

# SAFETY DATA SHEET

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

## 1. Identification

**Product identifier:** AROMATIC CONCENTRATE GRADE 2**Other means of identification****Common name(s),** AC1 and PFO Mixture; AC2**synonym(s):****SDS number:** NOVA-0003**Recommended use and restriction on use****Recommended use:** Feedstock for petrochemical manufacturing.**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) (24 hours)

## 2. Hazard(s) identification

**Hazard Classification According to Hazardous Products Regulations****Physical Hazards**

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

**Health Hazards**

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

**Environmental Hazards**

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

## Label Elements

### Hazard Symbol:



**Signal Word:** Danger

**Hazard Statement:** Extremely flammable liquid and vapour.  
Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment.  
Sparks may ignite liquid and vapour.  
May cause flash fire or explosion.  
Harmful if swallowed or if inhaled.  
Causes skin irritation.  
Causes serious eye irritation.  
May cause genetic defects.  
May cause cancer.  
Suspected of damaging fertility or the unborn child.  
May cause respiratory irritation.  
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.  
Very toxic to aquatic life with long lasting effects.

### Precautionary Statements:

**Prevention:** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment. Use non-sparking tools. Take action to prevent static discharges. These alone may be insufficient to remove static electricity. Do not breathe dust/fume/gas/mist/vapours/spray. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/ protective clothing/ eye protection/ face protection. Avoid release to the environment.

**Response:** IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTRE/doctor. IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water [or shower]. If skin irritation occurs: Get medical advice/attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE/doctor if you feel

unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention. In case of fire: Use dry chemical, foam, carbon dioxide (CO<sub>2</sub>), water spray or fog to extinguish. Collect spillage.

**Storage:** Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

**Disposal:** Dispose of contents/ container to an approved facility in accordance with local, regional, national and international regulations.

**Other hazards which do not result in GHS classification:** None.

### 3. Composition/information on ingredients

#### Mixtures

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
Benzene	Benzol	71-43-2	25 - 45%
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	Dicyclopentadiene, DCPD	77-73-6	8 - 19%
Toluene	Methylbenzene	108-88-3	2 - 7%
1,3-Cyclopentadiene	Cyclopentadiene	542-92-7	0.85 - 6.9%
Benzene, ethenyl-	Styrene	100-42-5	0.86 - 5.4%
1,3-Pentadiene	Piperylene	504-60-9	1 - 5%
1,3-Butadiene, 2-methyl-	Isoprene	78-79-5	0.08 - 3.6%
Naphthalene	Naphthalene	91-20-3	0.4 - 2.8%
1-Pentene	Pent-1-ene	109-67-1	1.3 - 2.59%
1-Octene	Octylene	111-66-0	0.01 - 2.5%
Cyclopentene	1-Cyclopentene	142-29-0	1.5 - 2%
1H-Indene	Indene, Benzocyclopentadiene	95-13-6	0 - 2%
2-Octene	Octene-2	111-67-1	0 - 1.8%
Benzene, ethyl-	Ethylbenzene, Phenylethane	100-41-4	0.2 - 1%
Benzene, dimethyl-	Xylene (mixed isomers)	1330-20-7	0.08 - 1%
n-Undecane	Undecane	1120-21-4	0.009 - 1%
1,3-Butadiene	Vinylethylene	106-99-0	0.2 - 0.7%
1,1'-Biphenyl	Biphenyl	92-52-4	0.01 - 0.2%

\* All concentrations are percent by weight.

**Additional Information:** This product is a mixture of CAS # 68921-67-5 - Hydrocarbons, ethylene-manuf.-by-product distn. residues and CAS # 69013-21-4 - Pyrolysis Fuel Oil. Hydrogen sulphide (CAS # 7783-06-4) may also be present up to 30 ppm. This product is considered hazardous by the Hazardous Products Regulations, 2015.

### 4. First-aid measures

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

**Ingestion:** IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTRE/doctor.

**Skin Contact:** IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water [or shower]. If skin irritation occurs: Get medical advice/attention.

**Eye contact:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

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

**Symptoms:** Eye irritation. Skin irritation. Respiratory irritation. Vomiting, nausea, abdominal pain and central nervous system effects including headache.

