SAFETY DATA SHEET

Fuel oil, residual

Section 1. Identification

GHS product identifier Fuel oil, residual

Other means of identification

RMG 380, RMG 380LS, RMG 380XX, RMG 380LSXX
RMG 500, RMG 500XX
RMG 700, RMG 700XX

RMH 380, RMH 380LS, RMH 380XX, RMH 380LSXX
RMH 700, RMH 700XX

RMK 380, RMK 380LS, RMK 380XX, RMK 380LSXX
RMK 500, RMK 500XX
RMK 700, RMK 700XX

Product type Liquid.

Product code SMI2111.

SDS # SMI2111.

Relevant identified uses of the substance or mixture and uses advised against

Product use Fuel for industrial, marine and commercial boilers and furnaces; fuel for low and medium speed diesel engines.
For specific application advice see appropriate Technical Data Sheet or consult our company representative.

Supplier

BP Marine Singapore Pte Ltd
1 Harbour Front Avenue
#02-01 Keppel Bay Tower
Singapore 098632

EMERGENCY TELEPHONE NUMBER +65 63718999 (24 hours)

E-mail address MSDSadvice@bp.com

Section 2. Hazards identification

Classification of the substance or mixture

ACUTE TOXICITY: INHALATION - Category 4
CARCINOGENICITY - Category 1B
TOXIC TO REPRODUCTION [Unborn child] - Category 2
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
AQUATIC TOXICITY (CHRONIC) - Category 1

GHS label elements

Hazard pictograms

Signal word Danger

Hazard statements

Harmful if inhaled.
May cause cancer.
Suspected of damaging the unborn child.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life with long lasting effects.

Section 2. Hazards identification

Precautionary statements

Prevention
Obtain special instructions before use.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use personal protective equipment as required.
Avoid release to the environment.

Response
IF exposed or concerned: Get medical attention/advice.

Storage
Not applicable

Disposal
Dispose of contents and container in accordance with all local, regional, national and international regulations.

Other hazards which do not result in classification
Defatting to the skin.
Note: High Pressure Applications
Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency.
See 'Notes to physician' under First-Aid Measures, Section 4 of this Safety Data Sheet.
Will cause burns if hot material contacts eyes.
Will cause burns if hot material contacts skin.
This material can contain hydrogen sulfide (H_2S), a very toxic and extremely flammable gas.
This material may contain significant quantities of polycyclic aromatic hydrocarbons (PCAs), some of which have been shown by experimental studies to induce skin cancer.

Section 3. Composition/information on ingredients

Substance/mixture Substance

Heavy fuel oil Complex hydrocarbon substance

Ingredient name	%	CAS number
Fuel oil, residual	100	68476-33-5
Naphthalene	1 - 5	91-20-3
Ethylbenzene	0.1 - 1	100-41-4

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact
Cold product - Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain medical advice if any pain or redness develops or persists.
Hot product - Flood with water to dissipate heat. In the event of any product remaining, do not try to remove it other than by continued irrigation with water. Obtain medical attention immediately.

Inhalation
If inhaled, remove to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention.

EXPOSURE TO HYDROGEN SULFIDE:
Casualties suffering ill effects as a result of exposure to hydrogen sulfide should be immediately removed to fresh air and medical assistance obtained without delay. Unconscious casualties must be placed in the recovery position. Monitor breathing and pulse rate and if breathing has failed, or is deemed inadequate, respiration must be assisted, preferably by the mouth to mouth method. Administer external cardiac

Section 4. First aid measures

massage if necessary. Seek medical attention immediately.

Skin contact

Cold Product - Wash contaminated skin with soap and water. Remove contaminated clothing and wash underlying skin as soon as reasonably practicable.
Hot Product - Flood skin with cold water to dissipate heat, cover with clean cotton or gauze, obtain medical advice immediately.
Never use gasoline, kerosene or other solvents to remove product from skin or clothing.

