Material Safety Data Sheet

Isopropanol

ACC# 95530

Section 1 - Chemical Product and Company Identification

MSDS Name: Isopropanol
Catalog Numbers: AC149320010, AC149320025, AC149320050, AC149320100, AC149320250, AC167880010 AC167880010, AC184130010, AC184130025, AC184130250, AC326960010, AC326961000 AC326961000, AC327270010, AC327930010, AC364400010, AC364401000, AC383910010 AC383910010, AC383910025, AC383920025, AC412795000, AC423830010, AC423835000 AC423835000
Synonyms: Isopropanol; Dimethylcarbinol; sec-Propyl alcohol; Rubbing alcohol; Petrohol; 1-Methylethanol; 1-Methylethyl alcohol; 2-Hydroxypropane; 2-Propyl alcohol; Isopropyl alcohol; Propan-2-ol; IPA; 2-Propanol.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
67-63-0	2-Propanol	>= 99.5	200-661-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid. Flash Point: 12 deg C.
Warning! Flammable liquid and vapor. Causes respiratory tract irritation. Breathing vapors may cause drowsiness and dizziness. Causes eye irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. Prolonged or repeated contact causes defatting of the skin with irritation, dryness, and cracking. This material has been reported to be susceptible to autoxidation and therefore should be classified as peroxidizable. May cause central nervous system depression. May form explosive peroxides. Hygroscopic (absorbs moisture from the air).
Target Organs: Central nervous system, respiratory system, eyes, skin.

Potential Health Effects

Eye: Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. May cause transient corneal injury. In the eyes of a rabbit, 0.1 ml of

70% isopropyl alcohol caused conjunctivitis, iritis, and corneal opacity.
Skin: May cause irritation with pain and stinging, especially if the skin is abraded. Isopropanol has a low potential to cause allergic skin reactions; however, rare cases of allergic contact dermatitis have been reported. May be absorbed through intact skin. Dermal absorption has been considered toxicologically insignificant. The cases of deep coma associated with skin contact are thought to be a consequence of gross isopropanol vapor inhalation in rooms with inadequate ventilation, rather than being attributable to percutaneous absorption of isopropanol per se.
Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. The probable oral lethal dose in humans is 240 ml (2696 mg/kg), but ingestion of only 20 ml (224 mg/kg) has caused poisoning.
Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. May cause narcotic effects in high concentration. Causes upper respiratory tract irritation. Inhalation of vapors may cause drowsiness and dizziness.
Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.
Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion: Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Urine acetone test may be helpful in diagnosis. Hemodialysis should be considered in severe intoxication. Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. May form explosive peroxides. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.
Extinguishing Media: Water may be ineffective. Do NOT use straight streams of water. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. For small fires, use carbon dioxide, dry chemical, dry sand, or alcohol-resistant foam. Cool containers with flooding quantities of water until well after fire is out.
Flash Point: 12 deg C (53.60 deg F)
Autoignition Temperature: 399 deg C (750.20 deg F)
Explosion Limits, Lower:2.0 vol %
Upper: 12.7 @ 93°C
NFPA Rating: (estimated) Health: 1; Flammability: 3; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Use water spray to dilute spill to a non-flammable mixture. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Take precautionary measures against static discharges. Keep container tightly closed. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Avoid breathing vapor or mist. Do not allow to evaporate to near dryness.
Storage: Keep away from heat, sparks, and flame. Do not store in direct sunlight. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. After opening, purge container with nitrogen before reclosing. Periodically test for peroxide formation on long-term storage. Addition of water or appropriate reducing materials will lessen peroxide formation. Store protected from moisture. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals. All peroxidizable substances should be stored away from heat and light and be protected from ignition sources.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
2-Propanol	200 ppm TWA; 400 ppm STEL	400 ppm TWA; 980 mg/m3 TWA 2000 ppm IDLH	400 ppm TWA; 980 mg/m3 TWA

OSHA Vacated PELs: 2-Propanol: 400 ppm TWA; 980 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear chemical splash goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: colorless
Odor: alcohol-like
pH: Not available.
Vapor Pressure: 33 mm Hg @ 20 deg C
Vapor Density: 2.1 (Air=1)
Evaporation Rate:1.7 (n-butyl acetate=1)
Viscosity: 2.27 mPas @ 20C
Boiling Point: 82 deg C @ 760 mmHg
Freezing/Melting Point:-88 deg C
Decomposition Temperature:Not available.
Solubility: Miscible.
Specific Gravity/Density:0.7850 (water=1)
Molecular Formula:C3H8O
Molecular Weight:60.09

Section 10 - Stability and Reactivity

Chemical Stability: Under normal storage conditions, peroxidizable compounds can form and accumulate peroxides which may explode when subjected to heat or shock. This material is most hazardous when peroxide levels are concentrated by distillation or evaporation. Isopropanol is susceptible to autoxidation and therefore should be classified as peroxidizable.
Conditions to Avoid: Light, ignition sources, excess heat, exposure to moist air or water.
Incompatibilities with Other Materials: Strong oxidizing agents, strong acids, strong bases, amines, ammonia, ethylene oxide, isocyanates, acetaldehyde, chlorine, phosgene, Attacks some forms of plastics, rubbers, and coatings., aluminum at high temperatures.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 67-63-0: NT8050000
LD50/LC50:
CAS# 67-63-0:
Draize test, rabbit, eye: 100 mg Severe;
Draize test, rabbit, eye: 10 mg Moderate;
Draize test, rabbit, eye: 100 mg/24H Moderate;
Draize test, rabbit, skin: 500 mg Mild;

Inhalation, mouse: LC50 = 53000 mg/m3;
Inhalation, rat: LC50 = 16000 ppm/8H;
Inhalation, rat: LC50 = 72600 mg/m3;
Oral, mouse: LD50 = 3600 mg/kg;
Oral, mouse: LD50 = 3600 mg/kg;
Oral, rabbit: LD50 = 6410 mg/kg;
Oral, rat: LD50 = 5045 mg/kg;
Oral, rat: LD50 = 5000 mg/kg;
Skin, rabbit: LD50 = 12800

