

**CLASS II ADMINISTRATIVE UPDATE  
APPLICATION FOR PERMIT R13-0882H**

**SCLAREOL PURIFICATION**

**REDACTED APPLICATION**

*Prepared for:*

**Optima Belle, LLC**  
901 W. DuPont Avenue  
Belle, West Virginia 25015

*Prepared by:*

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Project No. 0101-14-0162-009

January 2016

**POTESTA**

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Attachments Not Applicable to this Application: M & R.

**SECTION I - III**

**GENERAL APPLICANT INFORMATION**



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**DIVISION OF AIR QUALITY**

601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
(304) 926-0475  
[www.dep.wv.gov/daq](http://www.dep.wv.gov/daq)

**APPLICATION FOR NSR PERMIT  
AND  
TITLE V PERMIT REVISION  
(OPTIONAL)**

PLEASE CHECK ALL THAT APPLY TO NSR (45CSR13) (IF KNOWN):

- CONSTRUCTION     MODIFICATION     RELOCATION  
 CLASS I ADMINISTRATIVE UPDATE     TEMPORARY  
 CLASS II ADMINISTRATIVE UPDATE     AFTER-THE-FACT

PLEASE CHECK TYPE OF 45CSR30 (TITLE V) REVISION (IF ANY):

- ADMINISTRATIVE AMENDMENT     MINOR MODIFICATION  
 SIGNIFICANT MODIFICATION

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS ATTACHMENT S TO THIS APPLICATION

**FOR TITLE V FACILITIES ONLY:** Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

**Section I. General**

1. Name of applicant (as registered with the WV Secretary of State's Office): Optima Belle, LLC		2. Federal Employer ID No. (FEIN): 465403006	
3. Name of facility (if different from above): Optima Belle Plant		4. The applicant is the: <input type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input checked="" type="checkbox"/> BOTH	
5A. Applicant's mailing address: 901 W. DuPont Avenue Belle, West Virginia 25015		5B. Facility's present physical address: 901 W. DuPont Avenue Belle, West Virginia 25015	
6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO ⇒ If YES, provide a copy of the <b>Certificate of Incorporation/Organization/Limited Partnership</b> (one page) including any name change amendments or other Business Registration Certificate as <b>Attachment A</b> . ⇒ If NO, provide a copy of the <b>Certificate of Authority/Authority of L.L.C./Registration</b> (one page) including any name change amendments or other Business Certificate as <b>Attachment A</b> .			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation: No			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the <i>proposed site</i> ? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO ⇒ If YES, please explain:    The site is owned and operated by the applicant. ⇒ If NO, you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be <b>constructed, modified, relocated, administratively updated or temporarily permitted</b> (e.g., coal preparation plant, primary crusher, etc.): Chemical Manufacturing		10. North American Industry Classification System (NAICS) code for the facility: 325199	
11A. DAQ Plant ID No. (for existing facilities only): 039-00663		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): R13-0822H, R30-03900001	

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

12A.

- ⇒ For **Modifications, Administrative Updates** or **Temporary permits** at an existing facility, please provide directions to the *present location* of the facility from the nearest state road;
- ⇒ For **Construction** or **Relocation permits**, please provide directions to the *proposed new site location* from the nearest state road. Include a **MAP** as **Attachment B**.

I-64 to Belle exit, then Rt. 60 East to Belle exit, turn right onto DuPont Avenue, travel approximately 500 feet and the plant entrance is on the left.

12.B. New site address (if applicable):

Same

12C. Nearest city or town:

Belle

12D. County:

Kanawha

12.E. UTM Northing (KM): 4,232.60

12F. UTM Easting (KM): 451.90

12G. UTM Zone: 17

13. Briefly describe the proposed change(s) at the facility:

The facility proposes to purify sclareol in the existing equipment at the site and to use Reactor 7, a stainless steel reactor that is not used for chemical processes, as a tempered water tank.

14A. Provide the date of anticipated installation or change: NA

- ⇒ If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: NA

14B. Date of anticipated Start-Up if a permit is granted:

02/03/2016

14C. Provide a **Schedule** of the planned **Installation of/Change** to and **Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved).

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:

Hours Per Day 24

Days Per Week 7

Weeks Per Year 52

16. Is demolition or physical renovation at an existing facility involved?  YES  NO

17. **Risk Management Plans.** If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see [www.epa.gov/ceppo](http://www.epa.gov/ceppo)), submit your **Risk Management Plan (RMP)** to U. S. EPA Region III.

18. **Regulatory Discussion.** List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (*if known*). A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance (*if known*). Provide this information as **Attachment D**.

### ***Section II. Additional attachments and supporting documents.***

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

20. Include a **Table of Contents** as the first page of your application package.

21. Provide a **Plot Plan**, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as **Attachment E** (Refer to **Plot Plan Guidance**).

- ⇒ Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F**.

23. Provide a **Process Description** as **Attachment G**.

- ⇒ Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

**All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.**

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H**.  
 ⇒ For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I**.

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J**.

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K**.

28. Check all applicable **Emissions Unit Data Sheets** listed below:

<input type="checkbox"/> Bulk Liquid Transfer Operations	<input type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input type="checkbox"/> Chemical Processes	<input type="checkbox"/> Hot Mix Asphalt Plant	<input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	

General Emission Unit, specify: Sclareol Purification

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L**.

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

<input type="checkbox"/> Absorption Systems	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Flare
<input type="checkbox"/> Adsorption Systems	<input type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System

Other Collectors, specify:  
 Existing permitted control devices are being utilized.

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M**.

30. Provide all **Supporting Emissions Calculations** as **Attachment N**, or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O**.

➤ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and **Example Legal Advertisement** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33. **Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

YES       NO

➤ If YES, identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's "**Precautionary Notice – Claims of Confidentiality**" guidance found in the **General Instructions** as **Attachment Q**.

### Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

<input type="checkbox"/> Authority of Corporation or Other Business Entity	<input type="checkbox"/> Authority of Partnership
<input type="checkbox"/> Authority of Governmental Agency	<input type="checkbox"/> Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R**.

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

**Certification of Truth, Accuracy, and Completeness**

I, the undersigned  **Responsible Official** /  **Authorized Representative**, hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

**Compliance Certification**

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE   
(Please use blue ink)

DATE: 01-19-2016  
(Please use blue ink)

35B. Printed name of signee: J. Gene Williams		35C. Title: President
35D. E-mail: gwilliams@optimachem.com	36E. Phone: (912) 384-6330	36F. FAX: Use Email
36A. Printed name of contact person (if different from above): James Hook		36B. Title: EHS&S Manager
36C. E-mail: jhook@optimachem.com	36D. Phone: (304) 949-7152	36E. FAX: Use Email

**PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Attachment A: Business Certificate               | <input checked="" type="checkbox"/> Attachment K: Fugitive Emissions Data Summary Sheet            |
| <input checked="" type="checkbox"/> Attachment B: Map(s)                             | <input checked="" type="checkbox"/> Attachment L: Emissions Unit Data Sheet(s)                     |
| <input checked="" type="checkbox"/> Attachment C: Installation and Start Up Schedule | <input type="checkbox"/> Attachment M: Air Pollution Control Device Sheet(s)                       |
| <input checked="" type="checkbox"/> Attachment D: Regulatory Discussion              | <input checked="" type="checkbox"/> Attachment N: Supporting Emissions Calculations                |
| <input checked="" type="checkbox"/> Attachment E: Plot Plan                          | <input checked="" type="checkbox"/> Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans |
| <input checked="" type="checkbox"/> Attachment F: Detailed Process Flow Diagram(s)   | <input checked="" type="checkbox"/> Attachment P: Public Notice                                    |
| <input checked="" type="checkbox"/> Attachment G: Process Description                | <input checked="" type="checkbox"/> Attachment Q: Business Confidential Claims                     |
| <input checked="" type="checkbox"/> Attachment H: Material Safety Data Sheets (MSDS) | <input type="checkbox"/> Attachment R: Authority Forms   |
| <input checked="" type="checkbox"/> Attachment I: Emission Units Table               | <input checked="" type="checkbox"/> Attachment S: Title V Permit Revision Information              |
| <input checked="" type="checkbox"/> Attachment J: Emission Points Data Summary Sheet | <input checked="" type="checkbox"/> Application Fee  |

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

**FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:**

- Forward 1 copy of the application to the Title V Permitting Group and:
- For Title V Administrative Amendments:
  - NSR permit writer should notify Title V permit writer of draft permit,
- For Title V Minor Modifications:
  - Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,
  - NSR permit writer should notify Title V permit writer of draft permit.
- For Title V Significant Modifications processed in parallel with NSR Permit revision:
  - NSR permit writer should notify a Title V permit writer of draft permit,
  - Public notice should reference both 45CSR13 and Title V permits,
  - EPA has 45 day review period of a draft permit.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

**ATTACHMENT A**  
**BUSINESS CERTIFICATE**

**WEST VIRGINIA  
STATE TAX DEPARTMENT  
BUSINESS REGISTRATION  
CERTIFICATE**

**ISSUED TO:  
OPTIMA BELLE LLC  
901 W DUPONT AVE  
BELLE, WV 25015-1555**

**BUSINESS REGISTRATION ACCOUNT NUMBER: 2298-1773**

**This certificate is issued on: 05/8/2015**

*This certificate is issued by  
the West Virginia State Tax Commissioner  
in accordance with Chapter 11, Article 12, of the West Virginia Code*

*The person or organization identified on this certificate is registered  
to conduct business in the State of West Virginia at the location above.*

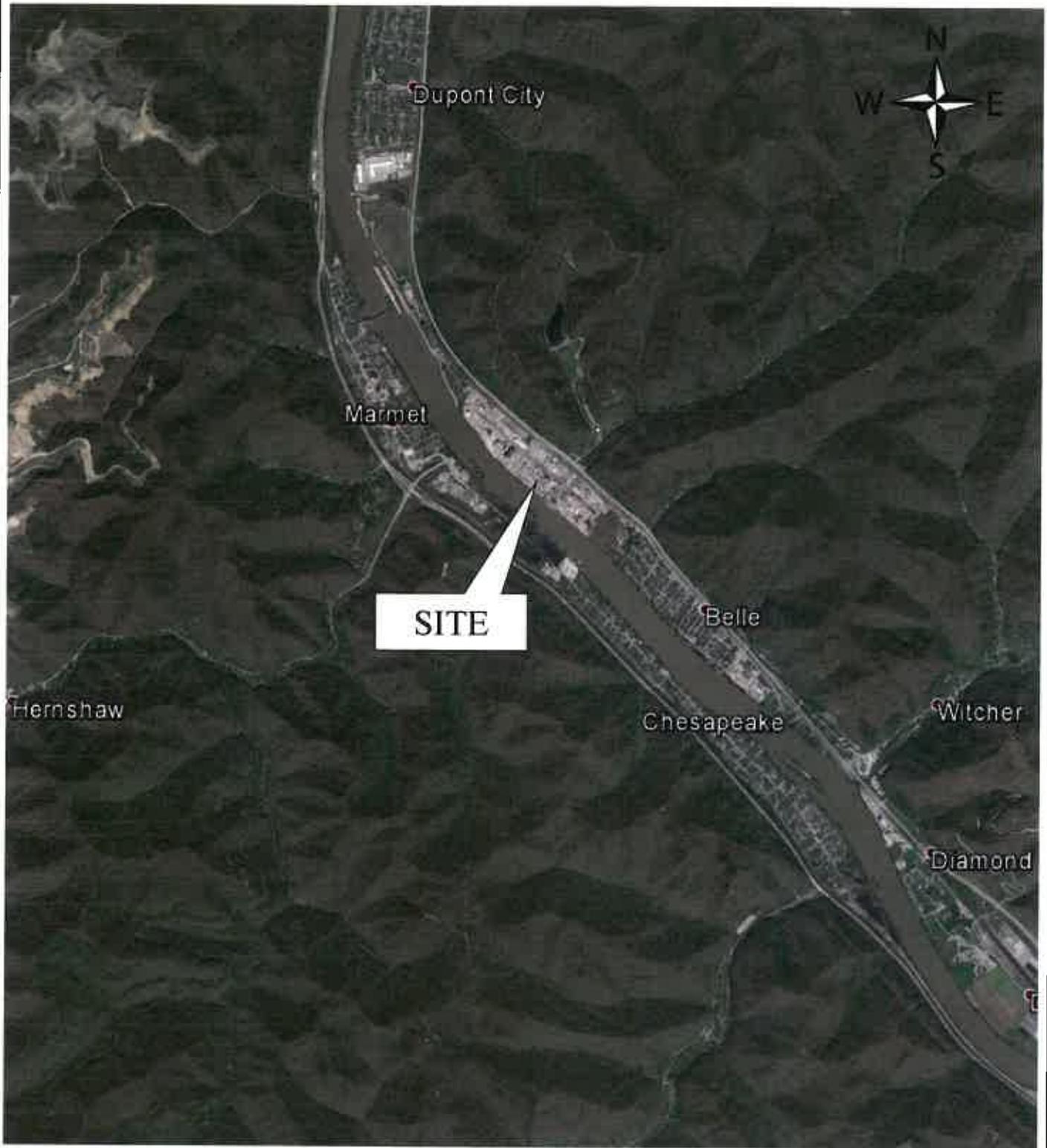
**This certificate is not transferrable and must be displayed at the location for which issued**

**This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.**

**Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.**

**TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.  
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.**

**ATTACHMENT B**  
**AREA MAP**



DATE: January 2016

PROJECT NO. 0101-14-0162

**MAPPING FOR VISUAL REPRESENTATION ONLY**

**SITE LOCATION MAP 1 of 2  
OPTIMA BELLE, LLC  
BELLE, KANAWHA COUNTY, WV**

**NOT TO SCALE**



DATE: January 2016

PROJECT NO. 0101-14-0162

**MAPPING FOR VISUAL REPRESENTATION ONLY**

**SITE LOCATION MAP 2 of 2  
OPTIMA BELLE, LLC  
BELLE, KANAWHA COUNTY, WV**

**NOT TO SCALE**

**ATTACHMENT C**  
**INSTALLATION AND START UP SCHEDULE**

**ATTACHMENT C**  
**SCHEDULE OF INSTALLATION**

There is no installation required for this production run. Existing permitted equipment will be utilized.

