

# SAFETY DATA SHEET

Classified in accordance with Health Canada Hazardous Products Regulations (SOR/2015-17)

## 1. Identification

**Product identifier:** Dicyclopentadiene**Other means of identification****Common name(s),  
synonym(s):** DCPD; Cyclopentadiene dimer; Bicyclopentadiene  
**SDS number:** NOVA-0006**Recommended use and restriction on use****Recommended use:** Petrochemical feedstock.  
**Restrictions on use:** All uses other than the identified.**Manufacturer/Importer/Supplier/Distributor Information****Manufacturer****Company Name:** NOVA Chemicals  
**Address:** P.O. Box 2518, Station M  
Calgary, Alberta, Canada T2P 5C6  
**Telephone:** Product Information: 1-412-490-4063  
**SDS Information Email:** [msdsemail@novachem.com](mailto:msdsemail@novachem.com)**Emergency telephone number:**

1-800-561-6682, 1-403-314-8767 (NOVA Chemicals) (24 hours)

## 2. Hazard(s) identification

**Hazard Classification According to Hazardous Products Regulations****Physical Hazards**Flammable liquids Category 3  
Static-accumulating flammable liquid Category 1**Health Hazards**Acute toxicity (Oral) Category 4  
Acute toxicity (Inhalation - vapour) Category 3  
Skin Corrosion/Irritation Category 2  
Serious Eye Damage/Eye Irritation Category 2A  
Specific Target Organ Toxicity -  
Single Exposure Category 3  
Aspiration Hazard Category 1**Environmental Hazards**Acute hazards to the aquatic  
environment Category 2  
Chronic hazards to the aquatic  
environment Category 2**Label Elements****Hazard Symbol:**



**Signal Word:** Danger

**Hazard Statement:** Flammable liquid and vapour.  
Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment.  
Sparks may ignite liquid and vapour.  
May cause flash fire or explosion.  
Toxic if inhaled.  
Harmful if swallowed.  
Causes skin irritation.  
Causes serious eye irritation.  
May cause respiratory irritation.  
May be fatal if swallowed and enters airways.  
Toxic to aquatic life with long lasting effects.

**Precautionary Statements:**

**Prevention:** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Take action to prevent static discharges. These alone may be insufficient to remove static electricity. Avoid breathing vapours. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

**Response:** IF SWALLOWED: Immediately call a POISON CENTRE/doctor. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water [or shower]. If skin irritation occurs: Get medical advice/attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE/doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. In case of fire: Use dry chemical, foam, carbon dioxide (CO<sub>2</sub>), water spray or fog to extinguish. Collect spillage.

**Storage:** Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.

**Disposal:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Other hazards which do not result in GHS classification:** None.

**3. Composition/information on ingredients****Mixtures**

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	Dicyclopentadiene, DCPD	77-73-6	83 - 87%

\* All concentrations are percent by weight.

**Additional Information:** C9-C11 Codimers mixture is also present (13-17 wt%) (no CAS # available). Benzene (CAS # 71-43-2) is also present up to 100 ppm. 4-tert-Butylcatechol (TBC) is added (minimum 100 ppm) to stabilize product. This product is considered hazardous by the Hazardous Products Regulations, 2015.

**4. First-aid measures**

**Inhalation:** IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE/doctor.

**Ingestion:** IF SWALLOWED: Immediately call a POISON CENTRE/doctor. Rinse mouth. Do NOT induce vomiting.

**Skin Contact:** IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water [or shower]. If skin irritation occurs: Get medical advice/attention.

**Eye contact:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

**Most important symptoms/effects, acute and delayed**

**Symptoms:** Skin irritation. Eye irritation. Respiratory irritation. Vomiting, nausea, abdominal pain and central nervous system effects including headache.

**Indication of immediate medical attention and special treatment needed**

**Treatment:** For more detailed medical emergency support information, call 1-800-561-6682 or 1-403-314-8767 (24 hours, NOVA Chemicals Emergency Response). Ensure thorough eye and skin decontamination. Treat unconsciousness, nausea, hypotension, seizures and cardiac arrhythmias in the conventional manner. Aspiration of this product during induced emesis can result in lung injury. If evacuation of stomach contents is considered necessary, use the method least likely to cause aspiration, such as gastric lavage after protecting the airway. Observe hospitalized patients for delayed chemical pneumonia, acute tubular necrosis, encephalopathy and dysrhythmias. Monitor for urinary phenol within 72 hours of acute exposure.

