



FUEL OIL, NO. 6

ChemWatch Review SDS

Chemwatch: 68430-3

Version No: 6.1.1.1

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Chemwatch Hazard Alert Code: 3

Issue Date: 06/27/2017

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S.GHS.USA.EN

SECTION 1 Identification

Product Identifier

| | |
|-------------------------------|---|
| Product name | FUEL OIL, NO. 6 |
| Chemical Name | fuel oil, No. 6 |
| Synonyms | diesel fuel API No 6; diesel oil (petroleum); diesel oils; diesel test fuel; fuel oil; BP Fuel Oil F180 |
| Proper shipping name | Environmentally hazardous substance, liquid, n.o.s. (contains fuel oil, No. 6) |
| Chemical formula | Not Available |
| Other means of identification | Not Available |
| CAS number | 68553-00-4 |

Recommended use of the chemical and restrictions on use

| | |
|--------------------------|----------------------|
| Relevant identified uses | Fuel. [~Fragrance ~] |
|--------------------------|----------------------|

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

| | |
|-------------------------|--|
| Registered company name | SGS North America |
| Address | 900 Georgia Ave Suite 1000, Deer Park, Texas 77536 USA |
| Telephone | +1 281-7170 |
| Fax | 281-479-2734 |
| Website | Not Available |
| Email | usogc.saman@sgs.com |

Emergency phone number

| | |
|-----------------------------------|---|
| Association / Organisation | Chemtrec |
| Emergency telephone numbers | US: 800-424-9300 Account #20017 |
| Other emergency telephone numbers | International: 170-352-73887 Account #20017 |

SECTION 2 Hazard(s) identification

Classification of the substance or mixture

NFPA 704 diamond



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

| | |
|----------------|--|
| Classification | Skin Corrosion/Irritation Category 2, Specific target organ toxicity - single exposure Category 3 (narcotic effects), Eye Irritation Category 2B, Acute Aquatic Hazard Category 2, Chronic Aquatic Hazard Category 2, Flammable Liquid Category 4, Carcinogenicity Category 1B |
|----------------|--|

Label elements

| | |
|---------------------|--------|
| Hazard pictogram(s) | |
| Signal word | Danger |

Hazard statement(s)

| | |
|------|--|
| H315 | Causes skin irritation. |
| H336 | May cause drowsiness or dizziness. |
| H320 | Causes eye irritation. |
| H411 | Toxic to aquatic life with long lasting effects. |
| H227 | Combustible liquid. |
| H350 | May cause cancer. |

Hazard(s) not otherwise classified

Not Applicable

Precautionary statement(s) Prevention

| | |
|------|--|
| P201 | Obtain special instructions before use. |
| P210 | Keep away from heat/sparks/open flames/hot surfaces. - No smoking. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P281 | Use personal protective equipment as required. |

Precautionary statement(s) Response

| | |
|-----------|--|
| P308+P313 | IF exposed or concerned: Get medical advice/attention. |
| P321 | Specific treatment (see advice on this label). |
| 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. |

Precautionary statement(s) Storage

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

Precautionary statement(s) Disposal

| | |
|------|--|
| P501 | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |
|------|--|

SECTION 3 Composition / information on ingredients

Substances

| CAS No | %[weight] | Name |
|------------|-----------|------------------------|
| 68553-00-4 | 0 - 60% | <u>fuel oil, No. 6</u> |
| 68334-30-5 | 0 - 90% | <u>diesel</u> |

Mixtures

See section above for composition of Substances

SECTION 4 First-aid measures

Description of first aid measures

| | |
|--------------|--|
| Eye Contact | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> 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 | <p>If skin contact occurs:</p> <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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. Avoid giving milk or oils. Avoid giving alcohol. If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus. |

Continued...

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and 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]

Treat symptomatically.

