

December 31, 2024

Michael Kennedy
Director
Kentucky Division for Air Quality
300 Sower Blvd
Frankfort, KY 40601
michael.kennedy@ky.gov

RE: *Significant Permit Revision Application for Title V Permit No. V-16-052 R1
Request for Reclassification as Conditional Major Source
Daramic, LLC – Owensboro, Kentucky Facility (AI: 894; Source ID: 021-059-00006)*

Dear Michael:

Trinity Consultants (Trinity) is submitting the following significant permit revision application for Daramic, LLC's (Daramic's) Owensboro, Kentucky facility. The facility is currently operating under Title V Permit No. V-16-052 R1, which was originally issued by the Kentucky Division for Air Quality (KDAQ) on May 31, 2017, and revised on December 22, 2021. Daramic submitted a timely renewal application as required for this permit.

The current Title V permit covers equipment associated with the full-scale commercial manufacturing of polyethylene battery separators through five main processes: receiving and handling of bulk materials, mixing of bulk materials, extrusion of the mixture, extraction of oil from the polyethylene web, and finishing by application of fiberglass mat to the polyethylene web and/or slitting/chopping. Section C of the permit identifies Insignificant Activities (IAs), including a Research and Development (R&D) scale battery separator production process as well as a wastewater treatment system. Section D of the permit limits the facility's hexane/n-hexane emissions to 529.98 tons per year (tpy).

According to the Permit Application Summary Form associated with the current permit, the facility's potential-to-emit (PTE) of volatile organic compounds (VOC) exceeds the associated Title V permitting threshold of 100 tpy, while the PTEs of hexane and combined Hazardous Air Pollutants (HAPs) exceed the associated Title V and major HAP source thresholds of 10 tpy and 25 tpy, respectively.

SCOPE OF FUTURE OPERATIONS

Due to changing market demands, Daramic has shut down most of the equipment identified in Section B of the current air permit and will continue to operate only R&D equipment and support facilities. The R&D equipment will only be used to produce non-saleable product. Based on worst-case annual emissions from the R&D extraction process, the post-shutdown facility could potentially exceed the HAP major source threshold; however, Daramic does not anticipate this level of hexane usage. Accordingly, this significant permit revision application requests (1) a voluntary limit on hexane/n-hexane emissions and (2) that the source be reclassified as a conditional major source subject to the requirements of 401 KAR 52:030, federally-enforceable permits for non-major sources, and as an area source of HAP emissions. Attachment A provides the requisite application forms.

HEADQUARTERS

12700 Park Central Dr, Ste 600, Dallas, TX 75251 / P 800.229.6655 / P 972.661.8100 / F 972.385.9203

The DEP7007DD form included in Attachment A identifies IAs that will remain operational. Apart from these IAs, the following equipment will continue to operate:

- ▶ Cleaver Brooks 900 HP Boiler – This unit is identified in Section B, Group 01 of the current permit and is referred to as emission point (EP) 77. It is rated at 37.8 MMBtu/hr and will only combust natural gas fuel. Therefore, Daramic requests that the revised permit eliminate the identification of distillate fuel oil as a backup fuel.
- ▶ Cummins Diesel-fired Emergency Fire Pump Engine – This unit is identified in Section B of the current permit and is referred to as EP228. It is rated at 235 hp.
- ▶ R&D Pilot Lab Extractor – This unit is currently identified as an IA in Section C of the permit and is referred to as EP67, 68; however, due to a revised estimate of worst-case hexane usage in this equipment, its potential VOC and HAP emissions exceed the IA thresholds. Therefore, Daramic requests that KDAQ redesignate the R&D extractor as a significant emission point and include this equipment in Section B of the updated permit. Vents from the extractor are routed to the R&D Pilot Lab Carbon Beds (2). A DEP7007B form for the extractor is included in Attachment A.

