

## Material Safety Data Sheet

Material Name: **C9-200 Hydrocarbons**

MSDS ID: NOVA-0020

### Section 1 - Product and Company Identification

**Synonyms:** C<sub>9</sub>+, mixed hydrocarbons, C9-200 (Corunna)

**Chemical Name:** Solvent naphtha (petroleum), light arom., hydrotreated

**Chemical Family:** Hydrocarbons

**Material Use:** Gasoline blending or fuel products blending

**Chemical Formula:** Complex 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](mailto: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)

**General Comments**

This product has been assigned a CAS # of 68512-78-7.

### Section 2 - Hazards Identification

**HMIS Ratings:** Health: 2\* 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: 2 Fire: 3 Reactivity: 0

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

**Emergency Overview**

**DANGER! FLAMMABLE! TOXIC! POSSIBLE CANCER HAZARD!** Product is a clear amber liquid with an aromatic odour. Vapour is heavier than air and may spread long distances. Distant ignition and flashback are possible. Liquid and vapour can accumulate static charge. Liquid can float on water and may travel to distant locations and/or spread fire. This product is harmful by inhalation, skin contact and if it is swallowed. This product is irritating to the eyes and skin. Excessive inhalation or ingestion may result in liver and kidney damage, blood disorders and central nervous system effects including headache, sleepiness, dizziness, nausea, loss of coordination, and in extreme conditions coma and possibly death. Small amounts, if aspirated into the lungs, may cause mild to severe pulmonary injury. Contains components that may cause cancer.

**Potential Health Effects: Eye**

Contact with liquid or vapour causes irritation.

**Potential Health Effects: Skin**

Prolonged and/or repeated skin contact with this product may cause serious irritation and dermatitis. Product contains component(s) that may be absorbed through the skin.

**Potential Health Effects: Ingestion**

This product is harmful if swallowed. Ingestion may result in central nervous system effects including headache, sleepiness, dizziness, nausea, loss of coordination, and in extreme conditions coma and possibly death. Small amounts, if aspirated into the lungs, may cause mild to severe pulmonary injury and possibly death. Ingestion may cause kidney and liver damage and blood disorders. This product may cause methemoglobinemia.

**Potential Health Effects: Inhalation**

This product is harmful by inhalation. Excessive inhalation may result in heartbeat irregularities and central nervous system effects including headache, sleepiness, dizziness, nausea, loss of coordination, and in extreme conditions coma and possibly death. Excessive inhalation may also cause damage to blood systems, and over time may cause kidney and liver damage, injury to reproductive and neurological systems, blood disorders and possibly cancer. Small amounts, if aspirated into the lungs, may cause mild to severe pulmonary injury.

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## Section 3 - Composition/Information on Ingredients

CAS #	Component	Percent by Wt.
68512-78-7	Solvent naphtha (petroleum), light arom., hydrotreated *	100
	The above listed CAS number and product is comprised of the following components:	
Not available	Dicyclodihydropentadiene	27-42
25550-14-5	Ethyltoluenes **	7.5-10
25550-14-5	Ethyltoluenes **	10-20
Not available	Alkylbenzenes ***	1-5
Not available	Alkylbenzenes ***	5-10
25551-13-7	Trimethylbenzene (Mixed Isomers) ****	2.5-5
25551-13-7	Trimethylbenzene (Mixed Isomers) ****	5-10
71-43-2	Benzene	0.3-5
71-43-2	Benzene	5-8
77-73-6	Dicyclopentadiene	2.5-5
77-73-6	Dicyclopentadiene	5-6
1120-21-4	n-Undecane	1.9-5
1120-21-4	n-Undecane	5-6
19489-10-2	Cis-1-methyl-3-ethylcyclohexane	3-5
91-20-3	Naphthalene	0.7-1
91-20-3	Naphthalene	1-5
95-47-6	o-xylene	0.1-1
95-47-6	o-xylene	1-3
124-18-5	n-Decane	1-2
100-42-5	Styrene	0.1-1
100-42-5	Styrene	1-2
100-41-4	Ethylbenzene	< 0.1-1
100-41-4	Ethylbenzene	1-1.5
542-92-7	1,3-Cyclopentadiene	0.1-0.5

### Additional Information

\* This product contains: 35-48% olefins, 35-40% aromatics, 6-12% isoparaffins, 1-7% naphthenes and 3-6% n-paraffins.

\*\* Includes m-ethyltoluene (CAS # 620-14-4), o-ethyltoluene (CAS # 611-14-3) and p-ethyltoluene (CAS # 622-96-8).

\*\*\* Includes n-propylbenzene (CAS # 103-65-1), 1-methyl-2-isopropylbenzene (CAS # 527-84-4) and 1,4-dimethyl-2-ethylbenzene (CAS # 1758-88-9).

\*\*\*\* Includes 1,2,3-Trimethylbenzene (CAS # 526-73-8), 1,2,4-Trimethylbenzene (CAS # 95-63-6), 1,3,5-Trimethylbenzene (CAS # 108-67-8) and 1, 2-dimethyl-3-ethylbenzene (CAS # 933-98-2).

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

This product is 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. Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical if symptoms develop or persist.

### First Aid: Skin

Remove contaminated clothing and shoes. 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.

