

# Material Safety Data Sheet



Acetylene

## Section 1. Chemical product and company identification

<b>Product name</b>	: Acetylene
<b>Supplier</b>	: AIRGAS INC., on behalf of its subsidiaries 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
<b>Product use</b>	: Synthetic/Analytical chemistry.
<b>Synonym</b>	: acetylen; acetylene ; ethine; ethyne; narcylen
<b>MSDS #</b>	: 001001
<b>Date of Preparation/Revision</b>	: 5/11/2011.
<b>In case of emergency</b>	: 1-866-734-3438

## Section 2. Hazards identification

<b>Physical state</b>	: Gas.
<b>Emergency overview</b>	: WARNING! FLAMMABLE GAS. MAY CAUSE FLASH FIRE. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CONTENTS UNDER PRESSURE.  Keep away from heat, sparks and flame. Do not puncture or incinerate container. May cause target organ damage, based on animal data. Use only with adequate ventilation. Keep container closed.  Contact with rapidly expanding gases can cause frostbite.
<b>Target organs</b>	: May cause damage to the following organs: lungs, upper respiratory tract, central nervous system (CNS).
<b>Routes of entry</b>	: Inhalation
<b>Potential acute health effects</b>	
<b>Eyes</b>	: Contact with rapidly expanding gas may cause burns or frostbite.
<b>Skin</b>	: Contact with rapidly expanding gas may cause burns or frostbite.
<b>Inhalation</b>	: Acts as a simple asphyxiant.
<b>Ingestion</b>	: Ingestion is not a normal route of exposure for gases
<b>Potential chronic health effects</b>	
<b>Chronic effects</b>	: May cause target organ damage, based on animal data.
<b>Target organs</b>	: May cause damage to the following organs: lungs, upper respiratory tract, central nervous system (CNS).
<b>Medical conditions aggravated by over-exposure</b>	: Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

## Section 3. Composition, Information on Ingredients

<b>Name</b>	<b>CAS number</b>	<b>% Volume</b>	<b>Exposure limits</b>
Acetylene	74-86-2	100	NIOSH REL (United States, 6/2009). CEIL: 2662 mg/m <sup>3</sup> CEIL: 2500 ppm

## Section 4. First aid measures

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.

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : As this product is a gas, refer to the inhalation section.

## Section 5. Fire-fighting measures

- Flammability of the product** : Flammable.
- Auto-ignition temperature** : 305°C (581°F)
- Flash point** : Closed cup: -18.15°C (-0.7°F).
- Flammable limits** : Lower: 2.5% Upper: 100%
- Products of combustion** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide
- Fire hazards in the presence of various substances** : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and oxidizing materials.
- Fire-fighting media and instructions** : In case of fire, use water spray (fog), foam or dry chemical.  
  
In case of fire, allow gas to burn if flow cannot be shut off immediately. Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.  
  
Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
- 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

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## Section 7. Handling and storage

- Handling** : Use only with adequate ventilation. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Keep container closed. Keep away from heat, sparks and flame. To avoid fire, eliminate ignition sources. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
- Storage** : Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Segregate from oxidizing materials. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

## Section 8. Exposure controls/personal protection

- 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.
- Personal protection**
- Eyes** : 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 or dusts.
- Skin** : 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.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93
- Hands** : 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.
- Personal protection in case of a large spill** : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

### Product name

Ethyne

NIOSH REL (United States, 6/2009).

CEIL: 2662 mg/m<sup>3</sup>

CEIL: 2500 ppm

Consult local authorities for acceptable exposure limits.

## Section 9. Physical and chemical properties

- Molecular weight** : 26.04 g/mole
- Molecular formula** : C<sub>2</sub>H<sub>2</sub>
- Melting/freezing point** : Sublimation temperature: -81.8°C (-115.2 to °F)
- Critical temperature** : 35.3°C (95.5°F)
- Vapor pressure** : 635 (psig)
- Vapor density** : 0.907 (Air = 1)
- Specific Volume (ft<sup>3</sup>/lb)** : 14.7058
- Gas Density (lb/ft<sup>3</sup>)** : 0.0691 (-80°C / -112 to °F)

## Section 10. Stability and reactivity

- Stability and reactivity** : The product is stable.
- Incompatibility with various substances** : Extremely reactive or incompatible with the following materials: oxidizing materials.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

## Section 11. Toxicological information

### Toxicity data

- Chronic effects on humans** : May cause damage to the following organs: lungs, upper respiratory tract, central nervous system (CNS).
- Other toxic effects on humans** : No specific information is available in our database regarding the other toxic effects of this material to humans.
- Specific effects**
- Carcinogenic effects** : No known significant effects or critical hazards.
- Mutagenic effects** : No known significant effects or critical hazards.
- Reproduction toxicity** : No known significant effects or critical hazards.

## Section 12. Ecological information

### Aquatic ecotoxicity


Not available.



- Products of degradation** : Products of degradation: carbon oxides (CO, CO<sub>2</sub>) and water.
- Environmental fate** : Not available.
- Environmental hazards** : This product shows a low bioaccumulation potential.
- Toxicity to the environment** : Not available.

## Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

## Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
<b>DOT Classification</b>	UN1001	ACETYLENE, DISSOLVED	2.1	Not applicable (gas).		<p><b>Limited quantity</b> Yes.</p> <p><b>Packaging instruction</b> <b>Passenger aircraft</b> Quantity limitation: Forbidden.</p> <p><b>Cargo aircraft</b> Quantity limitation: 15 kg</p>

Acetylene						
TDG Classification	UN1001	ACETYLENE, DISSOLVED	2.1	Not applicable (gas).		<u>Explosive Limit and Limited Quantity Index</u> 0  <u>Passenger Carrying Ship Index</u> 75  <u>Passenger Carrying Road or Rail Index</u> Forbidden  <u>Special provisions</u> 38, 42
Mexico Classification	UN1001	ACETYLENE, DISSOLVED	2.1	Not applicable (gas).		-

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

Section 15. Regulatory information

United States

U.S. Federal regulations

:
TSCA 8(a) IUR: Partial exemption  
United States inventory (TSCA 8b): This material is listed or exempted.  
SARA 302/304/311/312 extremely hazardous substances: No products were found.  
SARA 302/304 emergency planning and notification: No products were found.  
SARA 302/304/311/312 hazardous chemicals: Ethyne  
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:  
Ethyne: Fire hazard, reactive, Sudden release of pressure, Immediate (acute) health hazard  
  
Clean Air Act (CAA) 112 accidental release prevention - Flammable Substances:  
Acetylene

State regulations

:
Connecticut Carcinogen Reporting: This material is not listed.  
Connecticut Hazardous Material Survey: This material is not listed.  
Florida substances: This material is not listed.  
Illinois Chemical Safety Act: This material is not listed.  
Illinois Toxic Substances Disclosure to Employee Act: This material is not listed.  
Louisiana Reporting: This material is not listed.  
Louisiana Spill: This material is not listed.  
Massachusetts Spill: This material is not listed.  
Massachusetts Substances: This material is listed.  
Michigan Critical Material: This material is not listed.  
Minnesota Hazardous Substances: This material is not listed.  
New Jersey Hazardous Substances: This material is listed.  
New Jersey Spill: This material is not listed.  
New Jersey Toxic Catastrophe Prevention Act: This material is not listed.  
New York Acutely Hazardous Substances: This material is not listed.  
New York Toxic Chemical Release Reporting: This material is not listed.  
Pennsylvania RTK Hazardous Substances: This material is listed.

Acetylene

**Rhode Island Hazardous Substances:** This material is not listed.

Canada

WHMIS (Canada)

: Class A: Compressed gas.  
Class B-1: Flammable gas.  
Class F: Dangerously reactive material.  
**CEPA Toxic substances:** This material is not listed.  
**Canadian ARET:** This material is not listed.  
**Canadian NPRI:** This material is listed.  
**Alberta Designated Substances:** This material is not listed.  
**Ontario Designated Substances:** This material is not listed.  
**Quebec Designated Substances:** This material is not listed.

Section 16. Other information

United States

Label requirements

: FLAMMABLE GAS.  
MAY CAUSE FLASH FIRE.  
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.  
CONTENTS UNDER PRESSURE.

Canada

Label requirements

: Class A: Compressed gas.  
Class B-1: Flammable gas.  
Class F: Dangerously reactive material.

Hazardous Material Information System (U.S.A.)	:	Health	*	1
		Flammability		4
		Physical hazards		2

National Fire Protection  
Association (U.S.A.)

:

Health

0

4

3

Flammability

Instability

Special

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



## **MATERIAL SAFETY DATA SHEET**

**PRODUCT NAME: AMMONIA**

### **1. Chemical Product and Company Identification**

**BOC Gases,  
Division of  
The BOC Group, Inc.  
575 Mountain Avenue  
Murray Hill, NJ 07974**

**BOC Gases  
Division of  
BOC Canada Limited  
5975 Falbourne Street, Unit 2  
Mississauga, Ontario L5R 3W6**

**TELEPHONE NUMBER:** (908) 464-8100

**24-HOUR EMERGENCY TELEPHONE NUMBER:**  
CHEMTREC (800) 424-9300

**TELEPHONE NUMBER:** (905) 501-1700

**24-HOUR EMERGENCY TELEPHONE NUMBER:**  
(905) 501-0802

**EMERGENCY RESPONSE PLAN NO:** 20101

**PRODUCT NAME:** AMMONIA

**CHEMICAL NAME:** Ammonia

**COMMON NAMES/SYNONYMS:** Ammonia Anhydrous; Anhydrous Ammonia

**TDG (Canada) CLASSIFICATION:** 2.4 (9.2)

**WHMIS CLASSIFICATION:** A, E

**PREPARED BY:** Loss Control (908)464-8100/(905)501-1700

**PREPARATION DATE:** 6/1/95

**REVIEW DATES:** 7/1/96

### **2. Composition, Information on Ingredients**

INGREDIENT	% VOLUME	PEL-OSHA <sup>1</sup>	TLV-ACGIH <sup>2</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Ammonia FORMULA: NH <sub>3</sub> CAS: 7664-41-7 RTECS #: BO0875000	100.0	50 ppm TWA	25 ppm TWA 35 ppm STEL	LC <sub>50</sub> 2000 ppm/4H

<sup>1</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

<sup>2</sup> As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents

### **3. Hazards Identification**

#### **EMERGENCY OVERVIEW**

Irritating or corrosive to exposed tissues. Inhalation of vapors may result in pulmonary edema and chemical pneumonitis. Slightly flammable.

PRODUCT NAME: AMMONIA
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**ROUTE OF ENTRY:**

Skin Contact Yes	Skin Absorption No	Eye Contact Yes	Inhalation Yes	Ingestion No
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**HEALTH EFFECTS:**

Exposure Limits Yes	Irritant Yes	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen Yes
Synergistic Effects None Reported		

Carcinogenicity: -- NTP: No IARC: No OSHA: No

**EYE EFFECTS:**

Mild concentrations of product will cause conjunctivitis. Contact with higher concentrations of product will cause swelling of the eyes and lesions with a possible loss of vision.

**SKIN EFFECTS:**

Mild concentrations of product will cause dermatitis or conjunctivitis. Contact with higher concentrations of product will cause caustic-like dermal burns and inflammation. Toxic level exposure may cause skin lesions resulting in early necrosis and scarring.

**INGESTION EFFECTS:**

Since product is a gas at room temperature, ingestion is unlikely.

**INHALATION EFFECTS:**

Corrosive and irritating to the upper respiratory system and all mucous type tissue. Depending on the concentration inhaled, it may cause burning sensations, coughing, wheezing, shortness of breath, headache, nausea, with eventual collapse.

Inhalation of excessive amounts affects the upper airway (larynx and bronchi) by causing caustic-like burning resulting in edema and chemical pneumonitis. If it enters the deep lung, pulmonary edema will result. Pulmonary edema and chemical pneumonitis are potentially fatal conditions.

**NFPA HAZARD CODES**

Health: 3  
Flammability: 1  
Reactivity: 0

**HMIS HAZARD CODES**

Health: 3  
Flammability: 1  
Reactivity: 0

**RATINGS SYSTEM**

0 = No Hazard  
1 = Slight Hazard  
2 = Moderate Hazard  
3 = Serious Hazard  
4 = Severe Hazard



#### 4. First Aid Measures

##### EYES:

Flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes. PERSONS WITH POTENTIAL EXPOSURE TO AMMONIA SHOULD NOT WEAR CONTACT LENSES.

##### SKIN:

Remove contaminated clothing as rapidly as possible. Flush affected area with copious quantities of water. In cases of frostbite or cryogenic "burns" flush area with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

##### INGESTION:

Not specified. Seek immediate medical attention.

##### INHALATION

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Keep victim warm and quiet. Assure that mucus or vomited material does not obstruct the airway by positional drainage.

#### 5. Fire Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition: Temperature: 1274 °F (690 °C)
LEL(%): 16		UEL(%): 25
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

##### FIRE AND EXPLOSION HAZARDS:

The minimum ignition energy for ammonia is very high. It is approximately 500 times greater than the energy required for igniting hydrocarbons and 1000 to 10,000 times greater than that required for hydrogen.

##### EXTINGUISHING MEDIA:

Water fog. Use media suitable for surrounding fire.

##### FIRE FIGHTING INSTRUCTIONS:

If possible, stop the flow of gas. Since ammonia is soluble in water, it is the best extinguishing media--not only in extinguishing the fire, but also absorbing the escaped ammonia gas. Use water spray to cool surrounding containers.

PRODUCT NAME: AMMONIA
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## 6. Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

## 7. Handling and Storage

### Electrical Classification:

Class 1, Group D.

Earth-ground and bond all lines and equipment associated with the ammonia system. Electrical equipment should be non-sparking or explosion proof.

Gaseous or liquid anhydrous ammonia corrodes certain metals at ambient temperatures. The presence of oxygen enhances the corrosion of ordinary or semi-alloy steels. The addition of water inhibits this enhancement. Keep anhydrous ammonia systems scrupulously dry.

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure (<500 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve to trap in the discharge line to prevent hazardous back flow into the cylinder.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time.

For additional handling recommendations, consult Compressed Gas Association Pamphlets P-1 and G2.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

## 8. Exposure Controls, Personal Protection

### EXPOSURE LIMITS<sup>1</sup>:

INGREDIENT	% VOLUME	PEL-OSHA <sup>2</sup>	TLV-ACGIH <sup>3</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Ammonia FORMULA: NH <sub>3</sub> CAS: 7664-41-7 RTECS #: BO0875000	100.0	50 ppm TWA	25 ppm TWA 35 ppm STEL	LC <sub>50</sub> 2000 ppm/4H

<sup>1</sup> Refer to individual state of provincial regulations, as applicable, for limits which may be more stringent than those listed here.

<sup>2</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

<sup>3</sup> As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

### ENGINEERING CONTROLS:

Use local exhaust ventilation to reduce concentrations to within current exposure limits. A laboratory type hood is suitable for handling small or limited quantities.

MSDS: G-11

Revised: 7/1/96

PRODUCT NAME: AMMONIA
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**EYE/FACE PROTECTION:**

Gas tight chemical goggles or full-face piece respirator.

**SKIN PROTECTION:**

Protective gloves made of any suitable material.

**RESPIRATORY PROTECTION:**

Level C respiratory protection with full face piece or self-contained breathing apparatus should be available for emergency use. Air purifying respirators must be equipped with suitable cartridges. Do not exceed maximum use concentrations. Do not use air purifying respirators in an oxygen deficient/immediately dangerous to life and health (IDLH) atmosphere. Consult manufacturers instructions before use.

**OTHER/GENERAL PROTECTION:**

Safety shoes, safety shower, eyewash "fountain".

## 9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure at 70°F	: 94	psia
Vapor density at 60°F (Air = 1)	: 0.62	
Evaporation point	: Not Available	
Boiling point	: -28	°F
	: -33.3	°C
Freezing point	: 107.9	°F
	: -77.7	°C
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H2O)	: Very soluble	
Odor threshold	: Not Available	
Odor and appearance	: A colorless gas with a pungent odor.	

## 10. Stability and Reactivity

**STABILITY:**

Unstable

**CONDITIONS TO AVOID (STABILITY):**

None

**INCOMPATIBLE MATERIALS:**

Reacts vigorously with fluorine, chlorine, HCl, HBr, nitrosyl chloride, chromyl chloride, nitrogen dioxide, trioxxygen difluoride, and nitrogen trichloride.

**PRODUCT NAME: AMMONIA**

**HAZARDOUS DECOMPOSITION PRODUCTS:**

Hydrogen at very high temperatures: 1544°F (840°C).

**CONDITIONS TO AVOID (POLYMERIZATION):**

None

**HAZARDOUS POLYMERIZATION:**

Will not occur.

## 11. Toxicological Information

**MUTAGENIC:**

Genetic mutations observed in bacterial and mammalian test systems.

**OTHER:**

Toxic effects to the respiratory system, senses, liver, kidneys and bladder observed in mammalian species from prolonged inhalation exposures at above 100 ppm.

## 12. Ecological Information

**OTHER ENVIRONMENTAL INFORMATION:**

The reportable quantity is the minimum quantity of a material that when released, requires reporting to the appropriate Federal, State and local officials. Notification requirements are found under CERCLA Section 103(a). Initial notification may be by telephone, radio, or in person. A written follow-up notice is also required.

## 13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

## 14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Ammonia, Anhydrous, liquefied	Ammonia, Anhydrous, liquefied
HAZARD CLASS:	2.2	2.4 (9.2)
IDENTIFICATION NUMBER:	UN 1005	UN 1005
SHIPPING LABEL:	NONFLAMMABLE GAS	CORROSIVE GAS

**Additional Marking Requirement:** "Inhalation Hazard"

If net weight of product  $\geq$  100 pounds, the container must be also marked with the letters "RQ".

**Additional Shipping Paper Description Requirement:** "Poison Inhalation Hazard, Zone A"

If net weight of product  $\geq$  100 pounds, the shipping papers must be also marked with the letters "RQ".

## 15. Regulatory Information

Ammonia is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

**MSDS:** G-11

**Revised:** 7/1/96

PRODUCT NAME: AMMONIA
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**SARA TITLE III NOTIFICATIONS AND INFORMATION**

Ammonia is listed as an extremely hazardous substance (EHS) subject to state and local reporting under Section 304 of SARA Title III (EPCRA) with a reportable quantity (RQ) of 100 pounds.

The presence of Ammonia in quantities in excess of the threshold planning quantity (TPQ) of 500 pounds requires certain emergency planning activities to be conducted.

**SARA TITLE III - HAZARD CLASSES:**

Acute Health Hazard

Sudden Release of Pressure Hazard

Reactivity Hazard

**SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:**

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS NUMBER	INGREDIENT NAME	PERCENT BY VOLUME
7664-41-7	AMMONIA	100.0

This information must be included on all MSDS that are copied and distributed for this material.

**16. Other Information**

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

**DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:**

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

**The Clorox Company**

1221 Broadway  
Oakland, CA 94612  
Tel. (510) 271-7000

# Material Safety Data Sheet

<b>I Product:</b> CLOROX REGULAR-BLEACH											
<b>Description:</b> CLEAR, LIGHT YELLOW LIQUID WITH A CHARACTERISTIC CHLORINE ODOR											
<b>Other Designations</b>	<b>Distributor</b>	<b>Emergency Telephone Nos.</b>									
Clorox Bleach EPA Reg. No. 5813-50	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies Chemtrec (800) 424-9300									
<b>II Health Hazard Data</b>		<b>III Hazardous Ingredients</b>									
<p>DANGER: CORROSIVE. May cause severe irritation or damage to eyes and skin. Vapor or mist may irritate. Harmful if swallowed. Keep out of reach of children.</p> <p>Some clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g., irritation) occurs during exposure. Under normal consumer use conditions the likelihood of any adverse health effects are low.</p> <p>Medical conditions that may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, emphysema, chronic bronchitis or obstructive lung disease.</p> <p><b>FIRST AID:</b></p> <p><b>Eye Contact:</b> Hold eye open and rinse with water for 15-20 minutes. Remove contact lenses, after first 5 minutes. Continue rinsing eye. Call a physician.</p> <p><b>Skin Contact:</b> Wash skin with water for 15-20 minutes. If irritation develops, call a physician.</p> <p><b>Ingestion:</b> Do not induce vomiting. Drink a glassful of water. If irritation develops, call a physician. Do not give anything by mouth to an unconscious person.</p> <p><b>Inhalation:</b> Remove to fresh air. If breathing is affected, call a physician.</p>		<table><thead><tr><th>Ingredient</th><th>Concentration</th><th>Exposure Limit</th></tr></thead><tbody><tr><td>Sodium hypochlorite CAS# 7681-52-9</td><td>6.15%</td><td>Not established</td></tr><tr><td>Sodium hydroxide CAS# 1310-73-2</td><td>&lt;1%</td><td>2 mg/m<sup>3</sup>; <sup>1</sup> 2 mg/m<sup>3</sup>; <sup>2</sup></td></tr></tbody></table> <p><sup>1</sup>ACGIH Threshold Limit Value (TLV) - Ceiling</p> <p><sup>2</sup>OHSA Permissible Exposure Limit (PEL) - Time Weighted Average (TWA)</p> <p>None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen lists.</p>	Ingredient	Concentration	Exposure Limit	Sodium hypochlorite CAS# 7681-52-9	6.15%	Not established	Sodium hydroxide CAS# 1310-73-2	<1%	2 mg/m <sup>3</sup> ; <sup>1</sup> 2 mg/m <sup>3</sup> ; <sup>2</sup>
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Sodium hypochlorite CAS# 7681-52-9	6.15%	Not established									
Sodium hydroxide CAS# 1310-73-2	<1%	2 mg/m <sup>3</sup> ; <sup>1</sup> 2 mg/m <sup>3</sup> ; <sup>2</sup>									
<b>IV Special Protection and Precautions</b>		<b>V Transportation and Regulatory Data</b>									
<p>No special protection or precautions have been identified for using this product under directed consumer use conditions. The following recommendations are given for production facilities and for other conditions and situations where there is increased potential for accidental, large-scale or prolonged exposure.</p> <p><b>Hygienic Practices:</b> Avoid contact with eyes, skin and clothing. Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods.</p> <p><b>Engineering Controls:</b> Use general ventilation to minimize exposure to vapor or mist.</p> <p><b>Personal Protective Equipment:</b> Wear safety glasses. Use rubber or nitrile gloves if in contact liquid, especially for prolonged periods.</p> <p>KEEP OUT OF REACH OF CHILDREN</p>		<p><b>DOT/IMDG/IATA</b> - Not restricted.</p> <p><b>EPA - SARA TITLE III/CERCLA:</b> Bottled product is not reportable under Sections 311/312 and contains no chemicals reportable under Section 313. This product does contain chemicals (sodium hydroxide &lt;0.2% and sodium hypochlorite &lt;7.35% ) that are regulated under Section 304/CERCLA.</p> <p><b>TSCA/DSL STATUS:</b> All components of this product are on the U.S. TSCA Inventory and Canadian DSL.</p>									
<b>VI Spill Procedures/Waste Disposal</b>		<b>VII Reactivity Data</b>									
<p><b>Spill Procedures:</b> Control spill. Containerize liquid and use absorbents on residual liquid; dispose appropriately. Wash area and let dry. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed, and/or poorly ventilated areas until hazard assessment is complete.</p> <p><b>Waste Disposal:</b> Dispose of in accordance with all applicable federal, state, and local regulations.</p>		<p>Stable under normal use and storage conditions. Strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species. Prolonged contact with metal may cause pitting or discoloration.</p>									
<b>VIII Fire and Explosion Data</b>		<b>IX Physical Data</b>									
<p><b>Flash Point:</b> None</p> <p><b>Special Firefighting Procedures:</b> None</p> <p><b>Unusual Fire/Explosion Hazards:</b> None. Not flammable or explosive. Product does not ignite when exposed to open flame.</p>		<p>Boiling point.....approx. 212°F/100°C</p> <p>Specific Gravity (H<sub>2</sub>O=1) ..... ~ 1.1 at 70°F</p> <p>Solubility in Water ..... complete</p> <p>pH ..... ~11.4</p>									

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DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH

DATE PREPARED 05/05



# MATERIAL SAFETY DATA SHEET

MSDS: CHAMPION® MSDS 1400 SERIES DOT 3 BRAKE FLUIDS

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### CHAMPION® MSDS 1400 SERIES DOT 3 BRAKE FLUIDS

**Synonyms:**

DOT 3 BRAKE FLUID

**Company Identification**

Champion Brands, L.L.C., 1001 Golden Drive, Clinton, MO 64735

PHONE: 800-821-5693 WEBSITE: [www.championbrands.com](http://www.championbrands.com)

**CAS Registry Number** Not Applicable

**Synonyms** None

**Generic/Chemical Name** Mixture

**Product Type** Brake Fluid

**Transportation Emergency Response**

CHEMTREC: (800) 424-9300

**Product Information**

Product Information and MSDS Requests: (800) 821-5693 and [www.championbrands.com](http://www.championbrands.com)

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS#	EU Inventory	Conc. Wt.%	Risk	Symbol
Triethylene Glycol Monobutyl Ether	143-22-6	205-592-6	23 <= 35	None	None
Triethylene Glycol Monomethyl Ether	112-35-6	203-962-1	3 <= 10	None	None
Diethylene Glycol	111-46-6	203-872-2	10 <=20	R22	Xn
Tetraethylene Glycol Monobutyl Ether	1559-34-8	216-322-1	9 <=14	None	None
Tetraethylene Glycol	112-60-7	203-989-9	6 <=10	None	None
Triethylene Glycol Monoethyl Ether	112-50-5	203-978-9	8 <=20	None	None
Pentaethylene Glycol Monobutyl Ether	23601-39-0	245-774-2	2 <=5	None	None
Diethylene Glycol Monobutyl Ether	112-34-5	203-961-6	1 <=8	R36	Xi
Polyethylene Glycol Methyl Ether	9004-74-4	Not Assigned	<= 4.0	None	None
Diethylene Glycol Monoethyl Ether	111-90-0	203-919-7	<= 2.0	None	None

Concentrations given are typical values  
See section 16 for full text of risk phrases

**All Relevant Risk Phrases**  
R22 – Harmful if swallowed  
R36 – Irritating to eyes

## 3. HAZARD IDENTIFICATION

**Emergency Overview**

This material is HAZARDOUS by OSHA Hazard Communication definition.