**5. Fire-fighting measures**

**General Fire Hazards:** Flammable liquid and vapour. Vapours are heavier than air and may travel to a source of ignition and flash back. Closed containers may rupture violently when heated. Material will float and can be re-ignited on surface of water. If tank, rail car or tank truck is involved in fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions. Vapours may form explosive mixture with

air. Keep containers away from source of heat or fire. Refer to BLEVE Safety Precautions and Table in 2016 Emergency Response Guidebook. Product may destabilize if subjected to extreme heat conditions. Monitor heated vessels for pressure buildup.

#### Suitable (and unsuitable) extinguishing media

**Suitable extinguishing media:** Use dry chemical, foam, carbon dioxide (CO<sub>2</sub>), water spray or fog to extinguish. Use water to cool fire-exposed containers and to protect personnel.

**Unsuitable extinguishing media:** Do not use straight/direct streams as this may actually spread flames.

**Specific hazards arising from the chemical:** Upon combustion, this product emits carbon monoxide, carbon dioxide, low molecular weight hydrocarbons.

#### Special protective equipment and precautions for firefighters

**Special fire fighting procedures:** Keep upwind. Keep unauthorized personnel away. Move containers from fire area if you can do so without risk. Fight fire from maximum distance or use unmanned holders or monitor nozzles. Immediately withdraw in case of fire and container venting or heat discoloration of a container. Avoid inhaling any smoke and combustion materials. Remove and isolate contaminated clothing and shoes. Cool containers with flooding quantities of water until well after the fire is out. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Reference Emergency Response Guidebook No. 130 for additional details and instructions.

**Special protective equipment for firefighters:** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

### 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unauthorized personnel away. Alert stand-by emergency and fire fighting personnel. Monitor surrounding area for buildup of flammable concentrations in air.

**Methods and material for containment and cleaning up:** Wear appropriate personal protective equipment. Do not touch or walk through spilled material. In case of leakage, eliminate all ignition sources. As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (164 feet) in all directions. Keep upwind. Keep out of low areas. Stop leak if safe to do so. Contain discharge by booming on water or diking on ground. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply.

Small Spills: Remove liquid material with non-sparking approved pumps, skimmers or vacuum equipment. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Use non-sparking tools.

Large Spills: Consider downwind evacuation for 300 metres (1000 feet). The main issue with a DCPD spill is odour. Spills on water will volatilize rapidly, making containment or recovery difficult. A vapour-suppressing foam may be used to reduce vapours. Remove pooled liquid material with approved, non-sparking pumps, skimmers or vacuum equipment. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Soil remediation may be required.

**7. Handling and storage**

**Precautions for safe handling:** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Take action to prevent static discharges. These alone may be insufficient to remove static electricity. For additional information on equipment bonding and grounding, refer to the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity". For additional information on storing and handling flammable liquids, refer to the National Fire Protection Association (NFPA) 30, "Flammable and Combustible Liquids Code". Take special precautions when cold cutting or breaking into lines, or when cleaning and disposing of empty containers. Parts and equipment should be steam cleaned prior to maintenance procedures. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes. Keep away from incompatible materials such as oxidizing agents and acids. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation, use respiratory protection.

**Conditions for safe storage, including any incompatibilities:**

Storage area should be clearly identified, well-illuminated and clear of obstruction. Store in a well-ventilated place. Keep container tightly closed. Store locked up. Only allow access to authorized persons. Store and handle in properly designed pressure vessels and equipment. Store and use away from heat, sparks, open flame, or any other ignition source. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Have appropriate extinguishing capability in storage area (e.g. sprinkler system, portable fire extinguishers) and flammable gas detectors. Keep absorbents for leaks and spills readily available. Consider use of internal floating roof tanks or flame arrestors. Inspect vents during winter conditions for vapour ice buildup. Storage tanks should be above ground and diked to hold entire contents. Store away from incompatible materials. Store according to applicable regulations and standards for flammable materials.