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## 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 (NOVA Chemicals Emergency Response, 24 hours). Ensure thorough eye and skin decontamination. Treat unconsciousness, nausea, hypotension, seizures, and cardiac arrhythmias in a 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.

## 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 or flame. Vapours 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 and evacuation of 800 metres (1/2 mile) in all directions.

### Explosion Hazards

Vapours may form explosive mixture with air. Keep containers away from source of heat or fire. Evacuate personnel to a distance of at least 0.8 to 1.6 kilometres (1/2 to 1 mile) if a fire or rupture of a rail car, tank car, or major vessel is possible. This product may be a static accumulator which can form an ignitable vapour-air mixture in a storage tank.

### Hazardous Combustion Products

Upon combustion, this product emits carbon monoxide, carbon dioxide and other low molecular weight hydrocarbons, including possible toxic or irritating compounds.

### Extinguishing Media

Dry chemical, foam, carbon dioxide, and water fog. Use water to cool fire-exposed containers and to protect personnel. Water may be an ineffective extinguishing medium, and may spread flames if high-pressure direct water streams are used. Use of an inert foam extinguishing material may also assist in short term flammable vapour suppression. Monitor water run-off for flammability, and prevent from entering waterways, ditches, drains and sewers, or other confined or underground spaces.

### Fire Fighting Equipment/Instructions

Reference 2008 Emergency Response Guidebook, Guide # 128 for additional details and instructions. 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 container venting or heat discolouration of a container. Fire fighters should wear full-face, self-contained breathing apparatus and thermal protective clothing. Avoid inhaling any smoke and combustion materials. 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, ditches, drains, 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 buildup of flammable concentrations in air.

### Small Spills

Eliminate ignition sources. Stop discharge if safe to do so. Spill or leak area should be isolated immediately for 25 to 50 metres (82 to 164 feet) in all directions. Keep upwind and out of low areas. Remove liquid material with approved non-sparking pumps, skimmers or vacuum equipment. Absorb/adsorb residual liquids and clean up with non-sparking tools. Prevent entry into sewers, ditches, drains, underground or confined spaces, water intakes and waterways.

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## Large Spills

Consider downwind evacuation for 300 metres (984 feet). Isolate, contain, and attempt to recover. Absorb with DRY earth, sand or other non-combustible material. Land areas may require possible soil and ground water remediation. Prevent entry into sewers, ditches, drains, underground or confined spaces, water intakes and waterways.

## 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.

*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. If ingested, seek medical advice immediately. Avoid contact with skin and eyes. 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". Take special precautions when cold cutting or breaking into lines or when cleaning and disposing of empty containers. In case of insufficient ventilation, wear suitable respiratory equipment. 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 product. Store in grounded, properly designed and 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 floating roof or nitrogen blanketed tanks or where venting to atmosphere is permissible, equip storage tank vents with flame arrestors. Inspect vents during winter conditions for vapour ice buildup. Storage tanks should be above ground and diked to hold entire contents.

*See Section 8: Exposure Controls/Personal Protection for appropriate Personal Protective Equipment. 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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## Blended Gasoline (86290-81-5)

ACGIH: 300 ppm TWA; 890 mg/m<sup>3</sup> TWA; 500 ppm STEL; 1480 mg/m<sup>3</sup> STEL  
Alberta: 300 ppm TWA; 500 ppm STEL  
Ontario: 300 ppm TWA; 500 ppm STEL

## Trimethylbenzene (mixed isomers) (25551-13-7)

ACGIH: 25 ppm TWA; 123 mg/m<sup>3</sup> TWA  
NIOSH: 25 ppm TWA; 125 mg/m<sup>3</sup> TWA  
Alberta: 25 ppm TWA; 123 mg/m<sup>3</sup> TWA  
Ontario: 25 ppm TWA

## Benzene (71-43-2)

ACGIH: 0.5 ppm TWA; 1.6 mg/m<sup>3</sup> TWA; 2.5 ppm STEL; 8 mg/m<sup>3</sup> STEL; BEI  
Skin - potential significant contribution to overall exposure by the cutaneous route  
OSHA (Vacated)\*: 0.5 ppm Action Level; 1 ppm TWA; 5 ppm STEL (Cancer hazard, Flammable - see 29 CFR 1910.1028)  
OSHA Final: 0.5 ppm Action Level; 1 ppm TWA; 5 ppm STEL (Cancer hazard, Flammable - see 29 CFR 1910.1028); 1 ppm TWA; 10 ppm TWA (applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028); 5 ppm STEL (see 29 CFR 1910.1028); 25 ppm Ceiling (applies to industry segments exempt from the 1 ppm TWA and 5 ppm STEL of the benzene standard)  
NIOSH: 0.1 ppm TWA; 0.32 mg/m<sup>3</sup> TWA; 1 ppm STEL; 3.2 mg/m<sup>3</sup> STEL  
500 ppm IDLH  
Alberta: 0.5 ppm TWA; 1.6 mg/m<sup>3</sup> TWA; 2.5 ppm STEL; 8 mg/m<sup>3</sup> STEL  
Substance may be readily absorbed through intact skin  
Ontario: 0.5 ppm TWA; 2.5 ppm STEL  
Skin - Danger of cutaneous absorption