Ingestion

Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Get medical attention.

Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician

Treatment should in general be symptomatic and directed to relieving any effects. Inhalation of hydrogen sulfide may cause central respiratory depression leading to coma and death. It is irritant to the respiratory tract causing chemical pneumonitis and pulmonary edema. The onset of pulmonary edema may be delayed for 24 to 48 hours. Treat with oxygen and ventilate as appropriate. Administer broncho-dilators if indicated and consider administration of corticosteroids. Keep casualty under surveillance for 48 hours in case pulmonary edema develops.
Note: High Pressure Applications
Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. Injuries may not appear serious at first but within a few hours tissue becomes swollen, discolored and extremely painful with extensive subcutaneous necrosis.
Surgical exploration should be undertaken without delay. Thorough and extensive debridement of the wound and underlying tissue is necessary to minimize tissue loss and prevent or limit permanent damage. Note that high pressure may force the product considerable distances along tissue planes.

Specific treatments

No specific treatment.

Protection of first-aiders

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use water fog, foam, dry chemicals, or carbon dioxide.

Unsuitable extinguishing media

Do not use water jet.

Specific hazards arising from the chemical

Avoid spraying directly into storage containers because of the danger of boil-over. Boil-over is the rapid increase in volume caused by the presence of water in hot product and the subsequent overflow from a tank. Vapors can form explosive mixtures with air. Vapors are heavier than air and can spread along the ground or float on water surfaces to remote ignition sources. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. In a fire or if heated, a pressure increase will occur and the container may burst. Runoff to sewer may create fire or explosion hazard. This material is very toxic to aquatic life with long lasting effects. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

Section 5. Fire-fighting measures

This substance will float and can be reignited on surface water.

Hazardous thermal decomposition products

Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)
sulfur oxides (SO_2, SO_3 etc.)
Hydrogen Sulfide (H2S)
other hazardous substances.

Special protective actions for fire-fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. First move people out of line-of-sight of the scene and away from windows. No action shall be taken involving any personal risk or without suitable training. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling. This material can contain hydrogen sulfide (H_2S), a very toxic and extremely flammable gas.

Entry into a confined space or poorly ventilated area contaminated with vapor, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained positive pressure breathing apparatus (SCBA).

This material can contain hydrogen sulfide (H_2S), a very toxic and extremely flammable gas. Entry into a confined space or poorly ventilated area contaminated with vapor, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained positive pressure breathing apparatus (SCBA).

For emergency responders

Entry into a confined space or poorly ventilated area contaminated with vapor, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

Environmental precautions

Depending upon its temperature the product may be liquid, semi-solid or solid. Protect drains from spills and prevent entry of product, since this may result in blockage on cooling. Should blockage occur, notify the appropriate authority immediately.

Spillages in water or at sea:
Product less dense than water: In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. If possible, before working in the combustion/exhaust spaces of engines/boilers or before handling ash/dust produced by the combustion of product, the work area should be thoroughly dampened with water. This will help to minimize the amount of airborne contamination produced by the work activity. However, because of the risk of explosion, do not allow water to come into contact with hot ash/dust. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. Collect recovered product and other contaminated materials in suitable tanks or containers for recycle, recovery or safe disposal.
Product which is denser than water will sink to the bottom, and usually no intervention will be feasible. If possible, collect the product and contaminated

Section 6. Accidental release measures

materials with mechanical means, and store/dispose of according to relevant regulations. In special situations (to be assessed on case-by-case basis, according to expert judgment and local conditions), excavations of trenches on the bottom to collect the product with sand may be a feasible option.

