
Cumene	98-82-8	0.003
Ethylbenzene	100-41-4	0.038
Hexane, normal	110-54-3	0.070
Methanol	67-56-1	0.292
Methyl Isobutyl Ketone	108-10-1	0.0003
Methyl Methacrylate	80-62-6	0.005
Naphthalene	91-20-3	0.002
Styrene	100-42-5	0.001
Toluene	108-88-3	0.169
Xylene, mixed isomers	1330-20-7	0.179

- B. Actual operating schedule is 96 hours per week, 50 weeks per year = 4,800 hr/yr.
- C. Scale actual emissions to account for future expansion in Final Assembly = 1.25
- D. Safety data sheets (SDSs) are not attached since Altec uses many materials that may change over time. SDSs are maintained on-site in a form suitable for inspection.

Section IV. Approach

- A. HAPs with actual emissions less than 0.005 pounds per year are not listed in the above table.
- B. PTE scaling factor is the ratio of 8,760 (hr/yr) / actual operating schedule (hr/yr) * Scaling Factor for Expansion = 2.28
- C. Potential-to-emit (PTE), tons/year = Actual emissions x PTE scaling factor.
- D. Hourly Emissions (lb/hr) = PTE (ton/yr) * 2000 (lb/ton) / 8760 (hr/yr)

Section V. Results

A. Estimated emissions are shown in Table V-1 below.

Table V-1 Summary of Emissions from MCP1

Pollutants	CAS Number	Emissions	
		PTE (tpy)	PTE (lb/hr)
PM	---	0.60	0.14
VOC	---	19.89	4.54
Hazardous Air Pollutants			
2-Propoxyethanol	2807-30-9	0.000	0.00003
2,2,4-trimethylpentane	540-84-1	0.002	0.0004
Acetaldehyde	75-07-0	0.003	0.001
Benzene	71-43-2	0.004	0.001
Cobalt 2-ethylhexanoate	136-52-7	0.007	0.002
Copper Cmpds		0.001	0.0003
Cumene	98-82-8	0.006	0.001
Ethylbenzene	100-41-4	0.09	0.02
Hexane, normal	110-54-3	0.16	0.04
Methanol	67-56-1	0.67	0.15
Methyl Isobutyl Ketone	108-10-1	0.001	0.0002
Methyl Methacrylate	80-62-6	0.01	0.003
Naphthalene	91-20-3	0.003	0.001
Styrene	100-42-5	0.003	0.001
Toluene	108-88-3	0.39	0.088
Xylene, mixed isomers	1330-20-7	0.41	0.093

Section VI. Attachments

- A. ACIMS VOC and PM Emissions Summary
- B. ACIMS HAP Emissions Summary

Attachment A
ACIMS VOC and PM Emissions Summary

VOC and PM Emissions Summary

From: 01/01/2025 To: 09/30/2025

Facility: Altec - Elizabethtown

Entered Unit: US

Production Area: Misc. Chemical Usage

Production Unit: All Production Units

<u>Material</u>	<u>Part Number</u>	<u>Material Usage</u>		<u>VOC Emissions</u>		<u>PM Emissions</u>	
		<u>(Gals)</u>	<u>(Lbs)</u>	<u>Stack</u>	<u>Fugitive</u>	<u>Stack</u>	<u>Fugitive</u>
				<u>(Lbs)</u>	<u>(Lbs)</u>	<u>(Lbs)</u>	<u>(Lbs)</u>
LPS 3 (Aerosol)	00316	3.78	27.50	0.00	17.27	0.00	5.29
3-36 Multi-purpose Lubricant & Corrosion Inhibitor	03005	44.04	308.69	0.00	0.00	0.00	24.63
White Lithium Grease	03080	391.50	2,090.63	0.00	1,770.76	0.00	23.42
Dry Moly Lube	03084	0.51	3.44	0.00	1.61	0.00	0.00
QD Contact Cleaner	03130	4.94	30.94	0.00	23.17	0.00	0.41
Brakleen Brake Parts Cleaner (aerosol)	05084	312.20	2,188.50	0.00	958.56	0.00	168.51
Brakleen Brake Parts Cleaner	05151	11.21	82.25	0.00	2.22	0.00	0.00
A01387 Zep Dry Moly NC	10601	2.75	18.38	0.00	18.38	0.00	0.00
DEVCON 5 Minute Epoxy Gel	14265	3.41	33.39	0.00	0.00	0.00	0.00
PB Penetrating Catalyst	16-PB,8-PB,PB-TS,20-PB,26-PB,16-PB-DS	2.38	17.88	0.00	4.47	0.00	0.00
Loctite 680 Retain Cmpnd	1835201	0.01	0.12	0.00	0.00	0.00	0.00
Loctite SF 7649 (aerosol)	21348	0.85	5.63	0.00	0.08	0.00	0.00
Loctite 242	24231	1.06	9.69	0.00	0.05	0.00	0.00
AutoRf Lspr 6pk Auto Pro Undercoating	248656	5.59	45.00	0.00	17.33	0.00	14.14
Loctite 262 High Strength Threadlocker	26205	2.64	23.14	0.00	0.00	0.00	0.00
Loctite 277 Threadlocker High Strength	27731	0.42	3.88	0.00	0.03	0.00	0.00
3M Super 77 Classic Spray Adhesive	301701, 96315	5.32	30.94	0.00	24.44	0.00	5.96
Lord 310A Epoxy Adhesive Pt A	310A	0.16	1.95	0.00	0.00	0.00	0.00
Lord 310B Epoxy Adhesive Pt B Hardener	310B	0.16	1.68	0.00	0.00	0.00	0.00
Loctite 425 Instant Adhesive	42540	0.22	1.98	0.00	0.04	0.00	0.00
FLNA4002.SC (and all colors)	5-FSC	1.79	15.75	0.00	2.61	0.00	3.94
Sikaflex-505 UV Hi Visc	505UV HV	83.40	1,044.14	0.00	6.26	0.00	0.00

VOC and PM Emissions Summary

From: 01/01/2025 To: 09/30/2025

Facility: Altec - Elizabethtown

Entered Unit: US

Production Area: Misc. Chemical Usage

Production Unit: All Production Units

<u>Material</u>	<u>Part Number</u>	<u>Material Usage</u>		<u>VOC Emissions</u>		<u>PM Emissions</u>	
		<u>(Gals)</u>	<u>(Lbs)</u>	<u>Stack</u>	<u>Fugitive</u>	<u>Stack</u>	<u>Fugitive</u>
				<u>(Lbs)</u>	<u>(Lbs)</u>	<u>(Lbs)</u>	<u>(Lbs)</u>
545 Thread Sealant Pneumatic/Hydraulic Fittings	54531	3.13	26.62	0.00	0.53	0.00	0.00
Loctite 620 Retaining Compound	62085	2.38	21.83	0.00	0.04	0.00	0.00
Loctite LB 8150 SV A/S Silver Grade Anti-Seize	80209, 76764, 76732	5.27	55.00	0.00	1.65	0.00	0.00
Cross Check - Blue	83318	1.98	15.94	0.00	6.00	0.00	0.00
Brite-Mark Paint Marker - White	84003	0.09	1.01	0.00	0.49	0.00	0.00
Dupli-Color Battery Protector	BP900	48.56	289.44	0.00	155.43	0.00	15.80
Chain and Cable (Aerosol)	Chain and Cable (Aerosol)	1.35	10.50	0.00	2.52	0.00	0.00
Deoxit D-Series, 5 Spray, VOC Compliant	D5S-6	0.05	0.31	0.00	0.23	0.00	0.00
Formula Five Clean'N Glaze	Formula Five Clean'N Glaze	1.00	9.18	0.00	1.10	0.00	0.00
Gear Shield Extra Heavy - Aerosol	Gear Shield Extra Heavy (Aerosol)	22.10	180.81	0.00	39.78	0.00	0.00
Krylon Dec Spray Paints, Acrylic Crystal Clear	K01301A07	11.38	70.13	0.00	36.54	0.00	4.12
Acetone	LC10420, LC10425	0.13	0.87	0.00	0.00	0.00	0.00
LE-554 White Fibrated Alkyd Non-Skid Coating	LE-554	36.00	485.64	0.00	94.41	0.00	0.00
LE-771 Black Fibrated Alkyd Non Skid w/ Adh. Prom.	LE-771	2,456.00	33,843.68	0.00	6,582.60	0.00	0.00
LE-873 DTM Black Alkyd Non-Skid	LE-873	2.00	27.92	0.00	5.42	0.00	0.00
Methyl Ethyl Ketone	MEK	0.30	2.03	0.00	2.03	0.00	0.00
New Gel Coat Repair Kit	New 004190001	3.56	36.93	0.00	2.12	0.00	0.00
RTV108 Acetoxy Sealant (translucent)	RTV108	99.05	876.59	0.00	21.48	0.00	0.00
Acralock SA10-AW / ACT-6BWHT	SA10-AW (mixed)	51.53	445.50	0.00	6.25	0.00	0.00
Rohper LSPR 6PK Gloss Crystal Clear	V2102838	10.63	67.50	0.00	37.94	0.00	5.88
ROHPER 6PK Silver Aluminum	V2115838	8.35	50.63	0.00	29.13	0.00	3.22
Rohper Lspr 6pk Flat Black	V2178838	115.34	791.25	0.00	359.23	0.00	154.59

VOC and PM Emissions Summary

From: 01/01/2025 To: 09/30/2025

Facility: Altec - Elizabethtown

Entered Unit: US

Production Area: Misc. Chemical Usage

Production Unit: All Production Units

<u>Material</u>	<u>Part Number</u>	<u>Material Usage</u>		<u>VOC Emissions</u>		<u>PM Emissions</u>	
		<u>(Gals)</u>	<u>(Lbs)</u>	<u>Stack</u>	<u>Fugitive</u>	<u>Stack</u>	<u>Fugitive</u>
				<u>(Lbs)</u>	<u>(Lbs)</u>	<u>(Lbs)</u>	<u>(Lbs)</u>
Rohper Lspr 6pk Gloss Black	V2179838	662.89	4,302.19	0.00	2,248.75	0.00	680.00
Rohper Lspr 6pk Flat Gray Primer	V2182838	21.43	162.19	0.00	88.58	0.00	39.22
Rohper LSPR 6PK Gloss White	V2192838	117.05	810.00	0.00	379.24	0.00	159.16
Valve Action Paint Marker (Black, Purple)	Valve Action Paint Marker-Black, Purple	0.06	0.61	0.00	0.33	0.00	0.00
Valve Action Paint Marker (various colors)	Valve Action Paint Marker-various colors	4.58	44.48	0.00	24.46	0.00	0.00
Versapro Paint Marker Black	Versapro Paint Marker Black	1.02	9.92	0.00	5.95	0.00	0.00
Versapro Paint Marker Multiple Colors	Versapro Paint Marker Multiple Colors	16.97	164.94	0.00	98.96	0.00	0.00
Total For Production Unit: All Production Units		4,582.52	48,789.11	0.00	13,078.48	0.00	1,308.30
Total For Production Area: Misc. Chemical Usage		4,582.52	48,789.11	0.00	13,078.48	0.00	1,308.30
Total For Facility: Altec - Elizabethtown		4,582.52	48,789.11	0.00	13,078.48	0.00	1,308.30
				<u>Total VOC Emissions</u>		<u>Total PM Emissions</u>	
				13,078.48		1,308.30	

Attachment B
ACIMS HAP Emissions Summary

Hazardous Air Pollutants

From: 01/01/2025 To: 09/30/2025

Facility: Altec - Elizabethtown
Production Area: Misc. Chemical Usage
Production Unit: Aerosol Usage

Entered Unit: US

<u>Hazardous Air Pollutant</u>	<u>CAS Number</u>	<u>Constituent Usage (Lbs)</u>	<u>Constituent Emissions Stack Emissions Only</u>		<u>Constituent Emissions Fugitive Emissions Only</u>	
			<u>(Lbs)</u> ¹	<u>(Tons)</u> ²	<u>(Lbs)</u> ¹	<u>(Tons)</u> ²
2-Propoxyethanol	2807309	0.10	0.00	0.00	0.10	0.00
2,2,4-trimethylpentane	540841	1.24	0.00	0.00	1.24	0.00
Acetaldehyde	75070	2.27	0.00	0.00	2.27	0.00
Asphalt, oxidized ³	64742934	13.56	0.00	0.00	9.49	0.00
Benzene	71432	2.36	0.00	0.00	2.36	0.00
Cobalt 2-ethylhexanoate	136527	6.29	0.00	0.00	4.40	0.00
Copper phthalocyaninesulfonic acid, dioctadecyldimethylam. salt	70750639	1.16	0.00	0.00	0.81	0.00
Cumene	98828	3.77	0.00	0.00	3.77	0.00
Distillates, petroleum, light distillate hydrotreating, low boil ³	68410979	65.66	0.00	0.00	65.66	0.03
Ethylbenzene	100414	56.22	0.00	0.00	56.22	0.03
Hexane, normal	110543	105.66	0.00	0.00	105.66	0.05
Methanol	67561	438.06	0.00	0.00	438.06	0.22
Methyl isobutyl ketone	108101	0.45	0.00	0.00	0.45	0.00
Naphtha, Petroleum, Hydrotreated Light ³	64742490	488.56	0.00	0.00	488.56	0.24
Naphthalene	91203	2.27	0.00	0.00	2.27	0.00
Petrolatum ³	8009038	6.33	0.00	0.00	6.33	0.00
Petroleum Resins ³	64742161	8.30	0.00	0.00	8.30	0.00
Residues (petroleum), atm. tower ³	64741453	5.42	0.00	0.00	5.42	0.00
Toluene	108883	253.34	0.00	0.00	253.34	0.13
Xylene, mixed isomers	1330207	227.86	0.00	0.00	227.86	0.11
TOTAL for Production Unit: Aerosol Usage			0.00	0.00	1,682.57	0.84

Facility: Altec - Elizabethtown

Entered Unit: US

Production Area: Misc. Chemical Usage

Production Unit: Roll / Brush On

<u>Hazardous Air Pollutant</u>	<u>CAS Number</u>	<u>Constituent Usage (Lbs)</u>	<u>Constituent Emissions Stack Emissions Only</u>		<u>Constituent Emissions Fugitive Emissions Only</u>	
			<u>(Lbs)</u>	<u>(Tons)</u>	<u>(Lbs)</u>	<u>(Tons)</u>
Acrylic acid	79107	0.00	0.00	0.00	0.00	0.00
Benzene	71432	0.00	0.00	0.00	0.00	0.00
Chloromethane	74873	0.00	0.00	0.00	0.00	0.00
Copper naphthenate	1338029	0.00	0.00	0.00	0.00	0.00
Copper[N,N,N',N',N'',N''-hexaethyl-29H,31H-phthalocyanine-C,C,C]	28654731	0.22	0.00	0.00	0.00	0.00
Cumene	98828	0.27	0.00	0.00	0.27	0.00
Dimethyl phthalate	131113	0.56	0.00	0.00	0.00	0.00
Ethylbenzene	100414	0.24	0.00	0.00	0.24	0.00
Ethylene glycol	107211	0.00	0.00	0.00	0.00	0.00
Hydroquinone	123319	0.00	0.00	0.00	0.00	0.00
Methyl methacrylate	80626	220.42	0.00	0.00	6.25	0.00
Styrene	100425	13.52	0.00	0.00	1.97	0.00
Toluene	108883	0.00	0.00	0.00	0.00	0.00
Xylene, mixed isomers	1330207	41.28	0.00	0.00	41.28	0.02
TOTAL for Production Unit: Roll / Brush On			0.00	0.00	50.04	0.02
Total For Production Area: Misc. Chemical Usage			0.00	0.00	1,732.61	0.87

1 - "0.00" represents values less than 0.005 lbs.

