PROPANE

MATERIAL SAFETY DATA SHEET

MSDS File Number: 127

SECTION I - MATERIAL IDENTIFICATION AND USE

FLAMMABILITY	4
REACTIVITY	0
HEALTH (Acute)	1
(Chronic)	N

Material Name / Product Identifier

PROPANE - LIQUEFIED PETROLEUM GAS

Manufacturer's Name	Supplier's Name	Mfg Reference Number
Consumers' Co-operative Refineries Limited P. O. Box 260; 550E 9th Ave. North Regina, SK S4P 3A1 CANADA (306) 721-5353	Federated Co-operatives Limited P. O. Box 1050; 401 - 22nd Street East Saskatoon, SK S7K 3M9 Canada (306) 244-3447	
Emergency Telephone Number (613) 996-6666 (Canutec)	Emergency Telephone Number	

Chemical Name	Chemical Family	Chemical Formula
Propane	Liquefied Petroleum Gas (LPG)	N/A.

Molecular Weight	Trade Name and Synonyms	Material Use
N/A	UNSTENCHED/STANDARD PROPANE, HD-5 PROPANE	Manufacturing/Fuel.

SECTION II - HAZARDOUS INGREDIENTS OF MATERIALS

Hazardous Ingredients	Approximate Concentration %	C.A.S. Numbers	Exposure Limits	LD50 / LC 50 (Species and Route)
Propane(s)	100.0 %	74-98-6	(ACGIH) TLV-TWA 1,000 ppm	(LC50) Inhalation (rat) 280,000 ppm/4h
Stench (Ethyl Mercaptan)	0.0 - 50.0 ppm	75-08-1	(ACGIH) TLV-TWA 0.5 ppm	

SECTION III - PHYSICAL DATA FOR MATERIAL

Physical State	Odour and Appearance	Odour Threshold (ppm)	Specific Gravity
Liquefied Gas	Clear gas; Odor - Boiling cabbage if stenched.	4800	0.58

Vapour Pressure	Vapor Density (Air = 1)	Evaporation Rate	Boiling Point	Freezing / Pour Point
150 - 180 psia	1.56	N/A	- 42 C	-180 C (Freeze)

Solubility in Water (20 C)	% Volatiles	pH	Coefficient of water / oil distribution
6.5% by volume	100	N/A	N/A

SECTION IV - FIRE AND EXPLOSION HAZARD OF MATERIAL

Conditions of Flammability

Extremely flammable. May be readily ignited at temperatures at or above the flashpoint. Can form explosive mixtures with air. Increased risk of fire and explosion when combined with strong oxidizers.

Means of Extinction

Dry chemical, carbon dioxide. Use water spray to cool fire exposed containers and disperse vapours from leaks / spills that have not been ignited.

Special Procedures

Evacuate area. Wear full protective equipment and SCBA. Vapours are heavier than air and may travel to distant ignition sources and flash back. If possible, shut off source but do not extinguish flame until gas flow is shut off because explosive re-ignition exists. Remove cylinders from fire exposed area if possible to do so without risk.

Flash Point and Method	Upper Explosion Limit	Lower Explosion Limit	Auto Ignition Temperature
-101.1 C (Closed Cup)	9.5	2.3	432 C

Explosion Data - Sensitivity to Mechanical Impact	Explosion Data - Sensitivity to Static Discharge
N.D.	Can be ignited by static discharge.

SECTION V - REACTIVITY DATA

Chemical Stability	Yes.	If no, under which conditions?	Stable under normal conditions of storage and use (avoid excessive heat and sources of ignition).
Incompatibility to other substances	Yes.	If so, which ones?	Unstable with strong oxidizers.

Reactivity and under what conditions

Excessive heat, sources of ignition or contact with oxidizing materials may cause detonation. Rapid escape of liquid or vapour may generate static charge causing ignition. Hazardous polymerization will not occur.

Hazardous Decomposition and Combustion Products

Carbon monoxide, carbon dioxide, smoke.

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Material Name / Product Identifier: PROPANE - LIQUEFIED PETROLEUM GAS

SECTION VI - TOXICOLOGICAL PROPERTIES OF PRODUCT

Route of Entry: Skin Contact, Eye Contact, Inhalation.

Effects of Acute Exposure to Product

ntact with liquefied gas may cause frostbite or cold burns to skin or eyes. Propane acts as a simple asphyxiant as the oxygen content in the air is .splaced by the propane. At increasing concentration levels, propane may cause dizziness, headaches, loss of coordination, fatigue, unconsciousness and death.

Effects of Chronic Exposure to Product

There are no reported effects from long term low level exposures.

LD50 of Product	Irritancy of Product	Exposure Limits of Product
N.D.	Yes.	See 'Hazardous Ingredients'.
LC50 of Product	**Sensitization to Product**	**Synergistic materials**
N.D.	N.D.	N.D.

OTHER TOXICOLOGICAL EFFECTS: None.

The rapidity and severity of the narcosis increase with gas concentrations right up to the onset of severe hypoxia (oxygen deprivation) above about 15% propane gas in air and eventual unconsciousness and death above that. At high gas concentrations, the effects of narcosis and hypoxia may be difficult to distinguish as they are similar in many respects.

SECTION VII - PREVENTATIVE MEASURES

Personal Protective Equipment

If contact with liquid is possible, wear chemical resistant, insulated clothing.

Gloves	Eye Protection
Rubber and insulated.	Safety glasses or chemical goggles.

Respiratory

Not normally required if used in a well ventilated area. If safe exposure limits are exceeded, wear an air-supplied respirator (SCBA) or air line respirator equipped with an escape bottle.

Engineering Controls

Use only in well ventilated areas. Use with explosion proof mechanical ventilation in confined spaces or poorly ventilated areas. Lab samples should be handled with adequate ventilation (under a fume hood if necessary). Exhaust directly outdoors.

Leak and Spill Procedure

acuate and ventilate area. Eliminate all ignition sources. Contain (prevent entry into waterways). Use water spray to disperse vapors. Wear protective uipment, including SCBA. Stop leak if possible to do so without risk.

Waste Disposal

Incinerate in an approved furnace or allow propane to vaporize and disperse at a safe location.

Handling Procedures and Equipment

Transfer product using proper grounding and bonding procedures. Keep away from heat, sparks or open flames. Keep out of direct sunlight. EXPOSURE TO VAPORIZING LIQUID OR RAPIDLY EXPANDING GAS MAY CAUSE FROSTBITE! Avoid contact with skin or eyes. If contact with liquid is possible, wear chemical resistant, insulated clothing. Avoid breathing vapors. Use in well ventilated areas. Handle with care. Regularly inspect piping, valves and associated equipment.

Storage Requirements

Make sure vessel has no leaks and store in a cool, ventilated area away from oxidizers. Shut valve off when not in use.

Special Shipping Information

TDG: PROPANE Class 2.1 UN 1978.

SECTION VIII - FIRST AID MEASURES

Skin

Remove contaminated clothing. For frostbite, thaw frozen parts in luke warm water, then cover with blanket to keep warm. Seek immediate medical attention.

Eye

Flush with lukewarm running water for 15 minutes. Seek medical attention.

Inhalation

Rescuers should wear self contained breathing apparatus. Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek immediate medical attention.

Ingestion

Not likely (gas).

General Advice

Note to Physician: No specific treatment is indicated. Treat with support measure as appropriate to the patient's condition.

SECTION IX - PREPARATION OF M.S.D.S

W.H.M.I.S. Classification	N.F.C. Classification
-1.	

Sources Used

Available upon request.

Prepared By	Phone Number	Date
CCRL Safety Department	(306) 721-0564	January 2, 2007

MATERIAL SAFETY DATA SHEET

SECTION I – PRODUCT INFORMATION

Product Name: Propane
Trade Name: LPG (Liquefied Petroleum Gas)
Chemical Formula: C3H8
WHMIS Classification: Class A – Compressed Gas
Class B, Division I – Flammable Gas

Supplier:

Business:

Non-Medical Emergency:

Uses and Occurrence: Propane is commonly used as fuel for heating, cooking, automobiles, forklift trucks, crop drying and welding and cutting operations. Propane is used in industry as a refrigerant, solvent and as a chemical feedstock.

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

All components of this product are either on the Domestic Substances List (DSL) or are exempt.

SECTION II – HAZARDOUS INGREDIENTS

Components	CAS Registry No.	Proportion of Product	LC50	LD50
Propane	74-98-6	95% - 98%	N/A	N/A
Ethane	74-84-0	3% - 5%	N/A	N/A
Butane	106-97-8	1% - 3%	N/A	N/A
Iso-Butane	75-28-5	0.1% - 0.3%	N/A	N/A
Methane	74-82-8	0.1% - 0.2%	N/A	N/A

Note: Composition given is typical for Grade 1 Propane; exact composition will vary from shipment to shipment.

SECTION III – CHEMICAL AND PHYSICAL DATA

Form: While stored under pressure – liquid and/or vapour

Boiling Point: -42 °C atm

Freezing Point: -188 °C

Evapouration Rate: Rapid (Gas at Normal Ambient Conditions)

Vapour Pressure: 1,013 (kPa) @ 26.0 °C

Vapour Density: 1.52 (Air = 1)

Coefficient of Water/Oil Distribution: Not available

PH: Not available

Soluble in Water: 6.1% by Volume @ 17.8 °C and 753 mmHg

Specific Gravity: 0.51 (Water = 1)

Appearance: Colourless liquid and vapour while stored under pressure.

Colourless and odourless gas in natural state at any concentration.

Commercial propane has an odourant added which is commonly ethyl mercaptan which has an odour similar to boiling cabbage or rotten eggs.

Odour Threshold: 4800 PPM

See Note 1 - Odourants

SECTION IV – FIRE OR EXPLOSION HAZARD DATA

Flash Point: -103.4 °C **Method**: Closed Cup

Flammable Limits: Lower 2.4%, Upper 9.5%

Auto Ignition Temperature: 432 °C

Products Evolved Due to Heat or Combustion: Carbon monoxide can be produced when primary and secondary airs are deficient while combustion is taking place.

Fire and Explosive Hazards: Explosive air-vapour mixtures may form if allowed to leak to atmosphere.

Sensitivity to Impact: No

Sensitivity to Static Discharge: Yes

Fire Extinguishing Precautions: Use water spray to cool exposed cylinders or tanks. Do not extinguish fire unless the source of the escaping gas that is fuelling the fire can be turned off. Fire can be extinguished with carbon dioxide and/or dry chemical (BC). Container metal shells require cooling with water to prevent flame impingement and the weakening of metal. If weakening occurs, the area must be evacuated. If gas has not ignited, liquid and vapour may be dispersed by water spray or flooding.

Special Fire Fighting Equipment: Protective clothing, hose monitors, fog nozzles, self contained breathing apparatus.

SECTION V – REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chlorine dioxide.

Incompatibility: Remove sources of ignition and observe distance requirements for storage tanks from combustible material, drains, and openings to buildings.

Hazardous Decomposition Products: Deficient primary and secondary air can produce carbon monoxide.

Hazardous Polymerization: Will not occur.

SECTION VI – TOXICOLOGICAL PROPERTIES OF MATERIAL

ACUTE EXPOSURE:

Eyes: As a gas, none, Liquid causes "cold burns'.

Respiratory System: Little physiological effect at concentrations below 10.000 PPM. Higher concentrations may cause dizziness and unconsciousness due to asphyxiation.
SEE NOTE 2 – ASPHYXIANT.

Chronic Exposure: There are no reported effects from long-term low-level exposure.

Other: Liquid can cause burns and frostbite if in direct contact with skin.

