

SAFETY DATA SHEET

ExxonMobil

BOP Cyclics

Section 1. Identification

Product name	: BOP Cyclics See Section 16 for synonyms.
Product description	: Olefin
<u>Relevant identified uses of the substance or mixture and uses advised against</u>	
Identified uses	: Chemical feedstock
Uses advised against	: This product is not recommended for any industrial, professional or consumer use other than the identified uses above.
Supplier	: ExxonMobil Product Solutions Company (a division of Exxon Mobil Corporation) SDS – LOC. 106 22777 Springwoods Village Parkway Spring, TX 77389-1425 USA
24-Hour emergency telephone number	: 1-800-424-9300 / +1 703-741-5970 / +1-703-527-3887 (CHEMTREC)
Supplier General Contact	: (832) 624-8500
SDS Internet Address	: www.sds.exxonmobil.com

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2B TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: H226 - Flammable liquid and vapor.
H302 - Harmful if swallowed.
H304 - May be fatal if swallowed and enters airways.
H315 + H320 - Causes skin and eye irritation.
H331 - Toxic if inhaled.
H335 - May cause respiratory irritation.
H361 - Suspected of damaging fertility or the unborn child.

Precautionary statements

Section 2. Hazards identification

Prevention	: P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P240 - Ground and bond container and receiving equipment. P241 - Use explosion-proof electrical, ventilating or lighting equipment. P242 - Use non-sparking tools. P243 - Take action to prevent static discharges. P261 - Avoid breathing vapor. P264 - Wash thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P271 - Use only outdoors or in a well-ventilated area. P280 - Wear protective gloves, protective clothing and eye or face protection.
Response	: P301 + P330, P331, P310 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor. P302 + P352 - IF ON SKIN: Wash with plenty of water. P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. P304 + P311, P340 - IF INHALED: Call a POISON CENTER or doctor. Remove person to fresh air and keep comfortable for breathing. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308 + P313 - IF exposed or concerned: Get medical advice or attention. P332 + P313 - If skin irritation occurs: Get medical advice/attention. P337 + P313 - If eye irritation persists: Get medical advice/attention. P362 + P364 - Take off contaminated clothing and wash it before reuse. P370 + P378 - In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO ₂) to extinguish.
Storage	: P403 + P233 - Store in a well-ventilated place. Keep container tightly closed. P403 + P235 - Keep cool. P405 - Store locked up.
Disposal	: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Contains	: (c8-c16) cyclodiene concentrate
Hazards not otherwise classified	: None known.
Note	: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

Section 3. Composition/information on ingredients

Substance/mixture	: Substance
Chemical name	: (c8-c16) cyclodiene concentrate

Ingredient name	% by weight	Identifiers
(c8-c16) cyclodiene concentrate	100	CAS: 68478-10-4
dicyclopentadiene	30 - 80	CAS: 77-73-6
methyldicyclopentadiene	0.05 - 22	CAS: 16327-42-7
methylcyclopenta-1,3-diene	0 - 22	CAS: 26519-91-5
5-(1-propenyl)norborn-2-ene	4 - 18	CAS: 7158-40-9
1,2-dimethylcyclopenta-1,3-diene	3.5 - 14	CAS: 4784-86-5
styrene	3.5 - 6.5	CAS: 100-42-5

Section 3. Composition/information on ingredients

toluene	0 - 0.2	CAS: 108-88-3
---------	---------	---------------

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

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified 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. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 10 minutes. Get medical attention.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes eye irritation.
- Inhalation** : Toxic if inhaled. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : Harmful if swallowed. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

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

- Notes to physician** : If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

Section 4. First aid measures

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

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

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

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. This material is very toxic to aquatic life. This material is 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 combustion products : Incomplete combustion products, Oxides of carbon, Smoke, Fume

Special protective actions for fire-fighters : Use standard firefighting procedures and consider the hazards of other involved materials. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Assure an extended cooling down period to prevent re-ignition. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. No action shall be taken involving any personal risk or without suitable training.

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

Section 6. Accidental release measures

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

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. Put on appropriate personal protective equipment. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not breathe vapor or mist.