**Signal Word:** WARNING

**Hazards:** Liquid, vapors or mist may be irritating to eyes, skin and respiratory tract.

**NFPA®**

Health 1  
Flammability 1  
Reactivity 0

**HMIS®**

Health 2  
Flammability 1  
Reactivity 0

**Physical State**

Liquid

**Color**

Clear to Amber

**Odor**

Mild Odor

**Odor Threshold**

No Value Available

**Potential Health Effects****Routes of Exposure**

Skin, Eye, Inhalation

**Signs and Symptoms of Acute Exposure**

See component summary.



# MATERIAL SAFETY DATA SHEET

MSDS: CHAMPION® MSDS 1400 SERIES DOT 3 BRAKE FLUIDS

•Triethylene Glycol Monobutyl Ether 143-22-6

Contact may cause severe eye irritation, but not expected to cause permanent damage. No other signs or symptoms of acute exposure are expected during normal use with standard manufacturing practices.

•Triethylene Glycol Monomethyl Ether 112-35-6

Mildly toxic by ingestion and skin contact. A mild skin and eye irritant.

•Diethylene Glycol 111-46-6

This substance may cause effects on the central nervous system, liver and kidneys.

•Tetraethylene Glycol Monobutyl Ether 1559-34-8

No known chronic health effects.

•Tetraethylene Glycol 112-60-7

No adverse chronic human health effects have been reported for this material.

•Triethylene Glycol Monoethyl Ether 112-50-3

May be irritation to the skin.

•Pentaethylene Glycol Monobutyl Ether 23601-39-0

Not expected to present a significant acute health hazard with short term exposure

•Diethylene Glycol Monobutyl Ether 112-34-5

Moderate eye irritant. Effects of eye irritation are reversible. Contact may cause mild skin irritation. Not expected to be a sensitizer. Not a skin absorption hazard.

•Polyethylene Glycol Methyl Ether 9004-74-4

Mild skin irritant. May cause minor eye irritation.

•Diethylene Glycol Monoethyl Ether 111-90-0

Moderate eye irritant. Slight skin irritant. May produce symptoms of CNS depression including headache, dizziness, nausea, loss of sense of balance, drowsiness, and visual disturbances.

**Skin:** May cause slight irritation if left in contact with skin. May be absorbed in toxic amounts through the skin.

**Inhalation:** Due to low vapor pressure, significant exposure by inhalation appears unlikely. However, exposure to high concentrations of mist, aerosol, or vapors at elevated temperatures may cause irritation, coughing, and discomfort in the nose, throat and chest

**Eye:** Can cause irritation and moderate conjunctivitis following contact.

**Ingestion:** May produce symptoms of CNS depression including headache, dizziness, nausea, loss of sense of balance, drowsiness, and visual disturbances.

**Chronic Health Effects:** See component summary.

•Triethylene Glycol Monobutyl Ether 143-22-6

Repeated or prolonged contact may cause skin irritation. May cause dermatitis by defatting the skin from prolonged or repeated contact.

•Triethylene Glycol Monomethyl Ether 112-35-6

No chronic health hazards are expected to occur from anticipated conditions of normal use of this material.

•Polyethylene Glycol Methyl Ether 9004-74-4

No known chronic health effects.

•Diethylene Glycol 111-46-6

No adverse chronic human health effects have been reported for this material.

•Tetraethylene Glycol 112-60-7

No adverse chronic human health effects have been reported for this material.

•Tetraethylene Glycol Monobutyl Ether 1559-34-8

No adverse chronic human health effects have been reported for this material.

•Triethylene Glycol Monoethyl Ether 112-50-3

No known chronic health effects

•Pentaethylene Glycol Monobutyl Ether 23601-39-0

No known chronic health effects

•Diethylene Glycol Monobutyl Ether 112-34-5

May cause dermatitis by defatting the skin from prolonged or repeated contact.

•Polyethylene Glycol Methyl Ether 9004-74-4

No known chronic health effects

•Diethylene Glycol Monoethyl Ether 111-90-0





# MATERIAL SAFETY DATA SHEET

Repeated or prolonged skin contact may cause slight transient irritation. Skin absorption may add significantly to the overall toxic effect. Prolonged or high exposures may cause CNS effects and liver and kidney changes.

## Conditions Aggravated by Exposure

Any pre-existing disorders or diseases of the eyes, skin, blood, and/or central nervous system (CNS)

## 4. FIRST AID MEASURES

**General:** Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. For specific information refer to the Emergency Overview in Section 3 of this MSDS.

**Skin:** Wash skin with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. (Discard contaminated shoes.) If irritation occurs get medical attention.

**Inhalation:** Remove exposed person to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. CALL A PHYSICIAN IMMEDIATELY.

**Eye:** Flush eyes with large amounts of water for at least 15 minutes, lifting eyelids to insure complete flushing of surface. GET MEDICAL ATTENTION IMMEDIATELY

**Ingestion:** Never give anything by mouth to an unconscious person. Have patient drink several glasses of water, then induce vomiting by having patient tickle back of throat with finger. Keep airway clear. GET MEDICAL ATTENTION IMMEDIATELY.

## 5. FIRE FIGHTING MEASURES

### Flammable Properties

#### Classification

OSHA/NFPA Class IIIB combustible liquid

**Flash Point:** 121 °C (249 °F) PMCC

**Auto Ignition Temperature:** 310 °C (590 °F)

**Lower Flammable Limit:** No Data Available

**Upper Flammable Limit:** No Data Available

### Extinguishing Media

**Suitable:** SMALL FIRE: Use dry chemicals, CO<sub>2</sub>, water spray or alcohol resistant foam. LARGE FIRE: Use water spray, water fog or alcohol resistant foam.

**Unsuitable:** Do not use solid water stream.

### Protection of Firefighters

**Protective Equipment/Clothing:** Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters protective clothing will only provide limited protection.

**Fire Fighting Guidance:** Fight fire from maximum distance or use unmanned hose handlers or monitor nozzles. Move containers from fire area if you can do it without risk. 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.

**Hazardous Combustion Products:** Carbon Oxides (CO, CO<sub>2</sub>)

## 6. ACCIDENTAL RELEASE INFORMATION

### Release Response

Combustible liquid. Eliminate all sources of ignition. Do not touch or walk through spilled material. Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas. 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.

## 7. HANDLING AND STORAGE

**Handling:** Normal precautions common to good manufacturing practice should be followed in handling and storage. Open and handle container with care. Do not handle near heat, sparks or flame. Avoid contact with incompatible agents. Use only with adequate ventilation/personal protection. Avoid contact with eyes, skin, and clothing. Do not enter storage area unless adequately ventilated. Metal containers involved in the transfer of this material should be grounded and bonded. Handle empty containers with care as residue may be combustible. After handling, always



# MATERIAL SAFETY DATA SHEET

wash hands thoroughly with soap and water. Isolate, vent, drain, wash and purge systems or equipment before maintenance or repair. Observe precautions pertaining to confined space entry. Check atmosphere for explosiveness and oxygen deficiencies. Use only non-sparking tools.

**Storage:** Store in well ventilated area. Store away from heat, open flame and strong oxidizing agents. Keep container tightly closed and properly labeled. Ground all equipment containing this material. Use only non-sparking tools.

## 8. EXPOSURE CONTROL/PERSONAL PROTECTIVE EQUIPMENT

**Engineering Controls** Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

**Personal Protection: Inhalation** A respiratory protection program that meets OSHA's 29 CFR 1910.134 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. No occupational exposure limit(s) have been established for this material or its components. If nuisance mists cause discomfort, U.S. National Institute for Occupational Safety and Health (NIOSH) approved respiratory protection is suggested.

**Skin** Wear chemical resistant gloves such as rubber, neoprene, or vinyl. When skin contact is possible, protective clothing including gloves, apron, sleeves, boots, head and face protection should be worn. The equipment must be cleaned thoroughly after each use.

**Eye** Safety glasses are required as minimum requirements. Use splash goggles when eye contact due to splashing or spraying liquid is possible.

**Additional Remarks:** Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing and wash thoroughly before reuse. Use care in walking on spilled material. Material spilled on hard surfaces can be a serious slipping/falling hazard.

### Occupational Exposure Limits

Component Name	Source / Date	Value	Type	Notation
Tetraethylene Glycol	US (ACGIH) / 2007	N/L		
	US (OSHA) / 2007	N/L		
Diethylene Glycol	US (ACGIH) / 2006	N/L		
	US (OSHA) / 1993	N/L		
Triethylene Glycol Monoethyl Ether	US (ACGIH) / 2003	N/L		
	US (OSHA) / 2003	N/L		
Diethylene Glycol Monobutyl Ether	US (ACGIH) / 2004	N/L		
	US (OSHA) / 2000	N/L		
Diethylene Glycol Monoethyl Ether	ACGIH / 2006	N/L		

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Liquid. Amber.
<b>Odor:</b>	Mild Odor.
<b>Boiling Point/Boiling Range:</b>	>210 °C (> 410° F) @ 760 mm Hg
<b>Freezing Point/ Melting Point:</b>	-50 °C (-58 °F)
<b>Flash Point:</b>	121 °C (249.8 °F) PMCC
<b>Auto-Ignition:</b>	310 °C (590 °F)
<b>Flammability:</b>	OSHA/NFPA Class IIIB combustible liquid.
<b>Relative Density:</b>	1.05
<b>Solubility (Water):</b>	Soluble in water.

## 10. STABILITY AND REACTIVITY

<b>Chemical Stability:</b>	This product is stable.
<b>Conditions to Avoid:</b>	Avoid contact with strong oxidizers, excessive heat, sparks or open flame.



# MATERIAL SAFETY DATA SHEET

**Substances to Avoid:** Oxidizers  
**Decomposition Products:** Carbon oxides ( CO, CO<sup>2</sup> )  
**Hazardous Polymerization:** Will Not Occur.  
**Reactions with Air and Water:** Does not react with air, water or other common materials

## 11. TOXICOLOGICAL INFORMATION

### Product Summary

This substance appears to be of low toxicity, except for possible mild irritant effects in humans. A high dose may produce central nervous system depression, but there are no reports of adverse health effects from occupational exposure.

•Triethylene Glycol Monobutyl Ether 143-22-6

#### Acute Toxicity – Lethal Doses

LD50 (Oral) Rat 5300 MG/KG

LD50 (Skin) Rabbit 3540 UL/KG

#### Irritation

Skin Repeated or prolonged contact may cause slight skin irritation. No significant signs or symptoms indicative of any health hazard are expected to occur as a result of skin absorption exposure. Not expected to be a sensitizer.

Eye Contact may cause severe eye irritation, but is not expected to cause permanent damage.

**Target Organ Effects:** Eye. Skin.

**Repeated Dose Toxicity:** No known chronic health effects. Repeated or prolonged contact with skin may cause defatting and drying of the skin which may result in dermatitis.

**Reproductive Effects:** Not expected to occur.

**Developmental Effects:** Results from animal studies demonstrate that this material is not a teratogen, nor is it toxic to the developing embryo or fetus at non-maternally toxic doses.

**Carcinogenicity:** Not listed by IARC, NTP, or OSHA.

•Triethylene Glycol Monomethyl Ether 112-35-6

#### Acute Toxicity – Lethal Doses

LD50 (Oral) Rat 11.8 G/KG

LD50 (Skin) Rabbit 7.4 G/KG

#### Irritation

Skin This substance is a mild skin irritant.

Eye This product is suspected to be a mild eye irritant.

**Repeated Dose Toxicity:** In severe overexposure enough material might be absorbed into the skin to cause systemic injury.

**Reproductive Effects:** Laboratory tests indicate high doses may cause adverse reproductive effects in rats and mice.

**Carcinogenicity:** No conclusive data found in literature search. Not listed by IARC, NTP, or OSHA.

•Polyethylene Glycol Methyl Ether 9004-74-4

#### Acute Toxicity – Lethal Doses

LD50 (Oral) Rat 22 - 40 G/KG

LD50 (Skin) Rabbit > 20 ML/KG

**Reproductive Effects:** Maternally toxic oral doses did not produce malformations and was not selectively toxic to developing conceptus.

•Diethylene Glycol 111-46-6

#### Acute Toxicity – Lethal Doses

LD50 (Oral) Rat 12,565 MG/KG BWT

Mouse 23,700 MG/KG BWT

LD50 (Skin) Rabbit 11,900 MG/KG

**Acute Toxicity – Effects:** Inhalation None Expected



# MATERIAL SAFETY DATA SHEET

MSDS: CHAMPION® MSDS 1400 SERIES DOT 3 BRAKE FLUIDS

## Irritation:

Skin Slight skin irritant. Not expected to be a sensitizer.

Eye May cause minor eye irritation.

**Repeated Dose Toxicity:** Diethylene glycol given to rats in the diet for two years caused bladder stones, tumors, and kidney and liver damage. These effects were probably due to contaminating ethylene glycol, and the bladder stones were formed from oxalate crystals.

**Reproductive Effects:** Reproductive and developmental effects have been noted in animals following very large (>3000 mg/kg bw/day) oral doses. However, comparable internal dose levels are not possible with dermal or inhalation exposures under normal conditions of use. Therefore, Diethylene glycol is not considered a possible reproductive or developmental hazard except during very large oral doses.

**Carcinogenicity:** Not listed by IARC, NTP, or OSHA. No evidence for carcinogenicity was found with a chronic skin-painting study in mice. No carcinogenic or tumor promoting effects in rats exposed up to 2.5% solutions in drinking water for 108 weeks. Older feed studies utilizing limited number tissues but very high doses also provide no evidence of carcinogenicity. Therefore, this substance should not be considered a concern for carcinogenicity.

•Triethylene Glycol Monobutyl Ether 143-22-6

## Acute Toxicity – Lethal Doses

LD50 (Oral) Rat 5300 MG/KG

LD50 (Skin) Rabbit 3540 UL/KG

## Irritation

Skin Repeated or prolonged contact may cause slight skin irritation. No significant signs or symptoms indicative of any health hazard are expected to occur as a result of skin absorption exposure. Not expected to be a sensitizer.

Eye Contact may cause severe eye irritation, but not expected to cause permanent damage.

**Target Organ Effects:** Eye. Skin.

**Repeated Dose Toxicity:** No known chronic health effects. Repeated or prolonged contact with skin may cause defatting and drying of the skin which may result in dermatitis.

**Reproductive Effects:** Not expected to occur.

**Developmental Effects:** Results from animal studies demonstrate that this material is not a teratogen, nor is it toxic to the developing embryo or fetus at non-maternally toxic doses.

**Carcinogenicity:** Not listed by IARC, NTP, or OSHA.

•Tetraethylene Glycol 112-60-7

## Acute Toxicity – Lethal Doses

LD50 (Oral) Rat > 18,056 MG/KG

LD50 (Skin) Rabbit > 20000 MG/KG

**Carcinogenicity:** Not listed by IARC, NTP, or OSHA.

•Polyethylene Glycol 25322-68-3

## Acute Toxicity – Lethal Doses

LD50 (Oral) Rat > 30000 MG/KG

LD50 (Skin) Rabbit > 20000 MG/KG

**Carcinogenicity:** Not listed by IARC, NTP, or OSHA.

•Tetraethylene Glycol Monobutyl Ether 1559-34-8

**Repeated Dose Toxicity:** No known chronic health effects.

**Carcinogenicity:** Not listed by IARC, NTP, or OSHA.

•Pentaethylene Glycol Monobutyl Ether 23601-39-0

**Repeated Dose Toxicity:** No known chronic health effects.

**Carcinogenicity:** Not listed by IARC, NTP, or OSHA.

•Diethylene Glycol Monobutyl Ether 112-34-5

## Acute Toxicity – Lethal Doses



# MATERIAL SAFETY DATA SHEET

LD50 (Oral)	Rat	5080 MG/KG
	Mouse	2406 MG/KG
LD50 (Skin)	Rabbit	2764 MG/KG

## Irritation

Skin This substance is a mild skin irritant

Eye Moderate eye irritant

**Target Organ Effects:** Eye

**Reproductive Effects:** In vivo animal studies show no adverse reproductive effects.

**Developmental Effects:** Results from animal studies demonstrate that this material is not a teratogen or toxic to the developing embryo or fetus.

**Genetic Toxicity:** Negative for genotoxicity both in vitro in vivo tests.

**Carcinogenicity:** Not listed by IARC, NTP, or OSHA.

•Diethylene Glycol Monoethyl Ether 111-90-0

## Acute Toxicity – Lethal Doses

LD50 (Oral)	Rat	5400 MG/KG
LD50 (Skin)	Rabbit	9.0 G/KG

## Irritation

Skin Slight skin irritant

Eye Moderate eye irritant

**Repeated Dose Toxicity:** In a two year drinking water study with rats and mice, no adverse effects were observed at 1% and 5%, respectively.

**Carcinogenicity:** Not listed by IARC, NTP, or OSHA.

## 12. ECOLOGICAL INFORMATION

### •This Product

**Ecotoxicity:** This material is highly soluble in water. Laboratory toxicity tests indicate that it is not significantly toxic to fish and aquatic invertebrates, although amphibians may be more sensitive. Wildlife species may be more susceptible since mammals and birds do not readily metabolize this material. The odor and flavor of this material may attract some wildlife and cause them to consume spilled material.

**Environmental Fate and Pathway:** This material will biodegrade rather rapidly in both soil and water, and will not persist in the environment. Due care should be taken to avoid accidental releases to aquatic or terrestrial systems.

### Persistence and Degradability:

**Bioaccumulation:** This material is highly soluble in water and should not bioaccumulate in aquatic or terrestrial organisms.

•Triethylene Glycol Monobutyl Ether 143-22-6

**Ecotoxicity:** No Data Available

**Environmental Fate and Pathway:** Expected to have high mobility in soils. It is water soluble and is expected to have low volatility. If released to the atmosphere, this material should exist in both the vapor and particulate phases. Vapor phase is degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals. Particulate phase of this material may be physically removed from air by wet and dry deposition.

•Triethylene Glycol Monomethyl Ether 112-35-6

**Ecotoxicity:** This material is highly soluble in water. Limited toxicity tests indicate this material should exhibit low toxicity to aquatic organisms. The odor and flavor of this material may attract some wildlife and cause them to consume spilled material.

**Environmental Fate and Pathway:** This material will biodegrade rather rapidly in both soil and water, and will not persist in the environment. Due care should be taken to avoid accidental releases to aquatic or terrestrial systems.

**Persistence and Degradability:** **Bioaccumulation:** Because of this materials high solubility and rapid biodegradability, it is unlikely that bioaccumulation will occur in aquatic or terrestrial systems. Models estimate that this material will preferentially partition to water versus air or soil.





# MATERIAL SAFETY DATA SHEET

MSDS: CHAMPION® MSDS 1400 SERIES DOT 3 BRAKE FLUIDS

•Diethylene Glycol 111-46-6

**Ecotoxicity:** Diethylene glycol (DEG) is highly soluble in water. Laboratory tests indicate that DEG is not significantly toxic to fish or aquatic invertebrates. While there is no wildlife toxicity data available on DEG, laboratory tests on rats would indicate that it should not be highly toxic to mammals.

**Environmental Fate and Pathway:** This material is volatile and water soluble. It is not expected to absorb onto soils or sediments. Expected to have high mobility in soils. This material is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase is degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals. The particulate phase of this material may be physically removed from the air by wet and dry deposition. This material is not expected to persist in the environment.

**Persistence and Degradability:** Stability in water: Diethylene glycol (DEG) is highly soluble in water.

Biodegradation: This material is expected to be readily biodegradable.

Bioaccumulation: BCF < 1.0 This material is not expected to bioaccumulate.

Persistence and Degradability:

Stability in soil: The KOC value suggests that this compound would be highly mobile if released onto the soil and would not absorb to suspended solids or sediments.

Biodegradation: This material is expected to be partially or slowly biodegradable.

Bioaccumulation: BCF < 1.0 This material is not expected to bioaccumulate.

•Tetraethylene Glycol Monobutyl Ether 1559-34-8

**Ecotoxicity:** No data available.

**Environmental Fate and Pathway:** No data available.

•Tetraethylene Glycol 112-60-7

**Ecotoxicity:** This material is highly soluble in water. Limited toxicity tests indicate this material should exhibit low toxicity to aquatic organisms. The odor and flavor of this material may attract some wildlife and cause them to consume spilled material.

Acute Toxicity to Fish

LC50/96 HOURS > 1000 mg/l

Acute Toxicity to Aquatic Invertebrates

EC50/48 HOURS Daphnia magna. > 1000 mg/l

Toxicity to Aquatic Plants

EC50/96 HOURS Green Algae (Selenastrum) > 1000 mg/l

Toxicity to Microorganisms

EC50/6 HOURS Bacteria > 100 mg/l

**Environmental Fate and Pathway:** No data available.

Other Adverse Effects

No data available.

•Triethylene Glycol Monoethyl Ether 112.50-5

**Ecotoxicity:** No data available.

**Environmental Fate and Pathway:** Expected to have high mobility in soils. Volatilization from dry soil surfaces is expected. Volatilization from moist soil surfaces is expected. This material is expected to exist solely as a vapor in the ambient atmosphere. Vapor phase is degraded in the atmosphere by reaction with photochemically produced hydroxyl radical.

Persistence and Degradability

Biodegradation: This material is expected to be readily biodegradable.

Bioaccumulation: BCF <1.0 This material is not expected to bioaccumulate.

•Pentaethylene Glycol Monobutyl Ether 23601-39-0

**Ecotoxicity:** No data available.

**Environmental Fate and Pathway:** No data available.

•Diethylene Glycol Monobutyl Ether 112-34-5

**Ecotoxicity:**



# MATERIAL SAFETY DATA SHEET

## Acute Toxicity to Fish

LC50/96 HOURS silverside minnow. 2,000 mg/l

LC50/96 HOURS bluegill. 1,300 mg/l

Summary: This material is not harmful or toxic to fish.

## Acute Toxicity to Aquatic Invertebrates

Summary: No data available.

## Acute Toxicity to Aquatic Plants

Summary: No data available.

**Environmental Fate and Pathway:** Expected to have high mobility in soils. It is water soluble and is expected to have low volatility. This material is expected to exist solely as a vapor in the ambient atmosphere. Vapor phase is degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals. Hydrolysis is not expected to be an important factor in the environmental fate process for this material.

## Persistence and Degradability

**Stability in Soil:** The Koc value suggests that this compound would be highly mobile if released onto the soil and would not absorb to suspended solids or sediments.

**Biodegradation:** This material is expected to be readily biodegradable.

**Bioaccumulation:**  $2.0 \text{ BCF} < 5$  This material is not expected to bioaccumulate.

•Polyethylene Glycol Methyl Ether 9004-74-4

**Ecotoxicity:** No data available.

**Environmental Fate and Pathway:** No data available.

•Diethylene Glycol Monoethyl Ether 111-90-0

**Ecotoxicity:** This material is expected to have low toxicity to aquatic species. However, due caution should be exercised to prevent the accidental release of this material to the environment.

## Acute Toxicity to Fish

LC50/24 HOURS goldfish > 5000 mg/l

LC50/96 HOURS fathead minnow. 26,500 mg/l

**Environmental Fate and Pathway:** Expected to have high mobility in soils. Volatilization from dry soil surfaces is expected. While this material may evaporate into the air from dry soil, it is unlikely to evaporate from moist soil or water. This material is expected to exist solely as a vapor in the ambient atmosphere. The vapor phase of this material is degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals and ozone.

## Persistence and Degradability

**Biodegradation:** Incubation of Diethylene glycol monoethyl ether for 5, 10, and 20 days without an acclimation period resulted in theoretical BOD values of 5, 31, and 48% respectively. This material is expected to be readily biodegradable.

