



SAFETY DATA SHEET

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Issue Date: 19 May 2017
Engine Flush
Version: 1

Product name: Engine Flush

1. COMPANY DETAILS AND PRODUCT IDENTIFICATION

COMPANY: Hi-Tec Oil Traders Pty Ltd. (ABN 28 053 837 362)

ADDRESS: PO Box 322 Castle Hill NSW 1765
5 Tarlington Place, Smithfield NSW 2164

TELEPHONE NUMBER: 1300 796 009

FAX NUMBER: (02) 9604 1611

EMERGENCY TELEPHONE NUMBER: 1300 796 009

PRODUCT NAME: Engine Flush

OTHER NAMES: None

MANUFACTURER'S PRODUCT CODE: HI8-3302

USE: Engine cleaner additive

ADDITIONAL INFORMATION: Refer to Product Information Sheet for additional information

OTHER INFORMATION: Visit our website: www.hi-tecoils.com.au
Email: hitecoils@hi-tecoils.com.au

2. HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE: HAZARDOUS SUBSTANCE
DANGEROUS GOODS
Hazard classification according to criteria of NOHSC and GHS.
Dangerous Goods classification according to the Australian Dangerous Goods (ADG) Code, IATA and IMDG criteria.

DANGEROUS GOODS: Class 9, Environmentally Hazardous Substance, Liquid, N.O.S

HAZARDOUS SUBSTANCE: COMBUSTIBLE LIQUID, regulated for storage purposes only.

POISON SCHEDULE: S5



SIGNAL WORD(S): DANGER



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2. HAZARDS IDENTIFICATION (CONT)

GHS HAZARD CLASSIFICATIONS

Flammable liquid:	Category 4
Skin Corrosion/Irritation:	Category 2
Carcinogenicity:	Category 2
Aspiration Hazard:	Category 1
Acute Aquatic Hazard:	Category 1
Chronic Aquatic Hazard:	Category 1

HAZARD STATEMENTS:	H227: Combustible liquid
	H315: Causes skin irritation.
	H351: Suspected of causing cancer.
	H304: May be fatal if swallowed and enters airways.
	H410: Very toxic to aquatic life with long lasting effects.

PREVENTION STATEMENTS:	P201: Obtain special instructions before use.
	P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
	P281: Use personal protective equipment as required.
	P273: Avoid release to the environment.
	P280: Wear protective gloves/protective clothing/eye protection/face protection

RESPONSE STATEMENTS:	P301+P310: IF SWALLOWED: Immediately call the POISON INFORMATION CENTER on 13 11 26 or doctor/physician.
	P308+P313: IF exposed or concerned: Get medical advice/attention.
	P331: Do NOT induce vomiting.
	P362: Take off contaminated clothing and wash before reuse.
	P370+P378: In case of fire: Use alcohol resistant foam or normal protein foam for extinction.
	P391: Collect spillage.
	P302+P352: IF ON SKIN: Wash with plenty of soap and water.
	P332+P313: If skin irritation occurs: Get medical advice/attention.

STORAGE STATEMENTS:	P403+P235: Store in a well-ventilated place. Keep cool.
	P405: Store locked up.

DISPOSAL STATEMENT:	P501: Dispose of contents/container in accordance with local regulations.
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3. IDENTIFICATION / COMPOSITION OF INGREDIENTS

Ingredients	CAS No	Conc,%
Middle distillate	68476-34-6	30-60
Kerosene, (petroleum), hydrodesulfurised	64742-81-0	10-30
Mineral oil	-	10-30
Aromatic 150	64742-95-6	<10
Other non hazardous ingredients	-	<10

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non-hazardous ingredients are also possible.





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4. FIRST AID MEASURES

GENERAL INFORMATION:

You should call the Poisons Information Centre on 13 11 26 from anywhere in Australia (0800 764 766 in New Zealand) if you feel that you may have been poisoned, burned or irritated by this product.

Have this SDS with you when you call.

EYE CONTACT:

Wash out immediately 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.

Seek medical attention without delay; if pain persists or recurs seek medical attention.

Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN CONTACT:

Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.

INHALATION:

If fumes or combustion products are inhaled remove from contaminated area.

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. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor.

INGESTION:

If swallowed do **NOT** induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Seek medical advice.

IMMEDIATE MEDICAL ATTENTION / SPECIAL TREATMENT NEEDED:

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 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].