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

Section 6. Accidental release measures

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. Eliminate all ignition sources. 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. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. If the Flash Point exceeds the Ambient Temperature by 10 degrees C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. Seek the advice of a specialist before using dispersants. Warn other shipping. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. 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.
- Static Accumulator** : This material is a static accumulator.
- Loading/Unloading Temperature** : Ambient
- Transport Temperature** : Ambient
- Transport Pressure** : Ambient

Section 7. Handling and storage

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

Storage Temperature : Ambient

Storage Pressure : Ambient

Suitable Containers/Packing : Drums, Tank Trucks, Tank Cars, Tank Vessel

Suitable Materials and Coatings : Stainless Steel, Inorganic Zinc Coatings, Epoxy Phenolic, Carbon Steel, Cast Iron, Monel

Unsuitable Materials and Coatings : Natural Rubber, Amine Epoxy

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
(c8-c16) cyclodiene concentrate dicyclopentadiene	None. NIOSH REL (United States, 10/2020) TWA 10 hours: 5 ppm. TWA 10 hours: 30 mg/m ³ . CAL OSHA PEL (United States, 5/2018) TWA 8 hours: 30 mg/m ³ . TWA 8 hours: 5 ppm. OSHA PEL 1989 (United States, 3/1989) TWA 8 hours: 5 ppm. TWA 8 hours: 30 mg/m ³ . ACGIH TLV (United States, 1/2024) TWA 8 hours: 0.5 ppm. STEL 15 minutes: 1 ppm. ExxonMobil (COMPANY) TWA 8 hours: 5 mg/m ³ .
methyldicyclopentadiene methylcyclopenta-1,3-diene 5-(1-propenyl)norborn-2-ene 1,2-dimethylcyclopenta-1,3-diene styrene	None. None. None. None. NIOSH REL (United States, 10/2020) TWA 10 hours: 50 ppm. TWA 10 hours: 215 mg/m ³ . STEL 15 minutes: 100 ppm. STEL 15 minutes: 425 mg/m ³ . OSHA PEL Z2 (United States, 2/2013) TWA 8 hours: 100 ppm. CEIL: 200 ppm. AMP 5 minutes: 600 ppm. CAL OSHA PEL (United States, 5/2018) Absorbed through skin. STEL 15 minutes: 425 mg/m ³ . STEL 15 minutes: 100 ppm. C: 500 ppm. TWA 8 hours: 215 mg/m ³ . TWA 8 hours: 50 ppm. OSHA PEL 1989 (United States, 3/1989) TWA 8 hours: 50 ppm. TWA 8 hours: 215 mg/m ³ . STEL 15 minutes: 100 ppm.

Section 8. Exposure controls/personal protection

p-xylene

STEL 15 minutes: 425 mg/m³.**ACGIH TLV (United States, 1/2024)** Ototoxicant.

TWA 8 hours: 10 ppm.

STEL 15 minutes: 20 ppm.

NIOSH REL (United States, 10/2020)

TWA 10 hours: 100 ppm.

TWA 10 hours: 435 mg/m³.

STEL 15 minutes: 150 ppm.

STEL 15 minutes: 655 mg/m³.**CAL OSHA PEL (United States, 5/2018) [xylene]**STEL 15 minutes: 655 mg/m³.

STEL 15 minutes: 150 ppm.

C: 300 ppm.

TWA 8 hours: 435 mg/m³.

TWA 8 hours: 100 ppm.

OSHA PEL (United States, 5/2018) [Xylenes]

TWA 8 hours: 100 ppm.

TWA 8 hours: 435 mg/m³.**OSHA PEL 1989 (United States, 3/1989) [Xylenes (o-, m-, p-isomers)]**

TWA 8 hours: 100 ppm.

TWA 8 hours: 435 mg/m³.

STEL 15 minutes: 150 ppm.

STEL 15 minutes: 655 mg/m³.**ACGIH TLV (United States, 1/2024) [p-xylene and mixtures containing p-xylene]** Ototoxicant.

