



Section 1. Identification

Product identifier

Product Identity

Molten Sulfur (CHE-1110S)

Other means of identification

Not Applicable

Relevant identified uses of the substance or mixture and uses advised against

Manufacturing sulfuric acid, sulfur dioxide, fertilizer, carbon disulfide, plastics, enamels, vulcanizing rubber, synthesizing dyes, bleaching wood pulp.

Restrictions on use:

Not available.

Details of the supplier of the safety data sheet

Company Name

Chemtrade Logistics Inc. (Canada)
155 Gordon Baker Road Suite 300
Toronto, Ontario M2H 3N5
(416) 496-5856

Chemtrade Logistics Inc. (US)
90 East Halsey Road, Suite 200
Parsippany, NJ 07054
(800) 228- 8558

Emergency

24 hour Emergency Telephone No.

Chemtrade Emergency Contact: (866) 416-4404 (US and Canada)

CHEMTREC +1-800-424-9300

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

Customer Service:

For SDS Info: (416) 496-5856

www.chemtradelogistics.com

Section 2. Hazard(s) identification

Proper grounding procedures to avoid static electricity should be followed. Prevent dust accumulation (to minimize explosion hazard). Avoid generating dust.

Classification of the substance or mixture

Flammable Solid, category 2;H228 Flammable solid.

Skin corrosion/irritation category 2;H315	Causes skin irritation.
Aquatic toxicity (acute), category 3;H402	Harmful to aquatic life.
Combustible Dust - Category 1	May form combustible dust concentrations in air.

Label elements**Warning**

H228 Flammable solid.
H315 Causes skin irritation.
H402 Harmful to aquatic life.
May form combustible dust concentrations in air.

[Prevention]:

P210 Keep away from heat, sparks, open flames, and other ignition sources - No smoking.
P240 Ground, bond container and receiving equipment.
P241 Use explosion-proof electrical, ventilating, light, equipment.
P264 Wash thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves, eye protection, and face protection.

[Response]:

P302+352 IF ON SKIN: Wash with plenty of soap and water.
P304+312 IF INHALED: Call a poison center or doctor or physician if you feel unwell.
P332+313 If skin irritation occurs: Get medical attention.
P362+364 Take off contaminated clothing and wash it before reuse.
P370+378 In case of fire: Use extinguishing media listed in section 5 of SDS for extinction.

[Storage]:

No GHS storage statements

[Disposal]:

P501 Dispose of contents or container in accordance with local and national regulations.



Other hazards

Other Hazards: Although this SDS was prepared to address the hazards of molten sulfur, the product transforms into a solid rapidly upon cooling. This document primarily addresses the hazards of the molten state of sulfur, however the non-molten state is also addressed in certain cases. Molten when shipped above melting point 113°C (235.4°F), brittle solid below melting point. Solid particles of sulfur present a combustible dust hazard, and in the right conditions can cause an explosion with sparks, or an ignition source. Product is heated when in molten form, and in contact with an ignition source may present a fire or explosion hazard. Keep product away from sparks, open flames, incompatibilities, and all ignition sources. Risk of thermal burns on contact with molten product. Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

CONTAINS HYDROGEN SULFIDE. Product may contain significant quantities of dissolved hydrogen sulfide gas. H₂S has a broad range of effects dependent on the airborne concentration and length of exposure: 0.02 ppm odor threshold, smell of rotten eggs; 10 ppm eye and respiratory tract irritation; 100 ppm coughing, headache, dizziness, nausea, eye irritation, loss of sense of smell in minutes; 200 ppm potential for pulmonary edema after >20-30 minutes; 500 ppm loss of consciousness after short exposures, potential for respiratory arrest; >1000 ppm immediate loss of consciousness, may lead rapidly to death, prompt cardiopulmonary resuscitation may be required. Do not depend on sense of smell for warning. H₂S causes rapid olfactory fatigue (deadens sense of smell). There is no evidence that H₂S will accumulate in the body tissue after repeated exposure.

May form combustible dust concentrations in air.

This product contains no PBT/vPvB/vPvM chemicals.

This product contains no endocrine disrupting chemicals.

Does NOT contain component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS) per the US EPA PFASMASTER combined list of PFAS chemicals.

Section 3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the Hazardous Products Regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Sulfur CAS Number: 7704-34-9 Synonyms: No available information	80 - 100	Skin corrosion/irritation category 2;H315 Flammable Solid, category 2;H228	No data available
Hydrogen sulfide CAS Number: 7783-06-4 Synonyms: Dihydrogen monosulfide, Dihydrogen sulfide	0.5 - 1.5	Flammable Gas, category 1;H220 Gas under pressure;H280 Acute toxicity(inhalation), category 2:H330 Aquatic toxicity (acute), category 1;H400	No data available

The actual concentration or concentration range is withheld as a trade secret.

*PBT/vPvB - PBT, vPvM or vPvB-substance.

The full texts of the phrases are shown in Section 16.

The specific chemical identity and/or exact percentage of composition are withheld as a trade secret within the meaning of the OSHA Hazard Communication Standard [29 CFR 1910.1200].

Section 4. First aid measures**Description of first aid measures**

General	In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
Inhalation	Remove to fresh air, keep patient warm and at rest. If unconscious, place in the recovery position and obtain immediate medical attention. Give nothing by mouth.
Eyes	Irrigate copiously with clean water for at least 30 minutes, holding the eyelids apart and seek medical attention. Remove contact lenses, if present and easy to do. Continue rinsing.
Skin	Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser. Drench affected area with water for at least 30 minutes. Obtain medical attention if irritation develops or persists.
Ingestion	If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

Most important symptoms and effects, both acute and delayed

Overview	<p>Risk of thermal burns on contact with molten product in solid form. Causes skin irritation. Inhalation of vapors may cause respiratory irritation.</p> <p>Acute Health Effects : Risk of thermal burns on contact with molten product in solid form. Causes skin irritation. Inhalation of vapors may cause respiratory irritation.</p> <p>SKIN: Risk of thermal burns on contact with molten product. In solid form: Redness, pain, swelling, itching, burning, dryness, and dermatitis.</p> <p>INGESTION: Ingestion of the molten product may cause severe thermal burns. In solid form: Ingestion is likely to be harmful and have adverse effects.</p> <p>INHALATION: May be harmful if inhaled. Irritating and toxic hydrogen sulfide gas may be present. Inhalation of vapors may cause respiratory irritation.</p> <p>Warning: Irritating and toxic hydrogen sulfide gas may be present. Greater than 15 - 20 ppm continuous exposure can cause mucous membrane and respiratory tract irritation. 50 - 500 ppm can cause headache, nausea, and dizziness. Continued exposure at these levels can lead to loss of reasoning and balance, difficulty breathing, fluid in the lungs, and possible loss of consciousness. Greater than 500 ppm can cause rapid unconsciousness and death if not promptly revived. This product contains Hydrogen sulfide which may accumulate in confined spaces. Inhalation of Hydrogen sulphide may cause loss of sense of smell, major irritation of the respiratory tract, headache, nausea, vomiting, dizziness, and fluid buildup in the lungs (pulmonary edema), which can be fatal. At 300 ppm unconsciousness may occur after 20 minutes. From 300 to 500 ppm, death can occur within minutes of continuous exposure. Above 500 ppm Hydrogen sulphide may cause</p>
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instantaneous loss of consciousness and immediate death. See section 2 for further details.

Skin

Causes skin irritation.

Chronic effects

Contains a small amount of hydrogen sulfide, symptoms of chronic exposure that may manifest as long-term or permanent effects are headaches, dizziness, nausea, coughing, respiratory irritation, eye irritation, skin irritation, pain in the nose and loss of consciousness.

Section 5. Fire-fighting measures

Extinguishing media

Suitable Extinguishing Media: Water spray, dry chemical, foam, carbon dioxide.

Unsuitable extinguishing media: Apply aqueous extinguishing media carefully to prevent frothing/steam explosion. Do not use: water jet, or heavy water stream. Use of heavy stream of water may spread fire.

Special hazards arising from the substance or mixture

Hazardous decomposition: Molten sulfur can react with hydrocarbons to form hydrogen sulfide and carbon disulfide.

Explosion: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Keep away from heat, sparks, open flames, and other ignition sources - No smoking.

Ground, bond container and receiving equipment.

Use explosion-proof electrical, ventilating, light, equipment.

Advice for fire-fighters

As with all fires, wear positive pressure, self-contained breathing apparatus, (SCBA) with a full-face piece and protective clothing. Persons without respiratory protection should leave area. Wear SCBA during clean up immediately after fire. No smoking.

Fire Hazard: Flammable solid. Sulfur burns with a pale blue flame that may be difficult to see in daylight. Flammable vapors can accumulate in head space of closed systems.

Explosion Hazard: Product is not explosive; however, formation of explosive air-vapor mixture is possible. Water vapor and sulfuric acid vapors may develop in sealed containers from extreme heat exposure producing an explosion hazard. In solid form: Dust explosion hazard in air.

Firefighting Instructions: Do not enter fire area without proper protective equipment, including respiratory protection. Use water spray or fog for cooling exposed containers. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. **Exercise caution when fighting any chemical fire.**

Hazardous reactions . Reacts violently with strong oxidizers. Increased risk of fire or explosion.

Hazardous Combustion Products: Sulfur dioxide. Sulphur oxides. May liberate toxic gases.

Other Information: If stored under heat for extended periods or significantly agitated, this material might evolve or release hydrogen sulfide, a flammable gas, which can raise and widen this material's actual flammability limits and significantly lower its auto-ignition temperature. Hydrogen sulfide is a toxic gas that

can be fatal. It also has a rotten egg smell that causes odor fatigue very quickly and shouldn't be used as an indicator for the presence of gas. Do not allow run-off from firefighting to enter drains or water courses.

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Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing dust, or vapors. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Dust Deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.

Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

Nonsparking tools should be used.

Use only outdoors or in a well-ventilated area. Do not breathe mist, spray, and vapours.

Do not get in eyes, on skin, or on clothing. Use appropriate personal protection equipment (PPE). Wear protective gloves, eye protection, face protection (refer to section 8 for more details).

Use good personal hygiene practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Promptly remove soiled clothing and wash thoroughly before reuse.

Environmental precautions

Explosion: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Prevent entry to sewers and public waters. Avoid release to environment.

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

Methods and material for containment and cleaning up

Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

Ventilate area.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. If melted: allow liquid to solidify before taking it up. In solid form: Eliminate all ignition sources. Avoid generation of dust during clean-up of spills. Recover the product by vacuuming, shoveling or sweeping. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

For Containment: Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams. As an immediate precautionary measure, isolate spill or leak area in all directions. Use only non-sparking tools.

Equip cleanup crew with proper protection.

Section 7. Handling and storage

Precautions for safe handling

Handle containers carefully to prevent damage and spillage.

Special Rules on Packaging: Contains Sulfur, may release small amounts of hydrogen sulfide. Hydrogen sulfide is a highly flammable, explosive gas under certain conditions, is a toxic gas, and may be fatal. Gas can accumulate in the headspace of closed containers, use caution when opening sealed containers. Heating the product or containers can cause thermal decomposition of the product and release hydrogen sulfide.

Use only outdoors or in a well-ventilated area. Do not breathe mist, spray, and vapours.

Do not get in eyes, on skin, or on clothing. Use appropriate personal protection equipment (PPE). Wear protective gloves, eye protection, face protection (refer to section 8 for more details).

Use good personal hygiene practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

Conditions for safe storage, including any incompatibilities

Keep/Store away from direct sunlight, extremely high or low temperatures, ignition sources, and incompatible materials. Store in a well-ventilated place. Keep container tightly closed. Store in a dry, cool place. Keep in fireproof place.

Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

Handling this product may result in electrostatic accumulation. Use proper grounding procedures. Take action to prevent static discharges. Avoid creating or spreading dust. Use explosion-proof electrical, ventilating, and lighting equipment. Comply with applicable regulations.

Incompatible materials: Strong oxidizers. Under certain conditions: Sodium, tin, nickel, zinc.