2 - "0.00" represents values less than 0.005 tons.

3 - These materials used at the facility contain no HAP per discussion with manufacturer.



Section I. General Information

Project: Attec Industries, Inc. - Elizabethtown, KY

Subject: Emission calculations for Welding Operations

Section II. Source Description

- A. The purpose of this calculation is to estimate emissions from welding operations. Emissions are fugitive.
- B. Potential emissions are revised to account for future expansion in Final Assembly. Building capture efficiency also added.

Section III. Data

- A. 2022-2024 maximum actual annual throughput of carbon steel welding wire = 400,172 lbs/yr
 2022-2024 maximum actual annual throughput of aluminum welding wire = 7,762 lbs/yr
- B. The emission factors used are from USEPA's AP-42 for gas metal arc welding (GMAW), Section 12.19. See Attachment A.

Emission Factors E70S (lb/lb ³ of electrode consumed)	
PM	5.2
Cr	0.001
Mn	0.318
Ni	0.001

Emission Factors ER5154 (lb/lb ³ of electrode consumed)	
PM	24.1
Cr	0.01
Mn	0.034
Ni	N/A

- C. Actual operating schedule is 96 hours/week, 50 weeks per year = 4,800 hr/yr.
- D. Anticipated increase in welding due to Final Assembly expansion = 1.1
- E. PTE scaling factor is the ratio of 8,760 (hr/yr) / actual operating schedule (hr/yr) * increase due to expansion = 2.01
- F. SCC Code: 30900500 (Industrial Processes - Fabricated Metal Products - Welding - General)
- G. Welding operations vent inside the building. Assume building capture efficiency = 70%
- H. To reduce worker exposure, area dust/fume collectors are located throughout the buildings. No control credit is applied from the use of these collectors.

Section IV. Approach

- A. Actual Emissions (lb/yr) = [(Emission Factor for E70S (lb/10³ lb) x Estimated Actual Annual Carbon Wire Usage/ 1,000) + (Emission Factor for ER5154 (lb/10³ lb) x Estimated Actual Annual Aluminum Wire Usage/ 1,000)] * (1-bldg capt.%)
 Potential Emissions (lb/yr) = Actual Emissions (lb/yr) x PTE Scaling Factor
 Emissions (tpy) = Emissions (lb/yr) / 2,000
- B. PM₁₀ and PM emissions are equal, per AP-42, Sect. 12.19. PM_{2.5} emissions are assumed to equal PM₁₀ emissions.

Section V. Results

A. A summary of potential emissions is provided in Table V-1 below.

Table V-1 Potential Emissions

Pollutant	CAS No.	Scaling Factor	Actual Emissions		Potential Emissions	
			lbs/yr	tons/yr	lbs/yr	tons/yr
PM	---	2.01	680.4	0.34	1,366	0.68
Chromium	7440-47-3	2.01	0.14	0.0001	0.29	0.0001
Manganese	7439-96-5	2.01	38.3	0.02	76.8	0.04
Nickel	7440-02-0	2.01	0.12	0.0001	0.24	0.0001

Section VII. Attachments

A. USEPA AP-42 Welding Emission Factor Data

Attachment A
USEPA AP-42 Welding Emission Factor Data

Table 12.19-1 (Metric And English Units). PM-10 EMISSION FACTORS FOR WELDING OPERATIONS^a

Welding Process	Electrode Type (With Last 2 Digits Of SCC)	Total Fume Emission Factor (g/kg [lb/10 ³ lb] Of Electrode Consumed) ^b	EMISSION FACTOR RATING
SMAW ^c (SCC 3-09-051)	14Mn-4Cr (-04)	81.6	C
	E11018 (-08) ^h	16.4	C
	E308 (-12) ^j	10.8	C
	E310 (-16) ^k	15.1	C
	E316 (-20) ^m	10.0	C
	E410 (-24) ⁿ	13.2	D
	E6010 (-28)	25.6	B
	E6011 (-32)	38.4	C
	E6012 (-36)	8.0	D
	E6013 (-40)	19.7	B
	E7018 (-44)	18.4	C
	E7024 (-48)	9.2	C
	E7028 (-52)	18.0	C
	E8018 (-56) ^p	17.1	C
	E9015 (-60) ^q	17.0	D
	E9018 (-64) ^r	16.9	C
	ECoCr (-68) ^s	27.9	C
	ENi-CI (-72)	18.2	C
ENiCrMo (-76) ^t	11.7	C	
ENi-Cu (-80) ^u	10.1	C	
GMAW ^{d,e} (SCC 3-09-052)	E308L (-12) ^v	5.4	C
	E70S (-54) ^w	5.2	A
	ER1260 (-10)	20.5	D
	ER5154 (-26)	24.1	D
	ER316 (-20) ^x	3.2	C
	ERNiCrMo (-76) ^y	3.9	C
	ERNiCu (-80) ^z	2.0	C

Table 12.19-2. HAZARDOUS AIR POLLUTANT (HAP) EMISSION FACTORS FOR WELDING OPERATIONS^a

Welding Process	Electrode Type (With Last 2 Digits Of SCC)	HAP Emission Factor (10^{-1} g/kg [10^{-1} lb/ 10^3 lb] Of Electrode Consumed) ^b						EMISSION FACTOR RATING
		Cr	Cr(VI)	Co	Mn	Ni	Pb	
SMAW ^c (SCC 3-09-051)	14Mn-4Cr (-04)	13.9	ND	ND	232	17.1	ND	C
	E11018 (-08) ^h	ND	ND	ND	13.8	ND	ND	C
	E308 (-12) ^j	3.93	3.59	0.01	2.52	0.43	ND	D
	E310 (-16) ^k	25.3	18.8	ND	22.0	1.96	0.24	C
	E316 (-20) ^m	5.22	3.32	ND	5.44	0.55	ND	D
	E410 (-24) ⁿ	ND	ND	ND	6.85	0.14	ND	C
	E6010 (-28)	0.03	0.01	ND	9.91	0.04	ND	B
	E6011 (-32)	0.05	ND	0.01	9.98	0.05	ND	C
	E6012 (-36)	ND	ND	ND	ND	ND	ND	ND
	E6013 (-40)	0.04	ND	< 0.01	9.45	0.02	ND	B
	E7018 (-44)	0.06	ND	< 0.01	10.3	0.02	ND	C
	E7024 (-48)	0.01	ND	ND	6.29	ND	ND	C
	E7028 (-52)	0.13	ND	ND	8.4612	ND	1.62	C
	E8018 (-56) ^p	0.17	ND	ND	0.3	0.51	ND	C
	E9016 (-60)	ND	ND	ND	ND	ND	ND	ND
	E9018 (-64) ^q	2.12	ND	ND	7.83	0.13	ND	C
	ECoCr (-68)	ND	ND	ND	ND	ND	ND	ND
	ENi-CI (-72)	ND	ND	ND	0.39	8.90	ND	C
	ENiCrMo (-76) ^r	4.20	ND	ND	0.43	2.47	ND	C
	ENi-Cu-2 (-80) ^s	ND	ND	ND	2.12	4.23	ND	C
GMAW ^{d,e} (SCC 3-09-052)	E308 (-12) ^t	5.24	ND	< 0.01	3.46	1.84	ND	C
	E70S (-54) ^u	0.01	ND	< 0.01	3.18	0.01	ND	A
	ER1260 (-10)	0.04	ND	ND	ND	ND	ND	D
	ER5154 (-26)	0.10	ND	ND	0.34	ND	ND	D
	ER316 (-20) ^v	5.28	0.10	ND	2.45	2.26	ND	D
	ERNiCrMo (-76) ^w	3.53	ND	ND	0.70	12.5	ND	B
ERNiCu (-80) ^x	< 0.01	ND	ND	0.22	4.51	ND	C	

Section I. General InformationProject: Altec Industries, Inc. - Elizabethtown, KYSubject: PM Emissions from Fiberglass Router(s) (Insignificant Activity 22)**Section II. Source Description**

- A. The purpose of this calculation is to estimate PM emissions from the machining of fiberglass parts on automated routers (up to two) and through the associated dust collector. This calculation is based on information provided by the dust collector's manufacturer, Donaldson Torit. Emissions are vented indoors.

IA22 is currently listed in the permit as EP15 CNC Routers. Both units will be relocated to the new fiberglass building but will no longer be located next to each other. One existing unit and the existing dust collector will continue to be IA22. See Gantry Mill calculations for the other existing router. Another router may be purchased in the future and vented to the IA22 dust collector. The PTE will not change if this happens.

Section III. Data

- A. Donaldson Torit has provided the throughput flowrate and maximum filter efficiency. See Attachment A for the manufacturer's emission statement. This information is used to calculate the maximum PM emissions from the dust collector.

Air Flowrate: 6,500 acfm

Maximum Filter Efficiency: 0.002 grains/scf = 0.002 grains/acf. See Attachment A.

Note: The filter efficiency is for air at 70 °F and atmospheric pressure.

- B. Building capture efficiency for PM: 70%
- C. Potential Operating Hours: 8,760 hr/yr

Section IV. Approach

- A. Maximum Controlled PM emissions are calculated using the equation below.

Controlled PM Emissions

 $(\text{lb}/\text{min}) = \text{Maximum Emission Rate (gr/acf)} * \text{Air Flowrate (acf/min)} / 7000 (\text{gr}/\text{lb}) * (1 - \text{building capture}\%)$ $(\text{ton}/\text{yr}) = \text{PM Emissions (lb/min)} * \text{Potential Operating Hours (hr/yr)} * 60 (\text{min}/\text{hr}) / 2000 (\text{lb}/\text{ton})$

- B. Maximum Controlled PM emissions are calculated using the equation below. Control efficiency % is not provided by manufacturer. 95% assumed.

 $\text{Uncontrolled PM Emissions (ton/yr)} = \text{Controlled PM Emissions (ton/yr)} / (1 - 95\%)$



Section V. Results

A. Potential emissions for the fiberglass routing operation are summarized below:

$$\text{PM Emissions (lb/min)} = \frac{0.002 \text{ (gr/acf)} * 6,500 \text{ (acfm)}}{0.001 \text{ lb/min}} / \frac{7,000 \text{ (gr/lb)} * (1 - 70\%)}{2,000 \text{ (lb/ton)}}$$

$$\text{PM Emissions (ton/yr)} = \frac{0.001 \text{ (lb/min)} * 8,760 \text{ (hr/yr)} * 60 \text{ (min/hr)}}{2,000 \text{ (lb/ton)}} = \mathbf{0.15 \text{ ton/yr}}$$

B. Uncontrolled PM emissions (ton/yr) = 2.93

Assume PM₁₀ and PM_{2.5} = PM

Section VI. Attachments

A. Manufacturer's Emissions Statement



Attachment A
Manufacturer's Emissions Statement
See April 2022 Application



Section I. General Information

Subject: PM Emissions from Gantry Mill

Section II. Source Description

A. The purpose of this calculation is to estimate PM emissions from the machining of fiberglass parts on a Gantry Mill and through the associated dust collector. This calculation is based on information provided by the dust collector's manufacturer, Donaldson Torit. Emissions are vented indoors.

The gantry mill was previously part of EP15 CNC Rotuers (IA22). Because it will be located in a different part of the new building and will have its own dust collector, Altec is requesting a new ID.

Section III. Data

A. Donaldson Torit has provided the throughput flowrate and maximum filter efficiency. See Attachment A for the manufacturer's emission statement. This information is used to calculate the maximum PM emissions from the dust collector.

Air Flowrate: 6,500 acfm
Maximum Filter Efficiency: 0.002 grains/scf = 0.002 grains/acf. See Attachment A.
Note: The filter efficiency is for air at 70 °F and atmospheric pressure.

