

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***STATEMENT OF BASIS / SUMMARY***

Conditional Major, Operating  
Permit: F-25-012  
Daramic, LLC  
5525 KY 2830, Owensboro, KY 42303  
February 17, 2025  
Dylan Buckingham, Reviewer

SOURCE ID:	21-059-00006
AGENCY INTEREST:	894
ACTIVITY:	APE20250001

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## SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 3081, Unsupported Plastics Film and Sheets

Single Source Det.  Yes  No If Yes, Affiliated Source AI:

Source-wide Limit  Yes  No If Yes, See Section 4, Table A

28 Source Category  Yes  No If Yes, Category:

County: Daviess

Nonattainment Area  N/A  PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  Ozone  Lead  
If yes, list Classification:

PTE\* greater than 100 tpy for any criteria air pollutant  Yes  No  
If yes, for what pollutant(s)?  
 PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  VOC

PTE\* greater than 250 tpy for any criteria air pollutant  Yes  No  
If yes, for what pollutant(s)?  
 PM<sub>10</sub>  PM<sub>2.5</sub>  CO  NO<sub>x</sub>  SO<sub>2</sub>  VOC

PTE\* greater than 10 tpy for any single hazardous air pollutant (HAP)  Yes  No  
If yes, list which pollutant(s): Hexane

PTE\* greater than 25 tpy for combined HAP  Yes  No

\*PTE does not include self-imposed emission limitations.

### Description of Facility:

The Owensboro facility manufactures battery separators through its Research and Development (R&D) operations, which consist of the following processes: mixing of bulk materials, extrusion of the mixture, extraction of oil from the polyethylene web using hexane, and finishing by application of coating and/or slitting/chopping. The process also involves auxiliary operations including a natural gas-fired boiler and an emergency diesel-fired fire pump engine.

**SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM**

Permit Number: F-25-012

Activity: APE20250001

Application Received: December 31, 2024

Application Complete: February 17, 2025

Permit Action:  Initial  Renewal  Significant Rev  Minor Rev  Administrative  
 Construction/Modification Requested?  Yes  No NSR Applicable?  Yes  No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action  Yes  No

**Description of Action:**

On November 24, 2021, the Division for Air Quality received an application from Daramic, LLC for renewal of their Title V permit. Prior to permit issuance, Daramic submitted an application requesting a Conditional Major permit.

On December 31, 2024, the Division for Air Quality received an application outlining that Daramic would be downsizing their facility and were requesting a Conditional Major permit. Daramic removed all units besides one boiler (EP 77), one Emergency diesel fire engine (EP 228), and one pilot lab extractor referred to as EP67, 68. This pilot lab extractor was previously an insignificant activity but was reclassified as a Section B emission point due to its hexane potential. Additionally, Daramic removed distillate fuel oil as an alternate fuel source and will only be using natural gas in EP 77.

F-25-012 Emission Summary				
Pollutant	2023 Actual (tpy)	Previous PTE V-16-052 R1 (tpy)	Change (tpy)	Revised PTE F-25-012 (tpy)
CO	12.07	60.447	-41.25	19.2
NO <sub>x</sub>	14.4	90.242	-50.102	40.14
PT	1.80	22.05	-19.06	2.987
PM <sub>10</sub>	1.80	22.05	-19.06	2.987
PM <sub>2.5</sub>	1.38	13.59	-10.61	2.987
SO <sub>2</sub>	0.09	2.011	-0.295	1.716
VOC	244.45	607.17	-579.3	27.88
Lead	7.18E-5	3.283E-4	-2.46E-4	8.28E-5
Greenhouse Gases (GHGs)				
Carbon Dioxide	16,805	77,712	-57,436	20,276
Methane	0.32	1.484	-1.08	0.40
Nitrous Oxide	0.03	0.152	-0.11	0.04
CO <sub>2</sub> Equivalent (CO <sub>2</sub> e)	16,822	77,794	-57,495	20,299
Hazardous Air Pollutants (HAPs)				
Hexane; N-Hexane	97.40	<529.98	-504.72	25.26/9.0*
Combined HAPs:	97.45	<530.04	-504.75	25.29/9.03*
*	Source -wide limit to preclude classification as a major source of HAPs			

**SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS**

<b>EP77 Natural Gas Fired Boiler</b>				
<b>Pollutant</b>	<b>Emission Limit or Standard</b>	<b>Regulatory Basis for Emission Limit or Standard</b>	<b>Emission Factor Used and Basis</b>	<b>Compliance Method</b>
PM	F(77)=0.3168 lb/MMBtu	401 KAR 59:015, Section 4(1)(c)	AP-42 Chapter 1.4. 7.6 lbs/mmscf	Assumed based upon natural gas combustion
Opacity	20% opacity	401 KAR 59:015, Section 4(2)	N/A	Assumed based upon natural gas combustion
SO <sub>2</sub>	F(77)=1.7379 lb/MMBtu	401 KAR 59:015, Section 5(1)	AP-42 Chapter 1.4. 0.6 lbs/mmscf	Assumed based upon natural gas combustion
Hexane	9.0 tpy Source-Wide	401 KAR 52:030	AP-42 Chapter 1.4 1.8 lbs/mmscf	Calculate source-wide monthly and 12-month rolling hexane total
<b>Emission Point</b>	<b>Designation</b>	<b>Description</b>		<b>Year Installed</b>
EP77	ED223	<b>Cleaver Brooks 900 HP Boiler</b> Primary Fuel: Natural Gas Backup Fuel: NA Max Rated Capacity: 37.8 mmBtu/hr Control Device: None		1996

**Applicable Regulation:**

**401 KAR 59:015**, *New indirect heat exchangers*, applicable to indirect heat exchangers having a heat input capacity greater than one (1) million BTU per hour (MMBtu/hr) commenced on or after April 9, 1972 (401 KAR 59:015, Section 2(1)).

**401 KAR 60:005**, Section 2(2)(d), 40 C.F.R. 60.40c through 60.48c (**Subpart Dc**), *Standards of Performance for Small Industrial Commercial-Institutional Steam Generating Units*, applies to units with a maximum design heat input capacity of 100 million British thermal units per hour (mmBtu/hr) or less, but greater than or equal to 10 mmBtu/hr that commenced construction after June 9, 1989

**401 KAR 63:020**, *Potentially hazardous matter or toxic substances* [State-Origin Requirement]

**Comments:**

Since the source has voluntarily taken a 9 ton per year single HAP source wide limit, 40 CFR 63 Subpart DDDDD no longer applies. Additionally, with the removal of diesel fuel being an option for EP77 in APE20250001, 40 CFR 63, Subpart JJJJJ does not apply.

Emergency Fire Pump Engine			
Emission Point	Designation	Description	Year Installed
228	EG	Diesel-fired Emergency Fire Pump Cummins, Model NT-280-IF Rated Capacity: 235 Hp Fuel Input: 22.3 mmBtu/hr	1972
<p><b>Applicable Regulation:</b>                      401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (<b>Subpart ZZZZ</b>), <i>National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines</i>.</p> <p><b>Comments:</b>                      N/A</p>			

EP 67,68 - R&D Pilot Lab Extractor				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
Hexane	9.0 tpy Source-Wide	401 KAR 52:030	Mass Balance 2000 lb/hr	Calculate a source-wide 12-month rolling hexane total monthly
Emission Point	Designation	Description		Year Installed
67, 68	67, 68	Raw material input – 6 lb/hr Finished material Output – 6 m <sup>2</sup> web/hr		Pre-existing
<p><b>Applicable Regulation:</b>                      401 KAR 63:020, <i>Potentially hazardous matter or toxic substances</i> [State-Origin Requirement]</p> <p><b>Comments:</b>                      This R&amp;D Pilot Lab extractor was originally an insignificant activity but with APE20250001 it was reclassified as an emission unit due to its high hexane potential.</p> <p>Exhaust goes through a carbon bed but the facility is not taking credit for any control.</p>				

**SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)**

**Testing Requirements/Results**

<b>Emission Unit(s)</b>	<b>Control Device</b>	<b>Parameter</b>	<b>Regulatory Basis</b>	<b>Frequency</b>	<b>Test Method</b>	<b>Permit Limit</b>	<b>Test Result</b>	<b>Thruput and Operating Parameter(s) Established During Test</b>	<b>Activity Graybar</b>	<b>Date of last Compliance Testing</b>
EP37*	Carbon Bed 2	VOC	401 KAR 50:045	Initial and every 5 years	25A	98%	98.5	280 ft/min 4468.8 lbs/hr	CMN20090003	7/29/2009
EP42*	Carbon Bed 3						97.8	320 ft/min 5107.2 lbs/hr		
EP30*	Carbon Bed 1	VOC	401 KAR 50:045	Initial and every 5 years	25A	96%	96.7	1469.28 lb/hr	CMN20090004	12/2/2009
EP30*	Carbon Bed 1	VOC	401 KAR 50:045	Initial and every 5 years	25A	96%	97.67	60 ft/min	CMN20140001	6/11/2014
EP37*	Carbon Bed 2					98%	97.61	250-275 ft/min		
EP42*	Carbon Bed 3					96%	98.11	325 ft/min		
EP37*	Carbon Bed 2	VOC	401 KAR 50:045	Initial and every 5 years	25A	98%	99.24%	325 ft/min	CMN20140002	10/21/2014
EP30*	Carbon Bed 1	VOC	401 KAR 50:045	Initial and every 5 years	25A	95%	99.21	3500 lbs/hr	CMN20190001	12/10/2019
EP37*	Carbon Bed 2					98%	99.31	3500 lbs/hr		

**Footnotes:**

\* On December 31, 2024, DAQ received an application removing these units from operation.

**SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS**

**Table A - Group Requirements:**

<b>Emission and Operating Limit</b>	<b>Regulation</b>	<b>Emission Unit</b>
9 tpy of a single HAP (Hexane) based on a 12-month rolling total	401 KAR 52:030, <i>Federally-enforceable permits for nonmajor sources</i>	Source-wide
22.5 tpy of combined HAP emissions based on a 12-month rolling total	401 KAR 52:030, <i>Federally-enforceable permits for nonmajor sources</i>	Source-wide

**Table B - Summary of Applicable Regulations:**

<b>Applicable Regulations</b>	<b>Emission Unit</b>
401 KAR 59:015, New indirect heat exchangers	Group 01 (EP77)
401 KAR 60:005, Section 2(2)(d), 40 C.F.R. 60.40c through 60.48c (Subpart Dc), Standards of Performance for Small Industrial Commercial-Institutional Steam Generating Units	Group 01 (EP77)
Group 01 (EP77)	Group 01 (EP77), EP67, 68
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.	EP228

**Table C - Summary of Precluded Regulations:**

<b>Precluded Regulations</b>	<b>Emission Unit</b>
401 KAR 52:020, <i>Title V permits</i>	Source-wide

## **SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)**

### **Table D - Summary of Non Applicable Regulations:**

N/A

### **Air Toxic Analysis**

#### **401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances***

The Division for Air Quality (Division) has performed modeling using SCREEN View on 2/25/2025 of potentially hazardous matter or toxic substances (Hexane) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