TWA 8 hours: 20 ppm.

ethyl benzene

NIOSH REL (United States, 10/2020)

TWA 10 hours: 100 ppm.

TWA 10 hours: 435 mg/m³.

STEL 15 minutes: 125 ppm.

STEL 15 minutes: 545 mg/m³.**CAL OSHA PEL (United States, 5/2018)**STEL 15 minutes: 130 mg/m³.

STEL 15 minutes: 30 ppm.

TWA 8 hours: 22 mg/m³.

TWA 8 hours: 5 ppm.

OSHA PEL (United States, 5/2018)

TWA 8 hours: 100 ppm.

TWA 8 hours: 435 mg/m³.**OSHA PEL 1989 (United States, 3/1989)**

TWA 8 hours: 100 ppm.

TWA 8 hours: 435 mg/m³.

STEL 15 minutes: 125 ppm.

STEL 15 minutes: 545 mg/m³.**ACGIH TLV (United States, 1/2024)** Ototoxicant.

TWA 8 hours: 20 ppm.

o-xylene

NIOSH REL (United States, 10/2020)

TWA 10 hours: 100 ppm.

TWA 10 hours: 435 mg/m³.

STEL 15 minutes: 150 ppm.

STEL 15 minutes: 655 mg/m³.**CAL OSHA PEL (United States, 5/2018) [xylene]**STEL 15 minutes: 655 mg/m³.

STEL 15 minutes: 150 ppm.

C: 300 ppm.

TWA 8 hours: 435 mg/m³.

TWA 8 hours: 100 ppm.

OSHA PEL (United States, 5/2018) [Xylenes]

TWA 8 hours: 100 ppm.

Section 8. Exposure controls/personal protection

cyclopentadiene	<p>TWA 8 hours: 435 mg/m³. OSHA PEL 1989 (United States, 3/1989) [Xylenes (o-, m-, p-isomers)] TWA 8 hours: 100 ppm. TWA 8 hours: 435 mg/m³. STEL 15 minutes: 150 ppm. STEL 15 minutes: 655 mg/m³. ACGIH TLV (United States, 1/2024) [xylene] TWA 8 hours: 20 ppm. NIOSH REL (United States, 10/2020) TWA 10 hours: 75 ppm. TWA 10 hours: 200 mg/m³. CAL OSHA PEL (United States, 5/2018) TWA 8 hours: 200 mg/m³. TWA 8 hours: 75 ppm. OSHA PEL (United States, 5/2018) TWA 8 hours: 75 ppm. TWA 8 hours: 200 mg/m³. OSHA PEL 1989 (United States, 3/1989) TWA 8 hours: 75 ppm. TWA 8 hours: 200 mg/m³.</p>
toluene	<p>NIOSH REL (United States, 10/2020) TWA 10 hours: 100 ppm. TWA 10 hours: 375 mg/m³. STEL 15 minutes: 150 ppm. STEL 15 minutes: 560 mg/m³. OSHA PEL Z2 (United States, 2/2013) TWA 8 hours: 200 ppm. CEIL: 300 ppm. AMP 10 minutes: 500 ppm. CAL OSHA PEL (United States, 5/2018) Absorbed through skin. STEL 15 minutes: 560 mg/m³. STEL 15 minutes: 150 ppm. C: 500 ppm. TWA 8 hours: 37 mg/m³. TWA 8 hours: 10 ppm. OSHA PEL 1989 (United States, 3/1989) TWA 8 hours: 100 ppm. TWA 8 hours: 375 mg/m³. STEL 15 minutes: 150 ppm. STEL 15 minutes: 560 mg/m³. ACGIH TLV (United States, 1/2024) Ototoxicant. TWA 8 hours: 20 ppm.</p>

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Biological exposure indices

Ingredient name	Exposure indices
styrene	<p>ACGIH BEI (United States, 1/2024) BEI: 150 mg/g creatinine, mandelic acid plus phenylglyoxylic acid [in urine]. Sampling time: end of shift. BEI: 20 µg/l, styrene [in urine]. Sampling time: end of shift.</p>
toluene	<p>ACGIH BEI (United States, 1/2024) BEI: 0.03 mg/l, toluene [in urine]. Sampling time: end of shift. BEI: 0.3 mg/g creatinine, o-cresol [in urine]. Sampling time: end of shift. BEI: 0.02 mg/l, toluene [in blood]. Sampling time: prior to last shift of workweek.</p>

