

Material Safety Data Sheet

Material Name: **C6 - C8 Raffinates (Petroleum)**

MSDS ID: NOVA-0021

Section 1 - Product and Company Identification

Synonyms: Blended Reformate/Raffinate

Chemical Name: Distillates (petroleum), light distillate hydrotreating process, low-boiling

Chemical Family: Hydrocarbons

Material Use: Petrochemical industry: Raw material

Chemical Formula: Not applicable; mixture

NOVA Chemicals

P.O. Box 2518, Station M

Calgary, Alberta, Canada T2P 5C6

Product Information: 1-412-490-4063

MSDS Information Email:

msdsemail@novachem.com

EMERGENCY Telephone Numbers:

North America (Canada and US):

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

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

1-613-996-6666 (Canutec-Canada) (24 hours)

Mexico and South America: +44 208 762 8322 (NCEC) (24 hours)

General Comments

This product has been assigned a CAS # of 68410-97-9. It may also be described as CAS # 64741-84-0.

Section 2 - Hazards Identification

HMS Ratings: Health: 1* Fire: 3 Physical Hazard: 0 Personal Protection: chemical goggles, gloves, respirator, coveralls

*Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard*

NFPA Ratings: Health: 1 Fire: 3 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Emergency Overview

DANGER! TOXIC! FLAMMABLE! Product is a colorless liquid with a sweet aromatic odor. Vapor is heavier than air and may spread long distances. Distant ignition and flashback are possible. Flammable liquid and vapor can accumulate static charge. Liquid can float on water and may travel to distant locations and/or spread fire. This product is considered harmful by inhalation, by skin contact and if it is swallowed. This product is irritating to the eyes and skin. Ingestion or excessive inhalation of this product may result in central nervous system effects including headache, sleepiness, dizziness, slurred speech, blurred vision and in extreme conditions coma and possibly death. Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury. Contains low-level components that are linked to cancer.

Potential Health Effects: Eye

This product may cause mild irritation to the eyes.

Potential Health Effects: Skin

Skin contact with this product may cause mild to serious irritation/dermatitis, due to excess drying. Some components may be absorbed through intact skin. Not known to be a skin sensitizer.

Potential Health Effects: Ingestion

This product is harmful if swallowed. Ingestion of this product may result in central nervous system effects including headache, sleepiness, dizziness, slurred speech and blurred vision. Ingestion may cause liver and kidney damage. Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury. Contains n-hexane. Prolonged and/or repeated exposure to n-hexane may cause progressive and potentially irreversible damage to the peripheral nervous system, particularly in the arms and legs.

Potential Health Effects: Inhalation

This product may be harmful by inhalation. Excessive inhalation of this material causes headache, dizziness, nausea and loss of coordination, and in extreme conditions coma and possibly death. Repeated excessive inhalation may result in bronchitis or other breathing problems, as well as possible liver or kidney damage, possible damage to the peripheral nervous systems and possible cardiac sensitization. Liquid aspirated into the lungs may cause mild to severe pulmonary injury. Contains n-hexane. Prolonged and/or repeated exposure to n-hexane may cause progressive and potentially irreversible damage to the peripheral nervous system, particularly in the arms and legs. Based on animal testing, a component of this product (xylene) is considered to be a

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developmental toxicant in Canada (birth defects).

Section 3 - Composition/Information on Ingredients

| CAS # | Component | Percent by Wt. |
|-----------------------------------------|-------------------------------------------------------------------------------|----------------|
| 68410-97-9 | Distillates, petroleum, light distillate hydrotreating process, low-boiling * | 100 |
| | The above listed CAS # and product is comprised of the following components: | |
| 110-54-3/107-83-5 / 110-82-7/96-37-7 | n-Hexane / Isohexane / Cyclohexane / Methylcyclopentane (Mixed C6s) | 40-50 |
| 142-82-5/591-76-4 / 108-87-2 | n-Heptane / Isoheptane / Methylcyclohexane (Mixed C7s) | 11-15 |
| 111-65-9/1678-91-7 / Not available | n-Octane / Ethylcyclohexane / Mixed methylheptanes (Mixed C8s) | 5-8 |
| 109-66-0/78-78-4 / 287-92-3 | n-Pentane / Isopentane / Cyclopentane (Mixed C5s) | 8-13 |
| 109-66-0/78-78-4 / 287-92-3 | n-Pentane / Isopentane / Cyclopentane (Mixed C5s) | 13-16 |
| 111-84-2 / Not available | n-Nonane / Isononanes (Mixed C9s) | 2-3 |
| 110-41-4 | Ethylbenzene | 1-3 |
| 1330-20-7 | Xylenes | 1-3 |

Additional Information

Product typically contains hydrocarbon fractions described as 18-23% paraffinic, 49-53% naphthenic and 3-5% aromatic.

* Changes in operating conditions will impact wt% lights (C5s) and aromatic content.

The actual components and weight % concentrations vary based on operating conditions.

This product is considered to be hazardous under 29 CFR 1910.1200 (Hazard Communication).

This material is a controlled product under Canadian WHMIS regulations.

This material is regulated as hazardous material / dangerous goods for transportation.

See Section 8 for applicable exposure limits. See Section 11 for applicable toxicity data.

Section 4 - First Aid Measures

First Aid: Eyes

Remove contact lenses, if it can be done safely, and immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention if symptoms develop or persist.

First Aid: Skin

Remove contaminated clothing and shoes. For skin contact, wash immediately with soap and water. Seek medical attention if symptoms develop or persist. Completely decontaminate clothing, shoes and other protective equipment before reuse or discard.

First Aid: Inhalation

Move affected individual to non-contaminated air. Loosen tight clothing such as a collar, tie, belt or waistband to facilitate breathing. Seek immediate medical attention if the individual is not breathing, is unconscious or if any other symptoms persist. WARNING: Contact through mouth-to-mouth resuscitation may pose a secondary risk to the rescuer. Avoid mouth-to-mouth contact by using a mouth shield or guard to perform artificial respiration.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. Seek immediate medical attention.

First Aid: Notes to Physician

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.

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Section 5 - Fire Fighting Measures

See Section 9: Physical Properties for flammability limits, flash point and auto-ignition information.