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5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA:	Foam. Dry chemical powder. BCF (where regulations permit). Carbon dioxide. Water spray or fog - Large fires only.
FIRE INCOMPATIBILITY:	Avoid contamination with strong oxidising agents as ignition may result.
FIRE AND EXPLOSION HAZARDS:	Combustible. Slight fire hazard when exposed to heat or flame. Heating may cause expansion or decomposition leading to violent rupture of containers. On combustion, may emit toxic fumes of carbon monoxide (CO). May emit acrid smoke. Mists containing combustible materials may be explosive. Other combustion products include: carbon dioxide (CO ₂)
FIRE FIGHTING:	Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course. Use water delivered as a fine spray to control fire and cool adjacent area. Avoid spraying water onto liquid pools. 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.
HAZCHEM:	•3Z

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures - See section 8

Environmental precautions - See section 12

MINOR SPILLS:	Environmental hazard - contain spillage. Slippery when spilt. Remove all ignition sources. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact with the substance, by using protective equipment. Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable, labelled container for waste disposal.
MAJOR SPILLS:	Environmental hazard - contain spillage. Slippery when spilt. Moderate hazard. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course. No smoking, naked lights or ignition sources. Increase ventilation. Stop leak if safe to do so. Contain spill with sand, earth or vermiculite. Collect recoverable product into labelled containers for recycling. Absorb remaining product with sand, earth or vermiculite. Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains. If contamination of drains or waterways occurs, advise emergency services.



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7. HANDLING AND STORAGE

SAFE 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. Keep containers securely sealed when not in use. 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 SDS. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

SAFE STORAGE:

Store in original containers. Keep containers securely sealed. No smoking, naked lights or ignition sources. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storage and handling recommendations contained within this SDS.

SUITABLE CONTAINER:

Use metal can or drum packaging as recommended by manufacturer. Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY:

Avoid storage with oxidisers. Avoid strong acids, acid chlorides, acid anhydrides and chloroformates.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS

OCCUPATIONAL EXPOSURE LIMITS (OEL):

Ingredient	Material name	TWA	STEL	Peak	Notes
Mineral Oil	Oil mist, refined mineral	5 mg/m ³	N/A	N/A	Sk

EMERGENCY LIMITS:

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
Middle distillates	Diesel fuels: includes diesel fuel No. 4 (68476-31-3), fuel oil No. 2 (68476-30-2), fuel oil residual (68476-33-5)	300 mg/m ³	3,300 mg/m ³	20,000 mg/m ³

Ingredient	Original IDLH	Revised IDLH
Middle distillate	Not available	Not available
Kerosene, (petroleum), hydrodesulfurised	Not available	Not available
Mineral oil	Not available	Not available
Aromatic 150	Not available	Not available
Ingredients determined not to be hazardous	Not available	Not available





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8. EXPOSURE CONTROLS / PERSONAL PROTECTION (CONT)

MATERIAL DATA:

NOTE M: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 0.005% w/w benzo[a]pyrene (EINECS No 200-028-5). This note applies only to certain complex oil-derived substances in Annex IV.

European Union (EU) List of harmonised classification and labelling hazardous substances, Table 3.1, Annex VI, Regulation (EC) No 1272/2008 (CLP) - up to the latest ATP.

NOTE P: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 0.01% w/w benzene (EINECS No 200-753-7).

Note E: Shall also apply when the substance is classified as a carcinogen. This note applies only to certain complex oil-derived substances in Annex VI. European Union (EU) List of harmonised classification and labelling hazardous substances, Table 3.1, Annex VI, Regulation (EC) No 1272/2008 (CLP) - up to the latest ATP.

NOTE N: The classification as a carcinogen need not apply if the full refining history is known and it can be shown that the substance from which it is produced is not a carcinogen. This note applies only to certain complex oil-derived substances in Annex VI. European Union (EU) List of harmonised classification and labelling hazardous substances, Table 3.1, Annex VI, Regulation (EC) No 1272/2008 (CLP) - up to the latest ATP.

ENGINEERING CONTROLS:

Use in a well-ventilated area. General exhaust is adequate under normal operating conditions.

PERSONAL PROTECTION:

Safety gloves.
Safety footwear.
PVC aprons or overalls.
Respirator with type A filter.
Barrier cream.

EYE PROTECTION:

Safety glasses with side shields; or as required. 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]

HAND/FEET PROTECTION:

Gloves: Butyl rubber, neoprene, PVC.
Safety footwear: PVC boots.

