

SAFETY DATA SHEET

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

1. Identification

Product identifier: Butene-2 (SCRS)**Other means of identification****Common name(s),
synonym(s):** Liquefied Petroleum Gas (butylenes); Raffinate III (Butene-2); Spent butene-
SCRS; St. Clair Raffinate III Butene Stream
SDS number: NOVA-0027**Recommended use and restriction on use****Recommended use:** Petrochemical industry: Raw material.**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**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 gas	Category 1
Gases under pressure	Liquefied gas
Simple asphyxiant	Category 1

Health Hazards

Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A

Environmental Hazards

Acute hazards to the aquatic environment	Category 3
Chronic hazards to the aquatic environment	Category 3

Label Elements**Hazard Symbol:****Signal Word:**

Danger

Hazard Statement: Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.
May cause genetic defects.
May cause cancer.
Harmful to aquatic life with long lasting effects.

Precautionary Statements:

Prevention: 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. 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 exposed or concerned: Get medical advice/attention. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Storage: Store locked up. Protect from sunlight. Store in a well-ventilated place.

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: Contact with liquefied gas may cause irritation and/or frostbite.

3. Composition/information on ingredients

Mixtures

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
2-Butene	Butylene	107-01-7	60 - 96%
1-Butene	Butene-1	106-98-9	1 - 32%
n-Butane	Butane	106-97-8	1 - 10%
Cyclohexane	Benzene hexahydride	110-82-7	0.1 - 5%
Methane	Methyl hydride	74-82-8	0.1 - 2%
Ethane	Methylmethane	74-84-0	0.1 - 2%
Propane	Dimethylmethane	74-98-6	0.1 - 2%
1,3-Butadiene	Vinylethylene	106-99-0	0.1 - 0.2%

* All concentrations are percent by weight.

Additional Information: 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. Seek medical attention.

Ingestion: Ingestion of this product is not a likely route of exposure. Do NOT induce vomiting. Seek medical attention.

Skin Contact: Contact with liquefied gas may cause irritation and/or frostbite. Seek

medical attention immediately in the event of frostbite. IF ON SKIN: Wash with plenty of soap and water. Thaw frosted parts with lukewarm water. Do not rub affected area. Remove non-adhering contaminated clothing. Do not remove adherent material or clothing. Seek medical attention.

Eye contact: Contact with liquefied gas may cause irritation and/or frostbite. Seek medical attention immediately in the event of frostbite. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention.

Most important symptoms/effects, acute and delayed

Symptoms: Frostbite, headache, dizziness, nausea, heartbeat irregularities. Mild skin irritation. Mild eye irritation.

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). Treat unconsciousness, frostbite, nausea, hypotension, seizures and cardiac arrhythmias in the conventional manner. Sympathomimetics or catecholamines should be avoided or used with caution (lowest effective dose) because of possible cardiac sensitization. Administer oxygen by mask if there is respiratory distress.

5. Fire-fighting measures

General Fire Hazards: Extremely flammable liquefied gas. Vapours may travel considerable distance to a source of ignition and flash back. DO NOT ATTEMPT TO EXTINGUISH A GAS FIRE UNLESS LEAK SOURCE CAN BE ISOLATED AND SHUT OFF. Be aware of possibility of reignition. Vapours may form explosive mixture with air. Consider need for immediate emergency isolation and evacuation. If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, consider initial evacuation for 1600 metres (1 mile) in all directions. Keep containers away from source of heat or fire. Contains gas under pressure; may explode if heated.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use dry chemical, foam, carbon dioxide (CO₂) and water fog to extinguish. Use water to cool fire-exposed containers and to protect personnel.

Unsuitable extinguishing media: Direct addition of water (or any other room temperature liquid) to the liquefied gas will cause a BLEVE (boiling liquid expanding vapour explosion).

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 discolouration of a container. Let uncontrolled fires burn off. 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.

115 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. Keep upwind. Keep out of low areas. Stop leak if safe to do so. All equipment used when handling the product must be grounded. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Keep area isolated until any detectable flammable gas has been fully dispersed.

Small Spills: Isolate spill or leak area for 50 to 100 metres (164 to 330 feet).

Large Spills: Consider initial downwind evacuation for at least 800 metres (1/2 mile). Evacuate personnel to upwind of the spill area, and position at a safe distance. Use water spray to reduce gas or divert gas cloud drift.