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

**Treatment:** Ensure thorough eye and skin decontamination. Treat unconsciousness, nausea, hypotension, seizures and cardiac dysrhythmias in the conventional manner. 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. Urine collection (within 12 hours of exposure) for S-Phenylmercapturic Acid (SPMA) analysis can be used to assess the extent of benzene absorption.

### 5. Fire-fighting measures

**General Fire Hazards:** Extremely flammable liquid and vapour. Vapours are heavier than air and may travel to a source of ignition and flash back. Closed containers may rupture violently when heated. Material will float and can be re-ignited on surface of water. If tank, rail car or tank truck is involved in fire, ISOLATE for 800 metres (1/2 mile) in all directions; also, consider initial evacuation for 800 metres (1/2 mile) in all directions. Vapours may form explosive mixture with air. Keep containers away from source of heat or fire. This product may be a static accumulator which can form an ignitable vapour-air mixture in a storage tank.

#### Suitable (and unsuitable) extinguishing media

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

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

**Specific hazards arising from the chemical:** Upon combustion, this product emits carbon monoxide, carbon dioxide, low molecular weight hydrocarbons.

#### Special protective equipment and precautions for fire-fighters

**Special fire-fighting procedures:** Keep upwind. Keep unauthorized personnel away. Move containers from fire area if you can do so without risk. Fight fire from maximum distance or use unmanned holders or monitor nozzles. Immediately withdraw in case of fire and container venting or heat discolouration of a container. Avoid inhaling any smoke and combustion materials. Remove and isolate contaminated clothing and shoes. Cool containers with flooding quantities of water until well after the fire is out. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Reference

Emergency Response Guidebook No. 128 for additional details and instructions.

**Special protective equipment for fire-fighters:** Wear positive pressure self-contained breathing apparatus (SCBA).

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures:**

Wear appropriate personal protective equipment. Isolate area. Keep unauthorized personnel away. Alert stand-by emergency and fire-fighting personnel. Monitor surrounding area for buildup of flammable concentrations in air.

**Methods and material for containment and cleaning up:**

Do not touch or walk through spilled material. In case of leakage, eliminate all ignition sources. As an immediate precautionary measure, isolate spill or leak area for at least 50 metres (164 feet) in all directions. All equipment used when handling the product must be grounded. Keep upwind. Keep out of low areas. Stop leak if safe to do so. Contain discharge by booming on water or diking on ground. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply.

Small Spills: Remove liquid material with non-sparking approved pumps, skimmers or vacuum equipment. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Use non-sparking tools.

Large Spills: Consider downwind evacuation for 300 metres (1000 feet). Spills on water will volatilize rapidly, making containment or recovery difficult. A vapour-suppressing foam may be used to reduce vapours. Remove pooled liquid material with approved, non-sparking pumps, skimmers or vacuum equipment. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Soil remediation may be required.

## 7. Handling and storage

**Precautions for safe handling:**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment. Use non-sparking tools. Take action to prevent static discharges. These alone may be insufficient to remove static electricity. For additional information on equipment bonding and grounding, refer to the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity". For additional information on storing and handling flammable liquids, refer to the National Fire Protection Association (NFPA) 30, "Flammable and Combustible Liquids Code". Take special precautions when cold cutting or breaking into lines, or when cleaning and disposing of empty containers. Parts and equipment should be steam cleaned prior to maintenance procedures. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes. Keep away from incompatible materials such as oxidizing agents and acids. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/ protective clothing/ eye protection/ face protection. In case of inadequate ventilation, use respiratory protection. Avoid release to the environment.

**Conditions for safe storage, including any incompatibilities:**

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

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

**1,3-Butadiene, 2-methyl-:** The American Industrial Hygiene Association (AIHA) has developed an 8-hour TWA Workplace Environmental Exposure Level (WEEL) for isoprene of 2 ppm; adoption of this WEEL is recommended.