Additional Hazards When Processed: Risk of thermal burns on contact with molten product. Flammable vapors can accumulate in head space of closed systems. If stored under heat for extended periods or significantly agitated, this material might evolve or release hydrogen sulfide, a flammable gas, which can raise and widen this material's actual flammability limits and significantly lower its auto-ignition temperature. Hydrogen sulfide is a toxic gas that can be fatal. It also has a rotten egg smell that causes odor fatigue very quickly and shouldn't be used as an indicator for the presence of gas. Proper grounding procedures to avoid static electricity should be followed. Do not pressurize, cut, or weld containers. Avoid

dust production. As a result of flow, agitation, etc., electrostatic charges can be generated. Accumulation and dispersion of dust with an ignition source can cause a combustible dust explosion. Keep dust levels to a minimum and follow applicable regulations.

See section 2 for further details. - [Storage]:

Specific end use(s)

Manufacturing sulfuric acid, sulfur dioxide, fertilizer, carbon disulfide, plastics, enamels, vulcanizing rubber, synthesizing dyes, bleaching wood pulp.

Restrictions on use:

Not available.

Section 8. Exposure controls / personal protection

Control parameters

Exposure Limits

CAS No.	Ingredient	Source	Value
7704-34-9	Sulfur	ACGIH	No Established Limit
		OSHA	No Established Limit
		NIOSH	No Established Limit
		Alberta	10 mg/m ³ TWA
		British Columbia	No Established Limit
		Manitoba	No Established Limit
		New Brunswick	No Established Limit
		Newfoundland and Labrador	No Established Limit
		Nova Scotia	No Established Limit
		Northwest Territories	No Established Limit
		Nunavut	No Established Limit
		Ontario	No Established Limit
		Prince Edward Island	No Established Limit
		Quebec	No Established Limit
Saskatchewan	No Established Limit		
Yukon	No Established Limit		
7783-06-4	Hydrogen sulfide	ACGIH	1 ppm 5 ppm
		OSHA	C 20 ppm, Max above C: 50 ppm 10 mins once
		NIOSH	C 10 ppm (15 mg/m ³) [10-minute]
		Alberta	10 ppm TWA; 14 mg/m ³ TWA
		British Columbia	C 10 ppm
		Manitoba	1 ppm TWA 5 ppm STEL
		New Brunswick	10 ppm TWA; 14 mg/m ³ TWA 15 ppm STEL; 21 mg/m ³ STEL
		Newfoundland and Labrador	1 ppm TWA 5 ppm STEL
		Nova Scotia	1 ppm TWA 5 ppm STEL



	Northwest Territories	10 ppm TWA 15 ppm STEL
	Nunavut	10 ppm TWA 15 ppm STEL
	Ontario	10 ppm TWA 15 ppm STEL
	Prince Edward Island	1 ppm TWA 5 ppm STEL
	Quebec	10 ppm TWAEV; 14 mg/m ³ TWAEV 15 ppm STEV; 21 mg/m ³ STEV
	Saskatchewan	10 ppm TWA 15 ppm STEL
	Yukon	10 ppm TWA; 15 mg/m ³ TWA 15 ppm STEL; 27 mg/m ³ STEL

The exposure limits for nuisance dust are: OSHA PEL: 15 mg/m³ (50 mppcf*) TWA, ACGIH 10 mg/m³.

Exposure controls

Respiratory

If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

Eyes

Chemical safety goggles and face shield.

Skin

Wear chemically resistant protective gloves. If material is hot, wear thermally resistant protective gloves. Wear chemical fire resistant clothing. With molten material wear thermally protective clothing. **Where higher splash potential exists** (e.g. loading, unloading, line breaking, sampling of the product), wear hard hat and SCBA (Self Contained Breathing Apparatus) chemical splash shroud, fire resistant jacket and pants or bib overalls. Follow all posted PPE requirements.

Engineering Controls

Ensure adequate ventilation, especially in confined areas. Gas detectors should be used when flammable gases/vapors may be released. Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof equipment. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits. Power equipment should be equipped with proper dust collection devices.

Use only appropriately classified electrical equipment and powered industrial trucks. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed. Ensure all national/local regulations are observed.

Other Work Practices

Put on appropriate personal protective equipment. Chemically compatible gloves, Fire resistant clothing, and chemical resistant safety goggles and face shield. With molten material wear thermally protective clothing. Where there is insufficient ventilation: wear respiratory protection.

WHERE HIGHER SPASH POTENTIAL EXISTS (e.g. loading, unloading, line breaking,

sampling of the product), wear hard hat and SCBA, chemical splash shroud, fire resistant jacket and pants or bib overalls. Chemical resistant gloves. Follow all posted PPE requirements **AND** wear goggles and face shield with side and chin protection: chemical and impact resistant. Use only outdoors or in a well-ventilated area. Do not breathe mist, spray, and vapours.

Do not get in eyes, on skin, or on clothing. Use appropriate personal protection equipment (PPE). Wear protective gloves, eye protection, face protection (refer to section 8 for more details).

Use good personal hygiene practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details.

Section 9. Physical and chemical properties

Information on basic physical and chemical properties

Physical State	Solid
Color	Opaque liquid when shipped, brittle solid below melting point. Bright yellow to brown.
Odor	Smells like rotten eggs.
Odor threshold	No available information
Melting point / freezing point	114 - 119 °C (237.2 - 246.2 °F)
Initial boiling point and boiling range	444.6 °C (832.28 °F)
Flammability (solid, gas)	Solid
Upper/lower flammability or explosive limits	Lower Explosive Limit: 4% Upper Explosive Limit: 44%
Flash Point	207 °C (404.6 °F) Pensky-Martens Closed Cup
Auto-ignition temperature	232 °C (449.6 °F)
Decomposition temperature	No available information
pH	No available information
Viscosity (cSt)	No available information
Solubility in Water	Water: Insoluble Organic solvent: Soluble in carbon disulfide, benzene, toluene, chloroform, ether, warm aniline, carbon tetrachloride and liquid ammonia.
Partition coefficient n-octanol/water (Log Kow)	No available information
Vapour pressure (Pa)	0.015 kPa (0.11 mm Hg)
Relative Density	1.79
Vapour Density	3.64 [Air = 1]

Particle Characteristics	No available information
Evaporation rate (Ether = 1)	No available information
	Dust hazard explosive
Specific Gravity	1.79
Other information	
No other relevant information.	

Section 10. Stability and reactivity

Reactivity

Reacts violently with strong oxidizers. Increased risk of fire or explosion.

Chemical stability

Stable under recommended handling and storage conditions (see section 7).

Possibility of hazardous reactions

Hazardous polymerization will not occur.

Conditions to avoid

Direct sunlight, extremely high or low temperatures, heat, hot surfaces, sparks, open flames, incompatible materials, and other ignition sources. Dust accumulation (to minimize explosion hazard).

Incompatible materials

Strong oxidizers. Under certain conditions: Sodium, tin, nickel, zinc.

Hazardous decomposition products

Molten sulfur can react with hydrocarbons to form hydrogen sulfide and carbon disulfide.

Section 11. Toxicological information

Acute toxicity

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Product Acute Toxicity Estimates	NA	NA	NA	6	NA

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Sulfur - (7704-34-9)	> 2,000.00, Rat - Category: NA	> 2,000.00, Rat - Category: NA	No data available.	> 5.43, Rat - Category: NA	No data available.



Hydrogen sulfide - (7783-06-4)	No data available.	No data available.	No data available.	No data available.	444.00, Rat - Category: 2
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Carcinogen Data

CAS No.	Ingredient	Source	Value
7704-34-9	Sulfur	IARC	No
		ACGIH	No Established Limit
7783-06-4	Hydrogen sulfide	IARC	No
		ACGIH	No Established Limit

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	2	Causes skin irritation.
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

Possible routes of entry:

Inhalation, ingestion, skin contact, and skin absorption.

Symptoms and effects, both acute and delayed:

Risk of thermal burns on contact with molten product in solid form. Causes skin irritation. Inhalation of vapors may cause respiratory irritation.

Acute Health Effects : Risk of thermal burns on contact with molten product in solid form. Causes skin irritation. Inhalation of vapors may cause respiratory irritation.

SKIN: Risk of thermal burns on contact with molten product. In solid form: Redness, pain, swelling, itching, burning, dryness, and dermatitis.

INGESTION: Ingestion of the molten product may cause severe thermal burns. In solid form: Ingestion is likely to be harmful and have adverse effects.

INHALATION: May be harmful if inhaled. Irritating and toxic hydrogen sulfide gas may be present. Inhalation of vapors may cause respiratory irritation.

Warning: Irritating and toxic hydrogen sulfide gas may be present. Greater than 15 - 20 ppm continuous exposure can cause mucous membrane and respiratory tract irritation. 50 - 500 ppm can cause headache, nausea, and dizziness. Continued exposure at these levels can lead to loss of reasoning and balance,

difficulty breathing, fluid in the lungs, and possible loss of consciousness. Greater than 500 ppm can cause rapid unconsciousness and death if not promptly revived. This product contains Hydrogen sulfide which may accumulate in confined spaces. Inhalation of Hydrogen sulphide may cause loss of sense of smell, major irritation of the respiratory tract, headache, nausea, vomiting, dizziness, and fluid buildup in the lungs (pulmonary edema), which can be fatal. At 300 ppm unconsciousness may occur after 20 minutes. From 300 to 500 ppm, death can occur within minutes of continuous exposure. Above 500 ppm Hydrogen sulphide may cause instantaneous loss of consciousness and immediate death.

Skin Causes skin irritation.

Chronic effects Contains a small amount of hydrogen sulfide, symptoms of chronic exposure that may manifest as long-term or permanent effects are headaches, dizziness, nausea, coughing, respiratory irritation, eye irritation, skin irritation, pain in the nose and loss of consciousness.

Section 12. Ecological information

Toxicity

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Sulfur - (7704-34-9)	No data available.	> 0.01, Daphnia magna	No data available.
Hydrogen sulfide - (7783-06-4)	No data available.	No data available.	No data available.

Persistence and degradability

There is no data available on the preparation itself.

Bioaccumulative potential

No available information

Mobility in soil

No available information

Results of PBT and vPvB assessment

This product contains no PBT/vPvB/vPvM chemicals.

Other adverse effects

No available information

Section 13. Disposal considerations

Waste treatment methods

Dispose of waste material in accordance with all local, regional, federal, provincial, state, territorial and international regulations.

Ecology - Waste Materials: Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

Additional Information: Do not pressurize, cut, or weld containers. Handle empty containers with care because residual product is flammable. Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

Section 14. Transport information



Classification Method: Classified as per Part 2, Sections 2.1-2.8 of the Transportation of Dangerous Goods Regulations.

DOT (Domestic Surface Transportation)	
UN number	UN2448
UN proper shipping name	UN2448,Sulfur, molten,4.1,III
Transport hazard class(es)	4.1
Sub Class	Not Applicable
Packing group	III

TDG (Domestic Surface Transportation)	
UN number	UN2448
UN proper shipping name	Sulfur, molten
Transport hazard class(es)	4.1
Sub Class	Not Applicable
Packing group	III

IMO / IMDG (Ocean Transportation)	
UN number	UN2448
UN proper shipping name	Sulfur, molten
Transport hazard class(es)	4.1
Sub Class	Not Applicable
Packing group	III

ICAO/IATA	
UN number	UN2448
UN proper shipping name	Sulfur, molten

Transport hazard class(es)	4.1
Sub Class	Not Applicable
Packing group	III

Environmental hazards

IMDG Marine Pollutant: No;

Special precautions for user

No available information

Section 15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA) All components of this material are either listed or exempt from listing on the TSCA Inventory.

