

# SAFETY DATA SHEET

Classified in accordance with 29 CFR 1910.1200

## 1. Identification

**Product identifier:** Pyrolysis Fuel Oil - Joffre**Other means of identification****Common name(s),** PFO; Heavy Fuel Oils; Olefins Manufacturing Tower Bottoms**synonym(s):****SDS number:** NOVA-0036**Recommended use and restriction on use****Recommended use:** Petrochemical feedstocks, fuels.**Restrictions on use:** All uses other than the identified.**Manufacturer/Importer/Supplier/Distributor Information****Manufacturer**

Company Name: NOVA Chemicals  
Address: P.O. Box 2518, Station M  
Calgary, Alberta, Canada T2P 5C6  
Telephone: Product Information: 1-412-490-4063  
SDS Information Email: [msdsemail@novachem.com](mailto:msdsemail@novachem.com)

**Emergency telephone number:**

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

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

## 2. Hazard(s) identification

**Hazard Classification****Physical Hazards**

Flammable liquids Category 3

**Health Hazards**

Skin Corrosion/Irritation Category 2

Serious Eye Damage/Eye Irritation Category 2A

Germ Cell Mutagenicity Category 1B

Carcinogenicity Category 1A

Toxic to reproduction Category 2

Specific Target Organ Toxicity -  
Repeated Exposure Category 1Specific Target Organ Toxicity -  
Repeated Exposure Category 2

Aspiration Hazard Category 1

**Environmental Hazards**Acute hazards to the aquatic  
environment Category 2Chronic hazards to the aquatic  
environment Category 2**Label Elements**

**Hazard Symbol:****Signal Word:**

Danger

**Hazard Statement:**

Flammable liquid and vapor.  
Causes skin irritation.  
Causes serious eye irritation.  
May cause genetic defects.  
May cause cancer.  
Suspected of damaging fertility or the unborn child.  
Causes damage to organs through prolonged or repeated exposure.  
(Blood)  
(Auditory system)  
May cause damage to organs through prolonged or repeated exposure.  
(Central nervous system)  
(Hearing organs)  
May be fatal if swallowed and enters airways.  
Toxic to aquatic life with long lasting effects.

**Precautionary Statements:****Prevention:**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Take action to prevent static discharges. Do not breathe dust/fume/gas/mist/vapors/spray. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

**Response:**

IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water [or shower]. If skin irritation occurs: Get medical advice/attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention. In case of fire: Use dry chemical, foam, carbon dioxide (CO<sub>2</sub>), water spray or fog to extinguish. Collect spillage.

**Storage:**

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

**Disposal:**

Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Other hazards which do not result in GHS classification:**

None.

**3. Composition/information on ingredients****Mixtures**

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
Fuel Oil, Pyrolysis **	PFO	69013-21-4	100%
Naphthalene	Naphthalene	91-20-3	10 - 25%
1H-Indene	Indene, Benzocyclopentadiene	95-13-6	2 - 10%
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	Dicyclopentadiene, DCPD	77-73-6	1 - 10%
Benzene	Benzol	71-43-2	0 - 5%
1-Pentene	Pent-1-ene	109-67-1	0 - 3%
n-Undecane	Undecane	1120-21-4	0.6 - 2%
Benzene, ethenyl-	Styrene	100-42-5	0.1 - 2%
Toluene	Methylbenzene	108-88-3	0.01 - 1%
Benzene, dimethyl-	Xylene (mixed isomers)	1330-20-7	0.01 - 1%
Benzene, ethyl-	Ethylbenzene, Phenylethane	100-41-4	0 - 1%
1,3-Butadiene, 2-methyl-	Isoprene	78-79-5	0 - 1%
1,1'-Biphenyl	Biphenyl	92-52-4	0 - 1%
2-Octene	Octene-2	111-67-1	0 - 0.5%

\* All concentrations are percent by weight.

