

# SAFETY DATA SHEET

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

## 1. Identification

**Product identifier:** Hydrocarbons C5 Rich**Other means of identification****Common name(s),  
synonym(s):** Crude Isoprene; Isoprene/Piperylene Concentrate; C5 Mixture; Isoprene  
**SDS number:** NOVA-0007**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 1
Static-accumulating flammable liquid	Category 1

**Health Hazards**

Acute toxicity (Oral)	Category 4
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2A
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1B
Specific Target Organ Toxicity - Single Exposure	Category 3
Aspiration Hazard	Category 1

**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 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.  
Harmful if swallowed.  
Causes skin irritation.  
Causes serious eye irritation.  
Suspected of causing genetic defects.  
May cause cancer.  
May cause drowsiness or dizziness.  
May be fatal if swallowed and enters airways.  
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. 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 dust/fume/gas/mist/vapours/spray. 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 you feel unwell. 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. IF exposed or concerned: Get medical advice/attention. In case of fire: Use dry chemical, foam, carbon dioxide (CO<sub>2</sub>), water spray or fog to extinguish.

**Storage:**

Store in a well-ventilated place. Keep container tightly closed. Keep cool. 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 (%)*
1,3-Pentadiene	Piperylene	504-60-9	19 - 35%
1-Pentene	Pent-1-ene	109-67-1	15 - 25%
1,3-Butadiene, 2-methyl-	Isoprene	78-79-5	10 - 20%
Cyclopentene	1-Cyclopentene	142-29-0	9 - 20%
2-Pentene	Pent-2-ene	109-68-2	5 - 10%
1,3-Cyclopentadiene	Cyclopentadiene	542-92-7	1 - 3%
n-Pentane	Pentane	109-66-0	0.5 - 3%
2-Butene, 2-methyl-	Amylene	513-35-9	0.5 - 2%
Cyclopentane	Pentamethylene	287-92-3	0.1 - 2%
Butane, 2-methyl-	Isopentane	78-78-4	0.09 - 2%
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	Dicyclopentadiene, DCPD	77-73-6	0 - 2%
Pentane, 2-methyl-	Iso-hexane	107-83-5	0.1 - 1%

\* All concentrations are percent by weight.

**Additional Information:**

This product has been assigned a CAS# of 68476-55-1 - Hydrocarbons, C5 Rich. Benzene (CAS # 71-43-2) is also present up to 0.09 wt%. This product is inhibited with BHT (butylated hydroxytoluene) (50 to 200 ppm) for storage and transportation. 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 if you feel unwell.

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

**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:** Extremely 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. This product may be a static accumulator which can form an ignitable vapour-air mixture in a storage tank.

### 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. 128 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. Product

may react (exothermic, ignite, polymerize) with some absorbents. Test with small quantity prior to using larger amounts. Use non-sparking tools.

Large Spills: Consider downwind evacuation for 300 metres (1000 feet). 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. Product may react (exothermic, ignite, polymerize) with some absorbents. Test with small quantity prior to using larger amounts. Soil remediation may be required.

## 7. Handling and storage

<b>Precautions for safe handling:</b>	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". Maintain adequate inhibitor concentrations, and nitrogen pad bulk shipping containers to keep oxygen in headspace below 100 ppm. Deposits of organic buildup in lines or process equipment may react spontaneously with air, causing smoking and possibly a fire. Take special precautions when cold cutting or breaking into lines, or when cleaning and disposing of empty containers. 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.
<b>Conditions for safe storage, including any incompatibilities:</b>	Storage area should be clearly identified, well-illuminated and clear of obstruction. Maintain adequate inhibitor concentrations, and nitrogen pad bulk shipping containers to keep oxygen in headspace below 100 ppm. 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. 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.  This product is inhibited with BHT (butylated hydroxytoluene) (50 to 200 ppm) for storage and transportation.

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

**1,3-Butadiene, 2-methyl-:** While no peer-reviewed workplace exposure limit has been established for isoprene, based on the current literature, adoption of an internal Isoprene 8 hr. TWA exposure limit of 10 ppm or 28 mg/m<sup>3</sup> is recommended.