AIR EMISSIONS

To estimate the PTE of the equipment that will remain operational, Daramic used the following methodologies:

- ▶ Cleaver Brooks 900 HP Boiler (EP77) – The PTE for this unit is based on the combustion of natural gas only using the emission factors and maximum operating rate found in the Kentucky Emissions Inventory System (KYEIS). As DEP7007-series forms have previously been submitted for this existing boiler, the application forms in Attachment A do not account for this boiler.
- ▶ Cummins Diesel-fired Emergency Fire Pump Engine (EP228) – The PTE for this unit is based on the emission factors and maximum operating rate found in the KYEIS. As DEP7007-series forms have previously been submitted for this existing engine, the application forms in Attachment A do not account for this engine.
- ▶ R&D Pilot Lab Extractor (EP67, 68) – Daramic is requesting a voluntary limit of 9 tpy for hexane emissions from this extractor. This voluntary limit is documented by the DEP7007V forms provided in Attachment A. While vents from the extractor are routed through pilot-scale carbon beds, Daramic will not account for the control provided by these carbon beds when estimating emissions. Rather, Daramic will demonstrate compliance with this voluntary limit using the quantity of solvent consumed by the extractor system, which will be calculated based on solvent purchase records for the year discounted by the quantity of hexane contained in the waste shipped off-site for the same time period. Revised emission estimates for this equipment are documented by the DEP7007N form provided in Attachment A.
- ▶ IAs – Daramic has provided estimates for emissions from these insignificant operations in the DEP7007DD form provided in Attachment A. Emissions from these IAs have been rolled into the site-wide total for the post-shutdown operations.

The following table presents the estimated total PTE for the boiler, emergency engine, R&D extractor process, and IAs:

Table 1. Revised Site-wide PTE

Pollutant	Total PTE (tpy)
CO	14.30
NO _x	18.37
PT	4.39
PM ₁₀	4.39
PM _{2.5}	4.39
SO ₂	0.22
VOC	15.05
CO _{2e}	19,935
Hexane	9.30

The site-wide PTE for hexane accounts for the 9 tpy voluntary limit proposed by this application for the extractor (EP67, 68) as well as the worst-case estimate of hexane emissions from the boiler (EP77). Other equipment that will remain operational following the facility shutdown does not contribute to hexane emissions from the site. While the boiler and engine will emit additional HAPs, these contributions do not approach the 25 tpy major source threshold for combined HAPs.

REGULATORY REVIEW

The following subsections discuss the applicability of regulatory requirements for this revision.

401 KAR 52:020 vs. 401 KAR 52:030

With respect to the Title V program, the term *major source* is defined as a stationary source or a group of stationary sources that emits or has a potential to emit a pollutant that is subject to regulation at or above a major source threshold. Based on the facility's location in Daviess County, Kentucky, which is designated as in attainment/unclassifiable for all pollutants, the following major source thresholds are applicable to Daramic:

- ▶ 10 tpy of a single HAP;
- ▶ 25 tpy or more of combined HAPs; or
- ▶ 100 tpy or more for regulated air pollutants other than HAPs

Based on the voluntary limit on hexane emissions requested by this application, Daramic will not be considered a major source and therefore will not be subject to the Title V permitting requirements of 401 KAR 52:020. Instead, Daramic will be subject to permitting requirements for conditional major sources. Specifically, 401 KAR 52:030 establishes federally-enforceable permitting requirements for nonmajor sources that accept permit conditions that are legally and practically enforceable to limit their PTE below the major source thresholds that would make them subject to 401 KAR 52:020. Although the permit content is largely similar, permits for conditional major sources and associated reports are not subject to EPA review.

NESHAP Subpart DDDDD vs. NESHAP Subpart JJJJJ

Pursuant to 40 CFR 63.7485, National Emission Standard for Hazardous Air Pollutants Subpart DDDDD (Boiler MACT) applies to industrial, commercial, or institutional boilers or process heaters, as defined in 40 CFR 63.7575 that are located at, or are part of, a major source of HAP, except as specified in 40 CFR

63.7491. Following the requested permit revision, Daramic will represent an area source of HAP emissions. Accordingly, Boiler MACT will not apply to the remaining operational boiler at the site.