Carcinogenicity:
CAS# 67-63-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found
Teratogenicity: A rat & rabbit developmental toxicity study showed no teratogenic effects at doses that were clearly maternally toxic. In a separate rat study, no evidence of developmental neurotoxicity was associated with gestational exposures to IPA up to 1200 mg/kg/d.
Reproductive Effects: See actual entry in RTECS for complete information.
Mutagenicity: See actual entry in RTECS for complete information.
Neurotoxicity: In rats exposed to isopropanol by inhalation, acute neurotoxicity was noted at 1 and 6 hours at 5000 ppm, but only minimal effects were seen at 1500 ppm and the animals recovered within 5 hours. No toxicity was noted at 500 ppm.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Fathead Minnow: >1000 ppm; 96h; LC50Daphnia: >1000 ppm; 96h; LC50Fish: Gold orfe: 8970-9280 ppm; 48h; LC50 IPA has a high biochemical oxygen demand and a potential to cause oxygen depletion in aqueous systems, a low potential to affect aquatic organisms, a low potential to affect secondary waste treatment microbial metabolism, a low potential to affect the germination of some plants, a high potential to biodegrade (low persistence) with unacclimated microorganisms from activated sludge.
Environmental: No information available.
Physical: THOD: 2.40 g oxygen/gCOD: 2.23 g oxygen/gBOD-5: 1.19-1.72 g oxygen/g
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	ISOPROPANOL	ISOPROPANOL

Hazard Class:	3	3
UN Number:	UN1219	UN1219
Packing Group:	II	II
Additional Info:		FLASHPOINT 12 C

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 67-63-0 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 67-63-0: Effective 12/15/86, Sunset 12/15/96
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 67-63-0: immediate, delayed, fire.
Section 313
This material contains 2-Propanol (CAS# 67-63-0, >= 99.5%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 67-63-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
XI F

Risk Phrases:

R 11 Highly flammable.
R 36 Irritating to eyes.
R 67 Vapours may cause drowsiness and dizziness.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 24/25 Avoid contact with skin and eyes.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 7 Keep container tightly closed.

WGK (Water Danger/Protection)

CAS# 67-63-0: 1

Canada - DSL/NDSL

CAS# 67-63-0 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 67-63-0 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 7/27/1999
Revision #10 Date: 10/05/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

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Print Date: 4/16/2013
MSDS Number: 100000002748
Version: 1.0

METHANOL
20297

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Nexeo Solutions	Regulatory Information Number	1-855-429-2661
PO Box 2458	Telephone	1-855-429-2661
Columbus, OH 43216	Emergency telephone number	1-855-639-3648

Product name	METHANOL
Product code	20297
Product Use Description	Fuel, Solvent.

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance: liquid, colourless

WARNING! FLAMMABLE LIQUID AND VAPOR. MAY AFFECT THE CENTRAL NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. HARMFUL IF SWALLOWED. MAY CAUSE BLINDNESS. PROLONGED OR REPEATED CONTACT MAY DRY THE SKIN AND CAUSE IRRITATION AND BURNS. MAY BE HARMFUL IF INHALED.

Potential Health Effects

Exposure routes

Inhalation, Skin absorption, Skin contact, Eye Contact, Ingestion

Eye contact

May cause mild eye irritation. Symptoms include stinging, tearing, and redness.

Skin contact

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May cause mild skin irritation. Symptoms may include redness and burning of skin.Prolonged or repeated contact may dry the skin. Symptoms may include redness, burning, and drying and cracking of skin, skin burns, and other skin damage.

Ingestion

Swallowing this material may be harmful.

Inhalation

Breathing of vapor or mist is possible. It is possible to breathe this material under certain conditions of handling and use (for example, during heating, spraying, or stirring). Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful.

Aggravated Medical Condition

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material:, Skin, lung (for example, asthma-like conditions), Liver, kidney, pancreas, Heart, Central nervous systemExposure to this material may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias.

Symptoms

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:, stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness), muscle cramps, pain in the abdomen and lower back, Blurred vision, Shortness of breath, cyanosis (causes blue coloring of the skin and nails from lack of oxygen), visual impairment (including blindness), coma

Target Organs

Exposure to lethal concentrations of methanol has been shown to cause damage to organs including liver, kidneys, pancreas, heart, lungs and brain. Although this rarely occurs, survivors of severe intoxication may suffer from permanent neurological damage., Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals:, liver abnormalities, central nervous system damageOverexposure to this material (or its components) has been suggested as a cause of the following effects in humans:visual impairment

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Carcinogenicity

This material is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

Reproductive hazard

Methanol has caused birth defects in laboratory animals, but only when inhaled at extremely high vapor concentrations. The relevance of this finding to humans is uncertain.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components	CAS-No. / trade secret no.	Concentration
Methanol	67-56-1	90 - 100%

4. FIRST AID MEASURES

Eyes

If symptoms develop, move individual away from exposure and into fresh air. Flush eyes gently with water while holding eyelids apart. If symptoms persist or there is any visual difficulty, seek medical attention.

Skin

Remove contaminated clothing. Wash exposed area with soap and water. If symptoms persist, seek medical attention. Launder clothing before reuse.

Ingestion

Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

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Inhalation

If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

Notes to physician

Hazards: This product contains methanol which can cause intoxication and central nervous system depression. Methanol is metabolized to formic acid and formaldehyde. These metabolites can cause metabolic acidosis, visual disturbances and blindness. Since metabolism is required for these toxic symptoms, their onset may be delayed from 6 to 30 hours following ingestion. Ethanol competes for the same metabolic pathway and has been used to prevent methanol metabolism. Ethanol administration is indicated in symptomatic patients or at blood methanol concentrations above 20 ug/dl. Methanol is effectively removed by hemodialysis.