## Dicyclopentadiene (77-73-6)

ACGIH: 5 ppm TWA; 27 mg/m<sup>3</sup> TWA  
OSHA (Vacated)\*: 5 ppm TWA; 30 mg/m<sup>3</sup> TWA  
NIOSH: 5 ppm TWA; 30 mg/m<sup>3</sup> TWA  
Alberta: 5 ppm TWA; 27 mg/m<sup>3</sup> TWA  
Ontario: 5 ppm TWA

## Naphthalene (91-20-3)

ACGIH: 10 ppm TWA; 52 mg/m<sup>3</sup> TWA; 15 ppm STEL; 79 mg/m<sup>3</sup> STEL  
Skin - potential significant contribution to overall exposure by the cutaneous route  
OSHA (Vacated)\*: 10 ppm TWA; 50 mg/m<sup>3</sup> TWA; 15 ppm STEL; 75 mg/m<sup>3</sup> STEL  
OSHA (Final): 10 ppm TWA; 50 mg/m<sup>3</sup> TWA  
NIOSH: 10 ppm TWA; 50 mg/m<sup>3</sup> TWA; 15 ppm STEL; 75 mg/m<sup>3</sup> STEL  
250 ppm IDLH  
Alberta: 10 ppm TWA; 52 mg/m<sup>3</sup> TWA; 15 ppm STEL; 79 mg/m<sup>3</sup> STEL  
Substance may be readily absorbed through intact skin  
Ontario: 10 ppm TWA; 15 ppm STEL  
Skin - Danger of cutaneous absorption.

## o-Xylene (95-47-6)

ACGIH: 100 ppm TWA; 434 mg/m<sup>3</sup> TWA; 150 ppm STEL; 651 mg/m<sup>3</sup> STEL; BEI  
OSHA (Vacated)\*: 100 ppm TWA; 435 mg/m<sup>3</sup> TWA; 150 ppm STEL; 655 mg/m<sup>3</sup> STEL (as Xylenes (o-, m-, p-isomers))  
OSHA Final: 100 ppm TWA; 435 mg/m<sup>3</sup> TWA (as Xylenes (o-, m-, p-isomers))  
NIOSH: 100 ppm TWA; 435 mg/m<sup>3</sup> TWA; 150 ppm STEL; 655 mg/m<sup>3</sup> STEL  
900 ppm IDLH  
Alberta: 100 ppm TWA; 434 mg/m<sup>3</sup> TWA; 150 ppm STEL; 651 mg/m<sup>3</sup> STEL  
Ontario: 100 ppm TWA; 150 ppm STEL

## Styrene (100-42-5)

ACGIH: 20 ppm TWA; 85 mg/m<sup>3</sup> TWA; 40 ppm STEL; 170 mg/m<sup>3</sup> STEL; BEI  
OSHA (Vacated)\*: 50 ppm TWA; 215 mg/m<sup>3</sup> TWA; 100 ppm STEL; 425 mg/m<sup>3</sup> STEL  
OSHA Final: 100 ppm TWA; 200 ppm Ceiling  
NIOSH: 50 ppm TWA; 215 mg/m<sup>3</sup> TWA; 100 ppm STEL; 425 mg/m<sup>3</sup> STEL  
700 ppm IDLH  
Alberta: 20 ppm TWA; 85 mg/m<sup>3</sup> TWA; 40 ppm STEL; 170 mg/m<sup>3</sup> STEL  
Ontario: 35 ppm TWA; 100 ppm STEL

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## Ethylbenzene (100-41-4)

ACGIH: 20 ppm TWA; 87 mg/m<sup>3</sup> TWA; 125 ppm STEL; 543 mg/m<sup>3</sup> STEL; BEI  
OSHA (Vacated)\*: 100 ppm TWA; 435 mg/m<sup>3</sup> TWA; 125 ppm STEL; 545 mg/m<sup>3</sup> STEL  
OSHA Final: 100 ppm TWA; 435 mg/m<sup>3</sup> TWA  
NIOSH: 100 ppm TWA; 435 mg/m<sup>3</sup> TWA; 125 ppm STEL; 545 mg/m<sup>3</sup> STEL  
800 ppm IDLH (10% LEL)  
Alberta: 100 ppm TWA; 434 mg/m<sup>3</sup> TWA; 125 ppm STEL; 543 mg/m<sup>3</sup> STEL  
Ontario: 100 ppm TWA; 125 ppm STEL

## 1,3-Cyclopentadiene (542-92-7)

ACGIH: 75 ppm TWA; 203 mg/m<sup>3</sup> TWA  
OSHA (Vacated)\*: 75 ppm TWA; 200 mg/m<sup>3</sup> TWA  
OSHA (Final): 75 ppm TWA; 200 mg/m<sup>3</sup> TWA  
NIOSH: 75 ppm TWA; 200 mg/m<sup>3</sup> TWA  
750 ppm IDLH  
Alberta: 75 ppm TWA; 203 mg/m<sup>3</sup> TWA  
Ontario: 75 ppm TWA

## 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; wear tight fitting chemical goggles if vapours are present. Use face shield if splashing is possible.

### Personal Protective Equipment: Skin/Hands/Feet

Use chemically resistant gloves. 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 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.