Pursuant to 40 CFR 63.11193, National Emission Standard for Hazardous Air Pollutants Subpart JJJJJJ (Boiler NESHAP) applies to industrial, commercial, or institutional boilers, as defined in 40 CFR 63.11237 that are located at, or are part of, an area source of HAP, except as specified in 40 CFR 63.11195. 40 CFR 63.11195(e) establishes an exemption for gas-fired boilers, where 40 CFR 63.11237 defines a *gas-fired boiler* as a boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or for periodic testing, maintenance, or operator training on liquid fuel. Based on Daramic’s request to remove distillate oil as a backup fuel option, the boiler (EP77) will not be subject to Boiler NESHAP requirements.

401 KAR 59:015 - New Indirect Heat Exchangers

By revising the existing permit language to remove NESHAP Subpart DDDDD requirements for the boiler (EP77), the requirement to track boiler startups and shutdowns will also be removed. Accordingly, the startup and shutdown requirements of 401 KAR 59:015, Section 7 are identified in the DEP7007V forms in Attachment A.

CERTIFICATION STATEMENT

The required certification statement is affirmed by the responsible official via the signature on the DEP7007AI from in Attachment A. Through this letter and application, Daramic requests the significant permit revision in accordance with 401 KAR 52:030, Section 16.

~~~~~

If you have any questions or comments about the information presented in this significant revision application, please do not hesitate to call me at (859) 341-8100 ext. 1804.

Sincerely,



Maren Seibold  
Managing Consultant

Attachments

cc: Michael Galbraith, Daramic  
Maggie Fox, Daramic  
Elisabeth Martin, Trinity Consultants

**ATTACHMENT A**

**DEP7007 Forms (AI, B, N, V, and DD)**

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: Daramic, LLC

KY EIS (AFS) #: 21-059-00006

Permit #: V-16-052 R1

Agency Interest (AI) ID: 894

Date: Tuesday, December 31, 2024

**Section AI.1: Source Information**

|                   |                     |                      |           |                |
|-------------------|---------------------|----------------------|-----------|----------------|
| Physical Location | Street:             | <u>5525 Hwy 2830</u> |           |                |
| Address:          | City:               | <u>Owensboro</u>     | County:   | <u>Daviess</u> |
|                   |                     |                      | Zip Code: | <u>42303</u>   |
| Mailing Address:  | Street or P.O. Box: | <u>5525 Hwy 2830</u> |           |                |
|                   | City:               | <u>Owensboro</u>     | State:    | <u>KY</u>      |
|                   |                     |                      | Zip Code: | <u>42303</u>   |

**Standard Coordinates for Source Physical Location**

Longitude: -87.0505 (decimal degrees)      Latitude: 37.8106 (decimal degrees)

Primary (NAICS) Category: Unlaminated Plastics Film and Sheet      Primary NAICS #: 326113

Classification (SIC) Category:

Unsupported Plastics Film and Sheets

Primary SIC #:

3081

Briefly discuss the type of business conducted at this site:

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.

Description of Area Surrounding Source:

Rural Area

Industrial Park

Residential Area

Is any part of the source located on federal land?

Yes

No

Number of Employees:

21

Urban Area

Industrial Area

Commercial Area

Approximate distance to nearest residence or commercial property:

3/4 mile

Property Area:

66.21 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 A1.2: Applicant Information

**Applicant Name:** Daramic, LLC  
**Title:** (if individual) N/A  
**Mailing Address:** **Street or P.O. Box:** 5525 Hwy 2830  
**City:** Owensboro **State:** KY **Zip Code:** 42303  
**Email:** (if individual) N/A  
**Phone:** (270) 683-1561

### Technical Contact

**Name:** Maggie Fox  
**Title:** Corporate ESH Manager, Management Systems  
**Mailing Address:** **Street or P.O. Box:** 5525 Highway 2830  
**City:** Owensboro **State:** KY **Zip Code:** 42303  
**Email:** Maggie.Fox@polypore.net  
**Phone:** (812) 725-3682

### Air Permit Contact for Source

**Name:** Maggie Fox  
**Title:** Corporate ESH Manager, Management Systems  
**Mailing Address:** **Street or P.O. Box:** 5525 Highway 2830  
**City:** Owensboro **State:** KY **Zip Code:** 42303  
**Email:** Maggie.Fox@polypore.net  
**Phone:** (812) 725-3682



**Section A1.3: Owner Information**

**Owner same as applicant**

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Mailing Address:** **Street or P.O. Box:** \_\_\_\_\_  
**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip Code:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

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

| Name                | Position |
|---------------------|----------|
| <b>Daramic, LLC</b> |          |
| _____               | _____    |
| _____               | _____    |
| _____               | _____    |

**Section A1.4: 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:**  
(check all that apply)

Renewal Permit             Revised Registration                       Minor Revision                       Initial Source-wide Operating Permit

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

| <b>Pollutant:</b>                                         | <b>Requested Limit:</b> | <b>Pollutant:</b>                                          | <b>Requested Limit:</b> |
|-----------------------------------------------------------|-------------------------|------------------------------------------------------------|-------------------------|
| <input type="checkbox"/> Particulate Matter               | _____                   | <input checked="" type="checkbox"/> Single HAP             | 9.3 tons per year       |
| <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:** (MM/YYYY)                                          N/A                                          **Proposed Operation Start-Up Date:** (MM/YYYY)                                          N/A                   

**For Modifications:**

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

**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.**

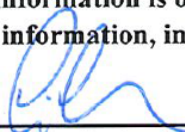
**Section AI.5 Other Required Information**

**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 type="checkbox"/> DEP7007GG Control Equipment                              |
| <input 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 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 type="checkbox"/> Site Map                                                 |