SECTION 5 Fire-fighting measures**Extinguishing media**

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

Special hazards arising from the substrate or mixture

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

Special protective equipment and precautions for fire-fighters

| | |
|------------------------------|---|
| Fire Fighting | <ul style="list-style-type: none"> ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear full body protective clothing with breathing apparatus. ▸ 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. |
| Fire/Explosion Hazard | <ul style="list-style-type: none"> ▸ 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). <p>Combustion products include: carbon dioxide (CO₂) other pyrolysis products typical of burning organic material.</p> |

SECTION 6 Accidental release measures**Personal precautions, protective equipment and emergency procedures**

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

| | |
|---------------------|--|
| Minor Spills | <p>Environmental hazard - contain spillage. Slippery when spilt.</p> <ul style="list-style-type: none"> ▸ 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. |
| Major Spills | <ul style="list-style-type: none"> ▸ Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear full body protective clothing with breathing apparatus. ▸ Prevent, by all means available, spillage from entering drains or water courses. <p>Environmental hazard - contain spillage. Slippery when spilt.</p> |

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

SECTION 7 Handling and storage**Precautions for safe handling**

| | |
|----------------------|--|
| Safe handling | <ul style="list-style-type: none"> ▸ Containers, even those that have been emptied, may contain explosive vapours. ▸ Do NOT cut, drill, grind, weld or perform similar operations on or near containers. ▸ DO NOT allow clothing wet with material to stay in contact with skin ▸ Electrostatic discharge may be generated during pumping - this may result in fire. ▸ Ensure electrical continuity by bonding and grounding (earthing) all equipment. ▸ Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/sec until fill pipe submerged to twice its diameter, then ≤ 7 m/sec). ▸ Avoid splash filling. ▸ Avoid all personal contact, including inhalation. ▸ Wear protective clothing when risk of exposure occurs. |
|----------------------|--|

| | |
|-------------------|--|
| | <ul style="list-style-type: none"> Use in a well-ventilated area. Prevent concentration in hollows and sumps. |
| Other information | <ul style="list-style-type: none"> Store in original containers. Keep containers securely sealed. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. |

Conditions for safe storage, including any incompatibilities

| | |
|-------------------------|--|
| Suitable container | <ul style="list-style-type: none"> Metal can or drum Packaging as recommended by manufacturer. Check all containers are clearly labelled and free from leaks. |
| Storage incompatibility | <p>Diesel Fuel 1-D or Diesel Fuel 2-D or Diesel Fuel 4-D (CAS 68334-30-5; 68476-31-3; 68476-34-6; 77650-28-3)</p> <ul style="list-style-type: none"> reacts violently with strong oxidisers, concentrated nitric acid, fluorine is incompatible with ammonia, ammonium nitrate may generate electrostatic charges due to low conductivity <p>CARE: Water in contact with heated material may cause foaming or a steam explosion with possible severe burns from wide scattering of hot material. Resultant overflow of containers may result in fire.</p> <ul style="list-style-type: none"> Avoid reaction with oxidising agents |

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

| Source | Ingredient | Material name | TWA | STEL | Peak | Notes |
|---------------------------------------|------------|--|-----------------------|---------------|---------------|----------------------------|
| US ACGIH Threshold Limit Values (TLV) | diesel | Kerosene/Jet fuels, as total hydrocarbon vapor | 200 mg/m ³ | Not Available | Not Available | Skin & URT irr; CNS impair |

Emergency Limits

| Ingredient | Material name | TEEL-1 | TEEL-2 | TEEL-3 |
|------------|---|-----------------------|-------------------------|--------------------------|
| diesel | 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 |
| diesel | 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 |
|-----------------|---------------|---------------|
| fuel oil, No. 6 | Not Available | Not Available |
| diesel | Not Available | Not Available |

Occupational Exposure Banding

| Ingredient | Occupational Exposure Band Rating | Occupational Exposure Band Limit |
|-----------------|-----------------------------------|----------------------------------|
| fuel oil, No. 6 | E | ≤ 0.1 ppm |

Notes: Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.