### Personal Protective Equipment: Respiratory

If engineering controls and ventilation are not sufficient to prevent buildup of aerosols or vapours, appropriate NIOSH 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.

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## Section 9 - Physical & Chemical Properties

<b>Physical State and Appearance:</b>	Liquid	<b>Colour:</b>	Clear, amber
<b>Odour:</b>	Aromatic	<b>Odour Threshold:</b>	Not available
<b>pH:</b>	Not available	<b>Vapour Pressure:</b>	Range: 1.0 to 3.0 kPa; average is 1.6 kPa at 37.8°C (100°F)
<b>Vapour Density at 0°C (Air=1):</b>	3.5; varies based on main components	<b>Boiling Point:</b>	Range: 110°C to 200°C ( 230°F to 392°F)
<b>Melting Point:</b>	Variable; <-60°C (< -76°F)	<b>Solubility (H2O):</b>	Negligible
<b>Specific Gravity (Water=1):</b>	Range: 0.91 to 0.93	<b>Evaporation Rate (n-Butyl Acetate=1):</b>	Not available
<b>Percent Volatile:</b>	100%	<b>Octanol/H2O Coeff.:</b>	Not available
<b>Auto Ignition:</b>	425°C (797°F)	<b>Flash Point:</b>	Range: 42°C to 57°C (107.6°F to 134.6°F)
<b>Flash Point Method:</b>	Tag	<b>Upper Flammability Limit (UFL):</b>	Range: 7 to 12% (estimate)
<b>Lower Flammability Limit (LFL):</b>	1% (estimate)	<b>Flammability Classification:</b>	Flammable

## Section 10 - Stability & Reactivity Information

### Chemical Stability

Stable under normal conditions. An antioxidant e.g. as Antioxidant No. 22 is added to reduce 'gum' formation. Product is not sensitive to mechanical impact.

### Chemical Stability: Conditions to Avoid

Keep away from heat, sparks, or open flame.

### Incompatibility

This product may react with strong oxidizing agents and acids

### Possibility of Hazardous Reactions or Hazardous Polymerization

Hazardous polymerization not likely to occur.

### Corrosivity

Not corrosive to the common metals.

### Hazardous Decomposition

Upon decomposition, this product emits carbon monoxide, carbon dioxide and other low molecular weight hydrocarbons, including possible toxic or irritating compounds.

### Special Remarks

Avoid elevated temperatures and pressures, chemical incompatibilities and sources of ignition. Some components of product may become unstable at elevated temperatures and pressures.

## Section 11 - Toxicological Information

### A: Acute Toxicity - General Product Information

Similar products (mixtures) were tested under the EPA's High Production Volume (HPV) Chemical Challenge program under the Low Benzene Naphthas and Gasoline Blending Categories. Tested mixtures demonstrated minimal acute toxicity by oral, dermal and inhalation routes. They were found to be non-irritating to the eyes. Moderate skin irritation was resolved 14 days post exposure but is not likely to be a skin sensitizer. Some components may be absorbed through intact skin. Mixtures are acutely toxic to the central nervous system and may cause dizziness, headaches, loss of coordination and unconsciousness. Ingestion carries a risk of pulmonary aspiration and chemical pneumonitis, and possible death. The following additional information has been found for its components:

**Trimethylbenzene** - is a skin and respiratory irritant. Inhalation can cause central nervous system (CNS) depression.

**Benzene** - may cause corneal injury to the eye. It is also a skin irritant that may be absorbed through the skin in harmful amounts. Inhalation of benzene can irritate the respiratory tract and may result in central nervous system (CNS) depression and possible death due to respiratory failure. Ingestion and subsequent aspiration into the lungs may cause chemical pneumonitis.

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**Dicyclopentadiene (DCPD)** - contact can irritate the eyes and skin. Inhalation can irritate the nose, throat, and lungs, causing coughing, wheezing, and/or shortness of breath. DCPD is toxic to the central nervous system (CNS) and exposure may cause CNS depression, causing headache, dizziness, nausea, vomiting, loss of coordination and unconsciousness.

**Undecane** - contact can irritate eyes and skin. In general, decanes have very low oral toxicity although ingestion is not a typical route of occupational exposure.

**Naphthalene** - can irritate the skin, eyes, nose, and throat. Contact may cause corneal damage. Inhalation of high concentrations may result in central nervous system (CNS) depression, causing headache, fatigue, confusion, nausea, vomiting and unconsciousness. Ingestion can cause nausea, vomiting, diarrhoea, liver damage, kidney damage, and haemolytic anemia, which may lead to methemoglobinemia.

**o-Xylene** - vapours 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, and in extreme conditions coma and possibly death. Ingestion and subsequent aspiration into the lungs may cause chemical pneumonitis.

**Styrene** - contact can irritate the eyes and skin. Vapours irritate the eyes and respiratory system and at high concentrations may result in central nervous system (CNS) depression, causing headache, dizziness, nausea, loss of coordination and unconsciousness.

**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.

**1,3-Cyclopentadiene** - can irritate the eyes and mucous membranes. Can irritate the skin causing a rash or burning feeling on contact. Inhalation may cause central nervous system (CNS) depression, causing headache, dizziness, nausea, loss of coordination, unconsciousness, and in extreme conditions coma and possibly death. CNS depression with terminal seizures has been noted in animal tests; however, seizures have not been reported in exposed humans.