- B. Building capture efficiency for PM: 70%
C. Potential Operating Hours: 8,760 hr/yr

Section IV. Approach

A. Maximum Controlled PM emissions are calculated using the equation below.

Controlled PM Emissions
(lb/min) = Maximum Emission Rate (gr/acf) * Air Flowrate (acf/min) / 7000 (gr/lb) * (1 - building capture%)
(ton/yr) = PM Emissions (lb/min) * Potential Operating Hours (hr/yr) * 60 (min/hr) / 2000 (lb/ton)

B. Maximum Controlled PM emissions are calculated using the equation below. Control efficiency % is not provided by manufacturer. 95% assumed.

Uncontrolled PM Emissions (ton/yr) = Controlled PM Emissions (ton/yr) / (1-95%)

Section V. Results

A. Potential emissions for the fiberglass routing operation are summarized below:

PM Emissions (lb/min) = 0.002 (gr/acf) * 6,500 (acfm) / 7,000 (gr/lb) * (1 - 70%) = 0.001 lb/min

PM Emissions (ton/yr) = 0.001 (lb/min) * 8,760 (hr/yr) * 60 (min/hr) / 2,000 (lb/ton) = 0.15 ton/yr

B. Uncontrolled PM emissions (ton/yr) = 2.93
Assume PM10 and PM2.5 = PM

Section VI. Attachments

A. Manufacturer's Emissions Statement



Attachment A
Manufacturer's Emissions Statement
Identical to IA22. See April 2022 Application.

Section I. General Information

Project: Altec Industries, Inc., Elizabethtown, KY

Subject: Emission calculations for shot blasting operation

Section II. Source Description

- A. The purpose of this calculation is to estimate the maximum process throughput and emissions for the shot blasting system. The process will be conducted in an enclosure. Dust generated will be controlled by a dust collection system and controlled emissions are vented outdoors.

Section III. Data

- A. Shots used for blasting are recycled and reused. Shots are replenished as needed. Based on the current replenish rate, approximately 87% of shots are recycled/reused. Therefore, the remaining 13% of shots replenished are considered PM emissions. The PM emissions from shot blasting are calculated using the replenish rate.
- B. Shot replenish rate = 120 lbs/hr
PM emission rate = 16 lb/hr (13% of shot replenish rate)
- C. Shot blasting is conducted in an enclosed booth that is equipped with an integral dust collector that has a PM removal efficiency of 99.9%
PM removal efficiency: 99.9%

Section IV. Approach

- A. PM₁₀ emissions were estimated based on attached EPA data (indicates that PM₁₀ emissions are approx. 25% of PM).
PM_{2.5} emissions were estimated based on attached AP-42 data (indicates that PM_{2.5} emissions are approx. 2.5% of PM).
- B. Potential emissions (lb/yr) = PM emission rate (lb/hr) * 8,760 (hr/yr) * (1 - PM removal eff. %) * PM wt. fraction
Potential emissions (tpy) = Potential emissions (lb/yr) / 2,000 (lb/ton)

Section VI. Results

- A. A summary of potential emissions is provided in Table V-1 below.

Table V-1 Potential Emissions

Pollutant	Wt Frac. of Total PM ¹	Potential Emissions	
		lbs/yr	tons/yr
PM	1	137	0.07
PM ₁₀	0.25	34	0.02
PM _{2.5}	0.025	3	0.00

Section VII. Attachments

- A. USEPA PM Weight Fraction Data - 2 Pages
- B. PM Removal Efficiency Data for Dust Collector Cartridge



Attachment A
USEPA PM Weight Fraction Data - 2 Pages

**Emission Factor Documentation for AP-42
Section 13.2.6**

Abrasive Blasting

Final Report

**For U. S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Emission Factor and Inventory Group**

**EPA Contract 68-D2-0159
Work Assignment No. 4-02**

MRI Project No. 4604-02

September 1997

TABLE 4-4. SUMMARY OF PM TEST DATA FROM REFERENCE 1^a

Operating condition	Test runs	Total PM emission factor, kg/kg sand	PM-10 emission factor, kg/kg sand ^b	PM-2.5 emission factor, kg/kg sand ^c	Result of mass balance, % closure ^d
Clean surface					
5 mph	17/18	0.029	0.017	0.0024	100
10 mph	9/10	0.068	0.0081	0.0022	95
15 mph	23/24	0.092	0.0045	0.00090	86
=>	Average emission factor		0.063	0.0099	0.0018
Painted surface					
5 mph	15/16	0.027	0.0059	0.0010	99
10 mph	7/8	0.070	0.052	0.00086	98
15 mph	21/22	0.091	0.0091	0.0013	79
=>	Average emission factor		0.063	0.022	0.0011
Oxidized surface					
5 mph	19/20	0.025	0.0057	0.0018	100
10 mph	11/12	0.026	0.014	0.0011	100
15 mph	25/26	0.089	0.0030	0.00026	82
=>	Average emission factor		0.047	0.0074	0.0011

^aAll results to two significant figures. Sand blasting only. Data are A-rated.

^bParticles $\leq 10 \mu\text{m}$ in aerodynamic diameter (equivalent unit density spheres).

^cParticles $\leq 2.5 \mu\text{m}$ in aerodynamic diameter (equivalent unit density spheres).

^dPercent closure = $\frac{\text{total sand recovered} + \text{total particulate emissions}}{\text{total sand fed to tunnel}} = 100$

Determine what percent of total PM is PM10 and PM2.5.

PM10 / PM

$$0.0099 / 0.063 = 0.157$$

$$0.022 / 0.063 = 0.349$$

$$0.0074 / 0.047 = 0.157$$

0.221 avg.

PM2.5 / PM

$$0.0018 / 0.063 = 0.029$$

$$0.0011 / 0.063 = 0.018$$

$$0.0011 / 0.047 = 0.023$$

0.023 avg.

Assume PM10 = 25% of total PM.

Assume PM2.5 = 2.5% of total PM.



Attachment A
PM Removal Efficiency Data for Dust Collector Cartridge

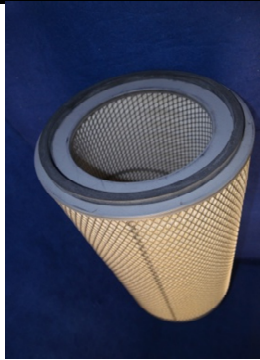


LMS TECHNOLOGIES, INC.
6423 Cecilia Circle
Bloomington, MN 55439
(952) 918-9060, Fax: (952) 918-9061

Test Report-ASHRAE Test Standard 52.2-2012

Report #: **3081**
 Test Date: **04/03/2014**

Test Requested By: MPF Engineered Filters
 Manufacturer: MPF Engineered Filters
 Filter ID: MPF Filter
 Model Number: N/A
 Dimensions: 12.75" x 26" Cylindrical
 Number of Pleats: Mini-Pleats
 Filter Description: White cellulose Cylindrical Filter
 How Filter Obtained: Provided by MPF Engineered Filters



Test Results

Test Air Flow Rate(CFM)/Velocity (FPM)	<u>400 cfm</u>
Initial Resistance (in. WG)	<u>0.300"</u>
Final Resistance (in. WG)	<u>4.000"</u>
Minimum Efficiency Rating Value (MERV)	<u>MERV 9 @ 400 cfm</u>
Minimum Average Efficiency 0.3 to 1.0 Microns (E1)	<u>18.7</u>
Minimum Average Efficiency 1.0 to 3.0 Microns (E2)	<u>45.3</u>
Minimum Average Efficiency 3.0 to 10 Microns (E3)	<u>89.4</u>
Dust Fed to Final Resistance (grams)	<u>565.4 grams</u>
Dust Holding Capacity (grams)	<u>564.8 grams</u>
Arrestance:	<u>99.9%</u> ←

Test Description

Temp & Humidity: 71° F @ 33%
 Particle Analysis: Hiac/Royco FE-80
 Test Dust: ASHRAE 52.1 Dust
 Test Aerosol: KCl, Neutralized
 LMS#: LMS#2802

Test Engineer : Kevin kwong/Emile Tadros/Pat Best/Jose Tizcareno

Approved By: K. C. Kwok, Ph.D.

Data verified by LMS Calibration filter* Patent Pending



CALCULATION SHEET

Calc. No.

NG Comb.

Section I. General Information

Project: Attec Industries, Inc. - Elizabethtown, KY
Calculations for Permit Modification Application

Subject: Air Emissions from Natural Gas-fired Heaters, Ovens, and Make-up Air Units

Section II. Source Description

- A. The purpose of this calculation is to determine potential emissions from the operation of the proposed natural gas-fired heaters, ovens, and make-up air units. Per 401 KAR 52:030 Section 6, these activities can be considered insignificant.

Section III. Data

- A. Potential emissions are estimated based on the total capacity of the burner and maximum annual operating hours of 8,760.

Table III-1. Estimated Potential Natural Gas Usage

Emission Unit	Description	Burner Heat Input Capacity (MMBtu/hr)	Natural Gas Usage	
			Potential (MMcft/hr)	Potential (MMcft/yr)
EP3	Paint Spray Booth Heater	2.5344	0.002	21.77
EP4	Paint Spray Booth Heater	2.5344	0.002	21.77
EP5	Paint Spray Booth Heater	2.5344	0.002	21.77
EP6	Paint Spray Booth Heater	2.5344	0.002	21.77
IA 6	Small Make-Up Air Unit	2.25	0.002	19.32
IA 7	Small Make-Up Air Unit	2.25	0.002	19.32
IA 8	Small Make-Up Air Unit	2.25	0.002	19.32
IA 9	Small Make-Up Air Unit	2.25	0.002	19.32
EP-12	Large Make-Up Air Unit	8.0	0.008	68.74
IA 11	3 Cure Ovens	9.0	0.009	77.29
IA 12	Washer	5.0	0.005	42.94
IA 13	Dry Off Oven	2.0	0.002	17.18
IA 14	Gel Oven	3.0	0.003	25.76
IA 15	Comfort Heating - Sitewide	11.31	0.011	97.17
TBD	Make-Up Air Unit for GC-1	1.425	0.001	12.24

Per AP-42, heat content of natural gas = 1,020 MMBtu/MMcft

IA 15 was previously 1.6 MMBtu/hr. Total provided is new sitewide value.



Section IV. Approach

A. Emissions are calculated by the methods described below.

Estimated natural gas usage (MMcft/hr) = Heat input capacity (MMBtu/hr) / 1,020 (MMBtu/MMcft)
 Estimated natural gas usage (MMcft/yr) = Hourly natural gas usage (MMcft/hr) * 8,760 (hr/yr)

Emissions (lb/hr) = Emission factor (lb/MMcft) * Natural gas usage (MMcft/hr)
 Emissions (ton/yr) = Hourly Emissions (lb/hr) * 8,760 (hr/yr) / 2,000 (lb/ton)

Emission factors (lb/MMcft) from AP-42, Sect. 1.4, Units for Small Boilers [Ref. A and Attachment A]
 Assume PM, PM10, and PM2.5 emissions are equal.

B. Emission Factors are shown in Table IV-1

Table IV-1. Natural Gas Combustion Emission Factors

Emission Factor (lb/MMcft)					
VOC	PM	NO _x	CO	SO _x	Total HAP
5.5	7.6	100	84	0.6	1.888

Except for hexane, individual HAPs are not listed as pollutants of natural gas combustion since the emission factors are very low.

- SCC 40200801 (Petroleum and Solvent Evaporation - Surface Coating Operations - Coating Oven Heater - Natural Gas)
- 10500106 (External Combustion Boilers - Space Heaters - Industrial - Natural Gas)

Section V. Results

A. Estimated emissions are shown in the tables below.

Table V-1. Summary of Potential Annual Emissions

Emission Unit	Description	Potential Emissions (ton/yr)					
		VOC	PM	NO _x	CO	SO _x	Total HAP
EP3	Paint Spray Booth Heater	0.06	0.08	1.09	0.91	0.01	0.02
EP4	Paint Spray Booth Heater	0.06	0.08	1.09	0.91	0.01	0.02
EP5	Paint Spray Booth Heater	0.06	0.08	1.09	0.91	0.01	0.02
EP6	Paint Spray Booth Heater	0.06	0.08	1.09	0.91	0.01	0.02
IA 6	Small Make-Up Air Unit	0.05	0.07	0.97	0.81	0.01	0.02
IA 7	Small Make-Up Air Unit	0.05	0.07	0.97	0.81	0.01	0.02
IA 8	Small Make-Up Air Unit	0.05	0.07	0.97	0.81	0.01	0.02
IA 9	Small Make-Up Air Unit	0.05	0.07	0.97	0.81	0.01	0.02
EP 12	Large Make-Up Air Unit						
IA 11	3 Cure Ovens	0.21	0.29	3.86	3.25	0.02	0.07
IA 12	Washer	0.12	0.16	2.15	1.80	0.01	0.04
IA 13	Dry Off Oven	0.05	0.07	0.86	0.72	0.01	0.02
IA 14	Gel Oven	0.07	0.10	1.29	1.08	0.01	0.02
IA 15	Comfort Heating - Sitewide	0.27	0.37	4.86	4.08	0.03	0.09
TBD	Make-Up Air Unit for GC-1	0.03	0.05	0.61	0.51	0.00	0.01
Project Total:		1.20	1.66	21.85	18.35	0.13	0.41



CALCULATION SHEET

Calc. No.

NG Comb.

Section VI. References

- A. July 1998 Revision to Section 1.4 - Natural Gas Combustion, AP-42, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources. U.S. Environmental Protection Agency, Research Triangle Park, N.C., 5th Edition January 1995.

Section VII. Attachments

- A. USEPA's AP-42 Emission Factors and Natural Gas Heat Content

Attachment A
USEPA's AP-42 Emission Factors
and Natural Gas Heat Content

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION^a

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO _x ^b		CO	
	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS) ^c	280	A	84	B
Uncontrolled (Post-NSPS) ^c	190	A	84	B
Controlled - Low NO _x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	→ 100	B	→ 84	B
Controlled - Low NO _x burners	50	D	84	B
Controlled - Low NO _x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

^b Expressed as NO₂. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_x emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_x emission factor.