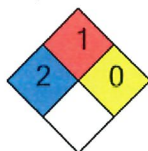
NFPA Ranking

Health (blue) :2

Fire (red) :1

Reactivity (yellow) :0

Special (white) :--


Toxic Substance Control Act (TSCA)

Hydrogen sulfide

Sulfur

CERCLA Chemicals and RQs (lbs):

Hydrogen sulfide (100.00)

EPCRA 302 Extremely Hazardous:

Hydrogen sulfide

EPCRA 313 Toxic Chemicals:

Hydrogen sulfide

Canadian Domestic Substance List (DSL):

Hydrogen sulfide

Sulfur

Canadian Non-Domestic Substance List (NDSL):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):

Hydrogen sulfide



Sulfur

Pennsylvania RTK Substances (>1%):

Hydrogen sulfide

Sulfur

Proposition 65 - Carcinogens (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 Label Warning:

This product contains no chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Chemical Name (CAS Number)	US TSCA	Australia AICS	Korea ECL	EU EINECS	EU ELINCS	EU SVHC	EN NLP	Mexico INSQ
Sulfur (7704-34-9)	Yes	Yes	Yes	Yes	No	No	No	Yes
Hydrogen sulfide (7783-06-4)	Yes	Yes	Yes	Yes	No	No	No	Yes

Chemical Name (CAS Number)	China IECSC	Japan ENCS	Japan ISHL	Japan PDSCCL	Japan PRTR 1	Japan PRTR 2	Philippines PICCS	New Zealand NZIOC
Sulfur (7704-34-9)	Yes	No	No	No	No	No	Yes	Yes
Hydrogen sulfide (7783-06-4)	Yes	Yes	Yes	No	No	No	Yes	Yes

Section 16. Other information

Revision Date 11/24/2025

Revision Number 4

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products.

Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.



Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

The full text of the phrases appearing in section 3 is:

H220 Extremely flammable gas.

H228 Flammable solid.

H280 Contains gas under pressure; may explode if heated.

H315 Causes skin irritation.

H330 Fatal if inhaled.

H400 Very toxic to aquatic life.

Disclaimer: The information presented herein is supplied as a guide to those who handle or use this product. Safe work practices must be employed when working with any materials. It is important that the end user makes a determination regarding the adequacy of the safety procedures employed during the use of this product.

End of Document

Safety Data Sheet

EnDuraFuels VelociD



Renewable Energy Group

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

REG 9000 Renewable Diesel

Product Use: Blendstock, Fuel, Solvent

Synonyms: Bio-Derived Diesel; Biomass-Based Diesel; Diesel Fuel No. 2; HDRD; HEFA; HRD; HVO; Hydrotreated esters and fatty acids; Odorless mineral spirits; Paraffinic middle distillate; R100; R98.9 Diesel Fuel; R99.9; RD; RD975; REG - 9000™ / RHD; REG RDB5; Renewable Diesel; Renewable Diesel Fuel; Renewable Hydrocarbon Diesel; Renewable Synthetic Diesel Fuel; RHD; SDS 402-US; VelociD™

Company Identification

REG Marketing & Logistics Group, LLC
416 South Bell Avenue
Ames, IA 50010
United States of America

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency & Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

email : REG-SDSDistribution@chevron.com
Product Information: Phone: 1 888.734.8686

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION:

- Flammable liquid: Category 4.
- Aspiration toxicant: Category 1.
- Carcinogen: Category 2.



Signal Word: Danger

Physical Hazards:

- Combustible liquid.

Health Hazards:

- May be fatal if swallowed and enters airways.
- Suspected of causing cancer.

PRECAUTIONARY STATEMENTS:

General:

- Keep out of reach of children.
- Read label before use.

Prevention:

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Use personal protective equipment as required.

Response:

- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- IF exposed or concerned: Get medical advice/attention.
- Do NOT induce vomiting.
- In case of fire: Use media specified in the SDS to extinguish.

Storage:

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

Disposal:

- Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Fuels, diesel, C9-18 alkane branched and linear	1159170-26-9	93 - 100 %weight
Fatty acids, C14-18 and C16-18-unsatd., Methyl esters	67762-26-9	< 5.5 %weight
Fuel Oil, No. 2	68476-30-2	< 1 %weight
Fuels, diesel	68334-30-5	< 1 %weight

SECTION 4 FIRST AID MEASURES**Description of first aid measures**

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.

Most important symptoms and effects, both acute and delayed**IMMEDIATE HEALTH EFFECTS**

Eye: Contact with the eyes may cause irritation. Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin may cause irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed

through the skin.

Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death.

Inhalation: Not expected to be harmful if inhaled. If this material is heated, fumes may be unpleasant and produce nausea and irritation of the eye and upper respiratory tract.

DELAYED OR OTHER HEALTH EFFECTS: Not classified

Indication of any immediate medical attention and special treatment needed

Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames. Do not use water spray or a direct stream of water.

Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Hydrocarbons, Nitrogen.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive force. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches.

Do not get in eyes, on skin, or on clothing. Do not breathe vapor or fumes from heated material. Do not taste or swallow. Wash thoroughly after handling. Keep out of the reach of children.

Unusual Handling Hazards: Materials saturated with this product, such as oily rags, used oil dri, soaked insulation pads, etc., may spontaneously combust due to product decomposition in the presence of oxygen. Place all such materials into appropriate oily waste containers (such as metal cans with metal lids or oily waste dumpsters with lids), and dispose of according to local, state, and federal regulations

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces .
USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the workplace when designing engineering controls and selecting personal protective equipment (PPE). If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, refer to PPE information below.

Factors that affect PPE include, but are not limited to: properties of the chemical, other chemicals which may contact the same PPE, physical requirements (fit & sizing, cut/puncture protection, dexterity, thermal protection, etc.), and potential allergic reactions to the PPE material. It is the responsibility of the user to read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

ENGINEERING CONTROLS:

Use general ventilation, local exhaust ventilation, or a combination of both.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.

Skin Protection: Wear chemical personal protective equipment (PPE) to prevent skin contact. Selection of chemical protective clothing should be performed by an Occupational Hygienist or Safety Professional and be based upon applicable standards (ASTM F739 or EN 374). Using chemical PPE depends upon operations conducted and may include chemical gloves, boots, chemical apron, chemical suit, and complete facial protection. **Refer to PPE manufacturers to obtain breakthrough time information to determine how long PPE can be used before it needs to be replaced.** Unless specific glove manufacturer data indicates otherwise, the below table is based upon available industry data to assist in the glove selection process and is intended to be used as reference only.

Chemical Glove Material	Thickness (mm)	Typical Breakthrough Time (minutes)
Nitrile	0.5	5

Nitrile	0.2	60
Viton Butyl	0.3	60

Butyl	Not recommended for use
Neoprene	Not recommended for use
Polyvinyl Chloride (PVC)	Not recommended for use

Respiratory Protection: No respiratory protection is normally required.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	Form	TWA	STEL	Ceiling	Notation
Fuel Oil, No. 2	ACGIH	Inhalable fraction and vapor	100 mg/m3	--	--	Skin total hydrocarbon
Fuels, diesel	ACGIH	Inhalable fraction and vapor	100 mg/m3	--	--	Skin total hydrocarbon
Fuel Oil, No. 2	ACGIH	Vapor and aerosol	100 mg/m3	--	--	Skin total hydrocarbon
Fuel Oil, No. 2	CVX	Vapor and aerosol	100 mg/m3	--	--	--
Fuels, diesel	CVX	Vapor and aerosol	100 mg/m3	--	--	Skin A3

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Clear to Amber or Green

Physical State: Liquid

Odor: Odorless

Odor Threshold: No data available

pH: No data available

Vapor Pressure: <0.3 mmHg @ 20 °C (68 °F)

Relative Vapor Density: >1

Initial Boiling Point: 150°C (302°F) - 315°C (599°F)

Solubility: Insoluble

Freezing Point: No data available

Melting Point: No data available

Particle Characteristics: Not applicable

Density: 0.77 g/ml - 0.79 g/ml

Kinematic Viscosity: 1.9 cSt - 4.1 cSt @ 40°C (104°F)

Coefficient of Therm. Expansion / °F: No data available

Evaporation Rate: No data available

Decomposition temperature: No data available

Partition coefficient n-octanol/water (logarithmic value): No data available

FLAMMABLE PROPERTIES:

Flammability (solid, gas): No Data Available

Flashpoint: > 60 °C (> 140 °F)

Autoignition: No data available

Flammability (Explosive) Limits (% by volume in air): Lower: 0.6 Upper: 4.7

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Conditions to Avoid: Do not store near sources of ignition. Do not heat above flash point. Avoid contact with mineral acid/alkali.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: None known (Elevated temperatures)

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The material is not considered an eye irritant. The product has not been tested. The statement is based on evaluation of data for similar materials.

Skin Corrosion/Irritation: The material is not considered a skin irritant. The product has not been tested. The statement is based on evaluation of data for similar materials.

Skin Sensitization: The material is not considered a skin sensitizer. The product has not been tested. The statement is based on evaluation of data for similar materials.

Acute Dermal Toxicity: The material is not considered a dermal toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials.

Acute Oral Toxicity: The material is not considered an oral toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials.

Acute Inhalation Toxicity: The material is not considered an inhalation toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The material is not considered a mutagen. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Carcinogenicity: This material is suspected of causing cancer. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Reproductive Toxicity: The material is not considered a reproductive toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Single Exposure: The material is not considered a target organ toxicant (single exposure). The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Repeated Exposure: The material is not considered a target organ toxicant (repeated exposure). The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Aspiration Hazard: This material is considered an aspiration hazard based on the kinematic viscosity of the material.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is not expected to be harmful to aquatic organisms. The product has not been tested. The statement has been derived from the properties of the individual components.

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is not expected to be readily biodegradable. The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.
Partition coefficient n-octanol/water (logarithmic value): No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: NA1993, DIESEL FUEL, 3, III

(International: UN1202, DIESEL FUEL, 3, III)

IMO/IMDG Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:

Aspiration Hazard
Carcinogenicity
Flammable (gases, aerosols, liquids, or solids)

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	05=MA RTK
01-2A=IARC Group 2A	06=NJ RTK
01-2B=IARC Group 2B	07=PA RTK
02=NTP Carcinogen	08-1=TSCA 5(e)
03=EPCRA 313	08-2=TSCA 12(b)
04=CA Proposition 65	

No components of this material were found on the regulatory lists above.

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: DSL (Canada), TSCA (United States).

One or more components does not comply with the following chemical inventory requirements: AIIIC (Australia), EINECS (European Union), ELINCS(European Union), ENCS (Japan), IECSC (China), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan).

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 2 Reactivity: 0

HMIS RATINGS: Health: 1* Flammability: 2 Reactivity: 0
 (0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

No revision information

Revision Date: February 28, 2024

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	PNOS - Particles Not Otherwise Specified

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions

beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Section 1: IDENTIFICATION

Product Name: Gasoline (Generic)

Synonyms: Not available.

Product Numbers: 180027000, 180027001, 180027002, 180028000, 180028001, 180028002, 180029000, 180031000, 180032000, 180032001, 180032002, 180033000, 180033001, 180033002, 180035000, 180037000, 180038000, 180038001, 180038002, 180038003, 180040000, 180040001, 180040002, 180040003, 180041000, 180041002, 180041003, 180042000, 180044000, 180045000, 180046000, 180130000, 180166000, 180168000, 180168003.

Product Use: Fuel.

Restrictions on Use: Not available.

Manufacturer/Supplier: Parkland Refining (B.C.) Ltd.
355 North Willingdon Ave
Burnaby, British Columbia
V5C 1X4

Phone Number: 604-257-4926

Emergency Phone: CANUTEC: 1-888-CAN-UTEC (226-8832), 613-996-6666 or *666 on a cellular phone

Date of Preparation of SDS: November 15, 2021

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification: Flammable Liquids, Category 1
Skin Irritation, Category 2
Eye Irritation, Category 2A
Germ Cell Mutagenicity, Category 1B
Carcinogenicity, Category 1A
Reproductive Toxicity, Category 2
Specific Target Organ Toxicity (Single Exposure), Category 3 - Narcotic Effects
Specific Target Organ Toxicity (Repeated Exposure), Category 1
Aspiration Hazard, Category 1

LABEL ELEMENTS

Hazard

Pictogram(s):



Signal Word: Danger

Physical Hazard Statements: Extremely flammable liquid and vapor.

Health Hazard Statements: Causes skin irritation.
Causes serious eye irritation.
May cause genetic defects.

May cause cancer.
Suspected of damaging fertility or the unborn child.
May cause drowsiness or dizziness.
Causes damage to organs through prolonged or repeated exposure.
May be fatal if swallowed and enters airways.

Precautionary Statements

Prevention: Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep container tightly closed.
Ground and bond container and receiving equipment.
Use explosion-proof electrical, ventilating, and lighting equipment.
Use non-sparking tools.
Take action to prevent static discharges.
Do not breathe mist, vapours, or spray.
Wash hands 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 and eye protection.

