

Maxi Lube Aerosol

Chemwatch Material Safety Data Sheet
Issue Date: 18-Nov-2013
A317LP

Hazard Alert Code: **EXTREME**

CHEMWATCH 21-9780
Version No:3.1.1.1
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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

Maxi Lube Aerosol

PROPER SHIPPING NAME

AEROSOLS

PRODUCT USE

Application is by spray atomisation from a hand held aerosol pack.
Used according to manufacturer's directions.
Used as a lubricant to eliminate sticking and repel water and ink.

SUPPLIER

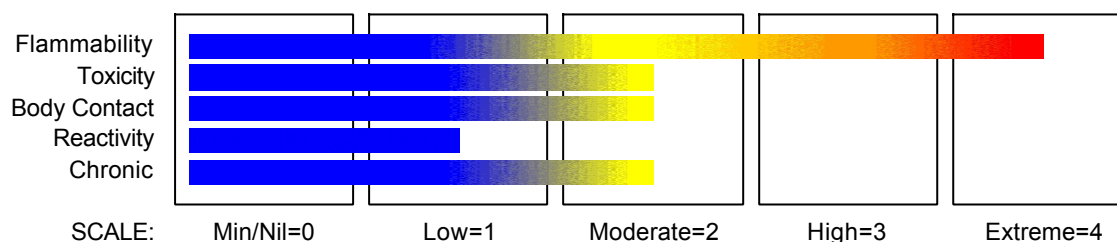
Company: GSB Chemical Co. Pty Ltd
Address:
84 Camp Road
Broadmeadows
VIC, 3047
Australia
Telephone: +61 3 9457 1125
Fax: +61 3 9459 7978
Email: info@gsbchem.com.au

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

CHEMWATCH HAZARD RATINGS



RISK

■ Extremely flammable.

SAFETY

• Keep away from sources of ignition. No smoking.

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Section 2 - HAZARDS IDENTIFICATION

- Irritating to eyes and skin.
 - Risk of explosion if heated under confinement.
 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 - Possible risk of impaired fertility.
 - Vapours may cause drowsiness and dizziness.
 - Inhalation, skin contact and/or ingestion may produce health damage*.
 - Cumulative effects may result following exposure*.
 - May produce discomfort of the respiratory system*.
 - Limited evidence of a carcinogenic effect*.
 - Repeated exposure potentially causes skin dryness and cracking*.
- * (limited evidence).
- Do not breathe gas/fumes/vapour/spray.
 - Avoid contact with skin.
 - Avoid contact with eyes.
 - Wear suitable protective clothing.
 - Wear suitable gloves.
 - Wear eye/face protection.
 - Use only in well ventilated areas.
 - Keep container in a well ventilated place.
 - Avoid exposure - obtain special instructions before use.
 - Do not empty into drains.
 - To clean the floor and all objects contaminated by this material, use water and detergent.
 - Keep container tightly closed.
 - This material and its container must be disposed of in a safe way.
 - Keep away from food, drink and animal feeding stuffs.
 - In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
 - If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).
 - Use appropriate container to avoid environmental contamination.
 - Avoid release to the environment. Refer to special instructions/Safety data sheets.
 - This material and its container must be disposed of as hazardous waste.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
polydimethylsiloxane	63148-62-9	30-60
naphtha petroleum, light, hydrotreated	64742-49-0.	30-60
isopropanol	67-63-0	10-<30
hydrocarbon propellant	68476-85-7.	10-<30

Section 4 - FIRST AID MEASURES

SWALLOWED

- Avoid giving milk or oils.

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Section 4 - FIRST AID MEASURES

- Avoid giving alcohol.
- Not considered a normal route of entry.

EYE

- If aerosols come in contact with the eyes:
 - Immediately hold the eyelids apart and flush the eye continuously for at least 15 minutes with fresh running water.
 - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
 - Transport to hospital or doctor without delay.
 - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If solids or aerosol mists are deposited upon the skin:
 - Flush skin and hair with running water (and soap if available).
 - Remove any adhering solids with industrial skin cleansing cream.
 - DO NOT use solvents.
 - Seek medical attention in the event of irritation.

INHALED

- If aerosols, fumes or combustion products are inhaled:
 - Remove to fresh air.
 - Lay patient down. Keep warm and rested.
 - Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
 - If breathing is shallow or has stopped, ensure clear airway and apply resuscitation, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
 - Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.

For acute or short term repeated exposures to isopropanol:

- Rapid onset respiratory depression and hypotension indicates serious ingestions that require careful cardiac and respiratory monitoring together with immediate intravenous access.
- Rapid absorption precludes the usefulness of emesis or lavage 2 hours post-ingestion. Activated charcoal and cathartics are not clinically useful. Ipecac is most useful when given 30 mins. post-ingestion.
- There are no antidotes.
- Management is supportive. Treat hypotension with fluids followed by vasopressors.
- Watch closely, within the first few hours for respiratory depression; follow arterial blood gases and tidal volumes.
- Ice water lavage and serial haemoglobin levels are indicated for those patients with evidence of gastrointestinal bleeding.

For acute or short term repeated exposures to petroleum distillates or related hydrocarbons:

- Primary threat to life, from pure petroleum distillate ingestion and/or inhalation, is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO₂ 50 mm Hg) should be intubated.
- Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
- A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax.
- Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial

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Section 4 - FIRST AID MEASURES

sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.

- Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients. [Ellenhorn and Barceloux: Medical Toxicology].

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

■ SMALL FIRE:

- Water spray, dry chemical or CO₂

LARGE FIRE:

- Water spray or fog.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- If safe, switch off electrical equipment until vapour fire hazard removed.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 100 metres in all directions.