Sensitization Properties: Skin – unknown, **Respiratory** – unknown.

Carcinogenicity: Not determined.
SEE NOTE 3 (NORM).

MEDIAN LETHAL DOSE:

Oral: Not applicable for gas.

Inhalation: Not determined.

Dermal: Not applicable for gas.

Other: Not determined.

IRRITATION INDEX:

Skin: No appreciable effect (gas).

Eyes: No appreciable effect (gas).

Symptoms of Exposure: Above 10,000 PPM – dizziness, stupor, unconsciousness. ***SEE NOTE 2 attached.*** American Conference of Governmental Industrial Hygienists (ACGIH) classifies propane as an asphyxiate; there is no recommended "Threshold Limit Value" (TLV).

Teratogenicity: Not determined.

Mutagenicity: Not determined.

SECTION VII – OCCUPATION CONTROL PROCEDURES

Eyes: Safety glasses, goggles, or face shield required when transferring product.

Skin: Insulated gloves if contact with liquid or liquid cooled equipment is expected. Wear gloves and long sleeves when transferring product.

Inhalation: In atmosphere, where the concentration of propane would reduce oxygen level below 18% in inhaled air, self contained breathing apparatus required.

SEE NOTE 3 – (NORM).

Ventilation: Explosion proof ventilation equipment required in confined spaces.

SECTION VIII – EMERGENCY AND FIRST AID PROCEDURES

FIRST AID:

Eyes: Should eye contact with liquid occur, flush eyes with lukewarm water for 15 minutes. Obtain immediate medical care.

Skin: In case of "Cold Burn" from contact with liquid, immediately place affected area in lukewarm water and keep at this temperature until circulation returns. If fingers or hands are frostbitten, have the victim hold his hand next to his body such as under the armpit. Obtain immediate medical care.

SPILL OR LEAK:

Eliminate leak if possible.

Eliminate source of ignition.

Ensure cylinder is upright.

Disperse vapours with hose streams using fog nozzles, watch for low area, as propane is heavier than air and can settle in low areas. Remain upwind of leak, keep people away.

Prevent vapour and/or liquid from entering into sewers, basements or confined areas.

SECTION 1X – TRANSPORTATION, HANDLING AND STORAGE

- Transport and store cylinders and tanks secured in an upright position in a ventilated space, away from ignition sources (so relief valve is in contact with vapour space of cylinder or tank).
- Cylinders that are not in use must have the valves in the closed position and be equipped with a protective cap or guard.
- Do not store with oxidizing agents, oxygen or chlorine cylinders.
- Transport, handle and store according to applicable federal and provincial regulations (CGA B149.2).
- ***SEE NOTE 4 – MAGNETIC RESIDUES.***

TDG Classification: 2.1 (gas)

TDG Shipping Name: Liquid Petroleum Gas (Propane)

TDG Special Provisions: 56, 90, and 102

PIN UN: 1075

SECTION X – PREPARATION INFORMATION

Prepared by: Canadian Propane Association
(613) 683-2270

Date prepared: July 2012

The information contained herein is believed to be accurate. It is provided independently of any sale of the product. It is not intended to constitute performance information concerning the product. No express warranty or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product information contained herein.

This information is in addition to the information supplied on the MSDS and forms a part of the MSDS by reference to note numbers indicated:

NOTE 1 - ODOURANTS:

Odourants are not completely effective warning agents in all cases.

Certain odourants are polar and/or chemically reactive and may be depleted by reaction or absorption.

Sensitivity to odourants differs from person to person and may decrease with age or impaired physical conditions such as colds or respiratory allergies.

Prolonged exposure to odourants can create desensitization to the odour.

NOTE 2 - ASPHYXIANT AND NARCOTIC EFFECTS OF PROPANE:

LPG's can displace air and can act as an asphyxiant. Lack of oxygen may cause dizziness, headaches, diminished awareness, faulty judgment, increase in fatigue and impaired muscular co-ordination. If these symptoms are identified while working in close proximity to propane that is released, go immediately into a fresh air environment.

LPG's are anaesthetic gases within the upper explosive limits and higher concentrations. A person working around propane in an enclosed space or in close proximity to a propane source such as filling cylinders, purging lines, investigating leaks, etc. who feels light-headed, dizzy, drunken, sleepy, or intoxicated should go immediately into fresh air. This narcotic effect may impair a person's judgment temporarily but will rapidly disappear in fresh air.

NOTE 3 - NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM):

Sludges and tank scale from propane storage tanks, bulk delivery truck tanks, railway tank cars, and fuel filters and strainers screens may contain Naturally Occurring Radioactive Material (NORM) in the form of lead 210.

Equipment used for the transfer of propane such as propane piping and hoses, pumps and compressors may have detectable levels of radioactive lead 210 on inner surfaces.

Workers involved in cleaning, repair or maintenance on inner surfaces of such equipment should avoid breathing dust generated from such activities. Suitable codes of practice should be developed for the activities, detailing appropriate occupational hygiene and disposal practices.

NOTE 4 - MAGNETIC RESIDUES IN PROPANE:

Magnetic residues generated in automotive fuel tanks from "mill scale" or corrosion processes may impair the operation of magnetic gauges and electronic solenoid valves.

Collection of gross amounts of solid residues can affect the proper operation of lock offs, mixers, pressure release valves, etc.

Solid residues could contain NORM (see note 3).

Liquefied Petroleum Gas

Material Safety Data Sheet

1. Product and Company Identification

Product Name:	Liquefied Petroleum Gas
Synonym:	LPG, Propane
Product use:	Fuel, Petroleum Feedstock
Manufacturer:	ARC Resources Ltd.
Address:	Suite 2100, 440 2nd Street SW Calgary, AB, T2P 5E9
Emergency Contact:	403-292-0434
Canutec:	(613) 996-6666 or Cellular *666

2. Hazards Identification

EMERGENCY OVERVIEW

Danger!! This product is extremely flammable and will be easily ignited by heat, sparks or flames. Will form explosive mixtures with air. Vapours from liquefied gas are initially heavier than air and spread along ground. Vapors may travel to source of ignition and flash back. Vapors may cause dizziness or asphyxiation without warning. Some may be irritating if inhaled at high concentrations. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases.

POTENTIAL HEALTH EFFECTS/ROUTES OF EXPOSURE

Eyes: This product is a moderate to severe irritant of the eyes. Contact with liquid will cause cryogenic (freezer) burns or frostbite. Vapors may cause irritation to the eyes, conjunctiva, and mucous membranes, causing redness and tearing.

Skin: This product is a moderate to severe irritant of the skin. Direct contact with liquid will cause cryogenic (freezer) burns or frostbite. The appearance of injury may be delayed for a few hours, but may cause tissue to become swollen, discolored and extremely painful; permanent damage or death may result without adequate medical treatment.

Ingestion: LPG is extremely unlikely to be swallowed and much more likely to be inhaled.

Inhalation: Vapors may cause nose and throat irritation, anesthetic effects and central nervous system (CNS) depression. Inhalation may result in dizziness, drowsiness, headaches, dizziness, mood disturbances, numbness of the extremities, sleepiness, mental confusion, poor judgment and coordination, and memory loss may occur. An increased pulse rate may occur. Hyperventilation may develop.

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, carbon dioxide resulting in oxygen deficiency that may result in unconsciousness, suffocation, and even death.

3. Composition/Information on Ingredients

Ingredient Name	%	CAS No.
Liquefied Petroleum Gas	100	68476-85-7
Propane	90-99	74-98-6
Ethane	0-5	74-84-0
Propylene	0-5	74-98-6
n-Butane	0-2.5	106-97-8
iso-Butane	0-2.5	75-28-5

Liquefied Petroleum Gas is gaseous hydrocarbon which is produced through a refrigeration process and is used as refinery feedstock and fuel. This product is a complex mixture consistent with the definition within WHMIS regulation CPR section 2. The listed components are provided as guidance based on the available knowledge of the commingled stream.

4. First Aid Measures

Eyes: In case of contact with eyes, immediately flush with clean, low-pressure water for at least 20 min. Hold eyelids open to ensure adequate flushing. Seek medical attention immediately. Eye damage may occur as contact with liquid may cause cryogenic burns.

Skin: This material will cause cryogenic (freezer) burns. Bathe the affected area in warm water as soon as possible. Remove clothing unless stuck to a burn area in which case cut around the burn leaving cloth fixed to the burn. Do not rub burns! Seek medical attention immediately.

Ingestion: This product is naturally a gas and is unlikely to be ingested and more likely to be inhaled. This material will cause cryogenic (freezer) burns to skin and other tissues. Rinse mouth with water.

Inhalation: Ensure your own safety and use the appropriate respiratory protection to immediately remove the victim to an uncontaminated area. Give CPR or artificial respiration as needed and give oxygen if breathing is difficult. Keep victim at rest and get immediate medical attention.

5. Fire Fighting Measures

FLAMMABLE PROPERTIES

Flammable gas

HAZARDOUS COMBUSTION PRODUCTS:

Carbon dioxide and/or carbon monoxide will be produced upon combustion.

FIRE AND EXPLOSION HAZARDS

This product is EXTREMELY FLAMMABLE. DO NOT ATTEMPT TO EXTINGUISH A LEAKING GAS FIRE UNLESS THE LEAK CAN BE STOPPED. Vapors will ignite easily in the presence of any source of ignition over a wide range of concentrations and even at very low temperatures. Containers may explode when heated. Ruptured cylinders may rocket.

EXTINGUISHING MEDIA

Dry chemical, foam or CO2 may be used according to the manufacturer's recommended technique. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed

containers. Consider initial downwind evacuation for at least 800 meters (1/2 mile). Cool containers with large quantities of water until well after the fire has been put out. Do not direct the water stream at the source of the leak or safety devices as icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. Fight fires from maximum distance and for massive fires, use unmanned hose holders or monitor nozzles. If this is not possible, withdraw from the area and let the fire burn.

FIRE FIGHTING INSTRUCTIONS

Small fires in the early stages may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment. When fighting fires may result in potential exposure to high heat, smoke or toxic byproducts of combustion, an approved self-contained breathing apparatus (SCBA) with full-face piece and full turnout gear must be worn. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with large quantities of water.

UNUSUAL FIRE & EXPLOSION HAZARDS:

This product is lighter than air and vapours may collect in the upper part of buildings. Burning occurs with a slightly luminous flame and very little noise. Pressurized containers of gas may explode due to heat generated by fires.

7. Handling and Storage

ACTIVATE SITE SPECIFIC EMERGENCY RESPONSE PLAN, IF AVAILABLE

Small Spills: Remove all ignition sources. Ventilate area of leak. Stop flow of gas. Do not attempt to extinguish a fire unless the leak can be stopped.

Large Spills: CALL Emergency Response Activation Telephone Number. Isolate spill or leak area immediately for at least 50 to 100 meters (160 to 330 feet) in all directions. Keep unauthorized personnel away and stay upwind. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Keep out of low areas. The proper use of water spray may effectively disperse product vapours, preventing contact with ignition sources or areas /equipment that require protection. Do not discharge solid water stream pattern into the liquid resulting in splashing. Do not flush down sewer or drainage systems. Protect bodies of water by dyking, if possible.

Evacuation: Fire: If tank, rail car or tank truck is involved in a fire, ISOLATE for l600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

Attention: Ensure your own safety and use the appropriate respiratory protection. An approved self-contained breathing apparatus (SCBA) with full-face piece may be required. The application of water and/or fire fighting foam may cause spilled liquids to generate increased amounts of vapours, particularly when the water/foam temperature is warmer than the liquid. However, this effect may be desirable under certain conditions to evaporate a spill quickly. Consideration should be given to environmental clean-up and waste material generation when deciding if the use of large volumes of water is appropriate for non-fire emergency situations. Clean-up crews must be properly trained and must utilize proper protective equipment.