Section 8. Exposure controls/personal protection

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Individual protection measures**
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): Viton, minimum 0.71 mm thickness or comparable protective barrier material
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: organic vapor filter (Type AX)

Section 9. Physical and chemical properties and safety characteristics

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

- Physical state** : Liquid. [Clear]
- Color** : Colorless to Yellow
- Odor** : Pungent petroleum
- Odor threshold** : Not available.
- pH** : Not applicable.
- Melting point/freezing point** : <-60°C (<-76°F)
- Boiling point or initial boiling point and boiling range** : 106.6 to 241.6°C (223.9 to 466.9°F) [ASTM D1078]

Section 9. Physical and chemical properties and safety characteristics

Flash point	: Closed cup: <40°C (<104°F) [ASTM D-93]
Evaporation rate	: Not available.
Flammability	: Flammable liquids - Category 3
Lower and upper explosion limit/flammability limit	: Lower: 1% [Technical literature] Upper: 10%
Vapor pressure	: 7.76 mm Hg [38 °C]
Relative vapor density	: >1 [Air = 1] [Calculated]
Relative density	: 0.9414 to 0.9706 [ASTM D4052]
Density	: 0.9414 to 0.9706 g/cm ³ [15.6°C (60.1°F)] [ASTM D4052]
Solubility in water	: Negligible
Partition coefficient: n-octanol/water	: 2.8 to 6.51 [Estimated]
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: 2.5 to 3.81 cSt [20 °C]
Particle characteristics	
Median particle size	: Not applicable.
Pour point	: -30.01 to 45°C [Calculated]
Hygroscopic	: No

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. Do not allow to become dry.
Incompatible materials	: Reactive or incompatible with the following materials:,oxidizing materials,Alkalies, Formic acids, Mineral Acids
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Species	Result	Duration
(c8-c16) cyclodiene concentrate	LC50 Inhalation Vapor	Rat	1.723 mg/l	6 hours
	LD50 Dermal	Rabbit	>2000 mg/kg	-
dicyclopentadiene	LD50 Oral	Rat	590 mg/kg	-
	LC50 Inhalation Vapor	Rat	1.723 mg/l	6 hours
	LD50 Oral	Rat	590 mg/kg	-

Conclusion/Summary

Inhalation : Moderately toxic. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403

Section 11. Toxicological information

Dermal : Minimally Toxic. Data available. Based on test data for structurally similar materials. Test (s) equivalent or similar to OECD Guideline 402

Oral : Slightly toxic. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 401

Irritation/Corrosion

Conclusion/Summary

Skin : Irritating to the skin. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404

Eyes : Irritating and will injure eye tissue. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405

Respiratory : May be irritating to the respiratory tract. The effects are reversible. No end point data for material. Based on assessment of the components.

Respiratory or skin sensitization

Conclusion/Summary

Skin : Not expected to be a skin sensitizer. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 406

Respiratory : Not expected to be a respiratory sensitizer. No end point data for material.

Mutagenicity

Conclusion/Summary

: Not expected to be a germ cell mutagen. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 473 474 478

Carcinogenicity

Conclusion/Summary

: Not expected to cause cancer. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 453

Classification

Product/ingredient name	OSHA	IARC	NTP
styrene	-	2A	Reasonably anticipated to be a human carcinogen.
toluene	-	3	-

Reproductive toxicity

Conclusion/Summary

: May damage the unborn child. No end point data for material. Based on assessment of the components.

Specific target organ toxicity (single exposure)

Conclusion/Summary

: May cause respiratory irritation. Data available. Based on assessment of the components.

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Target organs
(c8-c16) cyclodiene concentrate	Not applicable.	-

Conclusion/Summary

: Not expected to cause organ damage from prolonged or repeated exposure. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 408 412 413 422 453

Aspiration hazard

Conclusion/Summary

: May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material. Data available.