BODY PROTECTION:

Overalls. Barrier cream. Eyewash unit.

THERMAL HAZARDS:

Not available.



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8. EXPOSURE CONTROLS / PERSONAL PROTECTION (CONT)

RESPIRATORY PROTECTION:

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent). Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required minimum protection factor

Up to 10 x ES

Up to 50 x ES

Up to 100 x ES

Half face respirator

A-AUS P3

-

-

Full face respirator

-

A-AUS / Class 1 P3

A-2 P3

Powered air respirator

A-PAPR-AUS / Class 1 P3

-

A-PAPR-2 P3^

^ - Full-face

A (All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide (HCN), B3 = Acid gas or hydrogen cyanide (HCN), E = Sulfur dioxide (SO₂), G = Agricultural chemicals, K = Ammonia (NH₃), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds (below 65 degC).

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION & COLOUR: Clear yellow liquid with a petroleum odour, does not mix with water.

ODOUR: Petroleum odour

ODOUR THRESHOLD: Not available

pH (as supplied): Not applicable

FREEZING/MELTING POINT (°C): Not available

BOILING POINT/RANGE (°C): Not available

FLASH POINT (°C): >61

EVAPORATION RATE: Not available

RELATIVE DENSITY (WATER=1): 0.804-0.824

PARTITION COEFFICIENT: Not available

AUTOIGNITION TEMP (°C): Not available

DECOMPOSITION TEMPERATURE: Not available

VISCOSITY (cSt): Not available



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9. PHYSICAL AND CHEMICAL PROPERTIES (CONT)

MOLECULAR WEIGHT (g/mol):	Not applicable
TASTE:	Not available
EXPLOSIVE PROPERTIES:	Not available
FLAMMABILITY:	Combustible
EXPLOSIVE LIMITS:	Not available
VAPOUR PRESSURE (kPa):	Not available
SOLUBILITY IN WATER (g/l):	Immiscible
VAPOUR DENSITY (AIR=1)	>1
OXIDISING PROPERTIES:	Not available
SURFACE TENSION (dyn/cm or mN/m)	Not available
VOLATILE COMPONENT (% vol):	Not available
GAS GROUP:	Not available
pH as a solution (1%):	Not applicable
VOC (g/l)	830.1

10. STABILITY AND REACTIVITY

REACTIVITY:	See section 7.
CHEMICAL STABILITY:	Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur.
HAZARDOUS REACTIONS:	See section 7.
CONDITIONS TO AVOID:	See section 7.
INCOMPATIBILITIES:	See section 7.
DECOMPOSITION PRODUCTS:	See section 5.



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11. TOXICOLOGICAL INFORMATION

INHALED:

Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo. Inhalation hazard is increased at higher temperatures. Acute effects from inhalation of high concentrations of gas/vapour are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterised by headache and dizziness, increased reaction time, fatigue and loss of co-ordination.

INGESTION:

The liquid is highly discomforting. Ingestion may result in nausea, pain, vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.

SKIN CONTACT:

Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. The material may accentuate any pre-existing skin condition.

EYE CONTACT:

Limited evidence exists, or practical experience suggests, that the material may cause eye irritation in a substantial number of individuals and/or is expected to produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

CHRONIC:

On the basis, primarily, of animal experiments, concern has been expressed that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment. Repeated or prolonged exposure to mixed hydrocarbons may produce narcosis with dizziness, weakness, irritability, concentration and/or memory loss, tremor in the fingers and tongue, vertigo, olfactory disorders, constriction of visual field, paraesthesias of the extremities, weight loss and anaemia and degenerative changes in the liver and kidney. Chronic exposure by petroleum workers, to the lighter hydrocarbons, has been associated with visual disturbances, damage to the central nervous system, peripheral neuropathies (including numbness and paraesthesias), psychological and neurophysiological deficits, bone marrow toxicities (including hypoplasia possibly due to benzene) and hepatic and renal involvement. Chronic dermal exposure to petroleum hydrocarbons may result in defatting which produces localised dermatoses. Surface cracking and erosion may also increase susceptibility to infection by microorganisms. One epidemiological study of petroleum refinery workers has reported elevations in standard mortality ratios for skin cancer along with a dose-response relationship indicating an association between routine workplace exposure to petroleum or one of its constituents and skin cancer, particularly melanoma.