7. Handling and Storage

HANDLING PRECAUTIONS

Handle as a flammable gas. Keep away from heat, sparks, and open flame. No smoking or open flame in storage, use of handling areas. Keep containers closed and clearly labeled. Ground all containers and transfer vessels when handling. Empty product containers or vessels may contain explosive vapours. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Use only with adequate ventilation and avoid breathing vapours. Wash thoroughly after handling. Electrical equipment must be approved in classified areas. An emergency eye wash station must be available in the vicinity of any potential splash exposure.

STORAGE PRECAUTIONS

Outside storage is recommended. Store in a cool, dry and well ventilated area out of sunlight and away from all sources of ignition. Avoid storage in confined locations or near incompatible materials such as other flammable materials, oxidizers or materials that support combustion. This 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".

SPECIAL PRECAUTIONS

Store away from oxidizers such as oxygen, chlorine, bromine and peroxides.

WORK/HYGIENIC PRACTICES

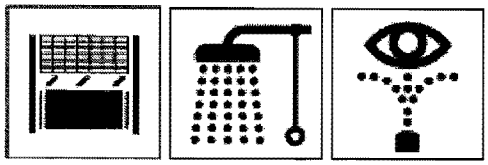
Use good personal hygiene practices. Avoid skin exposure and wash hands before eating, drinking, smoking, or using toilet facilities. Do not eat, drink or smoke in areas of use or storage. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapours which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM)

Industry experience indicates that propane contains small amounts of a radioactive gas called radon; radon decays into other radioactive products (called radon daughters). These naturally occurring radioactive materials (called NORM) can accumulate in production and process equipment handling propane liquids. Scales, deposits, and sludge from this equipment may have a significant accumulation of NORM. Gamma radiation above background may be detected external to equipment contaminated with NORM; such equipment should be assumed to be internally contaminated with long half-life decay products that emit alpha radiation, which is a radiation hazard if inhaled. Steps should be taken to minimize skin and inhalation exposure to NORM dusts/mists by wearing personal protective clothing [such as disposable Tyvek (®DuPont)], utilizing respiratory protection (minimum of HEPA filter), and practicing good personal hygiene. Please refer to API Bulletin E2, "Bulletin on Management of Naturally Occurring Radioactive Materials in Oil and Gas Production", April 1, 1992 for additional information on managing NORM.

8. Exposure Controls / Personal Protection

ENGINEERING CONTROLS



Ensure adequate ventilation to keep vapour and gas concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Ventilation system and other electrical equipment must be approved for flammable areas. Quick drench facilities and/or eyewash stations should be provided within the immediate work area for emergency use when there is any possibility of exposure to liquids that are extremely cold or rapidly evaporating.

PERSONAL PROTECTIVE EQUIPMENT

in emergencies 

Eye/Face Protection: Wear safety glasses with side shields, chemical goggles or a full-face shield to avoid burns or tissue damage from frostbite.

Skin Protection: Avoid repeated or prolonged skin contact. Wear fire retardant clothing and insulated chemical resistant gloves in order to prevent the potential of frostbite or cryogenic burns.

Respiratory Protection: This product is a known asphyxiant and air supplied respirators are required if there is a potential for decreased oxygen concentrations. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are unknown, or any other circumstance exist where an air-purifying respirator may not provide adequate protection. When assessing the proper type of respiratory protection, also consider the occupational exposure limits applicable to individual ingredients. Refer to CSA Standard "Selection, Use and Care of Respirators" (Z94.4-02) and NIOSH Respirator Decision Logic for additional guidance on respiratory protection.

Ingredient Name	CAS No.	Exposure Limits
Liquefied Petroleum Gas	68476-85-7	ACGIH TLV-TWA = 1,000 ppm (Alkane C1-C4)
Propane	74-98-6	ACGIH TLV-TWA = 1,000 ppm (Alkane C1-C4)
Ethane	74-84-0	ACGIH TLV-TWA = 1,000 ppm (Alkane C1-C4)
Propylene	115-07-1	ACGIH TLV-TWA= 500ppm
n-Butane	106-97-8	ACGIH TLV-TWA = 1,000 ppm (Alkane C1-C4)
iso-Butane	75-28-5	ACGIH TLV-TWA = 1,000 ppm (Alkane C1-C4)

9. Physical and Chemical Properties

Appearance and state:	Colourless gas
Odour:	Slight hydrocarbon that may not be detected by all. An odorant can be added with a foul rotten egg odour.
Odour Threshold:	500 ppm with odorant 5,000 to 20,000 ppm without odorant
Flash Point:	-104°C (Tagliabue CC) FLAMMABLE GAS
Auto Iignition:	466°C (871°F)
Lower Explosive Limit (%):	2.1%
Upper Explosive Limit (%):	9.5%
Boiling Point:	-88°C (-126.4°F)
Melting Point:	-172°C(-277.6°F)
Vapour Pressure:	760 mmHg @ 25 °C
Vapour Density (Air = 1):	1.56 @ 0 °C
Specific Gravity:	0.446 @0 °C
Solubility (H_2o):	Slightly soluble
Percent Volatiles:	100%
Evaporation Rate:	Not Applicable gas
Octanol/Water Coefficient:	log Kow = 1.81

10. Stability and Reactivity

STABILITY
Stable

CONDITIONS TO AVOID (STABILITY)
Avoid high temperatures, open flames, sparks, welding, smoking and other ignitions sources.

INCOMPATIBLE MATERIALS
Avoid contact with strong oxidizers such as peroxides, chlorines, nitrates or perchlorates.

HAZARDOUS DECOMPOSITION PRODUCTS
Thermal decomposition will produce carbon dioxide and carbon monoxide.

HAZARDOUS POLYMERIZATION
Will Not Occur

11. Toxicological Information

Chemical Name	CAS No.	LD50	LC50
Liquefied Petroleum Gas	68476-85-7	Not applicable	Not available
Propane	74-98-6	Not applicable	Not available
Ethane	74-84-0	Not applicable	Not available
Propylene	115-07-1	Not applicable	Not available
n-Butane	106-97-8	Not applicable	658mg/l rat
iso-Butane	75-28-5	Not applicable	Not available

POTENTIAL HEALTH EFFECTS

Acute effects: At very high concentrations, this product is a simple asphyxiant and may displace air resulting in suffocation, CNS depression, dizziness, confusion, asphyxia, drowsiness, narcosis,

headache, muscle weakness, numb extremities and even unconsciousness or chemical pneumonia (aspiration of liquid). If rapidly escaping gas comes in contact with skin this product may result in frostbite and dermatitis.

Chronic effects: In prolonged periods of high concentrations, this product is a simple asphyxiant and may displace oxygen primarily resulting in chronic hypoxia including effects such as decreased night vision, increased respiration, decreased alertness, fatigue, tunnel vision and headache. .

Sensitization: Ethane, propane and butane are considered cardiac sensitizers.

Mutagenicity: Not mutagenic.

Reproductive effects: Not known to cause reproductive effects.

Carcinogenicity: Ingredients are not identified as carcinogens by IARC, NTP or ACGIH.

Target organs: CNS (central nervous system), heart.

12. Ecological Information

This product is volatile and disperses rapidly. It is not toxic to aquatic organisms and does not concentrate in the food chain. However, keep out of sewage, drainage and waterways. Report spills and releases, as applicable, under provincial and local regulations.

13. Disposal Considerations

Vent to a safe location and ensure dissipation of gas is below the LEL or incinerate through a flaring system. Preferred waste management priorities are recycle, reprocess or incinerate with heat recovery.

14. Transport Information

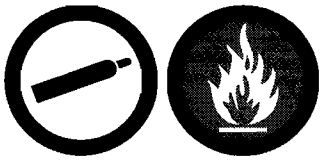
This material is transported via pipeline and does not enter the public transportation system. i.e. rail, highway, air or water. If the material will be entering the public transportation system, for movement of samples the following information will apply.

PROPER SHIPPING NAME:	**LPG, compressed**
PRIMARY TDG CLASS:	**2.1**
SECONDARY TDG CLASS:	**Not Applicable**
TDG IDENTIFICATION NUMBER:	**UN1075**
PACKING GROUP:	**Not Applicable**
ERG #:	**115**

15. Regulatory Information

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

Workplace Hazardous Materials Information Systems (WHMIS): This product has been classified in accordance with the hazard criteria of the CPR (Controlled Product Regulations), and the MSDS contains all of the information required by the CPR. This material is classified as:



Class A – Compressed Gas
Class B1 – Flammable Gas

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
All components of this product are listed on the Canadian DSL Inventory.

Risk Phrases: 12
Extremely flammable.

Safety Phrases: 9-16-20/21-33-36/37/39-45

Keep away from sources of ignition - No smoking. When using do not eat, drink or smoke. Wear suitable protective clothing, gloves and eye/face protection. Take precautionary measures against static discharges. In case of accident or if you feel unwell, seek medical advice immediately.

16. Other Information

Prepared for:	ARC Resources Safety Department
Preparation information:	403.503.8600
Prepared by:	Deerfoot Consulting Inc.

Disclaimer of Expressed and Implied Warranties

The information presented in the Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. However, neither Arc Resources, Deerfoot Consulting Inc nor any of their subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use.

RUSTOLUEM SPRAY PAINT

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700

1. Identification

Product Name: PRO LSPR 6PK SAFETY HUNTER GREEN **Revision Date:** 10/29/2012

Identification Number: 7538838

Product Use/Class: Topcoat/Aerosols

Supplier:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Manufacturer:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Harmful if swallowed. Extremely flammable liquid and vapor. Vapors may cause flash fire or explosion. Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Contents Under Pressure.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May be absorbed through the skin in harmful amounts. Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. High vapor concentrations are irritating to the eyes, nose, throat and lungs.

EFFECTS OF OVEREXPOSURE - INGESTION: Substance may be harmful if swallowed. Aspiration hazard if swallowed; can enter lungs and cause damage.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). Contains Titanium Dioxide. Titanium Dioxide is listed as a Group 2B-"Possibly carcinogenic to humans" by IARC. Significant exposure is not anticipated during brush application or drying. Risk of overexposure depends on duration and level of exposure to dust from repeated sanding of surfaces or spray mist and the actual concentration of Titanium Dioxide in the formula. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
iquefied Petroleum Gas	68476-86-8	30.0	N.E.	N.E.	N.E.	N.E.
cetone	67-64-1	25.0	500 ppm	750 ppm	1000 ppm	N.E.
Alkyd Resin	Proprietary	20.0	N.E.	N.E.	N.E.	N.E.
n-Butyl Acetate	123-86-4	15.0	150 ppm	200 ppm	150 ppm	N.E.
Xylene	1330-20-7	10.0	100 ppm	150 ppm	100 ppm	N.E.
Barium Sulfate	7727-43-7	5.0	10 mg/m3	N.E.	15 mg/m3	N.E.

Propylene Glycol Monobutyl Ether	5131-66-8	5.0	N.E.	N.E.	N.E.	N.E.
Ethylbenzene	100-41-4	5.0	20 ppm	125 ppm	100 ppm	N.E.
ellow Iron Oxide	51274-00-1	5.0	5 mg/m3	N.E.	10 mg/m3	N.E.
Solvent Naptha, Light Aromatic	64742-95-6	1.0	N.E.	N.E.	N.E.	N.E.
Titanium Dioxide	13463-67-7	1.0	10 mg/m3	N.E.	15 mg/m3 [Total Dust]	N.E.
Toluene	108-88-3	1.0	20 ppm	N.E.	200 ppm	300 ppm

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

5. Fire-fighting Measures

Flash Point, °F -156 (Setaflash)

EXTINGUISHING MEDIA: Alcohol Foam, Carbon Dioxide, Dry Chemical, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20 °. F. - EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Contents under pressure. Do not expose to heat or store above 120 ° F.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking.