Exposure controls

| | |
|----------------------------------|---|
| Appropriate engineering controls | <p>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:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>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.</p> |
| Personal protection |  |
| Eye and face protection | <ul style="list-style-type: none"> 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. |
| Skin protection | See Hand protection below |
| Hands/feet protection | <ul style="list-style-type: none"> Wear chemical protective gloves, e.g. PVC. Wear safety footwear or safety gumboots, e.g. Rubber <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care.</p> <ul style="list-style-type: none"> Polyethylene gloves |
| Body protection | See Other protection below |

Other protection

- ▶ Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent]
- ▶ Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted. [AS/NZS 1715 or national equivalent]
- ▶ Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely.
- ▶ Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood.
- ▶ Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.
- ▶ Overalls.
- ▶ P.V.C apron.
- ▶ Barrier cream.
- ▶ Skin cleansing cream.

Recommended material(s)**GLOVE SELECTION INDEX**

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:
FUEL OIL, NO. 6

| Material | CPI |
|----------|-----|
| NITRILE | A |

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

| Required minimum protection factor | Maximum gas/vapour concentration present in air p.p.m. (by volume) | Half-face Respirator | Full-Face Respirator |
|------------------------------------|--|----------------------|----------------------|
| up to 10 | 1000 | A-AUS / Class1 P2 | - |
| up to 50 | 1000 | - | A-AUS / Class 1 P2 |
| up to 50 | 5000 | Airline * | - |
| up to 100 | 5000 | - | A-2 P2 |
| up to 100 | 10000 | - | A-3 P2 |
| 100+ | | | Airline** |

* - Continuous Flow ** - Continuous-flow or positive pressure demand

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)

- ▶ 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.
- ▶ Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

SECTION 9 Physical and chemical properties**Information on basic physical and chemical properties**

| | | | |
|---|---|--|----------------|
| Appearance | Residual oils are manufactured in whole or in part from distillation residues from refinery processing. Residual oils are complex mixtures of relatively high molecular weight compounds and are difficult to characterise in detail. Molecular types include asphaltenes, polar aromatics, naphthalene aromatics, aromatics, saturated hydrocarbons and heteromolecules containing sulfur, oxygen, nitrogen and metals. Most blending stocks of residual fuel oils are likely to contain 5% or more of four- to six-ring condensed aromatic hydrocarbons. In residual fuel oils, the identities and concentration of PAHs depends on the nature and amount of the low viscosity blending stocks and the proportions of virgin and cracked residues used in their production. Pale straw to amber combustible liquid; floats on water. A distillate oil having a minimum viscosity of 900 SUS at 37.7.degree.C (100.degree.F) to a maximum of 9000 SUS at 37.7.degree.C (100.degree.F). | | |
| Physical state | Liquid | Relative density (Water = 1) | <1 |
| Odour | Not Available | Partition coefficient n-octanol / water | Not Available |
| Odour threshold | Not Available | Auto-ignition temperature (°C) | Not available. |
| pH (as supplied) | Not Applicable | Decomposition temperature | Not available. |
| Melting point / freezing point (°C) | Not available. | Viscosity (cSt) | Not Available |
| Initial boiling point and boiling range (°C) | Not Available | Molecular weight (g/mol) | Not Applicable |

FUEL OIL, NO. 6

| | | | |
|---------------------------|----------------|----------------------------------|----------------|
| Flash point (°C) | 75 (typical) | Taste | Not Available |
| Evaporation rate | Very slow. | Explosive properties | Not Available |
| Flammability | Combustible. | Oxidising properties | Not Available |
| Upper Explosive Limit (%) | Not available. | Surface Tension (dyn/cm or mN/m) | Not Available |
| Lower Explosive Limit (%) | Not available. | Volatile Component (%vol) | Not available. |
| Vapour pressure (kPa) | Not Available | Gas group | Not Available |
| Solubility in water | Immiscible | pH as a solution (1%) | Not Applicable |
| Vapour density (Air = 1) | Not available. | VOC g/L | Not Available |