FIRE/EXPLOSION HAZARD

- Liquid and vapour are highly flammable.
 - Severe fire hazard when exposed to heat or flame.
 - Vapour forms an explosive mixture with air.
 - Severe explosion hazard, in the form of vapour, when exposed to flame or spark.
 - Vapour may travel a considerable distance to source of ignition.
 - Heating may cause expansion or decomposition with violent container rupture.
 - Aerosol cans may explode on exposure to naked flames.
 - Rupturing containers may rocket and scatter burning materials.
 - Hazards may not be restricted to pressure effects.
 - May emit acrid, poisonous or corrosive fumes.
 - On combustion, may emit toxic fumes of carbon monoxide (CO).
- Combustion products include: carbon monoxide (CO), carbon dioxide (CO₂), silicon dioxide (SiO₂), other pyrolysis products typical of burning organic material.
- Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions. May emit clouds of acrid smoke.

FIRE INCOMPATIBILITY

- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

HAZCHEM

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Section 6 - ACCIDENTAL RELEASE MEASURES

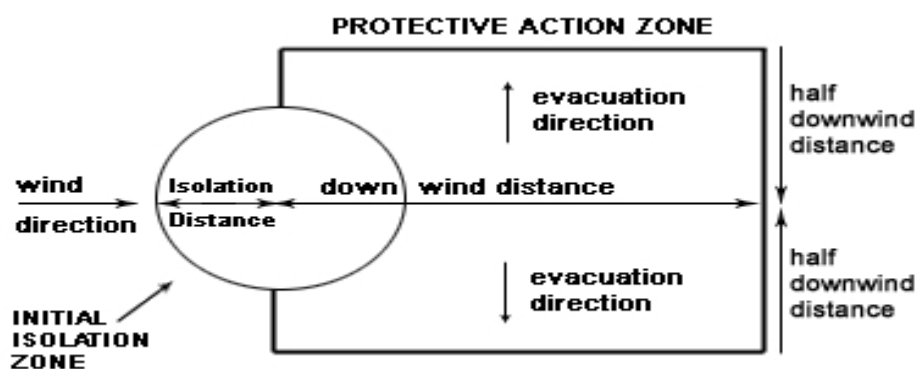
MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Wear protective clothing, impervious gloves and safety glasses.
- Shut off all possible sources of ignition and increase ventilation.
- Wipe up.
- If safe, damaged cans should be placed in a container outdoors, away from all ignition sources, until pressure has dissipated.
- Undamaged cans should be gathered and stowed safely.

MAJOR SPILLS

- DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapour.
- Absorb or cover spill with sand, earth, inert materials or vermiculite.
- If safe, damaged cans should be placed in a container outdoors, away from ignition sources, until pressure has dissipated.
- Undamaged cans should be gathered and stowed safely.
- Collect residues and seal in labelled drums for disposal.
- Remove leaking cylinders to a safe place if possible.
- Release pressure under safe, controlled conditions by opening the valve.

PROTECTIVE ACTIONS FOR SPILL



From IERG (Canada/Australia)

Isolation Distance

-

Downwind Protection Distance

8 metres

IERG Number

49

FOOTNOTES

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Section 6 - ACCIDENTAL RELEASE MEASURES

1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.

2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.

3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.

4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".

LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.

5 Guide 126 is taken from the US DOT emergency response guide book.

6 IERG information is derived from CANUTEC - Transport Canada.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- DO NOT incinerate or puncture aerosol cans.
- DO NOT spray directly on humans, exposed food or food utensils.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

- Aerosol dispenser.
- Check that containers are clearly labelled.

STORAGE INCOMPATIBILITY

- Avoid reaction with oxidising agents.

STORAGE REQUIREMENTS

- Keep dry to avoid corrosion of cans. Corrosion may result in container perforation and internal pressure

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Section 7 - HANDLING AND STORAGE

may eject contents of can.

- Store in original containers in approved flammable liquid storage area.
- DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
- No smoking, naked lights, heat or ignition sources.
- Keep containers securely sealed. Contents under pressure.
- Store away from incompatible materials.
- Store in a cool, dry, well ventilated area.
- Avoid storage at temperatures higher than 40 deg C.
- Store in an upright position.
- Protect containers against physical damage.
- Check regularly for spills and leaks.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+ X X X X +

+: May be stored together

O: May be stored together with specific preventions

X: Must not be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	TWA F/CC	Notes
Australia Exposure Standards	isopropanol (Isopropyl alcohol)	400		500	1230				
Australia Exposure Standards	hydrocarbon propellant (LPG (liquified petroleum gas))	1000							

The following materials had no OELs on our records

- polydimethylsiloxane:

CAS:63148- 62- 9

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m ³)	Revised IDLH Value (ppm)
isopropanol	4917	2,000 [LEL]
hydrocarbon propellant	0	2,000 [LEL]

NOTES

Values marked LEL indicate that the IDLH was based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

MATERIAL DATA

ISOPROPANOL:

MAXI LUBE AEROSOL:

Odour Threshold Value: 3.3 ppm (detection), 7.6 ppm (recognition)

Exposure at or below the recommended isopropanol TLV-TWA and STEL is thought to minimise the potential for inducing narcotic effects or significant irritation of the eyes or upper respiratory tract. It is believed, in the absence of hard evidence, that this limit also provides protection against the development of chronic health effects. The limit is intermediate to that set for ethanol, which is less toxic, and n-propyl alcohol, which is more toxic, than isopropanol.

MAXI LUBE AEROSOL:

NAPHTHA PETROLEUM, LIGHT, HYDROTREATED:

Odour threshold: 0.25 ppm.

The TLV-TWA is protective against ocular and upper respiratory tract irritation and is recommended for bulk handling of gasoline based on calculations of hydrocarbon content of gasoline vapour. A STEL is recommended to prevent mucous membrane and ocular irritation and prevention of acute depression of the central nervous system. Because of the wide variation in molecular weights of its components, the conversion of ppm to mg/m³ is approximate. Sweden recommends hexane type limits of 100 ppm and heptane and octane type limits of 300 ppm. Germany does not assign a value because of the widely differing compositions and resultant differences in toxic properties.