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11. TOXICOLOGICAL INFORMATION (CONT)

CHRONIC:

Other studies have been unable to confirm this finding.

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

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TOXICITY

Not available

IRRITATION

Not available

Middle distillate

Dermal (rabbit) LD50: >4200 mg/kg^[1]

Oral (rat) LD50: 7560 mg/kgd^[1]

Not available

Kerosene, (petroleum), hydrodesulfurised

Dermal (rabbit) LD50: >2000 mg/kg^[1]

Oral (rat) LD50: >5000 mg/kg^[1]

Not available

Mineral oil

Not available

Not available

Aromatic 150

Dermal (rabbit) LD50: >1900 mg/kg^[1]

Dermal (rat) LD50: >2000 mg/kg^[1]

Inhalation (rat) LC50: >0.59 mg/L/4hr^[2]

Inhalation (rat) LC50: >3670 ppm/8 h*^[2]

Oral (rat) LD50: >2000 mg/kg^[1]

Oral (rat) LD50: >4500 mg/kg^[1]

Not available

MIDDLE DISTILLATE:

No significant acute toxicological data identified in literature search.

KEROSENE, (PETROLEUM), HYDRODESULFURISED:

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

For "kerosenes"

Acute toxicity: Oral LD50s for three kerosenes (Jet A, CAS No. 8008-20-6 and CAS No. 64742-81-0) ranged from > 2 to >20 g/kg The dermal LD50s of the same three kerosenes were all >2.0 g/kg. Inhalation LC50 values in Sprague-Dawley rats for straight run kerosene (CAS No. 8008-20-6) and hydrodesulfurised kerosene (CAS No. 64742-81-0) were reported to be > 5 and > 5.2 mg/l, respectively. No mortalities in rats were reported in rats when exposed for eight hours to saturated vapor of deodorised kerosene (probably a desulfurised kerosene). Six hour exposures of cats to the same material produced an LC50 of >6.4 mg/l When tested in rabbits for skin irritation, straight run kerosene (CAS No. 8008-20-6) produced "moderate" to "severe" irritation. Six additional skin irritation studies on a range of kerosenes produced "mild" to "severe" irritation. An eye irritation in rabbits of straight run kerosene (CAS No. 8008-20-6) produced Draize scores of 0.7 and 2.0 (unwashed and washed eyes) at 1 hour. By 24 hours, the Draize scores had returned to zero. Eye irritation studies have also been reported for hydrodesulfurized kerosene and jet fuel.



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11. TOXICOLOGICAL INFORMATION (CONT)

KEROSENE, (PETROLEUM),
HYDRODESULFURISED:

These materials produced more irritation in the unwashed eyes at 1 hour than had the straight run kerosene. The eye irritation persisted longer than that seen with straight run kerosene, but by day 7 had resolved. Straight run kerosene (CAS No. 8008-20-6), Jet A, and hydrodesulfurized kerosene (CAS No. 64742-81-0) have not produced sensitisation when tested in guinea pigs.

Repeat-Dose toxicity: Multiple repeat-dose toxicity studies have been reported on a variety of kerosenes or jet fuels. When applied dermally, kerosenes and jet fuels have been shown to produce dermal and systemic effects. Dose levels of 200, 1000 and 2000 mg/kg of a straight run kerosene (CAS No. 8008-20-6) were applied undiluted to the skin of male and female New Zealand white rabbits. The test material was applied 3x/week for 28 days. One male and one female in the 2000 mg/kg dose group found dead on days 10 and 24 respectively were thought to be treatment-related. Clinical signs that were considered to be treatment-related included: thinness, nasal discharge, lethargy, soiled anal area, anal discharge, wheezing. The high dose group appeared to have a treatment related mean body weight loss when compared to controls. Dose-related skin irritation was observed, ranging from "slight" to "moderate" in the low and high dose groups, respectively. Other treatment-related dermal findings included cracked, flaky and/or leathery skin, crusts and/or hair loss. Reductions in RBC, haemoglobin and haematocrit were seen in the male dose groups. There were no treatment related effects on a variety of clinical chemistry values. Absolute and relative weights for a number of organs were normal, with the following exceptions that were judged to be treatment-related:

- increased relative heart weights for the mid- and high- dose males and females,
- increased absolute and relative spleen weights in treated females, and
- differences in absolute and relative adrenal weights in both male and female treated animals (considered to be stress-related and therefore, indirectly related to treatment).