Treatment: No information available.

5. FIREFIGHTING MEASURES

Suitable extinguishing media

Dry chemical, Carbon dioxide (CO2), Water spray

Hazardous combustion products

carbon dioxide and carbon monoxide

Precautions for fire-fighting

Material is volatile and readily gives off vapors which may travel along the ground or be moved by ventilation and ignited by pilot lights, flames, sparks, heaters, smoking, electric motors, static discharge or other ignition sources at locations near the material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). Water may be ineffective for extinguishment unless used under favorable conditions by experienced fire fighters. Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning material with water used for cooling purposes.

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NFPA Flammable and Combustible Liquids Classification
Flammable Liquid Class IB

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

For personal protection see section 8. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Ensure adequate ventilation. Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind.

Environmental precautions

Prevent spreading over a wide area (e.g. by containment or oil barriers). Do not let product enter drains. Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

Methods for cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

Other information

Comply with all applicable federal, state, and local regulations. Suppress (knock down) gases/vapours/mists with a water spray jet.

7. HANDLING AND STORAGE

Handling

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Static ignition hazard can result from handling and use. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Special precautions may be necessary to dissipate static electricity for non-conductive containers. Use proper bonding and

grounding during product transfer as described in National Fire Protection Association document NFPA 77.

Storage

Store in a cool, dry, ventilated area, away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Methanol		**67-56-1**
ACGIH	8-hour, time-weighted average	200 ppm
ACGIH	Short-term exposure limit	250 ppm
NIOSH	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek	200 ppm
NIOSH	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek	260 mg/m3
NIOSH	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday	250 ppm
NIOSH	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday	325 mg/m3
OSHA	8-hour time weighted average	200 ppm
OSHA	8-hour time weighted average	260 mg/m3
OSHA	Short-term exposure limit	250 ppm
OSHA	Short-term exposure limit	325 mg/m3
OSHA	8-hour time weighted average	200 ppm
OSHA	8-hour time weighted	260 mg/m3

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average

General advice

Exposure controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Eye protection

Not required under normal conditions of use. Wear chemical splash goggles and face shield when there is potential for exposure of the eyes or face to liquid, vapor or mist.

Skin and body protection

Wear normal work clothing including long pants, long-sleeved shirts and foot covering to prevent direct contact of the product with the skin. Launder clothing before reuse. If skin irritation develops, contact your facility health and safety professional or your local safety equipment supplier to determine the proper personal protective equipment for your use.
Wear resistant gloves (consult your safety equipment supplier).
Natural Rubber

Respiratory protection

A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	liquid

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Colour	colourless, clear
Odour	mild, characteristic
Boiling point/boiling range	148.5 °F / 64.7 °C
Melting point/range	Freezing Point -144.0 °F / -97.8 °C
pH	not applicable
Flash point	52 °F / 11 °C
Evaporation rate	4.1
Lower explosion limit/Upper explosion limit	6 %(V) / 36.5 %(V)
Vapour pressure	12.800 kPa @ 68 °F / 20 °C
Relative vapor density	1.105 @ 59 °F / 15 °C
Water solubility	completely soluble
Auto-ignition temperature	867 °F / 464 °C

10. STABILITY AND REACTIVITY

Stability

Stable.

Conditions to avoid

Heat, flames and sparks.

Incompatible products

Strong oxidizing agents, strong mineral acids, strong organic acids, strong bases, aluminum, sodium, peroxides, Lead, Zinc

Hazardous decomposition products

carbon dioxide and carbon monoxide, formaldehyde-like

Hazardous reactions

Product will not undergo hazardous polymerization.

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11. TOXICOLOGICAL INFORMATION

Acute oral toxicity

Acute oral toxicity - Product	: no data available

Acute inhalation toxicity

Acute inhalation toxicity - Product	: no data available

Acute inhalation toxicity - Components

Methanol	: LC50: 128.2 mg/l Exposure time: 4 h Species: rat
	LC50: 87.6 mg/l Exposure time: 6 h Species: rat

Acute dermal toxicity

Acute dermal toxicity - Product	: no data available

Acute toxicity (other routes of administration)

Acute toxicity (other routes of administration)	: no data available

12. ECOLOGICAL INFORMATION

Biodegradability

Biodegradability - Product	: no data available

Biodegradability - Components

Methanol	: aerobic 72 % Remarks: Readily biodegradable

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Bioaccumulation

Bioaccumulation - Product	:	no data available

Bioaccumulation - Components

Methanol	:	Species: Cyprinus carpio (Carp) Exposure time: 72 d Temperature: 20 °C Concentration: 5 mg/l Bioconcentration factor (BCF): 1.0

Ecotoxicity effects

Toxicity to fish

Toxicity to fish - Product	:	no data available

Toxicity to fish - Components

Methanol	:	LC50: 15,400 mg/l Exposure time: 96 h Species: Lepomis macrochirus (Bluegill sunfish)

Toxicity to daphnia and other aquatic invertebrates

Toxicity to daphnia and other aquatic invertebrates - Product	:	no data available

Toxicity to daphnia and other aquatic invertebrates - Components

Methanol	:	EC50: 10,000 mg/l Exposure time: 48 h Species: Daphnia

Toxicity to algae

Toxicity to algae - Product	:	no data available

Toxicity to algae - Components

Methanol	:	EC50: 22,000 mg/l

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	Exposure time: 96 h Species: Scenedesmus capricornutum (fresh water algae) Test Type: Growth inhibition

Toxicity to bacteria

Toxicity to bacteria - Product	: no data available

13. DISPOSAL CONSIDERATIONS

Waste disposal methods

Dispose of in accordance with all applicable local, state and federal regulations.For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact NEXEO's Environmental Services Group at 800-637-7922.