**Additional Information:**

\*\* This product has been assigned a CAS # of 69013-21-4 - Fuel Oil, Pyrolysis. It is comprised of the above listed components. Polycyclic aromatic hydrocarbons (no CAS # available) are also present (12-17 wt%). Asphaltene (heptane insoluble) (no CAS # is available) is also present (0.1-1.3 wt%). This product is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

**4. First-aid measures**

<b>Inhalation:</b>	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention.
<b>Ingestion:</b>	IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.
<b>Skin Contact:</b>	IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water [or shower]. If skin irritation occurs: Get medical advice/attention.
<b>Eye contact:</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

**Most important symptoms/effects, acute and delayed**

**Symptoms:** Eye irritation. Skin irritation. Blood disorders.

**Indication of immediate medical attention and special treatment needed**

**Treatment:** For more detailed medical emergency support information, call 1-800-561-6682 or 1-403-314-8767 (24 hours, NOVA Chemicals Emergency Response). Ensure thorough eye and skin decontamination. Treat unconsciousness, nausea, hypotension, seizures and cardiac arrhythmias in the conventional manner. Aspiration of this product during induced emesis can result in lung injury. If evacuation of

stomach contents is considered necessary, use the method least likely to cause aspiration, such as gastric lavage after protecting the airway. Observe hospitalized patients for delayed chemical pneumonia, acute tubular necrosis, encephalopathy and dysrhythmias. Monitor for urinary phenol within 72 hours of acute exposure.

## 5. Fire-fighting measures

**General Fire Hazards:** Flammable liquid. Vapors are heavier than air and may travel to a source of ignition and flash back. Closed containers may rupture violently when heated. Burns readily when heated to high temperatures. Consider initial downwind evacuation for at least 300 meters (1000 feet). If tank is involved in fire, ISOLATE for 800 meters (1/2 mile) in all directions. Heated vapors may form explosive mixture with air. Keep containers away from source of heat or fire.

### Suitable (and unsuitable) extinguishing media

**Suitable extinguishing media:** Use dry chemical, foam, carbon dioxide (CO<sub>2</sub>), water spray or fog to extinguish. Use water to cool fire-exposed containers and to protect personnel.

**Unsuitable extinguishing media:** Do not use straight/direct streams as this may actually spread flames.

**Specific hazards arising from the chemical:** Upon combustion, this product emits carbon monoxide, carbon dioxide, low molecular weight hydrocarbons, acidic gases, nitrogen oxides, oxides of sulfur.

### Special protective equipment and precautions for firefighters

**Special fire fighting procedures:** Keep upwind. Keep unauthorized personnel away. Move containers from fire area if you can do so without risk. Fight fire from maximum distance or use unmanned holders or monitor nozzles. Immediately withdraw in case of fire and container venting or heat discoloration of a container. Avoid inhaling any smoke and combustion materials. Remove and isolate contaminated clothing and shoes. Cool containers with flooding quantities of water until well after the fire is out. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Reference Emergency Response Guidebook No. 128 for additional details and instructions.

**Special protective equipment for fire-fighters:** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unauthorized personnel away. Monitor surrounding area for buildup of flammable concentrations in air. Alert stand-by emergency and fire fighting personnel.

**Methods and material for containment and cleaning up:** Wear appropriate personal protective equipment. Do not touch or walk through spilled material. In case of leakage, eliminate all ignition sources. Keep upwind. Keep out of low areas. Stop leak if safe to do so. Contain discharge by booming on water or diking on ground. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Use non-sparking tools.

Large Spills: Consider downwind evacuation for 300 meters (1000 feet). A vapor-suppressing foam may be used to reduce vapors. Remove pooled liquid material with approved, non-sparking pumps, skimmers or vacuum equipment. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Soil remediation may be required.

## 7. Handling and storage

**Precautions for safe handling:** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Take action to prevent static discharges. Take special precautions when cold cutting or breaking into lines, or when cleaning and disposing of empty containers. Parts and equipment should be steam cleaned prior to maintenance procedures. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes. Keep away from incompatible materials such as oxidizing agents and acids. Wash hands thoroughly after handling. Do not eat, drink or smoke when using the product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation, use respiratory protection.