Gross necropsy findings were confined largely to the skin. Enlarged spleens were seen in the female groups. Microscopic examination of tissues taken at necropsy found proliferative inflammatory changes in the treated skin of all male and female animals in the high dose group. These changes were, in the majority of animals, accompanied by an increase in granulopoiesis of the bone marrow. Four of six high dose males had testicular changes (multifocal or diffuse tubular hypoplasia) that were considered by the study authors to be secondary to the skin and/or weight changes. In a different study hydrodesulfurised kerosene was tested in a thirteen-week dermal study using Sprague-Dawley rats. Test material was applied 5x/week to the skin of male and female rats at dose levels of 165, 330 and 495 mg/kg. Aside from skin irritation at the site of application, there were no treatment-related clinical signs during the study. Screening of all animals using a functional observation battery (FOB) did not find any substance-related effects. Ophthalmological examination of all animals also found no treatment-related effects. There were no treatment-related effects on growth rates, hematological or clinical chemical values, or absolute or relative organ weights. Microscopic examination of tissues from animals surviving to termination found no treatment related changes, with the exception of a minimal degree of a proliferative and inflammatory changes in the skin. A hydrodesulfurised middle distillate (CAS no. 64742-80-9) has also been tested in a four week inhalation study. In the study, Sprague-Dawley rats were exposed to a nominal concentration of 25mg/m³ kerosene.



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11. TOXICOLOGICAL INFORMATION (CONT)

KEROSENE, (PETROLEUM),
HYDRODESULFURISED:

Exposures were for approximately 6 hr/day, five days each week for four consecutive weeks. There were no treatment-related effects on clinical condition, growth rate, absolute or relative organ weights, or any of the hematological or clinical chemistry determinations. Microscopic examination found no treatment-related changes observed in any tissues.

Carcinogenicity: In addition to the repeat-dose studies discussed above, a number of dermal carcinogenicity studies have been performed on kerosenes or jet fuels. Following the discovery that hydrodesulfurised (HDS) kerosene caused skin tumors in lifetime mouse skin painting studies, the role of dermal irritation in tumor formation was extensively studied. HDS kerosene proved to be a mouse skin tumor promoter rather than initiator, and this promotion required prolonged dermal irritation. If the equivalent dose of kerosene was applied to the skin in manner that did not cause significant skin irritation (eg, dilution with a mineral oil) no skin tumors occurred. Dermal bioavailability studies in mice confirmed that the reduced irritation seen with samples in mineral oil was not due to decreased skin penetration. The effect of chronic acanthosis on the dermal tumorigenicity of hydrodesulfurised kerosene was studied and the author concluded that hyperplasia was essential for tumor promotion. However, the author also concluded that subacute inflammation did not appear to be a significant factor. A sample of a hydrodesulfurised kerosene has been tested in an initiation-promotion assay in male CD-1 mice. Animal survivals were not effected by exposure to the kerosene. The study's authors concluded that the kerosene was not an initiator but it did show tumor promoting activity.

In-Vitro (Genotoxicity): The potential *in vitro* genotoxicities of kerosene and jet fuel have been evaluated in a variety of studies. Standard Ames assays on two kerosene samples and a sample of Jet A produced negative results with/without activation. Modified Ames assays on four kerosenes also produced negative results (with/without activation) except for one positive assay that occurred with activation. The testing of five kerosene and jet fuel samples in mouse lymphoma assays produced a mixture of negative and positive results. Hydrodesulfurized kerosene tested in a sister chromatid exchange assay produced negative results (with/without activation).

In-Vivo Genotoxicity: Multiple *in vivo* genotoxicity studies have been done on a variety of kerosene-based materials. Four samples of kerosene were negative and a sample of Jet A was positive in *in vivo* bone marrow cytogenetic tests in Sprague-Dawley rats. One of the kerosene samples produced a positive response in male mice and negative results in females when tested in a sister chromatid exchange assay. Both deodorised kerosene and Jet A samples produced negative results in dominant lethal assays. The kerosene was administered to both mice and rats intraperitoneally, while the jet fuel was administered only to mice via inhalation.

Reproductive/Developmental Toxicity Either 0, 20, 40 or 60% (v/v) kerosene in mineral oil was applied to the skin of the rats. The dose per body weight equivalents were 0, 165, 330 and 494 mg/kg. Test material was applied daily, 7 days/week from 14 days pre-mating through 20 days of gestation. There were no treatment-related effects on mortality and no clinical signs of toxicity were observed.