^c NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION^a

Pollutant	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
CO ₂ ^b	120,000	A
Lead	0.0005	D
N ₂ O (Uncontrolled)	2.2	E
N ₂ O (Controlled-low-NO _x burner)	0.64	E
PM (Total) ^c	→ 7.6	D
PM (Condensable) ^c	5.7	D
PM (Filterable) ^c	1.9	B
SO ₂ ^d	→ 0.6	A
TOC	11	B
Methane	2.3	B
VOC	→ 5.5	C

^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds.

VOC = Volatile Organic Compounds.
^b Based on approximately 100% conversion of fuel carbon to CO₂. CO₂[lb/10⁶ scf] = (3.67) (CON) (C)(D), where CON = fractional conversion of fuel carbon to CO₂, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2x10⁻⁴ lb/10⁶ scf.

^c All PM (total, condensable, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM₁₀, PM_{2.5} or PM₁ emissions. Total PM is the sum of the filterable PM and condensable PM. Condensable PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

^d Based on 100% conversion of fuel sulfur to SO₂. Assumes sulfur content is natural gas of 2,000 grains/10⁶ scf. The SO₂ emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO₂ emission factor by the ratio of the site-specific sulfur content (grains/10⁶ scf) to 2,000 grains/10⁶ scf.

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION^a

CAS No.	Pollutant	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene ^{b, c}	2.4E-05	D
56-49-5	3-Methylcholanthrene ^{b, c}	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene ^{b, c}	<1.6E-05	E
83-32-9	Acenaphthene ^{b, c}	<1.8E-06	E
203-96-8	Acenaphthylene ^{b, c}	<1.8E-06	E
120-12-7	Anthracene ^{b, c}	<2.4E-06	E
56-55-3	Benz(a)anthracene ^{b, c}	<1.8E-06	E
71-43-2	Benzene ^b	2.1E-03	B
50-32-8	Benzo(a)pyrene ^{b, c}	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene ^{b, c}	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene ^{b, c}	<1.2E-06	E
207-08-9	Benzo(k)fluoranthene ^{b, c}	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene ^{b, c}	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene ^{b, c}	<1.2E-06	E
25321-22-6	Dichlorobenzene ^b	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene ^{b, c}	3.0E-06	E
86-73-7	Fluorene ^{b, c}	2.8E-06	E
50-00-0	Formaldehyde ^b	7.5E-02	B
110-54-3	Hexane ^b	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene ^{b, c}	<1.8E-06	E
91-20-3	Naphthalene ^b	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanthrene ^{b, c}	1.7E-05	D
74-98-6	Propane	1.6E+00	E

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
129-00-0	Pyrene ^{b, c}	5.0E-06	E
108-88-3	Toluene ^b	3.4E-03	C

- ^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. Emission Factors preceded with a less-than symbol are based on method detection limits.
- ^b Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.
- ^c HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.
- ^d The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

TABLE 1.4-4. EMISSION FACTORS FOR METALS FROM NATURAL GAS COMBUSTION^a

CAS No.	Pollutant	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
7440-38-2	Arsenic ^b	2.0E-04	E
7440-39-3	Barium	4.4E-03	D
7440-41-7	Beryllium ^b	<1.2E-05	E
7440-43-9	Cadmium ^b	1.1E-03	D
7440-47-3	Chromium ^b	1.4E-03	D
7440-48-4	Cobalt ^b	8.4E-05	D
7440-50-8	Copper	8.5E-04	C
7439-96-5	Manganese ^b	3.8E-04	D
7439-97-6	Mercury ^b	2.6E-04	D
7439-98-7	Molybdenum	1.1E-03	D
7440-02-0	Nickel ^b	2.1E-03	C
7782-49-2	Selenium ^b	<2.4E-05	E
7440-62-2	Vanadium	2.3E-03	D
7440-66-6	Zinc	2.9E-02	E

^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. Emission factors preceded by a less-than symbol are based on method detection limits. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020.

^b Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.



CALCULATION SHEET

Calc No.

WS-1

Section I. General Information

Project: Altec Industries, Inc. - Elizabethtown, KY
Calculations for Permit Modification Application

Subject: Air Emissions from Seven Stage Pre-Treatment Washer System

Section II. Source Description

- A. The purpose of this calculation is to determine air pollutant emissions from the seven stage pre-treatment washer system. Actual emissions of non-hazardous regulated air pollutants are less than four tons per year; therefore, this process is exempt from the requirement to obtain a construction permit.

Section III. Data

- A. Each metal part to be washed will be subjected to seven (7) stages. Each stage is a batch process. All stages will occur within the same enclosure and vent to the outdoors through one or more stacks.

	Chemical	Potential Usage		Pollutants VOC%
		(gal/yr)	Density	
Stage 1	Al-Clene 43	3915	9.10	2.70%
Stage 2	Al-Clene 43			
Stage 3	City Water / RO			
Stage 4	RO			
Stage 5	Eco-Treat NPLF	5415	8.60	-
Stage 5 Adjust Up	COR-Rinse Adjust	317	8.32	-
Stage 5 Adjust Down	N/A			
Stage 6	RO			
Stage 7	COR-Rinse 404	4500	8.76	7.13%

* VOC% from product Safety Data Sheets and/or other manufacturer's information. VOC% is based on Method 24. See Attachment A.

Section IV. Approach

- A. Chemical concentrates used in the pre-treatment process are diluted with water, so only small amounts of VOCs may be emitted. All VOC is assumed to be emitted to be conservative.
- B. Emissions from each Stage (ton/yr) = Stage proposed usage (gal/yr) * density (lb/gal) * Pollutant% (lb/lb) / 2000 (lb/ton)
- C. Actual pollutant emissions (ton/yr) = Sum of pollutant emissions from each Stage (ton/yr)
- D. Potential emissions (ton/yr) = Actual emissions (ton/yr) * 8760 potential (hr/yr) / 4000 actual (hr/yr)



Section V. Results

A. Estimated actual emissions are shown in Table V-1 below.

Table V-1. Summary of Actual and Potential Emissions

Stage	VOC Emissions (ton/yr)	
	Actual	Potential
1		
2	0.48	1.05
3	-	-
4	-	-
5	-	-
6	-	-
7	1.41	3.08
Total	1.89	4.13

Section VI. Attachments

A. Safety Data Sheets and Manufacturer Information for Washer Chemicals



Attachment A
Safety Data Sheets and Manufacturer Information for Washer Chemicals

SAFETY DATA SHEET

AL CLENE 43

SDS according to the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200), Revision 2012

Section 1. Identification

Product code : 207451-01
Product name : AL CLENE 43
Other means of identification : Not available.

Relevant identified uses of the substance or mixture and uses advised against

Relevant uses : Cleaner
Uses advised against : Any other purpose.

Supplier : Quaker Houghton PA, Inc.
901 E. Hector Street
Conshohocken, PA 19428 USA
T: 610-832-4000

Wallover Oil Company
21845 Drake Road
Strongsville, OH 44149 USA
www.wallover.com
T: (440) 238-9250

ProductStewardship@quakerhoughton.com
www.quakerhoughton.com

Emergency telephone number (with hours of operation) : CHEMTREC US/Canada:1-800-424-9300 or 1-703-527-3887 (24 hours)


Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1
TOXIC TO REPRODUCTION - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

GHS label elements

Section 2. Hazards identification

Hazard pictograms	:	
Signal word	:	Danger
Hazard statements	:	Causes severe skin burns and eye damage. May cause respiratory irritation. May damage fertility or the unborn child.
<u>Precautionary statements</u>		
Prevention	:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash thoroughly after handling.
Response	:	IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
Storage	:	Store locked up. Store in a well-ventilated place. Keep container tightly closed.
Disposal	:	Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified	:	None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
2-aminoethanol	≤10	141-43-5
Alcohols, C8-10, ethers with polyethylene-polypropylene glycol monobenzyl ether	≤3	68154-99-4
2,2',2"-nitrilotriethanol	≤3	102-71-6
Amine neutralized dicarboxylic Acid	≤3	-
Amine neutralized inorganic acid	≤1	-

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Section 4. First aid measures

Description of necessary first aid measures

General advice	:	Get medical attention immediately. If medical advice is needed, have product container or label at hand. Use personal protective equipment as required. Remove contaminated clothing and wash it before reuse. Wash skin surfaces thoroughly after contact.
Inhalation	:	Get medical attention immediately. Move affected person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.

Section 4. First aid measures

- Skin contact** : Get medical attention immediately. Take off immediately all contaminated clothing. Rinse skin with water or shower.
- Eye contact** : Get medical attention immediately. Flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Remove contact lenses, if present and easy to do.
- Ingestion** : Get medical attention immediately. May cause burns to mouth, throat and stomach. Ingestion may cause gastrointestinal irritation and diarrhea. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

- Inhalation** : breathing difficulty or shortness of breath, respiratory tract irritation, coughing
- Skin contact** : pain, redness, burns
- Eye contact** : pain, redness, watering, burns
- Ingestion** : May cause burns to mouth, throat and stomach., stomach pains, nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Use personal protective equipment as required.

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire. Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

- Hazardous thermal decomposition products** : In a fire, hazardous decomposition products may be produced. carbon oxides (CO, CO₂) nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Put on appropriate personal protective equipment (see Section 8). Keep unnecessary personnel away. Avoid breathing vapor or mist. Provide adequate ventilation.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". Evacuate area.

- Environmental precautions** : Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Do not allow any potentially contaminated water, including rain water, runoff from fire fighting or spills, to enter any waterway, sewer or drain.

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. For large spills, dike spilled material or otherwise contain it to ensure runoff does not reach a waterway. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

- Storage temperature** : Not available.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
2-aminoethanol	ACGIH TLV (United States, 7/2023) TWA 8 hours: 3 ppm. TWA 8 hours: 7.5 mg/m ³ . STEL 15 minutes: 6 ppm. STEL 15 minutes: 15 mg/m ³ . NIOSH REL (United States, 10/2020) TWA 10 hours: 3 ppm. TWA 10 hours: 8 mg/m ³ . STEL 15 minutes: 6 ppm. STEL 15 minutes: 15 mg/m ³ . OSHA PEL (United States, 5/2018) TWA 8 hours: 3 ppm. TWA 8 hours: 6 mg/m ³ .
Alcohols, C8-10, ethers with polyethylene-polypropylene glycol monobenzyl ether 2,2',2"-nitrioltriethanol	None.
Amine neutralized dicarboxylic Acid Amine neutralized inorganic acid	ACGIH TLV (United States, 7/2023) TWA 8 hours: 5 mg/m ³ . None. None.

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. Keep equipment clean.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers.

Other skin protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Wear appropriate respiratory protection.

Section 8. Exposure controls/personal protection

Thermal hazards : Not expected under normal use. Not relevant/applicable due to nature of the product.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.
Color : Clear. Yellow.
Odor : Not available.
Odor threshold : Not available.
pH : 9.8
Melting point : 0°C (32°F)
Boiling point : >100°C (>212°F)
Flash point : Closed cup: 110°C (230°F)
Evaporation rate : Not available.
Flammability (solid, gas) : Not available.
Lower and upper explosive (flammable) limits : Not available.
Vapor pressure : Not available.
Vapor density : Not available.
Density : 1.09 g/cm³ [20°C (68°F)]
Solubility :

Media	Result
water	Easily soluble

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

VOC content

Product : 0.25 lbs/gal

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific measures identified.

Incompatible materials : Strong oxidizing materials. strong acids. strong alkalis

Section 10. Stability and reactivity

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity : Based on available data, the classification criteria are not met.

Acute toxicity estimates

Route	ATE value
Oral	15662.33 mg/kg
Dermal	10243.99 mg/kg
Inhalation (dusts and mists)	15.13 mg/l

Numerical measures of toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-aminoethanol	LC50 Inhalation Dusts and mists	Rat	1.5 mg/l	4 hours
	LD50 Oral	Rat	1720 mg/kg	-
Alcohols, C8-10, ethers with polyethylene-polypropylene glycol monobenzyl ether	LD50 Dermal	Rabbit	2000 mg/kg	-
	LD50 Oral	Rat	2414 mg/kg	-
2,2',2"-nitrilotriethanol	LD50 Oral	Rat	7.39 g/kg	-

Irritation/Corrosion : Causes severe skin burns and eye damage.

Product/ingredient name	Result	Species	Score	Exposure	Observation
2-aminoethanol	Eyes - Severe irritant	Rabbit	-	250 ug	-
	Skin - Moderate irritant	Rabbit	-	505 mg	-
2,2',2"-nitrilotriethanol	Eyes - Mild irritant	Rabbit	-	10 mg	-
	Eyes - Severe irritant	Rabbit	-	20 mg	-
	Skin - Mild irritant	Human	-	72 hours 15 mg l	-
	Skin - Mild irritant	Rabbit	-	24 hours 560 mg	-
	Skin - Severe irritant	Mouse	-	50 %	-

Respiratory or skin sensitization : Based on available data, the classification criteria are not met.

Mutagenicity : Based on available data, the classification criteria are not met.

Carcinogenicity : Based on available data, the classification criteria are not met.

Product/ingredient name	OSHA	IARC	NTP
2,2',2"-nitrilotriethanol	-	3	-

Reproductive toxicity : May damage the unborn child. May damage fertility.

Specific target organ toxicity (single exposure) : Irritating to respiratory system.

Name	Category	Route of exposure	Target organs
2-aminoethanol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure) : Based on available data, the classification criteria are not met.

Aspiration hazard : Based on available data, the classification criteria are not met.

Section 11. Toxicological information

Other information : None identified.

Information on the likely routes of exposure

Inhalation : Severely irritating to the respiratory system.
Skin contact : Causes burns.
Eye contact : Causes serious eye damage.
Ingestion : Causes digestive tract burns. May cause burns to mouth, throat and stomach.