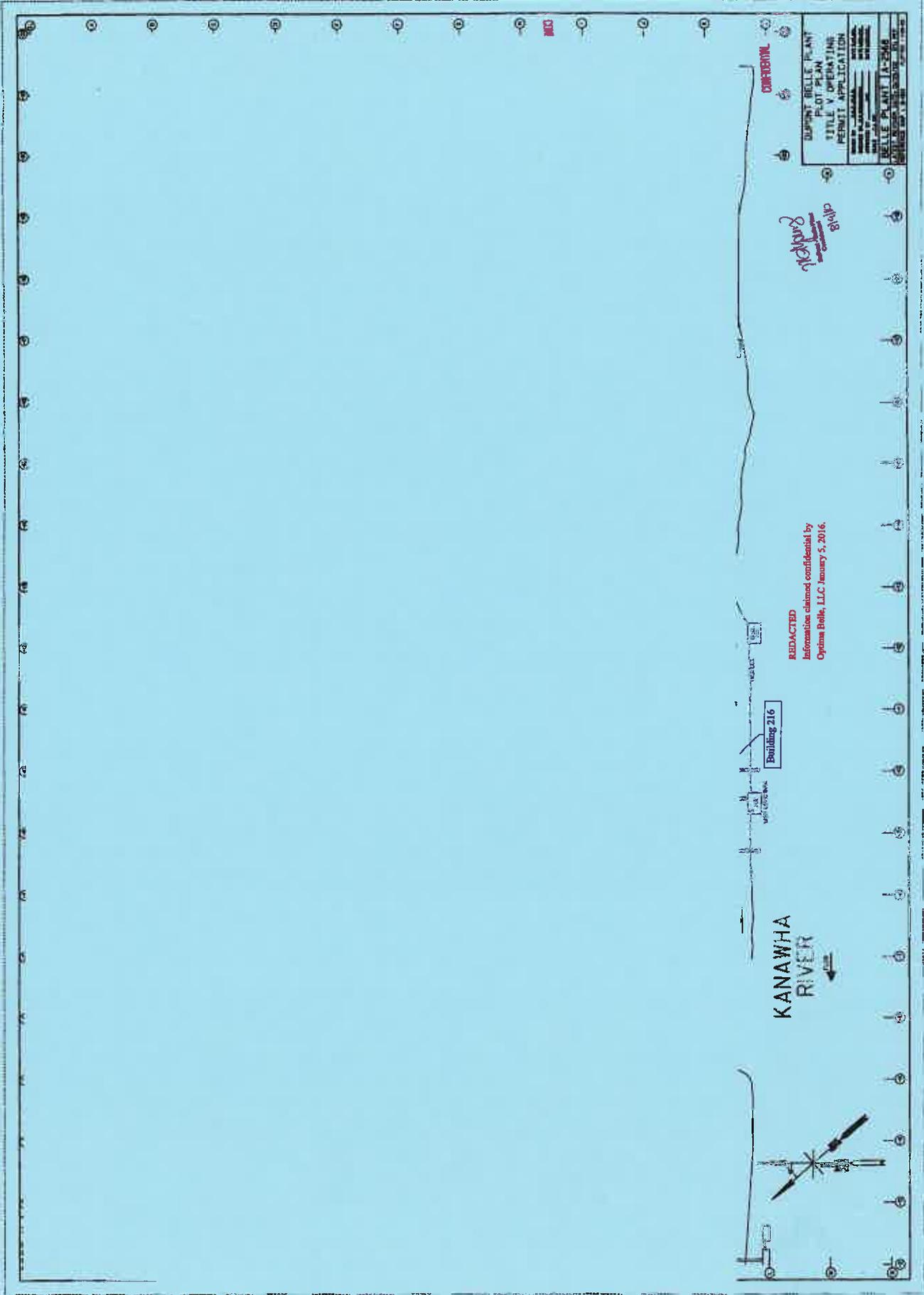
**ATTACHMENT D**  
**REGULATORY DISCUSSION**

## **ATTACHMENT D**

### **REGULATORY DISCUSSION**

The addition of Sclareol Purification to this facility/processing does not modify the regulatory basis for the permit. The equipment being utilized to purify the Sclareol is existing permitted equipment with controls which are specified in the permit.

**ATTACHMENT E**  
**PLOT PLAN**



KANAWHA RIVER

Building 216

REDACTED  
Information claimed confidential by  
Optima Belle, LLC January 5, 2016.

Mick Murphy  
8/1/16

CONFIDENTIAL

DUPONT BELLE PLANT	
PLOT PLAN	
TITLE V OPERATING PERMIT APPLICATION	
DATE	8/1/16
BY	MICK MURPHY
FOR	OPTIMA BELLE, LLC
PROJECT NO.	16-001
BELLE PLANT 1-2-16	
KANSAS STATE UNIVERSITY	
1000 EAST 17TH AVENUE	
TULSA, OKLAHOMA 74106	

**ATTACHMENT F**  
**DETAILED PROCESS FLOW DIAGRAM**

# Sclareol Purification Process Flow Diagram

**REDACTED**  
Information claimed confidential by  
Optima Belle, LLC. January 5, 2016.

**ATTACHMENT G**  
**PROCESS DESCRIPTION**

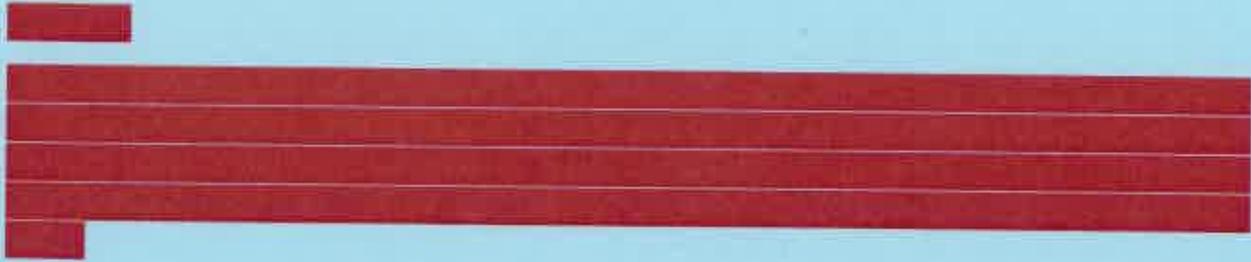
**CLAIMED CONFIDENTIAL**

Information claimed confidential by  
Optima Belle, LLC. January 5, 2016.

[REDACTED]

**CLAIMED CONFIDENTIAL**

Information claimed confidential by  
Optima Belle, LLC. January 5, 2016.



**ATTACHMENT H**  
**MATERIAL SAFETY DATA SHEETS (MSDS)**

## SAFETY DATA SHEET

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<b>Product identifier</b>	SCLAREOL (crystalline)
<b>Synonyms</b>	1-Naphthalenepropanol, alpha-ethenyldecahydro-2-hydroxy-alpha,2,5,5,8a-pentamethyl-, (alpha.R,1R,2R,4aS,8aS)- ; (1R,2R,8aS)-Decahydro-1-(3-hydroxy-3-methyl-4-pentenyl)-2,5,5,8a-tetramethyl-2-naphthol; Sclareol (cryst)
<b>Trade names</b>	NA
<b>Chemical family</b>	Terpene hydrocarbons
<b>Relevant identified uses of the substance or mixture and uses advised against</b>	Chemical intermediate for fragrance manufacture. Not for human or animal consumption.

**Issue Date** 12 November 2015

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### **SECTION 2 - HAZARDS IDENTIFICATION**

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#### **GHS Classification of the substance or mixture**

**Regulation (EC) 1272/2008  
OSHA HCS 2012** May form combustible dust concentrations. Substance not yet fully tested.

#### **Label elements**

**CLP/GHS hazard pictogram** None required

**CLP/GHS signal word** Warning

**CLP/GHS hazard statements** None required

**CLP/GHS precautionary statements** None required

**Hazards Not Otherwise Classified (HNOC):** MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR (DURING PROCESSING)  
May cause irritation. May be harmful if inhaled or absorbed through skin.

**Note** The environmental and toxicological properties of this substance have not been fully characterized.

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**SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS**

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<u>Ingredient</u>	<u>CAS #</u>	<u>EINECS/</u> <u>ELINCS#</u>	<u>Amount</u>	<u>EU</u> <u>Classification</u>	<u>GHS /CLP</u> <u>Classification</u>
Sclareol	515-03-7	208-194-0	95-100%	Not classified	May form combustible dust

**Note** The remaining impurities are non-hazardous and include miscellaneous terpenes (0-5%). See Section 16 for full text of GHS/CLP classifications. The EU classification is based on Directive 67/548/EEC and the GHS classification is based on Regulation (EC) 1272/2008 (EU CLP), 29 OSHA 1910.1200 and applicable GHS regulations (United Nations ST/SG/AC 10/30 rev 3).

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**SECTION 4 - FIRST AID MEASURES**

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**Description of first aid measures**

**Eye Contact** If easy to do, remove contact lenses, if worn. Immediately flush eyes with copious quantities of water for at least 15 minutes. If irritation occurs or persists, notify medical personnel and supervisor.

**Skin Contact** Wash exposed area with soap and water and remove contaminated clothing/shoes. If irritation occurs or persists, notify medical personnel and supervisor.

**Inhalation** Immediately move exposed subject to fresh air. If not breathing, give artificial respiration. If breathing is labored, administer oxygen. Immediately notify medical personnel and supervisor.

**Ingestion** If swallowed, call a physician immediately. Do not induce vomiting unless directed by medical personnel. Do not give anything to drink unless directed by medical personnel. Never give anything by mouth to an unconscious person. Notify medical personnel and supervisor.

**Protection of first aid responders** See Section 8 for Exposure Controls/Personal Protection recommendations.

**Most important symptoms and effects, both acute and delayed** No information available.

**Indication of immediate medical attention and special treatment needed, if necessary** Treat symptomatically and supportively. If accidental exposure occurs to an individual who is also taking one or more concomitant medications, consult the respective package or prescribing information for potential drug interactions.

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**SECTION 5 - FIREFIGHTING MEASURES**

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<b>Extinguishing media</b>	Use water spray (fog), alcohol resistant foam, dry powder, or carbon dioxide, as appropriate for surrounding fire and materials.
<b>Specific hazards arising from the substance or mixture</b>	No information identified. May emit toxic fumes of carbon monoxide and carbon dioxide.
<b>Flammability/Explosivity</b>	Warning may form combustible dust. High airborne concentrations of finely divided organic particles can potentially explode if ignited. Avoid generating dust.
<b>Advice for firefighters</b>	Wear full protective clothing and a self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode. Decontaminate all equipment after use.

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**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

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<b>Personal precautions, protective equipment and emergency procedures</b>	If product is released or spilled, take proper precautions to minimize exposure by using appropriate personal protective equipment (see Section 8). Avoid dust formation.
<b>Environmental precautions</b>	Do not empty into drains. Avoid release to the environment.
<b>Methods and material for containment and cleaning up</b>	Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Non-sparking tools should be used. Carefully sweep up material. Place spill materials into a leak-proof container suitable for disposal. Decontaminate area a second time. Dispose of material in a manner that is compliant with federal, state and local laws.
<b>Reference to other sections</b>	See Sections 8 and 13 for more information

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**SECTION 7 - HANDLING AND STORAGE**

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<b>Precautions for safe handling</b>	Avoid contact with eyes, skin and other mucous membranes. Wash thoroughly after handling. Use personal protective equipment. Avoid breathing any dust, vapors or aerosols generated. Do not eat, drink or smoke while handling this product. Avoid prolonged or repeated exposure. Provide sufficient air exchange and/or exhaust in workrooms where dust is generated. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Use normal preventative fire protection measures.
<b>Conditions for safe storage including any incompatibilities</b>	Keep container tightly closed. Keep in a cool and well ventilated area. To maintain product quality, do not store in heat or direct sunlight.
<b>Specific end use(s)</b>	No information identified.