14. TRANSPORT INFORMATION

REGULATION

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
U.S. DOT - ROAD					
UN 1230	METANOL	3	(6.1)	II	
U.S. DOT - RAIL					
UN 1230	Methanol	3		II	

U.S. DOT - INLAND WATERWAYS

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UN	1230	Methanol	3		II

TRANSPORT CANADA - ROAD

UN	1230	METHANOL	3	(6.1)	II

TRANSPORT CANADA - RAIL

UN	1230	METHANOL	3	(6.1)	II

TRANSPORT CANADA - INLAND WATERWAYS

UN	1230	METHANOL	3	(6.1)	II

INTERNATIONAL MARITIME DANGEROUS GOODS

UN	1230	METHANOL	3	(6.1)	II

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

UN	1230	Methanol	3		II

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

UN	1230	Methanol	3		II

MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES

UN	1230	Methanol	3		II

***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

15. REGULATORY INFORMATION

California Prop. 65

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.	Methanol

SARA Hazard Classification

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SARA 311/312 Classification

Fire Hazard Acute Health Hazard Chronic Health Hazard

New Jersey RTK Label Information

Methanol	67-56-1

Pennsylvania RTK Label Information

Methanol	67-56-1

Notification status

United States TSCA Inventory	y (positive listing)
Canadian Domestic Substances List (DSL)	y (positive listing)

Reportable quantity - Product

US. EPA CERCLA Hazardous Substances (40 CFR 302)	5000 lbs

Reportable quantity-Components

Methanol	67-56-1	5000 lbs

	HMIS	NFPA
Health	2*	2
Flammability	3	3
Physical hazards	0	
Instability		0
Specific Hazard	--	--

16. OTHER INFORMATION

The information accumulated 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

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which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by NEXEO™ Solutions EHS Product Safety Department (1-855-429-2661) MSDS@nexeosolutions.com.

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name **Irving Jet Fuel A-1**

Synonym(s) Aviation turbine fuel
Distillate fuel oils, light

CAS # Mixture

Product use Fuel

Manufacturer Irving Oil Refining G.P.
Box 1260
Saint John, NB E2L 4H6 CA
Phone: (506) 202-2000
Refinery: (506) 202-3000
Emergency Phone: 1-800-424-9300 (CHEMTREC)

2. Hazards Identification

Emergency overview WARNING
COMBUSTIBLE LIQUID AND VAPOR.
CAUSES SKIN IRRITATION. CAUSES EYE IRRITATION.
MAY CAUSE RESPIRATORY TRACT IRRITATION.

Potential short term health effects

Routes of exposure Eye, Skin contact, Skin absorption, Inhalation, Ingestion.

Eyes Causes irritation.

Skin Causes irritation. May be absorbed through the skin.

ACGIH - Threshold Limit Values - Skin Notations

Benzene	71-43-2	Skin - potential significant contribution to overall exposure by the cutaneous route
Kerosene	8008-20-6	Skin - potential significant contribution to overall exposure by the cutaneous route

Inhalation Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness).

Ingestion Harmful if swallowed. Aspiration of material into lungs can cause chemical pneumonitis. Ingestion of high levels may produce kidney damage.
May cause stomach distress, nausea or vomiting.

Target organs Eyes. Respiratory system. Skin.

Chronic effects Prolonged or repeated exposure to dilutions can cause drying, defatting and dermatitis.

Signs and symptoms Symptoms may include redness, edema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

OSHA Regulatory Status This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential environmental effects See section 12.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Kerosene	8008-20-6	60 - 100
Benzene	71-43-2	< 0.1

Composition comments *Jet fuel is a complex mixture of hydrocarbons. Its exact composition depends on the source of the crude oil from which it was produced and the refining methods used. Jet fuel contains hundreds of individual organic chemicals. This section identifies only some of the well-known chemical constituents.

*Sulphur: <0.3%
*Mercaptan sulphur: <0.003%
*Hydrogen sulphide: Nil

4. First Aid Measures

First aid procedures

Eye contact	Flush with cool water. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.
Skin contact	Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.
Inhalation	If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.
Ingestion	Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Never give anything by mouth if victim is unconscious, or is convulsing. Obtain medical attention.
Notes to physician	Symptoms may be delayed.
General advice	Keep away from sources of ignition. No smoking. If you feel unwell, seek medical advice (show the label where possible). 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. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties	Combustible by WHMIS/OSHA criteria. Vapors may travel to a source of ignition and flash back.
Extinguishing media	
Suitable extinguishing media	Carbon dioxide. Dry chemical. Foam.
Unsuitable extinguishing media	Not available
Protection of firefighters	
Specific hazards arising from the chemical	Container may explode in heat of fire. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Cool containers with flooding quantities of water until well after fire is out.
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus. Cool containers with flooding quantities of water until well after fire is out.
Hazardous combustion products	May include and are not limited to: Oxides of nitrogen. Oxides of carbon. Aromatic hydrocarbons.
Explosion data	
Sensitivity to mechanical impact	Not expected to be sensitive to mechanical impact.
Sensitivity to static discharge	Vapor: Yes.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
Environmental precautions	Do not discharge into lakes, streams, ponds or public waters.
Methods for containment	Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water.
Methods for cleaning up	Remove sources of ignition. Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
Other information	Keep unnecessary personnel away.

7. Handling and Storage

Handling

Use good industrial hygiene practices in handling this material.
Non-sparking equipment. Explosion-proof ventilation. Intrinsically safe electrical equipment. Ground and bond containers when transferring material.
Have clean emergency eye wash and shower available in work area.
When using do not eat or drink.
Avoid contact with skin and clothing.
Avoid contact with eyes.
Keep container tightly closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Avoid breathing vapors or mists of this product.

Storage

Keep out of reach of children.
Containers should be vented and equipped with a flame arrester.
Store in a cool, dry, well-ventilated place. Keep away from heat, open flames or other sources of ignition.