General Fire Hazards

Fire and container explosion hazards are serious when this product is exposed to heat, flame or other source of ignition. Presence of strong oxidizers can increase fire and explosion hazard. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Consider need for immediate emergency isolation evacuation for at least 300 meters (984 feet).

Explosion Hazards

Vapors may form explosive mixture with air. Keep containers and pipelines away from source of heat or fire. Containers may explode when involved in a fire. Evacuate personnel for 800 meters (1/2 mile) if a fire, or rail car, tank car, or major vessel rupture is possible. This product may be a static accumulator which can form an ignitable vapor-air mixture in a storage tank.

Hazardous Combustion Products

Upon combustion, this product emits carbon monoxide, carbon dioxide, and/or low molecular weight hydrocarbons.

Extinguishing Media

Dry chemical, foam, carbon dioxide, and water spray or fog. Use water to cool fire-exposed containers and to protect personnel. Water spray may be an ineffective extinguishing medium, and may spread flames if high-pressure direct water streams are used. Consider use of foam to suppress flammable vapors. Monitor water runoff for flammability, and prevent entry into ditches, sewers, drains, and waterways, or other confined or underground spaces.

Fire Fighting Equipment/Instructions

Reference 2008 Emergency Response Guidebook, Guide # 128. Position upwind. Keep unnecessary 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 tank venting or heat discoloration of a tank. Fire fighters should wear full-face, self-contained breathing apparatus and impervious protective clothing. Avoid inhaling any smoke and combustion products. Remove and clean or destroy any contaminated clothing. Cool containers with flooding quantities of water until well after the fire is out. Control runoff waters to prevent entry into sewers, drains, ditches, underground or confined spaces and waterways.

Section 6 - Accidental Release Measures

Evacuation Procedures

Isolate area. Keep unnecessary personnel away. Alert stand-by emergency and fire fighting personnel. Monitor surrounding area for build-up of flammable concentrations in air.

Small Spills

Eliminate ignition sources. Spill or leak area should be isolated immediately for 25 to 50 meters (82 to 164 feet) in all directions. Keep upwind and out of low areas. Stop discharge if safe to do so. Contain discharge by booming on water or diking on ground. Spills on water will volatilize rapidly, making containment or recovery difficult. Remove liquid material with non-sparking approved pumps, skimmers or vacuum equipment. Absorb/adsorb residual materials and clean up with non-sparking tools. Prevent entry into ditches, sewers, drains, underground or confined spaces, water intakes and waterways. Shovel material with non-sparking tools into appropriate container for disposal.

Large Spills

Consider downwind evacuation for 300 meters (984 feet). Eliminate ignition sources. Keep upwind and out of low areas. Stop discharge if safe to do so. Contain liquids by booming on water or by diking on land to prevent entry into ditches, sewers, drains or waterways. Spills on water will volatilize rapidly, making containment or recovery difficult. Recover any pooled liquid material with approved, non-sparking pumps, skimmers or vacuum equipment. An inert foam cover material may assist in short term vapor suppression. Absorb with DRY earth, sand or other non-combustible material and clean up with non-sparking tools. Soil remediation may be required.

Special Procedures

Contact local police/emergency services and appropriate emergency telephone numbers provided in Section 1. Ensure that statutory and regulatory reporting requirements in the applicable jurisdiction are met. Wear appropriate protective equipment and clothing during cleanup. Individuals without appropriate protective equipment should be excluded from area of spill until cleanup has been completed.

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See Section 8 for recommended Personal Protective Equipment and see Section 13 for waste disposal considerations.

Section 7 - Handling and Storage

Handling Procedures

Keep locked up or secured. Handle in fully grounded, properly designed and approved equipment systems that are suitable for flammable liquids. Use with adequate ventilation. Do not ingest or inhale. Keep away from heat and ignition sources. No smoking or open flames permitted in storage, use or handling areas. Dissipate static electricity during transfer by grounding and bonding containers and equipment. 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 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". Avoid draining or venting to atmosphere if possible. Take special precautions when cold cutting or breaking into lines or when cleaning and disposing of empty containers. Do not breathe gas, fumes, vapor or spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately. Avoid contact with skin and eyes. Keep away from incompatible materials such as oxidizing agents and acids. After handling, always wash hands thoroughly with soap and water.

Storage Procedures

Storage area should be clearly identified, well-illuminated, clear of obstruction and accessible only to trained and authorized personnel. Adequate security must be provided so that unauthorized personnel do not have access to material. Store in grounded, properly designed, approved vessels, and away from incompatible materials. Store and use away from heat, sparks, open flame, or any other ignition source. Store according to applicable regulations for flammable materials for storage tanks, containers, piping, buildings, rooms, cabinets, allowable quantities and minimum storage distances. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Have appropriate extinguishing capability in storage area (e.g. portable fire extinguishers (dry chemical, foam or carbon dioxide)) 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 vapor ice build-up. Storage tanks should be above ground and diked to hold entire contents. A refrigerated room is generally recommended for warehouse storage of materials with a flash point lower than 37.8°C (100°F).

See Section 8 for recommended Personal Protective Equipment and see Section 10 for information on Incompatibilities.

Section 8 - Exposure Controls / Personal Protection

Exposure Guidelines

A: General Product Information

Refer to published exposure limits - 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.

B: Component Exposure Limits

ACGIH, OSHA, NIOSH, EPA, Alberta, and Ontario exposure limit lists have been checked for major components listed with CAS registry numbers. Other exposure limits may apply, check with authorities.

*NOTE: The Vacated OSHA Permissible Exposure Limits (PELs) are those provided in the 1989 update to OSHA's Air Contaminants Standard 29 CFR 1910.1000. These limits were vacated by the U.S. Court of Appeals, Eleventh Circuit but may be enforceable in some states.

