SAFETY DATA SHEET

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

1. Identification

Product identifier: OCTYLENES™ Mixture of Octene Isomers and Xylene

Other means of identification

Common name(s), synonym(s): Octenes, mixed and octene/xylene

SDS number: NOVA-0108

Recommended use and restriction on use

Recommended use: Raw material for petrochemical industry.

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)
1-800-424-9300 (CHEMTREC) (24 hours)

2. Hazard(s) identification

Hazard Classification According to Hazardous Products Regulations

Physical Hazards

Flammable liquids	Category 1
Physical Hazards Not Otherwise Classified (PHNOC) - Static-accumulating flammable liquid	Category 1

Health Hazards

Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2A
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive toxicity	Category 2
Specific Target Organ Toxicity - Repeated Exposure	Category 1
Aspiration Hazard	Category 1

Environmental Hazards

Acute hazards to the aquatic environment	Category 1
Chronic hazards to the aquatic environment	Category 1

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.
Causes skin irritation.
Causes serious eye irritation.
May cause genetic defects.
May cause cancer.
Suspected of damaging fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure. (Blood)
May be fatal if swallowed and enters airways.
Very toxic 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 and lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Do not breathe dust/fume/gas/mist/vapours/spray. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/ protective clothing/ eye protection/ face protection. Avoid release to the environment.

Response:

IF SWALLOWED: Immediately call a POISON CENTRE. 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. 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. IF exposed or concerned: Get medical attention. In case of fire: Use dry chemical, foam, carbon dioxide (CO2), water spray or fog to extinguish. Collect spillage.

Storage: Store in a well-ventilated place. Keep cool. Store locked up.

Disposal: Dispose of contents and container in accordance with local regulations.

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-Octene	Octylene	111-66-0	43.3 - 56.9%
2-Octene	Octene-2	111-67-1	12.1 - 17.2%
3-Methyl-2-heptene	2-heptene, 3-methyl	3404-75-9	5.4 - 14.88%
Heptane, 3-methylene-	2-Ethylhex-1-ene	1632-16-2	1.94 - 8.0%
Benzene, 1,2-dimethyl-	o-Xylene	95-47-6	2.0 - 7.2%
Cis-4-Octene	Cis-4-Octene	7642-15-1	0 - 6.87%
Benzene	Benzol	71-43-2	0 - 5.0%
Pentane, 2-methyl-	Isohexane	107-83-5	1.25 - 2.7%
Pentane, 3-methyl-	3-Methylpentane	96-14-0	1.1 - 1.9%
Octane	n-Octane	111-65-9	0.9 - 1.8%
Toluene	Methylbenzene	108-88-3	0.18 - 0.9%
Hexane	n-Hexane	110-54-3	0.05 - 0.13%
Pentane, 3,3-dimethyl-	3,3-Dimethylpentane	562-49-2	0.03 - 0.13%

* All concentrations are percent by weight.

Additional Information: This product has been assigned a CAS# of 25377-83-7 - Octene (Mixed Isomers). It is comprised of the above listed components. This product is considered hazardous by the Hazardous Products Regulations.

4. First-aid measures

Inhalation: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE if you feel unwell.

Ingestion: IF SWALLOWED: Immediately call a POISON CENTRE. 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.

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.

Most important symptoms/effects, acute and delayed

Symptoms: Skin irritation. Eye irritation. Blood disorders.

Indication of immediate medical attention and special treatment needed

Treatment: Ensure thorough eye and skin decontamination. Treat unconsciousness, nausea, hypotension, seizures and cardiac dysrhythmias in the conventional manner. Adrenergic (epinephrine, norepinephrine) and dopaminergic agonists should be avoided during treatment or used with caution (lowest effective dose) because of possible cardiac sensitization by this product mixture. Administer oxygen by mask if there is respiratory distress, any change in level of consciousness, or cardiac rhythm disturbance. 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.

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. Monitor heated vessels for pressure buildup. 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 (CO2), 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 fire-fighters

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. 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 fire-fighters: Wear positive pressure self-contained breathing apparatus (SCBA).

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment. 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: 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). Dike far ahead of larger spills for later disposal. 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 and 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" or National Fire Protection Association (NFPA) 70. "National Electrical Code". 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 face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/ protective clothing/ eye protection/ face protection. In case of inadequate ventilation, use respiratory protection. Avoid release to the environment.

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. Keep cool. 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.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

1-Octene: AIHA: 75 ppm TWA, 344 mg/m3 TWA (recommended Workplace Environmental Exposure Level (WEEL)).