Shipping: Stable during transport. May be transported hot.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Benzene	**ACGIH-TLV** TWA: 0.5 ppm STEL: 2.5 ppm **OSHA-PEL** TWA: 10 ppm STEL: 5 ppm Ceiling: 25 ppm
Kerosene	**ACGIH-TLV** TWA: 200 mg/m3 Skin: 100 mg/m3 **OSHA-PEL** Not established

Engineering controls

Mechanical ventilation should be used when handling this product in enclosed spaces. Local exhaust ventilation may be necessary.

Personal protective equipment

Eye / face protection

Face shield or chemical goggles. Eye wash fountain is recommended.

Hand protection

Nitrile rubber Viton™. Polyethylene.

Skin and body protection

Use of protective coveralls and long sleeves is recommended.
If clothing or footwear becomes contaminated with the product, remove it and completely decontaminate it before re-use, or discard it.

Respiratory protection

For confined spaces, wear a NIOSH-approved (or equivalent) full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.
Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2).

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.
When using do not eat or drink.
Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance	Clear
Color	Colorless
Form	Liquid
Odor	Kerosene
Odor threshold	0.55 mg/m3 for sulphur free product
Physical state	Liquid

pH	Not applicable
Melting point	Not available
Freezing point	-52.60 - -76.00 °F (-47 - -60 °C)
Boiling point	314.60 - 572.00 °F (157 - 300 °C)
Pour point	Not available
Evaporation rate	Not available
Flash point	100.40 - 161.60 °F (38 - 72 °C) Closed Cup
Auto-ignition temperature	410.00 °F (210 °C)
Flammability limits in air, lower, % by volume	0.7 %
Flammability limits in air, upper, % by volume	5 %
Vapor pressure	10.5 mmHg @ 38°C
Vapor density	4.5 (Air=1)
Specific gravity	0.775 - 0.840 @ 15°C
Octanol/water coefficient	3.3 To > 6 (log Poct)
Solubility (H2O)	Not available
VOC (Weight %)	Not available
Viscosity	2.0 - 8.0 cST @ -20°C
Percent volatile	Not available

10. Stability and Reactivity

Reactivity	This product may react with strong oxidizing agents.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Heat, open flames, static discharge, sparks and other ignition sources. Avoid high temperatures. Do not mix with other chemicals.
Incompatible materials	Acids. Oxidizers.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Aromatic hydrocarbons.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Benzene	13700 ppm rat; 13700 mg/l/4h rat
Kerosene	5.2801 mg/m3 rat

Component analysis - Oral LD50

Ingredient(s)	LD50
Benzene	690 mg/kg rat; 4700 mg/kg mouse
Kerosene	5000 mg/kg rat; 16300 mg/kg guinea pig

Effects of acute exposure

Eye	Causes irritation.
Skin	Causes irritation. May be absorbed through the skin.

ACGIH - Threshold Limit Values - Skin Notations

Benzene	71-43-2	Skin - potential significant contribution to overall exposure by the cutaneous route
Kerosene	8008-20-6	Skin - potential significant contribution to overall exposure by the cutaneous route

Inhalation	Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness).
Ingestion	Harmful if swallowed. Aspiration of material into lungs can cause chemical pneumonitis. Ingestion of high levels may produce kidney damage. May cause stomach distress, nausea or vomiting.
Sensitization	Non-hazardous by WHMIS/OSHA criteria.
Chronic effects	Blood and nervous system disorders may occur after prolonged skin contact.

Carcinogenicity Contains potential carcinogens.
Benzene and certain polycyclic aromatic hydrocarbons (PAHs) are known carcinogens.

ACGIH - Threshold Limit Values - Carcinogens

Benzene	71-43-2	A1 - Confirmed Human Carcinogen
Kerosene	8008-20-6	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC - Group 1 (Carcinogenic to Humans)

Benzene	71-43-2	Monograph 100F [in preparation]; Supplement 7 [1987]; Monograph 29 [1982]

NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens

Benzene	71-43-2	Known Human Carcinogen

U.S. - California - Proposition 65 - Carcinogens List

Benzene	71-43-2	carcinogen, initial date 2/27/87

Mutagenicity Non-hazardous by WHMIS/OSHA criteria.

Reproductive effects Non-hazardous by WHMIS/OSHA criteria.

Teratogenicity Non-hazardous by WHMIS/OSHA criteria.

Name of Toxicologically Synergistic Products Other CNS depressants can be expected to produce additive or synergistic effects.
May increase the photosensitizing ability of certain chemicals, such as dinitrochlorobenzene (DNCB).

12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Algae - Acute Toxicity Data

Benzene	71-43-2	72 Hr EC50 Pseudokirchneriella subcapitata: 29 mg/L

Ecotoxicity - Freshwater Fish - Acute Toxicity Data

Benzene	71-43-2	96 Hr LC50 Pimephales promelas: 10.7-14.7 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 5.3 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 22.49 mg/L [static]; 96 Hr LC50 Poecilia reticulata: 28.6 mg/L [static]; 96 Hr LC50 Pimephales promelas: 22330-41160 µg/L [static]; 96 Hr LC50 Lepomis macrochirus: 70000-142000 µg/L [static]

Ecotoxicity - Water Flea - Acute Toxicity Data

Benzene	71-43-2	48 Hr EC50 Daphnia magna: 8.76 - 15.6 mg/L [Static]; 48 Hr EC50 Daphnia magna: 10 mg/L

Persistence / degradability Non-persistent/ Group 1

Bioaccumulation / accumulation Not available

Mobility in environmental media Not available

Environmental effects Not available

Aquatic toxicity Not available

Partition coefficient 3.3 To > 6 (log Poct)

Chemical fate information Not available

Other adverse effects Not available

13. Disposal Considerations

Disposal instructions Review federal, provincial, and local government requirements prior to disposal.