9. Physical and Chemical Properties

Vapor Density	Heavier than Air	**Odor:**	Solvent Like
Appearance:	Aerosolized Mist	**Evaporation Rate:**	Faster than Ether
Solubility in Water:	Slight	**Freeze Point:**	N.D.
Specific Gravity:	0.805	**pH:**	N.A.
Physical State:	Liquid		

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120 ° F. Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

Chemical Name	LD50	LC50
Liquefied Petroleum Gas	N.E.	N.E.
Acetone	5800 mg/kg (Rat)	50100 mg/m3 (Rat, 8Hr)
Alkyd Resin	N.E.	N.E.
n-Butyl Acetate	13100 mg/kg (Rat, Oral)	2000 ppm (Rat, Inhalation, 4 Hr)
Xylene	4300 mg/kg (Rat, Oral)	5000 ppm (Rat, Inhalation, 4Hr)
Barium Sulfate	N.E.	N.E.
Propylene Glycol Monobutyl Ether	2200 mg/kg (Rat, Oral)	N.E.
Ethylbenzene	3500 mg/kg (Rat, Oral)	N.E.
Yellow Iron Oxide	>5000 mg/kg (Rat, Oral)	N.E.

Solvent Naptha, Light Aromatic	4700 mg/kg (Rat, Oral)	3670 mg/kg (Rat, Inhalation)
Titanium Dioxide	>7500 mg/kg (Rat, Oral)	N.E.
Toluene	636 mg/kg (Rat, Oral)	>26700 ppm (Rat, Inhalation, 1Hr)

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state and federal regulations and ordinances. Do not allow to enter waterways, wastewater. soil, storm drains or sewer systems.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)
Proper Shipping Name:	Consumer Commodity	Aerosols	Aerosols
Hazard Class:	ORM-D	2.1	2.1
UN Number:	N.A.	UN1950	UN1950
Packing Group:	N.A.	N.A.	N.A.
Limited Quantity:	No	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA ' Hazard Categories ' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS-No.
Xylene	1330-20-7
Ethylbenzene	100-41-4
Toluene	108-88-3

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b)components exist in this product.

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: AB% D2A D2B

16. Other Information

HMIS Ratings:

Health:	3*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA Ratings:

Health:	3	**Flammability:**	4	**Instability**	0

REASON FOR REVISION: Regulatory Update

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

No Information

SPRAY NINE

Permatex, Inc.
10 Columbus Blvd.
Hartford, CT 06106 USA
Telephone: 1-87-Permatex
(877) 376-2839
Emergency: 800-255-3924
International Emergency: +01-813-248-0585

Canadian Corporate Office:
ITW Permatex Canada
8450 Lawson Road, Unit 1
Milton, ON L9T 0J8
Toll Free: (800) 924-6994
(905) 693-8900
Emergency: ChemTel (800) 255-3924

Material Safety Data Sheet

1. PRODUCT IDENTIFICATION

Product Name: **Spray Nine®**
Product Type: **Multi-Purpose Germicidal Cleaner**

Product Trade Name: **26824**

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight%	ACGIH; TLV-TWA	OSHA PEL
2-BUTOXYETHANOL 111-76-2	1-5	20 ppm	50 ppm; 240 mg/m^3
ETHOXYLATED C9-C11 ALCOHOLS 68439-46-3	1-5	NA	NA

3. HAZARDS IDENTIFICATION

Effects of Acute Exposure: Product may cause reversible eye and skin irritation.
May irritate respiratory system upon frequent or prolonged use

Primary Routes of Entry: Eye and skin contact, inhalation

Signs and Symptoms of Exposure: Overexposure may cause eye and skin redness May cause inflammation of mucous membranes and irritation Ingestion may cause nausea and vomiting

Medical Conditions Recognized as Being Aggravated by Exposure: None known. Preexisting eye, skin and respiratory disorders may be aggravated by overexposure to this product.

Chronic Health Hazard None known

4. FIRST AID MEASURES

Eye Contact: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Contact a physician if irritation persists.

Skin Contact: Immediately remove contaminated clothing and excess contaminant. Flush with water for at least 15 minutes. Wash thoroughly with soap and water. Consult a physician if irritation develops

Ingestion: If swallowed, DO NOT induce vomiting. Give victim water, call a physician immediately. Never give anything by mouth to an unconscious person

Inhalation: Move to fresh air; get medical attention if symptoms persist

Notes to Physician: Treat symptomatically

5. FIRE FIGHTING MEASURES

Flash Point °F(C°): 182°F/83°C TCC
Recommended Extinguishing Media: Carbon dioxide, Dry chemical, Foam
Special Fire-Fighting Procedures: Wear suitable protective equipment. Use water spray to cool exposed containers.
Hazardous Products of Combustion: Oxides of carbon, Oxides of nitrogen
Unusual Fire/Explosion Hazards: Does not sustain combustion (ASTM D4206).
Sensitivity to Static Discharge: Sensitivity to static discharge is not expected
Mechanical Sensitivity: None reasonably foreseeable

Product Name: Spray Nine®

5. FIRE FIGHTING MEASURES

Lower Explosive Limit: Not determined
Upper Explosive Limit: Not determined

6. ACCIDENTAL RELEASE MEASURES

Spills may cause slippery floors. Prevent spill from entering drainage/sewer systems, waterways and surface water. Notify local health authorities and other appropriate agencies if such contamination occurs.

7. HANDLING AND STORAGE

Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place. Store below 100°F. Do not allow freezing.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eyes: Safety glasses
Skin: Chemical resistant gloves
Ventilation: Use only in well ventilated area.
Respiratory Protection: Not required under normal use

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, colorless to slightly colored solution	**Odor:**	Mild
Boiling Point:	~212°F/~100°C	**Freezing Point:**	~32°F/ ~0°C
pH:	~12.6	**Solubility in Water:**	Completely soluble
Specific Gravity:	~1.022 g/ml	**Vapor Pressure:**	~18 mm Hg
Vapor Density (Air=1):	>1	**% Volatile:**	~95
VOC(Wt.%):	<4% by weight	**Evaporation Rate:**	<1 (butyl acetate = 1)

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Hazardous Polymerization: Will not occur.
Incompatabilities: Strong oxidizers
Conditions to Avoid: Avoid temperatures greater than 100°F. Freezing conditions.
Hazardous Products of Combustion: Oxides of carbon, Oxides of nitrogen

11. TOXICOLOGICAL INFORMATION

Product Toxicity

Eyes:	**Skin:**	**Inhalation LC50:**	**Oral LD50:**
Draize Test: 27.3 out of 110	Draize Test 2.5 out of 10 LD50: >5,000 mg/kg (Rat)	>200 g/L (Rat)	>5,000 mg/kg (Rat)

12. ECOLOGICAL INFORMATION

No data available

13. DISPOSAL CONSIDERATIONS

Disposal should be made in accordance with federal, state and local regulations.

14. TRANSPORTATION INFORMATION

Ground Transport (DOT)

DOT Shipping Name: Not Regulated
Hazard Class: None
UN/ID Number: None

TDG(Transport of Dangerous Goods) Canada

Proper Shipping Name: Not Regulated
Hazard Class: None
UN/ID No: None

15. REGULATORY INFORMATION

SARA 302 Extremely Hazardous Substances: None

15. REGULATORY INFORMATION

SARA 313 Toxic Chemicals:	2-butoxyethanol (Glycol ethers)
SARA (311, 312) Hazard Class:	Acute health hazard
TSCA Inventory Status:	All components of this product are listed (or exempt) on the EPA TSCA inventory.
California Proposition 65:	No California Prop 65 chemicals are known to be present.
WHMIS Hazard Class:	Exempt

16. OTHER INFORMATION

HEALTH 1, FLAMMABILITY 0, PHYSICAL HAZARD 0, PERSONAL PROTECTION B
HMIS is a registered trademark of the National Paint and Coatings Assn.

Estimated NFPA Rating:
HEALTH 1, FLAMMABILITY 0 , REACTIVITY 0
NFPA is a registered trademark of the National Fire Protection Assn.

Prepared By:	Denise Boyd, Manager-Environmental, Health & Safety	**Revision Date:** February 10, 2010
Company:	Permatex. Inc. 10 Columbus Blvd. Hartford, CT USA 06106	**Formula Index:** 04
Telephone No.:	1-87-Permatex (877) 376-2839	

DISCLAIMER OF LIABILITY:
The information contained herein is based on data we believe to be reliable as of the date of preparation of the Material Safety Data Sheet. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products may be used. We assume no liability or responsibility for loss or damage resulting from the improper or abnormal use or handlling of our products, from incompatible product combinations, from the failure to follow instructions and warnings in the product's label and Material Safety Data Sheet, or from any failure to adhere to recommended practices.

TORQ-GARD SUPREME ENGINE OIL (5W/30)

DEERE & COMPANY
John Deere Road, Moline, IL 61265
1-800-822-8262

Material Data Safety Sheet

JOHN DEERE PRODUCT NAME: **Torq-Gard Supreme Engine Oil (5W/30)**

DATA SHEET NO: 8503-40,175
LATEST REVISION DATE: 15 Oct. 1999
DEERE CODE: XN
JDM PART NO: TY22064, TY22065, TY22066
Part Nos. TY6359, TY6360, TY6361 end 2/95

SECTION I - PRODUCT IDENTIFICATION

CHEMICAL NAME AND SYNONYMS: Lubricating Oil
CHEMICAL FAMILY: Hydrocarbon FORMULA: Complex

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	TLV/PEL	V.P.	CAS.#
Solvent refined, hydro-treated heavy paraffinic distillate	40-45	5 mg/m^3*	-	64742547
Solvent refined, hydro-treated middle distillate	35-40	5 mg/m^3*	-	64742467
Additive package **	< 20	None	-	Mixture

* for oil mists

** The specific chemical identity of this component is considered trade secret information.

SECTION III - PHYSICAL DATA

BOILING POINT: N.A.
% VOLATILE VOLUME: N.A.
VAPOR DENSITY: N.A.
APPEARANCE/ODOR: light brown/slight odor
SP. GRAVITY (WATER=1): 0.88
EVAPORATION RATE: N.A.
SOLUBILITY IN WATER: Insoluble
N.A. - not available

SECTION IV - FIRE & EXPLOSION HAZARD DATA

FLASH POINT: 365° F P.M.C.C.
FLAMMABLE LIMIT - LEL: N.A.
EXTINGUISHING MEDIA: Water fog, foam, dry chemical, carbon dioxide, or halogenated agents.
SPECIAL FIRE FIGHTING PROCEDURES: Do not use a direct stream of water. Product will float and can be reignited on surface of water. Cool fire exposed containers with water. Use NIOSH approved self-contained breathing apparatus.

UNUSUAL FIRE & EXPLOSION HAZARDS: None

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---------- SECTION V - HEALTH HAZARD DATA ----------

EXPOSURE LIMIT: See Section II - Hazardous Ingredients
EFFECTS OF OVEREXPOSURE: Exposure to vapors or mists may cause mild upper respiratory tract irritation. Prolonged or repeated contact may cause various skin disorders such as dermatitis, oil acne, or folliculitis. Eye contact is minimally irritating. Effects of ingestion are expected to be relatively non-toxic. Preexisting skin and respiratory disorders may be aggravated by exposure to this product.
EMERGENCY & FIRST AID: Eyes - flush with water 15 minutes. Skin - remove contaminated clothing; wash skin with soap and water; if material is injected under the skin, do not wait for symptoms to develop - get medical attention promptly to prevent serious damage. Inhalation - remove victim to fresh air and provide oxygen if breathing is difficult. Ingestion - do NOT induce vomiting. In all cases seek medical attention.