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11. TOXICOLOGICAL INFORMATION (CONT)

KEROSENE, (PETROLEUM), HYDRODESULFURISED:

There were no compound-related effects on any of the reproductive/developmental parameters. The authors concluded that the no observable effect level (NOEL) for reproductive/developmental toxicity of HDS kerosene under the treatment conditions of the study was 494 mg/kg/day. Developmental toxicity screening studies on a kerosene and a sample of Jet A have been reported. There were no compound-related deaths in either study. While kerosene produced no clinical signs, the jet fuel produced a dose-related eye irritation (or infection). The signs of irritation lasted from 2 to 8 days with most animals showing signs for 3 days. Neither of the test materials had an effect on body weights or food consumption. Examination of offspring at delivery did not reveal any treatment-related abnormalities, soft tissue changes or skeletal abnormalities. The sex ratio of the fetuses was also unaffected by treatment with either of the compounds.

MINERAL OIL:

Toxicity and Irritation data for petroleum-based mineral oils are related to chemical components and vary as does the composition and source of the original crude. A small but definite risk of occupational skin cancer occurs in workers exposed to persistent skin contamination by oils over a period of years. This risk has been attributed to the presence of certain polycyclic aromatic hydrocarbons (PAH) (typified by benz[a]pyrene). Petroleum oils which are solvent refined/extracted or severely hydrotreated, contain very low concentrations of both.

AROMATIC 150:

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

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.



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11. TOXICOLOGICAL INFORMATION (CONT)

AROMATIC 150:

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.

12. ECOLOGICAL INFORMATION

TOXICITY:

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. **DO NOT** discharge into sewer or waterways.

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
Kerosene, (petroleum), hydrodesulfurised	NOEC	3072	Fish	= 1mg/L	1
Aromatic 150	LC50	96	Fish	0.58 mg/L	2
	EC50	48	Crustacea	0.76 mg/L	2
	EC50	72	Algae or other aquatic plants	< 1 mg/L	1
	EC50	48	Crustacea	= 0.95 mg/L	1
	NOEC	72	Algae or other aquatic plants	0.3 mg/L	2
	EC50	48	Crustacea	= 6.14 mg/L	1



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12. ECOLOGICAL INFORMATION (CONT)

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
Aromatic 150	EC50	72	Algae or other aquatic plants	3.2 mg/L	1
	EC10	72	Algae or other aquatic plants	1.13 mg/L	1
	NOEC	72	Algae or other aquatic plants	= 1 mg/L	1

Legnd: Extracted from 1. IUCALID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

PERSISTENCE AND DEGRADABILITY:

Ingredient**Persistence: Water/Soil**

No data available for all ingredients

Persistence: Air

No data available for all ingredients

BIOACCUMULATIVE POTENTIAL:

Ingredient

Kerosene, (petroleum), hydrodesulfurised

Bioaccumulation

LOW (BCF = 159)

Aromatic 150

LOW (BCF = 159)

MOBILITY IN SOIL:

Ingredient**Mobility**

No data available for all ingredients

13. DISPOSAL CONSIDERATIONS

PRODUCT/ PACKAGING DISPOSAL:

Consult manufacturer for recycling options and recycle where possible .
Consult State Land Waste Management Authority for disposal.
Incinerate residue at an approved site.
Recycle containers if possible, or dispose of in an authorised landfill.

14. TRANSPORT INFORMATION

LABELS REQUIRED:



HAZCHEM:

•3Z





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14. TRANSPORT INFORMATION (CONT)

ROAD AND RAIL TRANSPORT

Classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

UN NO: 3082

PROPER SHIPPING NAME: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (contains middle and kerosene, (petroleum), hydrodesulfurised.

TRANSPORT HAZARD CLASSES: Class – 9
Subrisk – Not applicable

PACKING GROUP: III

ENVIRONMENTAL HAZARD: Not applicable

SPECIAL PRECAUTIONS FOR USER: Special provisions – 274 331 335 375 AU01
Limited quantity – 5L

NOTES: Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to this Code when transported by road or rail in;
(a) packagings;
(b) IBCs; or
(c) any other receptacle not exceeding 500 kg(L).
- Australian Special Provisions (SP AU01) - ADG Code 7th Ed.