**Bioaccumulation:**  $\text{BCF} = 0.2$  This material is not expected to bioaccumulate.

## 13. DISPOSAL INFORMATION

Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations. Recovery and reuse, rather than disposal, should be the ultimate goal of handling efforts. The materials resulting from clean-up operations may be hazardous wastes and therefore, subject to specific regulations.

## 14. TRANSPORTATION INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

STATIC ACCUMULATOR (50 picosiemens or less): No



# MATERIAL SAFETY DATA SHEET

## 15. REGULATORY INFORMATION

### Regulatory Status

Country	Inventory		
Australia	AICS	X	
Canada	DSL		
Canada	NDSL		X = All components are included or are otherwise
China	IECS		Exempt from inclusion on this inventory
European Union	EINECS		
European Union	ELINCS		
European Union	NLP		
Japan	ENCS		
Korea	ECL		
Philippines	PICCS		
United States	TSCA	X	

All components of this product are listed or are exempt from listing on the TSCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

**SARA 311/312:** Based on available information, this material is classified as the following health and/or physical hazards according to Section 311 & 312.

Immediate Acute Health Hazard  
Delayed (Chronic) Health Hazard  
Fire Hazard

**SARA 313:** This material contains the following chemicals with known CAS numbers subject to the reporting requirements of SARA Title III, Section 313 and 40 CFR 372:

Component	Reporting Threshold
Diethylene Glycol Monobutyl Ether / CAS # 112-34-5	1.0%
Triethylene Glycol Monobutyl Ether / CAS # 143-22-6	1.0%
Diethylene Glycol Monoethyl Ether / CAS # 111-90-0	1.0%
Triethylene Glycol Monoethyl Ether / CAS # 112-50-5	1.0%
Triethylene Glycol Monomethyl Ether / CAS # 112-35-6	1.0%

## 16. DISCLAIMER

**REVISION STATEMENT:** Revision updates may be in many sections and the MSDS should be read in its entirety. Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by Champion LLC, 1001 Golden Drive, Clinton, Missouri 64735.

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best knowledge of Champion Brands, L.L.C. Champion Brands, L.L.C., makes no warranty whatsoever expressed or implied of merchantability or fitness for the particular purpose, regarding the accuracy of such data or the results to be obtained from the use thereof. Champion Brands, L.L.C., assumes no legal responsibility for use or reliance upon this data. 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.



# Safety (MSDS) data for chlordane



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## General

Synonyms: 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindan, octachloro-4,7-methanohydroindane, aspon-chlordane, belt, gamma-chlordan, chlorindan, chlor kil, chlorodane, corodane, dichlorochlordene, dowchlor, kypchlor, niran, octachlor, synklor, tat chlor 4, topichlor, topichlor 20, toxichlor, starchlor, kilex lindane, termi-ded, further trade names

Use: organochlorine pesticide

Molecular formula:  $C_{10}H_6Cl_8$

CAS No: 57-74-9

EINECS No:

## Physical data

Appearance: off-white powder

Melting point: 106 - 107 C

Boiling point: ca. 175 C (decomposes)

Vapour density:

Vapour pressure:

Density ( $g\ cm^{-3}$ ): ca. 1.6

Flash point:

Explosion limits:

Autoignition temperature:

Water solubility:

## Stability

Stable, but readily decomposed by moderately strong alkaline solutions. Corrodes iron and zinc and attacks some types of polymer. Incompatible with strong oxidizing agents.

## Toxicology

Toxic if ingested. Harmful in contact with the skin or inhaled. May cause systemic effects. Experimental carcinogen, teratogen.

### Toxicity data

(The meaning of any toxicological abbreviations which appear in this section is given [here.](#))

ORL-RAT LD50 200 mg kg<sup>-1</sup>

IHL-CAT LC50 100 mg m<sup>-3</sup>/4h

IPR-MUS LD50 240 mg kg<sup>-1</sup>

IVN-MUS LD50 10 mg kg<sup>-1</sup>

ORL-RBT LD50 100 mg kg<sup>-1</sup>

SKN-HMN LDLO 428 mg kg<sup>-1</sup>

ORL-QAL LD50 83 mg kg<sup>-1</sup>

### Risk phrases

(The meaning of any risk phrases which appear in this section is given [here.](#))

R20 R21 R25.

## Transport information

(The meaning of any UN hazard codes which appear in this section is given [here.](#))

UN No 2761. Hazard class 6.1. Packing group III.

# Personal protection

Safety glasses, gloves, adequate ventilation.

## Safety phrases

(The meaning of any safety phrases which appear in this section is given [here.](#))

[Return to [Physical & Theoretical Chemistry Lab. Safety home page.](#)]

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This information was last updated on March 9, 2005. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

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# CITGO No. 2 Fuel Oil, All Grades

## Material Safety Data Sheet

CITGO Petroleum Corporation  
P.O. Box 3758  
Tulsa, OK 74102-3758

MSDS No. AG2FO  
Revision Date 03/17/2003

**IMPORTANT:** Read this MSDS before handling or disposing of this product and pass this information on to employees, customers and users of this product.

### Emergency Overview

**Physical State** Liquid.  
**Color** Red. **Odor** Characteristic, kerosene-like.

#### WARNING!

Combustible liquid; vapor may cause flash fire.  
Harmful or fatal if swallowed - can enter lungs and cause damage.  
Mist or vapor can irritate the respiratory tract.  
Liquid contact can cause eye or skin irritation.  
May be harmful if inhaled or absorbed through the skin.  
Overexposure can cause central nervous system (CNS) depression and/or other target organ effects.  
Diesel engine exhaust can cause upper respiratory tract irritation and reversible pulmonary effects.  
Spills may create a slipping hazard.

### Hazard Rankings

	HMIS	NFPA
Health Hazard	* 1	0
Fire Hazard	2	2
Reactivity	0	0

\* = Chronic Health Hazard

### Protective Equipment

Minimum Recommended  
See Section 8 for Details



## SECTION 1: IDENTIFICATION

<b>Trade Name</b>	CITGO No. 2 Fuel Oil, All Grades	<b>Technical Contact</b>	(918) 495-5940 or (918) 495-5933
<b>Product Number</b>	Various	<b>Medical Emergency</b>	(918) 495-4700
<b>CAS Number</b>	68476-30-2	<b>CHEMTREC Emergency (United States Only)</b>	(800) 424-9300
<b>Product Family</b>	Fuels.		
<b>Synonyms</b>	Heating Oil; Home Heating Oil; Furnace Oil; Burner Fuel; Fuel Oil No. 2; No. 2 Heating Oil; K-2 Fuel Oil; Grade 2 Distillate Fuel; High Sulfur Fuel Oil; C9-C25 Petroleum Hydrocarbons		

## SECTION 2: COMPOSITION

Component Name(s)	CAS Registry No.	Concentration (%)
1) No. 2 Fuel Oil	68472-30-2	100
2) Hydrodesulfurized Middle Distillate (Petroleum)	64742-80-9	0 - 100
3) C10-C20 Petroleum Hydrocarbons	64741-44-2	0 - 100
4) Hydrodesulfurized Light Catalytic Cracked Distillate (Petroleum)	68333-25-5	0 - 50
5) Kerosine (Petroleum)	8008-20-6	0 - 50
6) C9-C25 Petroleum Hydrocarbons	64741-59-9	0 - 50
7) Nonane, all isomers		1 - 10
8) Ethylmethylbenzenes (Ethyltoluenes)	25550-14-5	1 - 3
9) Trimethylbenzenes, all isomers	25551-13-7	0 - 2
10) Naphthalene	91-20-3	0 - 2
11) Biphenyl (Diphenyl)	92-52-4	0 - 2
12) 1, 2, 4 Trimethylbenzene	95-63-6	0 - 1
13) Cumene	98-82-8	0 - 1
14) n-Propylbenzene	103-65-1	0 - 1
15) Sulfur	7704-34-9	<0.5
16) Toluene	108-88-3	<0.05
17) Benzene	71-43-2	<0.05

## SECTION 3: HAZARDS IDENTIFICATION

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Also see Emergency Overview and Hazard Ratings on the top of Page 1 of this MSDS.

**Major Route(s) of Entry** Skin contact. Eye contact. Inhalation.

### Signs and Symptoms of Acute Exposure

<b>Inhalation</b>	Breathing mist or vapors concentrations well above occupational exposure levels can irritate the mucous membranes of the nose, throat, bronchi, and lungs, and may cause transient central nervous system (CNS) depression. CNS symptoms include headache, dizziness, nausea, intoxication, blurred vision, slurred speech, flushed face, confusion, weakness, fatigue, loss of consciousness, convulsions, coma, and death, depending on the concentration and/or duration of exposure.
<b>Eye Contact</b>	Animal test results on similar materials suggest that this product can cause moderate eye irritation upon short-term exposure. Symptoms include stinging, watering, redness, and swelling.
<b>Skin Contact</b>	Animal test results on similar materials suggest that this product can cause moderate to severe skin irritation. Short-term contact symptoms include redness, itching, and burning of the skin. Also, certain components of this material may be absorbed through the skin and produce CNS depression effects (see "Inhalation" above). If the skin is damaged, absorption increases. Prolonged and/or repeated contact may cause severe dermatitis and/or more serious skin disorders. Chronic symptoms may include drying, swelling, scaling, blistering, cracking, and/or severe tissue damage.
<b>Ingestion</b>	<p>If swallowed, this material may irritate the mucous membranes of the mouth, throat, and esophagus. It can be readily absorbed by the stomach and intestinal tract. Symptoms include a burning sensation of the mouth and esophagus, nausea, vomiting, dizziness, staggering gait, drowsiness, loss of consciousness, and delirium, as well as additional central nervous system (CNS) effects (see "Inhalation" above).</p> <p>Due to its light viscosity, there is a danger of aspiration into the lungs during vomiting. Aspiration of a small amount of liquid can cause severe pulmonary edema and lipid or chemical pneumonia which can result in death. Progressive CNS depression, respiratory insufficiency, and ventricular fibrillation may also result in death.</p>
<b>Chronic Health Effects Summary</b>	<p>Secondary effects of ingestion and subsequent aspiration into the lungs may cause pneumatocele (lung cavity) formation and chronic lung dysfunction.</p> <p>This product contains petroleum middle distillates similar to those shown to produce skin tumors on laboratory rodents following repeated application. All tumors appeared during the latter portion of the typical 2-year lifespan of the animals. Certain studies have shown that washing the animal's exposed skin with soap and water between treatments greatly reduces the potential tumorigenic effects. These effects are unlikely to occur if good personal hygiene is practiced.</p> <p>This material and/or its components have been associated with developmental and/or reproductive toxicity, genotoxicity, immunotoxicity, and carcinogenicity. Refer to Section 11 of this MSDS for additional health-related information.</p>
<b>Conditions Aggravated by Exposure</b>	Medical conditions aggravated by exposure to this material may include skin disorders, chronic respiratory diseases, neurological conditions, liver or kidney dysfunction.
<b>Target Organs</b>	This material may cause damage to the following organs: kidneys, liver, upper respiratory tract, skin, eyes, central nervous system (CNS).
<b>Carcinogenic Potential</b>	This product does not contain any components at concentrations above 0.1% which are considered carcinogenic by OSHA, IARC or NTP. NTP has determined that exposure to diesel exhaust particulates, a complex mixture of combustion products of diesel fuel, is reasonably anticipated to be a human carcinogen.

## CITGO No. 2 Fuel Oil, All Grades

OSHA Hazard Classification is indicated by an "X" in the box adjacent to the hazard title. If no "X" is present, the product does not exhibit the hazard as defined in the OSHA Hazard Communication Standard (29 CFR 1910.1200).							
OSHA Health Hazard Classification				OSHA Physical Hazard Classification			
Irritant	<input checked="" type="checkbox"/>	Toxic	<input type="checkbox"/>	Combustible	<input checked="" type="checkbox"/>	Explosive	<input type="checkbox"/>
Sensitizer	<input type="checkbox"/>	Highly Toxic	<input type="checkbox"/>	Flammable	<input type="checkbox"/>	Oxidizer	<input type="checkbox"/>
Corrosive	<input type="checkbox"/>	Carcinogenic	<input type="checkbox"/>	Compressed Gas	<input type="checkbox"/>	Organic Peroxide	<input type="checkbox"/>
						Pyrophoric	<input type="checkbox"/>
						Water-reactive	<input type="checkbox"/>
						Unstable	<input type="checkbox"/>

### SECTION 4: FIRST AID MEASURES

Take proper precautions to ensure your own health and safety before attempting rescue or providing first aid. For more specific information, refer to Exposure Controls and Personal Protection in Section 8 of this MSDS.

<b>Inhalation</b>	Move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If breathing is difficult, 100 percent humidified oxygen should be administered by a qualified individual. Seek medical attention immediately. Keep the affected individual warm and at rest.
<b>Eye Contact</b>	Check for and remove contact lenses. Flush eyes with cool, clean, low-pressure water for at least 15 minutes while occasionally lifting and lowering eyelids. Do not use eye ointment unless directed to by a physician. Seek medical attention if excessive tearing, irritation, or pain persists.
<b>Skin Contact</b>	Remove contaminated shoes and clothing. Wipe off excess material. Wash exposed skin with mild soap and water. Seek medical attention if tissue appears damaged or if pain or irritation persists. Thoroughly clean contaminated clothing before reuse. Discard contaminated leather goods. If material is injected under the skin, seek medical attention immediately.
<b>Ingestion</b>	Do not induce vomiting. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Never give anything by mouth to a person who is not fully conscious. Do not leave victim unattended. Seek medical attention immediately.
<b>Notes to Physician</b>	<p>Inhalation overexposure can produce toxic effects. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. Vigorous anti-inflammatory/steroid treatment may be required at first evidence of upper airway or pulmonary edema. Administer 100 percent humidified supplemental oxygen with assisted ventilation, as required.</p> <p>If ingested, this material presents a significant aspiration/lipoid or chemical pneumonitis hazard. As a result, induction of emesis is not recommended. Consider administration of an aqueous slurry of activated charcoal followed by a cathartic such as magnesium citrate or sorbitol. Also, treatment may involve careful gastric lavage if performed soon after ingestion or in patients who are comatose or at risk of convulsing. Protect the airway by placement in Trendelenburg and left lateral decubitus position or by cuffed endotracheal intubation. If vital signs become abnormal or symptoms develop, obtain a chest x-ray and liver function tests. Antibiotics are indicated if pulmonary bacterial infection occurs. Monitor for cardiac function and arterial blood gases in severe exposure cases.</p>

### SECTION 5: FIRE FIGHTING MEASURES

<b>NFPA Flammability Classification</b>	NFPA Class-II combustible liquid.		
<b>Flash Point Method</b>	CLOSED CUP: 52°C (125°F). (Pensky-Martens.)		
<b>Lower Flammable Limit</b>	AP 0.6 %	<b>Upper Flammable Limit</b>	AP 7.5 %
<b>Autoignition Temperature</b>	>254°C (>489°F)		
<b>Hazardous Combustion Products</b>	Carbon dioxide, carbon monoxide, smoke, fumes, unburned hydrocarbons and trace oxides of sulfur and/or nitrogen.		

## CITGO No. 2 Fuel Oil, All Grades

<b>Special Properties</b>	Combustible Liquid! This material releases vapors when heated above ambient temperatures. Vapors can cause a flash fire. Vapors can travel to a source of ignition and flashback. A vapor and air mixture can create an explosion hazard in confined spaces such as sewers. Use only with adequate ventilation. If container is not properly cooled, it can rupture in the heat of a fire.
<b>Extinguishing Media</b>	SMALL FIRE: Use dry chemicals, carbon dioxide, foam, water fog, or inert gas (nitrogen). LARGE FIRE: Use foam, water fog, or water spray. Water fog and spray are effective in cooling containers and adjacent structures. However, water can cause frothing and/or may not extinguish the fire. Water can be used to cool the external walls of vessels to prevent excessive pressure, autoignition or explosion. DO NOT use a solid stream of water directly on the fire as the water may spread the fire to a larger area.
<b>Protection of Fire Fighters</b>	Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles. Cover pooling liquid with foam. Containers can build pressure if exposed to radiant heat; cool adjacent containers with flooding quantities of water until well after the fire is out. Withdraw immediately from the area if there is a rising sound from a venting safety device or discoloration of vessels, tanks, or pipelines. Be aware that burning liquid will float on water. Notify appropriate authorities if liquid enter sewers or waterways.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

Take proper precautions to ensure your own health and safety before attempting spill control or clean-up. For more specific information, refer to the Emergency Overview on Page 1, Exposure Controls and Personal Protection in Section 8 and Disposal Considerations in Section 13 of this MSDS.

Combustible Liquid! Release can result in a fire hazard. Evacuate all non-essential personnel from release area. Establish a regulated zone with site control and security. Eliminate all ignition sources. Stop the leak if it can be done without risk. A vapor-suppressing foam may be used to reduce vapors. Properly bond or ground all equipment used when handling this material. Avoid skin contact. Do not walk through spilled material. Verify that responders are properly trained and wearing appropriate personnel protective equipment. Dike far ahead of a liquid spill. Do not allow released material to enter waterways, sewers, basements, or confined areas. This material will float on water. Absorb or cover with dry earth, sand or other non-combustible material. Use clean, non-sparking tools to collect absorbed material. Place spent sorbent materials, free liquids and other clean-up debris into proper waste containers for appropriate disposal. Certain releases must be reported to the National Response Center (800/424-8802) and state or regulatory authorities. Comply with all laws and regulations.

## SECTION 7: HANDLING AND STORAGE

<b>Handling</b>	<p><b>Combustible Liquid!</b></p> <p>A static electrical charge can accumulate when this material is flowing through pipes, nozzles or filters and when it is agitated. A static spark discharge can ignite accumulated vapors particularly during dry weather conditions. Always bond receiving containers to the fill pipe before and during loading. Always keep nozzle in contact with the container throughout the loading process. Do not fill any portable container in or on a vehicle. Special precautions, such as reduced loading rates and increased monitoring, must be observed during "switch loading" operations (i.e., loading this material in tanks or shipping compartments that previously containing gasoline or similar low flash point products).</p> <p>Fire hazard increases as product temperature approaches its flash point. Use non-sparking tools. Keep container closed and drum bungs in place. Remove spillage immediately from walking areas. Do not handle or store near heat, sparks or other potential ignition sources. Do not handle or store with oxidizing agents. Avoid breathing mist or vapor. Never siphon by mouth. Do not taste or swallow. Avoid contact with eyes, skin and clothing. Use gloves constructed of impervious materials and protective clothing if direct contact is anticipated. Provide ventilation to maintain exposure potential below applicable exposure levels. Avoid water contamination. Wash thoroughly after handling. Prevent contact with food or tobacco products.</p> <p>Cutting or welding of empty containers can ignite residues with explosive force. Do not pressurize or expose empty containers to flames, sparks or heat. Observe all label warnings and precautions. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this product. Return empty drums to a qualified reconditioner. When performing repairs and maintenance on contaminated equipment, keep unnecessary persons from hazard area. Eliminate heat, flame and other potential ignition</p>
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## CITGO No. 2 Fuel Oil, All Grades

sources. Drain and purge equipment, as necessary, to remove material residues. Remove contaminated clothing. Wash exposed skin thoroughly with soap and water after handling.

### Storage

Store in a cool, dry, well-ventilated place. Keep containers tightly closed. Do not store this product near heat, flame or other potential ignition sources. Do not store with oxidizers. Do not store this product in unlabeled containers. Do not puncture or incinerate containers. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers or waste residues of this product. Ground all equipment containing this material. All electrical equipment in areas where this material is stored or handled must meet all applicable requirements of the NFPA's National Electrical Code (NEC). Store and transport in accordance with all applicable laws.

## SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor or mists below the applicable workplace exposure limits indicated below. All electrical equipment should comply with the National Electric Code. An emergency eye wash station and safety shower should be located near the work-station.

### Personal Protective Equipment

Personal protective equipment should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to OSHA regulations. The following pictograms represent the minimum requirements for personal protective equipment. For certain operations, additional PPE may be required.



### Eye Protection

Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. Chemical goggles should be worn during transfer operations or when there is a likelihood of misting, splashing, or spraying of this material. Suitable eye wash water should be readily available.

### Hand Protection

Avoid skin contact. Use gloves (e.g., disposable PVC, neoprene, nitrile, vinyl, or PVC/NBR). Wash hands with plenty of mild soap and water before eating, drinking, smoking, use of toilet facilities or leaving work. DO NOT use gasoline, kerosene, solvents or harsh abrasives as skin cleaners.

### Body Protection

Avoid skin contact. Wear long-sleeved fire-retardant garments (e.g., Nomex®) while working with flammable and combustible liquids. Additional chemical-resistant protective gear may be required if splashing or spraying conditions exist. This may include an apron, boots and additional facial protection. If product comes in contact with clothing, immediately remove soaked clothing and shower. Promptly remove and discarded contaminated leather goods.

### Respiratory Protection

Airborne concentration will determine the level of respiratory protection required. Respiratory protection is normally not required unless the product is heated or misted. For known or anticipated vapor or mist concentrations above the occupational exposure guidelines (see below), use a NIOSH-approved organic vapor respirator equipped with a dust/mist prefilter if adequate protection is provided. For unknown vapor concentrations or concentrations exceeding respirator protection factors, use a positive-pressure, pressure-demand, self-contained breathing apparatus (SCBA). Due to fire and explosion hazards, do not enter atmospheres containing concentrations greater than 20% of the lower flammable limit under any circumstances. Protection factors vary depending upon the type of respirator used. Respirators should be used in accordance with OSHA requirements (29 CFR 1910.134).

### General Comments

Warning! Use of this material in spaces without adequate ventilation may result in generation of hazardous levels of combustion products and/or inadequate oxygen levels for breathing. Odor is an inadequate warning for hazardous conditions.

### Occupational Exposure Guidelines

#### Substance

#### Applicable Workplace Exposure Levels



## CITGO No. 2 Fuel Oil, All Grades

1) Diesel Fuel No. 2	<b>ACGIH TLV (United States).</b> TWA: 100 mg/m <sup>3</sup>
2) Nonane, all isomers	<b>ACGIH (United States).</b> TWA: 200 ppm
3) Trimethylbenzenes, all isomers	<b>ACGIH (United States).</b> TWA: 25 ppm
4) Naphthalene	<b>ACGIH (United States). Skin</b> TWA: 10 ppm STEL: 15 ppm <b>OSHA (United States).</b> TWA: 10 ppm
5) Biphenyl (Diphenyl)	<b>ACGIH (United States)</b> TWA: 0.2 ppm <b>OSHA (United States)</b> TWA: 0.2 ppm

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (TYPICAL)

<b>Physical State</b>	Liquid.	<b>Color</b>	Red.	<b>Odor</b>	Characteristic, kerosene-like.
<b>Specific Gravity</b>	0.84 (Water = 1)	<b>pH</b>	Not Applicable.	<b>Vapor Density</b>	5.1 (Air = 1)
<b>Boiling Range</b>	AP 154°C (309°F)			<b>Melting/Freezing Point</b>	Not available.
<b>Vapor Pressure</b>	0.3 kPa (2.1 mmHg) (at 20°C)			<b>Viscosity (cSt @ 40°C)</b>	AP 3
<b>Solubility in Water</b>	Very slightly soluble in cold water.			<b>Volatile Characteristics</b>	840 g/l VOC (W/V)
<b>Additional Properties</b>	Density = 7.203lbs/gal.				

## SECTION 10: STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Stable.	<b>Hazardous Polymerization</b>	Not expected to occur.
<b>Conditions to Avoid</b>	Keep away from all ignition sources and strong oxidizing conditions.		
<b>Materials Incompatibility</b>	Strong acids, alkalies, and oxidizers such as liquid chlorine, other halogens, hydrogen peroxide and oxygen.		
<b>Hazardous Decomposition Products</b>	No additional hazardous decomposition products were identified other than the combustion products identified in Section 5 of this MSDS.		

## SECTION 11: TOXICOLOGICAL INFORMATION

For other health-related information, refer to the Emergency Overview on Page 1 and the Hazards Identification in Section 3 of this MSDS.

### Toxicity Data

#### Middle distillates, petroleum:

The products represented by this MSDS contain a mixture of petroleum hydrocarbons commonly referred to as "middle distillates." Laboratory data have associated some middle distillates with skin cancer when the material is applied repeatedly over the lifetime of the test animal. Middle distillates similar to the products represented by this MSDS have been associated with liver and kidney damage in subchronic (90-day) inhalation studies of male rats. The relevance of these findings to human health is unclear.

#### Hydrodesulfurized Middle Distillate (Petroleum):

INHALATION LC50, Acute: 4.6 to 7.64 mg/L for four hours [Rat] - Dyspnea, nasal discharge, alopecia and excessive salivation.

ORAL LD50, Acute >500 g/kg [Rat Screening Level] Diarrhea, hyperactivity, ptosis and somnolence.