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N-Hexane (110-54-3)

ACGIH: 50 ppm TWA; 176 mg/m3 TWA; BEI
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA (Vacated)*: 50 ppm TWA; 180 mg/m3 TWA
OSHA (Final): 500 ppm TWA; 1800 mg/m3 TWA
NIOSH: 50 ppm TWA; 180 mg/m3 TWA
1100 ppm IDLH (10% LEL)
Alberta: 50 ppm TWA; 176 mg/m3 TWA
Substance may be readily absorbed through intact skin
Ontario: 50 ppm TWAEV; 176 mg/m3 TWAEV

Isohexane (107-83-5)

ACGIH: 500 ppm TWA; 1760 mg/m3 TWA; 1000 ppm STEL; 3500 mg/m3 STEL (as hexane, other isomers)
NIOSH: 100 ppm TWA; 350 mg/m3 TWA; 510 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min) (as hexane isomers (excluding n-hexane))
Alberta: 500 ppm TWA; 1760 mg/m3 TWA; 1000 ppm STEL; 3500 mg/m3 STEL
Ontario: 500 ppm TWAEV; 1760 mg/m3 TWAEV; 1000 ppm STEV; 3520 mg/m3 STEV (as hexane, other isomers of)

Cyclohexane (110-82-7)

ACGIH: 100 ppm TWA; 344 mg/m3 TWA
OSHA (Vacated)*: 300 ppm TWA; 1050 mg/m3 TWA
OSHA (Final): 300 ppm TWA; 1050 mg/m3 TWA
NIOSH: 300 ppm TWA; 1050 mg/m3 TWA
1300 ppm IDLH (10% LEL)
Alberta: 100 ppm TWA; 344 mg/m3 TWA
Ontario: 100 ppm TWAEV

N-Heptane (142-82-5)

ACGIH: 400 ppm TWA; 1640 mg/m3 TWA; 500 ppm STEL; 2050 mg/m3 STEL
OSHA (Final): 500 ppm TWA; 2000 mg/m3 TWA
NIOSH: 85 ppm TWA; 350 mg/m3 TWA; 440 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)
750 ppm IDLH
Alberta: 400 ppm TWA; 1640 mg/m3 TWA; 500 ppm STEL; 2050 mg/m3 STEL
Ontario: 400 ppm TWAEV; 1635 mg/m3 TWAEV; 500 ppm STEV; 2045 mg/m3 STEV

Methylcyclohexane (108-87-2)

ACGIH: 400 ppm TWA; 1610 mg/m3 TWA
OSHA (Vacated)*: 400 ppm TWA; 1600 mg/m3 TWA
OSHA (Final): 500 ppm TWA; 2000 mg/m3 TWA
NIOSH: 400 ppm TWA; 1600 mg/m3 TWA
1200 ppm IDLH (LEL)
Alberta: 400 ppm TWA; 1610 mg/m3 TWA
Ontario: 400 ppm TWAEV; 1600 mg/m3 TWAEV

N-Octane (111-65-9)

ACGIH: 300 ppm TWA; 1401 mg/m3 TWA
OSHA (Final): 500 ppm TWA; 2350 mg/m3 TWA
NIOSH: 75 ppm TWA; 350 mg/m3 TWA; 385 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)
1000 ppm IDLH (10% LEL)
Alberta: 300 ppm TWA; 1400 mg/m3 TWA
Ontario: 300 ppm TWAEV; 1400 mg/m3 TWAEV; 375 ppm STEV; 1750 mg/m3

N-Pentane (109-66-0)

ACGIH: 600 ppm TWA; 1770 mg/m3 TWA
OSHA (Vacated)*: 600 ppm TWA; 1800 mg/m3 TWA; 750 ppm STEL; 2250 mg/m3 STEL
OSHA (Final): 1000 ppm TWA; 2950 mg/m3 TWA
NIOSH: 120 ppm TWA; 350 mg/m3 TWA; 610 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)
1500 ppm IDLH (10% LEL)
Alberta: 600 ppm TWA; 1770 mg/m3 TWA
Ontario: 600 ppm TWAEV; 1770 mg/m3 TWAEV; 750 ppm STEV; 2210 mg/m3 STEV

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Isopentane (78-78-4)

ACGIH: 600 ppm TWA; 1770 mg/m³ (listed under Pentane, all isomers)
OSHA (Vacated)*: 600 ppm TWA; 1800 mg/m³ TWA; 750 ppm STEL; 2250 mg/m³ STEL (related to Pentane)
OSHA (Final): 1000 ppm TWA; 2950 mg/m³ TWA (related to Pentane)
NIOSH: 120 ppm TWA; 350 mg/m³ TWA; 610 ppm Ceiling (15 min); 1800 mg/m³ Ceiling (15 min) (related to n-Pentane)
1500 ppm IDLH (10% LEL) (related to n-Pentane)
Alberta: 600 ppm TWA; 1770 mg/m³ TWA (listed under Pentane, all isomers)
Ontario: 600 ppm TWAEV; 1770 mg/m³ TWAEV; 750 ppm STEV; 2210 mg/m³ STEV (related to Pentane)

Cyclopentane (287-92-3)

ACGIH: 600 ppm TWA; 1720 mg/m³ TWA
OSHA (Vacated)*: 600 ppm TWA; 1720 mg/m³ TWA
NIOSH: 600 ppm TWA; 1720 mg/m³ TWA
Alberta: 600 ppm TWA; 1720 mg/m³ TWA
Ontario: 600 ppm TWAEV; 1720 mg/m³ TWAEV

N-Nonane (111-84-2)/ Isononane (CAS # Not Available)

ACGIH: 200 ppm TWA; 1050 mg/m³ TWA (related to Nonane, all isomers)
NIOSH: 200 ppm TWA; 1050 mg/m³ TWA (related to Nonane)
Alberta: 200 ppm TWA; 1050 mg/m³ TWA (related to Nonane, all isomers)
Ontario: 200 ppm TWAEV; 1050 mg/m³ TWAEV (related to Nonane)

Ethylbenzene (100-41-4)

ACGIH: 100 ppm TWA; 434 mg/m³ TWA; 125 ppm STEL; 543 mg/m³ STEL; BEI
OSHA (Vacated)*: 100 ppm TWA; 435 mg/m³ TWA; 125 ppm STEL; 545 mg/m³ STEL
OSHA (Final): 100 ppm TWA; 435 mg/m³ TWA
NIOSH: 100 ppm TWA; 435 mg/m³ TWA; 125 ppm STEL; 545 mg/m³ STEL
800 ppm IDLH (10% LEL)
Alberta: 100 ppm TWA; 434 mg/m³ TWA; 125 ppm STEL; 543 mg/m³ STEL
Ontario: 100 ppm TWAEV; 435 mg/m³ TWAEV; 125 ppm STEV; 540 mg/m³ STEV