**Conditions for safe storage, including any incompatibilities:** Storage area should be clearly identified, well-illuminated and clear of obstruction. Store in a well-ventilated place. Store locked up. Only allow access to authorized persons. Store and handle in properly designed pressure vessels and equipment. Store and use away from heat, sparks, open flame, or any other ignition source. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Have appropriate extinguishing capability in storage area (e.g. sprinkler system, portable fire extinguishers) and flammable gas detectors. Keep absorbents for leaks and spills readily available. Prevent soil contamination. Equip storage vessel vents with a flame arrestor. Inspect vents during winter conditions for vapor ice buildup. Storage tanks should be above ground and diked to hold entire contents. Store away from incompatible materials. Store according to applicable regulations and standards for flammable materials.

Recommended maximum temperature for storage and loading is below the flashpoint.

## 8. Exposure controls/personal protection

### Control Parameters

#### Occupational Exposure Limits

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

Chemical Identity	Type	Exposure Limit Values	Source
Naphthalene	TWA	10 ppm	US. ACGIH Threshold Limit Values, as amended
	PEL	10 ppm 50 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	STEL	15 ppm 75 mg/m <sup>3</sup>	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA	10 ppm 50 mg/m <sup>3</sup>	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended

	REL	10 ppm	50 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	15 ppm	75 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	IDLH	250 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
1H-Indene	TWA	5 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	10 ppm	45 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	10 ppm	45 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	5 ppm	30 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	5 ppm	30 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	1 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	0.5 ppm		US. ACGIH Threshold Limit Values, as amended
Benzene	TWA	0.5 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	2.5 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	5 ppm		US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053), as amended
	TWA	1 ppm		US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053), as amended
	OSHA_A C T	0.5 ppm		US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053), as amended
	TWA	1 ppm		US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	5 ppm		US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	Ceiling	25 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	TWA	10 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	MAX. CONC	50 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	REL	0.1 ppm		US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	1 ppm		US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	IDLH	500 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Benzene, ethenyl-	STEL	40 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	100 ppm	425 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA	50 ppm	215 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA	100 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	MAX. CONC	600 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	Ceiling	200 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	REL	50 ppm	215 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	100 ppm	425 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	IDLH	700 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Toluene	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	150 ppm	560 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA	100 ppm	375 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	MAX. CONC	500 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	TWA	200 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended



	Ceiling	300 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	STEL	150 ppm 560 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	REL	100 ppm 375 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	IDLH	500 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Benzene, dimethyl-	TWA	100 ppm	US. ACGIH Threshold Limit Values, as amended
	STEL	150 ppm	US. ACGIH Threshold Limit Values, as amended
	PEL	100 ppm 435 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	100 ppm 435 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	150 ppm 655 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	100 ppm 435 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	150 ppm 655 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene, ethyl-	TWA	20 ppm	US. ACGIH Threshold Limit Values, as amended
	PEL	100 ppm 435 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	STEL	125 ppm 545 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA	100 ppm 435 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	100 ppm 435 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	125 ppm 545 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	IDLH	800 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
1,1'-Biphenyl	TWA	0.2 ppm	US. ACGIH Threshold Limit Values, as amended
	PEL	0.2 ppm 1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	0.2 ppm 1 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	0.2 ppm 1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	IDLH	100 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended

### Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
Benzene (t,t-Muconic acid: Sampling time: End of shift.)	500 µg/g (Creatinine in urine)	ACGIH BEI
Benzene (S-Phenylmercapturic acid: Sampling time: End of shift.)	25 µg/g (Creatinine in urine)	ACGIH BEI
Benzene, ethenyl- (Mandelic acid plus phenylglyoxylic acid: Sampling time: End of shift.)	400 mg/g (Creatinine in urine)	ACGIH BEI
Benzene, ethenyl- (styrene: Sampling time: End of shift.)	40 µg/l (Urine)	ACGIH BEI
Toluene (toluene: Sampling time: End of shift.)	0.03 mg/l (Urine)	ACGIH BEI
Toluene (toluene: Sampling time: Prior to last shift of work week.)	0.02 mg/l (Blood)	ACGIH BEI
Toluene (o-Cresol, with hydrolysis: Sampling time: End of shift.)	0.3 mg/g (Creatinine in urine)	ACGIH BEI
Benzene, dimethyl- (Methylhippuric acids: Sampling time: End of shift.)	1.5 g/g (Creatinine in urine)	ACGIH BEI