AIR TRANSPORT

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

UN NO: 3082

PROPER SHIPPING NAME: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (contains middle and kerosene, (petroleum), hydrodesulfurised.

TRANSPORT HAZARD CLASSES: ICAO/IATA Class – 9
ICAO / IATA Subrisk – Not applicable
ERG Code – 9L

PACKING GROUP: III

ENVIRONMENTAL HAZARD: Not applicable



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14. TRANSPORT INFORMATION (CONT)

SPECIAL PRECAUTIONS FOR USER: Special provisions – A97 A158 A197
Cargo only packaging instructions – 964
Cargo Only Maximum Qty / Pack – 450 L
Passenger and Cargo Packing Instructions – 964
Passenger and Cargo Maximum Qty / Pack – 450 L
Passenger and Cargo Limited Quantity Packing Instructions – Y964
Passenger and Cargo Limited Maximum Qty / Pack – 30 kg G

MARINE TRANSPORT

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

UN NO: 3082

PROPER SHIPPING NAME: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, NO.O.S (contains middle and kerosene, (petroleum), hydrodesulfurised.

TRANSPORT HAZARD CLASSES: IMDG Class – 9
IMDG Subrisk – Not applicable

PACKING GROUP: III

ENVIRONMENTAL HAZARD: Marine Pollutant

SPECIAL PRECAUTIONS FOR USER: EMS Number – F-A, S-F
Special provisions – 274 335 969
Limited quantity – 5L

Transport in bulk according to Annex II of MARPOL and the IBC code

15. REGULATORY INFORMATION

POISONS SCHEDULE: S5

PACKING & LABELLING: Refer to Section 14.

REGULATORY LISTS:
Middle distillate (68476-34-6) Australian Hazardous Substances Information System – Consolidated Lists.
Australian Inventory of Chemical Substances (AICS)

Kerosene, (petroleum), Hydrodesulfurised (64742-81-0) Australian Hazardous Substances Information System – Consolidated Lists.
Australian Inventory of Chemical Substances (AICS)





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15. REGULATORY INFORMATION (CONT)

Mineral Oil (not available)	Australian Exposure Hazards. Australian Hazardous Substances Information System – Consolidated Lists. International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs.
Aromatic 150 (64742-95-6)	Australian Hazardous Substances Information System – Consolidated Lists. Australian Inventory of Chemical Substances (AICS).
AICS INVENTORY:	Status – N (mineral oil).
OTHER INFORMATION:	Ingredients with multiple cas numbers- Middle distillate – 68476-34-6, 68334-30-5. Aromatic 150 – 64742-95-6., 64742-94-5.

16. OTHER INFORMATION

CONTACT PERSON/POINT: General Manager 1300 796 009

This information was prepared in good faith from the best information available at the time of issue. It is based on the present level of research and to this extent we believe it is accurate. However, no guarantee of accuracy is made or implied and since conditions of use are beyond our control, all information relevant to usage is offered without warranty. The manufacturer will not be held responsible for any unauthorised use of this information or for any modified or altered versions.

If you are an employer it is your duty to tell your employees, and any others that may be affected, of any hazards described in this sheet and of any precautions that should be taken.

Safety Data Sheets are updated frequently. Please ensure you have a current copy.

LITERATURE REFERENCES:

- * NOHSC: 2011 National Code of Practice for the preparation of Safety Data Sheets.
- * NOHSC: 1008 Approved Criteria for Classifying Hazardous Substances.
- * NOHSC: 10005 List of Designated Hazardous Substances.
- * NOHSC: 1005 Control of Workplace Hazardous Substances, National Code of Practice.
- * NOHSC: 2007 Control of Workplace Hazardous Substances, National Code of Practice.
- * NOHSC: 1003 Exposure Standards for Atmospheric Contaminants in the Occupational Environment, National Exposure Standards.
- * NOHSC: 3008 Exposure Standards for Atmospheric Contaminants in the Occupational Environment, Guidance Note.
- * NOHSC: 1015 Storage and Handling of Workplace Dangerous Goods, National Standard.
- * NOHSC: 2017 Storage and Handling of Workplace Dangerous Goods, National Code of Practice.
- * SUSDP: Standard for the Uniform Scheduling of Drugs and Poisons
- * ADG: Australian Dangerous Goods Code
- * SDS of component materials.

LAST CHANGE: Supercedes document issued: New Document
Reason/s for revision: Minor editorial changes to comply with GHS requirements.

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END OF SDS