DERMAL LD50, Acute: >2,000 mg/kg [Rabbit Screening Level]

BUEHLER DERMAL, Acute: Non-sensitizing [Guinea Pig].

## CITGO No. 2 Fuel Oil, All Grades

14-Day DERMAL, Subchronic: 0.05 ml/kg applied 3 times per week [Mouse, Human skin grafted to Athymic nude Mice] - Irritation and epidermal hyperplasia.

62-Week DERMAL, Chronic: 0.05 ml/kg applied 3 times per week [Mouse] - Extreme skin irritation; moderate increase in contact-point skin tumors.

### C10-C20 Petroleum Hydrocarbons:

INHALATION, LC50, Acute: 1.72 mg/L for four hours [Male Rat].

INHALATION, LC50, Acute: 1.82 mg/L for 4 hours [Female Rat].

ORAL, LD50, Acute: >5,000 mg/kg [Rat screening level] - Diarrhea, hypoactivity and somnolence.

DERMAL, LD50, Acute: >2,000 mg/kg [Rabbit screen].

BUEHLER DERMAL, Acute: Non-sensitizing [Guinea Pig].

28-Day DERMAL, Subchronic: Moderate irritation at 200 to 2,000 mg/kg with no other treatment-related clinical effects observed.

### Trimethylbenzenes, all isomers:

The TCLo for humans is 10 ppm, with somnolence and respiratory tract irritation noted. In inhalation studies with rats, four of ten animals died after exposures of 2400 ppm for 24 hours. An oral dose of 5 mL/kg resulted in death in one of ten rats. Minimum lethal intraperitoneal doses were 1.5 to 2.0 mL/kg in rats and 1.13 to 12 mL/kg in guinea pigs. Levels of total hydrocarbon vapors present in the breathing atmosphere of these workers ranged from 10 to 60 ppm. Mesitylene (1, 3, 5 Trimethylbenzene) inhalation at concentrations of 1.5, 3.0, and 6.0 mg/L for six hours was associated with dose-related changes in white blood cell counts in rats. No significant effects on the complete blood count were noted with six hours per day exposure for five weeks, but elevations of alkaline phosphatase and SGOT were observed. Central nervous system depression and ataxia were noted in rats exposed to 5,100 to 9,180 ppm for two hours.

### Naphthalene:

Naphthalene is a potential irritant to eyes, skin and lungs. Ingestion of naphthalene has been associated with severe red blood cell and liver damage leading to death. Following prolonged or repeated exposures, naphthalene has been shown to cause cataracts, optical neuritis, hemolytic and aplastic anemia, jaundice and possibly neurotoxicity. In animal studies, naphthalene caused fetal effects and decreased spleen weights in pregnant female mice. In an NTP sponsored study, naphthalene produced a dose related increase in tumors at the 30 and 60 ppm exposure level in both male and female rats. Higher incidences of respiratory epithelial adenomas, olfactory epithelial neuroblastomas and non-neoplastic lesions of the nose were observed as compared to controls. Cytogenic studies with Chinese hamster ovary cells have demonstrated sister chromatid exchanges and chromosomal aberrations. The relevance of these studies to human health is unclear.

### Biphenyl (Diphenyl):

INHALATION, TCLo, Acute: 4,400 ug/m<sup>3</sup> for 4 hours [Human] - Flaccid paralysis of peripheral nerves without anesthesia and nausea or vomiting.

ORAL, LD50, Acute: >2,600 mg/kg [Cat screening level].

ORAL, LD50, Acute: 2,400 mg/kg [Rat and Rabbit].

ORAL, LD50, Acute: 1,900 mg/kg [Mouse] - Somnolence, hypermotility and diarrhea.

DERMAL, LD50, Acute: >5,010 mg/kg [Rabbit screening level].

## SECTION 12: ECOLOGICAL INFORMATION

### Ecotoxicity

#### Freshwater Toxicity:

Concentration: 2400 ppm Exposure: 48 hrs. Species: Juven. Am. Shad (*Squalius cephalus*) Effect: TLM

Concentration: >127 ppm Exposure: 96 hrs. Species: Bluegill (*Lepomis macrochirus*) Effect: LC50

#### Saltwater Toxicity

Concentration: 10 ppm Exposure: 96 hrs. Species: Menhaden (*Brevoortia patronus*) Effect: LC50

Concentration: 10 ppm Exposure: 96 hrs. Species: Grass Shrimp Effect: LC50

### Environmental Fate

If spilled, this material will normally evaporate. Hydrocarbon components may contribute to atmospheric smog. If released to the subsoils, petroleum middle distillate fuels will strongly adsorb to soils. Groundwater should be considered as an exposure pathway. Liquid and vapor can migrate through the subsurface and preferential pathways (such as utility line backfill) to downgradient receptors.

Middle distillates are potentially toxic to freshwater and saltwater ecosystems. Distillate fuels will normally float on water. In stagnant or slow-flowing waterways, a hydrocarbon layer can cover a large surface area. As a result, this oil layer can limit or eliminate natural atmospheric oxygen transport into

## CITGO No. 2 Fuel Oil, All Grades

the water. With time, if not removed, oxygen depletion in the waterway can cause a fish kill or create an anaerobic environment. Also, this coating action can also kill plankton, algae, and water birds.

### SECTION 13: DISPOSAL CONSIDERATIONS


Hazard characteristic and regulatory waste stream classification can change with product use. Accordingly, it is the responsibility of the user to determine the proper storage, transportation, treatment and/or disposal methodologies for spent materials and residues at the time of disposal.

Maximize material recovery for reuse or recycling. If spilled material is introduced into a wastewater treatment system, chemical and biological oxygen demand (COD and BOD) will likely increase. Vapor emissions from a bio-oxidation process contaminated with this material might be a potential health hazard.

Recovered non-usable material may be regulated by US EPA as a hazardous waste due to its ignitibility (D001). In addition, conditions of use may cause this material to become a hazardous waste, as defined by Federal or State regulations. It is the responsibility of the user to determine if the material is a hazardous waste at the time of disposal. Transportation, treatment, storage, and disposal of waste material must be conducted in accordance with RCRA regulations (see 40 CFR Parts 260 through 271). State and/or local regulations might be even more restrictive. Contact the RCRA/Superfund Hotline at (800) 424-9346 or your regional US EPA office for guidance concerning case specific disposal issues.

### SECTION 14: TRANSPORT INFORMATION

The shipping description below may not represent requirements for all modes of transportation, shipping methods or locations outside of the United States.

<b>US DOT Status</b>	A U.S. Department of Transportation (DOT) regulated material. The following U. S. DOT hazardous materials shipping description applies to bulk packaged material that is transported by highway or rail. Alternate shipping descriptions may be required for product transported by marine vessel, air or other method and for non-bulk packaged material.		
<b>Proper Shipping Name</b>	Fuel Oil No. 2, Combustible liquid, NA1993, PG III		
<b>Hazard Class</b>	DOT Class: Combustible liquid with a flash point greater than 37.8°C (100°F).	<b>Packing Group(s)</b>	III
		<b>UN/NA ID</b>	NA 1993 or UN 1202
<b>Reportable Quantity</b>	A Reportable Quantity (RQ) has not been established for this material.		
<b>Placards</b>		<b>Emergency Response Guide No.</b>	128
		<b>HAZMAT STCC No.</b>	49 122 12
		<b>MARPOL III Status</b>	Not a DOT "Marine Pollutant" per 49 CFR 171.8.

### SECTION 15: REGULATORY INFORMATION

<b>TSCA Inventory</b>	This product and/or its components are listed on the Toxic Substances Control Act (TSCA) inventory.
<b>SARA 302/304</b>	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to Subparts 302 and 304 to submit emergency planning and notification information based on Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) for "Extremely Hazardous Substances" listed in 40 CFR 302.4 and 40 CFR 355. No components were identified.
<b>SARA 311/312</b>	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to this subpart to submit aggregate information on chemicals by "Hazard Category" as defined in 40 CFR 370.2. This material would be classified under the following hazard categories:

## CITGO No. 2 Fuel Oil, All Grades

Fire, Acute (Immediate) Health Hazard, Chronic (Delayed) Health Hazard

### SARA 313

This product contains the following components in concentrations above de minimis levels that are listed as toxic chemicals in 40 CFR Part 372 pursuant to the requirements of Section 313 of SARA:  
Naphthalene [CAS No.: 91-20-3] Concentration: 0 - 2%  
1, 2, 4 Trimethylbenzene [CAS No.: 95-63-6] Concentration: 0 - 1%

### CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center concerning release of quantities of "hazardous substances" equal to or greater than the reportable quantities (RQ's) listed in 40 CFR 302.4. As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically designated in 40 CFR 302.4. Chemical substances present in this product or refinery stream that may be subject to this statute are:  
Naphthalene [CAS No.: 91-20-3] RQ = 100 lbs. (45.36 kg) Concentration: 0 - 2%  
Cumene [CAS No.: 98-82-8] RQ = 5000 lbs. (2268 kg) Concentration: 0 - 1%

### CWA

This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.

### California Proposition 65

This material may contain the following components which are known to the State of California to cause cancer, birth defects or other reproductive harm, and may be subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):  
Naphthalene: 0 - 2%  
Toluene: <0.05%  
Benzene: <0.05%

### New Jersey Right-to-Know Label

Fuel Oil

### Additional Regulatory Remarks

Federal Hazardous Substances Act, related statutes, and Consumer Product Safety Commission regulations, as defined by 16 CFR 1500.14(b)(3) and 1500.83(a)(13): This product contains "Petroleum Distillates" which may require special labeling if distributed in a manner intended or packaged in a form suitable for use in the household or by children. Precautionary label dialogue should display the following: **DANGER: Contains Petroleum Distillates! Harmful or fatal if swallowed! Call Physician Immediately. KEEP OUT OF REACH OF CHILDREN!**

## SECTION 16: OTHER INFORMATION

Refer to the top of Page 1 for the HMIS and NFPA Hazard Ratings for this product.

### REVISION INFORMATION

Version Number 1.1  
Revision Date 03/17/2003  
Print Date Printed on 03/17/2003.

### ABBREVIATIONS

AP: Approximately	EQ: Equal	>: Greater Than	<: Less Than	NA: Not Applicable	ND: No Data	NE: Not Established
ACGIH: American Conference of Governmental Industrial Hygienists				AIHA: American Industrial Hygiene Association		
IARC: International Agency for Research on Cancer				NTP: National Toxicology Program		
NIOSH: National Institute of Occupational Safety and Health				OSHA: Occupational Safety and Health Administration		
NPCA: National Paint and Coating Manufacturers Association				HMIS: Hazardous Materials Information System		
NFPA: National Fire Protection Association				EPA: US Environmental Protection Agency		

### DISCLAIMER OF LIABILITY

## **CITGO No. 2 Fuel Oil, All Grades**

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\*\*\*\*\* END OF MSDS \*\*\*\*\*



## MATERIAL SAFETY DATA SHEET

**Gasoline, All Grades**

**MSDS No. 9950**

### EMERGENCY OVERVIEW

#### DANGER!

**EXTREMELY FLAMMABLE - EYE AND MUCOUS MEMBRANE IRRITANT  
- EFFECTS CENTRAL NERVOUS SYSTEM - HARMFUL OR FATAL IF  
SWALLOWED - ASPIRATION HAZARD**



NFPA 704 (Section 16)

High fire hazard. Keep away from heat, spark, open flame, and other ignition sources.

If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs). Contact may cause eye, skin and mucous membrane irritation. Harmful if absorbed through the skin. Avoid prolonged breathing of vapors or mists. Inhalation may cause irritation, anesthetic effects (dizziness, nausea, headache, intoxication), and respiratory system effects.

Long-term exposure may cause effects to specific organs, such as to the liver, kidneys, blood, nervous system, and skin. Contains benzene, which can cause blood disease, including anemia and leukemia.

### 1. CHEMICAL PRODUCT and COMPANY INFORMATION

**Hess Corporation**  
**1 Hess Plaza**  
**Woodbridge, NJ 07095-0961**

**EMERGENCY TELEPHONE NUMBER (24 hrs):**  
**COMPANY CONTACT (business hours):**  
**MSDS (Environment, Health, Safety) Internet Website**

**CHEMTREC (800)424-9300**  
Corporate Safety (732)750-6000  
[www.hess.com](http://www.hess.com)

**SYNONYMS:** Hess Conventional (Oxygenated and Non-oxygenated) Gasoline; Reformulated Gasoline (RFG); Reformulated Gasoline Blendstock for Oxygenate Blending (RBOB); Unleaded Motor or Automotive Gasoline

See Section 16 for abbreviations and acronyms.

### 2. COMPOSITION and INFORMATION ON INGREDIENTS \*

INGREDIENT NAME (CAS No.)	CONCENTRATION PERCENT BY WEIGHT
Gasoline (86290-81-5)	100
Benzene (71-43-2)	0.1 - 4.9 (0.1 - 1.3 reformulated gasoline)
n-Butane (106-97-8)	< 10
Ethyl Alcohol (Ethanol) (64-17-5)	0 - 10
Ethyl benzene (100-41-4)	< 3
n-Hexane (110-54-3)	0.5 to 4
Methyl-tertiary butyl ether (MTBE) (1634-04-4)	0 to 15.0
Tertiary-amyl methyl ether (TAME) (994-05-8)	0 to 17.2
Toluene (108-88-3)	1 - 25
1,2,4- Trimethylbenzene (95-63-6)	< 6
Xylene, mixed isomers (1330-20-7)	1 - 15

A complex blend of petroleum-derived normal and branched-chain alkane, cycloalkane, alkene, and aromatic hydrocarbons. May contain antioxidant and multifunctional additives. Non-oxygenated Conventional Gasoline and RBOB do not have oxygenates (Ethanol or MTBE and/or TAME).



## MATERIAL SAFETY DATA SHEET

**Gasoline, All Grades**

**MSDS No. 9950**

Oxygenated Conventional and Reformulated Gasoline will have oxygenates for octane enhancement or as legally required.

### 3. HAZARDS IDENTIFICATION

#### **EYES**

Moderate irritant. Contact with liquid or vapor may cause irritation.

#### **SKIN**

Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.

#### **INGESTION**

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

#### **INHALATION**

Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

**WARNING:** the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

#### **CHRONIC EFFECTS and CARCINOGENICITY**

Contains benzene, a regulated human carcinogen. Benzene has the potential to cause anemia and other blood diseases, including leukemia, after repeated and prolonged exposure. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with systemic toxicity. See also Section 11 - Toxicological Information.

#### **MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash). Chronic respiratory disease, liver or kidney dysfunction, or pre-existing central nervous system disorders may be aggravated by exposure.

### 4. FIRST AID MEASURES

#### **EYES**

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

#### **SKIN**

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.

#### **INGESTION**



## MATERIAL SAFETY DATA SHEET

**Gasoline, All Grades**

**MSDS No. 9950**

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

### **INHALATION**

Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

## **5. FIRE FIGHTING MEASURES**

### **FLAMMABLE PROPERTIES:**

FLASH POINT:	-45 °F (-43°C)
AUTOIGNITION TEMPERATURE:	highly variable; > 530 °F (>280 °C)
OSHA/NFPA FLAMMABILITY CLASS:	1A (flammable liquid)
LOWER EXPLOSIVE LIMIT (%):	1.4%
UPPER EXPLOSIVE LIMIT (%):	7.6%

### **FIRE AND EXPLOSION HAZARDS**

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

### **EXTINGUISHING MEDIA**

**SMALL FIRES:** Any extinguisher suitable for Class B fires, dry chemical, CO<sub>2</sub>, water spray, fire fighting foam, or Halon.

**LARGE FIRES:** Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

During certain times of the year and/or in certain geographical locations, gasoline may contain MTBE and/or TAME. Firefighting foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration - refer to NFPA 11 "Low Expansion Foam - 1994 Edition."

### **FIRE FIGHTING INSTRUCTIONS**

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

See Section 16 for the NFPA 704 Hazard Rating.





## MATERIAL SAFETY DATA SHEET

**Gasoline, All Grades**

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### **6. ACCIDENTAL RELEASE MEASURES**

ACTIVATE FACILITY SPILL CONTINGENCY or EMERGENCY PLAN.

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

### **7. HANDLING and STORAGE**

#### **HANDLING PRECAUTIONS**

\*\*\*\*\*USE ONLY AS A MOTOR FUEL\*\*\*\*\*

\*\*\*\*\*DO NOT SIPHON BY MOUTH\*\*\*\*\*

Handle as a flammable liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents.

#### **STORAGE PRECAUTIONS**

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

#### **WORK/HYGIENIC PRACTICES**

Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and laundry before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.



## MATERIAL SAFETY DATA SHEET

**Gasoline, All Grades**

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### 8. EXPOSURE CONTROLS and PERSONAL PROTECTION

#### EXPOSURE LIMITS

Component (CAS No.)	Source	TWA (ppm)	STEL (ppm)	Exposure Limits	Note
Gasoline (86290-81-5)	ACGIH	300	500	A3	
Benzene (71-43-2)	OSHA	1	5	Carcinogen	
	ACGIH	0.5	2.5	A1, skin	
	USCG	1	5		
n-Butane (106-97-8)	ACGIH	1000	--	Aliphatic Hydrocarbon Gases Alkane (C1-C4)	
Ethyl Alcohol (ethanol) (64-17-5)	OSHA	1000	--		
	ACGIH	1000	--	A4	
Ethyl benzene (100-41-4)	OSHA	100	--		
	ACGIH	100	125	A3	
n-Hexane (110-54-3)	OSHA	500	--		
	ACGIH	50	--	Skin	
Methyl-tertiary butyl ether [MTBE] (1634-04-4)	ACGIH	50		A3	
Tertiary-amyl methyl ether [TAME] (994-05-8)				None established	
Toluene (108-88-3)	OSHA	200		Ceiling: 300 ppm; Peak: 500 ppm (10 min.)	
	ACGIH	20	--	A4	
1,2,4-Trimethylbenzene (95-63-6)	ACGIH	25	--		
Xylene, mixed isomers (1330-20-7)	OSHA	100	--		
	ACGIH	100	150	A4	

#### ENGINEERING CONTROLS

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

#### EYE/FACE PROTECTION

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

#### SKIN PROTECTION

Gloves constructed of nitrile or neoprene are recommended. Chemical protective clothing such as that made of E.I. DuPont Tychem®, products or equivalent is recommended based on degree of exposure.

Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

#### RESPIRATORY PROTECTION

A NIOSH-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

### 9. PHYSICAL and CHEMICAL PROPERTIES

#### APPEARANCE

A translucent, straw-colored or light yellow liquid



## MATERIAL SAFETY DATA SHEET

**Gasoline, All Grades**

**MSDS No. 9950**

### **ODOR**

A strong, characteristic aromatic hydrocarbon odor. Oxygenated gasoline with MTBE and/or TAME may have a sweet, ether-like odor and is detectable at a lower concentration than non-oxygenated gasoline.

### **ODOR THRESHOLD**

	<u>Odor Detection</u>	<u>Odor Recognition</u>
Non-oxygenated gasoline:	0.5 - 0.6 ppm	0.8 - 1.1 ppm
Gasoline with 15% MTBE:	0.2 - 0.3 ppm	0.4 - 0.7 ppm
Gasoline with 15% TAME:	0.1 ppm	0.2 ppm

### **BASIC PHYSICAL PROPERTIES**

BOILING RANGE:	85 to 437 °F (39 to 200 °C)
VAPOR PRESSURE:	6.4 - 15 RVP @ 100 °F (38 °C) (275-475 mm Hg @ 68 °F (20 °C)
VAPOR DENSITY (air = 1):	AP 3 to 4
SPECIFIC GRAVITY (H <sub>2</sub> O = 1):	0.70 - 0.78
EVAPORATION RATE:	10-11 (n-butyl acetate = 1)
PERCENT VOLATILES:	100 %
SOLUBILITY (H <sub>2</sub> O):	Non-oxygenated gasoline - negligible (< 0.1% @ 77 °F). Gasoline with 15% MTBE - slight (0.1 - 3% @ 77 °F); ethanol is readily soluble in water

## **10. STABILITY and REACTIVITY )**

**STABILITY:** Stable. Hazardous polymerization will not occur.

### **CONDITIONS TO AVOID**

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources

### **INCOMPATIBLE MATERIALS**

Keep away from strong oxidizers.

### **HAZARDOUS DECOMPOSITION PRODUCTS**

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitroresols that can decompose violently.

## **11. TOXICOLOGICAL PROPERTIES**

### **ACUTE TOXICITY**

Acute Dermal LD50 (rabbits): > 5 ml/kg	Acute Oral LD50 (rat): 18.75 ml/kg
Primary dermal irritation (rabbits): slightly irritating	Draize eye irritation (rabbits): non-irritating
Guinea pig sensitization: negative	

### **CHRONIC EFFECTS AND CARCINOGENICITY**

Carcinogenicity: OSHA: NO IARC: YES - 2B NTP: NO ACGIH: YES (A3)

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.



## MATERIAL SAFETY DATA SHEET

**Gasoline, All Grades**

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This product may contain methyl tertiary butyl ether (MTBE ): animal and human health effects studies indicate that MTBE may cause eye, skin, and respiratory tract irritation, central nervous system depression and neurotoxicity. MTBE is classified as an animal carcinogen (A3) by the ACGIH.

### 12. ECOLOGICAL INFORMATION

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations. If released, oxygenates such as ethers and alcohols will be expected to exhibit fairly high mobility in soil, and therefore may leach into groundwater. The API ([www.api.org](http://www.api.org)) provides a number of useful references addressing petroleum and oxygenate contamination of groundwater.

### 13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate disposal options.

### 14. TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: Gasoline  
DOT HAZARD CLASS and PACKING GROUP: 3, PG II  
DOT IDENTIFICATION NUMBER: UN 1203  
DOT SHIPPING LABEL: FLAMMABLE LIQUID

PLACARD:



### 15. REGULATORY INFORMATION

#### U.S. FEDERAL, STATE, and LOCAL REGULATORY INFORMATION

This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

#### CLEAN WATER ACT (OIL SPILLS)

Any spill or release of this product to "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

#### CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

#### SARA SECTION 311/312 - HAZARD CLASSES

<u>ACUTE HEALTH</u>	<u>CHRONIC HEALTH</u>	<u>FIRE</u>	<u>SUDDEN RELEASE OF PRESSURE</u>	<u>REACTIVE</u>
X	X	X	--	--

#### SARA SECTION 313 - SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

<u>INGREDIENT NAME (CAS NUMBER)</u>	<u>CONCENTRATION WT. PERCENT</u>
Benzene (71-43-2)	0.1 to 4.9 (0.1 to 1.3 for reformulated gasoline)
Ethyl benzene (100-41-4)	< 3



## MATERIAL SAFETY DATA SHEET

**Gasoline, All Grades**

**MSDS No. 9950**

n-Hexane (110-54-3)	0.5 to 4
Methyl-tertiary butyl ether (MTBE) (1634-04-4)	0 to 15.0
Toluene (108-88-3)	1 to 15
1,2,4- Trimethylbenzene (95-63-6)	< 6
Xylene, mixed isomers (1330-20-7)	1 to 15

US EPA guidance documents ([www.epa.gov/tri](http://www.epa.gov/tri)) for reporting Persistent Bioaccumulating Toxics (PBTs) indicate this product may contain the following deminimis levels of toxic chemicals subject to Section 313 reporting:

<u>INGREDIENT NAME (CAS NUMBER)</u>	<u>CONCENTRATION - Parts per million (ppm) by weight</u>
Polycyclic aromatic compounds (PACs)	17
Benzo (g,h,i) perylene (191-24-2)	2.55
Lead (7439-92-1)	0.079

### **CALIFORNIA PROPOSITION 65 LIST OF CHEMICALS**

This product contains the following chemicals that are included on the Proposition 65 "List of Chemicals" required by the California Safe Drinking Water and Toxic Enforcement Act of 1986:

<u>INGREDIENT NAME (CAS NUMBER)</u>	<u>Date Listed</u>
Benzene	2/27/1987
Ethyl benzene	6/11/2004
Toluene	1/1/1991

### **CANADIAN REGULATORY INFORMATION (WHMIS)**

Class B, Division 2 (Flammable Liquid)

Class D, Division 2A (Very toxic by other means) and Class D, Division 2B (Toxic by other means)

### **16. OTHER INFORMATION**

<b><u>NFPA® HAZARD RATING</u></b>	HEALTH:	1	Slight
	FIRE:	3	Serious
	REACTIVITY:	0	Minimal
<b><u>HMIS® HAZARD RATING</u></b>	HEALTH:	1 *	Slight
	FIRE:	3	Serious
	PHYSICAL:	0	Minimal
			* CHRONIC

**SUPERSEDES MSDS DATED:** 07/01/06

### **ABBREVIATIONS:**

AP = Approximately      < = Less than      > = Greater than  
N/A = Not Applicable      N/D = Not Determined      ppm = parts per million

### **ACRONYMS:**

ACGIH	American Conference of Governmental Industrial Hygienists	CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
AIHA	American Industrial Hygiene Association	DOT	U.S. Department of Transportation
ANSI	American National Standards Institute (212)642-4900		[General Info: (800)467-4922]
API	American Petroleum Institute (202)682-8000	EPA	U.S. Environmental Protection Agency
		HMIS	Hazardous Materials Information System



## MATERIAL SAFETY DATA SHEET

**Gasoline, All Grades**

**MSDS No. 9950**

IARC	International Agency For Research On Cancer	REL	Recommended Exposure Limit (NIOSH)
MSHA	Mine Safety and Health Administration	SARA	Superfund Amendments and Reauthorization Act of 1986 Title III
NFPA	National Fire Protection Association (617)770-3000	SCBA	Self-Contained Breathing Apparatus
NIOSH	National Institute of Occupational Safety and Health	SPCC	Spill Prevention, Control, and Countermeasures
NOIC	Notice of Intended Change (proposed change to ACGIH TLV)	STEL	Short-Term Exposure Limit (generally 15 minutes)
NTP	National Toxicology Program	TLV	Threshold Limit Value (ACGIH)
OPA	Oil Pollution Act of 1990	TSCA	Toxic Substances Control Act
OSHA	U.S. Occupational Safety & Health Administration	TWA	Time Weighted Average (8 hr.)
PEL	Permissible Exposure Limit (OSHA)	WEEL	Workplace Environmental Exposure Level (AIHA)
RCRA	Resource Conservation and Recovery Act	WHMIS	Workplace Hazardous Materials Information System (Canada)

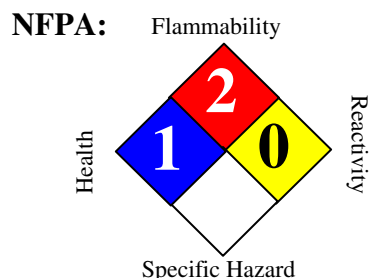
### DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

# Material Safety Data Sheet

## Jet Fuel



### HMIS III:

HEALTH	1
FLAMMABILITY	2
PHYSICAL	0

0 = Insignificant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme

## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product name</b>	:	Jet Fuel			
<b>Synonyms</b>	:	Jet Fuel - A, B, A-I, A-50, High Sulfur, Military, Jet A & B Aviation Turbine Fuel, Jet A-I, Jet A; Avjet For Blending; Jet Q Turbine Fuel, Aviation Fuel; Turbine Fuel; JP-4; JP-5; JP-8, Av-Jet, 888100004452			
<b>MSDS Number</b>	:	888100004452	<b>Version</b>	:	2.12
<b>Product Use Description</b>	:	Fuel			
<b>Company</b>	:	For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259			
<b>Tesoro Call Center</b>	:	(877) 783-7676	<b>Chemtrec (Emergency Contact)</b>	:	(800) 424-9300

## SECTION 2. HAZARDS IDENTIFICATION

### Emergency Overview

<b>Regulatory status</b>	: This material is considered hazardous by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200).
<b>Signal Word</b>	: WARNING
<b>Hazard Summary</b>	: Harmful or fatal if swallowed. Harmful by inhalation. Irritating to eyes, respiratory system and skin. Affects central nervous system. Flammable.