Benzene, ethyl- (Sum of mandelic acid and phenylglyoxylic acid: Sampling time: End of shift.)	0.15 g/g (Creatinine in urine)	ACGIH BEI
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**Exposure guidelines**

Chemical Identity	Notations	Source
Naphthalene	Can be absorbed through the skin.	US. ACGIH Threshold Limit Values, as amended
Benzene	Can be absorbed through the skin.	US. ACGIH Threshold Limit Values, as amended

**Appropriate Engineering Controls**

Engineering methods to reduce hazardous exposure are preferred controls. Methods include mechanical ventilation (dilution and local exhaust) process or personal enclosure, remote and automated operation, control of process conditions, leak detection and repair systems, and other process modifications. Ensure all exhaust ventilation systems are discharged to outdoors, away from air intakes and ignition sources. Supply sufficient replacement air to make up for air removed by exhaust systems. Administrative (procedure) controls and use of personal protective equipment may also be required.

**Individual protection measures, such as personal protective equipment**

- General information:** Personal protective equipment (PPE) should not be considered a long-term solution to exposure control. Employer programs to properly select, fit, maintain and train employees to use equipment must accompany PPE. Consult a competent industrial hygiene resource, the PPE manufacturer's recommendation, and/or applicable regulations to determine hazard potential and ensure adequate protection.
- Eye/face protection:** Safety glasses. Chemical goggles are recommended if splashing is possible or to prevent eye irritation from heated vapors or mists.
- Skin Protection**
- Hand Protection:** Chemical resistant gloves.
- Skin and Body Protection:** Wear appropriate clothing to prevent any possibility of skin contact. Wear work clothes with long sleeves and pants. If splashing or contact with liquid material is possible, consider the need for an impervious overcoat. Fire resistant (i.e., Nomex) or natural fiber clothing (i.e., cotton or wool) is recommended. Synthetic clothing can generate static electricity and is not recommended where a flammable vapor release may occur. Wear chemical-resistant safety footwear with good traction to prevent slipping. Static Dissipative (SD) rated footwear is also recommended.
- Respiratory Protection:** Appropriate NIOSH approved air-purifying respirator or self-contained breathing apparatus should be used. Air supplied breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.
- Hygiene measures:** Use effective control measures and PPE to maintain worker exposure to concentrations that are below these limits. Ensure that eyewash stations and safety showers are in close proximity to work locations.

**9. Physical and chemical properties****Appearance**

<b>Physical state:</b>	liquid
<b>Form:</b>	Oily
<b>Color:</b>	Dark



<b>Odor:</b>	Pungent, Disagreeable
<b>Odor Threshold:</b>	< 1 ppm (various components)
<b>pH:</b>	not applicable
<b>Melting point/freezing point:</b>	-57 - -36 °C (-71 - -33 °F)
<b>Initial boiling point and boiling range:</b>	80 - 522 °C (176 - 972 °F)
<b>Flash Point:</b>	28 - 80 °C (82 - 176 °F) (PMCC)
<b>Evaporation rate:</b>	No data available.
<b>Flammability (solid, gas):</b>	not applicable
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability Limit - Upper (%):</b>	5.9 %(V) (Naphthalene)
<b>Flammability Limit - Lower (%):</b>	0.9 %(V) (Naphthalene)
<b>Vapor pressure:</b>	< 1 mm HG (20 °C (68 °F)) (estimated)
<b>Vapor density:</b>	> 2 (estimated) (various components) (Air=1)
<b>Density:</b>	1,005 - 1,042 kg/m <sup>3</sup>
<b>Relative density:</b>	1.005 - 1.042 (15 °C (59 °F)) (Water=1)
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	Insoluble in water
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	No data available.
<b>Auto-ignition temperature:</b>	No data available.
<b>Decomposition temperature:</b>	No data available.
<b>Viscosity:</b>	5.0 - 9.9 mm <sup>2</sup> /s (40 °C (104 °F))