Other information

Contains

: ETHYLBENZENE: Caused cancer in laboratory animal studies. The relevance of these findings to humans is uncertain. Styrene: Prolonged or deliberate inhalation of this product may cause nervous system damage. Repeated exposure of pregnant animals to styrene has been reported to cause adverse fetal developmental effects. Styrene oxide, a possible metabolite of styrene, has been shown to be carcinogenic in animals and styrene has been reported to produce chromosomal abnormalities. The current information does not indicate that low level or infrequent exposure to styrene is associated with cancer or other serious diseases in humans. DICYCLOPENTADIENE: Repeated inhalation exposure of dicyclopentadiene produced damage to the kidney of

Section 11. Toxicological information

male rats only. These effects are believed to be species specific and are not relevant to humans.

Product : Vapor concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Section 12. Ecological information

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

Toxicity

Product/ingredient name	Duration	Species	Result
(c8-c16) cyclodiene concentrate	48 hours	daphnia - <i>Daphnia magna</i>	Acute EC50 0.76 mg/l
	96 hours	Algae - <i>Pseudokirchneriella subcapitata</i>	Acute ErC50 0.3 mg/l
	96 hours	Fish - <i>Oncorhynchus mykiss</i>	Acute LC50 0.58 mg/l
	96 hours	Algae - <i>Pseudokirchneriella subcapitata</i>	Acute NOEC 1 mg/l

Conclusion/Summary

Acute toxicity : Very toxic to aquatic life.
Chronic toxicity : Toxic to aquatic life with long lasting effects.

Persistence and degradability

Product/ingredient name	Test	Result	Qualifier	Media
(c8-c16) cyclodiene concentrate	Ready Biodegradability	0 % - 28 days	-	water

Biodegradability : Material -- Expected to biodegrade slowly.
Hydrolysis : Material -- Transformation due to hydrolysis not expected to be significant.
Photolysis : Material -- Transformation due to photolysis not expected to be significant.
Atmospheric Oxidation : Material -- Expected to degrade rapidly in air

Bioaccumulative potential

Not determined.

Mobility in soil

Mobility : Material -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

Other ecological information

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. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
 Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance

Section 13. Disposal considerations

with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Xylene	106-42-3	Listed	U239
Xylene	95-47-6	Listed	U239

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3295	UN3295	UN3295	UN3295
UN proper shipping name	Hydrocarbons, liquid, n.o.s.	HYDROCARBONS, LIQUID, N.O.S.	HYDROCARBONS, LIQUID, N.O.S.	Hydrocarbons, liquid, n.o.s.
Transport hazard class(es)	3	3	3	3
Label(s) / Marks				
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Additional information

DOT Classification

: This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a. **Reportable quantity** 3333.3 lbs / 1513.3 kg [418.18 gal / 1583 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

Limited quantity Yes.

Packaging instruction Exceptions: 150. Non-bulk: 203. Bulk: 242.

Quantity limitation Passenger aircraft/rail: 60 L. Cargo aircraft: 220 L.

Special provisions 144, B1, IB3, T4, TP1, TP29

TDG Classification

: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3), 2.7 (Marine pollutant mark).

The marine pollutant mark is not required when transported by road or rail.

Explosive Limit and Limited Quantity Index 5

Passenger Carrying Road or Rail Index 60

Special provisions 150

IMDG

: The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

Emergency schedules F-E, S-D

Special provisions 223

Flash point <40 °C C.C.

IATA

: The environmentally hazardous substance mark may appear if required by other transportation regulations.

Quantity limitation Passenger and Cargo Aircraft: 60 L. Packaging instructions: 355.

Cargo Aircraft Only: 220 L. Packaging instructions: 366. Limited Quantities - Passenger Aircraft: 10 L. Packaging instructions: Y344.