Odour Safety Factor (OSF)

OSF=0.042 (gasoline).

POLYDIMETHYLSILOXANE:

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

NAPHTHA PETROLEUM, LIGHT, HYDROTREATED:

for: hexane, isomers (excluding n-hexane)

The TLV-TWA is thought to be protective against nausea, headache, upper respiratory tract irritation and CNS depression. The STEL is added to prevent objective depression of the CNS. The lower value ascribed to n-hexane is due to the neurotoxicity of its metabolites, principally 5-hydroxy-2-hexanone and 2,5-hexanedione. It is considered unlikely that other hexanes follow the same metabolic route. It should be noted however that the n-hexane TLV-TWA also applies to commercial hexane having a concentration of greater than 5% n-hexane.

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For n-hexane:

Odour Threshold Value: 65 ppm

NOTE: Detector tubes for n-hexane, measuring in excess of 100 ppm, are available commercially.

Occupational polyneuropathy may result from exposures as low as 500 ppm (as hexane), whilst nearly continuous exposures of 250 ppm have caused neurotoxic effects in animals. Many literature reports have failed to distinguish hexane from n-hexane and on the assumption that the commercial hexane contains 30% n-hexane, a worst case recommendation for TLV is assumed to reduce the risk of peripheral neuropathies (due to the metabolites 2,5-heptanedione and 3,6-octanedione) and other adverse neuropathic effects.

Concurrent exposure to chemicals (including MEK) and drugs which induce hepatic liver oxidative metabolism can reduce the time for neuropathy to appear.

Odour Safety Factor(OSF)

OSF=0.15 (n-HEXANE).

REL TWA: 100 ppm (total hydrocarbons)

[Exxon]

HYDROCARBON PROPELLANT:

For butane:

Odour Threshold Value: 2591 ppm (recognition)

Butane in common with other homologues in the straight chain saturated aliphatic hydrocarbon series is not characterised by its toxicity but by its narcosis-inducing effects at high concentrations. The TLV is based on analogy with pentane by comparing their lower explosive limits in air. It is concluded that this limit will protect workers against the significant risk of drowsiness and other narcotic effects.

Odour Safety Factor(OSF)

OSF=0.22 (n-BUTANE).

For propane

Odour Safety Factor(OSF)

OSF=0.16 (PROPANE).

PERSONAL PROTECTION



EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

HANDS/FEET

- No special equipment needed when handling small quantities.
- OTHERWISE:

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

- For potentially moderate exposures:
- Wear general protective gloves, eg. light weight rubber gloves.
- For potentially heavy exposures:
- Wear chemical protective gloves, eg. PVC. and safety footwear.

OTHER

- No special equipment needed when handling small quantities.

OTHERWISE:

- Overalls.
- Skin cleansing cream.
- Eyewash unit.
- Do not spray on hot surfaces.
- The clothing worn by process operators insulated from earth may develop static charges far higher (up to 100 times) than the minimum ignition energies for various flammable gas-air mixtures. This holds true for a wide range of clothing materials including cotton.
- Avoid dangerous levels of charge by ensuring a low resistivity of the surface material worn outermost.

BRETHERRICK: Handbook of Reactive Chemical Hazards.

RESPIRATOR

- Type AX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)
- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

- CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear. Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.

Employers may need to use multiple types of controls to prevent employee overexposure.

General exhaust is adequate under normal conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection.

Provide adequate ventilation in warehouse or closed storage areas.

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Supplied as an aerosol pack. Contents under PRESSURE. Contains highly flammable hydrocarbon propellant. Clear liquid; not miscible with water.

PHYSICAL PROPERTIES

Liquid.

Gas.

Does not mix with water.

Floats on water.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (°C)	Not Available	Viscosity	Not Available
Boiling Range (°C)	40	Solubility in water (g/L)	Immiscible
Flash Point (°C)	- 81 (propellant)	pH (1% solution)	Not Available
Decomposition Temp (°C)	Not Available	pH (as supplied)	Not Available
Autoignition Temp (°C)	Not Available	Vapour Pressure (kPa)	Negligible
Upper Explosive Limit (%)	6.0	Specific Gravity (water=1)	0.7
Lower Explosive Limit (%)	1.0	Relative Vapour Density (air=1)	Not Available
Volatile Component (%vol)	80	Evaporation Rate	Not Available

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Silicone fluids are stable under normal storage conditions.
- Hazardous polymerisation will not occur.
- At temperatures > 150 C, silicones can slowly react with the oxygen in air.
- When heated > 300 C, silicones can slowly depolymerise to volatile siloxanes whether or not air is present.
- Elevated temperatures.
- Presence of open flame.
- Product is considered stable.
- Hazardous polymerisation will not occur.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

- Accidental ingestion of the material may be damaging to the health of the individual.

Not normally a hazard due to physical form of product.

Considered an unlikely route of entry in commercial/industrial environments.

Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733).

Ingestion of petroleum hydrocarbons can irritate the pharynx, oesophagus, stomach and small intestine, and

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Section 11 - TOXICOLOGICAL INFORMATION

cause swellings and ulcers of the mucous. Symptoms include a burning mouth and throat; larger amounts can cause nausea and vomiting, narcosis, weakness, dizziness, slow and shallow breathing, abdominal swelling, unconsciousness and convulsions. Damage to the heart muscle can produce heart beat irregularities, ventricular fibrillation (fatal) and ECG changes. The central nervous system can be depressed. Light species can cause a sharp tingling of the tongue and cause loss of sensation there. Aspiration can cause cough, gagging, pneumonia with swelling and bleeding.