Delayed and immediate effects and also chronic effects from short and long term exposure

May damage the unborn child. May damage fertility. Irritating to respiratory system.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : breathing difficulty or shortness of breath, respiratory tract irritation, coughing
Skin contact : pain, redness, burns
Eye contact : pain, redness, watering, burns
Ingestion : May cause burns to mouth, throat and stomach., stomach pains, nausea or vomiting

Section 12. Ecological information

This material is harmful to aquatic life with long lasting effects.

Toxicity

Product/ingredient name	Result	Species	Exposure
2-aminoethanol Alcohols, C8-10, ethers with polyethylene-polypropylene glycol monobenzyl ether 2,2',2''-nitrioltriethanol	Acute EC50 2.8 mg/l	Algae - <i>Pseudokirchneriella subcapitata</i>	72 hours
	Acute LC50 >100000 µg/l Marine water	Crustaceans - <i>Crangon crangon</i> - Adult	48 hours
	Acute LC50 170 mg/l Fresh water	Fish - <i>Carassius auratus</i>	96 hours
	Acute EC50 6.3 mg/l	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute EC50 609.98 mg/l Fresh water	Crustaceans - <i>Ceriodaphnia dubia</i> - Neonate	48 hours
	Acute LC50 11800000 µg/l Fresh water Chronic NOEC 16 mg/l Fresh water	Fish - <i>Pimephales promelas</i> Daphnia - <i>Daphnia magna</i>	96 hours 21 days

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
2-aminoethanol	-	-	Readily
2,2',2''-nitrioltriethanol	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
2-aminoethanol	-1.31	-	Low
2,2',2''-nitrioltriethanol	-1	<3.9	Low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.




Section 12. Ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Empty containers or liners may retain some product residues. Empty containers retain product residue and can be hazardous. Care should be taken when handling emptied containers that have not been cleaned or rinsed out.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN3267	UN3267	UN3267
UN proper shipping name	Corrosive liquid, basic, organic, n.o.s. (2-aminoethanol)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (2-aminoethanol)	Corrosive liquid, basic, organic, n.o.s. (2-aminoethanol)
Transport hazard class(es)	8 	8 	8 
Packing group	II	II	II
Environmental hazards	No.	No.	No.

Additional information

DOT Classification : **Limited quantity** Yes.
Packaging instruction Exceptions: 154. Non-bulk: 202. Bulk: 242.
Quantity limitation Passenger aircraft/rail: 1 L. Cargo aircraft: 30 L.
Special provisions B2, IB2, T11, TP2, TP27

IMDG : **Emergency schedules** F-A, S-B
Special provisions 274

IATA : **Quantity limitation** Passenger and Cargo Aircraft: 1 L. Packaging instructions: 851.
Cargo Aircraft Only: 30 L. Packaging instructions: 855. Limited Quantities - Passenger Aircraft: 0.5 L. Packaging instructions: Y840.
Special provisions A3, A803

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations

TSCA 12(b) - Chemical export notification

Not applicable.

Clean Water Act (CWA) 311

None of the components are listed.

Clean Water Act (CWA) 307

None of the components are listed.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)

None of the components are listed.

CERCLA: Hazardous substances.

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Reportable quantity : 1,4-dioxane: 100 lbs. (45.4 kg); α -chlorotoluene: 100 lbs. (45.4 kg); ethylene oxide: 10 lbs. (4.54 kg); acetic acid: 5000 lbs. (2270 kg); 2,2'-iminodiethanol: 100 lbs. (45.4 kg);

SARA 302/304

None of the components are listed.

SARA 311/312

Classification : See GHS Classification in section 2 for hazard class information

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

State regulations

Massachusetts : The following components are listed: ETHANOLAMINE; TRIETHANOLAMINE
New York : None of the components are listed.
New Jersey : The following components are listed: ETHANOLAMINE; TRIETHANOLAMINE
Pennsylvania : The following components are listed: ETHANOL, 2-AMINO-; ETHANOL, 2,2',2"-NITRILOTRIS-

California

California Prop. 65

Ingredient name	Concentration	
Diethanolamine	Trace	Cancer
Benzyl chloride	Trace	Cancer
Ethylene oxide	Trace	Cancer, Developmental, Reproductive female, Reproductive male
1,4-Dioxane	Trace	Cancer

SCAQMD Rule 1144

This product has not been tested for VOC content by the ASTM E-1868-10 (2021) method and is not approved for sale or distribution in the SCAQM District of California if the product is used as a metal forming, metal removal, metal treating, metal protection fluid

International regulations

Montreal Protocol

Not listed.

Section 15. Regulatory information

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

United States : All components are active or exempted.

Canada : All components are listed or exempted.

Section 16. Other information

Date of issue/Date of revision : 5/30/2024

Version : 2

Quaker Houghton Product Stewardship

Key to abbreviations :

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- N/A = Not available
- SGG = Segregation Group
- UN = United Nations
- VOC = Volatile Organic Compound

References : **Safety data sheets of raw materials, global regulatory body information, scientific literature, and testing data .**

🔹 Indicates information that has changed from previously issued version.

Notice to reader

This product's safety information is provided to assist our customers in assessing compliance with safety/health/environmental regulations. The information contained herein is based on data available to us and is correct to the best of our knowledge, information and belief at the date of its publication. However, no warranty of merchantability, fitness for any use, or any other warranty is expressed or implied regarding the accuracy of this data, the results to be obtained from the use thereof, or the hazards connected with the use of the product. Since the use of this product is within the exclusive control of the user, it is the user's obligation to determine the conditions for safe use of the product. Such conditions should comply with all regulations concerning the product. The company referenced in this Safety Data Sheet assumes no liability for any injury or damage, direct or consequential, resulting from the use of this product unless such injury or damage is attributable to the gross negligence of such company.

SECTION 1: SUPPLIER IDENTIFICATION

CORAL CHEMICAL COMPANY
Corporate Headquarters
1915 Industrial Avenue
Zion, IL 60099
(800)228-4646

Revision Date: 7/16/2014
Supersedes Date: 10/31/2013

INFOTRAC 24 HOUR EMERGENCY TELEPHONE (800) 535-5053 OR (352) 323-3500

SECTION 2: HAZARD IDENTIFICATION - GHS CLASSIFICATION AND LABELING



Signal Word: Danger
Label: Corrosive

Classification according to Regulation (EC) No. 1272/2008 [CLP]
H314 Causes severe skin burns and eye damage. Category 1

Hazard Statement
H314 Causes severe skin burns and eye damage.

Precautionary Statements

- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P301+P330+P331 IF SWALLOWED: Rinse mouth. Do not induce vomiting
- P340 Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P361 Remove/take off immediately all contaminated clothing.

1 of 8

CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

P363 Wash contaminated clothing before reuse.

P501 Dispose of contents/container according to regulations.

SECTION 3: COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

Ingredient Name	CAS #	% by Weight	Classification 67/548/EEC	Classification Reg. 1272/2008
Hexafluorozirconic Acid	12021-95-3	1-5	C, R35	H314, H331

SECTION 4: FIRST AID MEASURES

Route of Exposure: Inhalation, ingestion, direct contact

ALWAYS HAVE PLENTY OF WATER AVAILABLE FOR FIRST AID. SPEED OF REMOVAL IS ESSENTIAL.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Wash with soap and water. Mild skin effect may be treated by application of 2.5% calcium gluconate KY jelly. More severe burns may require injection with calcium gluconate solution.

Eyes: Immediately flush with plenty of water for at least 15 minutes; ensure water flushing of entire surface of eye and lid. Obtain medical attention.

Inhalation: Remove to fresh air; give oxygen if breathing is difficult. Keep warm. Obtain medical attention at once. Monitor patient for respiratory complications and pulmonary edema for at least 48 hours.

Ingestion: Do NOT induce vomiting. Dilution of ingested fluoride must be done with caution. Ingestion requires close medical supervision for at least 48 hours in order to control shock, inflammation, progressive tissue destruction and electrolyte imbalance. Obtain medical attention at once.

Remove contaminated clothing promptly. Launder clothing before re-use; discard shoes.

IN ALL CASES, OBTAIN IMMEDIATE MEDICAL ATTENTION, NO MATTER HOW SLIGHT THE BURN MAY INITIALLY APPEAR.

SECTION 5: Fire-Fighting Measures

Flash Point: Will not catch fire

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

SAFETY DATA SHEET

CORAL ECO-TREAT NPLF 130-013 Multi Metal Conversion Coating

Flammable Limits: Not Applicable

Extinguishing Media: Use extinguishing media proper to the primary cause of the fire.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus with full face piece, operated in pressure demand or other positive pressure mode.

Unusual Fire Hazards: Material can react with metal to liberate hydrogen, a flammable gas.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill: Use appropriate protective equipment. Dike to contain spill, cover with inert absorbent material, sweep up and place in a suitable container. Flush area well with water. Keep spills and cleaning run-off out of municipal sewers and open bodies of water.

Waste Disposal: Material collected on absorbent must be disposed to a permitted hazardous waste management facility in accordance with the Clean Air and Clean Water Acts, Resources Conservation and Recovery Act, and all relevant laws or regulations regarding disposal.

SECTION 7: HANDLING AND STORAGE

Precautions: Keep container closed. Keep container dry. Conduct any handling in a manner that will minimize employee contact and spill potential. Do not ingest. Do not breathe gas/fumes/vapor/spray. Never add water to the product. When dilution, slowly add acid to water while stirring, to avoid spattering, boiling and eruption. Keep product away from incompatible materials such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture. May corrode metallic surfaces. Emptied container will retain vapor and product residue.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection: NIOSH-approved respirator for dusts and mists

Ventilation: Mechanical (local or general exhaust)

Protective Gloves: Impervious Rubber Gloves

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

SAFETY DATA SHEET

CORAL ECO-TREAT NPLF 130-013 Multi Metal Conversion Coating

Eye Protection: Chemical goggles or face shield. Do not wear contact lenses.

Protective Equipment: Protective clothing to prevent skin contact.
Safety shower recommended in all storage and handling areas.

Exposure Limits:

Component/CAS #	Agency	Limits
Hexafluorozirconic Acid 12021-95-3	ACGIH TWA	5 mg (Zr)/m ³
	OSHA TWA	5 mg (Zr)/m ³
	ACGIH STEL	10 mg (Zr) m ³
	ACGIH TWA	2.5 mg (F)/m ³
	OSHA TWA	2.5 mg (F)/m ³

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquid, clear, colorless
Odor: Acrid
pH: 2.0 @ 70° (4% solution in deionized water)
Melting Point/Freezing Point: >212°F/32°F
Flash Point: Will not catch fire
Volatility/vol (%): >90%
Evaporation Rate: As water
Flammability (solid, gas): Not applicable
Upper/lower Flammability or Explosive Limits: Unknown
Vapor Pressure: Water vapor
Vapor Density: Water vapor
Relative Density: Not Available
Solubility(ies): Complete in water
Partition coefficient: n-octanol/water: Not available
Auto-ignition Temperature: Not available
Decomposition temperature: Not available
Viscosity: Not Applicable
Volatile Organic Compounds: None
Specific Gravity (H₂O = 1): 1.03

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: Stable

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

SAFETY DATA SHEET

CORAL ECO-TREAT NPLF 130-013 Multi Metal Conversion Coating

Conditions to Avoid: Do not store or test solutions of this product in glass.
Product is very corrosive to metal.

Incompatible Materials: Strong alkalis

Hazardous Decomposition Products: When heated to decomposition, emits hydrogen fluoride gas.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological effects of this product mixture have not been tested.

Product Information – Principle Routes of Exposure

Inhalation	Will cause severe gastric pain, internal bleeding, tissue damage. May cause death.
Eye Contact	Severe irritation and burns, reddening of tissue, burning sensation
Skin Contact	Will cause irritation and burning sensation.
Ingestion	Will cause severe irritation of mouth, throat, esophagus and stomach

Relevant Hazard Class Information

Irritation	Irritating to eyes and skin and if inhaled
Corrosivity	Contact with most metals will produce hydrogen
Sensitization	None known
Repeated Dose Toxicity	None known
Carcinogenicity	None known
Mutagenicity	None known
Toxicity to Reproduction	None known

SECTION 12: ECOLOGICAL INFORMATION

Ecological effects of this product mixture have not been tested.

SECTION 13: DISPOSAL CONSIDERATIONS

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

SAFETY DATA SHEET

CORAL ECO-TREAT NPLF 130-013 Multi Metal Conversion Coating

Waste Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations.

SECTION 14: TRANSPORT INFORMATION

UN NUMBER: UN3264
DOT SHIPPING NAME: Corrosive Liquid, Acidic, Inorganic, n.o.s. (Hydrofluorozirconic Acid), 8, PGI
REPORTABLE QUANTITY (RQ): >50,000 lbs. of product

If a discharge of a hazardous substance contained in this product equals or exceeds in 24 hours the RQ amount shown immediately report the discharge to the National Response Center, 800-424-8802.

SECTION 15: REGULATORY INFORMATION

SARA Sec. 313 Reportable Ingredients: None
CERCLA: Reportable Quantity = >50,000 lbs of product
SARA Sec. 302 (EHS): TPQ = None
TSCA 8(b): Yes
WHMIS Classification: Class E – Corrosive
State Right to Know Laws (Reportable Chemicals): Hydrofluorozirconic Acid
Sara Title III Hazard Classifications:

Acute: Yes
Chronic: Yes
Fire: No
Pressure: No
Reactivity: No

Other Information:

HMIS RATING:
Health: 2 Flammability: 0 Reactivity: 1 Personal Protection: D

SECTION 16: OTHER INFORMATION

REFERENCES:

1. Ingredient MSDS submitted by supplier.

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

2. GHS Guidance Documentation
3. Hazardous Materials Identification System Index
 - 0 = Minimal Hazard
 - 1 = Slight Hazard
 - 2 = Moderate Hazard
 - 3 = Serious Hazard
 - 4 = Severe HazardD = Face Shield and Eye Protection, Gloves, Apron
4. EC Regulation No. 1907/2006 and No. 1272/2008 and 1999/45

The classification detailed on this Safety Data Sheet refers to the neat material only. Dilution of the product may reduce the classification.