Chemical Identity	type	Exposure Limit Values		Source
Benzene, 1,2-dimethyl-	TWA	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
	STEL	150 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Benzene, 1,2-dimethyl-	TWA	100 ppm	434 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
	STEL	150 ppm	651 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Benzene, 1,2-dimethyl-	STEL	150 ppm	651 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	TWA	100 ppm	434 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Benzene, 1,2-dimethyl-	TWA	100 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
	STEL	150 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Benzene, 1,2-dimethyl-	REL	100 ppm	435 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene, 1,2-dimethyl-	STEL	150 ppm	655 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene, 1,2-dimethyl-	IDLH	900 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Benzene, 1,2-dimethyl-	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
Benzene	STEL	2.5 ppm	8 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	TWA	0.5 ppm	1.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Benzene	STEL	2.5 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
	TWA	0.5 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Benzene	STEL	2.5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
	TWA	0.5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Benzene	TWA	1 ppm	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
	STEL	5 ppm	15.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Benzene	REL	0.1 ppm		US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene	STEL	1 ppm		US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene	IDLH	500 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Benzene	TWA	0.02 ppm		US. ACGIH Threshold Limit Values, as amended
Pentane, 2-methyl-	TWA	500 ppm	1,760 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	STEL	1,000 ppm	3,500 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), 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-	STEL	1,000 ppm	3,500 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
	TWA	500 ppm	1,760 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Pentane, 2-methyl-	TWA	200 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Pentane, 2-methyl-	Ceil_Time	510 ppm	1,800 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Pentane, 2-methyl-	REL	100 ppm	350 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Pentane, 2-methyl-	TWA	200 ppm		US. ACGIH Threshold Limit Values, as amended
Pentane, 3-methyl-	TWA	500 ppm	1,760 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	STEL	1,000 ppm	3,500 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Pentane, 3-methyl-	TWA	500 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
	STEL	1,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Pentane, 3-methyl-	STEL	1,000 ppm	3,500 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
	TWA	500 ppm	1,760 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Pentane, 3-methyl-	TWA	200 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Pentane, 3-methyl-	Ceil_Time	510 ppm	1,800 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Pentane, 3-methyl-	REL	100 ppm	350 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Pentane, 3-methyl-	TWA	200 ppm		US. ACGIH Threshold Limit Values, as amended
Octane	TWA	300 ppm	1,400 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Octane	TWA	300 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Octane	TWA	300 ppm		Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Octane	TWA	300 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Octane	TWA	300 ppm		US. ACGIH Threshold Limit Values, as amended
Octane	Ceil_Time	385 ppm	1,800 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Octane	REL	75 ppm	350 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Octane	IDLH	1,000 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Toluene	TWA	50 ppm	188 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended

Toluene	TWA	20 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Toluene	TWA	20 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Toluene	TWA	50 ppm	188 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Toluene	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
Toluene	STEL	150 ppm	560 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Toluene	REL	100 ppm	375 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Toluene	IDLH	500 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Pentane, 3,3-dimethyl-	STEL	500 ppm	2,050 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	TWA	400 ppm	1,640 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Pentane, 3,3-dimethyl-	TWA	400 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
	STEL	500 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Pentane, 3,3-dimethyl-	TWA	400 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
	STEL	500 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Pentane, 3,3-dimethyl-	STEL	500 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	400 ppm		US. ACGIH Threshold Limit Values, as amended
Hexane	TWA	50 ppm	176 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Hexane	TWA	20 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Hexane	TWA	50 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Hexane	TWA	50 ppm	176 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Hexane	TWA	50 ppm		US. ACGIH Threshold Limit Values, as amended
Hexane	REL	50 ppm	180 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Hexane	IDLH	1,100 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended

Please refer to the latest edition of the appropriate source text and consult an industrial hygienist or similar professional, or local agencies, for further information.

Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
Benzene, 1,2-dimethyl- (Methylhippuric acids: Sampling time: End of shift.)	0.3 g/g (Creatinine in urine)	ACGIH BEI
Benzene (S-Phenylmercapturic acid: Sampling time: End of shift.)	25 µg/g (Creatinine in urine)	ACGIH BEI
Benzene (t,t-Muconic acid: Sampling time: End of shift.)	500 µg/g (Creatinine in urine)	ACGIH BEI

Toluene (toluene: Sampling time: Prior to last shift of work week.)	0.02 mg/l (Blood)	ACGIH BEI
Toluene (o-Cresol, with hydrolysis: Sampling time: End of shift.)	0.3 mg/g (Creatinine in urine)	ACGIH BEI
Toluene (toluene: Sampling time: End of shift.)	0.03 mg/l (Urine)	ACGIH BEI
Hexane (2,5-Hexanedione, without hydrolysis: Sampling time: End of shift.)	0.5 mg/l (Urine)	ACGIH BEI

Exposure guidelines

Chemical Identity	Notations	Source
Benzene	Can be absorbed through the skin.	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	Can be absorbed through the skin.	Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
	Can be absorbed through the skin.	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Pentane, 2-methyl-	Can be absorbed through the skin.	Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Pentane, 3-methyl-	Can be absorbed through the skin.	Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Toluene	Can be absorbed through the skin.	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	Can be absorbed through the skin.	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Hexane	Can be absorbed through the skin.	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	Can be absorbed through the skin.	Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
	Can be absorbed through the skin.	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
	Can be absorbed through the skin.	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), 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 (PPE)

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. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators or IDLH levels.