SECTION 10 Stability and reactivity

| | |
|------------------------------------|--|
| Reactivity | See section 7 |
| Chemical stability | <ul style="list-style-type: none"> Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur. |
| Possibility of hazardous reactions | See section 7 |
| Conditions to avoid | See section 7 |
| Incompatible materials | See section 7 |
| Hazardous decomposition products | See section 5 |

SECTION 11 Toxicological information

Information on toxicological effects

| | |
|--------------|--|
| Inhaled | <p>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.</p> <p>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.</p> <p>Fumes from diesel combustion vary greatly in composition, may contain particulates, unburnt components, and may be extremely irritating. Vapour or mist may irritate the airway. Human exposure may produce immediate cough, shortness of breath, cyanosis (bluing of the extremities) and unconsciousness. A productive cough with phlegm smelling of diesel fuel may persist for many days.</p> <p>Inhalation hazard is increased at higher temperatures.</p> <p>Inhaling high concentrations of mixed hydrocarbons can cause narcosis, with nausea, vomiting and lightheadedness. Low molecular weight (C2-C12) hydrocarbons can irritate mucous membranes and cause incoordination, giddiness, nausea, vertigo, confusion, headache, appetite loss, drowsiness, tremors and stupor.</p> <p>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.</p> <p>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.</p> |
| Ingestion | <p>Accidental ingestion of the material may be damaging to the health of the individual.</p> <p>Ingestion of petroleum hydrocarbons can irritate the pharynx, oesophagus, stomach and small intestine, and 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.</p> |
| Skin Contact | <p>The material may cause severe inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.</p> <p>Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.</p> <p>Animal testing showed that when applied under a patch to skin for 24 hours, diesel produced extreme irritation, severe redness and swelling with blistering and open sores. In humans, application to skin has produced acute kidney failure and gastrointestinal syndromes.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>The material may accentuate any pre-existing dermatitis condition</p> <p>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.</p> <p>Aromatic hydrocarbons may produce sensitivity and redness of the skin. They are not likely to be absorbed into the body through the skin but branched species are more likely to.</p> |
| Eye | <p>There is some evidence to suggest that this material can cause eye irritation and damage in some persons.</p> <p>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.</p> |
| Chronic | <p>There is ample evidence that this material can be regarded as being able to cause cancer in humans based on experiments and other information.</p> <p>Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.</p> <p>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.</p> <p>Prolonged or repeated skin contact with diesel fuel may cause defatting and irritation of follicles with blocked sebaceous glands, resulting in pimples and spots appearing on the arms and legs. Excessive scaling has been seen in engine drivers exposed to diesel fuels at work.</p> <p>In animals, diesel fuel caused skin irritation and irritation; there were also effects on the liver and kidney.</p> <p>Long term exposure to mist and fumes or ingestion may cause severe central nervous system deficiencies.</p> <p>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.</p> <p>High boiling residues of petroleum process can produce both benign and malignant skin tumours, according to animal testing. They may contain significant concentrations of polynuclear aromatic hydrocarbons (PAHs).</p> |

| fuel oil, No. 6 | TOXICITY | IRRITATION |
|-----------------|---|---|
| | Oral (rat) LD50: =4320 mg/kg ^[2] | Eye: no adverse effect observed (not irritating) ^[1] |

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| | | |
|--|--|--|
| | Oral (rat) LD50: =5500 mg/kg ^[2] | Skin (rabbit): 500 mg - mild |
| | Oral (rat) LD50: =5898 mg/kg ^[2] | Skin: no adverse effect observed (not irritating) ^[1] |
| | Oral (rat) LD50: >2000 mg/kg ^[2] | |
| | Oral (rat) LD50: >24700 mg/kg ^[2] | |
| | Oral (rat) LD50: 5300 mg/kg ^[2] | |
| diesel | TOXICITY | IRRITATION |
| | 4200 mg/kg ^[2] | Eye: no adverse effect observed (not irritating) ^[1] |
| | Oral (rat) LD50: =7400 mg/kg ^[2] | Skin (rabbit): 500 uL/24h SEVERE |
| | Oral (rat) LD50: >2000 mg/kg ^[2] | Skin: adverse effect observed (irritating) ^[1] |
| | Oral (rat) LD50: >5000 mg/kg ^[2] | |
| | Oral (rat) LD50: 7500 mg/kg ^[2] | |
| Legend: 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. * Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances | | |

| | |
|--------------------------|--|
| FUEL OIL, NO. 6 | For petroleum: This product contains benzene, which can cause acute myeloid leukaemia, and n-hexane, which can be metabolized to compounds which are toxic to the nervous system. This product contains toluene, and animal studies suggest high concentrations of toluene lead to hearing loss. This product contains ethyl benzene and naphthalene, from which animal testing shows evidence of tumour formation. Cancer-causing potential: Animal testing shows inhaling petroleum causes tumours of the liver and kidney; these are however not considered to be relevant in humans. Mutation-causing potential: Most studies involving gasoline have returned negative results regarding the potential to cause mutations, including all recent studies in living human subjects (such as in petrol service station attendants). IARC Cancer Review: Human Inadequate Evidence. |
| DIESEL | The substance is classified by IARC as Group 3: NOT classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing. |
| FUEL OIL, NO. 6 & DIESEL | The material may cause severe 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. Repeated exposures may produce severe ulceration. Kerosene may produce varying ranges of skin irritation, and a reversible eye irritation (if eyes are washed). Skin may be cracked or flaky and/or leathery, with crusts and/or hair loss. It may worsen skin cancers. There may also be loss of weight, discharge from the nose, excessive tiredness, and wheezing. |

| | | | |
|-----------------------------------|---|--------------------------|---|
| Acute Toxicity | ✗ | Carcinogenicity | ✓ |
| Skin Irritation/Corrosion | ✓ | Reproductivity | ✗ |
| Serious Eye Damage/Irritation | ✓ | STOT - Single Exposure | ✓ |
| Respiratory or Skin sensitisation | ✗ | STOT - Repeated Exposure | ✗ |
| Mutagenicity | ✗ | Aspiration Hazard | ✗ |

Legend: ✗ – Data either not available or does not fill the criteria for classification
 ✓ – Data available to make classification

SECTION 12 Ecological information

Toxicity

| fuel oil, No. 6 | Endpoint | Test Duration (hr) | Species | Value | Source |
|--|----------|--------------------|-------------------------------|-----------|--------|
| | LC50 | 96 | Fish | >1-mg/L | 2 |
| | EC50 | 48 | Crustacea | 0.22mg/L | 2 |
| | EC50 | 72 | Algae or other aquatic plants | 0.32mg/L | 2 |
| | NOEL | 72 | Algae or other aquatic plants | 0.05mg/L | 2 |
| diesel | Endpoint | Test Duration (hr) | Species | Value | Source |
| | LC50 | 96 | Fish | 3.2mg/L | 2 |
| | EC50 | 48 | Crustacea | 2mg/L | 2 |
| | EC50 | 72 | Algae or other aquatic plants | 1.8mg/L | 2 |
| | NOEL | 504 | Crustacea | 0.167mg/L | 2 |
| Legend: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - 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 | | | | | |

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 Kerosene and Kerosene-Range Refinery Steams: log Pow 6.1; Henry's Law Constant: 8.24E + 100 atm m³/mole 25 C. Kerosene is the name for the lighter end of a group of petroleum streams known as the middle distillates. Kerosene may be obtained either from the distillation of crude oil under atmospheric pressure (straight-run kerosene) or from catalytic, thermal or steam cracking of heavier petroleum streams (cracked kerosene). The streams are complex mixtures of paraffinic, isoparaffinic, naphthenic (cycloparaffinic) and aromatic (mainly alkylbenzene) hydrocarbons ranging in carbon number from C5-25 (mainly C9-16) and boil in the range 145 to 300 C. Jet fuels are included because they are composed almost entirely of two of these streams straight run kerosene or hydrodesulfurised kerosene (CAS).