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**SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION**

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**Control Parameters****Occupational Exposure Limits**

<u>Compound</u>	<u>Issuer</u>	<u>Type</u>	<u>OEL</u>
Sclareol	--	--	--

<b>DNEL/PNEC Limits</b>	NA.
<b>Risk Management Measures</b>	Avoid creation and inhalation of dust.
<b>Exposure/Engineering controls</b>	Selection and use of containment devices and personal protective equipment should be based on a risk assessment of exposure potential. Use local exhaust and/or enclosure at dust/ aerosol/spray-generating points. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen- deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks.
<b>Respiratory protection</b>	Where protection from nuisance dust is desired, use an N95 (US) or type P1 (EN143) dust mask. Choice of respiratory protection should be appropriate to the task and the level of existing engineering controls. Use respirators and components tested and approved under the appropriate government standard such as NIOSH (US) or CEN (EU).
<b>Hand protection</b>	Wear nitrile or other impervious gloves if skin contact is possible. When the material is dissolved or suspended in an organic solvent, wear gloves that provide protection against the solvent.
<b>Skin protection</b>	Wear appropriate gloves, lab coat, or other protective overgarment if skin contact is likely. Base the choice of skin protection on the job activity, potential for skin contact and solvents and reagents in use.
<b>Eye/face protection</b>	Wear safety glasses with side shields, chemical splash goggles, or full face shield, if necessary. Base the choice of protection on the job activity and potential for contact with eyes or face. An emergency eye wash station should be available.
<b>Environmental Exposure Controls</b>	Do not release to drains. Implement appropriate and effective emergency response procedures to prevent release or spread of contamination and to prevent inadvertent contact by personnel.
<b>Other protective measures</b>	Wash hands in the event of contact with this mixture, especially before eating, drinking or smoking. Protective equipment is not to be worn outside the work area (e.g., in common areas or out-of-doors). Decontaminate all protective equipment following use.

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## **SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES**

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### **Information on basic physical and chemical properties**

<b>Appearance</b>	Solid
<b>Color</b>	White to beige
<b>Odor</b>	Paraffinic, medicinal
<b>Odor threshold</b>	No information identified.
<b>pH</b>	No information identified.
<b>Melting point/freezing point</b>	104-105 °C (literature)

<b>Initial boiling point and boiling range</b>	218-220 °C at 19 mm Hg (literature reference)
<b>Flash point</b>	169 °C (predicted)
<b>Evaporation rate</b>	No information identified.
<b>Flammability (solid, gas)</b>	Not classified as a flammable solid by GHS. Time for combustion (200 mm) 203 s.
<b>Upper/lower flammability or explosive limits</b>	No information identified
<b>Vapor pressure</b>	5.36E-8 mmHg at 25°C (literature reference)
<b>Vapor density</b>	No information identified.
<b>Relative density</b>	0.954 g/cm <sup>3</sup> at 20 °C. (literature reference)
<b>Water solubility</b>	0.0917 mg/L @ 25 °C (literature reference).
<b>Solvent solubility</b>	Soluble in dodecane, hexane, ethyl acetate, ethanol.
<b>Partition coefficient (log) (n-octanol/water)</b>	6.0 at 25 °C (KOWWIN)
<b>Auto-ignition temperature</b>	No information identified.
<b>Decomposition temperature</b>	No information identified.
<b>Viscosity (kinematic)</b>	No information identified.
<b>Explosive properties</b>	No information for sclareol crystalline. Kst 2 bar m s <sup>-1</sup> (VDI-2263/ ASTM E1226) for the sclareol crude solid
<b>Minimum ignition energy</b>	No information for sclareol crystalline .< 3 mJ (ASTM E2019) for the sclareol crude solid
<b>Particle size (mean)</b>	No information for sclareol crystalline. 37 micron (after sieving on 63 micron sieve) for the sclareol crude solid
<b>Oxidizing properties</b>	No information identified.
<b>Other information</b>	
<b>Molecular weight</b>	308.50 g/mole
<b>Molecular formula</b>	C <sub>20</sub> H <sub>36</sub> O <sub>2</sub>

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## SECTION 10 - STABILITY AND REACTIVITY

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<b>Reactivity</b>	No information identified.
<b>Chemical stability</b>	Stable under normal handling and storage conditions.
<b>Possibility of hazardous reactions</b>	Not expected to occur.
<b>Conditions to avoid</b>	Avoid generation and accumulation of dust. Keep away from heat, sparks, and open flame.
<b>Incompatible materials</b>	Strong oxidizers.
<b>Hazardous decomposition products</b>	No information identified.

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**SECTION 11 - TOXICOLOGICAL INFORMATION**

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**Information on toxicological effects**

**Route of entry** May be absorbed by inhalation of dust, skin contact and ingestion.

**Acute toxicity**

<u>Compound</u>	<u>Type</u>	<u>Route</u>	<u>Species</u>	<u>Dose</u>
Sclareol	LD <sub>50</sub>	Oral	Rat	> 5000 mg/kg
	LD <sub>50</sub>	Dermal	Rabbit	> 5000 mg/kg

**Irritation/Corrosion** No studies identified.

**Sensitization** No studies identified.

**STOT-single exposure** No studies identified.

**STOT-repeated exposure/Repeat-dose toxicity** No studies identified.

**Reproductive toxicity** No studies identified.

**Developmental toxicity** No studies identified.

**Genotoxicity** No studies identified.

**Carcinogenicity** No studies identified. This substance is not listed by NTP, IARC, ACGIH or OSHA as a carcinogen.

**Aspiration hazard** No information available.

**Human health data** No studies identified.

**Additional information** Substance not yet fully tested.

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**SECTION 12 - ECOLOGICAL INFORMATION**

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**Aquatic Toxicity** No data available.

**Additional toxicity information** No data available.

**Persistence and Degradability** No data available

**Bioaccumulative potential** No data available.

**Mobility in soil** No data available.

**Results of PBT and vPvB assessment** No data available.

**Other adverse effects** No data available.

**Note** The environmental characteristics of this substance have not been fully investigated. Releases to the environment should be avoided.

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**SECTION 13 - DISPOSAL CONSIDERATIONS**

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**Waste treatment methods** Used product should be disposed of according to local, state, and federal regulations. Do not send down the drain or flush down the toilet. All wastes containing the material should be properly labeled. Dispose of wastes in accordance to prescribed federal, state, and local guidelines, e.g., appropriately permitted chemical waste incinerator. Rinse waters resulting from spill cleanups should be discharged in an environmentally safe manner, e.g., appropriately permitted municipal or on-site wastewater treatment facility.

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**SECTION 14 - TRANSPORT INFORMATION**

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**Transport** Based on the available data, this substance is not regulated as a hazardous material/dangerous good under EU ADR/RID, US DOT, Canada TDG, IATA, or IMDG.

**UN number** None assigned.

**UN proper shipping name** None assigned.

**Transport hazard classes and packing group** None assigned.

**Environmental hazards** Based on the available data, this substance is not regulated as an environmental hazard or a marine pollutant.

**Special precautions for users** Substance not fully tested - avoid exposure and releases to the environment.

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

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**SECTION 15 - REGULATORY INFORMATION**

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**Safety, health and environmental regulations/legislation specific for the substance or mixture** This SDS complies with the requirements under US, EU and GHS (EU CLP - Regulation EC No 1272/2008) guidelines.

**Chemical safety assessment** Not conducted.

**OSHA Hazardous** May form combustible dust concentrations on processing.

**WHMIS classification** This substance does not meet any of the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.

**Canada DSL** On DSL Supplement to Canada Gazette, Part I, January 26, 1991.

**US TSCA** Listed on the TSCA inventory as 1-Naphthalenepropanol, alpha-ethenyldecahydro-2-hydroxy-alpha,2,5,5,8a-pentamethyl-, (alpha.R,1R,2R,4aS,8aS)-

**EU REACH** Sclareol is not currently registered under REACH.

**China IECSC** On IECSC Inventory of Existing Chemical Substances in China, 2013

**SARA section 313** Not listed.

**California proposition 65** This substance does not contain chemicals known to the state of California to cause cancer or reproductive harm.

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## SECTION 16 - OTHER INFORMATION

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<b>Full text of H phrases, P phrases and GHS classification</b>	None available. HNOC: hazards not otherwise classified.
<b>Sources of data</b>	Information from published literature and internal company data. Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling. <sup>3</sup>
<b>Abbreviations</b>	<p>ACGIH - American Conference of Governmental Industrial Hygienists ADR/RID - European Agreement Concerning the International Carriage of Dangerous Goods by Road/Rail AIHA - American Industrial Hygiene Association CAS# - Chemical Abstract Services Number CLP - Classification, Labelling, and Packaging of Substances and Mixtures DNEL - Derived No Effect Level DOT - Department of Transportation EINECS - European Inventory of New and Existing Chemical Substances ELINCS - European List of Notified Chemical Substances</p> <p>EU - European Union GHS - Globally Harmonized System of Classification and Labelling of Chemicals HRIPT - Human Repeated Insult Patch Test IARC - International Agency for Research on Cancer IDLH - Immediately Dangerous to Life or Health IATA - International Air Transport Association IMDG - International Maritime Dangerous Goods LOEL - Lowest Observed Effect Level LOAEL - Lowest Observed Adverse Effect Level NIOSH - The National Institute for Occupational Safety and Health NOEL - No Observed Effect Level NOAEL - No Observed Adverse Effect Level NTP - National Toxicology Program OEL - Occupational Exposure Limit OSHA - Occupational Safety and Health Administration PBT - Persistent, Bioaccumulative and Toxic PNEC - Predicted No Effect Concentration SARA - Superfund Amendments and Reauthorization Act STEL - Short Term Exposure Limit TDG - Transport Dangerous Goods TSCA - Toxic Substances Control Act TWA - Time Weighted Average WHMIS - Workplace Hazardous Materials Information System</p>
<b>Revisions</b>	This is the first version of this SDS.
<b>Disclaimer</b>	<p>The above information is based on data available to us and is believed to be correct. Since the information may be applied under conditions beyond our control and with which we may be unfamiliar, we do not assume any responsibility for the results of its use and all persons receiving it must make their own determination of the effects, properties and protections which pertain to their particular conditions. No representation, warranty, or guarantee, express or implied (including a warranty of fitness or merchantability for a particular purpose), is made with respect to the materials, the accuracy of this information, the results to be obtained from the use thereof, or the hazards connected with the use of the material. Caution should be used in the handling and use of the material because it is a chemical substance. The above information is offered in good faith and with the belief that it is accurate. As of the date of issuance, we are providing all information relevant to the foreseeable handling of the material. However, in the event of an adverse incident associated with this product, this Safety Data Sheet is not, and is not intended to be, a substitute for consultation with appropriately trained personnel.</p>

# SAFETY DATA SHEET

n-Heptane

## Section 1. Identification

**GHS product Identifier** : n-Heptane  
**Chemical name** : heptane  
**Other means of Identification** : n-heptane; Heptane (n-Heptane)  
**Product use** : Synthetic/Analytical chemistry.  
**Synonym** : n-heptane; Heptane (n-Heptane)  
**SDS #** : 001108

## 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 1  
SKIN CORROSION/IRRITATION - Category 2  
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3  
AQUATIC HAZARD (ACUTE) - Category 1  
AQUATIC HAZARD (LONG-TERM) - Category 1

### GHS label elements

**Hazard pictograms** :



**Signal word** :

Danger

**Hazard statements** :

Extremely flammable liquid and vapor.  
May form explosive mixtures with air.  
Causes skin irritation.  
May cause drowsiness and dizziness.  
Very toxic to aquatic life.  
Very toxic to aquatic life with long lasting effects.

### Precautionary statements

**General** :

Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

**Prevention** :

Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - 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. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.

**Date of issue/Date of revision**

: 4/29/2015.

**Date of previous issue**

: 10/28/2014.

**Version** : 0.02

1/13

## Section 2. Hazards identification

- Response** : Collect spillage. 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 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. If skin irritation occurs: Get medical attention.
- Storage** : Store locked up. Store in a well-ventilated place. 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** : Substance
- Chemical name** : heptane
- Other means of identification** : n-heptane; Heptane (n-Heptane)

### CAS number/other identifiers

- CAS number** : 142-82-5
- Product code** : 001108

Ingredient name	%	CAS number
heptane	100	142-82-5

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, 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** : 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. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention.

## Section 4. First aid measures

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** : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.
- Skin contact** : Causes skin irritation.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Ingestion** : Can cause central nervous system (CNS) depression. 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:  
nausea or vomiting  
headache  
drowsiness/fatigue  
dizziness/vertigo  
unconsciousness
- 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, CO<sub>2</sub>, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

## Section 5. Fire-fighting measures

- Specific hazards arising from the chemical** : Extremely 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 very toxic 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  
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 specialised 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. Collect spillage.

### 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. 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. Dispose of via a licensed waste disposal contractor.
- 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. 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 ingest. 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.
- 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. 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.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
heptane	<p><b>ACGIH TLV (United States, 3/2012).</b>            STEL: 2050 mg/m<sup>3</sup> 15 minutes.            STEL: 500 ppm 15 minutes.            TWA: 1640 mg/m<sup>3</sup> 8 hours.            TWA: 400 ppm 8 hours.</p> <p><b>NIOSH REL (United States, 1/2013).</b>            CEIL: 1800 mg/m<sup>3</sup> 15 minutes.            CEIL: 440 ppm 15 minutes.            TWA: 350 mg/m<sup>3</sup> 10 hours.            TWA: 85 ppm 10 hours.</p> <p><b>OSHA PEL (United States, 6/2010).</b>            TWA: 2000 mg/m<sup>3</sup> 8 hours.            TWA: 500 ppm 8 hours.</p> <p><b>OSHA PEL 1989 (United States, 3/1989).</b>            STEL: 2000 mg/m<sup>3</sup> 15 minutes.            STEL: 500 ppm 15 minutes.            TWA: 1600 mg/m<sup>3</sup> 8 hours.            TWA: 400 ppm 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.