Risk Phrases

R35 Causes severe burns

Hazard Phrases

H314 Causes severe skin burns and eye damage.
H331 Toxic if inhaled.

Precautionary Statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do not induce vomiting
P340 Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P361 Remove/take off immediately all contaminated clothing.
P363 Wash contaminated clothing before reuse.
P501 Dispose of contents/container according to regulations.

SAFETY DATA SHEET

**CORAL ECO-TREAT NPLF
130-013 Multi Metal Conversion Coating**

Indication of Change: Add GHS Classifications to Sections 2 and 16

This SDS has been prepared by

Technical Department
Coral Chemical Company

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

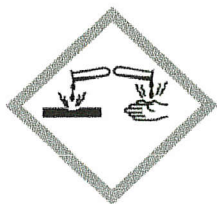
SECTION 1: SUPPLIER IDENTIFICATION

CORAL CHEMICAL COMPANY
Corporate Headquarters
1915 Industrial Avenue
Zion, IL 60099
(800)228-4646

Revision Date: 8/18/2014
Supersedes Date: 6/18/2013

INFOTRAC 24 HOUR EMERGENCY TELEPHONE (800) 535-5053 OR (352) 323-3500

SECTION 2: HAZARD IDENTIFICATION - GHS CLASSIFICATION AND LABELING



Signal Word: Danger

Label: Corrosive

Classification according to Regulation (EC) No. 1272/2008 [CLP]

H314 Causes severe skin burns and eye damage. Category 1

Hazard Statement

H314 Causes severe skin burns and eye damage.

Precautionary Statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do not induce vomiting

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P361 Remove/take off immediately all contaminated clothing.

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

P363 Wash contaminated clothing before reuse.

P501 Dispose of contents/container according to regulations.

SECTION 3: COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

Ingredient Name	CAS #	% by Weight	Classification 67/548/EEC	Classification Reg. 1272/2008
Ammonia	7664-41-7	4-9	C, R34, R50	H314

SECTION 4: FIRST AID MEASURES

Route of Exposure: Inhalation, ingestion, direct contact

ALWAYS HAVE PLENTY OF WATER AVAILABLE FOR FIRST AID.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Wash with soap and water.

Eyes: Immediately flush with plenty of water for at least 15 minutes; ensure water flushing of entire surface of eye and lid. Obtain medical attention at once.

Inhalation: Remove to fresh air; give oxygen if breathing is difficult. Keep warm. Obtain medical attention at once.

Ingestion: Do NOT induce vomiting. If conscious, give large amounts of water to drink. Obtain immediate medical attention. Never give anything by mouth to an unconscious person.

Remove contaminated clothing promptly. Launder clothing before re-use; discard shoes.

SECTION 5: Fire-Fighting Measures

Flash Point: Will not catch fire

Flammable Limits: Lower Flame Limit: 16%, Higher Flame Limit: 25%

Extinguishing Media: Water fog

**COR RINSE ADJUST
161-021 Ammonia Solution**

Special Fire Fighting Procedures: Evacuate area of unprotected personnel. Wear self-contained breathing apparatus with full face piece, operated in pressure demand or other positive pressure mode. Remain upwind of fire to avoid hazardous vapors and decomposition products. Use water spray to cool fire exposed containers and disperse vapors. Run-off from fire control may cause pollution.

Unusual Fire Hazards: Contact with strong oxidizing agents may cause an explosion. The presence of oil or other combustible materials will increase the fire hazard. The heat of a welding or cutting torch could cause an explosion. Ammonia will combine readily with either silver oxide or mercury to form explosive fulminating compounds. Contact with halogens and chlorates can cause explosions.

Hazardous Combustion Products: Nitrogen oxides. Ammonia.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill: Evacuate unprotected personnel from area. Maintain adequate ventilation. Follow personal protective equipment recommendations found in Section 8. Never exceed any occupational exposure limit. Shut off source of leak if safe to do so. Keep upwind of leak or spill. Contain spill, place into drums for proper disposal. Flush remaining area with water to remove trace residue and dispose of properly. Soak up residue with inert absorbent material. Place in non-leaking containers for immediate disposal. Avoid direct discharge to sewers and surface waters.

Waste Disposal: Dispose of in a permitted hazardous waste management facility following all local, state and federal regulations.

SECTION 7: HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Do not swallow. Avoid breathing vapors, mists, or dust. Do not eat, drink, or smoke in work area. Wash thoroughly after handling. Empty containers retain product residue (vapor, dust, or liquid) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other source of

SAFETY DATA SHEET**COR RINSE ADJUST
161-021 Ammonia Solution**

ignition. They may explode and cause injury or death. CORROSIVE MATERIAL. Avoid dust or mist formation.

Storage: CORROSIVE MATERIAL. Store in a cool, well-ventilated area, out of direct sunlight. Store in a dry location away from heat. Keep away from incompatible materials. Keep containers tightly closed. Do not store in unlabeled or mislabeled containers. Keep away from all sources of ignition. Store in suitable stainless steel or aluminum containers. Store below 77 Deg. F. Avoid copper bearing fittings on pipes, tanks, etc.

8. EXPOSURESECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection: NIOSH-approved vapor respirator if TLV is exceeded.

Ventilation: Mechanical (local or general exhaust)

Protective Gloves: Impervious Rubber Gloves

Eye Protection: Chemical goggles or face shield. Do not wear contact lenses.

Protective Equipment: Protective clothing to prevent skin contact.
Safety shower recommended in all storage and handling areas.

Exposure Limits:

Component/CAS #	Agency	Limits
Ammonia 7664-41-7	ACGIH TWA	25 ppm
	ACGIH STEL	35 ppm
	OSHA PEL	35 mg/M3

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquid, colorless

Odor: Pungent

pH: Strongly alkaline

Melting Point/Freezing Point: Not determined

Flash Point: None

Volatility/vol (%): 100%

Evaporation Rate: <1

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

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**COR RINSE ADJUST
161-021 Ammonia Solution**

Flammability (solid, gas): Not applicable
Upper/lower Flammability or Explosive Limits: 16%/25%
Vapor Pressure: Not determined
Vapor Density: Not determined
Relative Density: Not Available
Solubility(ies): Complete in water
Partition coefficient: n-octanol/water: Not available
Auto-ignition Temperature: Not available
Decomposition temperature: Not available
Viscosity: Not Applicable
Volatile Organic Compounds: None
Specific Gravity (H2O = 1): 0.997

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: Stable
Incompatible Materials: Strong oxidizing agents, acids, hypochlorites
Hazardous Decomposition Products: Ammonia gas and oxides of nitrogen

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological effects of this product mixture have not been tested. The toxicological effects of the hazardous ingredient are listed below.

Ammonium Hydroxide

Oral LD50 – 350 mg/kg Rat

Product Information – Principle Routes of Exposure

Inhalation	Causes severe irritation and burns
Eye Contact	Causes severe irritation and burns
Skin Contact	Causes severe irritation and burns
Ingestion	Causes severe irritation and burns

Relevant Hazard Class Information

Irritation	Will cause severe irritation and burns to skin and eyes
Corrosivity	Contact with most metals will produce hydrogen
Sensitization	None known

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

SAFETY DATA SHEET

COR RINSE ADJUST 161-021 Ammonia Solution

Repeated Dose Toxicity	None known
Carcinogenicity	None known
Mutagenicity	None known
Toxicity to Reproduction	None known

SECTION 12: ECOLOGICAL INFORMATION

Ecological effects of this product mixture have not been tested.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations.

SECTION 14: TRANSPORT INFORMATION

UN NUMBER:	UN3266
DOT SHIPPING NAME:	Corrosive Liquid, Basic, Inorganic, N.O.S. (Ammonium Hydroxide) 8, PGIII
REPORTABLE QUANTITY (RQ):	1,666 lbs. of product

If a discharge of a hazardous substance contained in this product equals or exceeds in 24 hours the RQ amount shown immediately report the discharge to the National Response Center, 800-424-8802.

SECTION 15: REGULATORY INFORMATION

SARA Sec. 313 Reportable Ingredients - Ammonia
CERCLA: Reportable Quantity = 1,666 lbs of product
SARA Sec. 302 (EHS): TPQ = Not applicable.
TSCA 8(b): Yes
WHMIS Classification: Class E – Corrosive
State Right to Know Laws (Reportable Chemicals): Ammonia

Sara Title III Hazard Classifications:

Acute:	Yes
Chronic:	Yes
Fire:	Yes

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

SAFETY DATA SHEET

COR RINSE ADJUST 161-021 Ammonia Solution

Pressure: No
Reactivity: No
Other Information:

HMIS RATING:

Health: 2 Flammability: 1 Reactivity: 0 Personal Protection: F

SECTION 16: OTHER INFORMATION

REFERENCES:

1. Ingredient MSDS submitted by supplier.
2. GHS Guidance Documentation
3. Hazardous Materials Identification System Index
 - 0 = Minimal Hazard
 - 1 = Slight Hazard
 - 2 = Moderate Hazard
 - 3 = Serious Hazard
 - 4 = Severe HazardF = Safety Glasses, Gloves, Apron, Dust Respirator
4. EC Regulation No. 1907/2006 and No. 1272/2008 and 1999/45

The classification detailed on this Safety Data Sheet refers to the neat material only. Dilution of the product may reduce the classification.

Risk Phrases

R34 Causes burns
R50 Very toxic to aquatic organisms

Hazard Statement

H314 Causes severe skin burns and eye damage.

Precautionary Statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do not induce vomiting
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

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CORAL CHEMICAL COMPANY believes the information contained in this Safety Data Sheet is current. However, since the use of this information and the conditions of the use of this product are not under the control of CORAL CHEMICAL COMPANY it is the user's obligation to determine the conditions of safe use of the product.

SAFETY DATA SHEET

**COR RINSE ADJUST
161-021 Ammonia Solution**

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P361 Remove/take off immediately all contaminated clothing.

P363 Wash contaminated clothing before reuse.

P501 Dispose of contents/container according to regulations.

Indication of Change: Add GHS Classifications to Sections 2 and 16.

This SDS has been prepared by

Technical Department
Coral Chemical Company



SAFETY DATA SHEET

COR RINSE 404

SDS according to the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200), Revision 2012

Section 1. Identification

Product code : 207410-01
Product name : COR RINSE 404
Other means of identification : Not available.

Relevant identified uses of the substance or mixture and uses advised against

Relevant uses : Corrosion inhibitor
Uses advised against : Any other purpose.

Supplier : Quaker Houghton PA, Inc.
901 E. Hector Street
Conshohocken, PA 19428 USA
T: 610-832-4000

Wallover Oil Company
21845 Drake Road
Strongsville, OH 44149 USA
www.wallover.com
T: (440) 238-9250

ProductStewardship@quakerhoughton.com
www.quakerhoughton.com

Emergency telephone number (with hours of operation) : CHEMTREC US/Canada:1-800-424-9300 or 1-703-527-3887 (24 hours)

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Section 2. Hazards identification

Prevention	: Not applicable.
Response	: Not applicable.
Storage	: Not applicable.
Disposal	: Not applicable.
Hazards not otherwise classified	: None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Section 4. First aid measures

Description of necessary first aid measures

General advice	: Get medical attention if symptoms occur. If medical advice is needed, have product container or label at hand. Use personal protective equipment as required. Remove contaminated clothing and wash it before reuse. Wash skin surfaces thoroughly after contact.
Inhalation	: Move affected person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention.
Skin contact	: Wash with plenty of soap and water. Remove contaminated clothing and wash it before reuse.
Eye contact	: Flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Remove contact lenses, if present and easy to do.
Ingestion	: Ingestion may cause gastrointestinal irritation and diarrhea. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Inhalation	: Not expected under normal use.
Skin contact	: Not expected under normal use.
Eye contact	: Not expected under normal use.
Ingestion	: Not expected under normal use.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: Treat symptomatically.
Specific treatments	: No specific treatment.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Use personal protective equipment as required.

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire. Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.

- Hazardous thermal decomposition products** : In a fire, hazardous decomposition products may be produced. carbon oxides (CO, CO₂) nitrogen oxides

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Put on appropriate personal protective equipment (see Section 8). Keep unnecessary personnel away.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Do not allow any potentially contaminated water, including rain water, runoff from fire fighting or spills, to enter any waterway, sewer or drain.

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. For large spills, dike spilled material or otherwise contain it to ensure runoff does not reach a waterway. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest.

Section 7. Handling and storage

- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
- Storage temperature** : Not available.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

- Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. Keep equipment clean.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Other skin protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : A respirator is not needed under normal and intended conditions of product use. Use appropriate respiratory protection if there is a risk of exceeding any exposure limits.
- Thermal hazards** : Not expected under normal use. Not relevant/applicable due to nature of the product.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Hazy, Colorless.
Odor	: Bland.
Odor threshold	: Not available.
pH	: 9 [Conc. (% w/w): 4%]
Melting point	: 0°C (32°F)
Boiling point	: >100°C (>212°F)
Flash point	: Not available.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Density	: 1.05 g/cm ³ [20°C (68°F)]
Solubility	:

Media	Result
water	Easily soluble

Partition coefficient: n-octanol/water	: Not applicable.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.

Particle characteristics

Median particle size	: Not applicable.
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Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific measures identified.
Incompatible materials	: Strong oxidizing materials. strong acids. strong alkalis
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity : Based on available data, the classification criteria are not met.