### Potential Health Effects

<b>Eyes</b>	: Severe eye irritant. Contact may cause stinging, watering, redness, swelling, and eye damage.
<b>Skin</b>	: Prolonged or repeated skin contact with liquid may cause defatting resulting in drying, redness and possible blistering. Practically non-toxic if absorbed following acute (single) exposure. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.
<b>Ingestion</b>	: Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death may occur.
<b>Inhalation</b>	: Inhalation of fumes or mist may result in respiratory tract irritation and central

nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.  
**WARNING:** the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

**Chronic Exposure**

: Similar products produced skin cancer and systemic toxicity in laboratory animals following repeated applications. The significance of these results to human exposures has not been determined - see Section 11 Toxicological Information.

**Target Organs**

: Eyes, Skin, Respiratory system, Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash)

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Component	CAS-No.	Weight %
Kerosene (petroleum)	8008-20-6	100%
Naphthalene	91-20-3	0 to 3%
Ethyl Benzene	100-41-4	0 to 1%
Trimethy Benzene	95-63-6	0 to 1%
Ethyl Benzene	100-41-4	0 to 1%
Diethylene Glycol Monomethyl Ether	111-77-3	0 to 0.15%
Alkyl Dithiothiadiazole	N/A	0 to 15%

**SECTION 4. FIRST AID MEASURES**

<b>Inhalation</b>	: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.
<b>Skin contact</b>	: Take off all contaminated clothing immediately. Wash off immediately with soap and plenty of water. Wash contaminated clothing before re-use. If skin irritation persists, seek medical attention.
<b>Eye contact</b>	: In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek medical attention immediately.
<b>Ingestion</b>	: Do NOT induce vomiting. Do not give liquids. Seek medical attention immediately. If vomiting does occur naturally, keep head below the hips to reduce the risks of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.
<b>Notes to physician</b>	: Symptoms: Aspiration may cause pulmonary edema and pneumonitis. Treatment: Do not induce vomiting, use gastric lavage only. Remove from further exposure and treat symptomatically.



## SECTION 5. FIRE-FIGHTING MEASURES

<b>Form</b>	: Liquid
<b>Flash point</b>	: 38 °C (100 °F) minimum
<b>Auto Ignition temperature</b>	: 210 °C (410 °F)
<b>Lower explosive limit</b>	: 0.7 %(V)
<b>Upper explosive limit</b>	: 5.0 %(V)
<b>Suitable extinguishing media</b>	: Carbon dioxide (CO <sub>2</sub> ), Water spray, Dry chemical, Foam, Keep containers and surroundings cool with water spray., Do not use a solid water stream as it may scatter and spread fire., Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.
<b>Specific hazards during fire fighting</b>	: Fire Hazard. Do not use a solid water stream as it may scatter and spread fire. Cool closed containers exposed to fire with water spray. Sealed containers may rupture when heated. Above the flash point, explosive vapor-air mixtures may be formed. Vapors can flow along surfaces to distant ignition source and flash back.
<b>Special protective equipment for fire-fighters</b>	: Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.
<b>Further information</b>	: Exposure to decomposition products may be a hazard to health. Standard procedure for chemical fires.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

<b>Personal precautions</b>	: ACTIVATE FACILITY'S SPILL CONTINGENCY OR EMERGENCY RESPONSE PLAN if applicable. Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to contain spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.
<b>Environmental precautions</b>	: Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.
<b>Methods for cleaning up</b>	: Take up with sand or oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

## SECTION 7. HANDLING AND STORAGE

<b>Handling</b>	: Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. The product should only be stored and handled in areas with intrinsically safe electrical classification.
-----------------	---

<b>Advice on protection against fire and explosion</b>	: Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static-initated fire or explosion during transfer, storage or handling, include but are not limited to these examples: (1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators. (2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such gasoline or naphtha). (3) Storage tank level floats must be effectively bonded. For more information on precautions to prevent static-initated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).
<b>Dust explosion class</b>	: Not applicable
<b>Requirements for storage areas and containers</b>	: Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".
<b>Advice on common storage</b>	: Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids.
<b>Other data</b>	: Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.

## SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Exposure Guidelines

List	Components	CAS-No.	Type:	Value
<b>OSHA Z1</b>	Naphthalene	91-20-3	PEL	10 ppm    50 mg/m3
	Ethyl Benzene	100-41-4	PEL	100 ppm    435 mg/m3
<b>ACGIH</b>	Naphthalene	91-20-3	TWA	10 ppm
		91-20-3	STEL	15 ppm
	Kerosene (petroleum)	8008-20-6	TWA	200 mg/m3
	Ethyl Benzene	100-41-4	TWA	100 ppm    434 mg/m3
			STEL	125 ppm    543 mg/m3

<b>Protective measures</b>	: Keep out of reach of children.
<b>Engineering measures</b>	: Use only intrinsically safe electrical equipment approved for use in classified areas. Emergency eye wash capability should be available in the vicinity of any potential splash exposure.

<b>Eye protection</b>	: Goggles and face shield as needed to prevent eye and face contact.
<b>Hand protection</b>	: Gloves constructed of nitrile, neoprene, or PVC are recommended.
<b>Skin and body protection</b>	: Chemical protective clothing such as DuPont TyChem ®, Barricade or equivalent, recommended based on degree of exposure. Consult manufacturer specifications for further information.
<b>Respiratory protection</b>	: NIOSH/MSHA approved positive-pressure self-contained breathing apparatus (SCBA) or Type C positive-pressure supplied air with escape bottle must be used for gas concentrations above occupational exposure limits, for potential of uncontrolled release, if exposure levels are not known, or in an oxygen-deficient atmosphere.
<b>Work / Hygiene practices</b>	: Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Form</b>	: Liquid
<b>Appearance</b>	: Light yellow to white
<b>Odor</b>	: Characteristic Petroleum distillate
<b>Flash point</b>	: 38 °C (100 °F) minimum
<b>Auto Ignition temperature</b>	: 210 °C (410 °F)
<b>Thermal decomposition</b>	: No decomposition if stored and applied as directed.
<b>Lower explosive limit</b>	: 0.7 %(V)
<b>Upper explosive limit</b>	: 5.0 %(V)
<b>pH</b>	: Not applicable
<b>Specific gravity</b>	: 0.8 (H2O=1)
<b>Freezing point</b>	: -45°C to -62°C (-50°F to -80°F)
<b>Boiling Range</b>	: 160 - 300 °C(320 - 572 °F)
<b>Vapor Pressure</b>	: 6.9 hPa at 20 °C (68 °F)
<b>Relative Vapor Density</b>	: 4.5
<b>Density</b>	: 0.8 g/cm3
<b>Water solubility</b>	: Insoluble
<b>Viscosity, kinematic</b>	: 1.6 mm2/s at 40 °C (104 °F)

<b>Percent Volatiles</b>	: 100 %
<b>Conductivity</b> (conductivity can be reduced by environmental factors such as a decrease in temperature)	Diesel Fuel Oils at terminal load rack: At least 25 pS/m Ultra Low Sulfur Diesel (ULSD) without conductivity additive: 0 pS/m to 5 pS/m ULSD at terminal load rack with conductivity additive: At least 50 pS/m but conductivity may decrease from environmental factors such as temperature drop. JP-8 at terminal load rack: 150 pS/m to 600 pS/m

## SECTION 10. STABILITY AND REACTIVITY

<b>Conditions to avoid</b>	: Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. Keep away from strong oxidizers.
<b>Materials to avoid</b>	: Keep away from strong oxidizers such as nitric and sulfuric acids.
<b>Hazardous decomposition products</b>	: Risk of explosion. In case of fire hazardous decomposition products may be produced such as: Smoke. Hydrocarbons. Carbon Monoxide and Carbon Dioxide.
<b>Thermal decomposition</b>	: No decomposition if stored and applied as directed.
<b>Hazardous reactions</b>	: Stable under normal conditions of use; however, incompatible with strong acids and strong oxidizers.

## SECTION 11. TOXICOLOGICAL INFORMATION

### Carcinogenicity

<b>NTP</b>	: Naphthalene (CAS-No.: 91-20-3)
<b>IARC</b>	: Kerosene is not listed as carcinogenic by NTP, OSHA, and ACGIH. IARC has listed kerosene as a probable human carcinogen. naphthalene (CAS-No.: 91-20-3) Kerosene (petroleum) (CAS-No.: 8008-20-6)
<b>CA Prop 65</b>	: WARNING! This product contains a chemical known to the State of California to cause cancer. Naphthalene (CAS-No.: 91-20-3)
<b>Skin irritation</b>	: Irritating to skin.
<b>Eye irritation</b>	: Irritating to eyes.
<b>Further information</b>	: Kerosene does not have a measurable effect on human reproduction or development. Kerosene is not listed as carcinogenic by NTP, OSHA, and ACGIH. IARC has listed kerosene as a probable human carcinogen. Some petroleum distillates have been found to cause adverse reproductive effects in laboratory animals. Acute and chronic exposure to kerosene may result in CNS effects including irritability, restlessness, ataxia, drowsiness, convulsions, coma and death. The most common health effect associated with chronic kerosene exposure is dermatitis.

### Component:

<b>Kerosene (petroleum)</b>	8008-20-6	<u>Acute oral toxicity:</u> LD50 rat Dose: 5 mg/kg  <u>Acute dermal toxicity:</u> LD50 rabbit Dose: 2,001 mg/kg
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## Naphthalene

91-20-3

Acute inhalation toxicity: LC50 rat

Dose: 5.28 mg/l

Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.

Result: Skin irritation

Acute oral toxicity: LD50 rat

Dose: 2,001 mg/kg

Acute dermal toxicity: LD50 rat

Dose: 2,501 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 101 mg/l

Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.

Result: Mild skin irritation

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

Carcinogenicity: N11.00422130

## SECTION 12. ECOLOGICAL INFORMATION

## Additional ecological information

: Release of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems. U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number for the U.S. Coast Guard National Response Center is (800) 424-8802. Naphthalene (91-20-3) one of the ingredients in this mixture is classified as a Marine Pollutant.

Component:

## Naphthalene

91-20-3

Toxicity to algae:

EC50

Species:

Dose: 33 mg/l

Exposure time: 24 h

## SECTION 13. DISPOSAL CONSIDERATIONS

## Disposal

: Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## SECTION 14. TRANSPORT INFORMATION

## CFR

Proper shipping name : Fuel, aviation, turbine engine

UN-No. : 1863

Class : 3

Packing group : III

**TDG**

Proper shipping name : Fuel, aviation, turbine engine  
 UN-No. : UN1863  
 Class : 3  
 Packing group : III

**IATA Cargo Transport**

UN UN-No. : UN1863  
 Description of the goods : Fuel, aviation, turbine engine  
 Class : 3  
 Packaging group : III  
 ICAO-Labels : 3  
 Packing instruction (cargo aircraft) : 366  
 Packing instruction (cargo aircraft) : Y344

**IATA Passenger Transport**

UN UN-No. : UN1863  
 Description of the goods : Fuel, aviation, turbine engine  
 Class : 3  
 Packaging group : III  
 ICAO-Labels : 3  
 Packing instruction (passenger aircraft) : 355  
 Packing instruction (passenger aircraft) : Y344

**IMDG-Code**

UN-No. : UN 1863  
 Description of the goods : Fuel, aviation, turbine engine  
 Class : 3  
 Packaging group : III  
 IMDG-Labels : 3  
 EmS Number : F-E S-E  
 Marine pollutant : Yes

**SECTION 15. REGULATORY INFORMATION**

OSHA Hazards : Toxic by inhalation.  
                                 Highly toxic by ingestion  
                                 Moderate skin irritant  
                                 Severe eye irritant  
                                 Combustible

TSCA Status : On TSCA Inventory

DSL Status : All components of this product are on the Canadian DSL list.

SARA 311/312 Hazards : Acute Health Hazard  
                                 Chronic Health Hazard  
                                 Fire Hazard

**CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIROMENT)**

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause cancer.

Naphthalene

91-20-3

## SECTION 16. OTHER INFORMATION

### Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Template** : GWU mbH  
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**Revision Date** : 01/27/2011

40, 41, 42, 43, 44, 45, 60, 113, 137, 138, 139, 140, 141, 142, 263, 285, 1048, 1117, 1137, 1138, 1546

**Clorox Professional Products Company**1221 Broadway  
Oakland, CA 94612  
Tel. (510) 271-7000**Material Safety  
Data Sheet**

<b>I Product:</b> COMMERCIAL SOLUTIONS® LIQUID-PLUMR® HEAVY DUTY CLOG OPENER											
<b>Description:</b> CLEAR ALKALINE LIQUID WITH A CHLORINE ODOR											
<b>Other Designations</b>	<b>Distributor</b>	<b>Emergency Telephone Nos.</b>									
Drain Cleaner	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies Chemtrec (800) 424-9300									
<b>II Health Hazard Data</b>		<b>III Hazardous Ingredients</b>									
CORROSIVE to the eyes. Injures eyes, skin and mucous membranes on contact. Harmful if swallowed; nausea, vomiting, and burning sensation of the mouth and throat may occur. No adverse health effects are expected with recommended use. Occasional clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g. irritation) occurs during exposure. However, clinical tests conducted on intact skin with Liquid-Plumr found no sensitization in the test subjects. Although not expected, heart conditions or chronic respiratory problems such as asthma, chronic bronchitis or obstructive lung disease may be aggravated by exposure to high concentrations of vapor or mist. <b>FIRST AID:</b> <b>EYE CONTACT:</b> Immediately flush eyes with water for 15 minutes. Contact a physician. <b>SKIN CONTACT:</b> Remove contaminated clothing. Flush skin with water. Contact a physician if irritation or discomfort persists. <b>INGESTION:</b> Drink a glassful of water. DO NOT induce vomiting. Immediately contact a physician or Poison Control Center. <b>INHALATION:</b> Remove from exposure to fresh air. HMIS/NFPA: H=3, F=0, R=1, PP=B HMIS Hazard Scale: 1=slight 2=moderate 3=serious 4=severe		<table><thead><tr><th>Ingredient</th><th>Concentration</th><th>Worker Exposure Limit</th></tr></thead><tbody><tr><td>Sodium hypochlorite CAS# 7681-52-9</td><td>5-10%</td><td>Not established</td></tr><tr><td>Sodium hydroxide CAS # 1310-73-2</td><td>0.5-2%</td><td>2 mg/m<sup>3</sup> - TLV-Ceiling limit<sup>a</sup> 2 mg/m<sup>3</sup> - PEL<sup>b</sup></td></tr></tbody></table> <sup>a</sup> TLV-Ceiling limit = ACGIH Threshold Limit Value-Ceiling limit <sup>b</sup> PEL = OSHA Permissible Exposure Limit-Time Weighted Average  None of the materials in this product are on the IARC, OSHA, or NTP carcinogen lists.	Ingredient	Concentration	Worker Exposure Limit	Sodium hypochlorite CAS# 7681-52-9	5-10%	Not established	Sodium hydroxide CAS # 1310-73-2	0.5-2%	2 mg/m <sup>3</sup> - TLV-Ceiling limit <sup>a</sup> 2 mg/m <sup>3</sup> - PEL <sup>b</sup>
Ingredient	Concentration	Worker Exposure Limit									
Sodium hypochlorite CAS# 7681-52-9	5-10%	Not established									
Sodium hydroxide CAS # 1310-73-2	0.5-2%	2 mg/m <sup>3</sup> - TLV-Ceiling limit <sup>a</sup> 2 mg/m <sup>3</sup> - PEL <sup>b</sup>									
<b>IV Special Protection and Precautions</b>		<b>V Transportation and Regulatory Data</b>									
<b>Hygienic Practices:</b> Wash skin after direct contact. Do not wear product-contaminated clothing. <b>Engineering Controls:</b> Use general ventilation to minimize exposure to vapors. <b>Personal Protective Equipment:</b> Wear safety glasses and gloves. The availability of an eye wash and shower is recommended in a manufacturing environment. KEEP OUT OF REACH OF CHILDREN. Avoid all splashing, particularly in eyes, on skin and on clothing. Keep children away from basins containing Liquid-Plumr®. Do not use Liquid-Plumr® with plunger or in toilets. Do not use Liquid-Plumr® with ammonia, toilet bowl cleaners or other drain openers. Do not reuse empty container. Rinse container and replace cap before discarding.		<b>DOT/IATA/IMDG:</b> Not restricted. <b>EPA - SARA Title III/CERCLA:</b> This product is regulated under Sections 311/312. This product contains no chemicals regulated under Section 313 and contains sodium hypochlorite and sodium hydroxide which are regulated under Section 304/CERCLA.									
<b>VI Spill Procedures/Waste Disposal</b>		<b>VII Reactivity Data</b>									
<b>Spill Procedures:</b> Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed down material. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed, and/or poorly ventilated areas until hazard assessment is complete. <b>Waste Disposal:</b> Dispose of in accordance with all applicable federal, state, and local regulations.		Stable under normal use and storage conditions.  Reacts with other household chemicals such as acid toilet bowl cleaners, rust removers, acids, and ammonia-containing products to produce hazardous gases, such as chlorine and other chlorinated compounds.									
<b>VIII Fire and Explosion Data</b>		<b>IX Physical Data</b>									
Not flammable or explosive. In a fire, cool containers to prevent rupture and release of sodium chlorate.		Boiling point ..... ~212°F/100°C (decomposes) Specific gravity ..... ~1.1 Solubility in Water ..... complete pH ..... ~13.2									

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DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH DATE PREPARED 4/02





# Mineral Spirits 66/3

## Material Safety Data Sheet

CITGO Petroleum Corporation  
1701 Golf Road, Suite 1-1101  
Rolling Meadows, IL 60008-4295

MSDS No. 19024  
Revision Date 06/07/2005

**IMPORTANT:** Read this MSDS before handling or disposing of this product and pass this information on to employees, customers and users of this product.

### Emergency Overview

**Physical State** Liquid.

**Color** Transparent, colorless.

**Odor** Characteristic hydrocarbon solvent odor.

#### CAUTION:

**Combustible liquid and vapor.**

**Harmful or fatal if swallowed - Can enter lungs and cause damage.**

**Can cause eye, skin or respiratory tract irritation.**

**Harmful to aquatic organisms.**

### Hazard Rankings

	HMIS	NFPA
Health Hazard	* 1	1
Fire Hazard	2	2
Reactivity	0	0

\* = Chronic Health Hazard

### Protective Equipment

Minimum Recommended  
See Section 8 for Details



## SECTION 1. PRODUCT IDENTIFICATION

<b>Trade Name</b>	Mineral Spirits 66/3	<b>Technical Contact</b>	(800) 967-7601 (8am - 4pm CT M-F)
<b>Product Number</b>	19024	<b>Medical Emergency</b>	(832) 486-4700
<b>CAS Number</b>	8052-41-3	<b>CHEMTREC Emergency (United States Only)</b>	(800) 424-9300
<b>Product Family</b>	Petroleum hydrocarbon solvent		
<b>Synonyms</b>	Petroleum hydrocarbon solvent; CITGO® Material Code No.: 19358 Former product code(s): 2358		

## SECTION 2. COMPOSITION

This product may be composed, in whole or in part, of any of the following refinery streams:

Light hydrotreated distillate (petroleum) [CAS No.: 64742-47-8]

Heavy hydrotreated naphtha (petroleum) [CAS No.: 64742-48-9]

Petroleum hydrocarbon distillates [CAS No.: 8052-41-3]

This product contains the following chemicals as components of the refinery streams listed above:

Component Name(s)	CAS Registry No.	Concentration (%)
Nonane, all isomers	Mixture.	10 - 30

## SECTION 3. HAZARDS IDENTIFICATION

Also see Emergency Overview and Hazard Ratings on the top of Page 1 of this MSDS.

**Major Route(s) of Entry** Skin contact. Inhalation.

### Signs and Symptoms of Acute Exposure

**Inhalation** Breathing high concentrations may be harmful. Mist or vapor can irritate the throat and lungs. Breathing this material may cause central nervous system depression with symptoms including nausea, headache, dizziness, fatigue, drowsiness, or unconsciousness. Breathing high concentrations of this material, for example, in an enclosed space or by intentional abuse, can cause irregular heartbeats which can cause death.

**Eye Contact** This product can cause transient mild eye irritation with short-term contact with liquid sprays or mists. Symptoms include stinging, watering, redness, and swelling.

**Skin Contact** This product can cause mild, transient skin irritation with short-term exposure. The severity of irritation will depend on the amount of material that is applied to the skin and the speed and thoroughness that it is removed. Symptoms include redness, itching, and burning of the skin. Repeated or prolonged skin contact can produce moderate irritation (dermatitis).

**Ingestion** If swallowed, this material may irritate the mucous membranes of the mouth, throat, and esophagus. It can be readily absorbed by the stomach and intestinal tract. Symptoms include a burning sensation of the mouth and esophagus, nausea, vomiting, dizziness, staggering gait, drowsiness, loss of consciousness, and delirium, as well as additional central nervous system (CNS) effects. Due to its light viscosity, there is a danger of aspiration into the lungs during vomiting. Aspiration can result in severe lung damage or death.

**Chronic Health Effects Summary** Chronic effects of ingestion and subsequent aspiration into the lungs may cause pneumatocele (lung cavity) formation and chronic lung dysfunction.

Reports have associated repeated and prolonged occupational overexposure to solvents with irreversible brain and nervous system damage (sometimes referred to as "Solvent or Painter's Syndrome"). Intentional misuse by deliberately concentrating and inhaling this product may be harmful or fatal.

**Conditions Aggravated by Exposure** Disorders of the following organs or organ systems that may be aggravated by significant exposure to this material or its components include: Skin, Respiratory System, Liver, Kidneys, Central Nervous System (CNS)

**Target Organs** May cause damage to the following organs: kidneys, lungs, the nervous system, liver, mucous membranes, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea

**Carcinogenic Potential** This product is not known to contain any components at concentrations above 0.1% which are considered carcinogenic by OSHA, IARC or NTP.