## Section 8. Exposure controls/personal protection

**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** : 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

<b>Physical state</b>	: Liquid. [Watery liquid.]
<b>Color</b>	: Colorless.
<b>Molecular weight</b>	: 100.23 g/mole
<b>Molecular formula</b>	: C7-H16
<b>Boiling/condensation point</b>	: 98.5°C (209.3°F)
<b>Melting/freezing point</b>	: -90.6°C (-131.1°F)
<b>Critical temperature</b>	: 266.85°C (512.3°F)
<b>Odor</b>	: Characteristic.
<b>Odor threshold</b>	: Not available.
<b>pH</b>	: Not available.
<b>Flash point</b>	: Closed cup: -3.89°C (25°F)
<b>Burning time</b>	: Not applicable.
<b>Burning rate</b>	: Not applicable.

## Section 9. Physical and chemical properties

Evaporation rate	: 3.18 (butyl acetate = 1)
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Lower: 1.05% Upper: 6.7%
Vapor pressure	: 4.6 kPa (34.502803352 mm Hg) [room temperature]
Vapor density	: 3.46 (Air = 1)
Specific Volume (ft <sup>3</sup> /lb)	: 1.462
Gas Density (lb/ft <sup>3</sup> )	: 0.684
Relative density	: 0.68
Solubility	: Not available.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: 4.66
Auto-ignition temperature	: 285°C (545°F)
Decomposition temperature	: Not available.
SADT	: Not available.
Viscosity	: Kinematic (room temperature): 0.00641 cm <sup>2</sup> /s (0.641 cSt)

## 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.
Incompatibility with various substances	: Extremely 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.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
heptane	LC50 Inhalation Gas.	Rat	48000 ppm	4 hours
	LC50 Inhalation Vapor	Rat	50242 ppm	1 hours
	LC50 Inhalation Vapor	Rat	103 g/m <sup>3</sup>	4 hours

#### Irritation/Corrosion

## Section 11. Toxicological information

Not available.

### Sensitization

Not available.

### Mutagenicity

Not available.

### Carcinogenicity

Not available.

### Reproductive toxicity

Not available.

### Teratogenicity

Not available.

### Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
heptane	Category 3	Not applicable.	Narcotic effects

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

**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 and dizziness.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. 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:  
nausea or vomiting  
headache  
drowsiness/fatigue  
dizziness/vertigo  
unconsciousness
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness
- Ingestion** : No specific data.

## Section 11. Toxicological information

### 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 : No known significant effects or critical hazards.

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

Not available.

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Result	Species	Exposure
heptane	Acute LC50 375000 µg/l Fresh water	Fish - Oreochromis mossambicus	96 hours

### Persistence and degradability

Not available.

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
heptane	4.66	552	high

### Mobility in soil

Soil/water partition coefficient (K<sub>oc</sub>) : 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	TDG	Mexico	IMDG	IATA
<b>UN number</b>	UN1206	UN1206	UN1206	UN1206	UN1206
<b>UN proper shipping name</b>	Heptanes	Heptanes	Heptanes	Heptanes	Heptanes
<b>Transport hazard class(es)</b>	3 	3 	3 	3  	3 
<b>Packing group</b>	II	II	II	II	II
<b>Environment</b>	No.	No.	No.	Yes.	No.
<b>Additional information</b>	-	<u>Explosive Limit and Limited Quantity Index</u> 1 <u>Passenger Carrying Road or Rail Index</u> 5	-	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark may appear if required by other transportation regulations.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

**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 73/78 and the IBC Code** : Not available.

## Section 15. Regulatory information

**U.S. Federal regulations** : TSCA 8(a) PAIR: heptane  
 TSCA 8(a) CDR Exempt/Partial exemption: Not determined  
 TSCA 12(b) one-time export: heptane  
 United States inventory (TSCA 8b): This material is listed or exempted.

**Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Not listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

### SARA 302/304

#### Composition/information on ingredients

No products were found.

**SARA 304 RQ** : Not applicable.

### SARA 311/312

**Classification** : Fire hazard  
 Immediate (acute) health hazard

#### Composition/Information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
heptane	100	Yes.	No.	No.	Yes.	No.

### State regulations

**Massachusetts** : This material is listed.

**New York** : This material is not listed.

**New Jersey** : This material is listed.

**Pennsylvania** : This material is listed.

**Canada inventory** : This material is listed or exempted.

### International regulations

#### International lists

**Australia inventory (AICS)**: This material is listed or exempted.

**China inventory (IECSC)**: This material is listed or exempted.

**Japan inventory**: This material is listed or exempted.

**Korea inventory**: This material is listed or exempted.

**Malaysia Inventory (EHS Register)**: Not determined.

**New Zealand Inventory of Chemicals (NZIoC)**: This material is listed or exempted.

**Philippines Inventory (PICCS)**: This material is listed or exempted.

**Taiwan Inventory (CSNN)**: Not determined.

**Chemical Weapons Convention List Schedule I Chemicals** : Not listed

## Section 15. Regulatory information

**Chemical Weapons Convention List Schedule II Chemicals** : Not listed

**Chemical Weapons Convention List Schedule III Chemicals** : Not listed

### Canada

**WHMIS (Canada)** : Class B-2: Flammable liquid  
Class D-2B: Material causing other toxic effects (Toxic).  
**CEPA Toxic substances:** This material is not listed.  
**Canadian ARET:** This material is not listed.  
**Canadian NPRI:** This material is listed.  
**Alberta Designated Substances:** This material is not listed.  
**Ontario Designated Substances:** This material is not listed.  
**Quebec Designated Substances:** This material is not listed.

## Section 16. Other information

**Canada Label requirements** : Class B-2: Flammable liquid  
Class D-2B: Material causing other toxic effects (Toxic).

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

Health	2
Flammability	3
Physical hazards	0

**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 are not required on SDSs 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 mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.**

The customer is responsible for determining the PPE code for this material.

### 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 printing** : 4/29/2015.  
**Date of issue/Date of revision** : 4/29/2015.

**Date of issue/Date of revision** : 4/29/2015. **Date of previous issue** : 10/28/2014. **Version** : 0.02 12/13

## Section 16. Other information

<b>Date of previous issue</b>	: 10/28/2014.
<b>Version</b>	: 0.02
<b>Key to abbreviations</b>	: 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 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations ACGIH – American Conference of Governmental Industrial Hygienists AIHA – American Industrial Hygiene Association CAS – Chemical Abstract Services CEPA – Canadian Environmental Protection Act CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act (EPA) CFR – United States Code of Federal Regulations CPR – Controlled Products Regulations DSL – Domestic Substances List GWP – Global Warming Potential IARC – International Agency for Research on Cancer ICAO – International Civil Aviation Organisation Inh – Inhalation LC – Lethal concentration LD – Lethal dosage NDSL – Non-Domestic Substances List NIOSH – National Institute for Occupational Safety and Health TDG – Canadian Transportation of Dangerous Goods Act and Regulations TLV – Threshold Limit Value TSCA – Toxic Substances Control Act WEEL – Workplace Environmental Exposure Level WHMIS – Canadian Workplace Hazardous Material Information System

**References** : Not available.

▣ 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

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<b>Product identifier</b>	Sclareol, crude
<b>Synonyms</b>	(1R,2R,8aS)-Decahydro-1-(3-hydroxy-3-methyl-4-pentenyl)-2,5,5,8a-tetramethyl-2-naphthol
<b>Trade names</b>	NA
<b>Chemical family</b>	Terpene hydrocarbons

**Relevant identified uses of the substance or mixture and uses advised against** For R&D use only. Not for human or animal consumption.

**Note** The pharmacologic and toxicologic properties of this substance have not been fully characterized; this SDS will be revisited as more data become available.

**Issue Date** 9 January 2015

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## **SECTION 2 - HAZARDS IDENTIFICATION**

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### **GHS Classification of the substance or mixture**

**Regulation (EC) 1272/2008** Not classified. Substance not yet fully tested.  
**OSHA HCS 2012**

### **Label elements**

**CLP/GHS hazard pictogram** None required

**CLP/GHS signal word** None required

**CLP/GHS hazard statements** None required

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**SECTION 2 - HAZARDS IDENTIFICATION** ...continued

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**CLP/GHS precautionary statements** None required

**NFPA Classification:** Health Hazard: 0; Fire Hazard: 0; Reactivity Hazard; 0

**Other hazards** May cause irritation. May be harmful if inhaled or absorbed through skin.

**Note** The pharmacologic and toxicologic properties of this substance have not been fully characterized. See Section 16 for full text of GHS classifications.

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**SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS**

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<u>Ingredient</u>	<u>CAS #</u>	<u>EINECS/ ELINCS#</u>	<u>Amount</u>	<u>EU Classification</u>	<u>GHS /CLP Classification</u>
Sclareol	515-03-7	208-194-0	60-95%	Not classified	Not classified

**Note** The remaining impurities are non-hazardous and include: sugar cane solids (<5.0%), buffer salts (<2.0%), and inactivated cell debris from non-pathogenic, Amyris proprietary yeast cultures (<5.0%) from *Saccharomyces cerevisiae* classified as Risk Group-1. See Section 16 for full text of GHS/CLP classifications. The EU classification is based on Directive 67/548/EEC and the GHS classification is based on Regulation (EC) 1272/2008 (EU CLP), 29 OSHA 1910.1200 and applicable GHS regulations (United Nations ST/SG/AC 10/30 rev 3).

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**SECTION 4 - FIRST AID MEASURES**

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**Description of first aid measures**

**Eye Contact** If easy to do, remove contact lenses, if worn. Immediately flush eyes with copious quantities of water for at least 15 minutes. If irritation occurs or persists, notify medical personnel and supervisor.

**Skin Contact** Wash exposed area with soap and water and remove contaminated clothing/shoes. If irritation occurs or persists, notify medical personnel and supervisor.

**Inhalation** Immediately move exposed subject to fresh air. If not breathing, give artificial respiration. If breathing is labored, administer oxygen. Immediately notify medical personnel and supervisor.

**Ingestion** If swallowed, call a physician immediately. Do not induce vomiting unless directed by medical personnel. Do not give anything to drink unless directed by medical personnel. Never give anything by mouth to an unconscious person. Notify medical personnel and supervisor.

**Protection of first aid responders** See Section 8 for Exposure Controls/Personal Protection recommendations.

**Most important symptoms and effects, both acute and delayed** No information available.

**Indication of immediate medical attention and special treatment needed, if necessary** Treat symptomatically and supportively. If accidental exposure occurs to an individual who is also taking one or more concomitant medications, consult the respective package or prescribing information for potential drug interactions.

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**SECTION 5 - FIREFIGHTING MEASURES**

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<b>Extinguishing media</b>	Use water spray (fog), alcohol resistant foam, dry powder, or carbon dioxide, as appropriate for surrounding fire and materials.
<b>Specific hazards arising from the substance or mixture</b>	No information identified. May emit toxic fumes of carbon monoxide and carbon dioxide.
<b>Flammability/Explosivity</b>	No explosivity or flammability data identified. High airborne concentrations of finely divided organic particles can potentially explode if ignited. Avoid raising dust.
<b>Advice for firefighters</b>	Wear full protective clothing and a self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode. Decontaminate all equipment after use.

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**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

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<b>Personal precautions, protective equipment and emergency procedures</b>	If product is released or spilled, take proper precautions to minimize exposure by using appropriate personal protective equipment (see Section 8). Avoid dust formation.
<b>Environmental precautions</b>	Do not empty into drains. Avoid release to the environment.
<b>Methods and material for containment and cleaning up</b>	Do not raise dust. Carefully sweep up material. Place spill materials into a leak-proof container suitable for disposal. Decontaminate area a second time. Dispose of material in a manner that is compliant with federal, state and local laws.
<b>Reference to other sections</b>	See Sections 8 and 13 for more information

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**SECTION 7 - HANDLING AND STORAGE**

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<b>Precautions for safe handling</b>	Avoid contact with eyes, skin and other mucous membranes. Wash thoroughly after handling. Use personal protective equipment. Avoid breathing any dust, vapors or aerosols generated. Do not eat, drink or smoke while handling this product. Avoid prolonged or repeated exposure. Provide sufficient air exchange and/or exhaust in workrooms where dust is generated. Use normal preventative fire protection measures.
<b>Conditions for safe storage including any incompatibilities</b>	Keep container tightly closed. Keep in a cool and well ventilated area. To maintain product quality, do not store in heat or direct sunlight.
<b>Specific end use(s)</b>	No information identified.