Acute toxicity estimates

Not available.

Numerical measures of toxicity

Not available.

Irritation/Corrosion : Based on available data, the classification criteria are not met.

Respiratory or skin sensitization : Based on available data, the classification criteria are not met.

Mutagenicity : Based on available data, the classification criteria are not met.

Carcinogenicity : Based on available data, the classification criteria are not met.

Reproductive toxicity : Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure) : Based on available data, the classification criteria are not met.

Specific target organ toxicity (repeated exposure) : Based on available data, the classification criteria are not met.

Aspiration hazard : Based on available data, the classification criteria are not met.

Other information : None identified.

Information on the likely routes of exposure

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Eye contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

None identified.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : Not expected under normal use.

Skin contact : Not expected under normal use.

Eye contact : Not expected under normal use.

Ingestion : Not expected under normal use.

Section 12. Ecological information

No known significant effects or critical hazards.

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Empty containers or liners may retain some product residues. Empty containers retain product residue and can be hazardous. Care should be taken when handling emptied containers that have not been cleaned or rinsed out.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations

TSCA 12(b) - Chemical export notification

Not applicable.

Clean Water Act (CWA) 311

None of the components are listed.

Clean Water Act (CWA) 307

Section 15. Regulatory information

None of the components are listed.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)

None of the components are listed.

CERCLA: Hazardous substances.

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this regulation, Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

SARA 302/304

None of the components are listed.

SARA 311/312

Classification : See GHS Classification in section 2 for hazard class information

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

California

California Prop. 65

This product does not contain any Proposition 65 chemicals.

SCAQMD Rule 1144

This product has not been tested for VOC content by the ASTM E-1868-10 (2021) method and is not approved for sale or distribution in the SCAQM District of California if the product is used as a metal forming, metal removal, metal treating, metal protection fluid

International regulations

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

United States : All components are active or exempted.

Canada : All components are listed or exempted.

Section 16. Other information

Date of issue/Date of revision	: 5/30/2024
Version	: 1.01 Quaker Houghton Product Stewardship
Key to abbreviations	: ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) N/A = Not available SGG = Segregation Group UN = United Nations VOC = Volatile Organic Compound
References	: Safety data sheets of raw materials, global regulatory body information, scientific literature, and testing data .

▣ Indicates information that has changed from previously issued version.

Notice to reader

This product's safety information is provided to assist our customers in assessing compliance with safety/health/environmental regulations. The information contained herein is based on data available to us and is correct to the best of our knowledge, information and belief at the date of its publication. However, no warranty of merchantability, fitness for any use, or any other warranty is expressed or implied regarding the accuracy of this data, the results to be obtained from the use thereof, or the hazards connected with the use of the product. Since the use of this product is within the exclusive control of the user, it is the user's obligation to determine the conditions for safe use of the product. Such conditions should comply with all regulations concerning the product. The company referenced in this Safety Data Sheet assumes no liability for any injury or damage, direct or consequential, resulting from the use of this product unless such injury or damage is attributable to the gross negligence of such company.



ANALYTICAL REPORT

REPORT NO. SSR- 2025-7702

CUSTOMER Altec

CONSULTANT Dean Rinks

SAMPLE DATE 8/15/25 **DATE REC'D** 8/29/25 **TEST COMPLETED** 9/3/25

SAMPLE INFORMATION Determine VOC content of Cor Rinse 404 by EPA Method 24

PURPOSE

VOC content of COR RINSE 404 following EPA method 24 was requested. The EPA method 24 is targeted specifically for paints and coatings. To improve the accuracy when testing high-water products, slight deviations of EPA method 24 were necessary. For testing of COR RINSE 404 product in the lab, the drying time and temperature were modified to better control water loss while ensuring complete VOC evaporation.

METHODS

The VOC level was determined following EPA Method 24 by weighting $\sim 0.3 \pm 0.1$ grams of product into a glass dish and placing it in an oven at 65°C (150°F) for 2 hours to remove any volatile components. Testing was performed in a duplicate and the average of the results is reported. The following calculations were used to derive the VOCs for each test:

Eq. 1 (For % VOC)

$$m = \frac{(m_i - m_f) * 100\%}{m_i}$$

where...

m = percent mass loss %
m_i = initial mass of sample
m_f = final mass of sample

Eq. 2 (For VOC in g/L)

$$voc = \left(\left(\frac{m_i - m_f}{m_i} \right) - \left(\frac{w}{100} \% \right) \right) * \rho * 1000 \text{ mL/L}$$

where...

voc = volatile organic compounds content (g/L)
ρ = density of sample (g/mL), @ 15°C
w = theoretical water content
m_i = initial mass of sample
m_f = final mass of sample

RESULTS

Table 1 – VOC Content at 65°C		
Product name	COR RINSE 404	
Density	1.05	
Water Content %	77.79	
	1	2
Sample (g)	0.3072	0.3093
Residue (g)	0.0467	0.0463
Loss (g)	0.2605	0.2630
Water Content (g)	0.2390	0.2406
% Volatile Matter (total)	84.80	85.03
% VOC	7.01	7.24
VOC (g/ml)	0.0736	0.0760
Avg % VOC	7.13	
Avg VOC (g/ml)	0.0748	
VOC (g/L)	74.80	

The COR RINSE 404 product was found to have a VOC level of **74.80 g/L** by modified EPA Method 24 at 65°C.

Reported By: Elena Martinez

Section I. General Information

Project: Altec Industries, Inc. - Elizabethtown, KY

Subject: Emission calculations for 6 kW laser cutting operation (Insignificant Activity 16)

Section II. Source Description

- A. The purpose of this calculation is to estimate the maximum process throughput and emissions for the laser cutting system. The throughput will be calculated using the information regarding the percentage of laser cutting usage per day and the laser cutter specifications. The throughput will be expressed in cubic inches of metal removed. The emissions from the laser cutter will be controlled using an enclosed capture and filtration system. Controlled emissions will be vented indoors.
- B. Emissions are being revised to account for building capture.

Section III. Data

- A. The laser cutter will be used to cut both mild steel and aluminum. For emission calculations, it is assumed that all of the throughput will be mild steel. This will result in a conservative estimate, since aluminum alloys are lighter and contain fewer metal HAPs than mild steel. In addition, it is expected that the thicknesses of aluminum cut on the laser cutter will be less than those of the mild steel pieces.
- B. Due to the batch nature of the operation, the laser cutter will not operate 8,760 hours per year. Emissions will be calculated using a percentage of machine on-time, the maximum thickness that will be cut, and the cutting rate at the maximum thickness. Note that actual thickness of sheets cut will vary. The operating parameters are provided below:

6,000 Hours of operation per year
 68% Laser cutter operation % in a year (accounting for cutter downtime between loadings)
 0.5 inch - maximum thickness of the metal
 79 inches per minute - laser cutter rate for cutting 0.5" mild steel Used max of O₂ or N₂ speeds.
 0.70 mm - width of kerf for laser at 0.5" sheet thickness

- C. Steel cut by the laser cutter contains HAP constituents. The weight percentages of these HAPs are based on recent certification sheets from facility and are summarized below in Table III-1.

Table III-1. HAP Constituent Weight Percentages

Compound	CAS Number	Weight Percentage
Manganese	7439-96-5	0.95%
Nickel	7440-02-0	0.03%
Chromium	7440-47-3	0.04%

- D. The laser metal cutter will be equipped with an integral dust collector system. Filters used in the dust collector have a removal efficiency of 99.6% MERV 15 (Attachment A of November 2017 application)
- E. Emissions from the dust collector will vent indoors. Per KYDEP, assume building capture = 70%

Section IV. Assumptions

- A. The laser cutter is operating at 8760 hours a year, including downtimes. The actual cutter operating hours are 6000 per year.
- B. From web search, the typical maximum density of high strength, low alloy sheet metal is 0.284 lb/in³
 (Typical range is 0.275 to 0.298 lb/in³) 7,850 kg/m³
- C. The emission factors for laser cutting were taken from the USEPA reference document "Emissions of Fume, Nitrogen Oxides and Noise in Plasma Cutting of Stainless and Mild Steel" (See Attachment B in November 2017 application). Assume emission factors for laser cutting are similar to plasma cutting.
 Amount of fumes expressed as % of total amount of material removed by cutting
 = 5% (mild steel, 8 mm)
- D. All particulate matter (PM) is assumed to be PM₁₀ (per reference document).

Section V. Approach

- A. Metal removed (in³/hr) = cutting rate (in/min) * thickness (in) * kerf (mm) * 60 (min/hr) / 25.4 (mm/in)
- B. Maximum PM emissions are calculated using the equation below.
 Uncontrolled PM₁₀ Emissions (ton/yr) = $\frac{\text{metal removed (in}^3\text{/hr)} * \text{density (lb/in}^3\text{)} * 8760 \text{ (hr/year)} * \text{laser cutter usage \%} * \text{fume emission \%}}{2,000 \text{ (lb/ton)}}$
- C. HAP emissions are calculated as follows.
 HAP Emissions (ton/yr) = PM₁₀ emissions (ton/yr) * HAP weight percentage in steel
- D. Controlled emissions are calculated as follows.
 Controlled emissions = Uncontrolled emissions * (1 - control efficiency%) * (1 - building capture%)

Section VI. Results

- A. Amount of metal removed = 65.31 in³/hr
- B. Total uncontrolled and controlled emissions are summarized below in Table VI-1.

Table VI-1. Potential Pollutant Emissions

Pollutant	Emissions (ton/yr)		Uncontrolled Emission Factor (lb/hr)
	Uncontrolled	Controlled	
PM ₁₀	2.78	0.003	0.93
PM-HAP	0.03	0.000	0.01
Chromium	0.00	0.000	0.00
Manganese	0.03	0.000	0.01
Nickel	0.00	0.000	0.00

Section I. General Information

Project: Altec Industries, Inc. - Elizabethtown, KY

Subject: Emission calculations for 10 kW laser cutting operation (Insignificant Activity 17)

Section II. Source Description

- A. The purpose of this calculation is to estimate the maximum process throughput and emissions for the laser cutting system. The throughput will be calculated using the information regarding the percentage of laser cutting usage per day and the laser cutter specifications. The throughput will be expressed in cubic inches of metal removed. The emissions from the laser cutter will be controlled using an enclosed capture and filtration system. Controlled emissions will be vented indoors.
- B. Emissions are being revised to account for building capture.

Section III. Data

- A. The laser cutter will be used to cut both mild steel and aluminum. For emission calculations, it is assumed that all of the throughput will be mild steel. This will result in a conservative estimate, since aluminum alloys are lighter and contain fewer metal HAPs than mild steel. In addition, it is expected that the thicknesses of aluminum cut on the laser cutter will be less than those of the mild steel pieces.
- B. Due to the batch nature of the operation, the laser cutter will not operate 8,760 hours per year. Emissions will be calculated using a percentage of machine on-time, the maximum thickness that will be cut, and the cutting rate at the maximum thickness. Note that actual thickness of sheets cut will vary. The operating parameters are provided below:
 - 5,000 Hours of operation per year
 - 57% Laser cutter operation % in a year (accounting for cutter downtime between loadings)
 - 1 inch - maximum thickness of the metal
 - 35 inches per minute - laser cutter rate for cutting 1" mild steel
 - 0.90 mm - width of kerf for laser at 1" sheet thickness

- C. Steel cut by the laser cutter contains HAP constituents. The weight percentages of these HAPs are based on recent certification sheets from facility and are summarized below in Table III-1.

Table III-1. HAP Constituent Weight Percentages

Compound	CAS Number	Weight Percentage
Manganese	7439-96-5	0.95%
Nickel	7440-02-0	0.03%
Chromium	7440-47-3	0.04%

- D. The laser metal cutter will be equipped with an integral dust collector system. Filters used in the dust collector have a removal efficiency of 95.0% MERV 15 (Attachment A or January 2025 Notification)
- E. Emissions from the dust collector will vent indoors. Per KYDEP, assume building capture = 70%

Section IV. Assumptions

- A. The laser cutter is operating at 8760 hours a year, including downtimes. The actual cutter operating hours are 5000 per year.
- B. From web search, the typical maximum density of high strength, low alloy sheet metal is 0.284 lb/in³
(Typical range is 0.275 to 0.298 lb/in³) 7,850 kg/m³
- C. The emission factors for laser cutting were taken from the USEPA reference document "Emissions of Fume, Nitrogen Oxides and Noise in Plasma Cutting of Stainless and Mild Steel" (See Attachment B in January 2025 Notification). Assume emission factors for laser cutting are similar to plasma cutting.
 - Amount of fumes expressed as % of total amount of material removed by cutting = 5% (mild steel, 8 mm)
- D. All particulate matter (PM) is assumed to be PM₁₀ (per reference document).

Section V. Approach

- A. Metal removed (in³/hr) = cutting rate (in/min) * thickness (in) * kerf (mm) * 60 (min/hr) / 25.4 (mm/in)
- B. Maximum PM emissions are calculated using the equation below.
 Uncontrolled PM₁₀ Emissions (ton/yr) = metal removed (in³/hr) * density (lb/in³) * 8760 (hr/year) * laser cutter usage % * fume emission % / 2,000 (lb/ton)
- C. HAP emissions are calculated as follows.
 HAP Emissions (ton/yr) = PM₁₀ emissions (ton/yr) * HAP weight percentage in steel
- D. Controlled emissions are calculated as follows.
 Controlled emissions = Uncontrolled emissions * (1 - control efficiency%) * (1 - building capture%)

Section VI. Results

- A. Amount of metal removed = 74.41 in³/hr
- B. Total uncontrolled and controlled emissions are summarized below in Table VI-1.