Following ingestion, a single exposure to isopropyl alcohol produced lethargy and non-specific effects such as weight loss and irritation. Ingestion of near-lethal doses of isopropanol produces histopathological changes of the stomach, lungs and kidneys, incoordination, lethargy, gastrointestinal tract irritation, and inactivity or anaesthesia.

Swallowing 10 ml. of isopropanol may cause serious injury; 100 ml. may be fatal if not promptly treated. The adult single lethal doses is approximately 250 ml. The toxicity of isopropanol is twice that of ethanol and the symptoms of intoxication appear to be similar except for the absence of an initial euphoric effect; gastritis and vomiting are more prominent. Ingestion may cause nausea, vomiting, and diarrhoea. There is evidence that a slight tolerance to isopropanol may be acquired.

EYE

■ Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals. Prolonged eye contact may cause inflammation characterised by a temporary redness of the conjunctiva (similar to windburn).

Not considered to be a risk because of the extreme volatility of the gas.

Direct eye contact with petroleum hydrocarbons can be painful, and the corneal epithelium may be temporarily damaged. Aromatic species can cause irritation and excessive tear secretion.

Isopropanol vapour may cause mild eye irritation at 400 ppm. Splashes may cause severe eye irritation, possible corneal burns and eye damage. Eye contact may cause tearing or blurring of vision.

Eye exposure to silicone fluids causes temporary irritation of the conjunctiva. Injection into the specific structures of the eye, however, causes corneal scarring, permanent eye damage, allergic reactions and cataract, and may lead to blindness.

SKIN

■ This material can cause inflammation of the skin on contact in some persons.

The material may accentuate any pre-existing dermatitis condition.

Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.

Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

Spray mist may produce discomfort.

Open cuts, abraded or irritated skin should not be exposed to this material.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Low molecular weight silicone fluids may exhibit solvent action and may produce skin irritation.

Excessive use or prolonged contact may lead to defatting, drying and irritation of sensitive skin.

INHALED

■ Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.

Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

Inhalation of toxic gases may cause:

- Central Nervous System effects including depression, headache, confusion, dizziness, stupor, coma and seizures;
- respiratory: acute lung swellings, shortness of breath, wheezing, rapid breathing, other symptoms and

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respiratory arrest;

- heart: collapse, irregular heartbeats and cardiac arrest;
- gastrointestinal: irritation, ulcers, nausea and vomiting (may be bloody), and abdominal pain.

Inhalation hazard is increased at higher temperatures.

Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be fatal.

Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas.

The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.

The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

WARNING: Intentional misuse by concentrating/inhaling contents may be lethal.

The odour of isopropanol may give some warning of exposure, but odour fatigue may occur. Inhalation of isopropanol may produce irritation of the nose and throat with sneezing, sore throat and runny nose. The effects in animals subject to a single exposure, by inhalation, included inactivity or anaesthesia and histopathological changes in the nasal canal and auditory canal.

CHRONIC HEALTH EFFECTS

■ Harmful: danger of serious damage to health by prolonged exposure through inhalation.

This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. This has been demonstrated via both short- and long-term experimentation.

Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility.

There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

Principal route of occupational exposure to the gas is by inhalation.

Constant or exposure over long periods to mixed hydrocarbons may produce stupor with dizziness, weakness and visual disturbance, weight loss and anaemia, and reduced liver and kidney function. Skin exposure may result in drying and cracking and redness of the skin. Chronic exposure to lighter hydrocarbons can cause nerve damage, peripheral neuropathy, bone marrow dysfunction and psychiatric disorders as well as damage the liver and kidneys.

Long term or repeated ingestion exposure of isopropanol may produce incoordination, lethargy and reduced weight gain.

Repeated inhalation exposure to isopropanol may produce narcosis, incoordination and liver degeneration.

Animal data show developmental effects only at exposure levels that produce toxic effects in the adult animals. Isopropanol does not cause genetic damage in bacterial or mammalian cell cultures or in animals.

There are inconclusive reports of human sensitisation from skin contact with isopropanol. Chronic alcoholics are more tolerant of systemic isopropanol than are persons who do not consume alcohol; alcoholics have survived as much as 500 ml. of 70% isopropanol.

Continued voluntary drinking of a 2.5% aqueous solution through two successive generations of rats produced no reproductive effects.

NOTE: Commercial isopropanol does not contain "isopropyl oil". An excess incidence of sinus and laryngeal cancers in isopropanol production workers has been shown to be caused by the byproduct "isopropyl oil".

Changes in the production processes now ensure that no byproduct is formed. Production changes include use of dilute sulfuric acid at higher temperatures.

Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes.

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[PATTYS].

TOXICITY AND IRRITATION

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

NAPHTHA PETROLEUM, LIGHT, HYDROTREATED:

HYDROCARBON PROPELLANT:

MAXI LUBE AEROSOL:

■ No significant acute toxicological data identified in literature search.

ISOPROPANOL:

MAXI LUBE AEROSOL:

■ Isopropanol is irritating to the eyes, nose and throat but generally not to the skin. Prolonged high dose exposure may also produce depression of the central nervous system and drowsiness. Few have reported skin irritation. It can be absorbed from the skin or when inhaled. Intentional swallowing is common particularly among alcoholics or suicide victims and also leads to fainting, breathing difficulty, nausea, vomiting and headache. In the absence of unconsciousness, recovery usually occurred. Repeated doses may damage the kidneys. A decrease in the frequency of mating has been found in among animals, and newborns have been found to have a greater incidence of low birth weight. Tumours of the testes have been observed in the male rat.

NAPHTHA PETROLEUM, LIGHT, HYDROTREATED:

MAXI LUBE AEROSOL:

■ for petroleum:

This product contains benzene which is known to cause acute myeloid leukaemia and n-hexane which has been shown to metabolize to compounds which are neuropathic.