| <input type="checkbox"/> DEP7007T Metal Plating and Surface Treatment Operations               | <input type="checkbox"/> Map or drawing depicting location of facility            |
| <input checked="" type="checkbox"/> DEP7007V Applicable Requirements and Compliance Activities | <input 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.

  
 \_\_\_\_\_  
 Authorized Signature

*Eric Miller*  
 \_\_\_\_\_  
 Type or Printed Name of Signatory

*12/30/2024*  
 \_\_\_\_\_  
 Date

*Plant Manager*  
 \_\_\_\_\_  
 Title of Signatory

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

| <b>Section AI.7: Notes, Comments, and Explanations</b>                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The Owensboro facility is shutting down its full-scale battery separator manufacturing processes and will only be operating the R&D equipment and necessary support facilities moving forward. The R&D equipment will not be used to produce saleable product.                          |
| Due to the worst-case usage of hexane solvent to extract the oil from the polyethylene web, the R&D operations have the potential to emit more than 10 tons per year of hexane. Therefore, Daramic is requesting a voluntary limit to avoid triggering Title V permitting requirements. |
| The emergency fire pump engine represented in the current air permit is owned by Daramic but will be operated by Milliken & Company Owensboro Specialty Polymers.                                                                                                                       |
|                                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                         |
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|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Division for Air Quality<br><br>300 Sower Boulevard<br>Frankfort, KY 40601<br>(502) 564-3999 | <h2 style="margin: 0;">DEP7007B</h2> <h3 style="margin: 10px 0 0 0;">Manufacturing or Processing Operations</h3> <p style="margin: 0;">___ Section B.1: Process Information</p> <p style="margin: 0;">___ Section B.2: Materials and Fuel Information</p> <p style="margin: 0;">___ Section B.3: Notes, Comments, and Explanations</p> | <h4 style="margin: 0;">Additional Documentation</h4> <p style="margin: 5px 0 0 0;">___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.</p> <p style="margin: 5px 0 0 0;">___ Attach a flow diagram</p> <p style="margin: 5px 0 0 0;">___ Attach SDS</p> |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                 |                     |
|---------------------------------|---------------------|
| <b>Source Name:</b>             | <i>Daramic, LLC</i> |
| <b>KY EIS (AFS) #:</b>          | <i>21-059-00006</i> |
| <b>Permit #:</b>                | <i>V-16-052 R1</i>  |
| <b>Agency Interest (AI) ID:</b> | <i>894</i>          |
| <b>Date:</b>                    | <i>12/31/2024</i>   |

**Section B.1: Process Information**

| Emission Unit # | Emission Unit Name      | Describe Emission Unit | Process ID | Process Name     | Manufacturer | Model No. | Date of Construction Commencement (MM/YYYY) | Is the Process <u>Continuous</u> or <u>Batch</u> ? | Number of Batches per 24 Hours (if applicable) | Hours per Batch (if applicable) |
|-----------------|-------------------------|------------------------|------------|------------------|--------------|-----------|---------------------------------------------|----------------------------------------------------|------------------------------------------------|---------------------------------|
| 67, 68          | R&D Pilot Lab Extractor |                        | 1          | Solvent Consumed | --           | --        | Existing                                    | Batch                                              | Variable                                       | Variable                        |

| <b>Section B.2: Materials and Fuel Information</b>                                                                                         |                         |                             |                                             |                           |                                                                 |                            |                                                   |                           |           |                                |                        |                                |                        |                    |                 |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------|---------------------------------------------|---------------------------|-----------------------------------------------------------------|----------------------------|---------------------------------------------------|---------------------------|-----------|--------------------------------|------------------------|--------------------------------|------------------------|--------------------|-----------------|
| <i>*Maximum yearly fuel usage rate only applies if applicant request operating restrictions through federally enforceable limitations.</i> |                         |                             |                                             |                           |                                                                 |                            |                                                   |                           |           |                                |                        |                                |                        |                    |                 |
| Emission Unit #                                                                                                                            | Emission Unit Name      | Name of Raw Materials Input | Maximum Quantity of Each Raw Material Input |                           | Total Process Weight Rate for Emission Unit<br><i>(tons/hr)</i> | 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 (%) |