## B: Acute Toxicity - LD50/LC50

### Full Range Catalytic Reformed Naphtha (FRCRN):

Oral LD50: 6.62 g/kg (males), 5.39 g/kg (females); Dermal LD50: >2g/kg; Inhalation LC50: >5220 mg/m<sup>3</sup>/4H (fully vaporized)

### o-Ethyltoluene (611-14-3)

Inhalation LC50 Mouse: 54 g/m<sup>3</sup>/4H

### p-Ethyltoluene (622-96-8)

Oral LD50 Rat: 4850 mg/kg; Inhalation LC50 Mouse: 54,000 mg/m<sup>3</sup>/4H

### n-Propylbenzene (103-65-1)

Oral LD50 Rat: 6040 mg/kg

### Benzene, 1-methyl-2-(1-methylethyl) (527-84-4)

Oral LD50 Rat 2130 mg/kg

### 1,2,4-Trimethylbenzene (95-63-6)

Inhalation LC50 Rat: 18 g/m<sup>3</sup>/4H; Oral LD50 Rat: 3400 mg/kg; Dermal LD50 Rabbit: >3160 mg/kg

### 1,3,5-Trimethylbenzene (108-67-8)

Inhalation LC50 Rat: 24 g/m<sup>3</sup>/4H; Oral LD50 Rat: 5000 mg/kg

### Benzene (71-43-2)

Inhalation LC50 Rat 13,050-14,380 ppm/4H; Oral LD50 Rat 1800 mg/kg

### Dicyclopentadiene (77-73-6)

Inhalation LC50 Rat: 500 ppm/4H; Oral LD50 Rat: 346.5 mg/kg; Dermal LD50 Rat: >2000 mg/kg; Dermal LD50 Rabbit: 4380 mg/kg

### n-Undecane (1120-21-4)

Inhalation LC50 Rat: >442 ppm/8H

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**Naphthalene (91-20-3)**

Inhalation LC50 Rat: >340 mg/m<sup>3</sup>/1H; Oral LD50 Rat: 490 mg/kg; Dermal LD50 Rat: >2500 mg/kg; Dermal LD50 Rabbit: >20 g/kg

**o-Xylene (95-47-6)**

Inhalation LC50 Rat 2180 ppm/4H; Oral LD50 Rat 3609 mg/kg

**n-Decane (124-18-5)**

Inhalation LC50 Mouse: 72,300 mg/m<sup>3</sup>/2H; Oral LD50 Rat: >5000 mg/kg; Dermal LD50 Rat: >2000 mg/kg

**Styrene (100-42-5)**

Inhalation LC50 Rat: 11.8 mg/L/4H; Oral LD50 Rat: 1000 mg/kg

**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

**1,3-Cyclopentadiene (542-92-7)**

Oral LD50 Rat: 113 mg/kg; Dermal LD50 Rabbit: 430 mg/kg

## C: Chronic Toxicity - General Product Information

Similar products (mixtures) were tested under the EPA's High Production Volume (HPV) Chemical Challenge program under the Low Benzene Naphthas and Gasoline Blending categories. Prolonged or repeated skin contact may cause a defatting dermatitis. Inhalation studies of selected hydrocarbon mixtures demonstrated lung irritation and toxic effects to skin (irritation), nasal epithelium, blood (anemia), liver, and kidneys of treated animals at high doses. Only kidney effect (male rate nephropathy) was observed after a 4-week recovery period. Neurotoxicity was not demonstrated in these mixed blended streams. In vivo mutagenic activity in mammalian cells (with metabolic activation) was found to be correlated to high aromatic (60 to 90%) content streams. No significant reproductive or developmental effects were observed on testing high aromatic streams. The following additional information has been found for its components:

**Trimethylbenzene** - chronic exposure may produce symptoms of asthmatic bronchitis, headache, drowsiness, nervousness, anemia and blood abnormalities.

**Benzene** - prolonged and/or repeated exposure can cause drying and scaling of the skin. Long-term exposure has been associated with certain types of leukemia in humans. IARC and OSHA consider benzene to be a human carcinogen. EPA has classified benzene as a Group A, known human carcinogen. Chronic exposure to benzene has been reported to cause bone marrow abnormalities and adverse blood effects including anemia. Progressive deterioration of haematopoietic function expressed as a decrease in absolute lymphocyte count is the most sensitive indicator of benzene exposure. Benzene may cause fetotoxicity and teratogenicity. Chromosomal aberrations have been noted in animal tests.

**Dicyclopentadiene (DCPD)** - prolonged and repeated exposure may damage the liver, kidney and the adrenal glands. Signs of intoxication in animals include excessive salivation, anorexia and loss of coordination. At higher doses, effects include convulsions, gastrointestinal disturbance, and haemorrhage of the lungs and intestines. Testing indicates that DCPD is not a skin sensitizer.