## 10. Stability and reactivity

<b>Reactivity:</b>	Reacts with oxidizing agents, can readily cause fire or explosion when in contact with open flame or excessive heat.
<b>Chemical Stability:</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions:</b>	No data available.
<b>Conditions to avoid:</b>	Exposure to open flame or excessive heat can cause fire or explosion. Keep away from heat, sparks and open flame.
<b>Incompatible Materials:</b>	Oxidizing agents.
<b>Hazardous Decomposition Products:</b>	Upon decomposition, this product emits carbon monoxide, carbon dioxide, low molecular weight hydrocarbons, acidic gases, nitrogen oxides, oxides of sulfur.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation:</b>	Known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.
<b>Ingestion:</b>	May be fatal if swallowed and enters airways. Minute amounts aspirated into the lungs during ingestion may cause severe lung damage. Ingestion may also cause blood disorders.
<b>Skin Contact:</b>	Causes skin irritation.
<b>Eye contact:</b>	Causes serious eye irritation.

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

<b>Inhalation:</b>	Headache, dizziness, confusion, loss of appetite and/or loss of consciousness.
<b>Ingestion:</b>	Vomiting, nausea, abdominal pain and central nervous system effects.
<b>Skin Contact:</b>	Skin irritation.
<b>Eye contact:</b>	Eye irritation.

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

<b>Oral</b>	
<b>Product:</b>	LD50 (Rat): > 5,000 mg/kg
<b>Dermal</b>	
<b>Product:</b>	LD50 (Rabbit): > 2,000 mg/kg
<b>Inhalation</b>	
<b>Product:</b>	LC 50 (Rat, 4 h): > 3.7 mg/l Dusts, mists and fumes: Not classified LC 50 was not reached at the dose of 3.7 mg/l (maximum dose tested).  LC 50 : Vapor: Not classified

**Repeated dose toxicity**

**Product:** No data available.

**Components:**

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

**Skin Corrosion/Irritation**

**Product:** Causes skin irritation.

**Serious Eye Damage/Eye Irritation**

**Product:** Causes serious eye irritation.

**Respiratory or Skin Sensitization**

**Product:** No data available.

**Components:**

4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-  
Skin sensitization, Draize (Guinea Pig): Not a skin sensitizer.

**Carcinogenicity**

**Product:** May cause cancer.

**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

Naphthalene Overall evaluation: 2B. Possibly carcinogenic to humans.  
Benzene Overall evaluation: 1. Carcinogenic to humans.  
Benzene, ethenyl- Overall evaluation: 2A. Probably carcinogenic to humans.  
Benzene, ethyl- Overall evaluation: 2B. Possibly carcinogenic to humans.  
1,3-Butadiene, 2-methyl- Overall evaluation: 2B. Possibly carcinogenic to humans.

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

Naphthalene Reasonably Anticipated to be a Human Carcinogen.  
Benzene Known To Be Human Carcinogen.

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

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:**

Benzene Cancer

**Germ Cell Mutagenicity****In vitro**

**Product:** May cause genetic defects.

**In vivo**

**Product:** May cause genetic defects.

**Reproductive toxicity**

**Product:** Suspected of damaging fertility or the unborn child.

**Specific Target Organ Toxicity - Single Exposure**

**Product:** No data available.

**Specific Target Organ Toxicity - Repeated Exposure**

**Product:** Blood, Auditory system - Causes damage to organs through prolonged or repeated exposure.

Central nervous system, hearing organs - May cause damage to organs through prolonged or repeated exposure.