|                                                                                                                                            |                         |                             |                                             | <i>(Specify Units/hr)</i> |                                                                 |                            |                                                   | <i>(Specify Units/hr)</i> |           |                                | <i>(Specify Units)</i> |                                | <i>(Specify Units)</i> |                    |                 |
| 67, 68                                                                                                                                     | R&D Pilot Lab Extractor | Solvent                     |                                             | 6 lb/hr                   | N/A                                                             | Battery Separator          |                                                   | 6 m <sup>2</sup> web/hr   | N/A       | N/A                            | N/A                    | N/A                            | N/A                    | N/A                | N/A             |

**Section B.3: Notes, Comments, and Explanations**

The maximum operating rate of the R&D Pilot Lab Extractor is estimated based on recent actual operations scaled to a worst-case basis.

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:** Daramic, LLC

**KY EIS (AFS) #:** 21- 059-00006

**Permit #:** V-16-052 R1

**Agency Interest (AI) ID:** 894

**Date:** December 31, 2024

#### 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                 |                                |
|-----------------|-------------------------|------------|------------------|---------------------|-------------------|----------|------------------------------------------|-----------|---------------------------------------------|---------------------------------------------------------------|------------------------|------------------------|--------------------------------|------------------------------|----------------------------------|--------------------------------|
|                 |                         |            |                  |                     |                   |          |                                          |           |                                             |                                                               |                        |                        | Uncontrolled Potential (lb/hr) | Controlled Potential (lb/hr) | Uncontrolled Potential (tons/yr) | Controlled Potential (tons/yr) |
| 67, 68          | R&D Pilot Lab Extractor | 1          | Solvent Consumed | N/A                 | N/A               | N/A      | 0.003                                    | VOC       | 2,000                                       | Mass Balance                                                  | N/A                    | N/A                    | 5.7                            | N/A                          | 9.0                              | N/A                            |
|                 |                         |            |                  |                     |                   |          | 0.003                                    | Hexane    | 2,000                                       | Mass Balance                                                  | N/A                    | N/A                    | 5.7                            | N/A                          | 9.0                              | N/A                            |



**Section N.2: Stack Information**

**UTM Zone:**

| Stack ID                        | Identify all Emission Units<br>(with Process ID) and<br>Control Devices that Feed<br>to Stack | Stack Physical Data                   |                       |                                  | Stack UTM Coordinates  |                       | Stack Gas Stream Data     |                             |                                  |
|---------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------|-----------------------|----------------------------------|------------------------|-----------------------|---------------------------|-----------------------------|----------------------------------|
|                                 |                                                                                               | Equivalent<br>Diameter<br><i>(ft)</i> | Height<br><i>(ft)</i> | Base<br>Elevation<br><i>(ft)</i> | Northing<br><i>(m)</i> | Easting<br><i>(m)</i> | Flowrate<br><i>(acfm)</i> | Temperature<br><i>( °F)</i> | Exit Velocity<br><i>(ft/sec)</i> |
| No Changes to Stack Information |                                                                                               |                                       |                       |                                  |                        |                       |                           |                             |                                  |

**Section N.3: Fugitive Information**

**UTM Zone: 16**

| Emission Unit # | Emission Unit Name | Process ID | Area Physical Data                  |                                     | Area UTM Coordinates   |                       | Area Release Data                  |                               |
|-----------------|--------------------|------------|-------------------------------------|-------------------------------------|------------------------|-----------------------|------------------------------------|-------------------------------|
|                 |                    |            | Length of the X Side<br><i>(ft)</i> | Length of the Y Side<br><i>(ft)</i> | Northing<br><i>(m)</i> | Easting<br><i>(m)</i> | Release Temperature<br><i>(°F)</i> | Release Height<br><i>(ft)</i> |

**No Change to Fugitive Emissions Associated With This Application**

**Section N.4: Notes, Comments, and Explanations**

As accurate DEP7007N forms have previously been submitted for the Cleaver Brooks Boiler (EP77) and the Cummins Emergency Engine (EP228), this updated form only reflects the revised PTE for the R&D Pilot Lab Extractor (EP67, 68). While vents from the extractor are routed through pilot-scale carbon beds, Daramic is not proposing to account for the control provided by these carbon beds when estimating actual emissions. Rather, the annual operating rate for the extractor will be based on the quantity of solvent consumed, which will be calculated using solvent purchase records for the year discounted by the quantity of hexane contained in the waste shipped off-site for the same time period.