Xylenes (1330-20-7)

ACGIH: 100 ppm TWA; 434 mg/m³ TWA; 150 ppm STEL; 651 mg/m³ STEL; BEI
OSHA (Vacated)*: 100 ppm TWA; 435 mg/m³ TWA; 150 ppm STEL; 655 mg/m³ STEL
OSHA (Final): 100 ppm TWA; 435 mg/m³ TWA
NIOSH: 100 ppm TWA; 435 mg/m³ TWA; 150 ppm STEL; 655 mg/m³ STEL
900 ppm IDLH (as m-xylene, o-xylene, p-xylene)
Alberta: 100 ppm TWA; 434 mg/m³ TWA; 150 ppm STEL; 651 mg/m³ STEL
Ontario: 100 ppm TWAEV; 435 mg/m³ TWAEV; 150 ppm STEV; 650 mg/m³ STEV (as dimethylbenzene (sum of o-, m-, and p-isomers))

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.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses; chemical goggles are recommended to prevent eye irritation or injury from splashing or from vapors.

Personal Protective Equipment: Skin/Hands/Feet

Use chemically resistant gloves when handling product. Wear chemical-resistant safety footwear with good traction to prevent slipping. Work clothing that sufficiently prevents skin contact should be worn, such as coveralls and/or 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 fiber clothing (i.e., cotton or wool) is recommended. Synthetic clothing can generate static electricity and is not recommended where flammable vapor releases may

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occur. Static Dissipative (SD) rated footwear is recommended.

Personal Protective Equipment: Respiratory

If engineering controls and ventilation are not sufficient to effectively prevent buildup of aerosols or vapors, appropriate NIOSH/MSHA approved air-purifying respirators or self-contained breathing apparatus (SCBA) appropriate for exposure potential 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.

Personal Protective Equipment: General

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.

Section 9 - Physical & Chemical Properties

| | | | |
|----------------------------------------------|-----------------------------|-------------------------------------|----------------------------------------------------------------|
| Physical State and Appearance: | Liquid | Color: | Colorless |
| Odor: | Sweet aromatic | Odor Threshold: | Not available |
| pH: | Not applicable | Vapor Pressure: | Range: 30-35 kPa (Reid's) |
| Vapor Density @ 0°C (Air=1): | 3.0 (at ambient conditions) | Boiling Point: | Range: 45°C - 165 °C (113°F - 329°F) |
| Melting Point: | -160°C (-256°F) (estimate) | Solubility (H2O): | Insoluble |
| Specific Gravity (Water=1): | 0.72 to 0.73 | Dispersion Properties: | Is not dispersed in cold water, or in hot water |
| Evaporation Rate (n-Butyl Acetate=1): | 5.6 | Solubility (other): | Highly soluble in ether, alcohols and other aliphatic solvents |
| Octanol/H2O Coeff.: | 2.2-4.5 (similar mixtures) | Percent Volatile: | > 95-100% |
| Auto Ignition: | 254°C (489.2°F) | Flash Point: | < -18°C (< -0.4°F) |
| Flash Point Method: | Closed cup | Upper Flammable Limit (UFL): | 8% |
| Lower Flammable Limit (LFL): | 1 % | Flammability Classification: | Flammable Liquid |

Section 10 - Stability & Reactivity Information

Chemical Stability

This is a stable material under normal handling and storage conditions. This material is not sensitive to mechanical impact.

Chemical Stability: Conditions to Avoid

Keep away from heat, sparks, or open flame. Presence of strong oxidizers can increase fire and explosion hazard.

Incompatibility

May react with strong acids or oxidizing agents.

Possibility of Hazardous Reactions or Hazardous Polymerization

Hazardous polymerization not likely to occur.

Corrosivity

Not expected to be corrosive.

Hazardous Decomposition

Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Special Remarks

Some components of the product become unstable at elevated temperatures and pressures.

Section 11 - Toxicological Information

A: Acute Toxicity – General Product Information

Similar hydrocarbon mixtures have been tested under the EPA's High Production Volume (HPV) Chemical Challenge Program under the Gasoline Blending Streams category. Product is considered slightly irritating to the eyes and moderately irritating/drying to the skin. Some toxic components may be absorbed through intact skin. There are no known skin sensitizers. This product is not classified as acutely toxic based on animal testing

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results. Accidental ingestion or excessive inhalation results in central nervous system effects including headache, light-headedness, drowsiness, nausea, cardiac arrhythmias and possible liver/kidney damage. In enclosed spaces, unconsciousness or death is possible. Small amounts of liquid if aspirated into the lungs may cause mild to severe pulmonary injury /edema. The following additional information has been found for its components:

Hexanes, mixed – Contact can irritate and may burn the eyes and skin. Inhalation can irritate the nose, mouth, and throat causing coughing and wheezing. Inhalation of high concentrations may result in central nervous system (CNS) depression, causing headache, nausea, vomiting, dizziness, loss of coordination, unconsciousness, and in extreme conditions respiratory failure and coma. Exposure to very high levels may cause an irregular heartbeat, which may be fatal. Ingestion and subsequent aspiration into the lungs may cause chemical pneumonitis.

N-Heptane - The main effect of short-term inhalation exposure is depression of the central nervous system. The fatal concentration has been reported to be 16,000 ppm. Mucous membrane irritation may occur at high vapor concentrations. N-heptane is a moderate to severe skin irritant. Harmful effects are not expected to occur by skin absorption. Eye contact with the liquid may result in irritation and pain. Concentrated vapor may cause slight irritation. Animal toxicity information indicates that n-heptane has very low toxicity if ingested. Ingestion of extremely large doses may cause nausea, vomiting, headache and other symptoms of central nervous system depression. If n-heptane is aspirated into the lungs following ingestion or vomiting, potentially fatal lung damage (pulmonary edema) can result. Based on its physical properties, n-heptane can be easily aspirated.

N-Octane - Very readily forms high vapor concentrations. High vapor concentrations can irritate the nose and throat, and may cause headache, drowsiness, dizziness, nausea and confusion, based on animal information. N-octane is a moderate to severe skin irritant, based on animal and human information. Contact of liquid with eyes may cause redness and pain. Very high vapor concentrations may be irritating to the eyes. Ingestion of n-octane may cause nausea, vomiting, headache, and depression of the central nervous system (CNS). However, oral toxicity is relatively low unless liquid n-octane is aspirated into the lungs. Severe lung irritation (chemical pneumonitis) or lung tissue damage (pulmonary edema) or death can result. Ingestion is not a typical route of occupational exposure.