Response: IF SWALLOWED: Immediately call a POISON CENTER or doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical attention.
Call a POISON CENTER or doctor if you feel unwell.
Do NOT induce vomiting.
If skin irritation occurs: Get medical attention.
If eye irritation persists: Get medical attention.
Take off contaminated clothing and wash it before reuse.
In case of fire: Use dry chemical, CO₂, water spray or regular foam to extinguish.

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

Disposal: Dispose of contents and container in accordance with applicable regional, national and local laws and regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: None.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

This material is considered hazardous by the Canadian Hazardous Products Regulations.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Gasoline	Not available.	86290-81-5	100
Benzene, methyl-	Toluene	108-88-3	1 - 35
Benzene, dimethyl-	Xylene	1330-20-7	1 - 15
Pentane, 2,2,4-trimethyl-	2,2,4-Trimethylpentane	540-84-1	1 - 13
Butane	Not available.	106-97-8	1 -12
Ethanol	Not available.	64-17-5	0.1 - 10
Hexane	Not available.	110-54-3	1 - 5
Hexane isomers	Not available.	(various)	1 - 5
Benzene	Not available.	71-43-2	0.1 - 4.9
Heptane	Not available.	142-82-5	1 - 4
Benzene, ethyl-	Ethylbenzene	100-41-4	0.1 - 3
Cyclohexane	Not available.	110-82-7	1 - 3
Naphthalene	Not available.	91-20-3	0.1 2
Cyclohexane, methyl-	Methylcyclohexane	108-87-2	1 - 2

Section 4: FIRST-AID MEASURES

Inhalation: Remove person to fresh air and keep comfortable for breathing. Contact medical aid or a poison control center if person is feeling unwell. If breathing or the heart stops, trained personnel should immediately begin artificial respiration (AR) or cardiopulmonary resuscitation (CPR) respectively. Get medical attention immediately.

Acute and delayed symptoms and effects: May cause drowsiness or dizziness. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. Inhalation of Toluene may result in peculiar skin sensations (e.g. pins and needles) or numbness. Very high concentrations may cause unconsciousness and death. High vapour concentrations of Xylene are anesthetic and central nervous system depressants. Hemolytic anemia (destruction of red blood cells) is the primary health concern for humans exposed to Naphthalene for either short or long periods of time. Other effects may include nausea, profuse perspiration, vomiting, kidney damage and liver damage. Optic neuritis (inflammation of the optic nerve) has been observed. Cataracts have also occurred.

Eye Contact: Rinse cautiously with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Acute and delayed symptoms and effects: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Ethanol may cause painful sensitization to light, chemical conjunctivitis and corneal damage.

Skin Contact: Immediately remove all contaminated clothing. Rinse skin with water or shower. If skin irritation occurs: Get medical attention. Wash contaminated clothing before reuse.

Acute and delayed symptoms and effects: Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching. n-Hexane, Benzene and Naphthalene may be absorbed through the skin in harmful amounts.

Ingestion: Do NOT induce vomiting. Immediately call a poison center or doctor. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Never give anything by mouth to an unconscious person. If breathing or the heart stops, trained personnel should immediately begin artificial respiration (AR) or cardiopulmonary resuscitation (CPR) respectively. Get medical attention immediately.

Acute and delayed symptoms and effects: May be fatal if swallowed and enters airways. May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Naphthalene may cause liver and kidney damage. May cause blood abnormalities, methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, and death. Ingestion of large quantities of Naphthalene may cause severe hemolytic anemia and hemoglobinuria. Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (provide a product label or SDS where possible).

Note to Physicians: Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Extremely flammable liquid and vapor. Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water.

If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: Take action to prevent static discharges. This material is sensitive to static discharge.

MEANS OF EXTINCTION

- Suitable Extinguishing Media:** Small Fire: Dry chemical, CO₂, water spray or regular foam.
Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.
- Unsuitable Extinguishing Media:** Do not use straight streams. CAUTION: This product has a very low flash point: Use of water spray when fighting fire may be inefficient.
- Products of Combustion:** Oxides of carbon.
- Protection of Firefighters:** Inhalation or contact with material may irritate or burn skin and eyes. Fire may produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control or dilution water may cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6: ACCIDENTAL RELEASE MEASURES

- Emergency Procedures:** Large Spills: As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded.
- Personal Precautions:** Do not contact or disturb spilled material without the use of personal protective equipment described in Section 8.
- Environmental Precautions:** Prevent entry into waterways, sewers, basements or confined areas.
- Methods for Containment:** Contain and/or stop the release, if it can be done safely and worker exposure can be managed effectively. A vapor suppressing foam may be used to reduce vapors.
- Methods for Clean-Up:** Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material.
- Other Information:** See Section 13 for disposal considerations.
- Reporting:** Report spills to local authorities as appropriate or required.

Section 7: HANDLING AND STORAGE**Handling:**

This product presents a fire hazard. Liquid can quickly evaporate at low temperatures and form vapour (fumes), which can spread and ignite from sources such as pilot lights, hot work activities, electric motors, switches, etc. Do not swallow. Do not breathe mist, vapours, or spray. 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 non-sparking tools. Take action to prevent static discharges. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. See Section 8 for information on Personal Protective Equipment.

Storage:

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store in secure or designated location. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Static Hazard:

Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**Exposure Guidelines****Component**

Gasoline [CAS No. 86290-81-5]

ACGIH: 300 ppm (TWA); 500 ppm (STEL); A3 (1990)

OSHA: 300 ppm (TWA); 500 ppm (STEL) [Vacated];

British Columbia OEL: 300 ppm (TWA); 500 ppm (STEL); 2B

Toluene [CAS No. 108-88-3]

ACGIH: 20 ppm (TWA); OTO; A4; BEI (2020)

OSHA: 200 ppm (TWA); 300 ppm (C); 500 ppm (Peak) (Maximum duration: 10 minutes.)
100 ppm (TWA); 150 ppm (STEL) [Vacated];

British Columbia OEL: 20 ppm (TWA); Reproductive effect

Xylene [CAS No. 1330-20-7]

ACGIH: 100 ppm (TWA); 150 ppm (STEL); A4; BEI (1992)

OSHA: 100 ppm (TWA), 435 mg/m³ (TWA);
150 ppm (STEL) [Vacated];

British Columbia OEL: 100 ppm (TWA); 150 ppm (STEL)

2,2,4-Trimethylpentane [CAS No. 540-84-1]

ACGIH: 300 ppm (TWA); (1979)

OSHA: No PEL established.

British Columbia OEL: No OEL established.

Butane [CAS No. 106-97-8]

ACGIH: 1000 ppm (STEL); Explosion hazard (2012)

OSHA: 800 ppm (TWA) [Vacated];

British Columbia OEL: 1000 ppm (STEL); Flammable asphyxiant

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Ethanol [CAS No. 64-17-5]

ACGIH: 1000 ppm (STEL); A3 (2008)
OSHA: 1000 ppm (TWA), 1900 mg/m³ (TWA);
British Columbia OEL: 1000 ppm (STEL)

Hexane [CAS No. 110-54-3]

ACGIH: 50 ppm (TWA); Skin, BEI (1996)
OSHA: 500 ppm (TWA), 1800 mg/m³ (TWA); Skin.
50 ppm (TWA) [Vacated];
British Columbia OEL: 20 ppm (TWA); Skin

Hexane isomers [CAS No. (various)]

ACGIH: 500 ppm (TWA); 1000 ppm (STEL); (1979); For Hexane, isomers, other than n-Hexane
OSHA: 500 ppm (TWA); 1000 ppm (STEL) [Vacated]; For Hexane isomers.
British Columbia OEL: 200 ppm (TWA)

Benzene [CAS No. 71-43-2]

ACGIH: 0.5 ppm (TWA); 2.5 ppm (STEL); Skin; A1; BEI (1996)
OSHA: 1 ppm (TWA); 5 ppm (STEL);
British Columbia OEL: 0.5 ppm (TWA); 2.5 ppm (STEL); Skin; A1, 1

Heptane [CAS No. 142-82-5]

ACGIH: 400 ppm (TWA); 500 ppm (STEL); (1979)
OSHA: 500 ppm (TWA), 2000 mg/m³ (TWA);
400 ppm (TWA); 500 ppm (STEL) [Vacated];
British Columbia OEL: 400 ppm (TWA); 500 ppm (STEL)

Ethylbenzene [CAS No. 100-41-4]

ACGIH: 20 ppm (TWA); A3; BEI (2010)
OSHA: 100 ppm (TWA), 435 mg/m³ (TWA);
125 ppm (STEL) [Vacated];
British Columbia OEL: 20 ppm (TWA); 2B

Cyclohexane [CAS No. 110-82-7]

ACGIH: 100 ppm (TWA); (1964)
OSHA: 300 ppm (TWA), 1050 mg/m³ (TWA);
British Columbia OEL: 100 ppm (TWA)

Naphthalene [CAS No. 91-20-3]

ACGIH: 10 ppm (TWA); Skin; A3 (2013)
OSHA: 10 ppm (TWA), 50 mg/m³ (TWA);
15 ppm (STEL) [Vacated];
British Columbia OEL: 10 ppm (TWA); Skin; 2B

Methylcyclohexane [CAS No. 108-87-2]

ACGIH: 400 ppm (TWA); (1962)
OSHA: 500 ppm (TWA), 2000 mg/m³ (TWA);
400 ppm (TWA) [Vacated];
British Columbia OEL: 400 ppm (TWA)

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PEL: Permissible Exposure Limit
TWA: Time-Weighted Average
STEL: Short-Term Exposure Limit
C: Ceiling
OEL: Occupational Exposure Limit

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits. Use explosion-proof electrical, ventilating, and lighting equipment.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



Eye/Face Protection: Wear chemical safety goggles where there is risk of splashing or contents may be released under pressure. Ensure that eyewash stations are close to the workstation location. Use equipment for eye protection that meets the regional occupational health and safety codes for Personal Protective Equipment.

Hand Protection: Wear protective gloves. Suggested materials for protective gloves include: Chlorinated Polyethylene (or Chlorosulfonated Polyethylene), Nitrile Rubber, Polyurethane, Viton. Consult manufacturer specifications for further information.

Skin and Body Protection: Wear protective clothing. Chemical resistant clothing that meets regional occupational health and safety codes for protective clothing is recommended in areas where material is stored or handled.

Respiratory Protection: If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator meeting regional occupational health and safety codes, with organic vapor cartridge, or self-contained breathing apparatus must 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.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Consult a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colourless to yellow liquid.
Colour: Colourless to yellow.

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Odour:	Gasoline.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH:	Not available.
Melting Point / Freezing Point:	Not available.
Initial Boiling Point:	27.2 °C (81 °F)
Boiling Range:	27.2 to 204.4 °C (81 to 399.9 °F) (Typical)
Flash Point:	< -45 °C (-49 °F) (TCC)
Evaporation Rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower Flammability Limit:	1.4 %
Upper Flammability Limit:	7.6 %
Vapor Pressure:	5 to 15 psi at 37.8 °C (100 °F)
Vapor Density:	3 to 4 (Air = 1) Typical
Relative Density:	0.70 to 0.80 (Water = 1) at 15.6 °C (60.1 °F) (Typical)
Solubilities:	Insoluble in water; miscible with most organic solvents.
Partition Coefficient: n-Octanol/Water:	2 to 7
Auto-ignition Temperature:	> 280 °C (536 °F)
Decomposition Temperature:	Not available.
Viscosity:	< 1 SUS at 37.8 °C (100 °F)
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.
Density:	0.70 to 0.80 g/mL at 15.6 °C (60.1 °F) (Typical)
Coefficient of Water/Oil Distribution:	Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability:	Stable under normal storage conditions.
Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	Contact with incompatible materials. Sources of ignition. Exposure to heat.

Incompatible Materials: Strong oxidizers: chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products: Not available.

Section 11: TOXICOLOGICAL INFORMATION
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EFFECTS OF ACUTE EXPOSURE
Product Toxicity

Oral: Not available.

Dermal: Not available.

Inhalation: Not available.