This product contains toluene. There are indications from animal studies that prolonged exposure to high concentrations of toluene may lead to hearing loss.

This product contains ethyl benzene and naphthalene from which there is evidence of tumours in rodents

Carcinogenicity: Inhalation exposure to mice causes liver tumours, which are not considered relevant to humans. Inhalation exposure to rats causes kidney tumours which are not considered relevant to humans.

Mutagenicity: There is a large database of mutagenicity studies on gasoline and gasoline blending streams, which use a wide variety of endpoints and give predominantly negative results. All in vivo studies in animals and recent studies in exposed humans (e.g. petrol service station attendants) have shown negative results in mutagenicity assays.

Reproductive Toxicity: Repeated exposure of pregnant rats to high concentrations of toluene (around or exceeding 1000 ppm) can cause developmental effects, such as lower birth weight and developmental neurotoxicity, on the foetus. However, in a two-generation reproductive study in rats exposed to gasoline vapour condensate, no adverse effects on the foetus were observed.

Human Effects: Prolonged/ repeated contact may cause defatting of the skin which can lead to dermatitis and may make the skin more susceptible to irritation and penetration by other materials.

Lifetime exposure of rodents to gasoline produces carcinogenicity although the relevance to humans has been questioned. Gasoline induces kidney cancer in male rats as a consequence of accumulation of the alpha2-microglobulin protein in hyaline droplets in the male (but not female) rat kidney. Such abnormal accumulation represents lysosomal overload and leads to chronic renal tubular cell degeneration, accumulation of cell debris, mineralisation of renal medullary tubules and necrosis. A sustained regenerative proliferation occurs in epithelial cells with subsequent neoplastic transformation with continued exposure. The alpha2-microglobulin is produced under the influence of hormonal controls in male rats but not in females and, more importantly, not in humans.

POLYDIMETHYLSILOXANE:

NAPHTHA PETROLEUM, LIGHT, HYDROTREATED:

MAXI LUBE AEROSOL:

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■ The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

POLYDIMETHYLSILOXANE:

MAXI LUBE AEROSOL:

■ Siloxanes may impair liver and hormonal function, as well as the lung and kidney. They have not been found to be irritating to the skin and eyes. They may potentially cause cancer (tumours of the womb in females) and may cause impaired fertility or infertility.

POLYDIMETHYLSILOXANE:

TOXICITY

Inhalation (rat) LC50:>1100 mg/m³*

Oral (rat) LD50:>35000 mg/kg*

Dermal (rabbit) LD50:>3000 mg/kg*

No toxic response noted during 90 day subchronic inhalation toxicity studies

The no observable effect level is 450 mg/m³.

Non-irritating and non-sensitising in human patch test. [Xerox]*

IRRITATION

Eye (rabbit):100 mg/1h - Mild

ISOPROPANOL:

TOXICITY

Oral (human) LDLo:3570 mg/kg

Oral (human) TDLo:223 mg/kg

Oral (man) TDLo:14432 mg/kg

Oral (rat) LD50:5045 mg/kg

Dermal (rabbit) LD50:12800 mg/kg

Oral (Human) TDLo:14432 mg/kg

Oral (Human) LD:5272 mg/kg

Oral (Human) LD:3570 mg/kg

Intraperitoneal (Rat) LD50:2735 mg/kg

Intravenous (Rat) LD50:1088 mg/kg

Oral (Mouse) LD50:3600 mg/kg

Intraperitoneal (Mouse) LD50:4477 mg/kg

Intravenous (Mouse) LD50:1509 mg/kg

Oral (Dog) LD:1537 mg/kg

Intravenous (Dog) LD:1024 mg/kg

Intravenous (Cat) LD:1963 mg/kg

Oral (Rabbit) LD50:6410 mg/kg

Intraperitoneal (Rabbit) LD50:667 mg/kg

Intravenous (Rabbit) LD50:1184 mg/kg

Intraperitoneal (Guinea pig) LD50:2560 mg/kg

Inhalation (Mouse) LC50:53000 mg/m³/4h

Oral (Rat) LD50:5000 mg/kg

Intraperitoneal (Rat) TDLo:800 mg/kg

Inhalation (Rat) LC50:72600 mg/m³/4h

Oral (Human) TDLo:286 mg/kg

Inhalation (Human) TClO:35 ppm/4h

Inhalation (Human) TClO:150 ppm/2h

■ The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

The substance is classified by IARC as Group 3:

IRRITATION

Skin (rabbit):500 mg - Mild

Eye (rabbit):10 mg - Moderate

Eye (rabbit):100mg/24hr- Moderate

Eye (rabbit):100 mg - SEVERE

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NOT classifiable as to its carcinogenicity to humans.
Evidence of carcinogenicity may be inadequate or limited in animal testing.

HYDROCARBON PROPELLANT:

- inhalation of the gas.

CARCINOGEN

isopropanol	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	3	Not classifiable as to its carcinogenicity to humans
isopropanol	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	1	Carcinogenic to humans

SKIN

isopropanol	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	1
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Section 12 - ECOLOGICAL INFORMATION

ISOPROPANOL:

HYDROCARBON PROPELLANT:

NAPHTHA PETROLEUM, LIGHT, HYDROTREATED:

DO NOT discharge into sewer or waterways.

POLYDIMETHYLSILOXANE:

Fish LC50 (96hr.) (mg/l): 10000

For Siloxanes:

Environmental Fate: Siloxanes are used in cosmetics, wax, polishes, and to a minor extent in several other applications.

Atmospheric Fate: In the presence of nitrate ions, short chain siloxanes are broken down by sunlight to the level of silicate within days. The main source atmospheric siloxane release to the air is via evaporation.