Chemical Identity	type	Exposure Limit Values		Source
Benzene	STEL	2.5 ppm	8 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	TWA	0.5 ppm	1.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Benzene	STEL	2.5 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
	TWA	0.5 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Benzene	STEL	2.5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
	TWA	0.5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Benzene	TWA	1 ppm	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
	STEL	5 ppm	15.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Benzene	REL	0.1 ppm		US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene	STEL	1 ppm		US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene	IDLH	500 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Benzene	TWA	0.02 ppm		US. ACGIH Threshold Limit Values, as amended
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	5 ppm	27 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	5 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended

4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	5 ppm	27 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	REL	5 ppm	30 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-	TWA	0.5 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	1 ppm		US. ACGIH Threshold Limit Values, as amended
Toluene	TWA	50 ppm	188 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Toluene	TWA	20 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Toluene	TWA	20 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Toluene	TWA	50 ppm	188 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Toluene	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
Toluene	STEL	150 ppm	560 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Toluene	REL	100 ppm	375 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Toluene	IDLH	500 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
1,3-Cyclopentadiene	TWA	75 ppm	203 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
1,3-Cyclopentadiene	TWA	75 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
1,3-Cyclopentadiene	TWA	75 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
1,3-Cyclopentadiene	TWA	75 ppm	203 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
1,3-Cyclopentadiene	REL	75 ppm	200 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
1,3-Cyclopentadiene	IDLH	750 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
1,3-Cyclopentadiene	STEL	1 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	0.5 ppm		US. ACGIH Threshold Limit Values, as amended
Benzene, ethenyl-	STEL	40 ppm	170 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	TWA	20 ppm	85 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Benzene, ethenyl-	TWA	35 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
	STEL	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Benzene, ethenyl-	TWA	20 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
	STEL	40 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Benzene, ethenyl-	STEL	75 ppm		Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended

	TWA	50 ppm		Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Benzene, ethenyl-	REL	50 ppm	215 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene, ethenyl-	STEL	100 ppm	425 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene, ethenyl-	IDLH	700 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Benzene, ethenyl-	STEL	20 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	10 ppm		US. ACGIH Threshold Limit Values, as amended
Naphthalene	TWA	10 ppm	52 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	STEL	15 ppm	79 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Naphthalene	TWA	10 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Naphthalene	TWA	10 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Naphthalene	TWA	10 ppm		Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Naphthalene	TWA	10 ppm		US. ACGIH Threshold Limit Values, as amended
Naphthalene	REL	10 ppm	50 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Naphthalene	STEL	15 ppm	75 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Naphthalene	IDLH	250 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
1H-Indene	TWA	10 ppm	48 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
1H-Indene	TWA	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
1H-Indene	TWA	10 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
1H-Indene	TWA	5 ppm		Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
1H-Indene	REL	10 ppm	45 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
1H-Indene	TWA	5 ppm		US. ACGIH Threshold Limit Values, as amended
Benzene, ethyl-	STEL	125 ppm	543 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	TWA	100 ppm	434 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Benzene, ethyl-	TWA	20 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Benzene, ethyl-	TWA	20 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Benzene, ethyl-	TWA	20 ppm		Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Benzene, ethyl-	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
Benzene, ethyl-	REL	100 ppm	435 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended



Benzene, ethyl-	STEL	125 ppm	545 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene, ethyl-	IDLH	800 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
Benzene, dimethyl-	STEL	150 ppm	651 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
	TWA	100 ppm	434 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
Benzene, dimethyl-	TWA	100 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
	STEL	150 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
Benzene, dimethyl-	TWA	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
	STEL	150 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
Benzene, dimethyl-	STEL	150 ppm	651 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
	TWA	100 ppm	434 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
Benzene, dimethyl-	STEL	150 ppm	655 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene, dimethyl-	REL	100 ppm	435 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene, dimethyl-	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
1,3-Butadiene	TWA	2 ppm	4.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
1,3-Butadiene	TWA	2 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
1,3-Butadiene	TWA	2 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
1,3-Butadiene	TWA	2 ppm	4.4 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
1,3-Butadiene	TWA	2 ppm		US. ACGIH Threshold Limit Values, as amended
1,3-Butadiene	IDLH	2,000 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended
1,1'-Biphenyl	TWA	0.2 ppm	1.3 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended
1,1'-Biphenyl	TWA	0.2 ppm		Canada. British Columbia OELs: Table of Exposure Limits for Chemical Biological Substances (Workers Compensation Board); as amended
1,1'-Biphenyl	TWA	0.2 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended
1,1'-Biphenyl	TWA	0.2 ppm	1.3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended
1,1'-Biphenyl	REL	0.2 ppm	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
1,1'-Biphenyl	TWA	0.2 ppm		US. ACGIH Threshold Limit Values, as amended
1,1'-Biphenyl	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 (S-Phenylmercapturic acid: Sampling time: End of shift.)	25 µg/g (Creatinine in urine)	ACGIH BEI
Benzene (t,t-Muconic acid: Sampling time: End of shift.)	500 µg/g (Creatinine in urine)	ACGIH BEI
Toluene (toluene: Sampling time: Prior to last shift of work week.)	0.02 mg/l (Blood)	ACGIH BEI
Toluene (o-Cresol, with hydrolysis: Sampling time: End of shift.)	0.3 mg/g (Creatinine in urine)	ACGIH BEI
Toluene (toluene: Sampling time: End of shift.)	0.03 mg/l (Urine)	ACGIH BEI
Benzene, ethenyl- (styrene: Sampling time: End of shift.)	20 µg/l (Urine)	ACGIH BEI
Benzene, ethenyl- (Mandelic acid plus phenylglyoxylic acid: Sampling time: End of shift.)	150 mg/g (Creatinine in urine)	ACGIH BEI
Benzene, ethyl- (Sum of mandelic acid and phenylglyoxylic acid: Sampling time: End of shift.)	150 mg/g (Creatinine in urine)	ACGIH BEI
Benzene, dimethyl- (Methylhippuric acids: Sampling time: End of shift.)	0.3 g/g (Creatinine in urine)	ACGIH BEI
1,3-Butadiene (1,2-Dihydroxy-4-(N-acetylcysteiny)-butane: Sampling time: End of shift.)	2.5 mg/l (Urine)	ACGIH BEI
1,3-Butadiene (Mixture of N-1- and N-2-(hydroxybutenyl)valine hemoglobin (Hb) adducts: Sampling time: Not critical.)	2.5 pmol/g (Blood)	ACGIH BEI

## Exposure guidelines

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

## Appropriate Engineering

Engineering methods to reduce hazardous exposure are preferred controls.

**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 vapours.

#### Skin Protection

**Hand Protection:** Chemical resistant gloves.

**Skin and Body Protection:** Wear appropriate clothing to prevent any possibility of skin contact. Wear work clothes with long sleeves and pants. If splashing or contact with liquid material is possible, consider the need for an impervious overcoat. Fire resistant (i.e., Nomex) or natural fibre clothing (i.e., cotton or wool) is recommended. Synthetic clothing can generate static electricity and is not recommended where a flammable vapour release may occur. Wear chemical-resistant safety footwear with good traction to prevent slipping. Static Dissipative (SD) rated footwear is also recommended.

**Respiratory Protection:** Appropriate NIOSH approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4, or self-contained breathing apparatus should be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators or IDLH levels.

**Hygiene measures:** Use effective control measures and PPE to maintain worker exposure to concentrations that are below these limits. Ensure that eyewash stations and safety showers are in close proximity to work locations.

## 9. Physical and chemical properties

### Appearance

<b>Physical state:</b>	liquid
<b>Form:</b>	liquid
<b>Colour:</b>	Pale yellow to dark brown
<b>Odour:</b>	Pungent
<b>Odour Threshold:</b>	0.011 ppm (DCPD) 0.0045 ppm (H <sub>2</sub> S)
<b>pH:</b>	not applicable
<b>Melting point/freezing point:</b>	-38 - -25 °C (-36 - -13 °F) (Aromatic Concentrate Grade 1)
<b>Initial boiling point and boiling range:</b>	20 - 420 °C (68 - 788 °F) (by simulated distillation)
<b>Flash Point:</b>	< -30 °C (-22 °F) (estimated) (Aromatic Concentrate Grade 2)
<b>Evaporation rate:</b>	No data available.
<b>Flammability (solid, gas):</b>	not applicable

**Upper/lower limit on flammability or explosive limits**

<b>Flammability limit - upper (%):</b>	7.8 %(V) (Benzene) 5.9 %(V) (Naphthalene)
<b>Flammability limit - lower(%):</b>	1.2 %(V) (Benzene) 0.9 %(V) (Naphthalene)
<b>Vapour pressure:</b>	13.43 kPa (20 °C (68 °F)) 47.32 kPa (54 °C (129 °F)) 26.89 kPa (37.8 °C (100.0 °F)) (estimated) (Aromatic Concentrate Grade 2)
<b>Vapour density:</b>	2.8 (Air=1) (Benzene)
<b>Density:</b>	840 - 869 kg/m3
<b>Relative density:</b>	0.84 - 0.869 (15 °C (59 °F)) (Water=1)
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	0.0018 g/ml Slightly soluble (Benzene)
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	3.3 - 5.4 (25 °C (77 °F), Measured)
<b>Auto-ignition temperature:</b>	400 - 500 °C (752 - 932 °F) (Aromatic Concentrate Grade 1)
<b>Decomposition temperature:</b>	No data available.
<b>Viscosity:</b>	0.7 mm <sup>2</sup> /s (40 °C (104 °F)), (Aromatic Concentrate Grade 2) estimated