---------- SECTION VI - REACTIVITY DATA ----------

STABILITY: Stable
INCOMPATIBILITY: Avoid open flame, and oxidizing materials
HAZARDOUS POLYMERIZATION: Will not occur
DECOMPOSITION PRODUCTS: Dependent on combustion conditions. A complex mixture of airborne solid liquid and gas will evolve when this material undergoes pyrolysis or combustion. Oxides of carbon, sulfur, phosphorous, and other unidentified organic compounds may be formed.

---------- SECTION VII - SPILL OR LEAK PROCEDURE ----------

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Dike and contain. Use vacuum or an absorbent such as clay or sand to pick up. Flush area with water to remove trace residue. NOTE: This product is classified as an oil under the Clean Water Act. Spills, entering surface waters or any watercourse or sewer leading to surface waters, must be reported to the National Response Center 800-424-9802.
WASTE DISPOSAL METHOD: In accord with federal, state, and local regulations

---------- SECTION VIII - PROTECTIVE EQUIPMENT INFORMATION ----------

VENTILATION: Local exhaust to keep TLV/PEL below acceptable levels
RESPIRATOR: NIOSH approved as needed EYE WEAR: Recommended
GLOVES: Recommended to minimize skin contact OTHER:

---------- SECTION IX - SPECIAL PRECAUTIONS ----------

Minimize skin contact. Wash with soap and water before eating, smoking, or using toilet facilities. Launder contaminated clothing before reuse. Store in a cool, dry place with adequate ventilation. Keep away from open flames. Keep away from children.

---------- SECTION X - DATA PREPARATION ----------

NAME: T. M. Snyder, CIH TITLE: Industrial Hygienist

SIGNATURE: DATE: October 27, 1999

The information contained herein is believed to be accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. 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. Furthermore, vendee assumes the risk in use of the material.

TREMCLAD SPRAY PAINT

Material Safety Data Sheet

24 Hour Assistance
1-847-367-7700
Rust-Oleum Corporation
www.rustoleum.com

Section 1 – Chemical Product / Company Information

Product Name	Rust Inhibitor	Revision Date	07/08/2005
Identification Number	224284		
Sku Number	224284		
Product Use/Class	Rust Inhibiting Spray		
Supplier	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA	Manufacturer	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA
Preparer	Regulatory Department		

Section 2 – Composition/ Identification Ingredients

Hazardous Ingredients	%	Exposure Limits	C.A.S.#	LD/50, Route, Species	LC/50 Route, Species
PETROLEUM LUBE OIL	<8%	5mg/m3 Oil mist Only	64742-65-0	NOT APPLICABLE	NOT APPLICABLE
ALIPHATIC PETROLEUM DISTILLATES	<18%	100ppm TWA VPEL	64742-88-7	NOT APPLICABLE	NOT APPLICABLE
SYNTHETIC ISOPARAFINIC HYDROCARBON	<49%	N/A	115-10-64742-47-8	NOT APPLICABLE	NOT APPLICABLE
PETROLEUM HYDROCARBON	<32%	5MG/M3	64742-62-7	NOT APPLICABLE	NOT APPLICABLE

Section 3 – Hazards Identification

EFFECTS OF OVEREXPOSURE

INHALATION ..... : SHORTNESS OF BREATH, DIZZINESS AND LIGHTHEADENESS.
EYE..... CAN CAUSE IRRITATION.
SKIN..... SLIGHT IRRITATION AND CAN CAUSE DERMATITIS.
INGESTION..... MAY CAUSE CHEMICAL PNEUMONIA ID ASIPATED INTO LUNG.
PRIMARY ROUTE(S) OF ENTRY..... SKIN CONTACT, SKIN ABSORPTION, INHALATION, INGESTION, EYE CONTACKT.
ACTIVE TOXICITY..... NOT DETERMINED.

EFFECTS OFOVEREXPOSURE, SYNTHETIC ISOPARAFINIC HYDROCARDON:

EYE CONTACT..... MAY CAUSE SLIGHT IRRITATION.
SKIN CONTACT..... REPEATED OR PROLONGED CONTACT MAY CAUSE REDNESS OR IRRITATION.
INHALATION..... MAY CAUSE IRRITATIONTO UPPER RESPIRATORY TRACT, EXTREME ASPIPATION MAYCAUSE PNEUMONIA OR DEATH.
INGESTION..... CAUSES IRRITATION OF THE STOMACH ANDINTESTINES.

CARCINOGENCITY..... NOT DETERMINED.
CHRONIC PROLONGED EXPOSURE ABOVE THE OSHA PERMISSIBLE EXPOSURE LIMITD (PEL) MAY RESULT IN KIDNEY AND LIVER DAMAGE.

ROUTE OF ENTRY

INGESTION..... ETHYLENE GLYCOL MONOBUTYL ETHER MAYCAUSE RED BLOOD CELL HEMOLYSIS AND POSSIBLE LIVER AND KIDNEY DAMAGE. MAY CAUSE HEADACHE, NAUSEA, VOMITING AND WEAKNESS.
INHALATION..... INHALATION OF SOLVENTS MAY CAUSE IRRITATION. PROPELLANT IS A SIMPLEASPHYXIANT

EYE CONTACT	ETHYLENE GLYCOL MONOBUTYL ETHER MAY CAUSE MODERATE IRRITATION AND POSSIBLE CORNEAL INJURY.
SKIN ABSORPTION	ETHYLENE GLYCOL MONOBUTYL ETHER PENETRATES SKIN READILY, FREQUENT OR WIDE SPREAS CONTACT MAY RESULT IN THE ABSORPTION OF POTENTIALLY HARMFUL AMOUNTS, SIGNS AND SYMPTOMS OF TOXICITY ARE SIMULAR TO THOS OF SWALLOWING.
SKIN CONTACT	MAY CAUSE IRRITATION.
EFFECTS OF ACUTE EXPOSURE	DIZZINESS, NAUSEA, IRRITATION TO SKIN & EYES.
EFFECTS OF CHRONIC EXPOSURE	ETHYLENE GLYCOL MONOBUTYL ETHER MAY CAUSE HEMOLYSIS RED BLOOD CELLS LEADING TO POSSIBLE LIVER AND KIDNEY DAMAGE SOLVENTS MAY CAUSE DEFATTING DERMATITIS.
EXPOSURE LIMIT OF MATERIAL	SEE SECTION 2

Section 4 – First Aid Measures

EMERGENCY FIRST AND PROCEDURES	IN THE CASE OF CONTACT, IMMEDIATELY FLUSH SKIN OR EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, FOR EYES GET MEDICAL ATTENTION, IN CASE OF INGESTION, INDUCE VOMITING IF PATIENT IS ALERT, CALL PHYSICIAN OR POISON CONTROL CENTRE IMMEDIATELY.
INHALATION	REMOVE INDIVIDUAL TO FRESH AIR. GIVE OXYGEN IF BREATHING IS LABORED. IF BREATHING HAS STOPPED GIVE ARTIFICICAL RESPIRATION. KEEP THE PERSON WARM, QUIET, AND SEEK MEDICAL ATTENTION.
EYES	FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 20 MINUTES. LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.
SKIN	THROROUGHLY WASH EXPSED AREA WITH SOAP AND WATER.
IF SWALLOWED	DO NOT INDUCE VOMITTING. IMMEDIATELY DRINK TWO GLASSES OF WATER. NEVER GIVE ANYTHING TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION.

Section 5 – Fire Fighting Measures

AUTO IGNITION TEMPERATURE (C)	NOT APPLICABLE
FIRE FIGHTING	WATER MAY BE USED COOL CLOSED CONTAINER TO PREVENT PRESSURE BUILD UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT.
FIRE EQUIPMENT	WEAR A FULL FACE POSITIVE PRESSURE SELF CONTAINED BREATHING APPARATUS (SCBA) WHEN FIGHTING FIRE.
FIRE/EXPLOSION HAZARD	MATERIAL IS HIGHLY VOLATILE AND READILY GIVES OFF VAPORS WHICH MAY TRAVEL ALONG THE GROUND AND IGNITED BY PILOT LIGHTS, FLAMES, SPARKS, HEATERS, SMOKING, ELECTRIC MOTORS, STATIC DISCHARGE OR OTHER IGNITION SOURCE DISTANT FROM THE HANDELING POINT.
BURNING CAN PRODUCE	CARBON MONOXIDE AND/OR CARBON DIOXIDE AND TRACES OF PHOSGENE GAS.
FLAMMABILITY	NOT A FLAMMABLE PRODUCT (AS PER CANADIAN AEROSOL REGULATIONS).
IF YES, UNDER WHICH CONDITION?	EXCESSIVE HEAT, SPARKS AND OPEN FLAME.
EXTINGUISHING MEDIA	ALCOHOL FOAM, CO2, DRY CHEMICAL, FOAM OR WATER FOG
FLASH POINT (C), TAG CLOSED CUP GAP	NOT APPLICABLE
UPPER FLAMMABLE LIMIT (% BY VOLUME)	NOT APPLICABLE
LOWER FLAMMABLE LIMIT (% BY VOLUME)	NOT APPLICABLE.
EXPLOSION DATA	
SENSITIVITY TO STATIC DISCHARGE	NOT APPLICABLE
SENSITIVITY TO IMPACT	NOT APPLICABLE
HAZARDOUS COMBUSTION PRODUCTS	HYDOCARBON FUMES AND SMOKE. CARBON MONOXIDE WHERE COMBUSTION IS INCOMPLETE
AEROSAL FLAME PRODUCTION CLASSIFED AS:	NOT APPLICABLE.

FLASHBACK	NOT APPLICABLE

Section 6 – Accidental Release Measures

LEAK/SPILL	REMOVE ALL SOURCES OF IGNITION. USE AN INERT ABSORBENT MATERIAL, AND NON-SPARKING TOOLS. VENTILATE AREA, PREVENT FROMENTERING A WATERCOURSE.
GENERAL AERA SPILLS PROCEDURE:	ISOLARE SPILL OR LEAK AREA IMMEDIATELY. KEEP UNAUTHORIZED PERSONNEL AWAY. VENTURE AREA AND ELIMINATE ALL IGNITION SOURCES.
SMALL SPILLS	CLEAN UP WITH INERT MATERIALS AND DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
LARGE SPILLS	DIKE AHEAD OF SPILL FOR LATER DISPOSAL. DO NOT DISCHARFE OF THIS PRODUCT INTO LAKES, STREAMS, OR OTHER WATERS UNLESS IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS.

Section 7 – Handling And Storage

STORAGE NEEDS	KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT STORE IN DIRECT SUNLIGHT, NEAR OPEN FLAMES/SPARK OR AT TEMPERATUREEXCEEDING 120F.
STORAGE NEEDS	KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT STORE IN DIRECT SUNGLIGHT, NEAR OPEN FLAME/SPARKS OR AT TEMPERATURES EXCEDDING 120F.
ENGINEERING CONTROLS	VENTILATION-LOCAL (MECHANICAL IF USED INDOOR ON A CONTINOUS BASIS).
HANDELING PROCEDURES AND EQUIPMENT	STORE IN A COOL, WELL VENTILATED AREA NOT TO EXCEED 50 DEG C.
SYNERGISTIC MATERIALS	NOT REQUIRED.