Chemical Identity	type	Exposure Limit Values		Source
1,3-Cyclopentadiene	TWA	75 ppm	203 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
1,3-Cyclopentadiene	TWA	75 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)
1,3-Cyclopentadiene	TWA	75 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
1,3-Cyclopentadiene	TWA	75 ppm	203 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
1,3-Cyclopentadiene	TWA	0.5 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	1 ppm		US. ACGIH Threshold Limit Values, as amended
1,3-Cyclopentadiene	REL	75 ppm	200 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
1,3-Cyclopentadiene	IDLH	750 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
n-Pentane	TWA	600 ppm	1,770 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
n-Pentane	TWA	120 ppm	350 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
n-Pentane	TWA	1,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
n-Pentane	TWA	1,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)
n-Pentane	TWA	1,000 ppm		US. ACGIH Threshold Limit Values, as amended
n-Pentane	Ceil_Time	610 ppm	1,800 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
n-Pentane	REL	120 ppm	350 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
n-Pentane	IDLH	1,500 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Butane, 2-methyl-	TWA	600 ppm	1,770 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Butane, 2-methyl-	TWA	1,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Butane, 2-methyl-	TWA	1,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)
Butane, 2-methyl-	TWA	1,000 ppm		US. ACGIH Threshold Limit Values, as amended
Cyclopentane	TWA	600 ppm	1,720 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Cyclopentane	TWA	600 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)
Cyclopentane	TWA	600 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended



Cyclopentane	TWA	600 ppm	1,720 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
Cyclopentane	TWA	600 ppm		US. ACGIH Threshold Limit Values, as amended
Cyclopentane	REL	600 ppm	1,720 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
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
Pentane, 2-methyl-	STEL	1,000 ppm	3,500 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	TWA	500 ppm	1,760 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Pentane, 2-methyl-	TWA	200 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)
Pentane, 2-methyl-	STEL	1,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
	TWA	500 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Pentane, 2-methyl-	TWA	500 ppm	1,760 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
	STEL	1,000 ppm	3,500 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended
Pentane, 2-methyl-	STEL	1,000 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	500 ppm		US. ACGIH Threshold Limit Values, as amended
Pentane, 2-methyl-	Ceil_Time	510 ppm	1,800 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Pentane, 2-methyl-	REL	100 ppm	350 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards, 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.

<b>Eye/face protection:</b>	Safety glasses. Chemical goggles are recommended if splashing is possible or to prevent eye irritation from vapours.
<b>Skin Protection</b>	
<b>Hand Protection:</b>	Chemical resistant gloves.
<b>Skin and Body Protection:</b>	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.
<b>Respiratory Protection:</b>	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.
<b>Hygiene measures:</b>	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>	slight hydrocarbon
<b>Odour Threshold:</b>	No data available.
<b>pH:</b>	not applicable
<b>Melting point/freezing point:</b>	No data available.
<b>Initial boiling point and boiling range:</b>	30 - 40 °C (86 - 104 °F)
<b>Flash Point:</b>	-51 °C (-60 °F)
<b>Evaporation rate:</b>	28.6 (pentane) n-butyl acetate=1
<b>Flammability (solid, gas):</b>	not applicable
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability limit - upper (%):</b>	10 %(V) (isoprene)
<b>Flammability limit - lower(%):</b>	1.4 %(V) (pentane)
<b>Vapour pressure:</b>	108 kPa (37.8 °C (100.0 °F)) (Reid Vapour Pressure)
<b>Vapour density:</b>	2.5 (0 °C (32 °F)) (Air=1)
<b>Density:</b>	675 - 695 kg/m <sup>3</sup>
<b>Relative density:</b>	0.675 - 0.695 (15 °C (59 °F)) (Water=1)
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	690 mg/l (1,3-Pentadiene) (estimated)
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	1.5 (1,3-Pentadiene) (estimated)
<b>Auto-ignition temperature:</b>	220 °C (428 °F)
<b>Decomposition temperature:</b>	No data available.