**Naphthalene** - prolonged and repeated exposure can cause cataracts and allergic skin reactions. If allergy develops, very low repeated exposure can cause itching and a skin rash. Chronic exposure may result in jaundice, optical neuritis, aplastic anemia, liver damage, kidney damage, and haemolytic anemia, which may lead to methemoglobinemia. Naphthalene has been shown to cause nasal and lung cancer in animal tests and has been classified by IARC as Group 2B (possibly carcinogenic to humans). NTP has listed naphthalene as "Reasonably Anticipated to be a Carcinogen". Naphthalene was not mutagenic in the Ames Salmonella microsome assay.

**o-Xylene** – 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.

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**Styrene** - chronic exposure at high concentration may result in CNS depression and may have an effect on hearing. It also may result in neurological defects known as "styrene sickness". Prolonged skin contact may produce irritation and defatting dermatitis. Styrene has been classified by IARC as Group 2B (possibly carcinogenic to humans) based on "limited evidence" in humans, "limited evidence" in animals, and "other relevant data". The National Toxicology Program (NTP) classified styrene as "reasonably anticipated to be a human carcinogen". Styrene has been shown to be mutagenic in several *in vitro* assays.

**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).

**1,3-Cyclopentadiene** - prolonged and repeated contact may cause a skin sensitization (allergy). If an allergy develops, very low future exposure can cause itching and a skin rash. Chronic exposure may cause headache, abdominal pain, jaundice and anemia. Cyclopentadiene has been shown to cause mild liver and kidney injury in repeat exposure animal tests.

## D: Component Carcinogenicity

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

### Blended Gasoline (86290-81-5)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans  
IARC: Monograph 45, 1989 (Group 2B (possibly carcinogenic to humans) (related to Gasoline))

### Benzene (71-43-2)

ACGIH: A1 - Confirmed Human Carcinogen  
OSHA: 0.5 ppm Action Level; 1 ppm TWA; 5 ppm STEL (Cancer hazard, Flammable - see 29 CFR 1910.1028)  
EPA: Classification: known human carcinogen for all routes of exposure.  
NTP: Known Human Carcinogen  
IARC: Monograph 100F [in prep], Supplement 7 [1987], Monograph 29 [1982] (Group 1 (carcinogenic to humans))

### Naphthalene (91-20-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen  
EPA: Classification: possible human carcinogen  
NTP: Reasonably Anticipated To Be A Human Carcinogen  
IARC: Monograph 82 [2002] (Group 2B (possibly carcinogenic to humans))

### o-Xylene (95-47-6)

ACGIH: A4 - Not Classifiable as a Human Carcinogen  
IARC: Monograph 71 [1999] (Group 3 (not classifiable))

### Styrene (100-42-5)

ACGIH: A4 - Not Classifiable as a Human Carcinogen  
NTP: Reasonably Anticipated To Be A Human Carcinogen  
IARC: Monograph 82 [2002]; Monograph 60 [1994] (Group 2B (possibly carcinogenic to humans))

### 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))

## Section 12 - Ecological Information

### Ecotoxicity

#### A: General Product Information

Similar hydrocarbon mixtures were tested under the EPA's High Production Volume (HPV) Chemical Challenge program under the Low Benzene Naphthas and Gasoline Blending categories. Product is volatile, insoluble in water and will float on water. Mixtures are toxic to freshwater algae, freshwater fish and invertebrates.

#### B: Component Analysis - Ecotoxicity - Aquatic Toxicity

##### Low Benzene Naphthas (C8-C10 Aromatics, Predominantly C9 Aromatics)

Test & Species	Results and Conditions
96 Hr LL50 Oncorhynchus mykiss	18 mg/L
48 Hr EL50 Daphnia magna	21.3 mg/L