**Aspiration Hazard**

**Product:** May be fatal if swallowed and enters airways.

**Other effects:** No data available.

**12. Ecological information****Ecotoxicity:****Acute hazards to the aquatic environment:****Fish**

**Product:** LC 50 (Fathead Minnow, 96 h): 3.2 mg/l  
Toxic to aquatic life.

**Aquatic Invertebrates**

**Product:** LC 50 (Water Flea, 48 h): 2.16 mg/l  
Toxic to aquatic life.

**Toxicity to Aquatic Plants**

**Product:** EC 50 (Green algae (Selenastrum capricornutum), 48 h): 2.96 mg/l  
Toxic to aquatic life.

**Chronic hazards to the aquatic environment:****Fish**

**Product:** Toxic to aquatic life with long lasting effects.

**Aquatic Invertebrates**

**Product:** Toxic to aquatic life with long lasting effects.

**Toxicity to Aquatic Plants**

**Product:** Toxic to aquatic life with long lasting effects.

**Persistence and Degradability****Biodegradation**

**Product:** Exhibited a range, 7 to 57% biodegradation under standard testing procedures after 28 days.

**BOD/COD Ratio**

**Product:** No data available.

**Bioaccumulative potential****Bioconcentration Factor (BCF)**

**Product:** No data available.

**Components:**

4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro- Carp, Bioconcentration Factor (BCF): 58.9 - 384

**Partition Coefficient n-octanol / water (log Kow)**

**Product:** No data available.

**Components:**

Naphthalene 3.30

1H-Indene 2.92

4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro- 2.89

Benzene 2.13

Benzene, ethenyl- 2.95

Toluene 2.73

Benzene, dimethyl- 3.12 - 3.20

Benzene, ethyl- 3.15

1,3-Butadiene, 2-methyl- 2.42

1,1'-Biphenyl 4.01

**Mobility in soil:** Will partition largely between the air, water, and soil compartments, with a negligible amount partitioning to sediment.

**Other adverse effects:** This product will accumulate on the surface of plants, waterfowls and mammals, resulting in serious injury and possible death. Contains polycyclic aromatic hydrocarbons which are known to persist and bioaccumulate.

**13. Disposal considerations**

**Disposal instructions:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Waste generator is advised to carefully consider hazardous properties and control measures needed for other materials that may be found in the waste.

**Contaminated Packaging:** Check local, federal and state environmental regulations prior to disposal.

**14. Transport information****DOT**

UN Number:	UN 3295
UN Proper Shipping Name:	Hydrocarbons, liquid, n.o.s.
Transport Hazard Class(es)	
Class:	3
Label(s):	3
Packing Group:	III
Marine Pollutant:	Yes
Special precautions for user:	Reference Emergency Response Guidebook No. 128, latest revision.
Reportable quantity	Benzene 10 lbs Naphthalene 100 lbs

**15. Regulatory information****US Federal Regulations****TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

None present or none present in regulated quantities.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended**

<u>Chemical Identity</u>	<u>OSHA hazard(s)</u>
Benzene	Cancer Central nervous system Aspiration Flammability respiratory tract irritation Eye Blood Skin

**CERCLA Hazardous Substance List (40 CFR 302.4):**

<u>Chemical Identity</u>	<u>Name on List:</u>	<u>Reportable quantity</u>
Naphthalene	NAPHTHALENE	100 lbs.
Benzene	BENZENE	10 lbs.
1-Pentene	RCRA HAZARDOUS WASTE NO. D001	100 lbs.
Benzene, ethenyl-	STYRENE	1000 lbs.
Toluene	BENZENE, METHYL-	1000 lbs.
Benzene, dimethyl-	BENZENE, DIMETHYL	100 lbs.
Benzene, ethyl-	ETHYLBENZENE	1000 lbs.
1,3-Butadiene, 2-methyl-	ISOPRENE	100 lbs.
1,1'-Biphenyl	BIPHENYL	100 lbs.
2-Octene	RCRA HAZARDOUS WASTE NO. D001	100 lbs.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)****Hazard categories**

Flammable (gases, aerosols, liquids, or solids), Skin Corrosion or Irritation, Serious eye damage or eye irritation, Germ Cell Mutagenicity, Carcinogenicity, Reproductive Toxicity, Specific target organ toxicity (single or repeated exposure), Aspiration Hazard

**US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances**

None present or none present in regulated quantities.