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:	liquid
Form:	liquid
Colour:	Colourless
Odour:	Mild hydrocarbon odour
Odour Threshold:	No data available.
Melting point/freezing point:	-101.7 °C (-151.1 °F) (1-Octene)
Initial boiling point and boiling range:	30 - 185 °C (86 - 365 °F)
Flammability:	not applicable
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	6.8 %(V) (1-Octene)
Flammability limit - lower(%):	0.7 %(V) (1-Octene)
Flash Point:	-13 - 13 °C (9 - 55 °F)
Auto-ignition temperature:	221 °C (430 °F) (1-Octene)
Decomposition temperature:	No data available.
pH:	not applicable
Kinematic viscosity:	0.38 mm2/s (40 °C (104 °F)), (1-Octene)
Solubility(ies)	
Solubility in water:	Insoluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	4.6 Log P(oct) (1-Octene)
Vapour pressure:	13 - 30 mm HG (20 °C (68 °F)) (1-Octene)
Evaporation rate:	0.7 - 1.3 (estimated)

Density:	700 - 800 kg/m3 (15 °C (59 °F))
Relative density:	0.7 - 0.8 (15 °C (59 °F)) (Water=1)
Vapour density:	3.9 (0 °C (32 °F)) (ambient conditions) (Air=1)
Particle characteristics	
Particle Size:	No data available.
Other information	
Explosive properties:	No data available.

10. Stability and reactivity

Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat. May attack and degrade some types of plastics, rubbers and coatings.
Chemical Stability:	Material is stable under normal conditions.
Possibility of Hazardous Reactions:	No data available.
Conditions to Avoid:	Exposure to open flame or excessive heat can cause fire or explosion. Keep away from heat, sparks and open flame.
Incompatible Materials:	Oxidizers. Acids.
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:	Excessive inhalation of this material may also cause damage to blood systems and possibly cancer (leukemia). Minute amounts aspirated into the lungs during ingestion or vomiting may cause pulmonary injury.
Ingestion:	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, unconsciousness, and nausea. Ingestion may also cause blood disorders.
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, sleepiness, dizziness, unconsciousness, and nausea.
Skin Contact:	Skin irritation.
Eye contact:	Eye irritation.

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.

Components:

Benzene	LOAEL (Rat, Oral): 25 mg/kg (Target Organ(s): Blood) LOAEL (Rat, Inhalation - vapour): 0.958 mg/l (Target Organ(s): Blood) LOAEL (Human, Inhalation - vapour): 0.0018 mg/l (Target Organ(s): Blood)

Skin Corrosion/Irritation
Product: Causes skin irritation.

Serious Eye Damage/Eye Irritation
Product: Causes serious eye irritation.

Respiratory or Skin Sensitization
Product: Not classified.

Carcinogenicity
Product: May cause cancer.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Benzene	Overall evaluation: 1. Carcinogenic to humans.

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

Benzene	Known To Be Human Carcinogen.

ACGIH Carcinogen List:

Benzene	Group A1: Confirmed human carcinogen.
Pentane, 2-methyl-	Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Pentane, 3-methyl-	Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Butane, 2,3-dimethyl-	Group A3: Confirmed animal carcinogen with unknown relevance to humans.

Germ Cell Mutagenicity

In vitro
Product: May cause genetic defects.

In vivo
Product: May cause genetic defects.

Reproductive toxicity
Product: Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity - Single Exposure
Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure
Product: Blood - Causes damage to organs through prolonged or repeated exposure.

Aspiration Hazard
Product: May be fatal if swallowed and enters airways.

Other effects: Xylene is a developmental toxicant in Canada.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish
Product: Very toxic to aquatic life.

Aquatic Invertebrates
Product: Very toxic to aquatic life.

Toxicity to aquatic plants
Product: Very toxic to aquatic life.

Chronic hazards to the aquatic environment:

Fish
Product: Very toxic to aquatic life with long lasting effects.

Aquatic Invertebrates
Product: Very toxic to aquatic life with long lasting effects.

Toxicity to aquatic plants
Product: Very toxic 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.

Partition Coefficient n-octanol / water (log Kow)
Product: 4.6 Log P(oct) (1-Octene)

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 or ID number:	UN 3295
UN Proper Shipping Name:	HYDROCARBONS, LIQUID, N.O.S.
Class	3
Packing Group	I
Label(s)	3
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	Name on List:
Benzene	Benzene

Export Control List (CEPA 1999, Schedule 3)

Not regulated

Greenhouse Gases

Not regulated

Precursor Control Regulations

Chemical Identity
Toluene

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: 12/31/2024

Revision Information:

12/31/2024: SDS Update – composition edits, phrasing updates
07/30/2024: SDS Update – OEL updates and phrase edits
06/30/2023: SDS Update – GHS classification change, composition edits, OEL edits, section 9 edits, section 11 edits, section 14 edits, section 15 edits, and phrase edits
02/20/2020: SDS Update

Version #: 8.2

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:

Bonding and grounding may be insufficient to eliminate the hazard from static-accumulating flammable liquids. For additional information on equipment bonding and grounding, refer to the Canadian Electrical Code in Canada, (CSA C22.1), or 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" or National Fire Protection Association (NFPA) 70. "National Electrical Code".

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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