7. Handling and storage

Precautions for safe handling: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep container tightly closed. Ground and bond container and receiving equipment. 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". Where possible, collect and flare vents. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities: Store locked up. Protect from sunlight. Store in a well-ventilated place. Keep container tightly closed. 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. Have appropriate extinguishing capability in storage area (e.g. sprinkler system, portable fire extinguishers) and flammable gas detectors. Storage pressure vessels should be above ground and diked. Store away from incompatible materials. Store according to applicable regulations and standards for flammable materials. Inspect vents during winter conditions for vapour ice buildup.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

In the ACGIH TLVs® and BEIs® book, n-butane (CAS# 106-97-8) (as Butane, isomers), methane (CAS# 74-82-8), propane (CAS# 74-98-6) and ethane (CAS# 74-84-0) have been identified as being an "Explosion hazard". Methane (CAS# 74-82-8), propane (CAS# 74-98-6) and ethane (CAS# 74-84-0) have also been identified as a "Simple asphyxiant". Please

refer to the ACGIH TLVs® and BEIs® book, latest edition, for additional information.

Chemical Identity	type	Exposure Limit Values		Source
2-Butene	TWA	250 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
2-Butene	TWA	250 ppm		US. ACGIH Threshold Limit Values, as amended
1-Butene	TWA	250 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
1-Butene	TWA	250 ppm		US. ACGIH Threshold Limit Values, as amended
n-Butane	TWA	1,000 ppm		Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
n-Butane	TWA	800 ppm	1,900 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
n-Butane	STEL	1,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
n-Butane	STEL	1,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)
n-Butane	REL	800 ppm	1,900 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
n-Butane	STEL	1,000 ppm		US. ACGIH Threshold Limit Values, as amended
n-Butane	IDLH	1,600 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Cyclohexane	TWA	100 ppm	344 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Cyclohexane	TWA	100 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)
Cyclohexane	TWA	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Cyclohexane	TWA	300 ppm	1,030 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
Cyclohexane	TWA	100 ppm		US. ACGIH Threshold Limit Values, as amended
Cyclohexane	REL	300 ppm	1,050 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Cyclohexane	IDLH	1,300 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Ethane	TWA	1,000 ppm		Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Propane	TWA	1,000 ppm		Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Propane	TWA	1,000 ppm	1,800 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
Propane	REL	1,000 ppm	1,800 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Propane	IDLH	2,100 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
1,3-Butadiene	TWA	2 ppm	4.4 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
1,3-Butadiene	TWA	2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)
1,3-Butadiene	TWA	2 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended

1,3-Butadiene	TWA	2 ppm	4.4 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
1,3-Butadiene	TWA	2 ppm		US. ACGIH Threshold Limit Values, as amended
1,3-Butadiene	IDLH	2,000 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended

Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
1,3-Butadiene (1,2-Dihydroxy-4-(N-acetylcysteinyl)-butane: Sampling time: End of shift.)	2.5 mg/l (Urine)	ACGIH BEI
1,3-Butadiene (Mixture of N-1- and N-2-(hydroxybutenyl)valine hemoglobin (Hb) adducts: Sampling time: Not critical.)	2.5 pmol/g (Blood)	ACGIH BEI

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 under a full-face shield are recommended if contact with liquefied gas is possible.

Skin Protection

Hand Protection: Wear protective gloves. Wear cold insulating gloves.

Skin and Body Protection: Wear appropriate clothing to prevent any possibility of skin contact. Wear work clothes with long sleeves and pants. 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: Air supplied breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed OEL.

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**

Physical state:	Gas
Form:	Liquefied gas
Colour:	Colourless
Odour:	Odourless, Faint hydrocarbon odour
Odour Threshold:	No data available.
pH:	not applicable
Melting point/freezing point:	-139 °C (-218 °F) (2-Butene)
Initial boiling point and boiling range:	3.7 °C (38.7 °F) (2-Butene)
Flash Point:	-73 °C (-99 °F) (ASTM D56 (Tag (Closed Cup))) (2-Butene)
Evaporation rate:	No data available.
Flammability (solid, gas):	Extremely flammable.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	10 %(V) (Butenes)
Flammability limit - lower(%):	1.6 %(V) (Butenes)
Vapour pressure:	28 psia (21 °C (70 °F))
Vapour density:	1.9 (0 °C (32 °F)) (Air=1) (estimated)
Density:	600 kg/m ³ (2-Butene)
Relative density:	0.6 (20 °C (68 °F)) (Water=1) (2-Butene)
Solubility(ies)	
Solubility in water:	Practically insoluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	2.3 (2-Butene)
Auto-ignition temperature:	324 °C (615 °F) (2-Butene)
Decomposition temperature:	No data available.
Viscosity:	not applicable

10. Stability and reactivity

Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability:	Stable under normal conditions.
Possibility of Hazardous Reactions:	Liquefied gas may explode on contact with hot water (45 °C to 75 °C) (113 °F to 167 °F). Hazardous polymerization not likely to occur except under favourable conditions requiring heat and catalyst.
Conditions to Avoid:	Keep away from heat, sparks and open flame.
Incompatible Materials:	Strong acids. Strong oxidizing agents. Many materials become brittle after contact with liquefied gases and may fail without warning. Carefully select and test equipment, gaskets and hoses periodically to ensure integrity and compatibility.
Hazardous Decomposition Products:	Upon decomposition, this product emits carbon monoxide, carbon dioxide, low molecular weight hydrocarbons.