**10. Stability and reactivity**

<b>Reactivity:</b>	Reactive with oxidizing agents, acids and halogens. May attack and degrade some types of plastics, rubbers and coatings. Some minor components of product may react at elevated temperatures and pressures, causing hydrocarbon deposits. Hydrogen sulphide and other sulphur compounds may be corrosive.
<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, acids and halogens.
<b>Hazardous Decomposition Products:</b>	Upon decomposition, this product emits carbon monoxide, carbon dioxide, low molecular weight hydrocarbons.

**11. Toxicological information****Information on likely routes of exposure**

<b>Inhalation:</b>	Harmful if inhaled. Excessive inhalation of this product may result in heartbeat irregularities and central nervous system effects including headache. Excessive inhalation of this material may also cause damage to blood systems and possibly cancer (leukemia). Minute amounts aspirated into the lungs during ingestion or vomiting may cause severe pulmonary injury.
<b>Ingestion:</b>	Harmful if swallowed. Minute amounts aspirated into the lungs during ingestion or vomiting may cause severe pulmonary injury. Ingestion of this product may result in vomiting, nausea, abdominal pain and central nervous system effects. Ingestion may also cause blood disorders.

**Skin Contact:** Causes skin irritation.

**Eye contact:** Causes serious eye irritation.

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

**Inhalation:** Respiratory irritation. Heartbeat irregularities and central nervous system effects including headache.

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

**Skin Contact:** Skin irritation.

**Eye contact:** Eye irritation.

### Information on toxicological effects

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

##### Oral

**Product:** ATEmix: 652.71 mg/kg

##### Dermal

**Product:** Not classified for acute toxicity based on available data.

##### Inhalation

**Product:** ATEmix: 12.83 mg/l

#### Repeated dose toxicity

**Product:** No data available.

##### Components:

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

#### Skin Corrosion/Irritation

**Product:** Causes skin irritation.

#### Serious Eye Damage/Eye Irritation

**Product:** Causes serious eye irritation.

#### Respiratory or Skin Sensitization

**Product:** 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:

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

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

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.
Naphthalene	Reasonably Anticipated to be a Human Carcinogen.
1,3-Butadiene	Known To Be Human Carcinogen.

**ACGIH Carcinogen List:**

Benzene	Group A1: Confirmed human carcinogen.
Benzene, ethenyl-	Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Naphthalene	Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Benzene, ethyl-	Group A3: Confirmed animal carcinogen with unknown relevance to humans.
1,3-Butadiene	Group A2: Suspected human carcinogen.

**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:** May cause respiratory irritation.

**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:**

Xylene is a developmental toxicant in Canada.

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

**Product:** LC 50 (Oncorhynchus mykiss, 96 h): 1.0 mg/l semi-static  
Very toxic to aquatic life.

**Aquatic Invertebrates**

**Product:** LC 50 (Daphnia magna, 48 h): 1.2 mg/l Static

**Toxicity to aquatic plants**

**Product:** EC 50 (Algae (Pseudokirchneriella subcapitata), 96 h): 1.8 mg/l

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

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

**Aquatic Invertebrates****Product:** Very toxic to aquatic life with long lasting effects.**Toxicity to aquatic plants****Product:** Very toxic to aquatic life with long lasting effects.**Persistence and Degradability****Biodegradation****Product:** 7.3 - 29 % (28 d)  
The product is not readily biodegradable.**BOD/COD Ratio****Product:** No data available.**Bioaccumulative Potential****Bioconcentration Factor (BCF)****Product:** No data available.**Components:**Benzene Clupea harengus, Bioconcentration Factor (BCF): 11 Aquatic sediment  
Experimental result, Supporting study4,7-Methano-1H-indene,  
3a,4,7,7a-tetrahydro- Carp, Bioconcentration Factor (BCF): 58.9 - 384Toluene Leuciscus idus melanotus, Bioconcentration Factor (BCF): 90 Aquatic  
sediment Experimental result, Key study