Aquatic Fate: It is well accepted that polydimethylsiloxane fluids become permanent residents of sediment but should not have adverse environmental effects. Silicone fluids are very surface active on surface waters.

These substances tend to move into the aquatic compartment attached to textiles, sewage sludge, hair, algae, sediment, etc. Non-evaporating silicone fluids used in cosmetics, wax, polishes, cleaning products and those used in textile applications, (softeners), will, to a large extent, end up in wastewater and be directed to wastewater treatment plants.

Ecotoxicity: Siloxanes are chemically stable which makes them very persistent in the environment, where they are expected to remain for many years. The cyclic siloxanes and small-chain linear siloxanes are will concentrate in the food chain concentrated (long-chained siloxanes have not been assessed). The estimated bioconcentration factors, (BCF), of the small siloxanes range from 340 for HMDS to 40,000 for a phenyl trimethicone. The small phenylated siloxanes may be substances are the most toxic for aquatic organisms. EPA screening criteria indicates that all siloxane's are of high concern as to environmental toxicity and that the phenyl siloxanes are considered very bioaccumulative.

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Ecotoxicity: Siloxanes are moderately toxic to fish, including rainbow trout, and sheepshead minnow. These substances are also moderately toxic to *Daphnia magna* water fleas, and mysid shrimp.

NAPHTHA PETROLEUM, LIGHT, HYDROTREATED:

Marine Pollutant Yes

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

For n-Hexane: Log Kow: 3.17-3.94; Henry's Law Constant: 1.69 atm-m³ mol; Vapor Pressure: 150 mm Hg @ 25 C; Log Koc: 2.90 to 3.61. BOD 5, (if unstated): 2.21; COD: 0.04; ThOD: 3.52.

Atmospheric Fate: n-Hexane is not expected to be directly broken down by sunlight. The main atmospheric removal mechanism is through reactions with hydroxyl radicals, with an approximate half-life of 2.9 days. The smog-producing potential of n-hexane is very low, compared to other alkanes, or chlorinated VOCs. Hydroxyl ion reactions in the upper troposphere, therefore, are probably the primary mechanisms for n-hexane degradation in the atmosphere.

Terrestrial Fate: Surface evaporation is expected to be the main fate process of this substance in soil. The substance has a moderate ability to sorb to soil particles but, is expected to have low potential for leaching into the lower soil depths. n-Hexane is expected to generally stay near the soil surface and, if not appreciably sorbed into the soil matrix, will eventually evaporate. Exceptions would involve locations with shallow groundwater tables where large spills occur - in such cases, n-hexane would spread out to contaminate a large volume of soil. Once introduced into groundwater, n-hexane may be fairly persistent, since its degradation by water is slow and opportunities for biodegradation may be limited, (due to low oxygen conditions), or, where nutrients, such as nitrogen or phosphorus, are in limited supply. Biological breakdown is probably the most significant degradation mechanism in groundwater. *Pseudomonas mendocina* bacteria have been shown to break the substance down in groundwater and mixed/pure bacterial cultures can utilize the substance, in the presence of oxygen. The most important biological breakdown process involves the conversion of n-hexane to primary alcohols, aldehydes and, ultimately, into fatty acids. In general, unless the n-hexane is buried at some depth within a soil or sediment, evaporation is generally assumed to occur at a much more rapid rate than chemical or biochemical degradation processes.

Aquatic Fate: The dominant transport process from water is evaporation, with an estimated half-life of <3 hours. For standing bodies of water, a half-life no longer than 6.8 days is estimated. The substance has very low water solubility and is resistant to breakdown by water. Few data exist for the biological breakdown of n-hexane in water, however; this process is not considered to be as rapid as evaporation. N-Hexane may be persistent if released to deep sediment.

Ecotoxicity: This substance is not expected to concentrate/accumulate in aquatic organisms or the food chain. These substances are considered to be the most readily biodegradable fractions in petroleum, particularly when oxygen is present in solution. The substance is moderately toxic to rainbow trout, fathead minnow, bluegill, and *Daphnia* water fleas.

ISOPROPANOL:

log Kow (Sangster 1997):	0.05
log Pow (Verschueren 1983):	- 0.5714285
BOD5:	60%
BOD20:	78%
COD:	2.23
ThOD:	2.4
Half- life Soil - High (hours):	168
Half- life Soil - Low (hours):	24
Half- life Air - High (hours):	72
Half- life Air - Low (hours):	6.2
Half- life Surface water - High (hours):	168
Half- life Surface water - Low (hours):	24

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Half- life Ground water - High (hours):	336
Half- life Ground water - Low (hours):	48
Aqueous biodegradation - Aerobic - High (hours):	168
Aqueous biodegradation - Aerobic - Low (hours):	24
Aqueous biodegradation - Anaerobic - High (hours):	672
Aqueous biodegradation - Anaerobic - Low (hours):	96
Photooxidation half- life water - High (hours):	1.90E+05
Photooxidation half- life water - Low (hours):	4728
Photooxidation half- life air - High (hours):	72
Photooxidation half- life air - Low (hours):	6.2

For Isopropanol (IPA):

log Kow: -0.16- 0.28;

Half-life (hr) air: 33-84;

Half-life (hr) H₂O surface water: 130;

Henry's atm m³ /mol: 8.07E-06;

BOD 5: 1.19,60%;

COD: 1.61-2.30, 97%;

ThOD: 2.4;

BOD 20: >70%.

Environmental Fate: IPA is expected to partition primarily to the aquatic compartment (77.7%) with the remainder to the air (22.3%). Overall, IPA presents a low potential hazard to aquatic or terrestrial biota.