Waste from residues / unused products Not available

Contaminated packaging Not available

14. Transport Information

U.S. Department of Transportation (DOT)

Basic shipping requirements:

Proper shipping name	Fuel, aviation, turbine engine
Hazard class	3
UN number	UN1863
Packing group	III
Additional information:	
Special provisions	144, B1, IB3, T2, TP1
Packaging exceptions	150
ERG number	128

Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

Proper shipping name	FUEL, AVIATION, TURBINE ENGINE
Hazard class	3
UN number	UN1863
Packing group	III
Additional information:	
Special provisions	17,82

15. Regulatory Information

Canadian federal regulations This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Canada - CEPA - Schedule I - List of Toxic Substances

Benzene	71-43-2	Present

Canada - WHMIS - Ingredient Disclosure List

Benzene	71-43-2	0.1 %

WHMIS status Controlled

WHMIS classification Class B - Division 3 - Combustible Liquid, Class D - Division 2B

WHMIS labeling

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Benzene	71-43-2	10 Lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Benzene	71-43-2	0.1 % de minimis concentration

U.S. - CWA (Clean Water Act) - Hazardous Substances

Benzene	71-43-2	Present

U.S. - CWA (Clean Water Act) - Priority Pollutants

Benzene	71-43-2	Present

U.S. - CWA (Clean Water Act) - Toxic Pollutants

Benzene	71-43-2	Present

CERCLA (Superfund) reportable quantity

Benzene: 10.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance: No

Section 311 hazardous chemical: Yes

Clean Air Act (CAA): Not available

Clean Water Act (CWA): Not available

State regulations

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Benzene	71-43-2	Present

U.S. - California - Proposition 65 - Carcinogens List

Benzene	71-43-2	carcinogen, initial date 2/27/87

U.S. - California - Proposition 65 - Developmental Toxicity

Benzene	71-43-2	developmental toxicity, initial date 12/26/97

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

Benzene	71-43-2	male reproductive toxicity, initial date 12/26/97

U.S. - Connecticut - Carcinogenic Substances

Benzene	71-43-2	Present

U.S. - Illinois - Toxic Air Contaminant Carcinogens

Benzene	71-43-2	ACGIH Carcinogen; IRIS A Carcinogen; NTP Known Carcinogen

U.S. - Illinois - Toxic Air Contaminants

Benzene	71-43-2	Present

U.S. - Louisiana - Reportable Quantity List for Pollutants

Benzene	71-43-2	10 Lb final RQ (received an adjusted RQ of 10 lb based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lb based on potential carcinogenicity in an August 14, 1989 final rule)

U.S. - Massachusetts - Right To Know List

Benzene	71-43-2	Carcinogen; Extraordinarily hazardous
Kerosene	8008-20-6	Present

U.S. - Michigan - Critical Materials List

Benzene	71-43-2	100 Lb Annual usage threshold

U.S. - Minnesota - Hazardous Substance List

Benzene	71-43-2	Carcinogen

U.S. - New Jersey - Right to Know Hazardous Substance List

Benzene	71-43-2	sn 0197
Kerosene	8008-20-6	sn 1091

U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Benzene	71-43-2	10 Lb RQ (air); 1 lb RQ (land/water)

U.S. - North Carolina - Control of Toxic Air Pollutants

Benzene	71-43-2	0.00012 mg/m3 (carcinogens)

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

Benzene	71-43-2	Present

U.S. - Pennsylvania - RTK (Right to Know) List

Benzene	71-43-2	Environmental hazard; Special hazardous substance
Kerosene	8008-20-6	Present

U.S. - Rhode Island - Hazardous Substance List

Benzene	71-43-2	Toxic (skin); Flammable (skin); Carcinogen (skin)
Kerosene	8008-20-6	Flammable

Inventory name

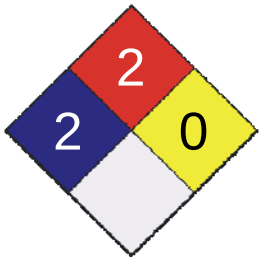
Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/	2
Flammability		2
Physical Hazard		0
Personal Protection		X



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Issue date	21-Aug-2012
Effective date	31-Oct-2012
Expiry date	31-Oct-2015
Prepared by	Dell Tech Laboratories Ltd. (519) 858-5021
Other information	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document. This MSDS conforms to the ANSI Z400.1/Z129.1-2010 Standard.

Irving Jet Fuel A-1

Combustible liquid. Eye and skin irritant.

Keep away from sources of ignition. No smoking. Avoid contact with eyes and skin. Wear rubber gloves and safety glasses with side shields. Keep out of reach of children.

EYE: Flush with cool water. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.

SKIN: Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.

INHALATION: If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.

INGESTION: Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Never give anything by mouth if victim is unconscious, or is convulsing. Obtain medical attention.

READ MATERIAL SAFETY DATA SHEET BEFORE USING PRODUCT

==========

Liquide combustible. Irritant pour les yeux et la peau.

Conserver à l'écart de toutes sources d'ignition. Ne pas fumer. Éviter le contact avec les yeux et la peau. Porter des gants en caoutchouc et des lunettes de sécurité pourvues de protections latérales. Tenir hors de la portée des enfants.

YEUX: Rincer à grande eau froide. Enlever les verres de contact, le cas échéant, et continuer à rincer. Obtenir de l'attention médicale si l'irritation persiste.

PEAU: Rincer à grande eau froide. Laver à l'eau et au savon. Obtenir de l'attention médicale si l'irritation persiste.

INHALATION: En cas de symptômes, placer la victime à l'air frais. Si les symptômes persistent, obtenir de l'attention médicale. Si la victime ne respire pas du personnel qualifié devrait immédiatement commencer la réanimation cardio-pulmonaire.

INGESTION: Ne pas provoquer le vomissement. Si le vomissement se produit spontanément, incliner la victime vers l'avant pour réduire le risque d'inhalation. Ne jamais rien faire boire ou avaler à une victime inconsciente, ou si la victime a des convulsions. Appeler un médecin.