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**SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION**

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**Control Parameters****Occupational Exposure Limits**

<u>Compound</u>	<u>Issuer</u>	<u>Type</u>	<u>OEL</u>
Sclareol, crude	--	--	--

**DNEL/PNEC Limits** NA.

**Risk Management Measures** Avoid creation and inhalation of dust.

**Exposure/Engineering controls** Selection and use of containment devices and personal protective equipment should be based on a risk assessment of exposure potential. Use local exhaust and/or enclosure at dust/ aerosol/spray-generating points.

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**SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION**

---

<b>Respiratory protection</b>	Where protection from nuisance dust is desired, use an N95 (US) or type P1 (EN143) dust mask. Choice of respiratory protection should be appropriate to the task and the level of existing engineering controls. Use respirators and components tested and approved under the appropriate government standard such as NIOSH (US) or CEN (EU).
<b>Hand protection</b>	Wear nitrile or other impervious gloves if skin contact is possible. When the material is dissolved or suspended in an organic solvent, wear gloves that provide protection against the solvent.
<b>Skin protection</b>	Wear appropriate gloves, lab coat, or other protective overgarment if skin contact is likely. Base the choice of skin protection on the job activity, potential for skin contact and solvents and reagents in use.
<b>Eye/face protection</b>	Wear safety glasses with side shields, chemical splash goggles, or full face shield, if necessary. Base the choice of protection on the job activity and potential for contact with eyes or face. An emergency eye wash station should be available.
<b>Environmental Exposure Controls</b>	Do not release to drains. Implement appropriate and effective emergency response procedures to prevent release or spread of contamination and to prevent inadvertent contact by personnel.
<b>Other protective measures</b>	Wash hands in the event of contact with this mixture, especially before eating, drinking or smoking. Protective equipment is not to be worn outside the work area (e.g., in common areas or out-of-doors). Decontaminate all protective equipment following use.

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**SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES**

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**Information on basic physical and chemical properties**

<b>Appearance</b>	Solid
<b>Color</b>	Yellow-brown
<b>Odor</b>	Paraffinic, medicinal
<b>Odor threshold</b>	No information identified.
<b>pH</b>	No information identified.
<b>Melting point/freezing point</b>	104-105 °C (literature)
<b>Initial boiling point and boiling range</b>	218-220 °C at 19 mm Hg
<b>Flash point</b>	169 °C (predicted)
<b>Evaporation rate</b>	No information identified.
<b>Flammability (solid, gas)</b>	No information identified.
<b>Upper/lower flammability or explosive limits</b>	No information identified
<b>Vapor pressure</b>	5.36E-8 mmHg at 25°C
<b>Vapor density</b>	No information identified.
<b>Relative density</b>	0.954 g/cm <sup>3</sup> at 20 °C.

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**SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES**

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<b>Water solubility</b>	0.0917 mg/L @ 25 °C (literature reference).
<b>Solvent solubility</b>	Soluble in dodecane, hexane, ethyl acetate, ethanol.
<b>Partition coefficient (log) (<i>n</i>-octanol/water)</b>	6.0 at 25 °C (KOWWIN)
<b>Auto-ignition temperature</b>	No information identified.
<b>Decomposition temperature</b>	No information identified.
<b>Viscosity (kinematic)</b>	No information identified.
<b>Explosive properties</b>	No information identified.
<b>Oxidizing properties</b>	No information identified.

**Other information**

<b>Molecular weight</b>	308.50 g/mole
<b>Molecular formula</b>	C <sub>20</sub> H <sub>36</sub> O <sub>2</sub>

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**SECTION 10 - STABILITY AND REACTIVITY**

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<b>Reactivity</b>	No information identified.
<b>Chemical stability</b>	Stable under normal handling and storage conditions.
<b>Possibility of hazardous reactions</b>	Not expected to occur.
<b>Conditions to avoid</b>	Keep away from heat, sparks, and open flame.
<b>Incompatible materials</b>	Strong oxidizers.
<b>Hazardous decomposition products</b>	No information identified.

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**SECTION 11 - TOXICOLOGICAL INFORMATION**

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**Information on toxicological effects**

**Route of entry** May be absorbed by inhalation of dust, skin contact and ingestion.

**Acute toxicity**

<u>Compound</u>	<u>Type</u>	<u>Route</u>	<u>Species</u>	<u>Dose</u>
Sclareol, crude	LD <sub>50</sub>	Oral	Rat	> 5000 mg/kg
	LD <sub>50</sub>	Dermal	Rabbit	> 5000 mg/kg

**Irritation/Corrosion** No studies identified.

**Sensitization** No studies identified.

**STOT-single exposure** No studies identified.

**STOT-repeated exposure/Repeat-dose toxicity** No studies identified.

**Reproductive toxicity** No studies identified.

**Developmental toxicity** No studies identified.

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**SECTION 11 - TOXICOLOGICAL INFORMATION**

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<b>Genotoxicity</b>	No studies identified.
<b>Carcinogenicity</b>	No studies identified. This mixture is not listed by NTP, IARC, ACGIH or OSHA as a carcinogen.
<b>Aspiration hazard</b>	No information available.
<b>Human health data</b>	No studies identified.
<b>Additional information</b>	Substance not yet fully tested.

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**SECTION 12 - ECOLOGICAL INFORMATION**

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<b>Aquatic Toxicity</b>	No data available.
<b>Additional toxicity information</b>	No data available.
<b>Persistence and Degradability</b>	No data available
<b>Bioaccumulative potential</b>	No data available.
<b>Mobility in soil</b>	No data available.
<b>Results of PBT and vPvB assessment</b>	No data available.
<b>Other adverse effects</b>	No data available.
<b>Note</b>	The environmental characteristics of this substance have not been fully investigated. Releases to the environment should be avoided.

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**SECTION 13 - DISPOSAL CONSIDERATIONS**

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<b>Waste treatment methods</b>	Used product should be disposed of according to local, state, and federal regulations. Do not send down the drain or flush down the toilet. All wastes containing the material should be properly labeled. Dispose of wastes in accordance to prescribed federal, state, and local guidelines, e.g., appropriately permitted chemical waste incinerator. Rinse waters resulting from spill cleanups should be discharged in an environmentally safe manner, e.g., appropriately permitted municipal or on-site wastewater treatment facility.
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**SECTION 14 - TRANSPORT INFORMATION**

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<b>Transport</b>	Based on the available data, this substance is not regulated as a hazardous material/dangerous good under EU ADR/RID, US DOT, Canada TDG, IATA, or IMDG.
<b>UN number</b>	None assigned.
<b>UN proper shipping name</b>	None assigned.
<b>Transport hazard classes and packing group</b>	None assigned.
<b>Environmental hazards</b>	Based on the available data, this substance is not regulated as an environmental hazard or a marine pollutant.
<b>Special precautions for users</b>	Substance not fully tested - avoid exposure and releases to the environment.
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.

---

**SECTION 15 - REGULATORY INFORMATION**

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<b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	This SDS complies with the requirements under US, EU and GHS (EU CLP - Regulation EC No 1272/2008) guidelines.
<b>Chemical safety assessment</b>	Not conducted.
<b>OSHA Hazardous</b>	No known OSHA hazards. Substance not fully tested.
<b>WHMIS classification</b>	This substance does not meet any of the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.
<b>Canada DSL</b>	On DSL Supplement to Canada Gazette, Part I, January 26, 1991.
<b>US TSCA</b>	Listed on the TSCA 2104 inventory
<b>EU REACH</b>	This substance is exempt from REACH registration due to low production/import volume (< 1 tonne per year).
<b>China IECSC</b>	On IECSC Inventory of Existing Chemical Substances in China, 2013
<b>SARA section 313</b>	Not listed.
<b>California proposition 65</b>	Not listed.

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**SECTION 16 - OTHER INFORMATION**

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<b>Full text of H phrases, P phrases and GHS classification</b>	None available.
<b>Sources of data</b>	Information from published literature and internal company data.
<b>Abbreviations</b>	ACGIH - American Conference of Governmental Industrial Hygienists ADR/RID - European Agreement Concerning the International Carriage of Dangerous Goods by Road/Rail AIHA - American Industrial Hygiene Association CAS# - Chemical Abstract Services Number CLP - Classification, Labelling, and Packaging of Substances and Mixtures DNEL - Derived No Effect Level DOT - Department of Transportation EINECS - European Inventory of New and Existing Chemical Substances ELINCS - European List of Notified Chemical Substances EU - European Union GHS - Globally Harmonized System of Classification and Labelling of Chemicals HRIPT - Human Repeated Insult Patch Test IARC - International Agency for Research on Cancer IDLH - Immediately Dangerous to Life or Health IATA - International Air Transport Association IMDG - International Maritime Dangerous Goods LOEL - Lowest Observed Effect Level LOAEL - Lowest Observed Adverse Effect Level NIOSH - The National Institute for Occupational Safety and Health NOEL - No Observed Effect Level NOAEL - No Observed Adverse Effect Level NTP - National Toxicology Program OEL - Occupational Exposure Limit OSHA - Occupational Safety and Health Administration PBT - Persistent, Bioaccumulative and Toxic PNEC - Predicted No Effect Concentration SARA - Superfund Amendments and Reauthorization Act STEL - Short Term Exposure Limit TDG - Transport Dangerous Goods TSCA - Toxic Substances Control Act TWA - Time Weighted Average WHMIS - Workplace Hazardous Materials Information System

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**SECTION 16 - OTHER INFORMATION**

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**Revisions**

This is the first version of this SDS.

**Disclaimer**

The above information is based on data available to us and is believed to be correct. Since the information may be applied under conditions beyond our control and with which we may be unfamiliar, we do not assume any responsibility for the results of its use and all persons receiving it must make their own determination of the effects, properties and protections which pertain to their particular conditions. No representation, warranty, or guarantee, express or implied (including a warranty of fitness or merchantability for a particular purpose), is made with respect to the materials, the accuracy of this information, the results to be obtained from the use thereof, or the hazards connected with the use of the material. Caution should be used in the handling and use of the material because it is a chemical substance. The above information is offered in good faith and with the belief that it is accurate. As of the date of issuance, we are providing all information relevant to the foreseeable handling of the material. However, in the event of an adverse incident associated with this product, this Safety Data Sheet is not, and is not intended to be, a substitute for consultation with appropriately trained personnel.

**ATTACHMENT I**  
**EMISSION UNITS TABLE**

**CLAIMED CONFIDENTIAL**Information claimed confidential by  
Optima Belle, LLC. January 5, 2016.

**Attachment I**  
**Emission Units Table**  
 (Includes all emission units and air pollution control devices  
 that will be part of this permit application review, regardless of permitting status)

Emission Unit ID <sup>1</sup>	Emission Point ID <sup>2</sup>	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type <sup>3</sup> and Date of Change	Control Device <sup>4</sup>
009	104.014	Incinerator	1977	[REDACTED]	Existing	None
002	104.014	Dryer	1977	[REDACTED]	Existing	Dryer Condenser Incinerator
004	104.014	[REDACTED] Condenser	1977	[REDACTED]	Existing	Incinerator
108	104.014	[REDACTED] Tank	1961	[REDACTED]	Existing	Incinerator
112	104.014	[REDACTED] Tank	1951	[REDACTED]	Existing	Incinerator
114A	104.003A	[REDACTED] Charge Hopper	2005	[REDACTED]	Existing	Dust Collector
201	104.014	Centrifuge	1961	[REDACTED]	Existing	Incinerator
201A	104.014	Wet Cake Bin		[REDACTED]	Existing	Incinerator
202	104.014	[REDACTED] Tank	1988	[REDACTED]	Existing	Incinerator
203	104.014	Reactor [REDACTED]	1977	[REDACTED]	Existing	Incinerator
205	104.014 / 205	Reactor [REDACTED]	1988	[REDACTED]	Existing / New	Incinerator / None
206	104.014	Reactor [REDACTED]	1992	[REDACTED]	Existing	Incinerator
208	104.014	Reactor [REDACTED]	1977	[REDACTED]	Existing	Incinerator
219	104.014	Reactor [REDACTED]	1984	[REDACTED]	Existing	Incinerator
227	104.014	Tank	2005	[REDACTED]	Existing	Incinerator
Not a Source	Not a Source	Reactor [REDACTED] (Tempered Water Tank Only)	1981	[REDACTED]	Existing	None
Fugitive	Fugitive	Bag and Polish Filter Change Out	NA	NA	Existing	None

**ATTACHMENT J**

**EMISSION POINTS DATA SUMMARY SHEET**

# Attachment J Emission Points Data Summary Sheet

**Table 1: Emissions Data**

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type <sup>1</sup>	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants Chemical Name/CAS <sup>3</sup> (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions <sup>4</sup>		Maximum Potential Controlled Emissions <sup>5</sup>		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used <sup>6</sup>	Emission Concentration (ppmv or mg/m <sup>3</sup> )
		ID No.	Source	ID No.	Device Type	Short Term <sup>2</sup>	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
104.014	Upward Vertical	*	Various	009	Incinerator	N/A	N/A	VOC	84.26	16.04	0.0843	0.0160	Gas	EE	N/A
104.003	Upward Vertical	114A	Reactor No. 3 Charge Hopper	114	Dust Collector	N/A	N/A	PM PM10 PM2.5	0.0033 0.0016 0.0002	0.00030 0.00014 0.00002	0.0033 0.0016 0.0002	0.00030 0.00014 0.00002	Solid	AP-42	N/A
107.022	Upward Vertical	210	Packing Unit	023	Dust Collector	N/A	N/A	PM PM10 PM2.5	0.0404 0.0191 0.0029	0.00364 0.00172 0.00026	0.0404 0.0191 0.0029	0.00364 0.00172 0.00026	Solid	AP-42	N/A
205	***	205	** D.E. to Reactor No. 1	N/A	N/A	N/A	N/A	PM PM10 PM2.5	0.0008 0.0004 0.0001	0.00008 0.00004 0.00001	0.0008 0.0004 0.0001	0.00008 0.00004 0.00001	Solid	AP-42	N/A

\* - Sources venting through this emissions point during Sclareol Production include 002-Dryer, 108-Flammable Waste Tank, 112-J Tank, 201-Centrifuge, 201A Wet Cake Bin, 202-M/L Disengaging Tank, 203-Reactor No. 3, 203C-Reactor No. 3 Condenser, 205-Reactor No. 1, 206-Reactor No. 2, 208-Reactor No. 6, 209-Reactor No. 8, 219-Reactor No. 5, and 227-Tank.