Aquatic Fate: IPA has been shown to biodegrade rapidly in aerobic, aqueous biodegradation tests and therefore, would not be expected to persist in aquatic habitats. IPA is expected to volatilize slowly from water. The calculated half-life for the volatilization from surface water (1 meter depth) is predicted to range from 4 days (from a river) to 31 days (from a lake). Hydrolysis is not considered a significant degradation process for IPA, however; aerobic biodegradation of IPA has been shown to occur rapidly under non-acclimated conditions. IPA is readily biodegradable in both freshwater and saltwater (72 to 78% biodegradation in 20 days).

Terrestrial Fate: Soil - IPA is also not expected to persist in surface soils due to rapid evaporation to the air. IPA will evaporate quickly from soil and is not expected to partition to the soil however; IPA has the potential to leach through the soil due to its low soil adsorption. Plants - Toxicity of IPA to plants is expected to be low.

Atmospheric Fate: IPA is subject to oxidation predominantly by hydroxy radical attack. The atmospheric half-life is expected to be 10 to 25 hours. Direct photolysis is not expected to be an important transformation process for the degradation of IPA.

Ecotoxicity: IPA has been shown to have a low order of acute aquatic toxicity and is not acutely toxic to fish and invertebrates. Chronic aquatic toxicity has also been shown to be of low concern and bioconcentration in aquatic organisms is not expected to occur.

HYDROCARBON PROPELLANT:

For Petroleum Hydrocarbon Gases:

Environmental Fate: Petroleum hydrocarbon gases are primarily produced in petroleum refineries, or in gas plants that separate natural gas and natural gas liquids. This category contains 99 petroleum hydrocarbon gas substances, the majority of which never reach the consumer. Petroleum hydrocarbon gases do not contain inorganic compounds, (e.g. hydrogen sulfide, ammonia, and carbon monoxide), other than asphyxiant gases; the low molecular weight hydrocarbon molecules are primarily responsible for the hazard associated with these gases.

Atmospheric Fate: All components of these gases will evaporate to the air where interaction with hydroxyl radicals is an important fate process. Substances in refinery gases that evaporate to air may undergo indirect, gas-phase oxidation reaction with hydroxyl radicals and this is an important fate process for these substances. Half-lives for refinery gases range from 960 days, (methane), to 0.16 days, (butadiene). The constituents of the C₅- C₆ hydrocarbon gases have light breakdown half-lives of approximately two days. The inorganic gases are chemically stable and may be lost to the atmosphere or simply become involved in the environmental recycling of their atoms.

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Terrestrial Fate: Biological breakdown of these organisms is not expected to be an important fate process since they tend to evaporate to the air, however; some of the higher weight components may become available for microbial attack. Naphtha gases are also considered to be inherently biodegradable.

Aquatic Fate: The solubilities of these substances in water vary, ranging from approximately 22 parts per million to several hundred parts per million. Some of these gasses have substantial water solubility, but they will eventually evaporate to the atmosphere. Refinery gases are not broken down by water but, they will be broken down by microbes. Gaseous hydrocarbons are widespread in nature and numerous types of microbes have evolved which are capable of oxidizing these substances as their sole energy source.

Ecotoxicity: These substances vary in their toxicities to aquatic organisms from slightly toxic to moderately toxic. They are not expected to persist long enough in the environment to elicit toxicity. Emissions of petroleum hydrocarbon gases to the atmosphere would not likely result in acutely toxic concentrations in adjacent water bodies because such emissions will tend to remain in the atmosphere. Several of the constituents in refinery gases were shown to be highly hazardous to aquatic organisms in laboratory toxicity tests where exposure concentrations can be maintained over time. Hydrogen sulfide was shown to be the most toxic constituent to fish, and invertebrates.

For Isobutene (Refrigerant Gas): Koc: 35, (estimated); Henry's Law Constant: 4.08 atm-cu m/mole; Vapor Pressure: 2611 mm Hg @ 25 deg C; BCF: 74, (estimated).

Atmospheric Fate: Isobutane is a gas at ordinary temperatures. The substance is highly flammable and explosive. It is degraded in the atmosphere by reactions with hydroxyl radicals; the half-life for this reaction in air is 6.9 days. The loss of these substances via wet/dry deposition is thought to be of minor importance. It is thought that the substance will evaporate upon leaving the atmosphere in precipitation then reemitted to the atmosphere after deposition to the land. Isobutane is a contributor to the production of PAN, (peroxyacyl nitrates), under photochemical smog conditions.

Terrestrial Fate: Isobutane will have very high mobility in soil and low adsorption potential. Evaporation from dry/moist soil surfaces is an important fate process for this substance. Isobutane is biodegradable, especially under acclimated conditions, and may biodegrade in soil. The substance is not expected to contaminate the soil.

Aquatic Fate: Isobutane is not expected to not adsorb to sediment/particulate matter in the water column. Isobutane will readily evaporate from water with an estimated half-life of 2.2 hours, for a model river and 3.0 days. If the gas is introduced to water, it will float and boil, producing a flammable, and visible, vapor cloud. Isobutane will not concentrate in aquatic organisms and will be broken down by microorganisms in water, however; the substance will not contaminate the water.

Ecotoxicity: Isobutane has slight acute toxicity to aquatic life. Short-term effects include death of animals, fish, and birds and low growth rate in plants. Long term, (chronic), effects include shortened life-spans, reproductive problems, lowered fertility, and appearance/behavioral changes in animals.

For Propane: Koc 460. log Kow 2.36.

Henry's Law constant of 7.07×10^{-1} atm-cu m/mole, derived from its vapour pressure, 7150 mm Hg, and water solubility, 62.4 mg/L. Estimated BCF: 13.1.

Terrestrial Fate: Propane is expected to have moderate mobility in soil. Volatilization from moist soil surfaces is expected to be an important fate process. Volatilization from dry soil surfaces is based vapor pressure. Biodegradation may be an important fate process in soil and sediment.