Methods and materials for containment and cleaning up

Small spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Contaminated absorbent material may pose the same hazard as the spilled product. Depending upon its temperature the product may be liquid, semi-solid or solid. Protect drains from spills and prevent entry of product, since this may result in blockage on cooling. Should blockage occur, notify the appropriate authority immediately. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Avoid contact of spilled material and runoff with soil and surface waterways. Contact with hot product may cause burns.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

This material can contain hydrogen sulfide (H_2S), a very toxic and extremely flammable gas. Vapors containing hydrogen sulfide may accumulate during storage or transport and may also be vented during filling of tanks. Hydrogen sulfide has a typical "bad egg" smell but at high concentrations the sense of smell is rapidly lost, therefore do not rely on sense of smell for detecting hydrogen sulfide. Use specially designed measuring instruments for determining its concentration.

Light hydrocarbon vapors can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapor in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. Entry to any tanks or other confined space requires a full risk assessment and appropriate control measures to be put in place in conformance with appropriate regulations and industry practice on confined space entry. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling,

Section 7. Handling and storage

there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks). Explosive air/vapor mixtures may form at ambient temperature. If product comes into contact with hot surfaces, or leaks occur from pressurized fuel pipes, the vapor or mists generated will create a flammability or explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Fuel oil, residual	**ACGIH TLV (United States).** TWA: 0.2 mg/m³, (Benzene-soluble)
Naphthalene	**Factories Order (PEL) (Singapore).** PEL (long term): 10 ppm 8 hour(s). Issued/Revised: 1/1997 PEL (long term): 52 mg/m³ 8 hour(s). Issued/Revised: 1/1997 PEL (short term): 79 mg/m³ 15 minute(s). Issued/Revised: 1/1997 PEL (short term): 15 ppm 15 minute(s). Issued/Revised: 1/1997
Ethylbenzene	**Factories Order (PEL) (Singapore).** PEL (long term): 100 ppm 8 hour(s). Issued/Revised: 1/1997 PEL (long term): 434 mg/m³ 8 hour(s). Issued/Revised: 1/1997 PEL (short term): 543 mg/m³ 15 minute(s). Issued/Revised: 1/1997 PEL (short term): 125 ppm 15 minute(s). Issued/Revised: 1/1997

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Recommended: Chemical splash goggles.

Section 8. Exposure controls/personal protection

Skin protection

Hand protection

Cold material: Wear chemical resistant gloves. Recommended: nitrile gloves. Hot material: to prevent thermal burns wear heat resistant and impervious gauntlets/gloves.

Do not re-use gloves. Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Skin protection

Cold material: Wear suitable protective clothing. Footwear highly resistant to chemicals. When there is a risk of ignition wear inherently fire resistant protective clothes and gloves. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static. Cotton or polyester/cotton overalls will only provide protection against light superficial contamination. When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required. Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes.

Respiratory protection

Use with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Suitable breathing apparatus (independent of ambient atmosphere) must be worn where there is a risk of hydrogen sulfide exposure limits being exceeded.
If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn.
The filter class must be suitable for the maximum contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application.
Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Recommended: Combined filter suitable for gases, vapors and particles (dust, smoke, mist, aerosol). Filter type: AP.

Thermal hazards

Hot material: Wear suitable protective clothing to protect against heat and brief contact with flame. Protection should be provided for exposed areas of the neck and head.

Section 9. Physical and chemical properties

Appearance

Physical state Liquid.

Color Dark Brown. / Black.

Odor Oily

Odor threshold Not available.

pH Not available.

Melting point <30°C (<86°F)

Boiling point 164 to 750°C (327.2 to 1382°F)

Flash point Closed cup: >=60°C (>=140°F) [Pensky-Martens.]

Evaporation rate Not available.