OSHA Hazard Classification is indicated by an "X" in the box adjacent to the hazard title. If no "X" is present, the product does not exhibit the hazard as defined in the OSHA Hazard Communication Standard (29 CFR 1910.1200).

OSHA Health Hazard Classification		OSHA Physical Hazard Classification			
Irritant	<input checked="" type="checkbox"/>	Sensitizer	<input type="checkbox"/>	Combustible	<input checked="" type="checkbox"/>
Toxic	<input type="checkbox"/>	Highly Toxic	<input type="checkbox"/>	Explosive	<input type="checkbox"/>
Corrosive	<input type="checkbox"/>	Carcinogenic	<input type="checkbox"/>	Oxidizer	<input type="checkbox"/>
				Pyrophoric	<input type="checkbox"/>
				Water-reactive	<input type="checkbox"/>
				Organic Peroxide	<input type="checkbox"/>
				Unstable	<input type="checkbox"/>
				Compressed Gas	<input type="checkbox"/>

## SECTION 4. FIRST AID MEASURES

Take proper precautions to ensure your own health and safety before attempting rescue or providing first aid. For more specific information, refer to Exposure Controls and Personal Protection in Section 8 of this MSDS.

<b>Inhalation</b>	Immediately move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If breathing is difficult, 100 percent humidified oxygen should be administered by a qualified individual. Seek medical attention immediately.
<b>Eye Contact</b>	Flush eyes with cool, clean, low-pressure water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of the eye and eyelid tissue. If easily accomplished, check for and remove contact lenses. If contact lenses cannot be removed, seek immediate medical attention. Do not use eye ointment. Seek medical attention.
<b>Skin Contact</b>	Remove contaminated shoes and clothing. Flush affected area with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. Do not use ointments. If skin surface is not damaged, clean affected area thoroughly with mild soap and water. Seek medical attention if tissue appears damaged or if pain or irritation persists.
<b>Ingestion</b>	Do not induce vomiting. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Never give anything by mouth to a person who is not fully conscious. Do not leave victim unattended. Seek medical attention immediately.
<b>Notes to Physician</b>	<p>INHALATION: Inhalation overexposure can produce toxic effects. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. Administer supplemental oxygen with assisted ventilation, as required.</p> <p>This material (or a component) sensitizes the heart to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.</p> <p>INGESTION: If ingested, this material presents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended. Consider activated charcoal and/or gastric lavage. If patient is obtunded, protect the airway by cuffed endotracheal intubation or by placement of the body in a Trendelenburg and left lateral decubitus position.</p>

## SECTION 5. FIRE FIGHTING MEASURES

<b>NFPA Flammability Classification</b>	NFPA Class-II combustible liquid.		
<b>Flash Point</b>	Closed cup: 42°C (108°F). (Tagliabue.)		
<b>Lower Flammable Limit</b>	AP 0.6 %	<b>Upper Flammable Limit</b>	AP 6 %
<b>Autoignition Temperature</b>	AP 230°C (AP 446°F)		
<b>Hazardous Combustion Products</b>	Carbon dioxide, carbon monoxide, smoke, fumes, and/or unburned hydrocarbons.		
<b>Special Properties</b>	Combustible Liquid! This material releases vapors when heated above ambient temperatures. Vapors can cause a flash fire. Vapors can travel to a source of ignition and flashback. A vapor and air mixture can create an explosion hazard in confined spaces such as sewers. Use only with adequate ventilation. If container is not properly cooled, it can rupture in the heat of a fire.		

## Mineral Spirits 66/3

### Extinguishing Media

SMALL FIRE: Use dry chemicals, carbon dioxide, foam, or inert gas (nitrogen). Carbon dioxide and inert gas can displace oxygen. Use caution when applying carbon dioxide or inert gas in confined spaces.

LARGE FIRE: Use foam, water fog, or water spray. Water fog and spray are effective in cooling containers and adjacent structures. However, water can cause frothing and/or may not extinguish the fire. Water can be used to cool the external walls of vessels to prevent excessive pressure, autoignition or explosion. DO NOT use a solid stream of water directly on the fire as the water may spread the fire to a larger area.

### Protection of Fire Fighters

Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles. Cover pooling liquid with foam. Containers can build pressure if exposed to radiant heat; cool adjacent containers with flooding quantities of water until well after the fire is out. Withdraw immediately from the area if there is a rising sound from a venting safety device or discoloration of vessels, tanks, or pipelines. Be aware that burning liquid will float on water. Notify appropriate authorities of potential fire and explosion hazard if liquid enter sewers or waterways.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

Take proper precautions to ensure your own health and safety before attempting spill control or clean-up. For more specific information, refer to the Emergency Overview on Page 1, Exposure Controls and Personal Protection in Section 8 and Disposal Considerations in Section 13 of this MSDS.

Combustible Liquid! Release causes an immediate fire or explosion hazard. Evacuate all non-essential personnel from immediate area and establish a "regulated zone" with site control and security. A vapor-suppressing foam may be used to reduce vapors. Eliminate all ignition sources. All equipment used when handling this material must be grounded. Stop the leak if it can be done without risk. Do not touch or walk through spilled material. Remove spillage immediately from hard, smooth walking areas. Prevent its entry into waterways, sewers, basements, or confined areas. Absorb or cover with dry earth, sand, or other non-combustible material and transfer to appropriate waste containers. Use clean, non-sparking tools to collect absorbed material.

For large spills, secure the area and control access. Dike far ahead of a liquid spill to ensure complete collection. Water mist or spray may be used to reduce or disperse vapors; but, it may not prevent ignition in closed spaces. This material will float on water and its run-off may create an explosion or fire hazard. Verify that responders are properly HAZWOPER-trained and wearing appropriate respiratory equipment and fire-resistant protective clothing during cleanup operations. In an urban area, cleanup spill as soon as possible; in natural environments, cleanup on advice from specialists. Pick up free liquid for recycle and/or disposal if it can be accomplished safely with explosion-proof equipment. Collect any excess material with absorbant pads, sand, or other inert non-combustible absorbent materials. Place into appropriate waste containers for later disposal. Comply with all laws and regulations.

## SECTION 7. HANDLING AND STORAGE

### Handling

A spill or leak can cause an immediate fire or explosion hazard. Keep containers closed and do not handle or store near heat, sparks, or any other potential ignition sources. Do not contact with oxidizable materials. Do not breathe vapor. Use only with adequate ventilation and personal protection. Never siphon by mouth. Avoid contact with eyes, skin, and clothing. Prevent contact with food and tobacco products. Do not take internally.

When performing repairs and maintenance on contaminated equipment, keep unnecessary persons away from the area. Eliminate all potential ignition sources. Drain and purge equipment, as necessary, to remove material residues. Follow proper entry procedures,

## Mineral Spirits 66/3

including compliance with 29 CFR 1910.146 prior to entering confined spaces such as tanks or pits. Use gloves constructed of impervious materials and protective clothing if direct contact is anticipated. Provide ventilation to maintain exposure potential below applicable exposure limits. Use appropriate respiratory protection when concentrations exceed any established occupational exposure level (See Section 8). Promptly remove contaminated clothing. Wash exposed skin thoroughly with soap and water after handling.

A static electrical charge can accumulate when this material is flowing through pipes, nozzles or filters and when it is agitated. A static spark discharge can ignite accumulated vapors particularly during dry weather conditions. Always bond receiving containers to the fill pipe before and during loading. Always keep nozzle in contact with the container throughout the loading process. Do not fill any portable container in or on a vehicle. Do NOT use compressed air for filling, discharging or other handling operations.

Product container is not designed for elevated pressure. Do not pressurize, cut, weld, braze solder, drill, or grind on containers. Do not expose product containers to flames, sparks, heat or other potential ignition sources. Empty containers may contain product residues that can ignite with explosive force. Observe label precautions. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this product.

### Storage

Keep container closed. Store in a cool, dry, well-ventilated area. Do not store with oxidizing agents. Do not store at elevated temperatures or in direct sunlight for extended periods of time. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers or waste residues of this product.

## SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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### Engineering Controls

Provide ventilation or other engineering controls to keep the airborne concentrations of vapor or mists below the applicable workplace exposure limits indicated below. All electrical equipment should comply with the National Electric Code. An emergency eye wash station and safety shower should be located near the work-station.

### Personal Protective Equipment

Personal protective equipment should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to OSHA regulations. The following pictograms represent the minimum requirements for personal protective equipment. For certain operations, additional PPE may be required.



### Eye Protection

Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. Chemical goggles should be worn during transfer operations or when there is a likelihood of misting, splashing, or spraying of this material. A suitable emergency eye wash water and safety shower should be located near the work station.

### Hand Protection

Avoid skin contact. Use heavy duty gloves constructed of chemical resistant materials such as Viton® or heavy nitrile rubber. Wash hands with plenty of mild soap and water before eating, drinking, smoking, use of toilet facilities or leaving work. DO NOT use gasoline, kerosene, solvents or harsh abrasives as skin cleaners.

## Mineral Spirits 66/3

<b>Body Protection</b>	Avoid skin contact. Wear long-sleeved fire-retardant garments (e.g., Nomex®) while working with flammable and combustible liquids. Additional chemical-resistant protective gear may be required if splashing or spraying conditions exist. This may include an apron, boots and additional facial protection. If product comes in contact with clothing, immediately remove soaked clothing and shower. Promptly remove and discarded contaminated leather goods.
<b>Respiratory Protection</b>	For known vapor concentrations above the occupational exposure guidelines (see below), use a NIOSH-approved organic vapor respirator if adequate protection is provided. Protection factors vary depending upon the type of respirator used. Respirators should be used in accordance with OSHA requirements (29 CFR 1910.134). For airborne vapor concentrations that exceed the recommended protection factors for organic vapor respirators, use a full-face, positive-pressure, supplied air respirator. Due to fire and explosion hazards, do not enter atmospheres containing concentrations greater than 10% of the lower flammable limit of this product.
<b>General Comments</b>	Warning! Use of this material in spaces without adequate ventilation may result in generation of hazardous levels of combustion products and/or inadequate oxygen levels for breathing. Odor is an inadequate warning for hazardous conditions.

### Occupational Exposure Guidelines

Substance	Applicable Workplace Exposure Levels
Petroleum Hydrocarbon Distillates	<b>ACGIH TLV (United States).</b> TWA: 100 ppm 8 hour(s).
	<b>OSHA PEL Z2 (United States).</b> TWA: 500 ppm 8 hour(s).
Nonane, all isomers	<b>ACGIH (United States).</b> TWA: 200 ppm 8 hour(s).

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES (TYPICAL)

<b>Physical State</b>	Liquid.	<b>Color</b>	Transparent, colorless.	<b>Odor</b>	Characteristic hydrocarbon solvent odor.
<b>Specific Gravity</b>	0.78 (Water = 1)	<b>pH</b>	Not applicable	<b>Vapor Density</b>	5 (Air = 1)
<b>Boiling Range</b>	159 to 199°C (318 to 390°F)			<b>Melting/Freezing Point</b>	Not available.
<b>Vapor Pressure</b>	<0.1 kPa (<1 mm Hg) (at 20°C)			<b>Volatility</b>	780 g/l VOC (w/v)
<b>Solubility in Water</b>	Very slightly soluble in cold water. (<0.1 % w/w)			<b>Viscosity (cSt @ 40°C)</b>	not available
<b>Flash Point</b>	Closed cup: 42°C (108°F). (Tagliabue.)				
<b>Additional Properties</b>	Paraffin, Isoparaffin and Cycloparaffin Hydrocarbons Content = >99 Wt.% (ASTM D-1319); Aromatic Hydrocarbon Content = <1 Wt. % (ASTM D-1319); Average Density at 60°F = 6.48 lbs./gal. (Calculated via ASTM D-287); Aniline Cloud Point Temperature = 155°F (68°C) (ASTM D-611); Kauri-Butanol (KB) Value = 33 (ASTM D-1133) Dry Point Temperature = 390°F (199°C) (ASTM D-86, D-850 or D-1078); Evaporation Rate = 0.2 (n-Butyl acetate = 1.0); Heat Value = 19,784 Btu. per pound				

## SECTION 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Stable.	<b>Hazardous Polymerization</b>	Not expected to occur.
<b>Conditions to Avoid</b>	Keep away from heat, flame and other potential ignition sources. Keep away from strong oxidizing conditions and agents.		
<b>Materials Incompatibility</b>	Strong acids, alkalis, and oxidizers such as liquid chlorine and oxygen.		
<b>Hazardous Decomposition Products</b>	No additional hazardous decomposition products were identified other than the combustion products identified in Section 5 of this MSDS.		

## SECTION 11. TOXICOLOGICAL INFORMATION

For other health-related information, refer to the Emergency Overview on Page 1 and the Hazards Identification in Section 3 of this MSDS.

### Toxicity Data

#### Light hydrotreated distillate (petroleum):

Studies on laboratory animals have shown similar materials to cause eye and respiratory tract irritation. Studies of similar materials on laboratory animals have resulted in skin irritation after repeated or prolonged contact. Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and rash (dermatitis).

#### Petroleum hydrocarbon distillates:

Dermal, Acute LD<sub>50</sub> (rabbit): >3000 mg/kg

Inhalation, Acute LC<sub>50</sub> (rat): >5.5 mg/l (8 hours)

Studies on laboratory animals have associated similar materials with eye and respiratory tract irritation. Studies on laboratory animals have shown similar materials to cause skin irritation after repeated or prolonged contact. Repeated direct application of Stoddard Solvent to the skin can produce defatting dermatitis and kidney damage in laboratory animals. Rats developed kidney damage and elevated blood urea nitrogen levels when exposed to a concentration of 1.9 mg/L for 65 days. The kidney damage occurred only in male rats and appeared to involve both the tubules and glomeruli. The significance of these animal study results to human health is unclear.

## SECTION 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	This mixture contains components that are potentially toxic to freshwater and saltwater ecosystems.
<b>Environmental Fate</b>	This product will normally float on water. Components will evaporate rapidly. This material may be harmful to aquatic organisms and may cause long term adverse effects in the aquatic environment. The log Kow value for this product is expected to be in the range of 3.3 to 6.


## SECTION 13. DISPOSAL CONSIDERATIONS

Hazard characteristic and regulatory waste stream classification can change with product use. Accordingly, it is the responsibility of the user to determine the proper storage, transportation, treatment and/or disposal methodologies for spent materials and residues at the time of disposition.

Maximize material recovery for reuse or recycling. Recovered non-usable material may be regulated by US EPA as a hazardous waste due to its ignitibility (D001) characteristics. Conditions of use may cause this material to become a "hazardous waste", as defined by federal or state regulations. It is the responsibility of the user to determine if the material is a RCRA "hazardous waste" at the time of disposal. Transportation, treatment, storage and disposal of waste material must be conducted in accordance with RCRA regulations (see 40 CFR 260 through 40 CFR 271). State and/or local regulations may be more restrictive. Contact your regional US EPA office for guidance concerning case specific disposal issues.

## SECTION 14. TRANSPORT INFORMATION

The shipping description below may not represent requirements for all modes of transportation, shipping methods or locations outside of the United States.

<b>US DOT Status</b>	A U.S. Department of Transportation (DOT) regulated material.		
<b>Proper Shipping Name</b>	Petroleum Distillates, n.o.s. (Naphtha Solvent), 3, UN1268 PG III		
<b>Hazard Class</b>	3	<b>Packing Group(s)</b>	III
		<b>UN/NA Number</b>	UN 1268
<b>Reportable Quantity</b>	A Reportable Quantity (RQ) has not been established for this material.		
<b>Placard(s)</b>		<b>Emergency Response Guide No.</b>	128
		<b>MARPOL III Status</b>	Not a DOT "Marine Pollutant" per 49 CFR 171.8.

## SECTION 15. REGULATORY INFORMATION

<b>TSCA Inventory</b>	This product and/or its components are listed on the Toxic Substances Control Act (TSCA) inventory.
<b>SARA 302/304 Emergency Planning and Notification</b>	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to Subparts 302 and 304 to submit emergency planning and notification information based on Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) for "Extremely Hazardous Substances" listed in 40 CFR 302.4 and 40 CFR 355. No components were identified.
<b>SARA 311/312 Hazard Identification</b>	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to this subpart to submit aggregate information on chemicals by "Hazard Category" as defined in 40 CFR 370.2. This material would be classified under the following hazard categories: fire, Acute (Immediate) Health Hazard, Chronic (Delayed) Health Hazard



## Mineral Spirits 66/3

### SARA 313 Toxic Chemical Notification and Release Reporting

This product contains the following components in concentrations above de minimis levels that are listed as toxic chemicals in 40 CFR Part 372 pursuant to the requirements of Section 313 of SARA: No components were identified.

### CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center concerning release of quantities of "hazardous substances" equal to or greater than the reportable quantities (RQ's) listed in 40 CFR 302.4. As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically designated in 40 CFR 302.4. This product or refinery stream is not known to contain chemical substances subject to this statute. However, it is recommended that you contact state and local authorities to determine if there are any other reporting requirements in the event of a spill.

### Clean Water Act (CWA)

This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.

### California Proposition 65

This product is not known to contain any components for which the State of California has found to cause cancer, birth defects or other reproductive harm.

### New Jersey Right-to-Know Label

For New Jersey R-T-K labeling requirements, refer to components listed in Section 2.

### Additional Regulatory Remarks

Federal Hazardous Substances Act, related statutes, and Consumer Product Safety Commission regulations, as defined by 16 CFR 1500.14(b)(3) and 1500.83(a)(13): This product contains "Petroleum Distillates" which may require special labeling if distributed in a manner intended or packaged in a form suitable for use in the household or by children. Precautionary label dialogue should display the following: **DANGER: Contains Petroleum Distillates! Harmful or fatal if swallowed! Call Physician Immediately. KEEP OUT OF REACH OF CHILDREN!**

## SECTION 16. OTHER INFORMATION

Refer to the top of Page 1 for the HMIS and NFPA Hazard Ratings for this product.

### REVISION INFORMATION

**Version Number** 4.1  
**Revision Date** 06/07/2005  
**Print Date** Printed on 06/07/2005.

### ABBREVIATIONS

AP: Approximately	EQ: Equal	>: Greater Than	<: Less Than	NA: Not Applicable	ND: No Data	NE: Not Established
ACGIH: American Conference of Governmental Industrial Hygienists				AIHA: American Industrial Hygiene Association		
IARC: International Agency for Research on Cancer				NTP: National Toxicology Program		
NIOSH: National Institute of Occupational Safety and Health				OSHA: Occupational Safety and Health Administration		
NPCA: National Paint and Coating Manufacturers Association				HMIS: Hazardous Materials Information System		
NFPA: National Fire Protection Association				EPA: US Environmental Protection Agency		

### DISCLAIMER OF LIABILITY

## **Mineral Spirits 66/3**

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# Material Safety Data Sheet



## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

### Havoline® Motor Oil (Deposit Shield)

**Product Use:** Engine Oil

**Product Number(s):** CPS223391, CPS223392, CPS223393, CPS223394, CPS223395, CPS223396, CPS223397

**Synonyms:** Havoline® Motor Oil SAE 10W-30, Havoline® Motor Oil SAE 10W-40, Havoline® Motor Oil SAE 20W-50, Havoline® Motor Oil SAE 30, Havoline® Motor Oil SAE 40, Havoline® Motor Oil SAE 5W-20, Havoline® Motor Oil SAE 5W-30

**Company Identification**

Chevron Products Company  
Global Lubricants  
6001 Bollinger Canyon Road  
San Ramon, CA 94583  
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 : lubemsds@chevrontexaco.com  
Product Information: 800-LUBE-TEK  
MSDS Requests: 800-414-6737

## SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	70 - 95 %weight

## SECTION 3 HAZARDS IDENTIFICATION

### IMMEDIATE HEALTH EFFECTS

**Eye:** Not expected to cause prolonged or significant eye irritation.

**Skin:** Contact with the skin is not expected to cause prolonged or significant irritation. 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:** Not expected to be harmful if swallowed.

**Inhalation:** Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

## SECTION 4 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:** No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

**Ingestion:** No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

**Inhalation:** No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

## SECTION 5 FIRE FIGHTING MEASURES

### FIRE CLASSIFICATION:

OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

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

### FLAMMABLE PROPERTIES:

**Flashpoint:** (Cleveland Open Cup) 200 °C (392 °F) (Min)

**Autoignition:** No Data Available

**Flammability (Explosive) Limits (% by volume in air):** Lower: Not Applicable Upper: Not Applicable

**EXTINGUISHING MEDIA:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

### 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.

## SECTION 6 ACCIDENTAL RELEASE MEASURES

**Protective Measures:** Eliminate all sources of ignition in vicinity of spilled material.

**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. 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

**Precautionary Measures:** Keep out of the reach of children.

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

**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. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

**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.

## SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

### GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

### ENGINEERING CONTROLS:

Use in a well-ventilated area.

### PERSONAL PROTECTIVE EQUIPMENT

**Eye/Face Protection:** No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

**Skin Protection:** No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

**Respiratory Protection:** No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.

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

### Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m3	10 mg/m3	--	--
Highly refined mineral oil (C15 - C50)	OSHA Z-1	5 mg/m3	--	--	--

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

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

**Color:** Amber

**Physical State:** Liquid

**Odor:** Petroleum odor

**pH:** Not Applicable

**Vapor Pressure:** <0.01 mmHg @ 100 °C (212 °F)

**Vapor Density (Air = 1):** >1

**Boiling Point:** >315°C (599°F)

**Solubility:** Soluble in hydrocarbons; insoluble in water

**Freezing Point:** Not Applicable

**Specific Gravity:** 0.87 @ 15.6°C (60.1°F) / 15.6°C (60.1°F) (Typical)

**Density:** 0.866 kg/l @ 15°C (59°F) (Typical)

**Viscosity:** 7.6 mm<sup>2</sup>/s @ 100°C (212°F) (Min)

## SECTION 10 STABILITY AND REACTIVITY

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

**Incompatibility With Other Materials:** May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

**Hazardous Decomposition Products:** None known (None expected)

**Hazardous Polymerization:** Hazardous polymerization will not occur.

## SECTION 11 TOXICOLOGICAL INFORMATION

### IMMEDIATE HEALTH EFFECTS

**Eye Irritation:** The eye irritation hazard is based on evaluation of data for similar materials or product components.

**Skin Irritation:** The skin irritation hazard is based on evaluation of data for similar materials or product components.

**Skin Sensitization:** The skin sensitization hazard is based on evaluation of data for similar materials or product components.

**Acute Dermal Toxicity:** The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.

**Acute Oral Toxicity:** The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

**Acute Inhalation Toxicity:** The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

### ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B). These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen

with unknown relevance to humans (A3).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water.

## SECTION 12 ECOLOGICAL INFORMATION

### ECOTOXICITY

This material is not expected to be harmful to aquatic organisms.

### ENVIRONMENTAL FATE

This material is not expected to be readily biodegradable.

## SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

## 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:** PETROLEUM LUBRICATING OIL, NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

**Additional Information:** NOT HAZARDOUS BY U.S. DOT. ADR/RID HAZARD CLASS NOT APPLICABLE.

**IMO/IMDG Shipping Description:** PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

**ICAO/IATA Shipping Description:** PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO

## SECTION 15 REGULATORY INFORMATION

### EPCRA 311/312 CATEGORIES:

- |                                       |    |
|---------------------------------------|----|
| 1. Immediate (Acute) Health Effects:  | NO |
| 2. Delayed (Chronic) Health Effects:  | NO |
| 3. Fire Hazard:                       | NO |
| 4. Sudden Release of Pressure Hazard: | NO |
| 5. Reactivity Hazard:                 | NO |

### REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK

02=NTP Carcinogen

06=NJ RTK

07=PA RTK

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

#### **CHEMICAL INVENTORIES:**

All components comply with the following chemical inventory requirements: EINECS (European Union), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

One or more components has been notified but may not be listed in the following chemical inventories: DSL (Canada). Secondary notification by the importer may be required.

One or more components does not comply with the following chemical inventory requirements: AICS (Australia), ENCS (Japan).

#### **NEW JERSEY RTK CLASSIFICATION:**

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Motor oil)

#### **WHMIS CLASSIFICATION:**

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

### **SECTION 16 OTHER INFORMATION**

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

**HMIS RATINGS:** Health: 1 Flammability: 1 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).

#### **LABEL RECOMMENDATION:**

Label Category : ENGINE OIL 1 - ENG1

**REVISION STATEMENT:** This is a new Material Safety Data Sheet.

**Revision Date:** October 02, 2006

#### **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
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Government Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - Chevron	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



Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Chevron Energy Technology Company, 100 Chevron Way, Richmond, California 94802.