\*\* - D.E. is diatomaceous earth.

\*\*\* - D.E. is manually charged (personnel dumping bags of D.E.) to Reactor No. 1 through the access port at the top of the reactor. When the top is open on the reactor the reactor does not vent to the scrubber and incinerator. This reactor is located within the building and this is a conservative estimate of the emissions associated with the feeding of D.E. through the port.

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

<sup>1</sup> Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.  
<sup>2</sup> Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (i.e., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).  
<sup>3</sup> List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. DO NOT LIST H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.  
<sup>4</sup> Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).  
<sup>5</sup> Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).  
<sup>6</sup> Indicate the method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).  
<sup>7</sup> Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m<sup>3</sup>) at standard conditions (68 °F



**ATTACHMENT K**

**FUGITIVE EMISSIONS DATA SUMMARY SHEET**

## Attachment K – Fugitive Emissions Data Summary Sheet

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS	
1.)	Will there be haul road activities? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.)	Will there be Storage Piles? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.)	Will there be Liquid Loading/Unloading Operations? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.)	Will there be emissions of air pollutants from Wastewater Treatment Evaporation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.)	Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.)	Will there be General Clean-up VOC Operations? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No – Filter change outs included with process. <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.)	Will there be any other activities that generate fugitive emissions? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."	

FUGITIVE EMISSIONS SUMMARY		All Regulated Pollutants - Chemical Name/CAS <sup>1</sup>	Maximum Potential Uncontrolled Emissions <sup>2</sup>		Maximum Potential Controlled Emissions <sup>3</sup>		Est. Method Used <sup>4</sup>
			lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads	NA						
Unpaved Haul Roads	NA						
Storage Pile Emissions	NA						
Loading/Unloading Operations	NA						
Wastewater Treatment Evaporation & Operations	NA						
Equipment Leaks	NA						
General Clean-up VOC Emissions	Filter Cleaning/Change Out VOC	0.23	0.02	0.23	0.02	EE	
Other	NA						

<sup>1</sup> List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. DO NOT LIST H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.

<sup>2</sup> Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

<sup>3</sup> Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

<sup>4</sup> Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

**ATTACHMENT L**  
**EMISSION UNIT DATA SHEETS**

**Attachment L  
EMISSIONS UNIT DATA SHEET  
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): Various (See Attachment I)

**1. Name or type and model of proposed affected source:**

Sclareol Purification is being proposed for the Small Lots Manufacturing (SLM) Building 216. This process will use the existing permitted equipment that is listed in Attachment I. Sclareol (Crude) is dissolved in Heptane and then filtered, crystalized, dried and packaged. This is a batch process and three batches may be in process at one time.

**2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.**

**3. Name(s) and maximum amount of proposed process material(s) charged per hour:**

Total Batches Per Year: 180  
Single Batch Time: 63.75 hours  
Batch Loading: Sclareol (Crude) Approximately 1,826.6 pounds; Heptane 1,626 gallons

**4. Name(s) and maximum amount of proposed material(s) produced per hour:**

Sclareol (Product) Approximately 1,200 pounds

**5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:**

No chemical reaction. Sclareol (Crude) is dissolved in Heptane to allow impurity removal by filtration.

\* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.



8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@	°F and	psia
a. NO <sub>x</sub>	lb/hr	grains/ACF
b. SO <sub>2</sub>	lb/hr	grains/ACF
c. CO	lb/hr	grains/ACF
d. PM <sub>10</sub>	0.02 lb/hr	grains/ACF
e. Hydrocarbons	lb/hr	grains/ACF
f. VOCs	84.26 lb/hr	grains/ACF
g. Pb	lb/hr	grains/ACF
h. Specify other(s)	lb/hr	grains/ACF
	lb/hr	grains/ACF
	lb/hr	grains/ACF
	lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

**MONITORING**

None

**RECORDKEEPING**

Amount of Sclareol (Crude) Processed

**REPORTING**

None

**TESTING**

None

**MONITORING.** PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

**RECORDKEEPING.** PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

**REPORTING.** PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

**TESTING.** PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

This is existing equipment that has been in place for years.

**ATTACHMENT N**  
**SUPPORTING EMISSIONS CALCULATIONS**

By: PEW  
Date: 1/7/2016

Checked By: JJD  
Date: 1/7/2016

**Total Emissions Estimate for a Campaign of Sclareol**

Number of Batches in Process 3 No.  
Number of Batches Per Year 180 No.  
VOC Control Efficiency 99.9 %

Emissions	Total Emissions						
	Uncontrolled		Controlled				
	pph (Max Rate)(2)	ppy	tpy	pph (Max Rate)	ppy	tpy (180 batches)	tpy (pph x 8,760 hrs/yr)
VOC - Process (1)	84.2586	32,085.8277	16.0429	0.0843	32.0858	0.0180	0.3691
VOC - Filter Changeout	0.22888	40.8389	0.0204	0.2289	40.8389	0.0204	0.9937
<b>Total VOC</b>	<b>84.4855</b>	<b>32,126.6665</b>	<b>16.0633</b>	<b>0.3111</b>	<b>72.9247</b>	<b>0.0365</b>	<b>1.3628</b>
PM	0.04463	8.03398	0.00402	0.04463	8.03398	0.00402	0.1955
PM10	0.02111	3.79985	0.00190	0.02111	3.79985	0.00190	0.0925
PM2.5	0.00320	0.57541	0.00029	0.00320	0.57541	0.00029	0.0140

(1) Uncontrolled VOC emissions are back calculated from the controlled emissions based on the control efficiency.

(2) Hourly emissions rate is the max rate of emissions based on Emissions Master multiplied by the number of batches that could be in process. The batches will not be at the same point within the process. This is a conservative estimate that all batches will be emitting the maximum hourly emissions value for a single batch.

**Total Emissions Estimate for a Batch of Sclareol - Emissions Master (Provided by Client)**

Product: Sclareol  
 Process Name: Sclareol-4  
 Production Quantity: 1200.0 lb  
 Process Cycle Time: 63.75 hr  
 Date: 12/21/2015  
 File: C:\Users\Public\Documents\Emission Master\Sclareol5.emm  
 Comments:

Compound	Activities Emitting	Emissions		Emissions Percent Removal
		Uncontrolled (lb)	Controlled (lb)	
Air	4	5.763887452	5.763887452	0
Diatomaceous Earth	6	0	0	
Heptane	59	177.9663166	0.177966317	99.9
Nitrogen	82	143.742132	143.742132	0
Sclareol	49	0	0	
Water	9	0.116982171	0.116982171	0

Compound	Process Cycle	Compound Emission	Compound Emission	Max Rate (lb/hr)
	Average (lb/hr)	Hours	Average (lb/hr)	Within 1 hour
Air	0.090413921	30.49861111	0.188988522	5.158703854
Diatomaceous Earth	0	1.75	0	0
Heptane	0.002791628	72.40388889	0.002457966	0.028084237
Nitrogen	2.254778542	68.2375	2.10649763	19.17727373
Sclareol	0	67.24416667	0	0
Water	0.001835014	6.25	0.018717147	0.048595109

- (1) Process Cycle Average = Compound emission quantity / Total process cycle time in hours.
- (2) Compound Emission Average = Compound emission quantity / Compound emission time in hours.

Classification	Active Emitting	Emissions		Percent Removal
		Uncontrolled (lb)	Controlled (lb)	
All Emissions	86	327.5893183	149.800968	54.27171778
Acid	0	0	0	
Acid Gases	0	0	0	
Asbestos	0	0	0	
Base	0	0	0	
Biological	0	0	0	
CO	0	0	0	
Company List	0	0	0	
CR+6	0	0	0	
Dioxin	0	0	0	
ETG	0	0	0	
EVOS	0	0	0	
Exclude	0	0	0	
Gas	0	0	0	
HAP	0	0	0	
Hydrogen	0	0	0	
LOC	0	0	0	
Metal	0	0	0	
NOx	0	0	0	
Other	0	0	0	
Particulate	0	0	0	
Pb	0	0	0	
PM10	0	0	0	
PM2.5	0	0	0	
Radionuclide	0	0	0	
SO2	0	0	0	
TSP	0	0	0	
TVOS	0	0	0	
VCM	0	0	0	
VOC	59	177.9663166	0.177966317	99.9
Heptane	59	177.9663166	0.177966317	99.9
Unclassified	86	149.6230017	149.6230017	0
Air	4	5.763887452	5.763887452	0
Diatomaceous Earth	6	0	0	
Nitrogen	82	143.742132	143.742132	0
Sclareol	49	0	0	
Water	9	0.116982171	0.116982171	0

Classification	Process Cycle Average (lb/hr)	Emission Hours	Emission Average (lb/hr)	Max Rate (lb/hr) Within 1 hour
Acid	0	0	0	0
Acid Gases	0	0	0	0
Asbestos	0	0	0	0
Base	0	0	0	0
Biological	0	0	0	0
CO	0	0	0	0
Company List	0	0	0	0
CR+6	0	0	0	0
Dioxin	0	0	0	0
ETG	0	0	0	0
EVOS	0	0	0	0
Exclude	0	0	0	0
Gas	0	0	0	0
HAP	0	0	0	0
Hydrogen	0	0	0	0
LOC	0	0	0	0
Metal	0	0	0	0
NOx	0	0	0	0
Other	0	0	0	0
Particulate	0	0	0	0
Pb	0	0	0	0
PM10	0	0	0	0
PM2.5	0	0	0	0
Radionuclide	0	0	0	0
SO2	0	0	0	0
TSP	0	0	0	0
TVOS	0	0	0	0
VCM	0	0	0	0
VOC	0.002791628	72.40388889	0.002457966	0.028084237
Unclassified	2.347027477	68.23722222	2.192688928	19.17727373

- (1) Process Cycle Average = Classification emission quantity / Total process cycle time in hours.  
(2) Emission Average = Classification emission quantity / Classification emission time in hours.

Vessel	Vent ID	Device # 1	Device # 1 Temp (°C)
CE-1	CE-1-TO	Incinerator (Bldg 216)	1500
DR-1	Dryer-TO	Incinerator (Bldg 216)	1500
Drum 216	Dryer-TO	Incinerator (Bldg 216)	1500
DS-1	RX-6-TO	Incinerator (Bldg 216)	1500
FV-3	RX-3-TO	Incinerator (Bldg 216)	1500
FW Tank	RX-3-TO	Incinerator (Bldg 216)	1500
J-tank	J-tk-TO	Incinerator (Bldg 216)	1500
MLDT	MLDT-TO	Incinerator (Bldg 216)	1500
RX-1	RX-1-TO	Incinerator (Bldg 216)	1500
RX-2	RX-2-TO	Incinerator (Bldg 216)	1500
RX-3	RX-3-TO	Incinerator (Bldg 216)	1500
RX-5	RX-5-TO	Incinerator (Bldg 216)	1500
RX-6	RX-6-TO	Incinerator (Bldg 216)	1500
Virtual Tanker		Incinerator (Bldg 216)	1500
Virtual Tanker	TO	Incinerator (Bldg 216)	1500
Wet Cake Bin	WCB-TO	Incinerator (Bldg 216)	1500

### Uncontrolled Emissions

Process: Sciareol-4

Emissions reported in Pounds.