**US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required**

<u>Chemical Identity</u>	<u>Reporting threshold for other users</u>	<u>Reporting threshold for manufacturing and processing</u>
Naphthalene	10000 lbs	25000 lbs.
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	10000 lbs	25000 lbs.
Benzene	10000 lbs	25000 lbs.
Benzene, ethenyl-	10000 lbs	25000 lbs.
Toluene	10000 lbs	25000 lbs.
Benzene, dimethyl-	10000 lbs	25000 lbs.
Benzene, ethyl-	10000 lbs	25000 lbs.
1,3-Butadiene, 2-methyl-	10000 lbs	25000 lbs.
1,1'-Biphenyl	10000 lbs	25000 lbs.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**

<u>Chemical Identity</u>	<u>Reportable quantity</u>
1-Pentene	10000 lbs
1,3-Butadiene, 2-methyl-	10000 lbs
1,3-Pentadiene	10000 lbs

**Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Naphthalene	100 lbs.
Benzene	10 lbs.
Benzene, ethenyl-	1000 lbs.
Toluene	1000 lbs.
Benzene, dimethyl-	100 lbs.
Benzene, ethyl-	1000 lbs.
1,3-Butadiene, 2-methyl-	100 lbs.

**US State Regulations****US. California Proposition 65**

**WARNING:** This product can expose you to chemicals including, Benzene; which is [are] known to the State of California to cause cancer and birth defects or other reproductive harm.

This product can expose you to chemicals including, Toluene; n-Hexane; which is [are] known to the State of California to cause birth defects or other reproductive harm.

This product can expose you to chemicals including, Naphthalene; Benzene, ethenyl-; Benzene, ethyl-; 1,3-Butadiene, 2-methyl-; which is [are] known to the State of California to cause cancer.

For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**US. New Jersey Worker and Community Right-to-Know Act**

<u>Chemical Identity</u>
Naphthalene
1H-Indene
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-
Benzene
1-Pentene
n-Undecane
Benzene, ethenyl-
Decane
Toluene
Benzene, dimethyl-
Benzene, ethyl-



1,3-Butadiene, 2-methyl-  
1,1'-Biphenyl

## US. Pennsylvania RTK - Hazardous Substances

### Chemical Identity

Naphthalene  
1H-Indene  
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-  
Benzene  
1-Pentene  
Benzene, ethenyl-  
Decane

### Inventory Status

Canada DSL Inventory List: On or in compliance with the inventory

US TSCA Inventory: On or in compliance with the inventory

## 16. Other information, including date of preparation or last revision

**Issue Date:** 12/09/2019

**Revision Information:** 12/09/2019: SDS Update

**Version #:** 8.0

**Abbreviations and acronyms:** ACC = American Chemistry Council; ACGIH = American Conference of Governmental Industrial Hygienists; BOD = Biochemical Oxygen Demand; C = Ceiling; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; COD = Chemical Oxygen Demand; DOT = Department of Transportation; DSL = Domestic Substances List; EC50 = Effective Concentration 50%; EPA = Environmental Protection Agency; GHS = Globally Harmonized System for the Classification and Labelling of Chemicals; HPV = High Production Volume; IARC = International Agency for Research on Cancer; LC50 = Lethal Concentration 50%; LD50 = Lethal Dose 50%; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; PMCC = Pensky-Martens Closed Cup; PPE = Personal Protective Equipment; RCRA = Resource Conservation and Recovery Act; REL = Recommended Exposure Limit; SARA = Superfund Amendments and Reauthorization Act; SCBA = Self Contained Breathing Apparatus; SDS = Safety Data Sheet; STEL = Short Term Exposure Limit; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

**Further Information:** For additional information on equipment bonding and grounding, refer to the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity".

For additional information on storing and handling flammable liquids, refer to the National Fire Protection Association (NFPA) 30, "Flammable and Combustible Liquids Code".

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