Table VI-1. Potential Pollutant Emissions

Pollutant	Emissions (ton/yr)		Uncontrolled Emission Factor (lb/hr)
	Uncontrolled	Controlled	
PM ₁₀	2.64	0.04	1.06
PM-HAP	0.03	0.00	0.01
Chromium	0.00	0.00	0.00
Manganese	0.03	0.00	0.01
Nickel	0.00	0.00	0.00

Section I. General Information

Project: Attec Industries, Inc., Elizabethtown, KY

Subject: Emission calculations for plasma cutting operation (Insignificant Activity 18)

Section II. Source Description

- A. The purpose of this calculation is to estimate the maximum process throughput and emissions for the plasma cutting system. The throughput will be calculated using the information regarding the percentage of plasma cutting usage per day and the plasma cutter specifications. The throughput will be expressed in cubic inches of metal removed. The emissions from the plasma cutter will be controlled using an enclosed capture and filtration system. Controlled emissions will be vented indoors.
- B. Emissions are being revised to account for building capture.

Section III. Data

- A. The plasma cutter will be used to cut both mild steel and aluminum. For emission calculations, it is assumed that all of the throughput will be mild steel. This will result in a conservative estimate, since aluminum alloys are lighter and contain fewer metal HAPs than mild steel. In addition, it is expected that the thicknesses of aluminum cut on the plasma cutter will be less than those of the mild steel pieces.
- B. Due to the batch nature of the operation, the plasma cutter will not operate 8,760 hours per year. Emissions will be calculated using a percentage of machine on-time, the maximum thickness that will be cut, and the cutting rate at the maximum thickness. Note that actual thickness of sheets cut will vary. The operating parameters are provided below:

6,000 Hours of operation per year
 68% Plasma cutter operation % in a year (accounting for cutter downtime between loadings)
 1.25 inch - maximum thickness of the metal
 65 inches per minute - plasma cutter rate for cutting 1.25" mild steel
 4.17 mm - width of kerf for plasma cutter at 1.25" sheet thickness

- C. Steel cut by the plasma cutter contains HAP constituents. The weight percentages of these HAPs are based on recent certification sheets from facility and are summarized below in Table III-1.

Table III-1. HAP Constituent Weight Percentages

Compound	CAS Number	Weight Percentage
Manganese	7439-96-5	0.95%
Nickel	7440-02-0	0.03%
Chromium	7440-47-3	0.04%

- D. The plasma metal cutter will be equipped with an integral dust collector system. Filters used in the dust collector have a removal efficiency of 99.995% (Attachment A of February 2018 application)
- E. Emissions from the dust collector will vent indoors. Per KYDEP, assume building capture = 70%

Section IV. Assumptions

- A. The plasma cutter is operating at 8760 hours a year, including downtimes. The actual cutter operating hours are 6000 per year.
- B. From web search, the typical maximum density of high strength, low alloy sheet metal is 0.284 lb/in³
 (Typical range is 0.275 to 0.298 lb/in³) 7,850 kg/m³
- C. The emission factors for plasma cutting were taken from the USEPA reference document "Emissions of Fume, Nitrogen Oxides and Noise in Plasma Cutting of Stainless and Mild Steel" (See Attachment B of February 2018 application).
 Amount of fumes expressed as % of total amount of material removed by cutting
 = 5% (mild steel, 8 mm)
- D. Amount of NOx expressed as lb/hr of NO2. Use high end of range to be conservative.
 = 5.5 l/min (dry cutting, mild steel, 8 mm)
 = 1.4 lb NO2/hr at standard temperature and pressure (STP)
 Assume STP conditions = 1 atm, 298.15 K
- E. All particulate matter (PM) is assumed to be PM₁₀ (per reference in Attachment B).

Section V. Approach

- A. Metal removed (in³/hr) = cutting rate (in/min) * thickness (in) * kerf (mm) * 60 (min/hr) / 25.4 (mm/in)
- B. Maximum PM emissions are calculated using the equation below.
 Uncontrolled PM₁₀ Emissions (ton/yr) = metal removed (in³/hr) * density (lb/in³) * 8760 (hr/year) * plasma cutter usage % * fume emission % / 2,000 (lb/ton)
- C. HAP emissions are calculated as follows.
 HAP Emissions (ton/yr) = PM₁₀ Emissions (ton/yr) * HAP Weight Percentage in steel
- D. NOx uncontrolled emissions are calculated as follows.
 NOx Emissions (ton/yr) = 8,760 (hr/yr) * plasma cutter usage % * Dry cutting NOx emissions (lb/hr) / 2,000 (lb/ton)
- E. Controlled PM emissions are calculated as follows.
 Controlled emissions = Uncontrolled emissions * (1 - control efficiency%) * (1 - building capture%)

Section VI. Results

- A. Amount of metal removed = 799.5 in³/hr
- B. Total uncontrolled and controlled emissions are summarized below in Table VI-1.

Table VI-1. Potential Pollutant Emissions

Pollutant	Emissions (ton/yr)		Uncontrolled Emission Factor (lb/hr)
	Uncontrolled	Controlled	
NOx	4.10	4.10	1.368
PM ₁₀	34.01	0.001	11.34
PM-HAP	0.33	0.000	0.111
Chromium	0.01	0.000	0.004
Manganese	0.32	0.000	0.108
Nickel	0.01	0.000	0.003

Section I. General Information

Project: Attec Industries, Inc. - Elizabethtown, KY

Subject: Emission calculations for 10 kW laser cutting operation (Insignificant Activity 19)

Section II. Source Description

- A. The purpose of this calculation is to estimate the maximum process throughput and emissions for the laser cutting system. The throughput will be calculated using the information regarding the percentage of laser cutting usage per day and the laser cutter specifications. The throughput will be expressed in cubic inches of metal removed. The emissions from the laser cutter will be controlled using an enclosed capture and filtration system. Controlled emissions will be vented indoors.
- B. Emissions are being revised to account for building capture.

Section III. Data

- A. The laser cutter will be used to cut both mild steel and aluminum. For emission calculations, it is assumed that all of the throughput will be mild steel. This will result in a conservative estimate, since aluminum alloys are lighter and contain fewer metal HAPs than mild steel. In addition, it is expected that the thicknesses of aluminum cut on the laser cutter will be less than those of the mild steel pieces.
- B. Due to the batch nature of the operation, the laser cutter will not operate 8,760 hours per year. Emissions will be calculated using a percentage of machine on-time, the maximum thickness that will be cut, and the cutting rate at the maximum thickness. Note that actual thickness of sheets cut will vary. The operating parameters are provided below:
 - 5,000 Hours of operation per year
 - 57% Laser cutter operation % in a year (accounting for cutter downtime between loadings)
 - 1 inch - maximum thickness of the metal
 - 35 inches per minute - laser cutter rate for cutting 1" mild steel
 - 0.90 mm - width of kerf for laser at 1" sheet thickness
- C. Steel cut by the laser cutter contains HAP constituents. The weight percentages of these HAPs are based on recent certification sheets from facility and are summarized below in Table III-1.

Table III-1. HAP Constituent Weight Percentages

Compound	CAS Number	Weight Percentage
Manganese	7439-96-5	0.95%
Nickel	7440-02-0	0.03%
Chromium	7440-47-3	0.04%

- D. The laser metal cutter will be equipped with an integral dust collector system. Filters used in the dust collector have a removal efficiency of 95.0% MERV 15 (Attachment A of May 2025 Notification)
- E. Emissions from the dust collector will vent indoors. Per KYDEP, assume building capture = 70%

Section IV. Assumptions

- A. The laser cutter is operating at 8760 hours a year, including downtimes. The actual cutter operating hours are 5000 per year.
- B. From web search, the typical maximum density of high strength, low alloy sheet metal is 0.284 lb/in³
(Typical range is 0.275 to 0.298 lb/in³) 7,850 kg/m³
- C. The emission factors for laser cutting were taken from the USEPA reference document "Emissions of Fume, Nitrogen Oxides and Noise in Plasma Cutting of Stainless and Mild Steel" (See Attachment B of May 2025 Notification). Assume emission factors for laser cutting are similar to plasma cutting.
 - Amount of fumes expressed as % of total amount of material removed by cutting = 5% (mild steel, 8 mm)
- D. All particulate matter (PM) is assumed to be PM₁₀ (per reference document).

Section V. Approach

- A. Metal removed (in³/hr) = cutting rate (in/min) * thickness (in) * kerf (mm) * 60 (min/hr) / 25.4 (mm/in)
- B. Maximum PM emissions are calculated using the equation below.
 Uncontrolled PM₁₀ Emissions (ton/yr) = $\frac{\text{metal removed (in}^3\text{/hr)} * \text{density (lb/in}^3\text{)} * 8760 \text{ (hr/year)} * \text{laser cutter usage \%} * \text{fume emission \%}}{2,000 \text{ (lb/ton)}}$
- C. HAP emissions are calculated as follows.
 HAP Emissions (ton/yr) = PM₁₀ emissions (ton/yr) * HAP weight percentage in steel
- D. Controlled emissions are calculated as follows.
 Contr. Controlled emissions = Uncontrolled emissions * (1 - control efficiency%) * (1 - building capture%)

Section VI. Results

- A. Amount of metal removed = 74.41 in³/hr
- B. Total uncontrolled and controlled emissions are summarized below in Table VI-1.

Table VI-1. Potential Pollutant Emissions

Pollutant	Emissions (ton/yr)		Uncontrolled Emission Factor (lb/hr)
	Uncontrolled	Controlled	
PM ₁₀	2.64	0.04	1.06
PM-HAP	0.03	0.00	0.01
Chromium	0.00	0.00	0.00
Manganese	0.03	0.00	0.01
Nickel	0.00	0.00	0.00

Section I. General Information

Project: Attec Industries, Inc. - Elizabethtown, KY

Subject: Emission calculations for 15 kW laser cutting operation (Insignificant Activity 21)

Section II. Source Description

- A. The purpose of this calculation is to estimate the maximum process throughput and emissions for the laser cutting system. The throughput will be calculated using the information regarding the percentage of laser cutting usage per day and the laser cutter specifications. The throughput will be expressed in cubic inches of metal removed. The emissions from the laser cutter will be controlled using an enclosed capture and filtration system. Controlled emissions will be vented indoors.
- B. Emissions are being revised to account for building capture.

Section III. Data

- A. The laser cutter will be used to cut both mild steel and aluminum. For emission calculations, it is assumed that all of the throughput will be mild steel. This will result in a conservative estimate, since aluminum alloys are lighter and contain fewer metal HAPs than mild steel. In addition, it is expected that the thicknesses of aluminum cut on the laser cutter will be less than those of the mild steel pieces.
- B. Due to the batch nature of the operation, the laser cutter will not operate 8,760 hours per year. Emissions will be calculated using a percentage of machine on-time, the maximum thickness that will be cut, and the cutting rate at the maximum thickness. Note that actual thickness of sheets cut will vary. The operating parameters are provided below:

8,760 Hours of operation per year
 100% Laser cutter operation % in a year (accounting for cutter downtime between loadings)
 0.5 inch - maximum thickness of the metal
 201 inches per minute - laser cutter rate for cutting 0.5" mild steel
 0.35 mm - width of kerf for laser at 0.5" sheet thickness

- C. Steel cut by the laser cutter contains HAP constituents. The weight percentages of these HAPs are based on recent certification sheets from facility and are summarized below in Table III-1.

Table III-1. HAP Constituent Weight Percentages

Compound	CAS Number	Weight Percentage
Manganese	7439-96-5	0.95%
Nickel	7440-02-0	0.03%
Chromium	7440-47-3	0.04%

- D. The laser metal cutter will be equipped with an integral dust collector system. Filters used in the dust collector have a removal efficiency of 95.0% MERV 15 (Attachment A in 2021 Renewal Application)
- E. Emissions from the dust collector will vent indoors. Per KYDEP, assume building capture = 70%

Section IV. Assumptions

- A. The laser cutter is operating at 8760 hours a year, including downtimes. The actual cutter operating hours are 8760 per year.
- B. From web search, the typical maximum density of high strength, low alloy sheet metal is 0.284 lb/in³
 (Typical range is 0.275 to 0.298 lb/in³) 7,850 kg/m³
- C. Fume content and emission factors for laser cutting were taken from the USEPA reference document "Emissions of Fume, Nitrogen Oxides and Noise in Plasma Cutting of Stainless and Mild Steel" (See Attachment B in 2021 Renewal Application). Assume emission factors for laser cutting are similar to plasma cutting.
 Amount of fumes expressed as % of total amount of material removed by cutting
 = 5% (mild steel, 8 mm)
 Assume similar fume percentages using nitrogen as cutting gas.
- D. All particulate matter (PM) is assumed to be PM₁₀ (per reference document).

Section V. Approach

- A. Metal removed (in³/hr) = cutting rate (in/min) * thickness (in) * kerf (mm) * 60 (min/hr) / 25.4 (mm/in)
- B. Maximum PM emissions are calculated using the equation below.
 Uncontrolled PM₁₀ Emissions (ton/yr) = metal removed (in³/hr) * density (lb/in³) * 8760 (hr/year) * laser cutter usage % * fume emission % / 2,000 (lb/ton)
- C. HAP emissions are calculated as follows.
 HAP Emissions (ton/yr) = PM₁₀ emissions (ton/yr) * HAP weight percentage in steel
- D. Controlled emissions are calculated as follows.
 Controlled emissions = Uncontrolled emissions * (1 - control efficiency%) * (1 - building capture%)

Section VI. Results

- A. Amount of metal removed = 83.09 in³/hr
- B. Total uncontrolled and controlled emissions are summarized below in Table VI-1.

Table VI-1. Potential Pollutant Emissions

Pollutant	Emissions (ton/yr)		Uncontrolled Emission Factor (lb/hr)
	Uncontrolled	Controlled	
PM ₁₀	5.16	0.08	1.18
PM-HAP	0.05	0.00	0.01
Chromium	0.00	0.00	0.00
Manganese	0.05	0.00	0.01
Nickel	0.00	0.00	0.00