Activity	Recipe Step	Vessel	Air	Diatomac	Heptane	Nitrogen	Sciareol	Water
1		RX-1		0		1.33E-02		
2		RX-1		0	0.14197	0.81165		
3		RX-1		0	0.13648	0.78029		
4		RX-1				0		
4		FV-3		0	0.14418	0.82429		
5		RX-3				2.3409		
6		RX-3				2.1212	0	3.19E-02
7		RX-3			2.6355	15.0367	0	1.98E-02
8		RX-3			1.0012	0.74699	0	3.11E-03
9		RX-3			14.7819	4.6817	0	4.76E-02
10		RX-6				13.3001		
11		DS-1				0.133		
12		RX-3			2.1487	0.42161	0	6.91E-03
13		RX-3			0	0	0	
13		DS-1			0.13325	1.0652		2.35E-03
14		FW Tank	0.60518		0.10236			
15		DS-1			0	0		
15		Virtual Tanker				4.44E-02		3.44E-04
16		DS-1				0		
16		RX-6			0.15867	1.0321		
17		RX-3				0		
17		FV-3		0	2.7267	15.5889	0	
18		FV-3		0	0	0	0	
18		RX-2			23.2576	7.1768	0	
19		RX-2			4.8267	0.91995	0	
20		RX-2			0	0	0	
20		RX-6			0.92283	6.0016		
21		RX-2				0		
21		RX-5			10.1007	3.1169	0	
22		RX-5			2.5287	0.78029	0	
23		RX-5			0	0	0	
24		RX-5			1.12E-02	7.01E-03	0	
25		RX-5			0	0	0	
26		RX-5			12.5058	7.8029	0	
27		RX-5				0		
27		CE-1			0.70948	7.1181	0	
28		RX-6			0	0		
28		CE-1			4.99E-02	0.50062	0	
29		CE-1			0	0	0	
29		MLDT			0.49721	4.9884	0	
30		CE-1				0		
30		Wet Cake Bin			0.26217	2.6303	0	
31		MLDT				0		
31		J-tank	5.1587		0.49721		0	
32		Wet Cake Bin				0		
32		DR-1			0.26217	2.6303	0	
33		DR-1			1.5824	2.3992	0	
34		J-tank	0		0			
34		RX-2			0.45489	2.959	0	
35		RX-2			38.4615	8.5574	0	
36		RX-2			0	0	0	
36		RX-6			5.8069	0.3426		
37		FW Tank	0					
37		Virtual Tanker			0.10236	0.60149		2.82E-03
38		RX-2				0		
38		RX-5			1.7634	0.38315	0	
39		RX-5			35.9126	7.8029	0	
40		RX-5			0	0	0	
41		RX-5			1.01E-02	7.42E-03	0	
42		RX-5			10.6577	7.8029	0	
43		RX-5			0	0	0	
44		DR-1				0	0	
44		RX-6			8.31E-02	0.5405		
45		DR-1				0		
45		Drum 216				1.5896	0	
46		RX-5				0		
46		CE-1			0.10713	1.0748	0	
47		CE-1			0	0	0	
47		MLDT			6.25E-02	0.62681	0	
48		RX-6			0	0		
48		CE-1			9.45E-03	9.48E-02	0	
49		CE-1			0	0	0	
49		MLDT			5.20E-03	5.21E-02	0	
50		MLDT				0		
50		J-tank			6.77E-02	0.67895	0	
51		CE-1				0		
51		Wet Cake Bin			4.89E-02	0.49073	0	
52		Wet Cake Bin				0		
52		DR-1			4.89E-02	0.49073	0	
53		DR-1			2.1015	3.1861	0	
54		DR-1				0	0	
54		RX-6			2.80E-02	0.1821		
55		DR-1				0		
55		Drum 216				0.18334	0	
56		J-tank				0		
56		Virtual Tanker			0.10998	1.1	0	2.19E-03

**Controlled Emissions**

Process: Sciareol-4

Emissions reported in Pounds.

Activity	Recipe Step	Vessel	Air	Diatomac	Heptane	Nitrogen	Sciareol	Water
1		RX-1		0		1.33E-02		
2		RX-1		0	1.42E-04	0.81165		
3		RX-1		0	1.36E-04	0.78029		
4		RX-1				0		
4		FV-3		0	1.44E-04	0.82429		
6		RX-3				2.3409		
6		RX-3				2.1212	0	3.19E-02
7		RX-3			2.64E-03	15.0367	0	1.98E-02
8		RX-3			1.00E-03	0.74699	0	3.11E-03
9		RX-3			1.48E-02	4.6817	0	4.76E-02
10		RX-6				13.3001		
11		DS-1				0.133		
12		RX-3			2.15E-03	0.42161	0	6.91E-03
13		RX-3			0	0	0	
13		DS-1			1.33E-04	1.0652		2.35E-03
14		FW Tank	0.60518		1.02E-04			
15		DS-1			0	0		
15		Virtual Tanker				4.44E-02		3.44E-04
16		DS-1				0		
16		RX-6			1.59E-04	1.0321		
17		RX-3				0		
17		FV-3		0	2.73E-03	15.5889	0	
18		FV-3		0	0	0	0	
18		RX-2			2.33E-02	7.1768	0	
18		RX-2			4.83E-03	0.91995	0	
20		RX-2			0	0	0	
20		RX-6			9.23E-04	6.0016		
21		RX-2				0		
21		RX-5			1.01E-02	3.1169	0	
22		RX-5			2.53E-03	0.78029	0	
23		RX-5			0	0	0	
24		RX-5			1.12E-05	7.01E-03	0	
25		RX-5			0	0	0	
26		RX-5			1.25E-02	7.8029	0	
27		RX-5				0		
27		CE-1			7.09E-04	7.1181	0	
28		RX-6			0	0		
28		CE-1			4.99E-05	0.50062	0	
29		CE-1			0	0	0	
29		MLDT			4.97E-04	4.9884	0	
30		CE-1				0		
30		Wet Cake Bin			2.62E-04	2.6303	0	
31		MLDT				0		
31		J-tank	5.1587		4.97E-04		0	
32		Wet Cake Bin				0		
32		DR-1			2.62E-04	2.6303	0	
33		DR-1			1.58E-03	2.3992	0	
34		J-tank	0		0			
34		RX-2			4.55E-04	2.959	0	
35		RX-2			3.85E-02	8.5574	0	
36		RX-2			0	0	0	
36		RX-6			5.81E-03	0.3426		
37		FW Tank	0					
37		Virtual Tanker			1.02E-04	0.60149		2.82E-03
38		RX-2				0		
38		RX-5			1.76E-03	0.38315	0	
39		RX-5			3.59E-02	7.8029	0	
40		RX-5			0	0	0	
41		RX-5			1.01E-05	7.42E-03	0	
42		RX-5			1.07E-02	7.8029	0	
43		RX-5			0	0	0	
44		DR-1				0	0	
44		RX-6			8.31E-05	0.5405		
45		DR-1				0		
45		Drum 216				1.5896	0	
46		RX-5				0		
46		CE-1			1.07E-04	1.0748	0	
47		CE-1			0	0	0	
47		MLDT			6.25E-05	0.62681	0	
48		RX-6			0	0		
48		CE-1			9.45E-06	9.48E-02	0	
49		CE-1			0	0	0	
49		MLDT			5.20E-06	5.21E-02	0	
50		MLDT				0		
50		J-tank			6.77E-05	0.67895	0	
51		CE-1				0		
51		Wet Cake Bin			4.89E-05	0.49073	0	
52		Wet Cake Bin				0		
52		DR-1			4.89E-05	0.49073	0	
53		DR-1			2.10E-03	3.1881	0	
54		DR-1				0	0	
54		RX-6			2.80E-05	0.1821		
55		DR-1				0		
55		Drum 216				0.18334	0	
56		J-tank				0		
56		Virtual Tanker			1.10E-04	1.1	0	2.19E-03

**REDACTED**

Information claimed confidential by Optima Belle, LLC. January 5, 2016

Activity	Recipe Step	Type	Activity Title	Start Time (hr)	Time (m)
1					
2					
3					
4					
4					
5					
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10					
11					
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**Emissions Estimate for a Heptane Tank - Emissions Master (Provided by Client)**

Product: Sclareol  
 Process Name: Heptane Tank  
 Production Quantity:  
 Process Cycle Time: 8783.9997 hr  
 Date: 1/6/2016  
 File: C:\Users\Public\Documents\Emission Master\Sclareol - Heptane Tank.emm  
 Comments:

Compound	Activities Emitting	Emissions		Emissions
		Uncontrolled (lb)	Controlled (lb)	Percent Removal
Air	1	408.9819344	408.9819344	0
Heptane	1	51.89067017	0.05189067	99.9

Compound	Process Cycle	Compound Emission	Compound Emission	Max Rate (lb/hr)
	Average (lb/hr)	Hours	Average (lb/hr)	Within 1 hour
Air	0.046559876	8783.999722	0.046559876	0.046559876
Heptane	5.90741E-06	8783.999722	5.90741E-06	5.90741E-06

- (1) Process Cycle Average = Compound emission quantity / Total process cycle time in hours.
- (2) Compound Emission Average = Compound emission quantity / Compound emission time in hours.

Classification	Activities Emitting	Emissions		Emissions Percent Removal
		Uncontrolled (lb)	Controlled (lb)	
All Emissions	1	460.8726046	409.0338251	11.24796288
Acid	0	0	0	
Acid Gases	0	0	0	
Asbestos	0	0	0	
Base	0	0	0	
Biological	0	0	0	
CO	0	0	0	
Company List	0	0	0	
CR+6	0	0	0	
Dioxin	0	0	0	
ETG	0	0	0	
EVOS	0	0	0	
Exclude	0	0	0	
Gas	0	0	0	
HAP	0	0	0	
Hydrogen	0	0	0	
LOC	0	0	0	
Metal	0	0	0	
NOx	0	0	0	
Other	0	0	0	
Particulate	0	0	0	
Pb	0	0	0	
PM10	0	0	0	
PM2.5	0	0	0	
Radionuclide	0	0	0	
SO2	0	0	0	
TSP	0	0	0	
TVOS	0	0	0	
VCM	0	0	0	
VOC	1	51.89067017	0.05189067	99.9
Heptane	1	51.89067017	0.05189067	99.9
Unclassified	1	408.9819344	408.9819344	0
Air	1	408.9819344	408.9819344	0

Classification	Process Cycle		Emission	
	Average (lb/hr)	Hours	Average (lb/hr)	Max Rate (lb/hr) Within 1 hour
All Emissions	0.046565783	8783.999722	0.046565783	0.046565783
Acid	0	0	0	0
Acid Gases	0	0	0	0
Asbestos	0	0	0	0
Base	0	0	0	0
Biological	0	0	0	0
CO	0	0	0	0
Company List	0	0	0	0
CR+6	0	0	0	0
Dioxin	0	0	0	0
ETG	0	0	0	0
EVOS	0	0	0	0
Exclude	0	0	0	0
Gas	0	0	0	0
HAP	0	0	0	0
Hydrogen	0	0	0	0
LOC	0	0	0	0
Metal	0	0	0	0
NOx	0	0	0	0
Other	0	0	0	0
Particulate	0	0	0	0
Pb	0	0	0	0
PM10	0	0	0	0
PM2.5	0	0	0	0
Radionuclide	0	0	0	0
SO2	0	0	0	0
TSP	0	0	0	0
TVOS	0	0	0	0
VCM	0	0	0	0
VOC	5.90741E-06	8783.999722	5.90741E-06	5.90741E-06
Unclassified	0.046559876	8783.999722	0.046559876	0.046559876

- (1) Process Cycle Average = Classification emission quantity / Total process cycle time in hours.  
(2) Emission Average = Classification emission quantity / Classification emission time in hours.

Vessel	Vent ID	Device #1	Device #1 Temp (°C)
PCF Tank		Incinerator (Bldg 216)	1500

## Uncontrolled Emissions

Process: Heptane Tank

Emissions reported in Pounds.

Activity	Recipe Step	Vessel	Air	Heptane
1		PCF Tank	408.9819	51.8907

### Controlled Emissions

Process: Heptane Tank

Emissions reported in Pounds.

Activity	Recipe Step	Vessel	Air	Heptane
1		PCF Tank	408.9819	5.19E-02

Activity	Location	Type	Activity File
1		Storage	Heptane Storage

**Optima Belle, LLC**  
**Sciareol**  
**PM Drop Emissions**  
**(Provided by Client)**

**Description:** Particulate emissions are generated through the drop of solid materials into process vessels, notably Sciareol (Crude) into RX-3, Sciareol (Product) from dryer to container, and D.E. into RX-1.

**Basis:** AP-42 Equation 13.2.4-3 is used to generate emissions from this operation. No control factor for the building enclosure and dust collector is being claimed even though there is dust collection on the building.

Compound	Number of Batches	Pounds per Batch (lb)	Tons per Campaign (ton)	U (mph) (1)	M (%)	Emissions (lb/ton)(1)			Emissions (lb/hr)		
						PM	PM10	PM2.5	PM	PM10	PM2.5
Sciareol (Crude)	180	1826.6	164.394	7.0	2	0.0037	0.0017	0.0003	0.0033	0.0016	0.0002
Sciareol (Product)	180	1200	108	7.0	0.25	0.0674	0.0319	0.0048	0.0404	0.0191	0.0029
Diatomaceous Earth	180	25	2.25	7.0	0.25	0.0674	0.0319	0.0048	0.0008	0.0004	0.0001
Total Emissions									0.0446	0.0211	0.0032

Compound	Emissions (ppy)			Emissions (tpy)		
	PM	PM10	PM2.5	PM	PM10	PM2.5
Sciareol (Crude)	0.60288	0.28515	0.04318	0.00030	0.00014	0.00002
Sciareol (Product)	7.27944	3.44298	0.52137	0.00364	0.00172	0.00026
Diatomaceous Earth	0.15165	0.07173	0.01086	0.00008	0.00004	0.00001
Total Emissions	8.03398	3.79985	0.57541	0.00402	0.00190	0.00029

(1) From AP-42:

$$E = k(0.0032) \frac{\left(\frac{U}{5}\right)^{1.5}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (pound (lb)/hour)}$$

where:

- E = emission factor
- k = particle size multiplier (dimensionless)
- U = mean wind speed, meters per second (m/s) (miles per hour (mph))
- M = material moisture content (%)

The particle size multiplier in the equation, k, varies with aerodynamic particle size range, as follows:

Aerodynamic Particle Size Multiplier (k) For Equation 1				
< 30 µm	< 15 µm	< 10 µm	< 5 µm	< 2.5 µm
0.74	0.48	0.35	0.20	0.053*

\* Multiplier for < 2.5 µm taken from Reference 14

**Optima Belle, LLC  
Sclareol Emissions  
Filter Changeouts  
(Provided by Client)**

Process: The filters are opened to atmosphere for changeout between batches.