For road, rail and marine shipments, ensure product is transported with the addition of a suitable inhibitor / stabilizer, such as t-butyl catechol (TBC) or equivalent.

**8. Exposure controls/personal protection****Control Parameters****Occupational Exposure Limits**

Chemical Identity	type	Exposure Limit Values		Source
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	5 ppm	27 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	5 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended

4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	5 ppm	27 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	REL	5 ppm	30 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	STEL	1 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	0.5 ppm		US. ACGIH Threshold Limit Values, as amended

### Appropriate Engineering Controls

Engineering methods to reduce hazardous exposure are preferred controls. Methods include mechanical ventilation (dilution and local exhaust) process or personal enclosure, remote and automated operation, control of process conditions, leak detection and repair systems, and other process modifications. Ensure all exhaust ventilation systems are discharged to outdoors, away from air intakes and ignition sources. Supply sufficient replacement air to make up for air removed by exhaust systems. Administrative (procedure) controls and use of personal protective equipment may also be required.

### Individual protection measures, such as personal protective equipment

**General information:** Personal protective equipment (PPE) should not be considered a long-term solution to exposure control. Employer programs to properly select, fit, maintain and train employees to use equipment must accompany PPE. Consult a competent industrial hygiene resource, the PPE manufacturer's recommendation, and/or applicable regulations to determine hazard potential and ensure adequate protection.

**Eye/face protection:** Safety glasses. Chemical goggles are recommended if splashing is possible or to prevent eye irritation from vapours.

#### Skin Protection

**Hand Protection:** Chemical resistant gloves.

**Skin and Body Protection:** Wear appropriate clothing to prevent any possibility of skin contact. Wear work clothes with long sleeves and pants. If splashing or contact with liquid material is possible, consider the need for an impervious overcoat. Fire resistant (i.e., Nomex) or natural fibre clothing (i.e., cotton or wool) is recommended. Synthetic clothing can generate static electricity and is not recommended where a flammable vapour release may occur. Wear chemical-resistant safety footwear with good traction to prevent slipping. Static Dissipative (SD) rated footwear is also recommended.

**Respiratory Protection:** Appropriate NIOSH approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4, or self-contained breathing apparatus should be used. Air supplied breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.

**Hygiene measures:** Use effective control measures and PPE to maintain worker exposure to concentrations that are below these limits. Ensure that eyewash stations and safety showers are in close proximity to work locations.

## 9. Physical and chemical properties

### Appearance

<b>Physical state:</b>	liquid
<b>Form:</b>	liquid
<b>Colour:</b>	Clear
<b>Odour:</b>	Pungent
<b>Odour Threshold:</b>	0.11 ppm (detectable), (DCPD)



<b>pH:</b>	not applicable
<b>Melting point/freezing point:</b>	-24 °C (-11 °F)
<b>Initial boiling point and boiling range:</b>	150 - 190 °C (302 - 374 °F)
<b>Flash Point:</b>	40 - 50 °C (104 - 122 °F) (Open cup)
<b>Evaporation rate:</b>	No data available.
<b>Flammability (solid, gas):</b>	not applicable
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability limit - upper (%):</b>	6.3 %(V)
<b>Flammability limit - lower(%):</b>	0.8 %(V)
<b>Vapour pressure:</b>	81 - 87 mm HG (37.8 °C (100.0 °F)) 1.52 psi (37.8 °C (100.0 °F))
<b>Vapour density:</b>	4.5 (0 °C (32 °F)) (Air=1)
<b>Density:</b>	970 - 980 kg/m <sup>3</sup>
<b>Relative density:</b>	0.97 - 0.98 (15 °C (59 °F)) (Water=1)
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	Insoluble
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	2.78
<b>Auto-ignition temperature:</b>	503 °C (937 °F)
<b>Decomposition temperature:</b>	> 150 °C (> 302 °F)(DCPD)
<b>Viscosity:</b>	2.0 - 2.5 mm <sup>2</sup> /s (40 °C (104 °F))