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72 Hr EbL50 Pseudokirchneriella subcapitata	2.6 mg/L
<b>1,2,4-Trimethylbenzene (95-63-6)</b>	
<b>Test and Species</b>	<b>Results and Conditions</b>
48 Hr EC50 Daphnia magna	6.14 mg/L
96 Hr LC50 Pimephales promelas	7.72 mg/L [flow-through]
<b>1,3,5-Trimethylbenzene (108-67-8)</b>	
<b>Test &amp; Species</b>	<b>Results and Conditions</b>
96 Hr LC50 Pimephales promelas	3.48 mg/L
24 Hr EC50 water flea	50 mg/L
<b>Benzene (71-43-2)</b>	
<b>Test and Species</b>	<b>Results and Conditions</b>
96 Hr LC50 Pimephales promelas	10.7-14.7 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	5.3 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	22.49 mg/L [static]
96 Hr LC50 Poecilia reticulata	28.6 mg/L [static]
96 Hr LC50 Pimephales promelas	22,330-41,160 µg/L [static]
96 Hr LC50 Lepomis macrochirus	70,000-142,000 µg/L [static]
72 Hr EC50 Pseudokirchneriella subcapitata	29 mg/L
48 Hr EC50 Daphnia magna	8.76-15.6 mg/L [static]
48 Hr EC50 Daphnia magna	10 mg/L
<b>Dicyclopentadiene (77-73-6)</b>	
<b>Test &amp; Species</b>	<b>Results and Conditions</b>
96 Hr LC50 Lepomis macrochirus	23 mg/L
96 Hr EC50 Selenastrum capricornutum	>100 mg/L
48 Hr EC50 Daphnia magna	11 mg/L
<b>Naphthalene (91-20-3)</b>	
<b>Test &amp; Species</b>	<b>Results and Conditions</b>
96 Hr LC50 Pimephales promelas	6.14 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	1.60 mg/L [flow-through, juvenile]
96 Hr LC50 Pimephales promelas	6.08 mg/L [flow-through]
96 Hr LC50 Pimephales promelas	1.99 mg/L
96 Hr EC50 Skeletonema costatum	0.4 mg/L
30 min EC50 Photobacterium phosphoreum	0.93 mg/L
48 Hr EC50 water flea	2.16 mg/L
<b>o-Xylene (95-47-6)</b>	
<b>Test and Species</b>	<b>Results and Conditions</b>
48 Hr EC50 Daphnia magna	3.2 mg/L
48 Hr EC50 Daphnia magna	2.61-5.59 mg/L [Flow through]
48 Hr EC50 Daphnia magna	0.78-2.51 mg/L [Static]
96 Hr LC50 Pimephales promelas	11.6-22.4 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	11.6-22.4 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	5.59-11.6 mg/L [flow-through]
96 Hr LC50 Poecilia reticulate	12 mg/L
72 Hr EC50 Pseudokirchneriella subcapitata	4.7 mg/L [static]
<b>n-Decane (124-18-5)</b>	
<b>Test &amp; Species</b>	<b>Results and Conditions</b>
24 Hr EC50 Chlorella vulgaris	0.043 mg/L
48 Hr EC50 Daphnia magna	0.029 mg/L
<b>Styrene (100-42-5)</b>	
<b>Test and Species</b>	<b>Results and Conditions</b>
72 Hr EC50 Pseudokirchneriella subcapitata	1.4 mg/L
96 Hr EC50 Pseudokirchneriella subcapitata	0.72 mg/L
72 Hr EC50 Pseudokirchneriella subcapitata	0.46-4.3 mg/L [static]
96 Hr EC50 Pseudokirchneriella subcapitata	0.15-3.2 mg/L [static]
<b>Ethylbenzene (100-41-4)</b>	
<b>Test &amp; Species</b>	<b>Results and Conditions</b>
72 Hr EC50 Pseudokirchneriella subcapitata	4.6 mg/L
96 Hr EC50 Pseudokirchneriella subcapitata	>438 mg/L
72 Hr EC50 Pseudokirchneriella subcapitata	2.6-11.3 mg/L [static]

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96 Hr EC50 Pseudokirchneriella subcapitata  
48 Hr EC50 Daphnia magna

1.7-7.6 mg/L [static]  
1.8-2.4 mg/L

## Environmental Fate/Mobility

Fugacity modeling demonstrates mixtures will partition primarily to air, with slight partitioning to water, and soils. Calculations of atmospheric half-lives of components range from 2.3 to 31.8 hours, due to indirect hydrolysis by hydroxyl radical attack. Will have a low ability to hydrolyze. Some migration through soils and groundwater.

## Persistence/Degradability

Will photodegrade rapidly and is likely to biodegrade significantly into non-toxic products over time, at variable rates depending on conditions.

## Bioaccumulation/Accumulation

Not expected to bioaccumulate.

## Section 13 - Disposal Considerations

### U.S./Canadian Waste Information

#### A: General Product Information

This product may generate a hazardous waste according to US and Canadian regulations. The use, mixing or processing of this material may alter its properties or hazards. 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 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

##### Benzene (71-43-2)

RCRA: waste number U019 (Ignitable waste, Toxic waste); 0.5 mg/L regulatory level

##### Naphthalene (91-20-3)

RCRA: waste number U165

##### o-Xylene (95-47-6)

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

## Section 14 - Transportation Information

### US DOT Information

**Shipping Name:** Petroleum distillates, n.o.s.

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

**Required Label(s):** FLAMMABLE LIQUID

**Additional Info.:** NOTE: The Reportable Quantity for benzene is 10 lbs. (4.54 kg). The Reportable Quantity for naphthalene is 100 lbs. (45.4 kg). The Reportable quantity for ethylbenzene is 1000 lbs. (454 kg).

2008 Emergency Response Guidebook: Guide No. 128

### Canadian TDG Information

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

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

**Required Label(s):** FLAMMABLE LIQUID

**Additional Info.:** 2008 Emergency Response Guidebook: Guide No. 128

### International Air Transport Association (IATA) and International Civil Aviation Organization (ICAO) Information

**Shipping Name:** Petroleum distillates, n.o.s.

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

**Required Label(s):** FLAMMABLE LIQUID

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Material Name: **C9-200 Hydrocarbons**

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## International Maritime Dangerous Goods (IMDG) Code

**Shipping Name:** Petroleum distillates, n.o.s.

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

**Required Label(s):** FLAMMABLE LIQUID

**Additional Info.:** EmS No: F-E, S-E

**Marine Pollutant:** No

## Section 15 - Regulatory Information

### International Regulations

#### Component Analysis - International Inventory Status

Component	CAS #	US - TSCA	CANADA - DSL	EU - EINECS
Solvent naphtha (petroleum), light arom., hydrotreated	68512-78-7	Yes	Yes	Yes

For additional regulatory information, please contact your NOVA Chemicals' representative or Product Integrity.