Special provisions A3, A324

Section 14. Transport information

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

Transport in bulk according to IMO instruments : Not applicable.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) PAIR**: dicyclopentadiene; p-xylene; cyclopentadiene
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
Clean Water Act (CWA) 307: ethyl benzene; toluene; benzene
Clean Water Act (CWA) 311: styrene; p-xylene; ethyl benzene; o-xylene; toluene; m-xylene; benzene

TSCA 12(b) - Chemical export notification

Name	One time notification		Annual notification		
	4	5	5(f)	6	7
1,3-Cyclopentadiene	Not listed	Listed	Not listed	Not listed	Not listed

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : 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 : FLAMMABLE LIQUIDS - Category 3
 ACUTE TOXICITY (oral) - Category 4
 ACUTE TOXICITY (inhalation) - Category 3
 SKIN IRRITATION - Category 2
 EYE IRRITATION - Category 2B
 TOXIC TO REPRODUCTION - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 ASPIRATION HAZARD - Category 1

SARA 313

Section 15. Regulatory information

	Product name	CAS number	%
Form R - Reporting requirements	dicyclopentadiene	77-73-6	30 - 80
	styrene	100-42-5	3.5 - 6.5
	p-xylene	106-42-3	0 - 3
	ethyl benzene	100-41-4	0 - 1.5
	o-xylene	95-47-6	0 - 1.2
Supplier notification	dicyclopentadiene	77-73-6	30 - 80
	styrene	100-42-5	3.5 - 6.5
	p-xylene	106-42-3	0 - 3
	ethyl benzene	100-41-4	0 - 1.5
	o-xylene	95-47-6	0 - 1.2

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts

: The following components are listed: DICYCLOPENTADIENE; STYRENE; P-XYLENE; ETHYL BENZENE; O-XYLENE; CYCLOPENTADIENE

New York

: The following components are listed: Styrene; p-Xylene; Ethylbenzene; o-Xylene

New Jersey

: The following components are listed: DICYCLOPENTADIENE; STYRENE MONOMER; p-XYLENE; ETHYL BENZENE; o-XYLENE; CYCLOPENTADIENE; TOLUENE

Pennsylvania

: The following components are listed: 4,7-METHANO-1H-INDENE, 3A,4,7,7A-TETRAHYDRO-; BENZENE, ETHENYL-; BENZENE, 1,4-DIMETHYL-; BENZENE, ETHYL-; BENZENE, 1,2-DIMETHYL-; 1,3-CYCLOPENTADIENE

Illinois

: None of the components are listed.

California Prop. 65

 **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

Inventory list

Australia inventory (AIC)	: All components are listed or exempted.
Canada inventory (DSL-NDSL)	: Restrictions Apply
China inventory (IECSC)	: Not determined.
Japan inventory (CSCL)	: Not determined.
Japan inventory (Industrial Safety and Health Act)	: Not determined.
New Zealand Inventory of Chemicals (NZIoC)	: Not determined.
Philippines inventory (PICCS)	: Not determined.
Korea inventory (KECI)	: All components are listed or exempted.
Taiwan Chemical Substances Inventory (TCSI)	: Not determined.
United States inventory (TSCA 8b)	: All components are active or exempted.

Section 16. Other information

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

Health	*	3
Flammability		3
Physical hazards		0

Section 16. Other information

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

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

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



[Procedure used to derive the classification](#)

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	On basis of test data
ACUTE TOXICITY (oral) - Category 4	Calculation method
ACUTE TOXICITY (inhalation) - Category 3	Expert judgment
SKIN IRRITATION - Category 2	Calculation method
EYE IRRITATION - Category 2B	Expert judgment
TOXIC TO REPRODUCTION - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
ASPIRATION HAZARD - Category 1	Calculation method

[History](#)

Date of issue/Date of revision : 5 September 2024

Date of previous issue : 22 February 2024

Version : 2.01

Key to abbreviations :

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- N/A = Not available
- SGG = Segregation Group
- UN = United Nations

References : Not available.

☑ Indicates information that has changed from previously issued version.

THIS SDS COVERS THE FOLLOWING MATERIALS :

BOP Cyclics (NDG - Baytown); CDC - UT71, Debol btms (BR)

Product code : 1150328

[Notice to reader](#)

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil

Section 16. Other information

Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.