**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. Chemical product and company identification

<b>Product name</b>	: Oxygen
<b>Supplier</b>	: AIRGAS INC., on behalf of its subsidiaries 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
<b>Product use</b>	: Synthetic/Analytical chemistry.
<b>Synonym</b>	: Molecular oxygen; Oxygen molecule; Pure oxygen; O <sub>2</sub> ; Liquid-oxygen-; UN 1072; UN 1073; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)
<b>MSDS #</b>	: 001043
<b>Date of Preparation/Revision</b>	: <b>6/16/2011.</b>
<b>In case of emergency</b>	: 1-866-734-3438

## Section 2. Hazards identification

<b>Physical state</b>	: Gas.
<b>Emergency overview</b>	: DANGER! GAS: OXIDIZER. CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE. CONTENTS UNDER PRESURE. Do not puncture or incinerate container. May cause severe frostbite. LIQUID: OXIDIZER. CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE. Extremely cold liquid and gas under pressure. May cause severe frostbite.  Do not puncture or incinerate container. Store in tightly-closed container. Avoid contact with combustible materials. Contact with rapidly expanding gases or liquids can cause frostbite.
<b>Routes of entry</b>	: Inhalation
<b>Potential acute health effects</b>	
<b>Eyes</b>	: May cause eye irritation. Contact with rapidly expanding gas may cause burns or frostbite. Contact with cryogenic liquid can cause frostbite and cryogenic burns.
<b>Skin</b>	: May cause skin irritation. Contact with rapidly expanding gas may cause burns or frostbite. Contact with cryogenic liquid can cause frostbite and cryogenic burns.
<b>Inhalation</b>	: Respiratory system irritation after overexposure to high oxygen concentrations.
<b>Ingestion</b>	: Ingestion is not a normal route of exposure for gases. Contact with cryogenic liquid can cause frostbite and cryogenic burns.
<b>Medical conditions aggravated by over-exposure</b>	: Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.
<b>See toxicological information (Section 11)</b>	

## Section 3. Composition, Information on Ingredients

<u>Name</u>	<u>CAS number</u>	<u>% Volume</u>	<u>Exposure limits</u>
Oxygen	7782-44-7	100	

## Section 4. First aid measures

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.

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : None expected.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.
- Ingestion** : As this product is a gas, refer to the inhalation section.

## Section 5. Fire-fighting measures

- Flammability of the product** : Non-flammable.
- Products of combustion** : No specific data.
- Fire hazards in the presence of various substances** : Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire.

Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. Contact with combustible material may cause fire. This material increases the risk of fire and may aid combustion. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

- 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

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Eliminate all ignition sources if safe to do so. Do not touch or walk through spilled material. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## Section 7. Handling and storage

- Handling** : High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Store in tightly-closed container. Avoid contact with combustible materials. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.  
Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cryogenic liquids. Prevent entrapment of liquid in closed systems or piping without pressure relief devices. Some materials may become brittle at low temperatures and will easily fracture.

## Oxygen

- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). For additional information concerning storage and handling refer to Compressed Gas Association pamphlets P-1 Safe Handling of Compressed Gases in Containers and P-12 Safe Handling of Cryogenic Liquids available from the Compressed Gas Association, Inc.

## Section 8. Exposure controls/personal protection

- 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.

### Personal protection

- Eyes** : 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 or dusts.

When working with cryogenic liquids, wear a full face shield.

- Skin** : 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.

- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

- Hands** : 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.

Insulated gloves suitable for low temperatures

- Personal protection in case of a large spill** : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

### Product name

Oxygen

Consult local authorities for acceptable exposure limits.

## Section 9. Physical and chemical properties

- Molecular weight** : 32 g/mole
- Molecular formula** : O<sub>2</sub>
- Boiling/condensation point** : -183°C (-297.4°F)
- Melting/freezing point** : -218.4°C (-361.1°F)
- Critical temperature** : -118.6°C (-181.5°F)
- Vapor density** : 1.105 (Air = 1)      Liquid Density@BP: 71.23 lb/ft<sup>3</sup> (1141 kg/m<sup>3</sup>)
- Specific Volume (ft<sup>3</sup>/lb)** : 12.0482
- Gas Density (lb/ft<sup>3</sup>)** : 0.083

## Section 10. Stability and reactivity

- Stability and reactivity** : The product is stable.
- Incompatibility with various substances** : Extremely reactive or incompatible with the following materials: oxidizing materials, reducing materials and combustible materials.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

## Section 11. Toxicological information

### Toxicity data

**Other toxic effects on humans** : No specific information is available in our database regarding the other toxic effects of this material to humans.

### Specific effects

**Carcinogenic effects** : No known significant effects or critical hazards.

**Mutagenic effects** : No known significant effects or critical hazards.

**Reproduction toxicity** : No known significant effects or critical hazards.

## Section 12. Ecological information

### Aquatic ecotoxicity

Not available.

**Environmental fate** : Not available.





**Environmental hazards** : This product shows a low bioaccumulation potential.

**Toxicity to the environment** : Not available.



## Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

## Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
<b>DOT Classification</b>	UN1072	OXYGEN, COMPRESSED	2.2	Not applicable (gas).		<b>Limited quantity</b> Yes.
	UN1073	Oxygen, refrigerated liquid				<b>Packaging instruction</b> <b>Passenger aircraft</b> Quantity limitation: 75 kg  <b>Cargo aircraft</b> Quantity limitation: 150 kg  <b>Special provisions</b> A52
<b>TDG Classification</b>	UN1072	OXYGEN, COMPRESSED	2.2	Not applicable (gas).		<b>Explosive Limit and Limited Quantity Index</b> 0.125
	UN1073	Oxygen, refrigerated liquid				<b>ERAP Index</b> 3000  <b>Passenger Carrying Ship</b>

## Oxygen

						Index 50  <b><u>Passenger Carrying Road or Rail Index</u></b> 75  <b><u>Special provisions</u></b> 42
<b>Mexico Classification</b>	UN1072  UN1073	OXYGEN, COMPRESSED  Oxygen, refrigerated liquid	2.2	Not applicable (gas).	 	-

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

## Section 15. Regulatory information

### United States

**U.S. Federal regulations** : TSCA 8(a) IUR: Partial exemption  
United States inventory (TSCA 8b): This material is listed or exempted.  
SARA 302/304/311/312 extremely hazardous substances: No products were found.  
SARA 302/304 emergency planning and notification: No products were found.  
SARA 302/304/311/312 hazardous chemicals: Oxygen  
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:  
Oxygen: Fire hazard, Sudden release of pressure, Delayed (chronic) health hazard

### State regulations

: Connecticut Carcinogen Reporting: This material is not listed.  
Connecticut Hazardous Material Survey: This material is not listed.  
Florida substances: This material is not listed.  
Illinois Chemical Safety Act: This material is not listed.  
Illinois Toxic Substances Disclosure to Employee Act: This material is not listed.  
Louisiana Reporting: This material is not listed.  
Louisiana Spill: This material is not listed.  
Massachusetts Spill: This material is not listed.  
Massachusetts Substances: This material is listed.  
Michigan Critical Material: This material is not listed.  
Minnesota Hazardous Substances: This material is not listed.  
New Jersey Hazardous Substances: This material is listed.  
New Jersey Spill: This material is not listed.  
New Jersey Toxic Catastrophe Prevention Act: This material is not listed.  
New York Acutely Hazardous Substances: This material is not listed.  
New York Toxic Chemical Release Reporting: This material is not listed.  
Pennsylvania RTK Hazardous Substances: This material is listed.  
Rhode Island Hazardous Substances: This material is not listed.

### Canada

**WHMIS (Canada)** : Class A: Compressed gas.  
Class C: Oxidizing material.

Oxygen

**CEPA Toxic substances:** This material is not listed.  
**Canadian ARET:** This material is not listed.  
**Canadian NPRI:** This material is not listed.  
**Alberta Designated Substances:** This material is not listed.  
**Ontario Designated Substances:** This material is not listed.  
**Quebec Designated Substances:** This material is not listed.

Section 16. Other information

United States

**Label requirements** : GAS:  
OXIDIZER.  
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.  
CONTENTS UNDER PRESURE.  
Do not puncture or incinerate container.  
May cause severe frostbite.  
LIQUID:  
OXIDIZER.  
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.  
Extremely cold liquid and gas under pressure.  
May cause severe frostbite.

Canada

**Label requirements** : Class A: Compressed gas.  
Class C: Oxidizing material.

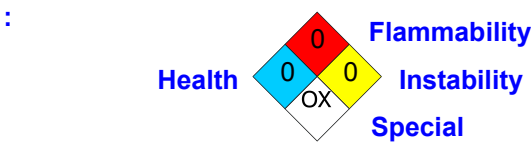
Hazardous Material  
Information System (U.S.A.)

Health	0
Flammability	0
Physical hazards	0

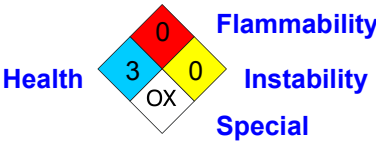
liquid:

Health	3
Fire hazard	0
Reactivity	0
Personal protection	

National Fire Protection  
Association (U.S.A.)



liquid:



Notice to reader

## Oxygen

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



# Monsanto

## Material Safety Data

### POLYCHLORINATED BIPHENYLS (PCBs)

Emergency Phone No.  
(Call Collect)  
314-694-1000

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#### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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PRODUCT NAME: **POLYCHLORINATED BIPHENYLS (PCBs)**  
Aroclor® Series 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268  
Therminol® FR Series

MSDS Number: M00018515

Date: 12/95

Chemical Family: Chlorinated Hydrocarbons  
Chemical Name: Polychlorinated biphenyls  
Synonyms: PCBs, Chlorodiphenyls, Chlorinated biphenyls

Trade Names/Common Names:

PYRANOL® and INERTEEN® are trade names for commonly used dielectric fluids that may have contained varying amounts of PCBs as well as other components including chlorinated benzenes.

ASKAREL is the generic name for a broad class of fire resistant synthetic chlorinated hydrocarbons and mixtures used as dielectric fluids that commonly contained about 30 - 70% PCBs. Some ASKAREL fluids contained 99% or greater PCBs and some contained no PCBs.

PYDRAUL® is the trade name for hydraulic fluids that, prior to 1972, may have contained varying amounts of PCBs and other components including phosphate esters.

The product names/trade names are representative of several commonly used Monsanto products (or products formulated with Monsanto products). Other trademarked PCB products were marketed by Monsanto and other manufacturers. PCBs were also manufactured and sold by several European and Japanese companies. Contact the manufacturer of the trademarked product, if not in this listing, to determine if the formulation contained PCBs.

In 1972, Monsanto restricted sales of PCBs to applications involving only closed electrical systems, (transformers and capacitors). In 1977, all manufacturing and sales were voluntarily terminated. In 1979, EPA restricted the manufacture, processing, use, and distribution of PCBs to specifically exempted and authorized activities.

**MONSANTO COMPANY, 800 N. LINDBERGH BLVD., ST. LOUIS, MO 63167**

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT  
Call CHEMTREC - Day or Night - 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska, or Virgin Islands. For calls originating elsewhere: 202-483-7616 (collect calls accepted)

For additional nonemergency information, call: 314-694-3344.

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## 2. COMPOSITION/INFORMATION ON INGREDIENTS

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Chemically, commercial PCBs are defined as a series of technical mixtures, consisting of many isomers and compounds that vary from mobile, oily liquids to white crystalline solids and hard noncrystalline resins. Technical products vary in composition, in the degree of chlorination, and possibly according to batch.

The mixtures generally used contain an average of 3 atoms of chlorine per molecule (42% chlorine) to 5 atoms of chlorine per molecule (54% chlorine). They were used as components of dielectric fluids in transformers and capacitors. Prior to 1972, PCB applications included heat transfer media, hydraulic, and other industrial fluids, plasticizers, carbonless copy paper, paints, inks, and adhesives.

<u>Component</u>	<u>CAS No.</u>
chlorinated biphenyl	1336-36-3
Aroclor 1016	12674-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5
Aroclor 1262	37324-23-5
Aroclor 1268	11100-14-4

There are also CAS Numbers for individual PCB congeners and for mixtures of Aroclor® products.

PCBs are identified as hazardous chemicals under criteria of the OSHA Hazard Communication Standard (29 CFR Part 1910.1200). PCBs have been listed in the International Agency for Research on Cancer (IARC) Monographs (1987)-Group 2A and in the National Toxicology Program (NTP) Annual Report on Carcinogens (Seventh).

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## 3. HAZARDS IDENTIFICATION

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### EMERGENCY OVERVIEW

Appearance and Odor: PCB mixtures range in form and color from clear to amber liquids to white crystalline solids. They have a mild, distinctive odor and are not volatile at room temperature. Refer to Section 9 for details.

WARNING!  
CAUSES EYE IRRITATION  
MAY CAUSE SKIN IRRITATION

PROCESSING AT ELEVATED TEMPERATURES MAY RELEASE VAPORS OR FUMES WHICH MAY CAUSE RESPIRATORY TRACT IRRITATION

### POTENTIAL HEALTH EFFECTS

#### Likely Routes

of Exposure: Skin contact and inhalation of heated vapors

Eye Contact: Causes moderate irritation based on worker experience.

Skin Contact: Prolonged or repeated contact may result in redness, dry skin and defatting based on human experience. A potential exists for developing chloracne. PCBs can be absorbed through intact skin.

Inhalation: Due to the low volatility of PCBs, exposure to this material in ambient conditions is not expected to produce adverse health effects. However, at elevated processing temperatures, PCBs may produce a vapor that may cause respiratory tract irritation if inhaled based on human experience.

Ingestion: No more than slightly toxic based on acute animal toxicity studies. Coughing, choking and shortness of breath may occur if liquid material is accidentally drawn into the lungs during swallowing or vomiting.

MSDS #: MOOO18515

Other: Numerous epidemiological studies of humans, both occupationally exposed and nonworker environmentally exposed populations, have not demonstrated any causal relationship between PCB exposure and chronic human illnesses such as cancer or neurological or cardiovascular effects. PCBs at high dosage can cause skin symptoms; however, these subside upon removal of the exposure source.

Refer to Section 11 for toxicological information.

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#### 4. FIRST AID MEASURES

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IF IN EYES, immediately flush with plenty of water for at least 15 minutes. If easy to do, remove any contact lenses. Get medical attention. Remove material from skin and clothing.

IF ON SKIN, immediately flush the area with plenty of water. Wash skin gently with soap as soon as it is available. Get medical attention if irritation persists.

IF INHALED, remove person to fresh air. If breathing is difficult, get medical attention.

IF SWALLOWED, do NOT induce vomiting. Rinse mouth with water. Get medical attention. Contact a Poison Control Center. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTE TO PHYSICIANS: Hot PCBs may cause thermal burn. If electrical equipment arcs between conductors, PCBs or other chlorinated hydrocarbon dielectric fluids may decompose to produce hydrochloric acid (HCl), a respiratory irritant. If large amounts are swallowed, gastric lavage may be considered.

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#### 5. FIRE FIGHTING MEASURES

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Flash Point: 284 degrees F (140 degrees C) or higher depending on the chlorination level of the Aroclor product

Fire Point: 349 degrees F (176 degrees C) or higher depending on the chlorination level of the Aroclor product

NOTE: Refer to Section 9 for individual flash points and fire points.

##### Extinguishing

Media: Extinguish fire using agent suitable for surrounding fire. Use dry chemical, foam, carbon dioxide or water spray. Water may be ineffective. Use water spray to keep fire-exposed containers or transformer cool.

PCBs are fire-resistant compounds. They may decompose to form CO, CO<sub>2</sub>, HCl, phenolics, aldehydes, and other toxic combustion products under severe conditions such as exposure to flame or hot surfaces.

Dielectric fluids having PCBs and chlorinated benzenes as components have been reported to produce polychlorinated dibenzo-p-dioxins (PCDDs) and furans (PCDFs) during fire situations involving electrical equipment. At temperatures in the range of 600-650 degrees C in the presence of excess oxygen, PCBs may form polychlorinated dibenzofurans (PCDFs). Laboratory studies under similar conditions have demonstrated that PCBs do not produce polychlorinated dibenzo-p-dioxins (PCDDs).

Federal regulations require all PCB transformers to be registered with fire response personnel.

If a PCB transformer is involved in a fire-related incident, the owner of the transformer may be required to report the incident. Consult and follow appropriate federal, state and local regulations.

Fire Fighting Equipment: Fire fighters and others exposed to products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

## 6. ACCIDENTAL RELEASE MEASURES

Cleanup and disposal of liquid PCBs and other PCB items are strictly regulated by the federal government. The regulations are found at 40 CFR Part 761. Consult these regulations as well as applicable state and local regulations prior to any cleanup or disposal of PCBs, PCB items, or PCB contaminated items.

If PCBs leak or are spilled, the following steps should be taken immediately:

All nonessential personnel should leave the leak or spill area.

The area should be adequately ventilated to prevent the accumulation of vapors.

The spill/leak should be contained. Loss to sewer systems, navigable waterways, and streams should be prevented. Spills/leaks should be removed promptly by means of absorptive material, such as sawdust, vermiculite, dry sand, clay, dirt or other similar materials, or trapped and removed by pumping or other suitable means (traps, drip-pans, trays, etc.).

Personnel entering the spill or leak area should be furnished with appropriate personal protective equipment and clothing as needed. Refer to Section 8 for personal protection equipment and clothing.

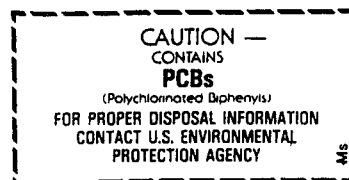
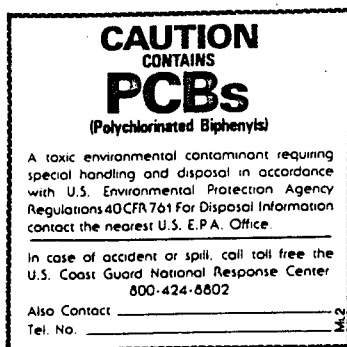
Personnel trained in emergency procedures and protected against attendant hazards should shut off sources of PCBs, clean up spills, control and repair leaks, and fight fires in PCB areas.

Refer to Section 13 for disposal information and Sections 14 and 15 for information regarding reportable quantity, and Section 7 for marking information.

## 7. HANDLING AND STORAGE

Care should be taken to prevent entry into the environment through spills, leakage, use vaporization, or disposal of liquid or containers. Avoid prolonged breathing of vapors or mists. Avoid contact with eyes or prolonged contact with skin. If skin contact occurs, remove by washing with soap and water. Following eye contact, flush with water. In case of spillage onto clothing, the clothing should be removed as soon as practical, skin washed, and clothing laundered. Comply with all federal, state, and local regulations.

Federal regulations under the Toxic Substances Control Act require PCBs, PCB items, storage areas, transformer vaults, and transport vehicles to be marked (check regulations, 40 CFR 761, for details).



**Storage:** The storage of PCB items or equipment (those containing 50 ppm or greater PCBs) and PCB waste is strictly regulated by 40 CFR Part 761. The storage time is limited, the storage area must meet physical requirements, and the area must be labeled.

**Avoid contact with eyes.**  
**Wash thoroughly after handling.**  
**Avoid breathing processing fumes or vapors.**  
**Process using adequate ventilation.**

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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**Eye Protection:** Wear chemical splash goggles and have eye baths available where there is significant potential for eye contact.

**Skin Protection:** Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine the appropriate type glove for a given application. Wear chemical goggles, face shield, and chemical resistant clothing such as a rubber apron when splashing is likely. Wash immediately if skin is contacted. Remove contaminated clothing promptly and launder before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

ATTENTION! Repeated or prolonged skin contact may cause chloracne in some people.

**Respiratory Protection:** Avoid breathing vapor, mist, or dust. Use NIOSH/MSHA approved equipment when airborne exposure limits are exceeded. Full facepiece equipment is recommended when airborne exposure limits are exceeded and, if used, replaces the need for face shield and/or chemical splash goggles. Consult respirator manufacturer to determine the type of equipment for a given application. The respirator use limitations specified by NIOSH/MSHA or the manufacturer must be observed. High airborne concentrations may require use of self-contained breathing apparatus or supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR Part 1910.134.

ATTENTION! Repeated or prolonged inhalation may cause chloracne in some people.

**Ventilation:** Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of vapor or mist, such as open process equipment.

### Airborne Exposure Limits:

**Product:** Chlorodiphenyl (42% chlorine)

OSHA PEL: 1 mg/m<sup>3</sup> 8-hour time-weighted average - Skin\*  
ACGIH TLV: 1 mg/m<sup>3</sup> 8-hour time-weighted average - Skin\*

**Product:** Chlorodiphenyl (54% chlorine)

OSHA PEL: 0.5 mg/m<sup>3</sup> 8-hour time-weighted average - Skin\*  
ACGIH TLV: 0.5 mg/m<sup>3</sup> 8-hour time-weighted average - Skin\*

\*For Skin notation see Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Government Industrial Hygienists, 1995-1996.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

PROPERTIES OF SELECTED AROCLORS <sup>®</sup>							
PROPERTY	1016	1221	1232	1242	1248	1254	1260
Color (APHA)	40	100	100	100	100	100	150
Physical state	mobile oil	mobile oil	mobile oil	mobile oil	mobile oil	viscous liquid	sticky resin
Stability	inert	inert	inert	inert	inert	inert	inert
Density (lb/gal 25°C)	11.40	9.85	10.55	11.50	12.04	12.82	13.50
Specific gravity x/15.5°C	1.36-1.37 x-25°	1.18-1.19 x-25°	1.27-1.28 x-25°	1.30-1.39 x-25°	1.40-1.41 x-65°	1.49-1.50 x-65°	1.55-1.56 x-90°
Distillation range (°C)	323-356	275-320	290-325	325-366	340-375	365-390	385-420
Acidity mg KOH/g, maximum	.010	.014	.014	.015	.010	.010	.014
Fire point (°C)	none to boiling point	176	238	none to boiling point	none to boiling point	none to boiling point	none to boiling point
Flash point (°C)	170	141-150	152-154	176-180	193-196	none	none
Vapor pressure (mm Hg @ 100°F)	NA	NA	0.005	0.001	0.00037	0.00006	NA
Viscosity (Saybolt Univ. Sec. @ 100°F) (centistokes)	71-81 13-16	38-41 3.6-4.6	44-51 5.5-7.7	82-92 16-19	185-240 42-52	1800-2500 390-540	— —

NA—Not Available

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

## 10. STABILITY AND REACTIVITY

Stability: PCBs are very stable, fire-resistant compounds.

Materials to Avoid: None

Hazardous Decomposition

Products: PCBs may decompose to form CO, CO<sub>2</sub>, HCl, phenolics, aldehydes, and other toxic combustion products under severe conditions such as exposure to flame or hot surface.

Hazardous Polymerization: Does not occur.

## 11. TOXICOLOGICAL INFORMATION

Data from laboratory studies conducted by Monsanto and from the available scientific literature are summarized below.

Single exposure (acute) studies indicate:

Oral - Slightly Toxic (Rat LD50 - 8.65 g/kg for 42% chlorinated; 11.9 g/kg for 54% chlorinated)

The liquid products and their vapors are moderately irritating to eye tissues. Animal experiments of varying duration and at different air concentrations show that for similar exposure conditions, the 54% chlorinated material produces more liver injury than the 42% chlorinated material.

There are literature reports that PCBs can impair reproductive functions in monkeys. The National Cancer Institute (NCI) performed a study in 1977 using Aroclor 1254 with both sexes of rats. NCI stated that the PCB, Aroclor 1254, was not carcinogenic under the conditions of their bioassay. There is sufficient evidence in the scientific literature to conclude that Aroclor 1260 can cause liver cancer when fed to rodents at high doses. Similar experiments with less chlorinated PCB products have produced negative or equivocal results.

The consistent finding in animal studies is that PCBs produce liver injury following prolonged and repeated exposure by any route, if the exposure is of sufficient degree and duration. Liver injury is produced first, and by exposures that are less than those reported to cause cancer in rodents. Therefore, exposure by all routes should be kept sufficiently low to prevent liver injury.

Numerous epidemiological studies of humans, both occupationally exposed and nonworker environmentally exposed population, have not demonstrated any causal relationship between PCB exposure and chronic human illnesses such as cancer or neurological or cardiovascular effects. PCBs at high dosage can cause skin symptoms; however, these subside upon removal of the exposure source.

PCBs have been listed in the International Agency for Research on Cancer (IARC) Monographs (1987)-Group 2A and in the National Toxicology Program (NTP) Seventh Annual Report on Carcinogens.

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## 12. ECOLOGICAL INFORMATION

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Care should be taken to prevent entry of PCBs into the environment through spills, leakage, use, vaporization or disposal of liquid or solids. PCBs can accumulate in the environment and can adversely affect some animals and aquatic life. In general, PCBs have low solubility in water, are strongly bound to soils and sediments, and are slowly degraded by natural processes in the environment.

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## 13. DISPOSAL CONSIDERATIONS

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The disposal of PCB items or equipment (those containing 50 ppm or greater PCBs) and PCB wastes is strictly regulated by 40 CFR Part 761. For example, all wastes and residues containing PCBs (wiping cloths, absorbent material, used disposable protective gloves and clothing, etc.) should be collected, placed in proper containers, marked and disposed of in the manner prescribed by EPA regulations (40 CFR Part 761) and applicable state and local regulations.