Component Toxicity

Component	CAS No.	LD ₅₀ oral	LD ₅₀ dermal	LC ₅₀
Gasoline	86290-81-5	60 mL/kg (mouse)	Not available.	Not available.
Toluene	108-88-3	2600 mg/kg (rat)	14.1 mL/kg (rabbit)	49000 mg/m ³ (rat); 4H
Xylene	1330-20-7	4300 mg/kg (rat)	> 1700 mg/kg (rabbit)	5000 ppm (rat); 4H
2,2,4-Trimethylpentane	540-84-1	Not available.	Not available.	Not available.
Butane	106-97-8	Not available.	Not available.	658000 mg/m ³ (rat); 4H
Ethanol	64-17-5	7060 mg/kg (rat)	20000 mg/kg (rabbit)	20000 ppm (rat); 10H
Hexane	110-54-3	25000 mg/kg (rat)	Not available.	48000 ppm (rat); 4H
Hexane isomers	(various)	Not available.	Not available.	Not available.
Benzene	71-43-2	930 mg/kg (rat)	> 9400 µL/kg (rabbit)	10000 ppm (rat); 7H
Heptane	142-82-5	Not available.	Not available.	103000 mg/m ³ (rat); 4H
Ethylbenzene	100-41-4	3500 mg/kg (rat)	17800 µL/kg (rabbit)	Not available.
Cyclohexane	110-82-7	813 mg/kg (mouse)	180000 mg/kg (rabbit)	Not available.
Naphthalene	91-20-3	490 mg/kg (rat)	> 2500 mg/kg (rat)	> 340 mg/m ³ (rat); 1H
Methylcyclohexane	108-87-2	> 3200 mg/kg (rat)	> 86700 mg/kg (rabbit)	15227 ppm (rabbit); 1H

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion. Skin absorption.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Bone marrow. Liver. Kidneys. Central nervous system. Peripheral nervous system.

Symptoms (including delayed and immediate effects)

Inhalation: May cause drowsiness or dizziness. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. Inhalation of Toluene may result in peculiar skin sensations (e.g. pins and needles) or numbness. Very high concentrations may cause unconsciousness and death. High vapour concentrations of Xylene are anesthetic and central nervous system depressants. Hemolytic anemia (destruction of red blood cells) is the primary health concern for humans exposed to Naphthalene for either short or long periods of time. Other effects may include nausea, profuse perspiration, vomiting, kidney damage and liver damage. Optic neuritis (inflammation of the optic nerve) has been observed. Cataracts have also occurred.

Eye: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Ethanol may cause painful sensitization to light, chemical conjunctivitis and corneal damage.

Skin: Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching. n-Hexane, Benzene and Naphthalene may be absorbed through the skin in harmful amounts.

Ingestion: May be fatal if swallowed and enters airways. May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Naphthalene may cause liver and kidney damage. May cause blood abnormalities, methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, and death. Ingestion of large quantities of Naphthalene may cause severe hemolytic anemia and hemoglobinuria.

Skin Sensitization: Not available.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Glucose-6-phosphate dehydrogenase deficiency.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Blood. Cardiovascular system. Bone marrow. Liver. Kidneys. Reproductive system. Central nervous system. Peripheral nervous system.

Chronic Effects: Hazardous by OSHA/WHMIS criteria. May cause chronic effects. Prolonged or repeated contact may dry skin and cause irritation. High vapour concentrations, generally greater than 10% by volume, may sensitize the heart and lead to lethal cardiac arrhythmias. Reports of chronic poisoning with Benzene, Toluene, Ethylbenzene or Xylene describe anemia, decreased blood cell count and bone marrow hypoplasia. Liver and kidney damage may occur. Repeated exposure of the eyes to high concentrations of Xylenes vapour may cause reversible eye damage. Chronic inhalation exposure to xylene causes mid-frequency hearing loss in laboratory animals. Xylene reacts synergistically with n-hexane to enhance hearing loss. Immunodepressive effects have also been reported for Benzene. Prolonged

exposure to Ethanol may cause liver, kidney, and heart damage. Chronic inhalation of n-Hexane may cause peripheral nerve disorders and central nervous system effects. This material contains Cyclohexane which is known to cause liver and kidney damage.

Carcinogenicity: May cause cancer. Long-term exposure to Gasoline vapours has caused cancer in laboratory animals. Animal studies with Ethanol have reported the development of tumours. Chronic exposure to benzene has been associated with an increased incidence of leukemia and multiple myeloma (tumour composed of cells of the type normally found in the bone marrow).

Component Carcinogenicity

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Gasoline	A3	Group 2B	Not listed.	OSHA Carcinogen.	Listed.
Toluene	A4	Group 3	Not listed.	Not listed.	Not listed.
Xylene	A4	Group 3	Not listed.	Not listed.	Not listed.
Ethanol	A3	Group 1	Not listed.	OSHA Carcinogen.	Not listed.
Benzene	A1	Group 1	List 1	OSHA Carcinogen.	Listed.
Ethylbenzene	A3	Group 2B	Not listed.	OSHA Carcinogen.	Listed.
Naphthalene	A3	Group 2B	List 2	OSHA Carcinogen.	Listed.

Mutagenicity: May cause genetic defects. Laboratory experiments with Ethanol have resulted in mutagenic effects.

Reproductive Effects: Suspected of damaging fertility or the unborn child. Ethanol may cause reproductive effects.

Developmental Effects

Teratogenicity: Not available.

Embryotoxicity: Possible risk of harm to the unborn child. Exposure to Toluene may affect the developing fetus. Benzene and Xylene have caused adverse fetal effects in laboratory animals. Ethanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Prenatal exposure to ethanol is associated with a distinct pattern of congenital malformations that have collectively been termed the "fetal alcohol syndrome".

Toxicologically Synergistic Materials: Xylene reacts synergistically with n-hexane to enhance hearing loss.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

96 hour(s) LC50: 2.7 mg/l (Oncorhynchus mykiss)

96 hour(s) LC50: 1.8 mg/l (Mysidopsis bahia)

96 hour(s) LC50: 8.3 mg/l (Cyprinodon variegatus)

48 hour(s) LC50: 3.0 mg/l (Daphnia magna)

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Waste petroleum products can often be reused or recycled, contact local hazardous waste disposal companies for assistance. Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: UN1203, GASOLINE, 3, PG II

Class: 3

UN Number: UN1203

Packing Group: II

Label Code:



Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name: UN1203, GASOLINE, 3, PG II

Class: 3

UN Number: UN1203

Packing Group: II

Label Code:



IMO/IMDG

Proper Shipping Name: UN1203, GASOLINE, 3, PG II

Class: 3

UN Number: UN1203

Packing Group: II

Label Code:



Marine Pollutant: Yes.

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)

The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)

The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations
United States

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Toluene	Not listed.	Not listed.	1000	313	U220	Not listed.
Xylene	Not listed.	Not listed.	100	313	U239	Not listed.
2,2,4-Trimethylpentane	Not listed.	Not listed.	1000	Not listed.	Not listed.	Not listed.
Butane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Hexane	Not listed.	Not listed.	5000	313	Not listed.	Not listed.
Benzene	Not listed.	Not listed.	10	313	U019	Not listed.
Ethylbenzene	Not listed.	Not listed.	1000	313	Not listed.	Not listed.
Cyclohexane	Not listed.	Not listed.	1000	313	U056	Not listed.
Naphthalene	Not listed.	Not listed.	100	313	U165	Not listed.

State Regulations
Massachusetts

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Gasoline	86290-81-5	Listed.
Toluene	108-88-3	Listed.
Xylene	1330-20-7	Listed.
2,2,4-Trimethylpentane	540-84-1	Listed.
Butane	106-97-8	Listed.
Ethanol	64-17-5	Listed.
Hexane	110-54-3	Listed.
Benzene	71-43-2	E
Heptane	142-82-5	Listed.
Ethylbenzene	100-41-4	Listed.
Cyclohexane	110-82-7	Listed.
Naphthalene	91-20-3	Listed.
Methylcyclohexane	108-87-2	Listed.

Note: E = Extraordinarily Hazardous Substance

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Gasoline	86290-81-5	SHHS
Toluene	108-88-3	SHHS

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Xylene	1330-20-7	SHHS
2,2,4-Trimethylpentane	540-84-1	SHHS
Butane	106-97-8	SHHS
Ethanol	64-17-5	SHHS
Hexane	110-54-3	SHHS
Benzene	71-43-2	SHHS
Heptane	142-82-5	SHHS
Ethylbenzene	100-41-4	SHHS
Cyclohexane	110-82-7	SHHS
Naphthalene	91-20-3	SHHS
Methylcyclohexane	108-87-2	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Gasoline	86290-81-5	Listed.
Toluene	108-88-3	E
Xylene	1330-20-7	E
2,2,4-Trimethylpentane	540-84-1	Listed.
Butane	106-97-8	Listed.
Ethanol	64-17-5	Listed.
Hexane	110-54-3	Listed.
Benzene	71-43-2	ES
Heptane	142-82-5	Listed.
Ethylbenzene	100-41-4	E
Cyclohexane	110-82-7	E
Naphthalene	91-20-3	E
Methylcyclohexane	108-87-2	Listed.

Note: E = Environmental Hazard; S = Special Hazardous Substance

California
California Prop 65:


WARNING This product can expose you to chemicals including Gasoline, Toluene, Benzene, Ethylbenzene, Hexane and Naphthalene which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Section 16: OTHER INFORMATION

Other information: This SDS was prepared according to WHMIS 2015.

Disclaimer:

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for their own particular use.

Date of Preparation of SDS: November 15, 2021

Version: 2.0

GHS SDS Prepared by: Deerfoot Consulting Inc.

Phone: (403) 720-3700

SAFETY DATA SHEET

KEROSENE TYPE AVIATION TURBINE FUEL



Section 1. Identification

Product name : KEROSENE TYPE AVIATION TURBINE FUEL
See Section 16 for synonyms.

Product description : Hydrocarbons and Additives

SDS # : 8525

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Aviation fuel

Uses advised against : This product is not recommended for any industrial, professional or consumer use other than the identified uses above.

Supplier : Imperial Oil Downstream
P.O. Box 2480, Station M

Calgary, ALBERTA T2P 3M9 Canada

24-Hour emergency telephone number : 1-866-232-9563 / (800)424-9300 CHEMTREC

Product Technical Information : 1-800-268-3183

Supplier General Contact : 1-800-567-3776

SDS Internet Address : www.sds.exxonmobil.com

Section 2. Hazard identification

This material is considered to be hazardous according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H226 - Flammable liquid and vapor.
H304 - May be fatal if swallowed and enters airways.
H315 - Causes skin irritation.
H336 - May cause drowsiness or dizziness.
H351 - Suspected of causing cancer.