## 10. Stability and reactivity

<b>Reactivity:</b>	Reactive with oxidizing agents, acids and halogens. May attack and degrade some types of plastics, rubbers and coatings. Vapours may form explosive mixture with air.
<b>Chemical Stability:</b>	Stable when inhibited and stored under normal temperatures. Product may destabilize if subjected to extreme heat conditions. This product may form explosive peroxides; this product is listed in some references as shock sensitive. DCPD will decompose to cyclopentadiene at temperatures >150 °C (302 °F).
<b>Possibility of Hazardous Reactions:</b>	DCPD can partially polymerize at temperatures above 50 °C (122 °F). These polymer buildups may ignite in air and should be treated as pyrophoric material.
<b>Conditions to Avoid:</b>	Keep away from heat, sparks and open flame. Elevated temperatures. Rapid pressure increases may occur at greater than 150 °C (302 °F) during decomposition to cyclopentadiene.
<b>Incompatible Materials:</b>	Oxidizing agents. Peroxides. Acids. Bases. Metal salts.
<b>Hazardous Decomposition Products:</b>	Upon decomposition, this product emits cyclopentadiene, carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

## 11. Toxicological information

### Information on likely routes of exposure

**Inhalation:** Toxic if inhaled. Inhalation of this product causes headache, dizziness and nausea and loss of coordination. Repeated inhalation of this material may cause damage to kidney. Minute amounts aspirated into the lungs during ingestion or vomiting may cause severe pulmonary injury.

**Ingestion:** Harmful if swallowed. Minute amounts aspirated into the lungs during

ingestion or vomiting may cause severe pulmonary injury. Ingestion of this product may result in vomiting, nausea, abdominal pain and central nervous system effects including headache, sleepiness, dizziness and nausea. Can cause kidney damage.

**Skin Contact:** Causes skin irritation.

**Eye contact:** Causes serious eye irritation.

#### Symptoms related to the physical, chemical and toxicological characteristics

**Inhalation:** Central nervous system effects including headache.

**Ingestion:** Vomiting, nausea, abdominal pain and central nervous system effects including headache.

**Skin Contact:** Skin irritation.

**Eye contact:** Eye irritation.

#### Information on toxicological effects

##### Acute toxicity (list all possible routes of exposure)

###### Oral

**Product:** ATEmix: 346.59 mg/kg

###### Dermal

**Product:** Not classified for acute toxicity based on available data.

###### Inhalation

**Product:** ATEmix: 2.7 mg/l Vapour

##### Repeated dose toxicity

**Product:** No data available.

##### Skin Corrosion/Irritation

**Product:** Causes skin irritation.

##### Serious Eye Damage/Eye Irritation

**Product:** Causes serious eye irritation.

##### Respiratory or Skin Sensitization

**Product:** No data available.

###### Components:

4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-  
Skin sensitization, Draize (Guinea Pig): Not a skin sensitizer.

##### Carcinogenicity

**Product:** Not classified

##### IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

##### US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

##### ACGIH Carcinogen List:

No carcinogenic components identified



**Germ Cell Mutagenicity****In vitro****Product:** No data available.**Components:**4,7-Methano-1H-indene, No genotoxic effect in bacteria and chromosome aberration.  
3a,4,7,7a-tetrahydro-**In vivo****Product:** No data available.**Components:**4,7-Methano-1H-indene, No genotoxic effect in bacteria and chromosome aberration.  
3a,4,7,7a-tetrahydro-**Reproductive toxicity****Product:** No data available.**Components:**4,7-Methano-1H-indene, Not classified.  
3a,4,7,7a-tetrahydro-**Specific Target Organ Toxicity - Single Exposure****Product:** May cause respiratory irritation.**Specific Target Organ Toxicity - Repeated Exposure****Product:** No data available.**Aspiration Hazard****Product:** May be fatal if swallowed and enters airways.**Other effects:** No data available.**12. Ecological information****Ecotoxicity:****Acute hazards to the aquatic environment:****Fish****Product:** No data available.**Components:**4,7-Methano-1H-indene, LC 50 (Oryzias latipes, 96 h): 4.3 mg/l  
3a,4,7,7a-tetrahydro- Toxic to aquatic life.**Aquatic Invertebrates****Product:** No data available.**Components:**4,7-Methano-1H-indene, EC 50 (Water flea, 48 h): 8.0 mg/l  
3a,4,7,7a-tetrahydro- Toxic to aquatic life.**Toxicity to aquatic plants****Product:** No data available.**Components:**4,7-Methano-1H-indene, EC 50 (Green algae (Selenastrum capricornutum), 96 h): > 27 mg/l  
3a,4,7,7a-tetrahydro- Harmful to aquatic life.