Section 8 – Exposure Controls / Personal Protection

GLOVES/TYPE	WEAR CHEMICAL RESISTANT GLOVES.
RESPIRATORY/TYPE	IF USED INDOORS ON A CONTINUOUS BASIS, USE A CARTRIDGE TYPE RESPIRATOR (NIOSH/MSHATC 23C OR EQUIVALENT) IS RECOMMENDED.
EYE/TYPE	SAFETY GLASSES.
FOOTWEAR/TYPE	NOT NORMALLY REQUIRED.
OTHER/TYPE	NOT REQUIRED.

Section 9 – Physical And Chemical Properties

PHYSICAL STATE	NOT AVAILABLE
APPEARANCE	AEROSOL SPRAY
ODER	SOLVENT
ODER THRESHOLD	NOT AVAILABLE
VAPOUR PRESSURE(PSIG)-AEROSOL @ 20 C	NOT AVAILABLE
BOILING POINT (C)(CONC)	NOT AVAILABLE
EVAPORATION RATE	IS SLOWER THAN ETHER.
n-BUTYL ACETATE=1	
VAPOUR DENSITY (AIR=I)	NOT AVAILABLE
(BY WEIGHT)	
SOLUBILITY IN WATER	NOT AVAILABLE
pH	NOT AVAILABLE
SPECIFIC GRAVITY (LIQUID)	NOT AVAILABLE.
COEFFICIENT OF WATER/OIL DIST	NOT AVAILABLE.
FREEZING POINT: (C)	NOT AVAILABLE.
AEROSOL PERCENT VOLATILE (BY WEIGHT).	NOT AVAILABLE.
SPECIFIC GRAVITY (AEROSOL)	NOT AVAILABLE

AEROSOL PERCENT VOC (W/W)	NOT AVAILABLE.

Section 10– Stability And Reactivity

HAZARDOUS PRODUCTS OF DECOMPOSITION	.HYRPCARBON FUMES AND SMOKE. CARBON MONOXIDE WHERE COMBUSTION IS INCOMPLETE.
STABLE	UNDER NORMAL CONDITIONS. KEEP AWAY FROM HEAT, SPARK, OR OPEN FLAMES.
ADVOID CONTACT WITH	STRONG OXIDIZING AGENTS.
BURNING CAN PRODUCE	CARBON MONOXIDE AND/OR CARDON DIXIDE AND TRACES OF PHOSGENE GAS.
HAZARDOUS POLYMERIZATION	WILL NOT OCCUR.

Section 10– Stability And Reactivity

HAZARDOUS PRODUCTS OF DECOMPOSITION	HYRPCARBON FUMES AND SMOKE. CARBON MONOXIDE WHERE COMBUSTION IS INCOMPLETE.
CHEMICAL STABILITY:	
YES	UNDER NORMAL CONDITIONS.
NO, WHICH CONDITIONS?	NOT APPLICABLE.
COMPATABILITY WITH OTHER SUBSTANCES:	
NO, WHICH ONES?	STRONG OXIDIZING AGENTS.
REACTIVITY CONDITIONS?	NOT APPLICABLE
HAZARDOUS POLYMERIZATION	WILL NOT OCCUR.

Section 11 – Toxicological Information

TOXICOLOGY	NOT AVAILABLE
REPRODUCTIVE EFFECTS	NO INFORMATION IS AVAILABLE AND NO ADVERSE REPRODUCTIVE EFFECTS ARE ANTICIPATED.
IRRITANCY OF MATERIAL	SKIN/EYE IRRITANT.
SENSITIVITIZING CAPABILITY OF MATERIAL	UNKNOWN.
CARCINOGENICITY OF MATERIAL	THE INGREDIENTS OF THIS PRODUCT ARE NOT LISTED AS CARCINOGENS BY NTP, (NATIONAL TOXICOLOGY PROGRAM), NOT REGULATED AS CARCINOGENS BY OSHA, (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION), AND HAVE NOT BEEN EVALUATED BY IARC, (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER), NOR BY ACGIH(AMERICAN CONFERENCE OF GOVERNMENT INDUSTRAL HYGIENISTS).
TERATOGENICITY	NO INFORMATION IS AVAILABLE AND NO ADVERSE TERATOGENIC EFFECTS ARE ANTICIPATED.
MUTAGENICITY	NO INFORMATION IS AVAILABLE AND NO ADVERSE MUTAGENIC EFFECTS ARE ANTICIPATED

Section 12 – Ecological Information

ENVIRONMENTAL	NOT AVAILABLE

Section 13 – Disposal Information

WASTE DISPOSAL	DO NOT PUNCTURE OR INCINERATE CONTAINERS, EVEN WHEN EMPTY, DISPOSE OF IN ACCORDANCE EITH LOCAL, PROVINCIAL AND FEDERAL, REGULATIONS.
WASTE DISPOSAL	EMPTY AEROSOL CONTAINERS MAY BE DISPOSED OF THROUGHNORMAL CHANNELS. FULL OR PARTIALLY FULL CONTAINERS ARE CONSIDERED HAZARDOUS WASTE AND MUST BE DISPOSED OF ACCORDINGLY.

Section 14 – Transportation Information

FOR DOT REGULATORY INFORMATION	IF REQUIRED, CONSULT TRANSPORTATION REGULATIONS OF PRODUCT SHIPPING PAPERS.
DOT CLASSIFICATION	CONSUMER COMMODITY, ORM-D.

Section 15 – Regulatory Information

ALL INGREDIENTS ARE ON THE TSCA INVENTORY OR ARE NOT REQUIRED TO BE LISTED ON THE TSCA INVENTORY.

WHMIS CLASSIFICATION	A,D1A,D2A,D2B.
HMIS RATING HEALTH	2 MODERATE HAZARD.
HMIS RATING FLAMMABILITY	1 SLIGHT HAZARD.
HMIS RATING REACTIVITY	1 SLIGHT HAZARD.
NFPA CODE 30B	LEVEL 1.
CNFC SECTION 3.3.5	LEVEL 1.

Section 16 – Other Information

The information contained on this MSDS has been checked and should be accurate. However, it is the responsibility of the user to comply with all Federal, State and Local laws and regulations.

INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING VAPORS AND INHALING CONTENTS CAN BE HARMFUL OR FATAL.
DISCLAIMER: THE FORGOING INFORMATION HAS BEEN COMPLIED FROM SOURCES BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE. RECIPIENTS ARE ACCURATE BUT IS NOR WITHOUT NOTICE. IT IS THE RESPONSIBILITY OF THE RECIPENT TO ASSURE THAT THEIR PERSONNEL HAS BEEN NOTIFIED OF ANY CHANGES WITH MAY AFFECT THEM. THE DATA PROVIDED ON THIS MSDS ARE NOT MEAN TO BE USED AS SPECIFICATIONS, ONLY AS GUIDELINE INFORMATION AS TO THE SAFE USE OF THIS PRODUCT. THE USER SHOULD REFER TO APPLICABLE LAWS BEFORE USE. THIS MSDS COMPLIES WITH BUIDELINES SET BY 29CFR1910.1200

TYME PARTS CLEANING SOLVENT

CRC MATERIAL SAFETY DATA SHEET

Section 1: Product & Company Identification

Product Name: **Tyme® I**

Product Number (s): **14101, 14104**

Product Use: Parts cleaning solvent for use in cold cleaner / dip tank

Manufacturer / Supplier Contact Information:

In United States:
CRC Industries, Inc.
885 Louis Drive
Warminster, PA 18974
www.crcindustries.com
1-215-674-4300(General)
(800) 521-3168 (Technical)
(800) 272-4620 (Customer Service)

In Canada:
CRC Canada Co.
2-1246 Lorimar Drive
Mississauga, Ontario L5S 1R2
www.crc-canada.ca
1-905-670-2291

In Mexico:
CRC Industries Mexico
Av. Benito Juárez 4055 G
Colonia Orquídea
San Luís Potosí, SLP CP 78394
www.crc-mexico.com
52-444-824-1666

24-Hr Emergency – CHEMTREC: (800) 424-9300 or (703) 527-3887

Section 2: Hazards Identification

ACKLANDS GRAINGER

Emergency Overview

DANGER: Vapor Harmful.

As defined by OSHA's Hazard Communication Standard, this product is hazardous.

Appearance & Odor: Yellow opaque emulsion, solvent odor

Potential Health Effects:

ACUTE EFFECTS:

EYE: May cause mild to moderate eye irritation, including burning sensation. Vapors may irritate the eyes at concentrations of 100 ppm.

SKIN: Short single exposure may cause skin irritation. Prolonged exposure may cause severe skin irritation, even a burn. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.

INHALATION: Dizziness may occur at concentrations of 200 ppm. Progressively higher levels may also cause nasal irritation, nausea, incoordination, and drunkenness. Very high levels or prolonged exposure could lead to unconsciousness and death.

INGESTION: Single dose oral toxicity is considered to be extremely low. Swallowing large amounts may cause injury if aspirated into the lungs. This may be rapidly absorbed through the lungs and result in injury to other body systems.

CHRONIC EFFECTS: Repeated contact with skin may cause drying or flaking of skin. Excessive or long term exposure to vapors may increase sensitivity to epinephrine and increase myocardial irritability.

TARGET ORGANS: Central nervous system. Possibly liver and kidney.

Medical Conditions Aggravated by Exposure: None known.

See Section 11 for toxicology and carcinogenicity information on product ingredients.

Section 3: Composition/Information on Ingredients

COMPONENT	CAS NUMBER	% by Wt.
Tetrachloroethylene (PERC)	127-18-4	45 - 55
Water	7732-18-5	30 - 35
Cyclohexanol	108-93-0	5 – 15
Distilled Tall Oil	8002-26-4	< 5
Potassium hydroxide	1310-58-3	< 1

Section 4: First Aid Measures

Eye Contact: Immediately flush with plenty of water for 15 minutes. Call a physician if irritation persists.

Skin Contact: Remove contaminated clothing and wash affected area with soap and water. Call a physician if irritation persists. Wash contaminated clothing prior to re-use.

Inhalation: Remove person to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Call a physician.

Ingestion: Do NOT induce vomiting. Call a physician immediately

Note to Physicians: Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. If burn is present, treat as any thermal burn, after decontamination. Exposure may increase myocardial irritability. Do not administer sympathomimetic drugs unless absolutely necessary. No specific antidote.

Section 5: Fire-Fighting Measures

Flammable Properties: As defined by OSHA, this product is a nonflammable liquid.

Flash Point: None (TCC) Upper Explosive Limit: None

Autoignition Temperature: None Lower Explosive Limit: None

Fire and Explosion Data:

Suitable Extinguishing Media: This material does not burn. Use extinguishing agent suitable for surrounding fire.

Products of Combustion: Hydrogen chloride, trace amounts of phosgene and chlorine

Explosion Hazards: Containers, when exposed to heat from fire, may build pressure and rupture.

Protection of Fire-Fighters: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against suffocation and possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool and to knock down vapors which may result from product decomposition.

Section 6: Accidental Release Measures

Personal Precautions: Use personal protection recommended in Section 8. Do not breathe vapors.

Environmental Precautions: Take precautions to prevent contamination of ground and surface waters. Do not flush into sewers or storm drains.

Methods for Containment & Clean-up: Dike area to contain spill. Ventilate the area with fresh air. If in confined space or limited air circulation area, clean-up workers should wear appropriate respiratory protection. Recover or absorb spilled material using an absorbent designed for chemical spills. Place used absorbents into proper waste containers.