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                  |                                       |                                                              |                                                                                                                                                           |                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------|---------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Division for Air Quality<br><br>300 Sower Boulevard<br>Frankfort, KY 40601<br>(502) 564-3999 | <b>DEP7007V</b><br><b>Applicable Requirements and Compliance Activities</b><br>___ Section V.1: Emission and Operating Limitation(s)<br>___ Section V.2: Monitoring Requirement<br>___ Section V.3: Recordkeeping Requirer<br>___ Section V.4: Reporting Requirements<br>___ Section V.5: Testing Requirements<br>___ Section V.6: Notes, Comments, and Explanations | <b>Additional Documentation</b><br><br>___ Complete DEP7007AI |                  |                                       |                                                              |                                                                                                                                                           |                                                                                                                                                                                                                                                                                                              |
| <b>Source Name:</b> <span style="color: red;">Daramic, LLC</span>                            |                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                  |                                       |                                                              |                                                                                                                                                           |                                                                                                                                                                                                                                                                                                              |
| <b>KY EIS (AFS) #:</b> <span style="color: red;">21-059-00006</span>                         |                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                  |                                       |                                                              |                                                                                                                                                           |                                                                                                                                                                                                                                                                                                              |
| <b>Permit #:</b> <span style="color: red;">V-16-052 R1</span>                                |                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                  |                                       |                                                              |                                                                                                                                                           |                                                                                                                                                                                                                                                                                                              |
| <b>Agency Interest (AI) ID:</b> <span style="color: red;">894</span>                         |                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                  |                                       |                                                              |                                                                                                                                                           |                                                                                                                                                                                                                                                                                                              |
| <b>Date:</b> <span style="color: red;">12/31/2024</span>                                     |                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                  |                                       |                                                              |                                                                                                                                                           |                                                                                                                                                                                                                                                                                                              |
| <b>Section V.1: Emission and Operating Limitation(s)</b>                                     |                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                  |                                       |                                                              |                                                                                                                                                           |                                                                                                                                                                                                                                                                                                              |