**Chronic hazards to the aquatic environment:****Fish****Product:** Toxic to aquatic life with long lasting effects.**Aquatic Invertebrates****Product:** Toxic to aquatic life with long lasting effects.**Toxicity to aquatic plants****Product:** Toxic to aquatic life with long lasting effects.**Persistence and Degradability****Biodegradation****Product:** Direct photodegradation is expected with DCPD, with an estimated half-life of 1 to 3 hours.**BOD/COD Ratio****Product:** No data available.**Bioaccumulative Potential****Bioconcentration Factor (BCF)****Product:** No data available.**Components:**4,7-Methano-1H-indene, Carp, Bioconcentration Factor (BCF): 58.9 - 384  
3a,4,7,7a-tetrahydro-**Partition Coefficient n-octanol / water (log Kow)****Product:** 2.78**Mobility in Soil:** Minimal partitioning into sediment. DCPD has high affinity for soil adsorption.**Other Adverse Effects:** No data available.**13. Disposal considerations****Disposal instructions:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Waste generator is advised to carefully consider hazardous properties and control measures needed for other materials that may be found in the waste.**Contaminated Packaging:** Check local, federal and provincial environmental regulations prior to disposal.**14. Transport information****TDG**

UN Number:	UN 2048
UN Proper Shipping Name:	DICYCLOPENTADIENE
Class	3
Packing Group	III
Label(s)	3
Subsidiary risk label	—
Special precautions for user:	Reference Emergency Response Guidebook No. 130, latest revision.

**15. Regulatory information****Canada Federal Regulations****List of Toxic Substances (CEPA, Schedule 1)****Chemical Identity**

Benzene

**Export Control List (CEPA 1999, Schedule 3)**

Not regulated

**National Pollutant Release Inventory (NPRI)****Canada. Canadian Environmental Protection Act (CEPA). National Pollutant Release Inventory (NPRI) (Parts 1-4)**

NPRI 4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-

**Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements**

NPRI PT5 Not regulated

**Greenhouse Gases**

Not regulated

**Precursor Control Regulations**

Not regulated

**Canada. Substances Subject to Significant New Activity (SNAc) Reporting Requirements**

Not regulated

**Inventory status**

Canada DSL Inventory List: On or in compliance with the inventory

US TSCA Inventory: On or in compliance with the inventory

**16. Other information, including date of preparation or last revision****Issue Date:** 01/17/2020**Revision Information:** 01/17/2020: SDS Update**Version #:** 7.0

**Abbreviations and acronyms:** ACGIH = American Conference of Governmental Industrial Hygienists; BOD = Biochemical Oxygen Demand; CAS = Chemical Abstracts Service; CEPA = Canadian Environmental Protection Act; COD = Chemical Oxygen Demand; DSL = Domestic Substances List; EC50 = Effective Concentration 50%; EPA = Environmental Protection Agency; GHS = Globally Harmonized System for the Classification and Labelling of Chemicals; IARC = International Agency for Research on Cancer; IDLH = Immediately Dangerous to Life or Health; Kow = Octanol/water partition coefficient; LC50 = Lethal Concentration 50%; LD50 = Lethal Dose 50%; LEL = Lower Explosive Limit; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OEL = Occupational Exposure Limit; OSHA = Occupational Safety and Health Administration; PNOC = Particulates Not Otherwise Classified; PPE = Personal Protective Equipment; REL = Recommended Exposure Limit; SCBA = Self Contained Breathing Apparatus; SDS = Safety Data Sheet; STEL = Short Term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

**Further Information:** For additional information on equipment bonding and grounding, refer to the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity".

For additional information on storing and handling flammable liquids, refer to the National Fire Protection Association (NFPA) 30, "Flammable and Combustible Liquids Code".

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