11. Toxicological information**Information on likely routes of exposure**

Inhalation: Product is not acutely toxic.

Ingestion:	Ingestion of this product is not a likely route of exposure.
Skin Contact:	Gas may be mildly irritating. The liquefied form will cause freezing burns (frostbite).
Eye contact:	Gas may be mildly irritating. The liquefied form will cause freezing burns (frostbite).

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation:	Headache, dizziness, nausea, heartbeat irregularities.
Ingestion:	No adverse effects due to ingestion are expected.
Skin Contact:	Mild skin irritation. Frostbite.
Eye contact:	Mild eye irritation. Frostbite.

Information on toxicological effects**Acute toxicity (list all possible routes of exposure)**

Oral	
Product:	Not classified for acute toxicity based on available data.
Dermal	
Product:	Not classified for acute toxicity based on available data.
Inhalation	
Product:	Not classified for acute toxicity based on available data.

Repeated dose toxicity

Product: No data available.

Skin Corrosion/Irritation

Product: No data available.

Components:

1-Butene	Gas may be mildly irritating. Contact with liquid form may cause frostbite.
n-Butane	Gas may be mildly irritating. Contact with the liquefied or pressurized gas may cause frostbite.
Cyclohexane	Mildly Irritating
Methane	Frostbite hazard - rapidly expanding gas or liquid may cause frostbite.
Ethane	Not likely, due to the form of the product.
Propane	Contact with liquid form may cause frostbite.
1,3-Butadiene	Not likely, due to the form of the product. Frostbite hazard - rapidly expanding gas or liquid may cause frostbite.

Serious Eye Damage/Eye Irritation

Product: No data available.

Components:

1-Butene Gas may be mildly irritating. Contact with liquefied gas might cause frostbites, in some cases with tissue damage.

n-Butane	Gas may be mildly irritating. Contact with the liquefied or pressurized gas may cause momentary freezing followed by swelling and eye damage.
Cyclohexane	Mildly Irritating
Methane	Frostbite hazard - rapidly expanding gas or liquid may cause frostbite.
Propane	Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
1,3-Butadiene	Irritant of eyes and mucous membranes. Frostbite hazard - rapidly expanding gas or liquid may cause frostbite.

Respiratory or Skin Sensitization

Product: No data available.

Carcinogenicity

Product: May cause cancer.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

1,3-Butadiene Overall evaluation: 1. Carcinogenic to humans.

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

1,3-Butadiene Known To Be Human Carcinogen.

ACGIH Carcinogen List:

1,3-Butadiene Group A2: Suspected human carcinogen.

Germ Cell Mutagenicity**In vitro**

Product: May cause genetic defects.

In vivo

Product: May cause genetic defects.

Reproductive toxicity

Product: Not classified.

Specific Target Organ Toxicity - Single Exposure

Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure

Product: No data available.

Components:

2-Butene Nervous system

1,3-Butadiene Liver, Blood, Lungs, ovaries, testes

Aspiration Hazard

Product: not applicable

Other effects: No data available.

12. Ecological information**Ecotoxicity:****Acute hazards to the aquatic environment:****Fish****Product:** Harmful to aquatic life.**Aquatic Invertebrates****Product:** Harmful to aquatic life.**Toxicity to aquatic plants****Product:** Harmful to aquatic life.**Chronic hazards to the aquatic environment:****Fish****Product:** Harmful to aquatic life with long lasting effects.**Aquatic Invertebrates****Product:** Harmful to aquatic life with long lasting effects.**Toxicity to aquatic plants****Product:** Harmful to aquatic life with long lasting effects.**Persistence and Degradability****Biodegradation****Product:** Components are likely to degrade in air within minutes to hours. Butene-2 will degrade rapidly over time in air with a calculated half-life of 2.3 to 3 hours.**BOD/COD Ratio****Product:** No data available.**Bioaccumulative Potential****Bioconcentration Factor (BCF)****Product:** Bioconcentration Factor (BCF): 12 (estimated) (2-Butene)**Partition Coefficient n-octanol / water (log Kow)****Product:** 2.3 (2-Butene)**Mobility in Soil:** Low potential.**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 1075
UN Proper Shipping Name:	LIQUEFIED PETROLEUM GASES
Shipping Name Continued:	(butylene) Not Odorized
Class	2.1
Packing Group	–
Label(s)	2.1
Subsidiary risk label	–
Special precautions for user:	Reference Emergency Response Guidebook No. 115, latest revision.

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

Methane
1,3-Butadiene

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

NPRI PT5	2-Butene 1-Butene n-Butane Propane 1,3-Butadiene
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Greenhouse Gases**Chemical Identity**

Methane

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: 03/02/2020

Revision Information: 03/02/2020: 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".

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