| <b>Emission Unit #</b>                                                                       | <b>Emission Unit Description</b>                                                                                                                                                                                                                                                                                                                                     | <b>Applicable Regulation or Requirement</b>                   | <b>Pollutant</b> | <b>Emission Limit (if applicable)</b> | <b>Voluntary Emission Limit or Exemption (if applicable)</b> | <b>Operating Requirement or Limitation (if applicable)</b>                                                                                                | <b>Method of Determining Compliance with the Emission and Operating Requirement(s)</b>                                                                                                                                                                                                                       |
| 77                                                                                           | Natural Gas Boiler                                                                                                                                                                                                                                                                                                                                                   | 401 KAR 59:015, Section 7                                     | N/A              | N/A                                   | N/A                                                          | Comply with required work practice standards during startup and shutdown.                                                                                 | Daramic will keep records of the manufacturer's recommended procedures for startup and shutdown, any instance in which the recommended procedures were not followed, and any corrective actions taken.                                                                                                       |
| 67, 68                                                                                       | R&D Pilot Lab Extractor                                                                                                                                                                                                                                                                                                                                              | N/A                                                           | Hexane           | N/A                                   | 9.0 tpy                                                      | To preclude the applicability of Title V permitting and major source HAP requirements, the EP67, 68 shall not emit more than 9.0 tons per year of hexane. | Daramic will demonstrate compliance with this voluntary limit using the quantity of solvent consumed by the extractor system, which will be calculated based on solvent purchase records for the year discounted by the quantity of hexane contained in the waste shipped off-site for the same time period. |
| N/A                                                                                          | Site-Wide                                                                                                                                                                                                                                                                                                                                                            | N/A                                                           | Hexane           | N/A                                   | 9.3 tpy                                                      | To preclude the applicability of Title V permitting and major source HAP requirements, site-wide hexane emissions shall not exceed 9.3 tons per year.     | Daramic will demonstrate compliance with this voluntary limit by tracking hexane emissions from the extractor (EP67, 68) and the boiler (EP77).                                                                                                                                                              |

**Section V.2: Monitoring Requirements**

| <b>Emission Unit #</b>                     | <b>Emission Unit Description</b> | <b>Pollutant</b> | <b>Applicable Regulation or Requirement</b> | <b>Parameter Monitored</b> | <b>Description of Monitoring</b> |
|--------------------------------------------|----------------------------------|------------------|---------------------------------------------|----------------------------|----------------------------------|
| <i>Not applicable for this application</i> |                                  |                  |                                             |                            |                                  |

**Section V.3: Recordkeeping Requirements**

| <b>Emission Unit #</b>                     | <b>Emission Unit Description</b> | <b>Pollutant</b> | <b>Applicable Regulation or Requirement</b> | <b>Parameter Recorded</b> | <b>Description of Recordkeeping</b> |
|--------------------------------------------|----------------------------------|------------------|---------------------------------------------|---------------------------|-------------------------------------|
| <i>Not applicable for this application</i> |                                  |                  |                                             |                           |                                     |

**Section V.4: Reporting Requirements**

| <b>Emission Unit #</b>                     | <b>Emission Unit Description</b> | <b>Pollutant</b> | <b>Applicable Regulation or Requirement</b> | <b>Parameter Reported</b> | <b>Description of Reporting</b> |
|--------------------------------------------|----------------------------------|------------------|---------------------------------------------|---------------------------|---------------------------------|
| <i>Not applicable for this application</i> |                                  |                  |                                             |                           |                                 |

| <b>Section V.5: Testing Requirements</b>   |                                  |                  |                                             |                         |                               |
|--------------------------------------------|----------------------------------|------------------|---------------------------------------------|-------------------------|-------------------------------|