Atmospheric Fate: Kerosene may undergo oxidation by a gas-phase reaction with photochemically produced hydroxyl radicals.

Continued...

DO NOT discharge into sewer or waterways.

Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|------------|---------------------------------------|---------------------------------------|
| | No Data available for all ingredients | No Data available for all ingredients |

Bioaccumulative potential

| Ingredient | Bioaccumulation |
|------------|-----------------|
| diesel | LOW (BCF = 159) |

Mobility in soil

| Ingredient | Mobility |
|------------|---------------------------------------|
| | No Data available for all ingredients |



SECTION 13 Disposal considerations

Waste treatment methods

| | |
|------------------------------|--|
| Product / Packaging disposal | <ul style="list-style-type: none"> Containers may still present a chemical hazard/ danger when empty. Return to supplier for reuse/ recycling if possible. <p>Otherwise:</p> <ul style="list-style-type: none"> If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. Where possible retain label warnings and SDS and observe all notices pertaining to the product. <p>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.</p> <p>A Hierarchy of Controls seems to be common - the user should investigate:</p> <ul style="list-style-type: none"> Reduction Reuse Recycling Disposal (if all else fails) <p>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use.</p> <ul style="list-style-type: none"> 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. Recycle wherever possible or consult manufacturer for recycling options. Consult State Land Waste Authority for disposal. Bury or incinerate residue at an approved site. Recycle containers if possible, or dispose of in an authorised landfill. |
|------------------------------|--|

SECTION 14 Transport information

Labels Required

| | |
|------------------|---|
| |  |
| Marine Pollutant |  |

Land transport (DOT)

| | | | | | |
|------------------------------|---|--------------|---|--------------------|--------------------------------------|
| UN number | 3082 | | | | |
| UN proper shipping name | Environmentally hazardous substance, liquid, n.o.s. (contains fuel oil, No. 6) | | | | |
| Transport hazard class(es) | <table> <tr> <td>Class</td><td>9</td></tr> <tr> <td>Subrisk</td><td>Not Applicable</td></tr> </table> | Class | 9 | Subrisk | Not Applicable |
| Class | 9 | | | | |
| Subrisk | Not Applicable | | | | |
| Packing group | III | | | | |
| Environmental hazard | Environmentally hazardous | | | | |
| Special precautions for user | <table> <tr> <td>Hazard Label</td><td>9</td></tr> <tr> <td>Special provisions</td><td>8, 146, 173, 335, IB3, T4, TP1, TP29</td></tr> </table> | Hazard Label | 9 | Special provisions | 8, 146, 173, 335, IB3, T4, TP1, TP29 |
| Hazard Label | 9 | | | | |
| Special provisions | 8, 146, 173, 335, IB3, T4, TP1, TP29 | | | | |

A197 - is a special provision assigned to environmental substances (UN3077 & UN3082) that allows these substances to be shipped as "not restricted" provided that the net quantity in any receptacle does not exceed 5kg or 5L and the packaging used meets defined standards.

For Individual Packages of Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 that contain LESS THAN the reportable quantity (5000 lbs) - Not Regulated

For Individual Packages of Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 that contain MORE THAN the reportable quantity (5000 lbs) - Regulated and classified as below:

Air transport (ICAO-IATA / DGR)

Continued...

| | | |
|------------------------------|--|----------------|
| UN number | 3082 | |
| UN proper shipping name | Environmentally hazardous substance, liquid, n.o.s. * (contains fuel oil, No. 6) | |
| Transport hazard class(es) | ICAO/IATA Class | 9 |
| | ICAO / IATA Subrisk | Not Applicable |
| | ERG Code | 9L |
| Packing group | III | |
| Environmental hazard | Environmentally hazardous | |
| Special precautions for user | Special provisions | A97 A158 A197 |
| | Cargo Only Packing 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 |