Precautionary statements

Section 2. Hazard identification

- Prevention** : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240 - Ground and bond container and receiving equipment.
P241 - Use explosion-proof electrical, ventilating or lighting equipment.
P242 - Use non-sparking tools.
P243 - Take action to prevent static discharges.
P261 - Avoid breathing vapor.
P264 - Wash thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves, protective clothing and eye or face protection.
- Response** : P301 + P310, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304 + P312, P340 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell. Remove person to fresh air and keep comfortable for breathing.
P308 + P313 - IF exposed or concerned: Get medical advice or attention.
P332 + P313 - If skin irritation occurs: Get medical advice/attention.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P370 + P378 - In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish.
- Storage** : P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 - Keep cool.
P405 - Store locked up.
- Disposal** : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Contains** : kerosene and naphthalene
- Note** : This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% (w/w)	CAS number
kerosene	99.85	8008-20-6
naphthalene	0.8	91-20-3
2-(2-methoxyethoxy)-ethanol	0.15	111-77-3

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Section 4. First-aid measures

- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 10 minutes. Get medical attention.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products : Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, sulfur oxides

Special protective actions for fire-fighters : Use standard firefighting procedures and consider the hazards of other involved materials. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Assure an extended cooling down period to prevent re-ignition. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Put on appropriate personal protective equipment. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

- Large spill** : Stop leak if without risk. Eliminate all ignition sources. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. If the Flash Point exceeds the Ambient Temperature by 10 degrees C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. Seek the advice of a specialist before using dispersants. Warn other shipping. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not swallow. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. It is dangerous and/or unlawful to put fuel into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) during safety critical tasks, such as bulk fuel loading or unloading operations, or in storage areas where vapors may be present, unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. For use as a motor fuel only. Do not siphon by mouth.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Static Accumulator** : This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
KEROSENE TYPE AVIATION TURBINE FUEL kerosene	ExxonMobil (Company). TWA: 100 ppm 8 hours. Form: Vapor and aerosol. TWA: 500 mg/m ³ 8 hours. Form: Vapor and aerosol. CA Saskatchewan Provincial (Canada, 7/2013). Absorbed through skin. STEL: 250 mg/m ³ , (measured as total hydrocarbon vapour) 15 minutes. TWA: 200 mg/m ³ , (measured as total hydrocarbon vapour) 8 hours. CA Ontario Provincial (Canada, 6/2019). Absorbed through skin. TWA: 200 mg/m ³ , (as total hydrocarbon vapour) 8 hours. CA Quebec Provincial (Canada, 6/2022). [kerosene] Absorbed through skin. TWAEV: 200 mg/m ³ 8 hours. CA Alberta Provincial (Canada, 6/2018). [Kerosene/Jet fuels] Absorbed through skin. OEL: 200 mg/m ³ , (as total hydrocarbon vapour) 8 hours. CA British Columbia Provincial (Canada, 6/2023). [Kerosene/Jet fuels] Absorbed through skin. Notes: Application restricted to conditions in which there are negligible aerosol exposures. TWA: 200 mg/m ³ , (as total hydrocarbon vapour) 8 hours. ACGIH TLV (United States, 1/2023). [Kerosene] Absorbed through skin. TWA: 200 mg/m ³ , (as total hydrocarbon vapor) 8 hours. ExxonMobil (Company). Absorbed through skin. TWA: 5 mg/m ³ 8 hours. Form: Stable Aerosol. TWA: 200 mg/m ³ 8 hours. Form: Vapor.
naphthalene	CA Saskatchewan Provincial (Canada, 7/2013). Absorbed through skin. STEL: 15 ppm 15 minutes. TWA: 10 ppm 8 hours. CA British Columbia Provincial (Canada, 6/2023). Absorbed through skin. TWA: 10 ppm 8 hours. CA Ontario Provincial (Canada, 6/2019). Absorbed through skin. TWA: 10 ppm 8 hours. CA Quebec Provincial (Canada, 6/2022). Absorbed through skin. TWAEV: 10 ppm 8 hours. CA Alberta Provincial (Canada, 6/2018). Absorbed through skin. OEL: 15 ppm 15 minutes. OEL: 10 ppm 8 hours. OEL: 52 mg/m ³ 8 hours. OEL: 79 mg/m ³ 15 minutes. ACGIH TLV (United States. 1/2023). Absorbed through skin.

Section 8. Exposure controls/personal protection

TWA: 52 mg/m³ 8 hours.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

- Physical state** : Liquid.
- Color** : Pale yellow

Section 9. Physical and chemical properties and safety characteristics

Odor threshold	: Not available.
pH	: Not applicable.
Melting point/freezing point	: Not available.
Boiling point, initial boiling point, and boiling range	: <205°C (<401°F)
Flash point	: Closed cup: 38°C (100.4°F) [ASTM D-93]
Evaporation rate	: Not available.
Flammability	: Flammable liquids - Category 3
Lower and upper explosion limit/flammability limit	: Lower: 0.7% Upper: 5%
Vapor pressure	: <7.5 mm Hg [38 °C]
Relative vapor density	: 4 [Air = 1]
Relative density	: 0.81
Solubility in water	: Negligible
Partition coefficient: n-octanol/water	: >3.5
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: 8.8 cSt [-20 °C]
<u>Particle characteristics</u>	
Median particle size	: Not applicable.
Pour point	: -40°C

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials, Halogens, strong acids, Alkalies, Strong oxidizers
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Section 11. Toxicological information

Product/ingredient name	Test	Species	Result	Duration
KEROSENE TYPE AVIATION TURBINE FUEL	LC50 Inhalation Vapor	Rat	>5.28 mg/l	4 hours
	LD50 Dermal	Rabbit	>2000 mg/kg	-
naphthalene	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Vapor	Rat	>0.4 mg/l	4 hours
	LD50 Oral	Mouse	533 mg/kg	-

Conclusion/Summary

Inhalation

: Minimally Toxic. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403

Dermal

: Minimally Toxic. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 402

Oral

: Minimally Toxic. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 420

Irritation/Corrosion

Conclusion/Summary

Skin

: Irritating to the skin. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404

Eyes

: May cause mild, short-lasting discomfort to eyes. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405

Respiratory

: Negligible hazard at ambient/normal handling temperatures. No end point data for material. Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.

Sensitization

Conclusion/Summary

Skin

: Not expected to be a skin sensitizer. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 406

Respiratory

: Not expected to be a respiratory sensitizer. No end point data for material.

Mutagenicity

Conclusion/Summary

: Not expected to be a germ cell mutagen. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 475 476 478 479

Carcinogenicity

Conclusion/Summary

: May cause cancer. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 451

Classification

Product/ingredient name	IARC	NTP	ACGIH
kerosene	3	-	A3
naphthalene	2B	Reasonably anticipated to be a human carcinogen.	A3

Reproductive toxicity

Conclusion/Summary

: Not expected to be a reproductive toxicant. No end point data for material. Based on assessment of the components.

Specific target organ toxicity (single exposure)

Conclusion/Summary

: May cause drowsiness or dizziness. No end point data for material.

Specific target organ toxicity (repeated exposure)

Conclusion/Summary

: Not expected to cause organ damage from prolonged or repeated exposure. Data available. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 410 412 413

Aspiration hazard

Section 11. Toxicological information

Other information

Contains

: NAPHTHALENE: Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts. Naphthalene caused cancer in laboratory animal studies, but the relevance of these findings to humans is uncertain. Kerosene: Carcinogenic in animal tests. Lifetime skin painting tests produced tumors, but the mechanism is due to repeated cycles of skin damage and restorative hyperplasia. This mechanism is considered unlikely in humans where such prolonged skin irritation would not be tolerated. Did not cause mutations In vitro. Inhalation of vapors did not result in reproductive or developmental effects in laboratory animals. Inhalation of high concentrations in animals resulted in respiratory tract irritation, lung changes and some reduction in lung function. Non-sensitizing in animal tests.

Product

: Vapor/aerosol concentrations above recommended exposure levels are irritating to the eyes and respiratory tract, may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects including death. Jet fuel: Some jet fuels have potential in mice to suppress indicators of immune system functionality. The relevance of these effects to humans is uncertain. DIETHYLENE GLYCOL MONOMETHYL ETHER: Oral maternal exposure of animals resulted in teratogenicity. Dermal maternal exposure of animals resulted in slight toxicity to the fetus. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Section 12. Ecological information

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

Toxicity

Conclusion/Summary

Acute toxicity

: Toxic to aquatic life.

Chronic toxicity

: Toxic to aquatic life with long lasting effects.

Persistence and degradability

Biodegradability

: Majority of components -- Expected to be inherently biodegradable

Atmospheric Oxidation

: More volatile component -- Expected to degrade rapidly in air

Bioaccumulative potential

Conclusion/Summary

: Majority of components -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

Mobility in soil

Mobility

: High molecular wt. component -- Expected to partition to sediment and wastewater solids. Low solubility and floats and is expected to migrate from water to the land. More volatile component -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

Other ecological information

Other adverse effects





: No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

- The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

Section 14. Transport information

	TDG Classification	DOT Classification	IMDG	IATA
UN number	UN1863	UN1863	UN1863	UN1863
UN proper shipping name	FUEL, AVIATION, TURBINE ENGINE	Fuel, aviation, turbine engine	FUEL, AVIATION, TURBINE ENGINE	Fuel, aviation, turbine engine
Transport hazard class(es)	3	3	3	3
Label(s) / Mark(s)				
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Additional information

TDG Classification

- Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3), 2.7 (Marine pollutant mark). The marine pollutant mark is not required when transported by road or rail.
Explosive Limit and Limited Quantity Index 5
Passenger Carrying Road or Rail Index 60
Special provisions 17, 150

DOT Classification

- This product may be re-classified as "Combustible Liquid," unless transported by vessel or aircraft. Non-bulk packages (less than or equal to 119 gal) of combustible liquids, that are marine pollutants, are not regulated as hazardous materials in package sizes less than the product reportable quantity, unless transported by vessel. This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a. **Reportable quantity** 12500 lbs / 5675 kg [1850.8 gal / 7006.2 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
Limited quantity Yes.

Section 14. Transport information

- IMDG** : **Quantity limitation** Passenger aircraft/rail: 60 L. Cargo aircraft: 220 L.
Special provisions 144, B1, IB3, T2, TP1
 : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Emergency schedules F-E, S-E
Special provisions 223
 Flash point 38 °C C.C.
- IATA** : The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: 60 L. Packaging instructions: 355. Cargo Aircraft Only: 220 L. Packaging instructions: 366. Limited Quantities - Passenger Aircraft: 10 L. Packaging instructions: Y344.
Special provisions A3
- Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
- Transport in bulk according to IMO instruments** : Not applicable.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : None of the components are listed.

Inventory list

Australia inventory (AIC) : All components are listed or exempted.

Canada inventory (DSL-NDSL) : All components are listed or exempted.

China inventory (IECSC) : All components are listed or exempted.

Japan inventory (CSCL) : All components are listed or exempted.

Japan inventory (Industrial Safety and Health Act) : All components are listed or exempted.

New Zealand Inventory of Chemicals (NZIoC) : All components are listed or exempted.

Philippines inventory (PICCS) : All components are listed or exempted.

Korea inventory (KECI) : All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI) : All components are listed or exempted.

United States inventory (TSCA 8b) : All components are active or exempted.

Section 16. Other information

History

Date of issue/Date of revision : 10 May 2024

Date of previous issue : No previous edition

Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 HPR = Hazardous Products Regulations
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container

Section 16. Other information

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)

N/A = Not available

SGG = Segregation Group

UN = United Nations

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	On basis of test data
SKIN IRRITATION - Category 2	Calculation method
CARCINOGENICITY - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3	Calculation method
ASPIRATION HAZARD - Category 1	Calculation method

References : Not available.

Indicates information that has changed from previously issued version.

THIS SDS COVERS THE FOLLOWING MATERIALS :

AVIATION TURBINE FUEL; CAN/CGSB-3.24 GRADE F34; JET A; JET A-1; JET A-1 (FSII); KEROSENE-TYPE AVIATION TURBINE FUEL

Product code : 1168399

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SAFETY DATA SHEET

1. Identification

Product identifier ETHANOL (FUEL GRADE)
Other means of identification
SDS number 5393
Product code FHR_ETOHFG_CA_EN
Synonyms DENATURED FUEL ETHANOL * ETHANOL - DENATURED * ETHYL ALCOHOL (FUEL GRADE)
Recommended use Gasoline blending component.
Recommended restrictions Not for human consumption

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Supplier Flint Hills Resources, LP
4111 E. 37th St. North
Wichita, KS
67220-3203
United States

Telephone Numbers - 24 hour Emergency Assistance

Chemtrec (US) 800-424-9300 (CCN: 8586)

Telephone numbers

General Assistance

8-4:45 (M-F, CST) 316-828-7988

SDS Assistance E-mail msdsrequest@fhr.com

2. Hazard identification

Physical hazards	Flammable liquids	Category 2
Health hazards	Serious eye damage/eye irritation	Category 2A
	Germ cell mutagenicity	Category 1B
	Carcinogenicity	Category 1A
	Reproductive toxicity	Category 2
	Specific target organ toxicity following single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity following single exposure	Category 3 narcotic effects
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 3
	Hazardous to the aquatic environment, long-term hazard	Category 3

Label elements



Signal word

Danger

Hazard statement

Highly flammable liquid and vapour. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. Harmful to aquatic life with long lasting effects.