| <b>Emission Unit #</b>                     | <b>Emission Unit Description</b> | <b>Pollutant</b> | <b>Applicable Regulation or Requirement</b> | <b>Parameter Tested</b> | <b>Description of Testing</b> |
| <i>Not applicable for this application</i> |                                  |                  |                                             |                         |                               |



|                                                       |
|-------------------------------------------------------|
| <b>Section V.6: Notes, Comments, and Explanations</b> |
|                                                       |

|                                                                                          |                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Division for Air Quality<br>300 Sower Boulevard<br>Frankfort, KY 40601<br>(502) 564-3999 | <h2 style="margin: 0;">DEP7007DD</h2> <h3 style="margin: 0;">Insignificant Activities</h3> <p style="margin: 0;">___ Section DD.1: Table of Insignificant Activities</p> <p style="margin: 0;">___ Section DD.2: Signature Block</p> <p style="margin: 0;">___ Section DD.3: Notes, Comments, and Explanations</p> |
| <b>Source Name:</b>                                                                      | <i>Daramic, LLC</i>                                                                                                                                                                                                                                                                                                |
| <b>KY EIS (AFS) #:</b>                                                                   | <i>21-059-00006</i>                                                                                                                                                                                                                                                                                                |
| <b>Permit #:</b>                                                                         | <i>V-16-052 R1</i>                                                                                                                                                                                                                                                                                                 |
| <b>Agency Interest (AI) ID:</b>                                                          | <i>894</i>                                                                                                                                                                                                                                                                                                         |
| <b>Date:</b>                                                                             | <i>12/31/2024</i>                                                                                                                                                                                                                                                                                                  |

**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                |
|--------------------------|-------------------------------------------------------------|------------------------------------------|--------------------------|-------------------------------------|
| 1.                       | <i>Conditioning Line (Unwind, Slitter, Chopper, Rewind)</i> | --                                       | <i>401 KAR 59:010</i>    | <i>&lt;1 tpy PM</i>                 |
| 2.                       | <i>Reinspection Line</i>                                    | --                                       | --                       | <i>Negligible</i>                   |
| 3.                       | <i>R&amp;D Pilot Lab Web Coater</i>                         | --                                       | --                       | <i>&lt;1 tpy VOC</i>                |
| 4.                       | <i>UV Lamps (2) and Conveyor Systems</i>                    | --                                       | --                       | <i>Negligible</i>                   |
| 5.                       | <i>R&amp;D Pilot Lab Extruder</i>                           | --                                       | <i>401 KAR 59:010</i>    | <i>&lt;1 tpy PM, &lt; 1 tpy VOC</i> |
| 6.                       | <i>R&amp;D Pilot Lab Mix Room</i>                           | --                                       | <i>401 KAR 59:010</i>    | <i>&lt;1 tpy PM, &lt; 1 tpy VOC</i> |
| 7.                       | <i>R&amp;D Pilot Lab Web Coater (DGRF)</i>                  | --                                       | --                       | <i>&lt;1 tpy VOC</i>                |
| 8.                       | <i>Battery Lab Hoods (2) and Downdraft Table</i>            | --                                       | --                       | <i>&lt;1 tpy VOC</i>                |
| 9.                       | <i>Analytical Lab Hoods (8)</i>                             | --                                       | --                       | <i>Negligible</i>                   |
| 10.                      | <i>Water Discharge Lagoon</i>                               | --                                       | --                       | <i>Negligible</i>                   |
| 11.                      | <i>Maintenance Welding</i>                                  | --                                       | --                       | <i>Negligible</i>                   |
| 12.                      | <i>Maintenance Painting</i>                                 | --                                       | --                       | <i>Negligible</i>                   |

**Section DD.2: 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.



Authorized Signature



Date

By:

*Eric Miller*

Type/Print Name of Signatory

*Plant Manager*

Title of Signatory

**Section DD.3: Notes, Comments, and Explanations**

The DEP7007DD form submitted with this application represents the full list of Insignificant Activities associated with the R&D operations following the shutdown of full-scale production equipment.

The R&D Pilot Lab Extractor and associated carbon beds are being reclassified significant activities in Section B of the permit based on their potential VOC/hexane emissions.