Pentanes mixed – Contact can irritate the eyes and skin causing a rash and a burning sensation. Inhalation can irritate the nose, throat, and lungs causing coughing, wheezing, and/or shortness of breath. Inhalation of high concentrations may result in central nervous system (CNS) depression, causing headache, dizziness, nausea, loss of coordination, unconsciousness, and in extreme conditions coma and possibly death. Very high levels of vapors in an enclosed space will decrease the amount of available oxygen and may cause suffocation. Ingestion and subsequent aspiration into the lungs may cause chemical pneumonitis.

N-Nonane - Concentrated vapor may cause irritation of the nose and throat, headache, drowsiness, dizziness, confusion, nausea, tremors, incoordination and difficulty breathing. Very high concentrations may cause unconsciousness and death. Specific information is not available, but these are typical effects of exposure to nonanes. Direct contact with liquid will cause irritation. Concentrated vapor is probably irritating to the eyes. Contact of liquid with eyes may cause temporary redness and pain. Ingestion of n-nonane may cause nausea, vomiting, swelling of abdomen, headache and depression. Oral toxicity is relatively low unless liquid is aspirated into the lungs. Severe lung irritation (chemical pneumonitis) or lung tissue damage (pulmonary edema) or death can result.

Ethylbenzene - Causes severe eye, nose, and throat irritation. It is also a skin irritant that may be absorbed through the skin in harmful amounts. Inhalation may result in central nervous system depression, causing headache, dizziness, nausea, loss of coordination, unconsciousness, and at high concentrations, difficulty breathing and possibly death. Ingestion and subsequent aspiration into the lungs may cause chemical pneumonitis.

Xylenes, mixed – Vapors can irritate the eyes. Contact with unprotected skin or eyes produces erythema and slight necrosis. Xylene can be absorbed through intact skin. Inhalation can irritate the nose and throat causing cough and difficulty breathing. Inhalation of high concentrations may result in central nervous system (CNS) depression, causing headache, dizziness, nausea, vomiting, loss of coordination, confusion, unconsciousness,

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and in extreme conditions coma and possibly death. Ingestion and subsequent aspiration into the lungs may cause chemical pneumonitis.

B: Acute Toxicity - LD50/LC50

Distillates (petroleum), light distillate hydrotreating process, low-boiling (68410-97-9)

Oral LD50 Rat: >6200 mg/kg; Dermal LD50 Rabbit: >2000 mg/kg; Inhalation LD50 Rat: >5.1 mg/L

N-Hexane (110-54-3)

Inhalation LC50 Rat: 48,000 ppm/4H; Oral LD50 Rat: 25 g/kg; Dermal LD50 Rabbit: 3000 mg/kg

Isohexane (107-83-5)

Inhalation LC50 Rat: >3125 ppm/4H

Cyclohexane (110-82-7)

Inhalation LC50 Rat: 13.9 mg/L/4H; Oral LD50 Rat: >5000 mg/kg; Dermal LD50 Rabbit: >2000 mg/kg

N-Heptane (142-82-5)

Inhalation LC50 Rat: 103 g/m³/4H; Oral LD50 Mouse: 5000 mg/kg; Dermal LD50 Rabbit: 3000 mg/kg

Methylcyclohexane (108-87-2)

Oral LD50 Rat: >3200 mg/kg

N-Octane (111-65-9)

Inhalation LC50 Rat: 118 g/m³/4H; Inhalation LC50 Rat: 25,250 ppm/4H; LC50 Mouse: 13,500 ppm/1H

N-Pentane (109-66-0)

Inhalation LC50 Rat: 364 g/m³/4H; Dermal LD50 Rabbit: 3000 mg/kg; Oral LD50 Rat: >2000 mg/kg

Isopentane (78-78-4)

Inhalation LC50 Rat: 280,000 mg/m³/4H

Cyclopentane (287-92-3)

Oral LD50 Mouse: 12,800 mg/kg; Oral LD50 Rat: 11,400 mg/kg

N-Nonane (111-84-2)

Inhalation LC50 Rat: 3200 ppm/4H

Ethylbenzene (100-41-4)

Inhalation LC50 Rat: 17.2 mg/L/4H; Oral LD50 Rat: 3500 mg/kg; Dermal LD50 Rabbit: 15,354 mg/kg

Xylenes (1330-20-7)

Inhalation LC50 Rat: 5000 ppm/4H; Inhalation LC50 Rat: 47,635 mg/L/4H; Oral LD50 Rat: 4300 mg/kg; Dermal LD50 Rabbit: >1700 mg/kg

C: Chronic Toxicity - General Product Information

Similar hydrocarbon mixtures have been tested under the EPA's High Production Volume (HPV) Chemical Challenge Program under the Gasoline Blending Streams category. Repeat contact with skin can cause severe dryness and serious dermatitis. Repeat inhalation toxicity studies in animals indicate minor effects to the nose, lungs (irritation), blood, liver and kidneys. Neurotoxicity (from hexane, toluene) was not found in animal testing of similar mixtures, possibly due to low concentrations and competitive inhibition with other hydrocarbons. No genetic mutations were induced from *in vivo* testing. No significant reproductive or developmental toxicity was observed in testing of similar streams. The following additional information has been found for its components:

Hexanes, mixed – Prolonged and repeated skin contact can cause irritation, defatting dermatitis with dryness and cracking, and can lead to a rash. Long-term exposure to these solvent mixtures may result in possible lung, liver, kidney, spleen, blood, thymus, and adrenal gland damage; and has resulted in neurotoxic effects including peripheral neuropathy (n-hexane) causing numbness, tingling, and/or muscle weakness in the arms and legs.

N-Heptane - No effects following long-term exposure have been reported in humans. N-heptane is a defatting agent and prolonged or repeated skin contact can cause irritation and dermatitis (inflammation, reddening and swelling). Nerve damage of the extremities, such as the hands and feet (peripheral neuropathy) has been reported in workers exposed to petroleum solvents containing mixtures of chemicals including heptane. No major toxic effects have been reported in long-term inhalation studies.