Precautionary statement	
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. Avoid breathing mist/vapours. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. In case of fire: Use appropriate media to extinguish.
Storage	Keep cool. Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Other hazards	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.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Ethanol		64-17-5	92 - 100
Denaturant		Mixture	1 - < 3
Water		7732-18-5	1
Benzene		71-43-2	< 1

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison centre or doctor/physician if you feel unwell.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Coughing.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Alcohol resistant foam. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapours may form explosive mixtures with air. Vapours may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Highly flammable liquid and vapour.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist/vapours. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. This product is miscible in water. Prevent product from entering drains.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

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. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Explosion-proof general and local exhaust ventilation. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist/vapours. Avoid contact with eyes. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

For additional information on equipment bonding and grounding, refer to the Canadian Electrical Code in Canada, (CSA C22.1), or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity" or National Fire Protection Association (NFPA) 70, "National Electrical Code".

Conditions for safe storage, including any incompatibilities Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	2.5 ppm
	TWA	0.5 ppm
Ethanol (CAS 64-17-5)	STEL	1000 ppm

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	8 mg/m3
		2.5 ppm
	TWA	1.6 mg/m3
Ethanol (CAS 64-17-5)		0.5 ppm
	TWA	1880 mg/m3
		1000 ppm

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	2.5 ppm
	TWA	0.5 ppm
Ethanol (CAS 64-17-5)	STEL	1000 ppm

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	2.5 ppm
	TWA	0.5 ppm
Ethanol (CAS 64-17-5)	STEL	1000 ppm

Canada - Northwest Territories

Components	Type	Value
Ethanol (CAS 64-17-5)	STEL	1250 ppm
	TWA	1000 ppm

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	2.5 ppm
	TWA	0.5 ppm
Ethanol (CAS 64-17-5)	STEL	1000 ppm

Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	15.5 mg/m3
		5 ppm
	TWA	3 mg/m3
Ethanol (CAS 64-17-5)		1 ppm
	TWA	1880 mg/m3
		1000 ppm

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value
Ethanol (CAS 64-17-5)	15 minute	1250 ppm

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value
	8 hour	1000 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Benzene (CAS 71-43-2)	25 µg/g	S-Phenylmercapturic acid	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines

Canada - Alberta OELs: Skin designation

Benzene (CAS 71-43-2) Can be absorbed through the skin.

Canada - British Columbia OELs: Skin designation

Benzene (CAS 71-43-2) Can be absorbed through the skin.

Canada - Manitoba OELs: Skin designation

Benzene (CAS 71-43-2) Danger of cutaneous absorption

Canada - Ontario OELs: Skin designation

Benzene (CAS 71-43-2) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Benzene (CAS 71-43-2) Danger of cutaneous absorption

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear appropriate chemical resistant gloves. Nitrile, butyl rubber or neoprene gloves are recommended.

Other Wear suitable protective clothing. Use of an impervious apron is recommended.

Respiratory protection Use a chemical respirator with organic vapour cartridge and full facepiece when concentration exceeds exposure limits.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Liquid.
Form Liquid.
Colour Clear, colourless.

Odour Alcohol.

Odour threshold Not available.

pH Not available.

Melting point/freezing point Not available.

Initial boiling point and boiling range > 65.56 °C (> 150 °F)

Flash point < 0 °C (< 32.0 °F) Pensky-Martens Closed Cup

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	1.4 %
Flammability limit - upper (%)	19 %
Explosive limit - lower (%)	See flammability limit.
Explosive limit – upper (%)	See flammability limit.
Vapour pressure	7.91 kPa at 25°C
Vapour density	1.59
Relative density	0.791 - 0.793
Relative density temperature	20 °C (68 °F)
Solubility(ies)	
Solubility (water)	Very soluble.
Partition coefficient (n-octanol/water)	-0.31 (as ethanol)
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

Other information

Density	0.79 g/cm ³ estimated at 20 °C
Dynamic viscosity	0.5 mPa·s
Dynamic viscosity temperature	70 °C (158 °F)
Electrostatic properties	
Conductivity	> 2000 pS/m
Explosive properties	Not explosive.
Heat of combustion	24.7 kJ/g
Kinematic viscosity	0.6389 mm ² /s estimated
Oxidising properties	Not oxidising.
Percent volatile	100
Surface tension	22.75 mN/m 68°F (20°C)
VOC	100 %

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidising agents.
Hazardous decomposition products	No hazardous decomposition products are known.

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

Inhalation	May cause drowsiness and dizziness. Headache. Nausea, vomiting. May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics

May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Coughing.

Information on toxicological effects

Acute toxicity

Components	Species	Test Results
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Benzene (CAS 71-43-2)

Acute

Inhalation

LC50 Rat 10000 mg/l, 7 Hours

Oral

LD50 Rat 3306 mg/kg

Ethanol (CAS 64-17-5)

Acute

Dermal

LD50 Rat > 2000 mg/kg

Inhalation

Vapour

LC50 Mouse 39 g/m3, 4 Hours

Oral

LD50 Rat 7000 - 11000 mg/kg

Skin corrosion/irritation

Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory or skin sensitisation

Respiratory sensitisation

Not a respiratory sensitiser.

Skin sensitisation

This product is not expected to cause skin sensitisation.

Germ cell mutagenicity

May cause genetic defects.

Carcinogenicity

May cause cancer.

ACGIH Carcinogens

Benzene (CAS 71-43-2) A1 Confirmed human carcinogen.

Canada - Alberta OELs: Carcinogen category

Benzene (CAS 71-43-2) Confirmed human carcinogen.

Canada - Manitoba OELs: carcinogenicity

Benzene (CAS 71-43-2) Confirmed human carcinogen.

Ethanol (CAS 64-17-5) Confirmed animal carcinogen with unknown relevance to humans.

Canada - Quebec OELs: Carcinogen category

Benzene (CAS 71-43-2) Detected carcinogenic effect in humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Benzene (CAS 71-43-2) 1 Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

Benzene (CAS 71-43-2) Known To Be Human Carcinogen.

Reproductive toxicity

Suspected of damaging fertility or the unborn child.

Specific target organ toxicity - single exposure

May cause respiratory irritation. May cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure

Not classified.

Aspiration hazard

Not an aspiration hazard.

Chronic effects

Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity

Harmful to aquatic life with long lasting effects.

Components	Species	Test Results
Benzene (CAS 71-43-2)		
Aquatic		
Crustacea	EC50	Water flea (Daphnia magna)
Fish	LC50	Rainbow trout, donaldson trout (Oncorhynchus mykiss)
Ethanol (CAS 64-17-5)		
Aquatic		
<i>Acute</i>		
Crustacea	LC50	Ceriodaphnia dubia
		Daphnia magna
Fish	LC50	Pimephales promelas
<i>Chronic</i>		
Crustacea	NOEC	Ceriodaphnia dubia
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.	
Bioaccumulative potential		
Partition coefficient n-octanol / water (log Kow)		
Benzene (CAS 71-43-2)	2.13	
Ethanol (CAS 64-17-5)	-0.31	
Mobility in soil	The product is soluble in water.	
Other adverse effects	The product contains volatile organic compounds which have a photochemical ozone creation potential.	
13. Disposal considerations		
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.	
Local disposal regulations	Dispose in accordance with all applicable regulations.	
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer of the waste, and the waste disposal company.	
Waste from residues / unused products	Dispose in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).	
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.	
14. Transport information		
TDG		
UN number	UN3475	
UN proper shipping name	Ethanol and Gasoline Mixture	
Transport hazard class(es)		
Class	3	
Subsidiary risk	-	
Packing group	II	
Environmental hazards	Not available.	
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.	
IATA		
UN number	UN1987	
UN proper shipping name	Alcohols, n.o.s. (Ethanol, Gasoline)	
Transport hazard class(es)		
Class	3	
Subsidiary risk	-	
Packing group	II	
Environmental hazards	No.	
ERG Code	3L	
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.	

IMDG

UN number	UN1987
UN proper shipping name	ALCOHOLS, N.O.S.
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-E, S-D
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Ontario. Toxic Substances. Toxic Reduction Act, 2009. Regulation 455/09 (July 1, 2011)

Benzene (CAS 71-43-2)

Precursor Control Regulations

Not regulated.

International regulations**Stockholm Convention**

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date	03-April-2019
Revision date	27-January-2021
Version No.	02
Further information	WARNING -- WARNING: THIS PRODUCT, AS INDICATED, CONTAINS ETHANOL. ETHANOL, OR FUELS BLENDED WITH ETHANOL, MAY DAMAGE OR HARM FUEL STORAGE TANKS, PIPING, METERS, ENGINES AND/OR RELATED FUEL SYSTEMS (INCLUDING, BUT NOT LIMITED TO MARINE EQUIPMENT). IT IS IMPERATIVE THAT BEFORE YOU USE OR STORE THIS PRODUCT YOU CONDUCT AN ASSESSMENT TO DETERMINE WHETHER THIS FUEL IS COMPATIBLE WITH YOUR PARTICULAR EQUIPMENT/MACHINERY IN WHICH THIS FUEL MIGHT BE STORED, TRANSPORTED OR COMBUSTED. DISCLAIMER OF ALL WARRANTIES: FLINT HILLS RESOURCES MAKES NO WARRANTY EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR WARRANTY FOR FITNESS FOR ANY PARTICULAR PURPOSE AND HEREBY DISCLAIMS ALL SUCH WARRANTIES REGARDING THIS PRODUCT.

Disclaimer	NOTICE: The information contained in this document is based on data considered to be accurate as of the preparation date of this Safety Data Sheet (SDS) and was prepared pursuant to applicable Government regulation(s). This SDS may not be used as a commercial specification sheet of manufacturer or seller, and no warranty or representation, expressed or implied, is made as to the accuracy or comprehensiveness of the above data and safety information, nor is any authorization given or implied to practice any patented invention without a license. Additional information may be needed to evaluate other uses of the product, including use of the product in combination with any materials or in any processes other than those specifically referenced. Information provided about any hazards that may be associated with the product is not meant to suggest that use of the product in a given application will necessarily result in any exposure or risk to workers or the general public. Purchasers and users of the product are responsible for determining that this product is suitable for the intended use and application. No responsibility can be assumed by vendor for any damage or injury resulting from failure to adhere to recommended uses, or from any hazards inherent to the product. Purchasers and users assume all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Purchasers and users of the product should explicitly advise their employees, agents, contractors and customers who will use the product of this SDS.
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SAFETY DATA SHEET

AVIATION GASOLINE 100LL



Section 1. Identification

Product name : AVIATION GASOLINE 100LL
Product description : Hydrocarbons and Additives
SDS # : 3834

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Aviation fuel
Uses advised against : This product is not recommended for any industrial, professional or consumer use other than the identified uses above.

Supplier : Imperial Oil Downstream
P.O. Box 2480, Station M
Calgary, ALBERTA T2P 3M9 Canada

24-Hour emergency telephone number : 1-866-232-9563 / (800)424-9300 CHEMTREC

Product Technical Information : 1-800-268-3183

Supplier General Contact : 1-800-567-3776

SDS Internet Address : www.sds.exxonmobil.com

Section 2. Hazard identification

This material is considered to be hazardous according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
SKIN IRRITATION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms



Signal word : Danger

Hazard statements : H225 - Highly flammable liquid and vapor.
H304 - May be fatal if swallowed and enters airways.
H315 - Causes skin irritation.
H336 - May cause drowsiness or dizziness.
H373 - May cause damage to organs through prolonged or repeated exposure. (central nervous system (CNS), kidneys, liver)

Precautionary statements

Section 2. Hazard identification

Prevention : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P240 - Ground and bond container and receiving equipment.
 P241 - Use explosion-proof electrical, ventilating or lighting equipment.
 P242 - Use non-sparking tools.
 P243 - Take action to prevent static discharges.
 P260 - Do not breathe vapor.
 P264 - Wash thoroughly after handling.
 P271 - Use only outdoors or in a well-ventilated area.
 P280 - Wear protective gloves, protective clothing, eye protection, face protection, or hearing protection.

Response : P301 + P331, P310 - IF SWALLOWED: Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.
 P302 + P352 - IF ON SKIN: Wash with plenty of water.
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 P304 + P312, P340 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell. Remove person to fresh air and keep comfortable for breathing.
 P332 + P313 - If skin irritation occurs: Get medical advice/attention.
 P362 + P364 - Take off contaminated clothing and wash it before reuse.
 P370 + P378 - In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish.