Sea transport (IMDG-Code / GGVSee)

| | | |
|------------------------------|--|----------------|
| UN number | 3082 | |
| UN proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains fuel oil, No. 6) | |
| Transport hazard class(es) | 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 Quantities | 5 L |

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

Not Applicable

SECTION 15 Regulatory information**Safety, health and environmental regulations / legislation specific for the substance or mixture****fuel oil, No. 6 is found on the following regulatory lists**

Chemical Footprint Project - Chemicals of High Concern List
 US Clean Air Act - Hazardous Air Pollutants
 US EPCRA Section 313 Chemical List
 US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
 US TSCA Chemical Substance Inventory - Interim List of Active Substances

diesel is found on the following regulatory lists

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
 International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B : Possibly carcinogenic to humans
 US ACGIH Threshold Limit Values (TLV)
 US ACGIH Threshold Limit Values (TLV) - Carcinogens
 US AIHA Workplace Environmental Exposure Levels (WEELs)
 US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)
 US DOE Temporary Emergency Exposure Limits (TEELs)
 US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
 US TSCA Chemical Substance Inventory - Interim List of Active Substances

Federal Regulations**Superfund Amendments and Reauthorization Act of 1986 (SARA)****Section 311/312 hazard categories**

| | |
|---|-----|
| Flammable (Gases, Aerosols, Liquids, or Solids) | Yes |
| Gas under pressure | No |
| Explosive | No |
| Self-heating | No |
| Pyrophoric (Liquid or Solid) | No |
| Pyrophoric Gas | No |
| Corrosive to metal | No |
| Oxidizer (Liquid, Solid or Gas) | No |

Continued...

| | |
|--|-----|
| Organic Peroxide | No |
| Self-reactive | No |
| In contact with water emits flammable gas | No |
| Combustible Dust | No |
| Carcinogenicity | Yes |
| Acute toxicity (any route of exposure) | No |
| Reproductive toxicity | No |
| Skin Corrosion or Irritation | Yes |
| Respiratory or Skin Sensitization | No |
| Serious eye damage or eye irritation | No |
| Specific target organ toxicity (single or repeated exposure) | Yes |
| Aspiration Hazard | No |
| Germ cell mutagenicity | No |
| Simple Asphyxiant | No |
| Hazards Not Otherwise Classified | No |

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

None Reported

State Regulations**US. California Proposition 65**

None Reported

National Inventory Status

| National Inventory | Status |
|--|--|
| Australia - AIIIC / Australia Non-Industrial Use | Yes |
| Canada - DSL | Yes |
| Canada - NDSL | No (fuel oil, No. 6; diesel) |
| China - IECSC | Yes |
| Europe - EINEC / ELINCS / NLP | Yes |
| Japan - ENCS | No (fuel oil, No. 6) |
| Korea - KECI | No (fuel oil, No. 6) |
| New Zealand - NZIoC | Yes |
| Philippines - PICCS | No (fuel oil, No. 6) |
| USA - TSCA | Yes |
| Taiwan - TCSI | Yes |
| Mexico - INSQ | No (fuel oil, No. 6) |
| Vietnam - NCI | No (fuel oil, No. 6) |
| Russia - ARIPS | Yes |
| Legend: | Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets) |

SECTION 16 Other information

| | |
|----------------------|---------------|
| Revision Date | 06/27/2017 |
| Initial Date | Not Available |

Other information

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.

The 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.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
 PC—STEL: Permissible Concentration-Short Term Exposure Limit
 IARC: International Agency for Research on Cancer
 ACGIH: American Conference of Governmental Industrial Hygienists
 STEL: Short Term Exposure Limit
 TEEL: Temporary Emergency Exposure Limit.
 IDLH: Immediately Dangerous to Life or Health Concentrations
 OSF: Odour Safety Factor
 NOAEL :No Observed Adverse Effect Level
 LOAEL: Lowest Observed Adverse Effect Level
 TLV: Threshold Limit Value
 LOD: Limit Of Detection

Continued...

OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

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