N-Octane - No chronic effects in humans have been reported. N-octane has not been shown to cause the type of peripheral neuropathy associated with n-hexane. Irritation and dermatitis (dry cracked skin, inflammation, reddening and swelling) can result from prolonged or repeated contact.

Pentanes mixed – Prolonged and repeated skin contact can cause defatting dermatitis with dryness and cracking, redness, and blisters. Chronic pentane exposure may damage the nervous system causing numbness, "pins and needles", and weakness in the arms and legs.

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N-Nonane - No chronic effects in humans have been reported. Irritation, and dermatitis (inflammation, reddening and swelling) and possibly tissue death can result from prolonged or repeated skin contact.

Ethylbenzene – Prolonged and repeated exposure may be harmful to the central nervous system (CNS), upper respiratory tract, and/or may cause liver disorders. It may also cause drying, scaling, and blistering of the skin. Ethylbenzene has been classified by IARC as Group 2B (possibly carcinogenic to humans) based on the National Toxicology Program's two year study of very high exposure levels on rats and mice (NTP, 1999). Rats and mice were exposed to concentrations of 0, 75, 250, or 750 ppm of ethylbenzene for 6 hours per day, 5 days per week for 104 and 103 weeks, respectively. There were statistically significant increases in incidence of kidney tumors in male and female rats, lung tumors in male mice, and liver tumors in female mice exposed to 750 ppm of ethylbenzene. The relevance of these data to human exposure is presently being evaluated.

Xylenes, mixed – Prolonged and repeated skin contact can cause defatting dermatitis with drying and cracking. Chronic inhalation has been associated with central nervous system effects, loss of appetite, nausea, ringing in the ears, irritability, thirst, anemia, mucosal bleeding, enlarged liver, and hyperplasia. Xylene can damage the liver and kidneys. In chronic occupational exposure, xylene (usually mixed with other solvents) has produced irreversible damage to the central nervous system and may be ototoxic (damages hearing or increases sensitivity to noise), probably from a neurotoxic mechanism. Xylene is classified as a developmental toxicant in Canada.

D: Chronic Toxicity - Carcinogenic Effects

ACGIH, EPA, IARC, OSHA, and NTP carcinogen lists have been checked for selected similar materials or those components with CAS registry numbers.

N-Hexane (110-54-3)

EPA: Classification: under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005b), there is inadequate information to assess the carcinogenic potential of n-hexane.

N-Heptane (142-82-5)

EPA: Classification: not classifiable as to human carcinogenicity.

Ethylbenzene (100-41-4)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

EPA: Classification: not classifiable as to human carcinogenicity.

IARC: Monograph 77 [2000] (Group 2B (possibly carcinogenic to humans))

Xylenes (1330-20-7)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

EPA: Classification: not classified as a carcinogen.

IARC: Monograph 71 [1999], Monograph 47 [1989] (Group 3 (not classifiable))

Section 12 - Ecological Information

Ecotoxicity

A: General Product Information

Similar hydrocarbon mixtures have been tested under the EPA's High Production Volume (HPV) Chemical Challenge Program under the Gasoline Blending Streams category. Product is largely insoluble in water, and evaporates rapidly. Similar products were found to have the potential to be moderately toxic to aquatic organisms. Studies conclude that aquatic toxicity can be reasonably predicted based on carbon number and toxicities of constituent hydrocarbon groups and components.

B: Component Analysis - Ecotoxicity - Aquatic/Terrestrial Toxicity

HPV Mixture Testing: Light alkylate naphtha (Paraffinic - tested as WAF)

96 Hr LL50 fathead minnow: 8.2 mg/L; 48 Hr EL50 Daphnia magna: 32 mg/L; 96 Hr EL50 Selenastrum caprocornutum: 45 mg/L

HPV Mixture Testing: Light straight run naphtha (approx. 34% Naphthenic, tested as WAF)

96 Hr LL50 rainbow trout: 18mg/L; 48 Hr EL50 Daphnia magna: 4.5mg/L; 72 Hr EL50 Selenastrum caprocornutum: 3.6mg/L

The following information has been found for this product's listed components:

N-Hexane (110-54-3)

| Test & Species | | Conditions |
|--------------------------------|-----------|--------------|
| 96 Hr LC50 Oncorhynchus mykiss | 4.14 mg/L | |
| 96 Hr LC50 Pimephales promelas | 2.5 mg/L | flow-through |
| 96 Hr LC50 Lepomis macrochirus | 4.12 mg/L | |
| 48 Hr EC50 water flea | 3.87 mg/L | |

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Cyclohexane (110-82-7)

Test & Species

| | |
|----------------------------------------|------------|
| 96 Hr LC50 Pimephales promelas | 4.53 mg/L |
| 96 Hr LC50 Lepomis macrochirus | 34.72 mg/L |
| 96 Hr LC50 Poecilia reticulata | 48.0 mg/L |
| 72 Hr EC50 Scenedesmus subspicatus | >500 mg/L |
| 5 min EC50 Photobacterium phosphoreum | 85.5 mg/L |
| 10 min EC50 Photobacterium phosphoreum | 93 mg/L |
| 48 Hr EC50 water flea | 400.0 mg/L |

Conditions

flow-through

N- Heptane (142-82-5)

Test & Species

| | |
|--------------------------|----------|
| 24 Hr EC50 Daphnia magna | >10 mg/L |
|--------------------------|----------|

Conditions

N-Octane (111-65-9)

Test & Species

| | |
|-----------------------------------------|-----------|
| 30 min EC50 Photobacterium phosphoreum: | 890 mg/L |
| 48 Hr EC50 water flea: | 0.38 mg/L |

Conditions

N-Pentane (109-66-0)

Test & Species

| | |
|--------------------------------|------------|
| 96 Hr LC50 Oncorhynchus mykiss | 9.87 mg/L |
| 96 Hr LC50 Pimephales promelas | 11.59 mg/L |
| 96 Hr LC50 Lepomis macrochirus | 9.99 mg/L |
| 48 Hr EC50 water flea | 9.7 mg/L |

Conditions

Isopentane (78-78-4)