LIRE LA FICHE SIGNALÉTIQUE AVANT D'UTILISER CE PRODUIT

Safety Data Sheet

Material Name: DIESEL FUEL **SDS ID: NCR07090**

* * * Section 1 - PRODUCT AND COMPANY IDENTIFICATION* * *

Material Name: DIESEL FUEL

Manufacturer Information

National Cooperative Refinery Association
1391 Iron Horse Road
McPherson, KS 67460

Phone: (620) 241-2340

Emergency # CHEMTREC: 1-800-424-9300 (USA)

Chemical Family

petroleums, hydrocarbons

Synonyms

DIESEL OIL; DIESEL FUEL NO. 1; DIESEL OIL, LIGHT; DIESEL OIL PETROLEUM PRODUCTS; DIESEL FUEL NO. 1-D; NO. 1-D FUEL OIL; PETROLEUM DIESEL OIL PRODUCTS; PETROLEUM PRODUCTS, DIESEL OIL; SUMMER DIESEL; DIESEL FUEL #1; RTECS: HZ1800000

* * * Section 2 - HAZARDS IDENTIFICATION* * *

EMERGENCY OVERVIEW

Health Hazards: respiratory tract irritation, skin irritation, central nervous system depression

Physical Hazards: Combustible liquid and vapor.

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: irritation, nausea, vomiting, difficulty breathing, headache, symptoms of drunkenness, disorientation, bluish skin color, coma

Long Term: no information on significant adverse effects

Skin

Short Term: irritation, blisters, symptoms of drunkenness

Long Term: kidney damage

Eye

Short Term: mild irritation

Long Term: no information on significant adverse effects

Ingestion

Short Term: nausea, vomiting, diarrhea, difficulty breathing, symptoms of drunkenness, lung congestion

Long Term: no information on significant adverse effects

* * * Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS* * *

CAS	Component	Percent	Symbol(s)	Risk Phrase(s)
68334-30-5	DIESEL FUEL 269-822-7	>99	Xn	R:40
7704-34-9	SULFUR 231-722-6	<0.05	Xi	R:38

* * * Section 4 - FIRST AID MEASURES* * *

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

* * * Section 5 - FIRE FIGHTING MEASURES* * *

See Section 9 for Flammability Properties

NFPA Ratings: Health: 2 **Fire:** 2 **Reactivity:** 0

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

Flammable Properties

Moderate fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive above flash point.

Extinguishing Media

regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

* * * Section 6 - ACCIDENTAL RELEASE MEASURES* * *

Occupational spill/release

Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. **Small spills:** Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. **Large spills:** Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

* * * Section 7 - HANDLING AND STORAGE* * *

Storage Procedures

Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Keep separated from incompatible substances.

* * * Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION* * *

Component Exposure Limits

DIESEL FUEL (68334-30-5)

ACGIH: 100 mg/m3 TWA (as total hydrocarbons, inhalable fraction and vapor)
Skin - potential significant contribution to overall exposure by the cutaneous route

Ventilation

Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

Wear appropriate chemical resistant clothing. Remove any chemical soaked clothing immediately.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

Any chemical cartridge respirator with organic vapor cartridge(s).

Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).

Any air-purifying respirator with a full facepiece and an organic vapor canister.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

* * * Section 9 - PHYSICAL AND CHEMICAL PROPERTIES* * *

Physical State:	Liquid	**Appearance:**	Not available
Physical Form:		**Odor:**	Not Available
Odor Threshold:	0.7 ppm	**pH:**	Not available
Melting Point:	-34 °C	**Boiling Point:**	163 - 357 °C
Flash Point:	38 °C CC	**Evaporation Rate:**	Not available
OSHA Flammability Class:	II	**LEL:**	1.3 %
UEL:	6 %	**Vapor Pressure:**	2 mmHg @ 20 °C
Vapor Density (air = 1):	>1	**Density:**	Not available
Specific Gravity (water = 1):	0.8	**Water Solubility:**	insoluble
Coeff. Water/Oil Dist:	Not available	**Auto Ignition:**	177 °C
Viscosity:	Not available	**Volatility:**	Not available

* * * Section 10 - STABILITY AND REACTIVITY* * *

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers. Dangerous gases may accumulate in confined spaces.

Materials to Avoid

oxidizing materials

DIESEL FUEL:

OXIDIZERS (STRONG): Fire and explosion hazard.

Decomposition Products

oxides of sulfur,carbon

Thermal decomposition products: oxides of sulfur, carbon.

Possibility of Hazardous Reactions

Will not polymerize.

* * * Section 11 - TOXICOLOGICAL INFORMATION* * *

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

DIESEL FUEL (68334-30-5)

Inhalation LC50 Rat 4.6 mg/L 4 h; Oral LD50 Rat >5000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg

SULFUR (7704-34-9)

Inhalation LC50 Rat >9.23 mg/L 4 h; Oral LD50 Rat >3000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

DIESEL FUEL (68334-30-5)

Oral: 7.5 gm/kg Oral Rat LD50; 7500 mg/kg Oral Rat LD50

Acute Toxicity Level

DIESEL FUEL (68334-30-5)

Slightly Toxic: ingestion

SULFUR (7704-34-9)

Highly Toxic: inhalation

Component Carcinogenicity

DIESEL FUEL (68334-30-5)

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

IARC: Monograph 45 [1989] (Group 2B (possibly carcinogenic to humans))

RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

DIESEL FUEL (68334-30-5)

80 gm/10 day(s) Skin Rabbit severe; 100 percent Skin Rabbit severe; 500 uL/24 hour Skin Rabbit severe

Local Effects

DIESEL FUEL (68334-30-5)

Irritant: inhalation, skin

SULFUR (7704-34-9)

Irritant: inhalation, skin, eye

Target Organs

DIESEL FUEL (68334-30-5)

central nervous system

RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

DIESEL FUEL (68334-30-5)

350 mg/kg/14 day(s) intermittent mouse

Animal studies have confirmed an association between the induction of cancer, primarily of the lung, and inhalation exposure to whole diesel exhaust. Limited epidemiologic evidence also suggests an association between occupational exposure to diesel engine emissions and lung cancer (NIOSH, 1988).