### **Single Source Determination**

N/A



**SECTION 5 – PERMITTING HISTORY**

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
V-03-004	Initial Issuance	APE20050001	10/10/2003	4/1/2004	Prevention of significant deterioration for Extractor Line III	PSD
V-03-004 R1	Title V/ PSD Significant Revision	APE20040001	8/2/2004	7/5/2005	The major revision of the battery plate insulator plastic web production plant	PSD
V-03-004 R1	502(b)(10) Change	APE20050002	10/31/2005	12/1/2005	New and Modified Equipment and Processes	PSD
V-03-004 R2	Significant Revision	APE20060002 APE20050003	5/11/2006	9/18/2006	The Mix Tower Dust Collector (2-13-16) Revision; Purchase of Fibermark Facility – Permitting of 900 hp Boiler; Addition of Insignificant Activities	PSD
V-03-004 R3	Significant Revision	APE20070001	3/9/2007	8/6/2007	40 CFR 63 Subpart EEEE air permit language & equipment leaks assessment for Group 12 Tanks	PSD
V-03-004 R4	Minor Revision	APE20090001	6/28/2009	10/8/2009	Temporary shut down of extractor Lines I and II and change in solvent consumption allocation to each Line	PSD
V-03-004 R4	502(b)(10) change	APE20090002	8/24/2009	9/21/2009	changes to emission factor and process rate in the materials handling operations	PSD
V-03-004 R5	Minor Revision	APE20100001	3/19/2010	10/18/2010	Temporary shut down of extractor Lines I and IV and change in solvent consumption allocation to Lines II and III.	PSD

V-11-031	Renewal	APE20110001	1/19/2011	11/22/2011	Renewal	PSD
V-16-052	Renewal	APE20160003	1/11/2017	6/1/2017	Renewal	PSD
V-16-052 R1	Minor Revision	APE20200001	10/16/2021	12/30/2021	Update Emission Calculations	PSD

**SECTION 6 – PERMIT APPLICATION HISTORY**  
N/A

## **APPENDIX A – ABBREVIATIONS AND ACRONYMS**

AAQS	– Ambient Air Quality Standards
BACT	– Best Available Control Technology
Btu	– British thermal unit
CAM	– Compliance Assurance Monitoring
CO	– Carbon Monoxide
Division	– Kentucky Division for Air Quality
ESP	– Electrostatic Precipitator
GHG	– Greenhouse Gas
HAP	– Hazardous Air Pollutant
HF	– Hydrogen Fluoride (Gaseous)
MSDS	– Material Safety Data Sheets
mmHg	– Millimeter of mercury column height
NAAQS	– National Ambient Air Quality Standards
NESHAP	– National Emissions Standards for Hazardous Air Pollutants
NO <sub>x</sub>	– Nitrogen Oxides
NSR	– New Source Review
PM	– Particulate Matter
PM <sub>10</sub>	– Particulate Matter equal to or smaller than 10 micrometers
PM <sub>2.5</sub>	– Particulate Matter equal to or smaller than 2.5 micrometers
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
SO <sub>2</sub>	– Sulfur Dioxide
TF	– Total Fluoride (Particulate & Gaseous)
VOC	– Volatile Organic Compounds

**APPENDIX B – INDIRECT HEAT EXCHANGER EMISSIONS LIMITATIONS**

Summary of All Affected Facilities Used to Determine 401 KAR 59:015 Emission Limits								
EU	Fuel(s)	Capacity (MMBtu/hr)	Constructed	Basis for PM Limit	Total Heat Input Capacity for PM Limit (MMBtu/hr)	Basis for SO <sub>2</sub> Limit	Total Heat Input Capacity for SO <sub>2</sub> Limit (MMBtu/hr)	Notes
02	Natural Gas; No. 2 Fuel Oil	26.8	1959	Unit Subject to 401 KAR 61:015				Removed 2024
03	Natural Gas; No. 2 Fuel Oil	22.3	1959	Unit Subject to 401 KAR 61:015				Removed 2024
01	Natural Gas; No. 2 Fuel Oil	63.0	1970	Unit Subject to 401 KAR 61:015				Removed 2024
77	Natural Gas	37.8	1996	Section 4 (1)(b)	149.9	Section 5(1)(b)	149.9	Removed alternate fuel source in 2024