Aquatic Fate: Propane is expected to adsorb to suspended solids and sediment. Volatilization from water surfaces is expected and half-lives for a model river and model lake are estimated to be 41 minutes and 2.6 days, respectively. Biodegradation may not be an important fate process in water.

Ecotoxicity: The potential for bioconcentration in aquatic organisms is low.

Atmospheric Fate: Propane is expected to exist solely as a gas in the ambient atmosphere. Gas-phase propane is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 14 days and is not expected to be susceptible to direct photolysis by sunlight.

Marine Pollutant

Yes

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Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
polydimethylsiloxane	No Data Available	No Data Available	LOW	No Data Available
naphtha petroleum, light, hydrotreated	No Data Available	No Data Available	No Data Available	No Data Available
isopropanol	LOW	MED	LOW	HIGH
hydrocarbon propellant	No Data Available	No Data Available	No Data Available	No Data Available

Section 13 - DISPOSAL CONSIDERATIONS

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Consult State Land Waste Management Authority for disposal.
- Discharge contents of damaged aerosol cans at an approved site.
- Allow small quantities to evaporate.
- DO NOT incinerate or puncture aerosol cans.
- Bury residues and emptied aerosol cans at an approved site.

Section 14 - TRANSPORTATION INFORMATION



Labels Required: FLAMMABLE GAS

HAZCHEM:

2YE (ADG7)

ADG7:

Class or Division	2.1	Subsidiary Risk1:	None
UN No.:	1950	Packing Group:	None
Special Provision:	63 190 277 327	Limited Quantity:	See SP 277
Portable Tanks & Bulk Containers - Instruction:	None	Portable Tanks & Bulk Containers - Special Provision:	None
Packagings & IBCs - Packing Instruction:	P003 LP02	Packagings & IBCs - Special Packing Provision:	PP17 PP87 L2
Name and Description:	AEROSOLS		

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Air Transport IATA:

ICAO/IATA Class	2.1	ICAO/IATA Subrisk:	None
UN/ID Number:	1950	Packing Group:	-
Special provisions:	A145A167A802		
Cargo Only			
Packing Instructions:	203	Maximum Qty/Pack:	150 kg
Passenger and Cargo		Passenger and Cargo	
Packing Instructions:	203	Maximum Qty/Pack:	75 kg
Passenger and Cargo Limited Quantity		Passenger and Cargo Limited Quantity	
Packing Instructions:	Y203	Maximum Qty/Pack:	30 kg G

Shipping name:AEROSOLS

Maritime Transport IMDG:

IMDG Class	2.1	IMDG Subrisk:	None
UN Number:	1950	Packing Group:	None
EMS Number:	F-D,S-U	Special provisions:	63 190 277 327 344 959
Limited Quantities:	SP277	Marine Pollutant:	Yes

Shipping name:AEROSOLS

Section 15 - REGULATORY INFORMATION

Indications of Danger:

F+ Extremely flammable
N Dangerous for the environment
Xn Harmful

POISONS SCHEDULE

S5

REGULATIONS

Maxi Lube Aerosol (CAS:) is found on the following regulatory lists;

"Australia Exposure Standards", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO Provisional Categorization of Liquid Substances - List 3: (Trade-named) mixtures containing at least 99% by weight of components already assessed by IMO, presenting safety hazards", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Chemical Secretariat (ChemSec) SIN List (*Substitute It Now!)", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-Aldrich Transport Information"

Regulations for ingredients

polydimethylsiloxane (CAS: 63148-62-9) is found on the following regulatory lists;

"Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Inventory of Chemical Substances (AICS)", "IMO IBC Code Chapter 17: Summary of minimum

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Maxi Lube Aerosol

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Section 15 - REGULATORY INFORMATION

requirements", "IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution – United Kingdom", "Sigma-AldrichTransport Information"

naphtha petroleum, light, hydrotreated (CAS: 64742-49-0) is found on the following regulatory lists;

"Australia Exposure Standards", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO Provisional Categorization of Liquid Substances - List 3: (Trade-named) mixtures containing at least 99% by weight of components already assessed by IMO, presenting safety hazards", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Chemical Secretariat (ChemSec) SIN List (*Substitute It Now!)", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-AldrichTransport Information"

isopropanol (CAS: 67-63-0) is found on the following regulatory lists;

"Acros Transport Information", "Australia Exposure Standards", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Quarantine and Inspection Service List of chemical compounds that are accepted solely for use at establishments registered to prepare meat and meat products for the purpose of the Export Control Act 1982", "FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO IBC Code Chapter 18: List of products to which the Code does not apply", "IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "IMO Provisional Categorization of Liquid Substances - List 2: Pollutant only mixtures containing at least 99% by weight of components already assessed by IMO", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Fragrance Association (IFRA) Survey: Transparency List", "IOFI Global Reference List of Chemically Defined Substances", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-AldrichTransport Information"

hydrocarbon propellant (CAS: 68476-85-7, 68476-86-8) is found on the following regulatory lists;

"Australia - New South Wales -Work Health and Safety Regulation 2011 - Hazardous chemicals", "Australia - Queensland Work Health and Safety Regulation - Hazardous chemicals at major hazard facilities (and their threshold quantity)", "Australia - Tasmania - Work Health and Safety Regulations 2012 - Hazardous Chemicals at Major Hazard Facilities (and their Threshold Quantity) - Table 15.1", "Australia Exposure Standards", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia Work Health and Safety Regulations 2011 - Hazardous chemicals at major hazard facilities and their threshold quantity", "International Chemical Secretariat (ChemSec) SIN List (*Substitute It Now!)", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Numbering System for Food Additives", "OECD List of High Production Volume (HPV) Chemicals"

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Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
hydrocarbon propellant	68476-85-7, 68476-86-8

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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This is the end of the MSDS.