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## 14. TRANSPORT INFORMATION

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The data provided in this section are for information only. Please apply the appropriate regulations to properly classify a shipment for transportation.

DOT Classification:	IF WEIGHT OF PCBs TO BE SHIPPED IS OVER ONE POUND, THE FOLLOWING CLASSIFICATION AND LABEL APPLY.
DOT Label:	LIQUID: Environmentally Hazardous Substance, liquid, n.o.s. (Contains PCB), 9, UN 3082, III
	SOLID: Environmentally Hazardous Substance, solid, n.o.s. (Contains PCB), 9, UN 3077, III
DOT Label:	Class: 9
DOT Reportable Quantity:	One Pound
IMO Classification:	Polychlorinated Biphenyls, IMO Class 9, UN 2315, II
	IMO Page 9034, EMS 6.1-02
IATA/ICAO Classification:	Polychlorinated Biphenyls, 9, UN2315, II

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**15. REGULATORY INFORMATION**

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For regulatory purposes, under the Toxic Substances Control Act, the term "PCBs" refers to a chemical substance limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contain such a substance (40 CFR Part 761).

TSCA Inventory: not listed.

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): Immediate, Delayed.  
SARA Section 313 Toxic Chemical(s): Listed-1993 (De Minimis concentration 0.1%).

Reportable Quantity (RQ) under DOT (49 CFR) and CERCLA Regulations: 1 lb. (polychlorinated biphenyls) PCBs.

Release of more than 1 (one) pound of PCBs to the environment requires notification to the National Response Center (800-424-8802 or 202-426-2675).

Various state and local regulations may require immediate reporting of PCB spills and may also define spill cleanup levels. Consult your attorney or appropriate regulatory officials for information relating to spill reporting and spill cleanup.

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**16. OTHER INFORMATION**

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Reason for revision: Conversion to the 16 section format. Supersedes MSDS dated 10/88.

Therminol® Aroclor® and Pydraul® are registered trademarks of Monsanto Company  
Pyranol® is a registered trademark of General Electric Company  
Inerteen® is a registered trademark of Westinghouse Electric Corporation

FOR ADDITIONAL NONEMERGENCY INFORMATION, CONTACT:

Gary W. Mappes  
Manager, Product & Environmental Safety

Robert G. Kaley, II  
Director, Environmental Affairs

Monsanto Company  
800 North Lindbergh Boulevard  
St. Louis, MO 63167  
(314) 694-3344

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## Section 1. Chemical product and company identification

<b>Product name</b>	: Propane
<b>Supplier</b>	: AIRGAS INC., on behalf of its subsidiaries 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
<b>Product use</b>	: Synthetic/Analytical chemistry.
<b>Synonym</b>	: n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.
<b>MSDS #</b>	: 001045
<b>Date of Preparation/Revision</b>	: 4/26/2011.
<b>In case of emergency</b>	: 1-866-734-3438

## Section 2. Hazards identification

<b>Physical state</b>	: Gas. [COLORLESS LIQUEFIED COMPRESSED GAS; ODORLESS BUT MAY HAVE SKUNK ODOR ADDED.]
<b>Emergency overview</b>	: WARNING! FLAMMABLE GAS. MAY CAUSE FLASH FIRE. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CONTENTS UNDER PRESSURE.  Keep away from heat, sparks and flame. Do not puncture or incinerate container. May cause target organ damage, based on animal data. Use only with adequate ventilation. Keep container closed.  Contact with rapidly expanding gases can cause frostbite.
<b>Target organs</b>	: May cause damage to the following organs: the nervous system, heart, central nervous system (CNS).
<b>Routes of entry</b>	: Inhalation
<b>Potential acute health effects</b>	
<b>Eyes</b>	: Contact with rapidly expanding gas may cause burns or frostbite.
<b>Skin</b>	: Contact with rapidly expanding gas may cause burns or frostbite.
<b>Inhalation</b>	: Acts as a simple asphyxiant.
<b>Ingestion</b>	: Ingestion is not a normal route of exposure for gases
<b>Potential chronic health effects</b>	
<b>Chronic effects</b>	: May cause target organ damage, based on animal data.
<b>Target organs</b>	: May cause damage to the following organs: the nervous system, heart, central nervous system (CNS).
<b>Medical conditions aggravated by over-exposure</b>	: Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.
<b>See toxicological information (Section 11)</b>	

## Section 3. Composition, Information on Ingredients

<u>Name</u>	<u>CAS number</u>	<u>% Volume</u>	<u>Exposure limits</u>
Propane	74-98-6	100	<b>ACGIH TLV (United States, 2/2010).</b> TWA: 1000 ppm 8 hour(s). <b>NIOSH REL (United States, 6/2009).</b> TWA: 1800 mg/m <sup>3</sup> 10 hour(s). TWA: 1000 ppm 10 hour(s). <b>OSHA PEL (United States, 6/2010).</b> TWA: 1800 mg/m <sup>3</sup> 8 hour(s). TWA: 1000 ppm 8 hour(s). <b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 1800 mg/m <sup>3</sup> 8 hour(s). TWA: 1000 ppm 8 hour(s).

## Section 4. First aid measures

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.

<b>Eye contact</b>	: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
<b>Skin contact</b>	: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
<b>Frostbite</b>	: Try to warm up the frozen tissues and seek medical attention.
<b>Inhalation</b>	: Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
<b>Ingestion</b>	: As this product is a gas, refer to the inhalation section.

## Section 5. Fire-fighting measures

<b>Flammability of the product</b>	: Flammable.
<b>Auto-ignition temperature</b>	: 450°C (842°F)
<b>Flash point</b>	: Closed cup: -104°C (-155.2°F). Open cup: -104°C (-155.2°F).
<b>Flammable limits</b>	: Lower: 2.1% Upper: 9.5%
<b>Products of combustion</b>	: Decomposition products may include the following materials: carbon dioxide carbon monoxide
<b>Fire hazards in the presence of various substances</b>	: Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.
<b>Fire-fighting media and instructions</b>	: In case of fire, use water spray (fog), foam or dry chemical.  In case of fire, allow gas to burn if flow cannot be shut off immediately. Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.  Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
<b>Special protective equipment for fire-fighters</b>	: 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

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## Section 7. Handling and storage

- Handling** : Use only with adequate ventilation. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Keep container closed. Keep away from heat, sparks and flame. To avoid fire, eliminate ignition sources. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
- Storage** : Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Segregate from oxidizing materials. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

## Section 8. Exposure controls/personal protection

- 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.
- Personal protection**
- Eyes** : 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 or dusts.
- Skin** : 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.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93
- Hands** : 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.
- Personal protection in case of a large spill** : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

### Product name

Propane

**ACGIH TLV (United States, 2/2010).**

TWA: 1000 ppm 8 hour(s).

**NIOSH REL (United States, 6/2009).**TWA: 1800 mg/m<sup>3</sup> 10 hour(s).

TWA: 1000 ppm 10 hour(s).

**OSHA PEL (United States, 6/2010).**TWA: 1800 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ppm 8 hour(s).

**OSHA PEL 1989 (United States, 3/1989).**TWA: 1800 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ppm 8 hour(s).

Consult local authorities for acceptable exposure limits.

## Section 9. Physical and chemical properties

<b>Molecular weight</b>	: 44.11 g/mole
<b>Molecular formula</b>	: C <sub>3</sub> -H <sub>8</sub>
<b>Boiling/condensation point</b>	: -42°C (-43.6°F)
<b>Melting/freezing point</b>	: -189.7°C (-309.5°F)
<b>Critical temperature</b>	: 96.6°C (205.9°F)
<b>Vapor pressure</b>	: 109 (psig)
<b>Vapor density</b>	: 1.6 (Air = 1)
<b>Specific Volume (ft<sup>3</sup>/lb)</b>	: 8.6206
<b>Gas Density (lb/ft<sup>3</sup>)</b>	: 0.116

## Section 10. Stability and reactivity

<b>Stability and reactivity</b>	: The product is stable.
<b>Incompatibility with various substances</b>	: Extremely reactive or incompatible with the following materials: oxidizing materials.
<b>Hazardous decomposition products</b>	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
<b>Hazardous polymerization</b>	: Under normal conditions of storage and use, hazardous polymerization will not occur.

## Section 11. Toxicological information

### Toxicity data

Product/ingredient name	Result	Species	Dose	Exposure
Propane	LC50 Inhalation Gas.	Rat	>800000 ppm	15 minutes

**IDLH** : 2100 ppm**Chronic effects on humans** : May cause damage to the following organs: the nervous system, heart, central nervous system (CNS).**Other toxic effects on humans** : No specific information is available in our database regarding the other toxic effects of this material to humans.

### Specific effects

**Carcinogenic effects** : No known significant effects or critical hazards.**Mutagenic effects** : No known significant effects or critical hazards.**Reproduction toxicity** : No known significant effects or critical hazards.

## Section 12. Ecological information

### Aquatic ecotoxicity




Not available.

**Products of degradation** : Products of degradation: carbon oxides (CO, CO<sub>2</sub>) and water.**Environmental fate** : Not available.**Environmental hazards** : This product shows a low bioaccumulation potential.**Toxicity to the environment** : Not available.

## Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

## Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
<b>DOT Classification</b>	UN1978	PROPANE	2.1	Not applicable (gas).		<b>Limited quantity</b> Yes.  <b>Packaging instruction</b> <b>Passenger aircraft</b> Quantity limitation: Forbidden.  <b>Cargo aircraft</b> Quantity limitation: 150 kg  <b>Special provisions</b> 19, T50
<b>TDG Classification</b>	UN1978	PROPANE	2.1	Not applicable (gas).		<b>Explosive Limit and Limited Quantity Index</b> 0.125  <b>ERAP Index</b> 3000  <b>Passenger Carrying Ship Index</b> 65  <b>Passenger Carrying Road or Rail Index</b> Forbidden  <b>Special provisions</b> 29, 42
<b>Mexico Classification</b>	UN1978	PROPANE	2.1	Not applicable (gas).		-

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

## Section 15. Regulatory information

### United States

**U.S. Federal regulations** :

- TSCA 8(a) IUR:** Partial exemption
- United States inventory (TSCA 8b):** This material is listed or exempted.
- SARA 302/304/311/312 extremely hazardous substances:** No products were found.
- SARA 302/304 emergency planning and notification:** No products were found.
- SARA 302/304/311/312 hazardous chemicals:** Propane
- SARA 311/312 MSDS distribution - chemical inventory - hazard identification:**  
Propane: Fire hazard, Sudden release of pressure
- Clean Air Act (CAA) 112 accidental release prevention - Flammable Substances:**  
Propane

**Clean Air Act (CAA) 112 regulated flammable substances:** Propane

**State regulations** :

- Connecticut Carcinogen Reporting:** This material is not listed.
- Connecticut Hazardous Material Survey:** This material is not listed.
- Florida substances:** This material is not listed.
- Illinois Chemical Safety Act:** This material is not listed.
- Illinois Toxic Substances Disclosure to Employee Act:** This material is not listed.
- Louisiana Reporting:** This material is not listed.
- Louisiana Spill:** This material is not listed.
- Massachusetts Spill:** This material is not listed.
- Massachusetts Substances:** This material is listed.
- Michigan Critical Material:** This material is not listed.
- Minnesota Hazardous Substances:** This material is not listed.
- New Jersey Hazardous Substances:** This material is listed.
- New Jersey Spill:** This material is not listed.
- New Jersey Toxic Catastrophe Prevention Act:** This material is not listed.
- New York Acutely Hazardous Substances:** This material is not listed.
- New York Toxic Chemical Release Reporting:** This material is not listed.
- Pennsylvania RTK Hazardous Substances:** This material is listed.
- Rhode Island Hazardous Substances:** This material is not listed.

### Canada

**WHMIS (Canada)** :

- Class A: Compressed gas.
- Class B-1: Flammable gas.
- CEPA Toxic substances:** This material is not listed.
- Canadian ARET:** This material is not listed.
- Canadian NPRI:** This material is listed.
- Alberta Designated Substances:** This material is not listed.
- Ontario Designated Substances:** This material is not listed.
- Quebec Designated Substances:** This material is not listed.

## Section 16. Other information

### United States

**Label requirements** :

- FLAMMABLE GAS.
- MAY CAUSE FLASH FIRE.
- MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
- CONTENTS UNDER PRESSURE.

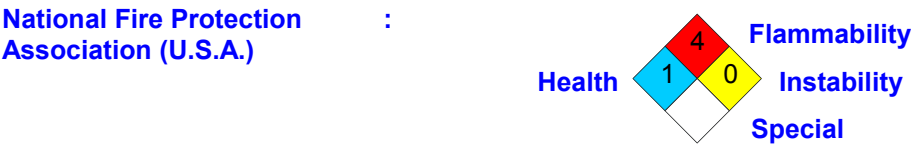
### Canada

**Label requirements** :

- Class A: Compressed gas.
- Class B-1: Flammable gas.

Propane

Hazardous Material Information System (U.S.A.)	:	Health	*	1
		Flammability		4
		Physical hazards		0



Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

# Roundup Weed & Grass Killer1 Ready-To-Use MSDS # 7070

## MATERIAL SAFETY DATA SHEET

**DATE PREPARED:** 10/31/2000

**MSDS No:** 7070

**Roundup Weed & Grass Killer1 Ready-To-Use**

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### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Roundup Weed & Grass Killer1 Ready-To-Use

**PRODUCT DESCRIPTION:** Herbicide

**MANUFACTURER**

Monsanto Company  
Lawn & Garden Products  
P.O. Box 1750  
Columbus, OH 43216

**24 HR. EMERGENCY  
TELEPHONE NUMBERS**

**Emergency Phone:** 1-800-225-2883

**EPA REG. NO.:** 71995-23 **PN:** 7037

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### 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>Wt.%</u>	<u>CAS#</u>
Glyphosate, isopropylamine salt	1.92	38641-94-0

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### 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW**

**PHYSICAL APPEARANCE:** Yellow or off-white hazy liquid.

**IMMEDIATE CONCERNS:** CAUSES EYE IRRITATION

**AVOID CONTACT WITH EYES OR CLOTHING**

**WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING**

**KEEP OUT OF REACH OF CHILDREN**

**POTENTIAL HEALTH EFFECTS**



**EYES:** This substance causes moderate eye irritation as indicated by possible discomfort, tearing, swelling, redness, and blurred vision. See Toxicological Information, section 11.

**SKIN:** This substance is not expected to cause skin irritation. See Toxicological Information, section 11.

**INGESTION:** If swallowed, this product may cause gastrointestinal tract irritation. See Toxicological Information, section 11.

**INHALATION:** If inhaled, this substance is considered practically non-toxic to internal organs. This substance may be irritating if inhaled. See Toxicological Information, section 11.

**COMMENTS HEALTH:** Inhalation and skin contact are expected to be the primary routes of occupational exposure to glyphosate. Occupational exposure to this material has not been reported to cause significant adverse health effects. However, swallowing of a similar, but more concentrated formulation, has been reported to produce gastrointestinal discomfort, nausea, vomiting and diarrhea.

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## 4. FIRST AID MEASURES

**EYES:** Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. Call a physician if irritation persists.

**SKIN:** No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

**INGESTION:** If swallowed, immediately telephone a poison control center, emergency treatment center or a physician for advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then immediately take person and product container, with label, to an emergency treatment center.

**INHALATION:** Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required. If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

**ADDITIONAL INFORMATION:** Medical Information: Call day or night, 1-800-225-2883

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## 5. FIRE FIGHTING MEASURES

**FLASHPOINT AND METHOD:** >212°F TAG CC

**EXTINGUISHING MEDIA:** Water spray, foam, CO2, dry chemical or any class B extinguishing agent.

**FIRE FIGHTING PROCEDURES:** For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Equipment should be thoroughly cleaned after use. Read the entire document.

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## 6. ACCIDENTAL RELEASE MEASURES

**SMALL SPILL:** Soak up spilled material with paper towels and discard in trash.

**LARGE SPILL:** Liquid spills on floor or other impervious surfaces should be contained or diked, and should be absorbed with attapulgate, bentonite or other absorbent clays. Collect contaminated absorbent, place in plastic-lined metal drum and dispose of in accordance with instructions provided under Section 13. "DISPOSAL". Thoroughly scrub floor or other impervious surface with a strong industrial type detergent solution and rinse with water.

For liquid spills that soak into the ground, contact the applicable Federal, State and or County Health Dept. for disposal recommendations. If disposal is required then refer to Section 13 "DISPOSAL" for instructions.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a drum or other non-leaking container and disposed of in accordance with instructions provided under Section 13 "Disposal". Any recovered spilled liquid should be similarly collected and disposed of.

Do not contaminate water, foodstuffs or feed by storage or disposal.

**GENERAL PROCEDURES:** Observe all protection and safety precautions when cleaning up spills -- see Section 8. "EXPOSURE CONTROLS/PERSONAL PROTECTION". For help with any spill, leak, fire or exposure involving this material, call day or night (800) 225-2883.

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## 7. HANDLING AND STORAGE

**GENERAL PROCEDURES:** Keep pesticide in original container. For containers larger than 24 oz.: Place sprayer nozzle under handle on container so the sprayer is not below level of contents of container to prevent leakage. Store in a secure, preferably locked, storage area. Protect container from freezing.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:** No special ventilation is necessary.

### PERSONAL PROTECTION

**EYES AND FACE:** For application of product in accordance with label instructions, no special eye protection is needed.

Where there is significant potential for eye contact, wear chemical goggles and have eye flushing equipment available.

**SKIN:** Although this product does not present a significant skin concern, minimize skin contamination by following good industrial practice. Wearing protective gloves is recommended. Wash hands and contaminated skin thoroughly after handling.

**RESPIRATORY:** Avoid breathing vapor or mist.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE:** Liquid

**APPEARANCE:** Clear liquid

**pH:** ~7.1 to 7.5

**SOLUBILITY IN WATER:** Soluble

**SPECIFIC GRAVITY:** 1.01 Water = 1.00 at 20°C

**VISCOSITY:** Same as water.

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## 10. STABILITY AND REACTIVITY

**STABLE:** YES

**HAZARDOUS POLYMERIZATION:** NO

**HAZARDOUS DECOMPOSITION:** None.

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## 11. TOXICOLOGICAL INFORMATION

### ACUTE

**EYES:** rabbit - moderately irritating, irritation cleared by test day 7.  
EPA FIFRA toxicity category - III.

**DERMAL LD<sub>50</sub>:** Practically non-toxic, (Rat) LD50 >5.0 gm/Kg; EPA FIFRA toxicity category - IV. Nonirritating to skin (Rabbit); EPA FIFRA toxicity category - IV.

**ORAL LD<sub>50</sub>:** Rat = >5.0 g/kg.  
EPA FIFRA toxicity category - IV.

**INHALATION LC<sub>50</sub>:** Practically non-toxic, (Rat 4-hr LC50 >10mg/L). EPA FIFRA toxicity category - IV.

**SENSITIZATION:** Guinea pig - no evidence of allergic skin reactions.

**CHRONIC:** Data from glyphosate laboratory toxicology studies were conducted with a formulation comprised of 62% isopropylamine salt of glyphosate (MON 0139).

Rabbits - 3 week dermal: Repeated daily primarily resulted in slight skin irritation.

Dogs - 6 month feeding: Only slight body weight changes noted.

Rats - 90 day feeding: No treatment related effects.

Mice - 90 day feeding: Decreased weight gains at the high dose level group animals.

### CARCINOGENICITY:

**CARCINOGENICITY COMMENTS: GLYPHOSATE:** Glyphosate is not considered to be a carcinogen. Glyphosate did not produce tumors in any of the long-term toxicology studies. EPA has classified glyphosate in category "E" (Evidence of noncarcinogenicity for humans).

Mice: 2-year feeding study. Reduced body weight gain and effects on liver tissues

were observed at high dose levels.

Rats: 2-year feeding study. Reduced body weight gain and eye changes were observed at the high dose level in one study, while no treatment related effects occurred in a second study conducted at lower dose levels.

Dogs: No adverse effects were observed in feeding studies with dogs.

**TERATOGENICITY: GLYPHOSATE:** No evidence of teratogenic effects. Results of rat and rabbit teratology studies indicate that no birth defects were noted. This included dose levels of glyphosate that were maternally toxic.

**REPRODUCTIVE TOXIN: GLYPHOSATE:** No evidence of adverse reproductive effects. Glyphosate was fed continuously to rats at very high dose levels for 2 successive generations. Toxicity was reported in offspring from the high dose, a level which also produced adverse effects on the mothers. In a 3-generation study conducted at lower dose levels, no effects were seen on the ability of male or female rats to reproduce.

**MUTAGENICITY: GLYPHOSATE:** Glyphosate has not produced any genetic changes in various mutagenicity tests involving animals and animal or bacterial cells.

**COMMENTS:** See Section 16 for definition of EPA FIFRA toxicity categories.

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## 12. ECOLOGICAL INFORMATION

**ECOTOXICOLOGICAL INFORMATION:** Monsanto has not conducted environmental toxicity studies with this product. Available data for a similar formulation are summarized below:

Aquatic Invertebrates:48-hr EC50 Daphnia magna:1,634 mg/L;Practically Nontoxic

Warmwater Fish:96-hr LC50 Silver orfe:491 mg/L;Practically Nontoxic

Coldwater Fish:96-hr LC50 Rainbow trout:322 mg/L;Practically Nontoxic

Algal Species:72-hr EC50 Selenastrum:15 mg/L;Slightly Toxic

Studies with the active ingredient indicate that this product would be practically nontoxic to avian species and honeybees. The results of degradation and bioconcentration studies with the active ingredient in this product indicate that it is rapidly adsorbed to soil, readily biodegrades in soil and water, and does not bioaccumulate.

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## 13. DISPOSAL CONSIDERATIONS

**FOR LARGE SPILLS:** Material collected that cannot be reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, State or local procedures.

**PRODUCT DISPOSAL:** Securely wrap partially filled or empty container in several layers of newspaper and discard in trash. Never pour product down any drain.

**EMPTY CONTAINER:** Do not reuse container except for refill in accordance with product label directions. If not used for refill, rinse thoroughly before discarding in trash.

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## 14. TRANSPORT INFORMATION

### DOT (DEPARTMENT OF TRANSPORTATION)

**PROPER SHIPPING NAME:** Not Regulated

**PRIMARY HAZARD CLASS/DIVISION:** None

**UN/NA NUMBER:** None

**PACKING GROUP:** No

**U.S. SURFACE FREIGHT CLASS:** Weed killing compounds, NOBIN.

### AIR (ICAO/IATA)

**PROPER SHIPPING NAME:** Not Regulated

**SPECIAL SHIPPING NOTES:** 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.

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## 15. REGULATORY INFORMATION

### UNITED STATES

**SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)**

PRODUCT CLASSIFICATION UNDER SECTION 311 OF SARA				
ACUTE: YES	CHRONIC: NO	FIRE: NO	REACTIVITY: NO	PRESSURE GENERATING: NO

**TSCA (TOXIC SUBSTANCE CONTROL ACT)**

**TSCA REGULATORY:** All non FIFRA regulated components are on the US EPA's TSCA Inventory List.

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**16. OTHER INFORMATION****HMIS CODES**

**FIRE: 0 HEALTH: 1 REACTIVITY: 0 PROTECTION: -**

**NFPA CODES**

**FIRE: 0 HEALTH: 1 REACTIVITY: 0 SPECIAL: -**

**APPROVAL DATE:** 10/31/2000

**REVISION SUMMARY** New MSDS

**MANUFACTURER SUPPLEMENTAL NOTES:** EPA FIFRA (Federal Insecticide, Fungicide and Rodenticide Act) Toxicity Categories: The EPA toxicity categories are based on the results of the acute toxicology studies. The toxicology findings are compared to the FIFRA criteria to determine the product label signal word, precautionary and first aid statements. The EPA FIFRA toxicity category summary:

EPA FIFRA Product Label Toxicity Rating  
Toxicity Category Signal Word

I DANGER Most toxic and irritating  
II WARNING  
III CAUTION  
IV CAUTION Least toxic and irritating

**COMMENTS:** For additional information concerning this product, call the Helpline at 800-225-2883.

**MANUFACTURER DISCLAIMER:** This Material Safety Data Sheet (MSDS) contains health, safety and environmental information for you and your employees. It does not replace the precautionary language, use directions, or the storage and disposal information found on the product label. Information contained in this MSDS will help you to prepare for emergency response and to meet community right-to-know, emergency response and reporting requirements under SARA Title III and many other laws. Emergency response agencies and health care providers will also find this additional information useful.

Use of this product is regulated by the U.S. Environmental Protection Agency (EPA) through the approved label copy. It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Monsanto Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determinations as to its suitability for their purposes prior to use. In no event will Monsanto Company be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

[http://www.roundup.com/product\\_info/msds/msds7070rtu1.htm](http://www.roundup.com/product_info/msds/msds7070rtu1.htm)

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