1,3-Butadiene Bioconcentration Factor (BCF): 10

**Partition Coefficient n-octanol / water (log Kow)****Product:** 3.3 - 5.4 (25 °C (77 °F), Measured)**Mobility in Soil:**

Components have slight water solubility. Calculation of atmospheric half-lives of constituent chemicals has identified a half-life of 0.9 to 65.8 hours as result of indirect hydrolysis by hydroxyl radical attack.

**Other Adverse Effects:**

No data available.

**13. Disposal considerations****Disposal instructions:**

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

**Contaminated Packaging:**

Check local, federal and provincial environmental regulations prior to disposal.

**14. Transport information****TDG**UN number or ID number: UN 3295  
UN Proper Shipping Name: HYDROCARBONS, LIQUID, N.O.S.  
Class 3  
Packing Group I  
Label(s) 3  
Subsidiary risk label —

Special precautions for user:

Reference Emergency Response Guidebook No. 128, latest revision.

**15. Regulatory information****Canada Federal Regulations****List of Toxic Substances (CEPA, Schedule 1)****Chemical Identity**Benzene  
1,3-Butadiene, 2-methyl-  
Naphthalene  
1,3-Butadiene**Export Control List (CEPA 1999, Schedule 3)**

Not regulated

**National Pollutant Release Inventory (NPRI)****Canada. Canadian Environmental Protection Act (CEPA). National Pollutant Release Inventory (NPRI) (Parts 1-4)**NPRI  
Benzene  
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro-  
Toluene  
Benzene, ethenyl-  
1,3-Pentadiene  
1,3-Butadiene, 2-methyl-  
Naphthalene  
1-Pentene  
Cyclopentene  
1H-Indene  
2-Hexene  
Benzene, ethyl-  
Benzene, dimethyl-  
n-Undecane  
Pentane, 2-methyl-  
1,4-Pentadiene  
Pentane, 3-methyl-  
Decane**Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements**NPRI PT5  
Benzene  
Toluene  
Benzene, ethenyl-  
1-Pentene  
2-Hexene  
Benzene, dimethyl-  
Pentane, 2-methyl-  
1,3-Butadiene  
Pentane, 3-methyl-**Greenhouse Gases**

Not regulated

**Precursor Control Regulations****Chemical Identity**

Toluene

**Canada. Substances Subject to Significant New Activity (SNAc) Reporting Requirements**

Not regulated



**Inventory status**

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

US TSCA Inventory: On or in compliance with the inventory

**16. Other information, including date of preparation or last revision****Issue Date:** 07/22/2024**Revision Information:** 07/22/2024: SDS Update – OEL updates and phrase edits  
05/31/2024: SDS Update – section 1 edits, GHS classification change, composition edits, OEL edits, section 15 edits, and phrase edits  
10/21/2022: SDS Update – OEL updates, section 9, section 11, section 12, section 15 edits, phrase edits  
12/10/2019: SDS Update**Version #:** 5.3**Abbreviations and acronyms:** ACGIH = American Conference of Governmental Industrial Hygienists; BOD = Biochemical Oxygen Demand; CAS = Chemical Abstracts Service; CEPA = Canadian Environmental Protection Act; COD = Chemical Oxygen Demand; DSL = Domestic Substances List; EC50 = Effective Concentration 50%; EPA = Environmental Protection Agency; GHS = Globally Harmonized System for the Classification and Labelling of Chemicals; IARC = International Agency for Research on Cancer; IDLH = Immediately Dangerous to Life or Health; Kow = Octanol/water partition coefficient; LC50 = Lethal Concentration 50%; LD50 = Lethal Dose 50%; LEL = Lower Explosive Limit; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OEL = Occupational Exposure Limit; OSHA = Occupational Safety and Health Administration; PNOC = Particulates Not Otherwise Classified; PPE = Personal Protective Equipment; REL = Recommended Exposure Limit; SCBA = Self Contained Breathing Apparatus; SDS = Safety Data Sheet; STEL = Short Term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average**Further Information:** For additional information on equipment bonding and grounding, refer to the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity".

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

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