### Canadian Regulations - Federal and Provincial

Canadian Environmental Protection Act (CEPA): This product is on the Domestic Substances List (DSL) and is acceptable for use under the provisions of CEPA.

### WHMIS Ingredient Disclosure List (IDL)

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

Component	CAS #	Minimum Concentration
Trimethylbenzene	25551-13-7	1 %
1,2,3-Trimethylbenzene	526-73-8	1 %
1,2,4-Trimethylbenzene	95-63-6	0.1 %
1,3,5-Trimethylbenzene	108-67-8	0.1 %
Benzene	71-43-2	0.1 %
Dicyclopentadiene	77-73-6	1 %
Naphthalene	91-20-3	1 %
o-xylene	95-47-6	1 %
Styrene	100-42-5	0.1 %
Ethylbenzene	100-41-4	0.1 %
1,3-Cyclopentadiene	542-92-7	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 B3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).

WHMIS CLASS D1A: Very Toxic (Dicyclopentadiene)

WHMIS CLASS D2A: Carcinogen (Benzene, Naphthalene, Styrene, Ethylbenzene), Mutagen (Benzene)

WHMIS CLASS D2B: Toxic

### Other Regulations

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

## Section 16 - Other Information

### Label Information

**DANGER! FLAMMABLE! TOXIC! POSSIBLE CANCER HAZARD!** Product is a clear amber liquid with an aromatic odour. Vapour is heavier than air and may spread long distances. Distant ignition and flashback are possible. Liquid and vapour can accumulate static charge. Liquid can float on water and may travel to distant locations and/or spread fire. This product is harmful by inhalation, skin contact and if it is swallowed. This product is irritating to the eyes and skin. Excessive inhalation or ingestion may result in liver and kidney damage, blood disorders and central nervous system effects including headache, sleepiness, dizziness, nausea, loss of coordination, and in extreme conditions coma and possibly death. Small amounts, if aspirated into the lungs, may cause mild to severe pulmonary injury. Contains components that may cause cancer.

#### FIRST AID:

**SKIN:** Remove contaminated clothing and shoes. 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 it can be done safely. Immediately flush eyes with water for at least 15 minutes, while

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holding eyelids open. Seek medical 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 metres (984 feet). Isolate, contain, and attempt to recover. Absorb with DRY earth, sand or other non-combustible material. Land areas may require possible soil and ground water remediation. Prevent entry into sewers, ditches, drains, underground or confined spaces, water intakes and waterways.

## 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".

## Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; ADR = Transport of Dangerous Goods by Road; ADR/RID = European Agreement of Dangerous Goods by Road/Rail; BOD = Biochemical Oxygen Demand; CAS = Chemical Abstracts Service; CEPA = Canadian Environmental Protection Act; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; CPR = Controlled Products Regulations; DFG = Deutsche Forschungsgemeinschaft; DOT = Department of Transportation; DSL = Domestic Substances List; EC50 = Effective Concentration 50%; EEC = European Economic Community; EINECS = European Inventory of Existing Commercial Chemical Substances; ELINCS = European List of Notified Chemical Substances; EPA = Environmental Protection Agency; EU = European Union; FDA = Food and Drug Administration; GHS = Globally Harmonized System for the Classification and Labelling of Chemicals; HCS = Hazard Communication Standard; HMIS = Hazardous Materials Identification System; IARC = International Agency for Research on Cancer; IATA = International Air Transport Association; ICAO = International Civil Aviation Organization; IDL = Ingredient Disclosure List; IDLH = Immediately Dangerous to Life or Health; IMDG = International Maritime Dangerous Goods; IMO = International Maritime Organization; ISHL = Industrial Safety and Health Law; Kow = Octanol/water partition coefficient; LC50 = Lethal Concentration 50%; LD50 = Lethal Dose 50%; LEL = Lower Explosive Limit; LFL = Lower Flammable Limit; LLV = Level Limit Ceiling Limit (Sweden dust); MAK = Maximum Concentration Value in the Workplace; MITI = Ministry of International Trade and Industry; MSDS = Material Safety Data Sheet; NAB = Threshold Values (Indonesia); NCEC = National Chemical Emergency Centre; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OEL = Occupational Exposure Limit; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; PNOC = Particulates Not Otherwise Classified; PPE = Personal Protective Equipment; PRTR = Designated Chemical Substance Law (Japan); PSD = Short Term Exposure Limit (Indonesia); RCRA = Resource Conservation and Recovery Act; REACH = Registration, Evaluation, Authorisation and Restriction of Chemical Substances; REL = Recommended Exposure Limit; RID = Transport of Dangerous Goods by Rail; SARA = Superfund Amendments and Reauthorization Act; SCBA = Self Contained Breathing Apparatus; SDS = Safety Data Sheet; SEPA = State Environmental Protection Administration; STEL = Short Term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average; UEL = Upper Explosive Limit; UFL = Upper Flammable Limit; VLA-ED = Valor límite Ambiental de Exposición Diaria (Environmental Exposure Daily Limit Value); VME = valeur limite d'exposition (Occupational Exposure Limits); WHMIS = Workplace Hazardous Materials Information Systems

**MSDS Prepared by:** NOVA Chemicals

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

## Other Information

### Notice to Reader:

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This is the end of MSDS # NOVA-0020.