Test & Species

| | |
|--------------------------|----------|
| 48 Hr EC50 Daphnia magna | 2.3 mg/L |
|--------------------------|----------|

Conditions

Cyclopentane (287-92-3)

Test & Species

| | |
|--------------------------|-----------|
| 48 Hr EC50 Daphnia magna | 10.5 mg/L |
|--------------------------|-----------|

Conditions

Ethylbenzene (100-41-4)

Test & Species

| | |
|----------------------------------------|--------------|
| 72 Hr EC50 Selenastrum capricornutum | 4.6 mg/L |
| 96 Hr EC50 Selenastrum capricornutum | >438 mg/L |
| 30 min EC50 Photobacterium phosphoreum | 9.68 mg/L |
| 24 Hr EC50 Nitrosomonas | 96 mg/L |
| 48 Hr EC50 Daphnia magna | 1.8-2.4 mg/L |

Conditions

Xylenes (1330-20-7)

Test & Species

| | |
|---------------------------------------|-------------|
| 96 Hr LC50 Pimephales promelas | 13.4 mg/L |
| 96 Hr LC50 Oncorhynchus mykiss | 8.05 mg/L |
| 96 Hr LC50 Lepomis macrochirus | 16.1 mg/L |
| 96 Hr LC50 Pimephales promelas | 26.7 mg/L |
| 24 hr EC50 Photobacterium phosphoreum | 0.0084 mg/L |
| 48 Hr EC50 water flea | 3.82 mg/L |
| 48 Hr LC50 Gammarus lacustris | 0.6 mg/L |

Conditions

flow-through

flow-through

flow-through

static

Environmental Fate/Mobility

When released into the environment, this product is expected to partition primarily to air (> 95%), with some partitioning to water (< 3%), to soils (< 2%) and into sediment (< 1%). In air, this product is considered to be readily degraded by reaction with photochemically produced hydroxyl radicals. Spill remediation has shown potential for downward movement and partitioning into groundwater.

Persistence/Degradability

Based on calculated data, submitted by API under the HPV testing program, it can be concluded that all categories of Light Hydrocracked Naphtha degrade in sunlight with component half-life between 1 and 16 days. When released into water, this stream is expected to volatilize with a half-life of less than 1 day and biodegrade more slowly. In soils, low levels are expected to biodegrade.

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HPV Testing: Light alkylate naphtha (Paraffinic)

Tested for 56 days using mixed adapted inoculum of domestic activated sludge and soil:
28 days - 42% degradation; 42 days - 48% degradation; 56 days - 40% degradation

This information indicates similar hydrocarbon mixtures have inherent biodegradability. Components rapidly degrade in air and over time in soils or ground water into less toxic materials.

Bioaccumulation/Accumulation

Hexane has a log octanol-water partition coefficient of greater than 3.0 and is not expected to significantly bioaccumulate. Isopentane has an estimated bioconcentration factor (BCF) of less than 100. Isopentane has a log octanol-water partition coefficient greater than 3.0. Isopentane is not expected to significantly bioaccumulate. Ethylbenzene is not expected to bioaccumulate significantly. Some absorption to sediment may occur for xylene. Low to moderate absorption to soil would be expected based on the Kow. Little bioconcentration is expected in fish such as eel and clams. The concentration in rainbow trout and carp was found at the level of 50 and 120 ppb respectively.

Section 13 - Disposal Considerations

U.S./Canadian Waste Number & Descriptions

A: General Product Information

This product is known to be a hazardous waste according to US RCRA and Canadian regulations. The use, mixing or processing of this product may alter this product. Contact federal, provincial/state and local authorities in order to generate or ship a waste material associated with this product to ensure materials are handled appropriately and meet all criteria for disposal of hazardous waste. **DO NOT ATTEMPT TO DISPOSE OF BY UNCONTROLLED IGNITION.** Since emptied containers retain product/material residue, follow safe handling/label warnings even after container is emptied.

See Section 7: Handling and Storage and Section 8: Exposure Controls/Personal Protection for additional handling information that may be applicable for safe handling and the protection of employees.

Waste generator is advised to carefully consider hazardous properties and control measures needed for other materials that may be found in the waste.

B: Component Waste Numbers

Xylenes (1330-20-7)

RCRA: waste number U239 (Ignitable waste, Toxic waste)

Cyclohexane (110-82-7)

RCRA: waste number U056 (Ignitable waste)

Section 14 - Transportation Information

US DOT Information

Shipping Name: Petroleum Distillates, n.o.s.

UN#: UN1268 **Hazard Class:** 3 **Packing Group:** II

Required Label(s): FLAMMABLE LIQUID

Additional Info.: 2008 Emergency Response Guidebook, Guide # 128.

Canadian TDG Information

Shipping Name: PETROLEUM DISTILLATES, N.O.S.

UN#: UN1268 **Hazard Class:** 3 **Packing Group:** II

Required Label(s): FLAMMABLE LIQUID

Additional Info.: 2008 Emergency Response Guidebook, Guide #128.

International Air Transport Association (IATA) and ICAO Information

Shipping Name: Petroleum Distillates, n.o.s.

UN#: UN1268 **Hazard Class:** 3 **Packing Group:** II

Required Label(s): FLAMMABLE LIQUID

International Maritime Dangerous Goods (IMDG) Code

Shipping Name: Petroleum Distillates, n.o.s.

UN#: UN1268 **Hazard Class:** 3 **Packing Group:** II

Required Label(s): FLAMMABLE LIQUID

EmS Code: F-E, S-E

Marine Pollutant: No

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Section 15 - Regulatory Information

A: International Regulations

Component Analysis - Inventory

| Component | CAS # | US - TSCA | CANADA - DSL | EU - EINECS |
|------------------------------------------|------------|-----------|--------------|-------------|
| Distillates, petroleum, light distillate | 68410-97-9 | Yes | Yes | Yes |
| hydrotreating process, low-boiling | 64741-84-0 | | | |

B: USA Federal & State Regulations

Ongoing occupational hygiene, medical surveillance programs, or site emission or spill reporting may be required by Federal or State regulations. Check for applicable regulations.

USA OSHA Hazard Communication Class

This product is considered to be hazardous under 29 CFR 1910.1200 (Hazard Communication). HCS Classes: HCS CLASS: Flammable liquid IB with a flash point lower than 22.8°C (73°F) and a boiling point at or above 37.8°C (100°F).