Section 7: Handling and Storage

Handling Procedures: Vapors of this product are heavier than air and will collect in low areas. Make sure ventilation removes vapors from low areas. Keep containers closed when not in use. Do not eat, drink or smoke while using this product. Do not mix with other chemical products. Do not heat this liquid. For use in cold cleaners only. Do not cut, drill or weld on or near empty containers. For product use instructions, please see the product label.

Storage Procedures: Store in a cool dry area out of direct sunlight. Containers should be tightly closed while in storage.

Aerosol Storage Level: NA

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines:

	OSHA		ACGIH		OTHER		
COMPONENT	TWA	STEL	TWA	STEL	TWA	SOURCE	UNIT
Tetrachloroethylene	100	N.E.	25	100	N.E.		ppm
Water	N.E.	N.E.	N.E.	N.E.	N.E.		
Cyclohexanol	50	N.E.	50	N.E.	N.E.		ppm
Distilled Tall Oil	5*	N.E.	5*	10*	N.E.		mg/m^3
Potassium Hydroxide	2 (v)	N.E.	2 (c)	N.E.	N.E.		mg/m^3
N.E. – Not Established	(c) – ceiling		(s) – skin		(v) – vacated	* - oil mist	

Controls and Protection:

Engineering Controls: Area should have ventilation to provide fresh air. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at the source, preventing dispersion into the general work area. Use mechanical means if necessary to maintain vapor levels below the exposure guidelines. If working in a confined space, follow applicable OSHA regulations.

Respiratory Protection: None required for normal work where adequate ventilation is provided. If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with organic vapor cartridge. Air monitoring is needed to determine actual employee exposure levels. Use a self-contained breathing apparatus in confined spaces and for emergencies.

Eye/face Protection: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles.

Skin Protection: Use protective gloves such as PVA, Teflon or Viton. Also, use full protective clothing if there is prolonged or repeated contact of liquid with skin.

Section 9: Physical and Chemical Properties

Physical State: liquid / emulsion
Color: yellow, opaque
Odor: solvent odor
Odor Threshold: 50 ppm
Specific Gravity: 1.245
Initial Boiling Point: 212 F
Freezing Point: ND
Vapor Pressure: ND
Vapor Density: > 3 (air = 1)
Evaporation Rate: ND
Solubility: emulsion in water
Coefficient of water/oil distribution (log P_{ow}): 2.88
pH: 12.2
Volatile Organic Compounds: wt %: 10.25 g/L: 126 lbs./gal: 1.06

Section 10: Stability and Reactivity

Stability: Stable

Conditions to Avoid: Avoid direct sunlight or ultraviolet sources. Avoid open flames, welding arcs, and other high temperature sources which induce thermal decomposition. Do not heat this product.

Incompatible Materials: Avoid contact with metals such as: aluminum powders, magnesium powders, potassium, sodium, and zinc powder. Avoid unintended contact with amines. Avoid contact with strong bases and strong oxidizers.

Hazardous Decomposition Products: Hydrogen chloride, trace amounts of phosgene and chlorine

Possibility of Hazardous Reactions: No

ACKLANDS GRAINGER

Section 11: Toxicological Information

Long-term toxicological studies have not been conducted for this product. The following information is available for components of this product.

Acute Toxicity:

Component	Oral LD50 (rat)	Dermal LD50 (rabbit)	Inhalation LC50 (rat)
Tetrachloroethylene	2629 mg/kg	> 10 g/kg	5200 mg/kg/4H
Water	> 90 mL/kg	No data	No data
Cyclohexanol	1400 mg/kg	No data	> 6500 mg/m^3/1H
Distilled Tall Oil	> 5000 mg/kg	No data	No data
Potassium Hydroxide	273 mg/kg	No data	No data

Chronic Toxicity:

Component	OSHA Carcinogen	IARC Carcinogen	NTP Carcinogen	Irritant	Sensitizer
Tetrachloroethylene	No	Group 2A	Reasonably Anticipated to be a Carcinogen	E (mild) / S (severe)	No
Water	No	No	No	No	No
Cyclohexanol	No	No	No	E & S(moderate)	No
Distilled Tall Oil	No	No	No	No	No
Potassium Hydroxide	No	No	No	S (severe) / E(moderate)	No

E – Eye S – Skin R - Respiratory

Reproductive Toxicity: No information available.
Teratogenicity: No information available.
Mutagenicity: Tetrachloroethylene: in vitro studies were negative
animal studies were negative
Synergistic Effects: No information available.

Section 12: Ecological Information

Ecological studies have not been conducted for this product. The following information is available for components of this product.

Ecotoxicity: Tetrachloroethylene -- 96 Hr LC50 Rainbow Trout: 5.28 mg/L (static)
96 Hr LC50 Fathead minnow: 13.4 mg/L (flow-through)
Persistence / Degradability: Biodegradation under aerobic conditions is below detectable limits. Biodegradation may occur under anaerobic conditions. Biodegradation rate may increase in soil and/or water with acclimation.
Bioaccumulation / Accumulation: Bioconcentration potential is low (BCF less than 100).
Mobility in Environment: Potential for mobility in soil is medium.

Section 13: Disposal Considerations

Waste Classification: This product is a RCRA hazardous waste for toxicity with the following potential waste codes: F001, F002, D039. (See 40 CFR Part 261.20 – 261.33)
Empty containers may be recycled. If this waste is mixed with other wastes, the mixture will be a hazardous waste.

ACKLANDS GRAINGER

All disposal activities must comply with federal, state, provincial and local regulations. Local regulations may be more stringent than state, provincial or national requirements.

Section 14: Transport Information

US DOT (ground):	**14101**	Consumer Commodity, ORM-D
	14104	Tetrachloroethylene solution, UN1897, 6.1, PGIII
ICAO/IATA (air):	**14101**	Tetrachloroethylene solution, UN1897, 6.1, PGIII, Limited Quantity
	14104	Tetrachloroethylene solution, UN1897, 6.1, PGIII
IMO/IMDG (water):	**14101**	Tetrachloroethylene solution, UN1897, 6.1, PGIII, Limited Quantity
	14104	Tetrachloroethylene solution, UN1897, 6.1, PGIII

Special Provisions: Marine Pollutant

Section 15: Regulatory Information

U.S. Federal Regulations:

Toxic Substances Control Act (TSCA):
All ingredients are either listed on the TSCA inventory or are exempt.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):
Reportable Quantities (RQ's) exist for the following ingredients: Tetrachloroethylene (100 lbs)

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Superfund Amendments Reauthorization Act (SARA) Title III:
Section 302 Extremely Hazardous Substances (EHS): None

Section 311/312 Hazard Categories:

Fire Hazard	No
Reactive Hazard	No
Release of Pressure	No
Acute Health Hazard	Yes
Chronic Health Hazard	Yes

Section 313 Toxic Chemicals: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:
Tetrachloroethylene (51.4%), Cyclohexanol (10%)

Clean Air Act:
Section 112 Hazardous Air Pollutants (HAPs): tetrachloroethylene

U.S. State Regulations:

California Safe Drinking Water and Toxic Enforcement Act (Prop 65):
This product may contain the following chemicals known to the state of California to cause cancer, birth defects or other reproductive harm: Tetrachloroethylene

Consumer Products VOC Regulations: Not regulated. This product is intended to be used in solvent cleaning machines (cold cleaner / dip tank) with a capacity greater than 2 gallons.

ACKLANDS GRAINGER

State Right to Know:
New Jersey: 127-18-4, 108-93-0, 1310-58-3
Pennsylvania: 127-18-4, 108-93-0, 1310-58-3
Massachusetts: 127-18-4, 108-93-0, 1310-58-3
Rhode Island : 127-18-4, 108-93-0, 1310-58-3

Canadian Regulations:

Canadian DSL Inventory: All ingredients are either listed on the DSL Inventory or are exempt.

WHMIS Hazard Class: D1B, D2A, D2B

European Union Regulations:

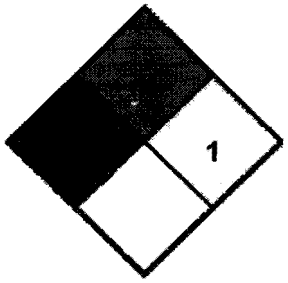
RoHS Compliance: This product is compliant with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003. This product does not contain any of the restricted substances as listed in Article 4(1) of the RoHS Directive.

Additional Regulatory Information: None

Section 16: Other Information

HMIS® (II)	
Health:	2
	1
Reactivity:	1
PPE:	B

NFPA



Ratings range from 0 (no hazard) to 4 (severe hazard)

Prepared By: Michelle Rudnick
CRC #: 609H
Revision Date: 05/13/2010

Changes since last revision: MSDS reformatted to meet the requirements of the Canadian Controlled Products Regulations.

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this MSDS consult your supervisor, a health & safety professional, or CRC Industries.

ACKLANDS GRAINGER

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Service
CFR: Code of Federal Regulations
DOT: Department of Transportation
DSL: Domestic Substance List
g/L: grams per Liter
HMIS: Hazardous Materials Identification System
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
IMO: International Maritime Organization
lbs./gal: pounds per gallon
LC: Lethal Concentration
LD: Lethal Dose
NA: Not Applicable
ND: Not Determined
NIOSH: National Institute of Occupational Safety & Health
NFPA: National Fire Protection Association
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PMCC: Pensky-Martens Closed Cup
PPE: Personal Protection Equipment
ppm: Parts per Million
RoHS: Restriction of Hazardous Substances
STEL: Short Term Exposure Limit
TCC: Tag Closed Cup
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Information System

VARSOL

Material Safety Data Sh

1620-614
-632
-641

WHMIS (Pictograms)	WHMIS (Classification)	Personal Protective Equipment
	**WHMIS CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).**	

Section 1. Product and Company Identification

Product Name / Trade name	**Varsol**	**Associated Product's Item Code**	**13-371**
Synonym	Petroleum Distillate	**CAS #**	
Chemical Family	Aliphatic hydrocarbon (Solvent.)	**Validation Date**	**Nov. 23 2006**
Chemical Formula	Not applicable. (mixture of hydrocarbons)	**Print Date**	Nov. 23 2006
Manufacturer	Recochem Inc. 850 Montee de Liesse Montreal, Quebec 514-341-3550	**In Case of Emergency**	Recochem Inc. Communications and Regulatory Affairs Department (905) 791-1788
Material Uses	Consumer products: Various.		

Section 2. Hazardous Ingredients

Name	CAS #	% by Weight	Exposure Limits	
			Canadian Values (ACGIH)	U.S. Values (OSHA)
Petroleum Distillat	8052-41-3	100	**ACGIH (Canada, 2003).** TWA: 100 ppm 8 hour(s). TWA: 525 mg/m³ 8 hour(s).	Petroleum distillate **OSHA (United States, 2003).** TWA: 500 ppm 8 hour(s). TWA: 2900 mg/m³ 8 hour(s).

Section 3. Hazard Identification

Emergency Overview

CAUTION! Combustible liquid.

HARMFUL OR FATAL IF SWALLOWED.

Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Keep out of reach of children.

Potential Acute Health Effects

See Section #11: "Toxicological Information" for further human health effects.

This product may cause mild Irritatation to eyes and skin upon contact.
Prolonged and repeated contact with skin can cause drying of the skin resulting in irritation and dermatitis.
Inflammation of the eye is characterized by mild redness, watering, and itching.
Skin inflammation is characterized by mild itching, scaling, reddening.
Ingestion can cause burning sensation, vomiting, drowsiness and in severe cases pulmonary edema.
Inhalation of excessive amounts may result in impairment, such as drowsiness, lack of coordination, headache and nausea.

Note to Physician

Aspiration hazard if swallowed- can enter lungs and cause damage. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause mild to severe pulmonary injury and possible death.