**Viscosity:** No data available.

## 10. Stability and reactivity

<b>Reactivity:</b>	May attack and degrade some types of plastics, rubbers and coatings. Residues (hydrocarbons in polymer buildup) will react with air and may be a serious fire hazard. In the presence of air, explosive peroxides may be produced. Product may react (exothermic, ignite, polymerize) with some absorbents. Test with small quantity prior to using larger amounts. Strong oxidizers can increase fire and explosion hazard.
<b>Chemical Stability:</b>	Material is stable when inhibited and handled and stored properly.
<b>Possibility of Hazardous Reactions:</b>	Hazardous reactions can occur if product is in contact with oxygen.
<b>Conditions to Avoid:</b>	Exposure to open flame or excessive heat can cause fire or explosion. Keep away from heat, sparks and open flame.
<b>Incompatible Materials:</b>	Oxidizing agents. Reducing agents. Acids.
<b>Hazardous Decomposition Products:</b>	Upon decomposition, this product emits carbon monoxide, carbon dioxide, low molecular weight hydrocarbons.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation:</b>	Harmful if inhaled. Excessive inhalation of this product may result in central nervous system effects including headache, dizziness and nausea. Minute amounts aspirated into the lungs during ingestion or vomiting may cause severe pulmonary injury.
<b>Ingestion:</b>	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, abdominal pain and central nervous system effects including headache, dizziness and nausea.
<b>Skin Contact:</b>	Causes skin irritation.
<b>Eye contact:</b>	Causes serious eye irritation.

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

<b>Inhalation:</b>	Central nervous system effects including headache, dizziness and nausea.
<b>Ingestion:</b>	Vomiting, abdominal pain and central nervous system effects including headache, dizziness and nausea.
<b>Skin Contact:</b>	Skin irritation.
<b>Eye contact:</b>	Eye irritation.

### Information on toxicological effects

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

<b>Oral Product:</b>	ATEmix: 1,386.47 mg/kg
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**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:** 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:** May cause cancer.**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

1,3-Butadiene, 2-methyl- Overall evaluation: 2B. Possibly carcinogenic to humans.

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

1,3-Butadiene, 2-methyl- Reasonably Anticipated to be a Human Carcinogen.

**ACGIH Carcinogen List:**

No carcinogenic components identified

**Germ Cell Mutagenicity****In vitro****Product:** May cause genetic defects.**In vivo****Product:** May cause genetic defects.**Reproductive toxicity****Product:** No data available.**Components:**

4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro- Not classified.

**Specific Target Organ Toxicity - Single Exposure****Product:** May cause drowsiness or dizziness.**Specific Target Organ Toxicity - Repeated Exposure****Product:** No data available.**Components:**

1,3-Pentadiene Nervous system

1,3-Butadiene, 2-methyl- Nervous system, Lungs

1,3-Cyclopentadiene Liver, Kidney

n-Pentane	Nervous system - Chronic pentane exposure may damage the nervous system causing numbness, "pins and needles" and weakness in the arms and legs.  Skin - Prolonged and repeated skin contact can cause defatting dermatitis with dryness, cracking, redness and blisters.
Cyclopentane	Nervous system - Chronic pentane exposure may damage the nervous system causing numbness, "pins and needles" and weakness in the arms and legs.  Skin - Prolonged and repeated skin contact can cause defatting dermatitis with dryness, cracking, redness and blisters.
Butane, 2-methyl-	Nervous system - Chronic pentane exposure may damage the nervous system causing numbness, "pins and needles" and weakness in the arms and legs.  Skin - Prolonged and repeated skin contact can cause defatting dermatitis with dryness, cracking, redness and blisters.
<b>Aspiration Hazard</b>	
<b>Product:</b>	May be fatal if swallowed and enters airways.
<b>Other effects:</b>	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:** No data available.

#### 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:** 1.5 (1,3-Pentadiene) (estimated)**Mobility in Soil:** Limited absorption into soil and sediment.**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 3295
UN Proper Shipping Name:	HYDROCARBONS, LIQUID, N.O.S.
Class	3
Packing Group	1
Label(s)	3
Subsidiary risk label	—
Special precautions for user:	Reference Emergency Response Guidebook No. 128, latest revision.

**15. Regulatory information****Canada Federal Regulations****List of Toxic Substances (CEPA, Schedule 1)****Chemical Identity**1,3-Butadiene, 2-methyl-  
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 1,3-Butadiene, 2-methyl-  
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 1-Pentene

2-Pentene  
1-Butene, 2-methyl-  
n-Pentane  
2-Butene, 2-methyl-  
Butane, 2-methyl-  
Pentane, 2-methyl-

**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:** 01/02/2020

**Revision Information:** 01/02/2020: SDS Update

**Version #:** 8.0

**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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