Storage : P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
 P403 + P235 - Keep cool.
 P405 - Store locked up.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Contains : light alkylation naphtha; toluene and tetraethyl lead

Note : This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% (w/w)	Identifiers
light alkylation naphtha	≥80	CAS: 64741-66-8
toluene	≥5 - ≤10	CAS: 108-88-3
tetraethyl lead	≤0.1	CAS: 78-00-2

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Section 4. First-aid measures

- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 10 minutes. Get medical attention.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately. This material, or a component, may be associated with cardiac sensitization following very high exposures (well above occupational exposure limits) or with concurrent exposure to high stress levels or heart-stimulating substances like epinephrine. Administration of such substances should be avoided.
- Specific treatments** : No specific treatment.

Section 4. First-aid measures

- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.

- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

- Hazardous combustion products** : Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, sulfur oxides

- Special protective actions for fire-fighters** : Use standard firefighting procedures and consider the hazards of other involved materials. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Assure an extended cooling down period to prevent re-ignition. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. No action shall be taken involving any personal risk or without suitable training.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Put on appropriate personal protective equipment. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate.

- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Section 6. Accidental release measures

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Eliminate all ignition sources. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Do not confine in area of spill. Allow liquid to evaporate from the surface. Seek the advice of a specialist before using dispersants. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not swallow. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. It is dangerous and/or unlawful to put fuel into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) during safety critical tasks, such as bulk fuel loading or unloading operations, or in storage areas where vapors may be present, unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. For use as a motor fuel only. Do not siphon by mouth.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Static Accumulator** : This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
<p>AVIATION GASOLINE 100LL</p> <p>toluene</p> <p>tetraethyl lead</p>	<p>ExxonMobil (COMPANY) STEL: 200 ppm. Form: Vapor.. TWA 8 hours: 100 ppm. Form: Vapor.. TWA 8 hours: 300 mg/m³. Form: Vapor..</p> <p>CA Saskatchewan Provincial (Canada, 4/2021) Absorbed through skin. STEL 15 minutes: 60 ppm. TWA 8 hours: 50 ppm.</p> <p>CA British Columbia Provincial (Canada, 6/2025) TWA 8 hours: 20 ppm.</p> <p>CA Ontario Provincial (Canada, 6/2019) TWA 8 hours: 20 ppm.</p> <p>CA Quebec Provincial (Canada, 2/2024) Ototoxicant. TWAEV 8 hours: 20 ppm.</p> <p>CA Alberta Provincial (Canada, 3/2023) Absorbed through skin. OEL 8 hours: 50 ppm. OEL 8 hours: 188 mg/m³.</p> <p>ACGIH TLV (United States, 1/2025) Ototoxicant. TWA 8 hours: 20 ppm.</p> <p>CA Saskatchewan Provincial (Canada, 4/2021) Absorbed through skin. STEL 15 minutes: 0.3 mg/m³ (measured as Pb). TWA 8 hours: 0.1 mg/m³ (measured as Pb).</p> <p>CA British Columbia Provincial (Canada, 6/2025) Absorbed through skin. TWA 8 hours: 0.075 mg/m³ (as Pb).</p> <p>CA Ontario Provincial (Canada, 6/2019) Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (as Pb). STEL 15 minutes: 0.3 mg/m³ (as Pb).</p> <p>CA Quebec Provincial (Canada, 2/2024) Absorbed through skin. TWAEV 8 hours: 0.05 mg/m³ (as Pb).</p> <p>CA Alberta Provincial (Canada, 3/2023) Absorbed through skin. OEL 8 hours: 0.1 mg/m³ (as Pb).</p> <p>ACGIH TLV (United States, 1/2025) Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (as Pb).</p>

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state	: Liquid.
Color	: Clear (May Be Dyed)
Odor	: Petroleum/Solvent
Odor threshold	: Not available.
pH	: Not applicable.
Melting point/freezing point	: -58°C (-72.4°F)
Boiling point or initial boiling point and boiling range	: 70 to 170°C (158 to 338°F)
Flash point	: Closed cup: -42°C (-43.6°F) [ASTM D-56]

Section 9. Physical and chemical properties

Lower and upper explosion limit/flammability limit	: Lower: 1.4% Upper: 7.6%
Vapor pressure	: 285.02 to 360.03 mm Hg [38 °C]
Relative vapor density	: 4 [Air = 1]
Relative density	: 0.7
Solubility in water	: Negligible
Partition coefficient: n-octanol/water	: >3
Auto-ignition temperature	: 439°C (822.2°F)
Decomposition temperature	: Not available.
Kinematic viscosity	: 0.6 cSt [20 °C]
Particle characteristics	
Median particle size	: Not applicable.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. Heat, sparks, flame, and build up of static electricity.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials, Halogens, strong acids, Strong oxidizers, Alkalies
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result
Tetraethyl lead	Rat - Oral - LD50 14.18 mg/kg Rat - Inhalation - LC50 Vapor 0.85 mg/l [1 hours]

Conclusion/Summary

Inhalation	: Minimally Toxic. No end point data for material. Based on assessment of the components.
Dermal	: Minimally Toxic. No end point data for material. Based on assessment of the components.
Oral	: Minimally Toxic. No end point data for material. Based on assessment of the components.

Irritation/Corrosion

Conclusion/Summary

Skin	: Irritating to the skin. No end point data for material. Based on assessment of the
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Section 11. Toxicological information

- Eyes** : May cause mild, short-lasting discomfort to eyes. No end point data for material. Based on assessment of the components.
- Respiratory** : Negligible hazard at ambient/normal handling temperatures. No end point data for material. Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.

Respiratory or skin sensitization

Conclusion/Summary

- Skin** : Not expected to be a skin sensitizer. No end point data for material. Based on assessment of the components.
- Respiratory** : Not expected to be a respiratory sensitizer. No end point data for material.

Mutagenicity

Conclusion/Summary

- : Not expected to be a germ cell mutagen. No end point data for material. Based on assessment of the components.

Carcinogenicity

Conclusion/Summary

- : Not expected to cause cancer. No end point data for material. Based on assessment of the components.

Classification

Product/ingredient name	IARC	NTP	ACGIH
Toluene	3	-	A4
tetraethyl lead	3	Reasonably anticipated to be a human carcinogen.	A4

Reproductive toxicity

Conclusion/Summary

- : Not expected to be a reproductive toxicant. No end point data for material. Based on assessment of the components.

Specific target organ toxicity (single exposure)

Conclusion/Summary

- : May cause drowsiness or dizziness. No end point data for material.

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Target organs
AVIATION GASOLINE 100LL	Category 2	central nervous system (CNS), kidneys, liver

Conclusion/Summary

- : May cause damage to organs through prolonged or repeated exposure. No end point data for material. Based on assessment of the components.

Aspiration hazard

Product/ingredient name	Result
AVIATION GASOLINE 100LL	Category 1

Conclusion/Summary

- : May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material. Data available.

Other information

Contains

- : Light alkylate naphtha: Carcinogenic in animal tests. Chronic inhalation studies resulted in kidney tumors in male rats. This result was not considered significant for human health risk assessment by the United States EPA and others. Did not cause mutations In vitro or in vivo. Inhalation of vapors did not result in reproductive or developmental effects in test animals. Inhalation of high concentrations in animals resulted in reversible central nervous system depression, but no persistent toxic effect on the nervous system. Non-sensitizing in test animals. TOLUENE : Concentrated, prolonged or deliberate inhalation may cause brain and nervous system damage. Prolonged and repeated exposure of pregnant animals (> 1500 ppm) have been reported to cause adverse fetal developmental effects.

Section 11. Toxicological information

Product : Aviation gasoline leaded: Chronic inhalation studies resulted in liver tumors in female mice and kidney tumors in male rats. Neither result considered significant for human health risk assessment by United States EPA and others. Did not cause mutations In Vitro or In Vivo. Negative in inhalation developmental studies and reproductive toxicity studies. Inhalation of high concentrations in animals resulted in reversible central nervous system depression, but no persistent neurotoxic effects. Non-sensitizing in test animals. Caused nerve damage in humans from abusive use (sniffing). Lead may produce maternal toxicity, toxicity to fetus, and adverse effects to blood, bone marrow, central/peripheral nervous systems, kidney, liver, and reproductive systems. Exposure to this material, or one of its components, in situations where there is the potential for high levels, such as in confined spaces or with abuse, may result in abnormal heart rhythm (arrhythmia). High-level exposure to hydrocarbons (above occupational exposure limits) may initiate arrhythmia in a worker that is undergoing stress or is taking a heart-stimulating substance such as epinephrine, a nasal decongestant, or an asthma or cardiovascular drug. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Section 12. Ecological information

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

Toxicity

Conclusion/Summary

Acute toxicity : Toxic to aquatic life.
Chronic toxicity : Toxic to aquatic life with long lasting effects.

Persistence and degradability

Biodegradability : Majority of components -- Expected to be inherently biodegradable
Atmospheric Oxidation : More volatile component -- Expected to degrade rapidly in air

Bioaccumulative potential

Conclusion/Summary : Majority of components -- Potential to bioaccumulate is low.

Mobility in soil

Mobility : Less volatile component -- Expected to partition to sediment and wastewater solids. Low solubility and floats and is expected to migrate from water to the land. More volatile component -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

Other ecological information

Other adverse effects : No known significant effects or critical hazards.





Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without

Section 13. Disposal considerations

until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

Section 14. Transport information

	TDG Classification	DOT Classification	IMDG	IATA
UN number	UN1203	UN1203	UN1203	UN1203
UN proper shipping name	GASOLINE	Gasoline	GASOLINE	Gasoline
Transport hazard class(es)	3	3	3	3
Label(s) / Mark(s)				
Packing group	II	II	II	II
Environmental hazards	Yes.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Additional information

TDG Classification

- : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3), 2.7 (Marine pollutant mark). The marine pollutant mark is not required when transported by road or rail.
- Explosive Limit and Limited Quantity Index** 30
- Passenger Carrying Vessel Index** 100
- Passenger Carrying Road or Rail Index** 5
- Special provisions** 17, 88, 98, 150

DOT Classification

- : This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a.
- Reportable quantity** 12345.7 lbs / 5604.9 kg [2115.2 gal / 8007.1 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
- Limited quantity** Yes.
- Packaging instruction** Exceptions: 150. Non-bulk: 202. Bulk: 242.
- Quantity limitation** Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.
- Special provisions** 144, 177, B1, B33, IB2, T4

IMDG

- : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
- Emergency schedules** F-E, S-E
- Special provisions** 243
- Flash point -42 °C C.C.

IATA

- : The environmentally hazardous substance mark may appear if required by other transportation regulations.
- Quantity limitation** Passenger and Cargo Aircraft: 5 L. Packaging instructions: 353. Cargo Aircraft Only: 60 L. Packaging instructions: 364. Limited Quantities - Passenger Aircraft: 1 L. Packaging instructions: Y341.
- Special provisions** A100

Section 14. Transport information

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : The following components are listed: toluene

CEPA Toxic substances : None of the components are listed.

U.S. Federal regulations : **TSCA 4(a) proposed test rules:** tetraethyl lead
TSCA 6 final risk management: phenol, 2,4,6-tris(1,1-dimethylethyl)

TSCA 12(b) - Chemical export notification

Not applicable.

Inventory list

Australia inventory (AIC) : All components are listed or exempted.

Canada inventory (DSL-NDSL) : All components are listed or exempted.

China inventory (IECSC) : All components are listed or exempted.

Japan inventory (CSCL) : All components are listed or exempted.

Japan inventory (Industrial Safety and Health Act) : At least one component is not listed.

New Zealand Inventory of Chemicals (NZIoC) : All components are listed or exempted.

Philippines inventory (PICCS) : All components are listed or exempted.

Korea inventory (KECI) : All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI) : Not determined.

United States inventory (TSCA 8b) : All components are active or exempted.

Section 16. Other information

History

Date of issue/Date of revision : 16 December 2025

Date of previous issue : 22 January 2024

Version : 2

Key to abbreviations : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 HPR = Hazardous Products Regulations
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 N/A = Not available
 SGG = Segregation Group
 UN = United Nations

Procedure used to derive the classification

Section 16. Other information

Classification	Justification
FLAMMABLE LIQUIDS - Category 2	On basis of test data
SKIN IRRITATION - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method
ASPIRATION HAZARD - Category 1	Calculation method

References : Not available.

Indicates information that has changed from previously issued version.

Product code : 1145257

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