Continued on Next Page

Section 4. First Aid Measures

ye Contact	Rinse with water for a few minutes. If irritation persists, seek medical attention.
Skin Contact	Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. If irritation persists, get medical attention. Wash contaminated clothing before reusing.
Inhalation	Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting. Allow the victim to rest in a well-ventilated area. Seek medical attention.

Section 5. Fire Fighting Measures

Products of Combustion	Carbon oxides (CO, CO_2), smoke, fumes.
Fire Fighting Media and Instructions	Combustible liquid, insoluble in water. SMALL FIRE: Use DRY chemicals, CO_2, alcohol foam or water spray. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.
Fire Hazards	Container explosion may occur under fire conditions or when heated. Vapour may travel considerable distance to source of ignition and flash back. Vigourously supports combustion. Combustible when exposed to heat or flame.
Explosion Hazards	Vapours may travel along ground and flashback along vapour trail.

Section 6. Accidental Release Measures

Small Spill and Leak	Absorb with an inert material and put the spilled material in an appropriate waste disposal.
Large Spill and Leak	Combustible liquid, insoluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Prevent entry into sewers and surface waterways. Absorb with DRY earth, sand or other non-combustible material. Place in appropriate container and dispose of in accordance with regional regulations.

Section 7. Handling and Storage

Handling	Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.
Storage	**See Section #10 for applicable incompatible materials.** Combustible materials should be stored away from extreme heat and away from strong oxidizing agents. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed in a cool, well-ventilated place. Keep out of reach of children.

Section 8. Exposure Controls, Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Personal Protection	
Eyes	Safety glasses.
Body	No special protective clothing is required.
Respiratory	Wear appropriate respirator when ventilation is inadequate. Be sure to use an approved/certified respirator or equivalent.
Hands	Gloves (impervious materials such as Viton®, Neoprene® or butyl rubber).

Continued on Next Page

Section 9. Physical and Chemical Properties

Physical State and Appearance	Liquid.	**Odour**	Petroleum distillates
Molecular Weight	Not applicable.	**Taste**	Not available.
pH	Not applicable.	**Colour**	Colourless.
Boiling/Condensation Point	150 to 210°C (302 to 410°F)	**Volatility**	100% (v/v). 100% (w/w).
Melting/Freezing Point	-58°C (-72.4°F)	**Evaporation Rate**	0.1 compared to Butyl acetate.
Specific Gravity	0.79 (Water = 1)	**Odour Threshold**	Not available.
Vapour Pressure	2.2 mm of Hg (@ 20°C)	**Viscosity**	Kinetic: 1.14 cS
Vapour Density	4.8 (Air = 1)	**Solubility**	Easily soluble in diethyl ether, n-octanol. Insoluble in water.
VOC Content	790 (g/l).	**Other Properties**	Not available.

The Product Is:	Combustible.
Auto-ignition Temperature	229°C (444.2°F)
Flash Point	Closed cup: 42°C (107.6°F). (Tagliabue. (ASTM D56))
Flammable Limits	LOWER: 1% UPPER: 13.3%
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames, sparks and static discharge. This product is combustible if exposed to heat or when in involved in a fire and in contact with combustible materials which may act as a wick.

Section 10. Stability and Reactivity

Stability	The product is stable.
Conditions of Instability	No additional remark.
Incompatibility with Various Substances	Reactive with oxidizing agents.

Section 11. Toxicological Information

Routes of Entry	Eye contact. Inhalation. Ingestion.
Toxicity to Animals	Acute oral toxicity (LD50): >5000 mg/kg [Rat].
Acute Effects on Humans	
Eyes	May cause mild eye irritation.
Skin	May cause mild skin irritation.
Inhalation	Slightly hazardous in case of inhalation. Exposure to very high concentrations can cause dizziness, lightheadness, headache, nausea, and blurred vision. Higher levels may cause unconsciousness.
Ingestion	This product is of very low acute toxicity. Aspiration hazard if swallowed- can enter lungs and cause damage.

Continued on Next Page

Chronic Effects on Humans	**CARCINOGENIC EFFECTS**: Not available. **MUTAGENIC EFFECTS**: Not available. **TERATOGENIC EFFECTS**: Not available. **DEVELOPMENTAL TOXICITY**: Not available. Prolonged and repeated contact with skin can cause drying of the skin resulting in irritation and dermatitis. Effect of chronic exposure include soporific or intoxicating effect if prolonged and in sufficient concentration. Avoid breathing vapour or mist.

Section 12. Ecological Information

Ecotoxicity	**For accidential discharges into environment, see Section #6: "Accidential Release Measures" for suggested instructions.** No additional remark.

Section 13. Disposal Considerations

Waste Information	Waste must be disposed of in accordance with federal, state or provincial and local environmental control regulations.

Section 14. Transport Information

Canada Transportation of Dangerous Goods (TDG) Information

Primary Class	Class 3: Flammable liquid.
Subsidiary Class (if applicable)	-
Proper shipping name	PETROLEUM DISTILLATES, N.O.S.
Hazard Identification Number	UN 1268
Packing Group	III
Special Provisions	In containers of 450L or less this product is not classified as a Dangerous Goods according to TDG exemption 1.33

International Maritime Dangerous Goods (IMDG) Transportation Information

Primary Class	Class 3: Flammable liquid.
Subsidiary Class (if applicable)	-
Proper shipping name	PETROLEUM DISTILLATES, N.O.S.
Hazard Identification Number	UN 1268
Packing Group	III
Marine Pollutant	Not pollutant.
Special Provisions	In containers of 5 L (5Kg) capacity or less this product is classified as a "Consumer Commodity" under IMDG regulations.

No placard (handling and hazard label) required.

United States Department of Transportation (DOT) Information

Primary Class	Class 3: Flammable liquid.
Subsidiary class (if applicable)	-
Proper shipping name	PETROLEUM DISTILLATES, N.O.S.

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Hazard Identification Number	UN 1268
'cking Group	III
Special Provisions	In containers of 454L or less this product is not classified as a Gangerous Good according to exception 173.150 f(1-2)
International Air Transport Association (IATA)	For air shipment classification and associated regulations, please refer to the latest edition of IATA Dangerous Goods Regulations.

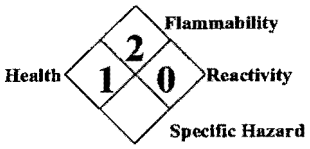
Section 15. Other Regulatory Information and Pictograms

WHMIS Classification (Canada)	WHMIS CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Canada Domestic Substances List (DSL) Status	This product and/ or all of its components are on the DSL.
HCS Classification (U.S.A.)	Combustible liquid
U.S.A. Regulatory Lists	This product and/ or all of its components are on the TSCA inventory list.

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

Health	1
Flammability	2
Reactivity	0
Personal Protection	G

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



Section 16. Other Information

alidated and verified by Compliance and Technical Information Manager on 11/23/2006 ph.# 905-791-1788.

Printed 11/23/2006.

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.

MSDS are available at www.recochem.com

WINDEX

WINDEX® ORIGINAL GLASS CLEANER

Version 1.1 | Print Date 12/05/2012

Revision Date 12/05/2012 | MSDS Number 350000014153

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	WINDEX® ORIGINAL GLASS CLEANER
Use of the Substance/Mixture	:	Hard Surface Cleaner
Company	:	S.C. Johnson and Son, Limited 1 Webster Street Brantford ON N3T 5R1
Emergency telephone number	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647 24 Hour Canadian Transport Emergency Phone (CANUTEC) (613) 996-6666

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	blue / liquid / pleasant
Immediate Concerns	:	Avoid contact with skin, eyes and clothing.

Potential Health Effects

Exposure routes	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	May cause: Mild eye irritation
Skin	:	Prolonged or repeated contact may dry skin and cause irritation.
Inhalation	:	No adverse effects expected when used as directed.
Ingestion	:	May cause irritation to mouth, throat and stomach. May cause abdominal discomfort.
Aggravated Medical Condition	:	Persons with pre-existing skin disorders may be more susceptible to irritating effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product does not contain hazardous chemicals at or above a reportable level as defined by OSHA 29 CFR 1910.1200 or Canadian Controlled Products Regulations.

For additional information on product ingredients, see www.whatsinsidescjohnson.com.

4. FIRST AID MEASURES

Eye contact	:	Rinse with plenty of water. Get medical attention if irritation develops and persists.
Skin contact	:	Rinse with plenty of water. Get medical attention if irritation develops and persists.
Inhalation	:	No special requirements
Ingestion	:	Rinse mouth with water.

5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Specific hazards during firefighting	:	Container may melt and leak in heat of fire.
Further information	:	Although this product has a flash point below 200 Deg F, it is an aqueous solution containing an alcohol and does not sustain combustion. Fight fire with normal precautions from a reasonable distance. Standard procedure for chemical fires. Wear full protective clothing and positive pressure self-contained breathing apparatus. In case of fire and/or explosion do not breathe fumes.
Flash point	:	85 °C 185 °F Method: ASTM D 56
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	No special precautions required.
Environmental precautions	:	Outside of normal use, avoid release to the environment.
Methods for cleaning up	:	Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Dike large spills.

Clean residue from spill site.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	Use only as directed. KEEP OUT OF REACH OF CHILDREN AND PETS.
Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.

Storage

Requirements for storage areas and containers	:	Keep container closed when not in use. Keep in a dry, cool and well-ventilated place.
Other data	:	Stable under normal conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

ACGIH or OSHA exposure limits have not been established for this product or reportable ingredients unless noted in the table above.

Personal protective equipment

Respiratory protection		No personal respiratory protective equipment normally required.
Hand protection	:	No special requirements.
Eye protection		No special requirements.
Skin and body protection	:	No special requirements.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	liquid
Color	:	blue
Odor	:	pleasant

pH	:	10.7
Boiling point	:	no data available
Freezing point	:	no data available
Flash point	:	85 °C 185 °F Method: ASTM D 56
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Does not sustain combustion.
Auto-ignition temperature	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Density	:	0.997 g/cm3 at 20 °C
Water solubility	:	soluble
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
Volatile Organic Compounds Total VOC (wt. %)*	:	0.5 % - additional exemptions may apply *as defined by US Federal and State Consumer Product Regulations

10. STABILITY AND REACTIVITY

Conditions to avoid	:	Direct sources of heat.
Materials to avoid	:	Strong oxidizing agents
Hazardous decomposition products	:	Thermal decomposition can lead to release of irritating gases and vapours.
Hazardous reactions	:	Stable under recommended storage conditions.

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50

		estimated > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 estimated > 2.58 mg/l
Acute dermal toxicity	:	LD50 estimated > 5,000 mg/kg

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects : no data available

13. DISPOSAL CONSIDERATIONS

Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.
Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Land transport

- **U.S. DOT and Canadian TDG Surface Transportation:**

Proper shipping name	not regulated
Class:	None.
UN/ID No.:	None.
Packaging group	None.

Sea transport

- *IMDG:*

Proper shipping name	not regulated
Class:	None.
UN/ID No.:	None.
Packaging group	None.

Air transport

- *ICAO/IATA:*

Proper shipping name	not regulated
Class:	None.
UN/ID No.:	None.
Packaging group	None.

15. REGULATORY INFORMATION

Notification status	:	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
Notification status	:	All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
California Prop. 65	:	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
Canada Regulations	:	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

HMIS Ratings

Health	1
Flammability	2
Reactivity	0

NFPA Ratings

WINDEX® ORIGINAL GLASS CLEANER

Version *1.*1
Print Date 12/05/2012
Revision Date 12/05/2012
MSDS Number 350000014153

Health	1
Fire	2
Reactivity	0
Special	-

Further information
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Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)