HEALTH EFFECTS

Inhalation - Acute Exposure

DIESEL FUEL: Vapors or mist may cause respiratory tract irritation. A human exposure has resulted in immediate cough, dyspnea, cyanosis and unconsciousness for one hour. A productive cough with sputum smelling of diesel fuel persisted for 37 days. Chest X-ray showed diffuse shadowing, most prominent at the lung bases, which resolved slowly with treatment but was still present at day 37. High levels may also cause central nervous system excitation followed by depression with symptoms possibly including restlessness, confusion, ataxia, headache, dizziness, anorexia, nausea, vomiting, weakness, incoordination, stupor, delirium and coma.

Inhalation - Chronic Exposure

DIESEL FUEL: Repeated or prolonged exposure may cause irritation. One individual exposed to diesel vapors in a truck cab developed nephrotoxic effects.

Skin Contact - Acute Exposure

DIESEL FUEL: May cause smarting, redness and irritation. A sample of diesel fuel applied to rabbits under a patch for 24 hours caused extreme irritation with severe erythema and edema with blistering and open sores.

Skin Contact - Chronic Exposure

DIESEL FUEL: Repeated or prolonged contact may cause defatting and drying of the skin resulting in severe irritation and dermatitis. Cutaneous hyperkeratosis has been described in engine drivers with occupational exposure to diesel fuel. Two individuals with topical exposure from washing hair or hands with diesel fuel developed acute renal failure; one also had gastrointestinal symptoms. Repeated application to rabbit skin produced 67% mortality at 8 mL/kg. The primary causes of death were central nervous system depression and anorexia which were induced by dermal irritation with infection, rather than systemic intoxication. Autopsy revealed effects on the liver and kidneys.

Eye Contact - Acute Exposure

DIESEL FUEL: Liquid or vapors may cause slight irritation, although tests with one sample of diesel fuel in rabbit eyes was non-irritating.

Eye Contact - Chronic Exposure

DIESEL FUEL: Repeated or prolonged exposure may cause irritation.

Ingestion - Acute Exposure

DIESEL FUEL: May cause nausea, vomiting, cramping, diarrhea, and possibly symptoms of central nervous system depression. Aspiration of even small amounts during ingestion or vomiting may result in severe pulmonary irritation with coughing, gagging, dyspnea, substernal distress, and pneumonitis, pulmonary edema and hemmorhage, and death.

Ingestion - Chronic Exposure

DIESEL FUEL: No data available.

* * * Section 12 - ECOLOGICAL INFORMATION* * *

Component Analysis - Aquatic Toxicity

DIESEL FUEL (68334-30-5)

Fish: 96 Hr LC50 Pimephales promelas: 35 mg/L [flow-through]

SULFUR (7704-34-9)

Fish: 96 Hr LC50 Brachydanio rerio: 866 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: <14 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: >180 mg/L [static]

* * * Section 13 - DISPOSAL CONSIDERATIONS* * *

Disposal Methods

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

* * * Section 14 - TRANSPORT INFORMATION* * *

US DOT Information

Shipping Name: Diesel fuel

UN/NA #: NA1993 **Hazard Class:** 3 **Packing Group:** III

Required Label(s): None

TDG Information

No Classification assigned.

ADR Information

No Classification assigned.

ADR Tunnel Code Restrictions

This list contains tunnel restriction codes for those substances and/or chemically related entries which are found in chapter 3.2 of the ADR regulations.

SULFUR (7704-34-9)

E [UN1350] (III); E [UN2448] (III, molten)

RID Information

No Classification assigned.

IATA Information

No Classification assigned.

ICAO Information

No Classification assigned.

IMDG Information

No Classification assigned.

* * * Section 15 - REGULATORY INFORMATION* * *

U.S. Federal Regulations

None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: Yes **Chronic Health:** Yes **Fire:** Yes **Pressure:** No **Reactive:** No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
DIESEL FUEL	68334-30-5	No	No	No	No	Yes
SULFUR	7704-34-9	Yes	Yes	No	Yes	Yes

Not regulated under California Proposition 65

Canada

Germany Water Classification

DIESEL FUEL (68334-30-5)

ID Number 76, hazard class 2 - hazard to waters

SULFUR (7704-34-9)

ID Number 842, not considered hazardous to water

ID Number 753, hazard class 1 - low hazard to waters (colloidal)

EU Marking and Labelling

Symbols

Xn Harmful

Risk Phrases

R10 Flammable.

R40 Limited evidence of a carcinogenic effect.

Safety Phrases

S2 Keep out of the reach of children. **S36/37** Wear suitable protective clothing and gloves.

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
DIESEL FUEL	68334-30-5	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
SULFUR	7704-34-9	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes

* * * Section 16 - OTHER INFORMATION* * *

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Full text of R phrases in Section 3

R38 Irritating to skin.
R40 Limited evidence of a carcinogenic effect.

Other Information

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End of Sheet NCR07090

- If appropriate contact government representatives. This should only be done if given direction by the Project Manager or you need to report an emergency which requires immediate assistance. (e.g., uncontainable spill)
- If required, activate spill response and immediate clean-up if safe to do so. Materials impacted with fuels or POL shall be handled and disposed of as hazardous waste materials.

The following spill kit resources will be maintained at site:

- Adsorbent pads (package of 50 minimum)
- Small adsorbent booms (6 foot) – at least 2
- Adsorbent granular (at least one 10 kg package)
- Nitrile gloves (large size, one package)

Spill reporting contact information:

NT-NU 24-HOUR SPILL REPORT LINE	TEL: (867) 920-8130 FAX: (867) 873-6924	EMAIL: spills@gov.nt.ca
STANTEC PROJECT MANAGER	TEL: (613) 738-6090 FAX: (613) 722-2799	EMAIL: david.wilson@stantec.com

Annex A – MSDS Sheets