HCS CLASS: Irritating substance.

HCS CLASS: Target organ effects.

HCS CLASS: MAY CAUSE CANCER

USA Right-to-Know – Federal

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

N-Hexane (110-54-3)

SARA 313: 1.0 % de minimis concentration

CERCLA: 5000 lb final RQ; 2270 kg final RQ

Cyclohexane (110-82-7)

SARA 313: 1.0 % de minimis concentration

CERCLA: 1000 lb final RQ; 454 kg final RQ

Ethylbenzene (100-41-4)

SARA 313: 0.1 % de minimis concentration

CERCLA: 1000 lb final RQ; 454 kg final RQ

Xylenes (1330-20-7)

SARA 313: 1.0 % de minimis concentration

CERCLA: 100 lb final RQ; 45.4 kg final RQ

USA Right-to-Know - State

The following components appear on one or more of the following state hazardous substances lists. Some components (including those present only in trace quantities, and therefore not listed in this document) may be included on the Right-To-Know lists of other U.S. states. The reader is therefore cautioned to contact his or her NOVA Chemicals' representative or NOVA Chemicals' Product Integrity group for further U.S. State Right-To-Know information.

| Component | CAS # | NJ | PA |
|--------------|-----------|-----|-----|
| N-Hexane | 110-54-3 | Yes | Yes |
| Pentane | 109-66-0 | Yes | Yes |
| Isopentane | 78-78-4 | Yes | Yes |
| Cyclopentane | 287-92-3 | Yes | Yes |
| Ethylbenzene | 100-41-4 | Yes | Yes |
| Xylenes | 1330-20-7 | Yes | Yes |

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

WARNING! This product contains a chemical known to the state of California to cause reproductive /developmental effects.

C: Canadian Regulations - Federal and Provincial

WHMIS Ingredient Disclosure List (IDL)

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List (IDL):

| Component | CAS # | Minimum Concentration |
|-----------|----------|----------------------------------|
| N-Hexane | 110-54-3 | 1 % |
| Isohexane | 107-83-5 | 1 % (related to 2-methylpentane) |

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| | | |
|-------------------|----------|-------|
| Cyclohexane | 110-82-7 | 1 % |
| N-Heptane | 142-82-5 | 1 % |
| Methylcyclohexane | 108-87-2 | 1 % |
| N-Octane | 111-65-9 | 1 % |
| N-Pentane | 109-66-0 | 1 % |
| Cyclopentane | 287-92-3 | 1 % |
| n-Nonane | 111-84-2 | 1 % |
| Ethylbenzene | 100-41-4 | 0.1 % |

WHMIS Classification

Workplace Hazardous Materials Information System (WHMIS): This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and the MSDS contains all the information required by the CPR.

WHMIS CLASS B2: Flammable liquid with a flashpoint lower than 37.8°C (100°F).

WHMIS CLASS D1A: Very Toxic (N-Octane)

WHMIS CLASS D2A: Carcinogen (Ethylbenzene), Animal embryotoxic (Xylene).

WHMIS CLASS D2B: Toxic

Other Regulations

Ongoing occupational hygiene, medical surveillance programs, or site emission or spill reporting may be required by Federal or Provincial regulations. Check for applicable regulations.

Section 16 - Other Information

Label Information

DANGER! TOXIC! FLAMMABLE! Product is a colorless liquid with a sweet aromatic odor. Vapor is heavier than air and may spread long distances. Distant ignition and flashback are possible. Flammable liquid and vapor can accumulate static charge. Liquid can float on water and may travel to distant locations and/or spread fire. This product is considered harmful by inhalation, by skin contact and if it is swallowed. This product is irritating to the eyes and skin. Ingestion or excessive inhalation of this product may result in central nervous system effects including headache, sleepiness, dizziness, slurred speech, blurred vision and in extreme conditions coma and possibly death. Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury. Contains low-level components that are linked to cancer.

FIRST AID:

SKIN: Remove contaminated clothing and shoes. For skin contact, wash immediately with soap and water. Seek medical attention if symptoms develop or persist. Completely decontaminate clothing, shoes and other protective equipment before reuse or discard.

EYES: Remove contact lenses, if worn, and immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention if symptoms develop or persist.

INHALATION: Move affected individual to non-contaminated air. Loosen tight clothing such as a collar, tie, belt or waistband to facilitate breathing. Seek immediate medical attention if the individual is not breathing, is unconscious or if any other symptoms persist. WARNING: Contact through mouth-to-mouth resuscitation may pose a secondary risk to the rescuer. Avoid mouth-to-mouth contact by using a mouth shield or guard to perform artificial respiration.

INGESTION: DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. Seek immediate medical attention.

IN CASE OF A LARGE SPILL: Consider downwind evacuation for 300 meters (984 feet). Eliminate ignition sources. Keep upwind and out of low areas. Stop discharge if safe to do so. Contain liquids by booming on water or by diking on land to prevent entry into ditches, sewers, drains or waterways. Spills on water will volatilize rapidly, making containment or recovery difficult. Recover any pooled liquid material with approved, non-sparking pumps, skimmers or vacuum equipment. An inert foam cover material may assist in short term vapor suppression. Absorb with DRY earth, sand or other non-combustible material and clean up with non-sparking tools. Soil remediation may be required.

References

Available on request.

Special Considerations

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 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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Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; BLEVE = Boiling Liquid Expanding Vapor Explosion; BOD = Biochemical Oxygen Demand; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CPR = Controlled Products Regulations; DOT = Department of Transportation; DSL = Domestic Substances List; EINECS = European Inventory of Existing Commercial Substances; EPA = Environmental Protection Agency; EU = European Union; FDA = Food and Drug Administration; IARC = International Agency for Research on Cancer; IDL = Ingredient Disclosure List; Kow = Octanol/water partition coefficient; LEL = Lower Explosive Limit; NIOSH = National Institute for Occupational Safety and Health; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; RCRA = Resource Conservation and Recovery Act; SARA = Superfund Amendments and Reauthorization Act; TDG = Transportation of Dangerous Goods; TSCA = Toxic Substances Control Act.

MSDS Prepared by: NOVA Chemicals

MSDS Information Phone Number: 1-412-490-4063

Other Information

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