Basis: It is assumed that the liquids have been removed from the vessel after blowout, and that the vapor space is full of nitrogen and heptane.

Equation:  $PV = nRT$

Item	Value	Unit	Source
Filter Size	0.417	m <sup>3</sup>	Equipment
Temperature	25	°C	Operators (65 F)
Temperature	298.15	K	-
VP Heptane	6.11	kPa	MSDS
R	8.314	J / K * mol	Constant
n	1.0270	mol	Calculated
MW	100.21	g/mol	-
Conversion	0.0022	lb/g	-
Mass Emitted	0.22688	lb	Calculated
Estimated Time	1	hr	Estimated
Hourly Emissions	0.23	pph	Calculated
Number of Changes	180	No.	Provided
Total Emissions	40.84	ppy	Calculated
	0.02	tpy	Calculated

**ATTACHMENT O**  
**MONITORING/RECORDKEEPING/REPORTING/TESTING**  
**PLANS**

## **ATTACHMENT O**

### **MONITORING/RECORDKEEPING/ REPORTING/TESTING PLANS**

Optima Belle, LLC plans to follow the monitoring, recordkeeping, reporting, and testing required by the issued permit.

**ATTACHMENT P**  
**PUBLIC NOTICE**

## **Attachment P – Public Notice**

### **AIR QUALITY PERMIT NOTICE**

#### **Notice of Application**

Notice is given that Optima Belle, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Regulation 13 Permit Class II Administrative Update to operate the facility on W. DuPont Avenue near Belle, Kanawha County, West Virginia. The latitude and longitude coordinates are: 38.239659 and -81.551886.

The applicant estimates the potential to discharge the following Regulated Air Pollutants from the facility will be: VOC of 0.0365 tons per year (tpy) and PM of 0.00402 tpy, PM10 of 0.00190 tpy, and PM2.5 of 0.00029 tpy.

Startup of the revised operation is planned to begin on or about the 3<sup>rd</sup> day of February, 2016. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57<sup>th</sup> Street, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, Extension 1250, during normal business hours.

Dated this the **(PLEASE INSERT DAY)** day of January, 2016.

By: Optima Belle, LLC  
J. Gene Williams  
President  
901 W. DuPont Avenue  
Belle, West Virginia 25015

**ATTACHMENT Q**  
**BUSINESS CONFIDENTIAL CLAIMS**

## Precautionary Notice Claims of Confidentiality

The person submitting this information may assert that some or all of the information submitted is entitled to confidential treatment as provided by West Virginia Legislative Rule 45CSR31, entitled Confidential Information. Information covered by such a claim will be disclosed by the Division of Air Quality (DAQ) only to the extent, and by means of the procedures, set forth in 45CSR31. Please contact the West Virginia Secretary of State's Office at 304/558-6000 to obtain a copy of 45CSR31 in order to ensure that all required procedures are followed.

Information concerning the types and amounts of air pollutants discharged as that term is defined in WVCSR §45-31-2.4, shall not be claimed as confidential.

Any claim of confidentiality shall be made in accordance with the requirements of 45CSR31 and must accompany the information at the time it is submitted to the DAQ. **If no claim of confidentiality is made at the time of submission or is not made in accordance with the requirements of 45CSR31, the DAQ may make the information available to the public without further notice.**

Included below are procedures to be followed in submitting information claimed as confidential. This information is intended to assist a person with claiming confidential information and is not meant to relieve a person of his/her obligation to review the provisions of 45CSR31 and to comply with such rule. The procedures are as follows:

1. Indicate clearly the items of information claimed confidential by marking each page with the term Claimed Confidential, with the date of such claim of confidentiality. With the exception of documents of a size greater than 8½" x 14", information claimed confidential must be submitted on colored paper.
2. Include a cover document which justifies the claim of confidentiality in accordance with the specific criteria under WVCSR §45-31-4.1. A sample cover document is attached for your information and use. The cover document will be available for public disclosure and must include the following information:
  - (a) The identity of the person making the submission of information claimed confidential;
  - (b) The reason for the submission of information;
  - (c) The name, an address in the State of West Virginia and telephone number of the designee who shall be contacted in accordance with 45CSR31;
  - (d) Identification of each segment of information within each page that is submitted as confidential and the justification for each segment claimed confidential, including the criteria under WVCSR 45-31-4.1;

- (e) The period of time for which confidential treatment is desired (e.g., until a certain date, until the occurrence of a specified event or permanently); and,
  - (f) Signature of a responsible official or an authorized representative of such person.
3. At the same time as the information claimed confidential is submitted to the DAQ on colored paper, a complete set of the information, including the cover document previously required under paragraph 2, must be submitted on white paper with the information claimed to be confidential blacked or whited out and the words Redacted Copy Claim of Confidentiality marked clearly on each such page, so that the information is suitable for public disclosure. In the case of drawings and blueprints, mark each page with the words Redacted Copy Claim of Confidentiality, include the title or legend of the drawing, and black or white out the information claimed confidential. The redacted page may be 8½" x 11" in size.
4. In the case of a permit application or supplemental information to an application, DAQ requires an applicant to submit three (3) copies of the application. Of those three (3) copies, one (1) must be a complete set of the application containing the information claimed confidential on colored paper and two (2) must be redacted copies. The DAQ reserves the right, however, to request additional copies of the information containing the confidential material.

Attachment

## Attachment Q Business Confidential Claim

<b>Company Name</b>	Optima Belle, LLC	<b>Responsible Official</b>		
<b>Company Address</b>	900 W. DuPont Avenue	<b>Confidential Information Designee in State of WV</b>	<b>Name</b>	J. Gene Williams
	Belle, WV 25015		<b>Title</b>	President
			<b>Address</b>	200 Willacoochee Highway
<b>Person/Title Submitting Confidential Information</b>	J. Gene Williams			Douglas, GA 31535
	President		<b>Phone</b>	(912) 384-5101
			<b>Fax</b>	(912) 384-6330

**Reason for Submittal Of Confidential Information : R13 Class II Administrative Update**

<b>Identification of Confidential Information</b>	<b>Rationale for Confidential Claim 45CSR31-4.1a-e</b>	<b>Confidential Treatment Time Period</b>
<ul style="list-style-type: none"> <li>-Equipment design and capacity information</li> <li>-Process descriptions</li> <li>-Process flow diagrams</li> <li>-Site Map</li> </ul>	<p>a. Information initially claimed confidential by E.I. Dupont De Nemours and Company, Inc. and The Chemours Company FC, LLC. Information continues to be confidential under Optima Belle, LLC. The claim has not expired by its term, or been waived or withdrawn. The confidential information should continue to be maintained as such for an indefinite time period.</p> <p>See attached for b-e</p>	Permanent

<b>Responsible Official Signature:</b>	
<b>Responsible Official Title:</b>	President
<b>Date Signed:</b>	01-19-2016

**NOTE:** Must be signed and dated in **BLUE INK**.

## **Rationale for Confidentiality Claim (Cont.)**

b. Information claimed confidential is not available to the general public. Within the company, Optima Belle, LLC (Optima) distributes technical information on a need-to-know basis and has used its business confidentiality policy to prevent inadvertent dissemination of information. This policy includes:

- \* Marking of business confidential documents,
- \* Limited distribution of documents,
- \* Shredding of confidential documents before disposal.

Employees are aware of the competitive nature of their business and are trained in guarding confidential information.

c. Information revealing the process technology in this submittal is not reasonably obtainable by persons other than Optima employees who need to know. To maintain the confidentiality of such information, Optima employees involved with confidential information sign a confidentiality agreement.

d. There is no statute that has been reviewed that requires disclosure of information claimed to be confidential.

e. Optima claims business confidentiality protection for the information submitted since disclosure would allow competent engineers within a competitor's company to determine the manner or process by which Optima produces this product and would provide competitors information without paying for technology or conducting research and development necessary to obtain the technology.

**ATTACHMENT S**

**TITLE V PERMIT REVISION INFORMATION**

## Attachment S

### Title V Permit Revision Information

<b>1. New Applicable Requirements Summary</b>	
Mark all applicable requirements associated with the changes involved with this permit revision:	
<input type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input type="checkbox"/> NESHAP (45CSR15)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input type="checkbox"/> Section 111 NSPS (Subpart(s) _____)	<input type="checkbox"/> Section 112(d) MACT standards (Subpart(s) _____)
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqts.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input type="checkbox"/> 45CSR27 State enforceable only rule
<input type="checkbox"/> 45CSR4 State enforceable only rule	<input type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input type="checkbox"/> Compliance Assurance Monitoring (40CFR64) <sup>(1)</sup>
<input type="checkbox"/> NO <sub>x</sub> Budget Trading Program Non-EGUs (45CSR1)	<input type="checkbox"/> NO <sub>x</sub> Budget Trading Program EGUs (45CSR26)
<sup>(1)</sup> If this box is checked, please include <b>Compliance Assurance Monitoring (CAM) Form(s)</b> for each Pollutants Specific Emission Unit (PSEU) (See Attachment H to Title V Application). If this box is not checked, please explain why <b>Compliance Assurance Monitoring</b> is not applicable:	
<b>2. Non Applicability Determinations</b>	
List all requirements, which the source has determined not applicable to this permit revision and for which a permit shield is requested. The listing shall also include the rule citation and a rationale for the determination.	

**Permit Shield Requested** (not applicable to Minor Modifications)

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

### 3. Suggested Title V Draft Permit Language

Are there any changes involved with this Title V Permit revision outside of the scope of the NSR Permit revision?  Yes  No If Yes, describe the changes below.

Also, please provide **Suggested Title V Draft Permit language** for the proposed Title V Permit revision (including all applicable requirements associated with the permit revision and any associated monitoring /recordkeeping/ reporting requirements), OR attach a marked up pages of current Title V Permit. Please include appropriate citations (Permit or Consent Order number, condition number and/or rule citation (e.g. 45CSR§7-4.1)) for those requirements being added / revised.

### 4. Active NSR Permits/Permit Determinations/Consent Orders Associated With This Permit Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
R13-0882H	07/23/2008	CO-R21-97-31
	/ /	
	/ /	

### 5. Inactive NSR Permits/Obsolete Permit or Consent Orders Conditions Associated With This Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
R13-0882 (previous versions)	Various	None
	/ /	
	/ /	

### 6. Change in Potential Emissions

Pollutant	Change in Potential Emissions (+ or -), TPY
VOC	0.0365
PM/PM10/PM2.5	0.00402/0.00190/0.00029

Note: The emissions shown here are associated with Sclareol purification. This facility is a batch processor and the emissions are not a direct increase in the Potential to Emit.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

**7. Certification For Use Of Minor Modification Procedures (Required Only for Minor Modification Requests)**

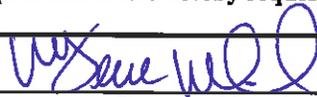
**Note:** This certification must be signed by a responsible official. Applications without a signed certification will be returned as incomplete. The criteria for allowing the use of Minor Modification Procedures are as follows:

- i. Proposed changes do not violate any applicable requirement;
- ii. Proposed changes do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
- iii. Proposed changes do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient air quality impacts, or a visibility increment analysis;
- iv. Proposed changes do not seek to establish or change a permit term or condition for which there is no underlying applicable requirement and which permit or condition has been used to avoid an applicable requirement to which the source would otherwise be subject (synthetic minor). Such terms and conditions include, but are not limited to a federally enforceable emissions cap used to avoid classification as a modification under any provision of Title I or any alternative emissions limit approved pursuant to regulations promulgated under § 112(j)(5) of the Clean Air Act;
- v. Proposed changes do not involve preconstruction review under Title I of the Clean Air Act or 45CSR14 and 45CSR19;
- vi. Proposed changes are not required under any rule of the Director to be processed as a significant modification;

Notwithstanding subparagraph 45CSR§30-6.5.a.1.A. (items i through vi above), minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in rules of the Director which are approved by the U.S. EPA as a part of the State Implementation Plan under the Clean Air Act, or which may be otherwise provided for in the Title V operating permit issued under 45CSR30.

Pursuant to 45CSR§30-6.5.a.2.C., the proposed modification contained herein meets the criteria for use of Minor permit modification procedures as set forth in Section 45CSR§30-6.5.a.1.A. The use of Minor permit modification procedures are hereby requested for processing of this application.

(Signed):

  
(Please use blue ink)

Date:

01 / 19 / 16  
(Please use blue ink)

Named (typed):

J. Gene Williams

Title:

President

**Note: Please check if the following included (if applicable):**

- Compliance Assurance Monitoring Form(s)
- Suggested Title V Draft Permit Language

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.