Flammability (solid, gas) Not applicable. Physical state - Liquid.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits	Lower: 0.5% Upper: 5%
Vapor pressure	<0.133 kPa (<1 mm Hg) at 20°C
Vapor density	>0.9 [Air = 1]
Relative density	Not available.
Density	1010 kg/m^3 (1.01 g/cm^3) at 15°C
Solubility	Not available.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	250 to 537°C (482 to 998.6°F)
Decomposition temperature	Not available.
Viscosity	Kinematic: 663.2 mm^2/s (663.2 cSt) at 40°C Kinematic: 180 to 700 mm^2/s (180 to 700 cSt) at 50°C

Section 10. Stability and reactivity

Reactivity	No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.
Incompatible materials	Reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result/Route	Test detail	Species	Dose	Exposure	Remarks
Fuel oil, residual	LD50 Dermal	EU B.3	Rabbit	>2000 mg/kg	-	Based on Catalytic cracked clarified oil (CCCO)
	LD50 Dermal	OECD 434	Rabbit	>2000 mg/kg	-	Based on Heavy fuel oil
	LD50 Oral	OECD 401	Rat	5270 mg/kg	-	Based on Catalytic cracked clarified oil (CCCO)
	LD50 Oral	OECD 401	Rat	4320 mg/kg	-	Based on Catalytic cracked

Section 11. Toxicological information

						clarified oil (CCCO)
	LC50 Inhalation Dusts and mists	EPA 798.115	Rat	4500 mg/m³	4 hours	Based on Carbon black oil
	LC50 Inhalation Dusts and mists	EPA 798.115	Rat	4100 mg/m³	4 hours	Based on Carbon black oil

Irritation/Corrosion

Product/ingredient name	Test authority / Test number		Species	Route/Result	Conc.	Remarks
Fuel oil, residual	EU	B.4	Rabbit	Skin - Non-irritant to skin.	-	Based on Heavy fuel oil
	EU	B.5	Rabbit	Eyes - Non-irritating to the eyes.	-	Based on Heavy fuel oil

Sensitization

Product/ingredient name	Route of exposure	Test detail		Species	Result	Remarks
Fuel oil, residual	skin	EU	B.6	Not sensitizing	Guinea pig	Based on Heavy fuel oil

Mutagenicity

Product/ingredient name	Test detail	Cell / Type	Result	Remarks
Fuel oil, residual	Equivalent to OECD 476	Experiment: In vitro Subject: Mammal - species unspecified	Positive	Based on Catalytic cracked clarified oil (CCCO)
	Equivalent to OECD 471	Experiment: In vitro Subject: Non-mammalian species	Positive	Based on Catalytic cracked clarified oil (CCCO)
	Equivalent to OECD 475	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Catalytic cracked clarified oil (CCCO)
	Equivalent to OECD 474	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Catalytic cracked clarified oil (CCCO)

Conclusion/Summary Not classified. Based on available data, the classification criteria are not met.

Carcinogenicity

Product/ingredient name	Test detail		Species	Route	Exposure	Result	Remarks
Fuel oil, residual	Equivalent to OECD	451	Mouse	Dermal	Lifetime	Positive - Dermal - Unspecified	Based on Catalytic cracked clarified oil (CCCO)

Conclusion/Summary May cause cancer

Section 11. Toxicological information

Reproductive toxicity

Product/ingredient name	Test detail		Species	Exposure		Developmental toxicity	Maternal toxicity	Fertility	Remarks
Fuel oil, residual	EPA	OTS 798.4700	Rat	Dermal	70 days no effects observed	-	-	Negative	Based on Catalytic cracked clarified oil (CCCO)
	EPA	OTS 798.4900	Rat	Dermal	20 days Effects observed	Positive	-	-	Based on atmospheric residue

Conclusion/Summary Development: Suspected of damaging the unborn child.
Fertility: Based on available data, the classification criteria are not met.
Effects on or via lactation: Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Ethylbenzene	Category 2 Category 3	Not determined Not determined	central nervous system (CNS) Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Fuel oil, residual	Category 2	Not determined	Not determined

Aspiration hazard

Name	Result
Ethylbenzene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure Routes of entry anticipated:Dermal, Inhalation.
Routes of entry not anticipated:Oral.

Potential acute health effects

Eye contact Will cause burns if hot material contacts eyes.

Inhalation Harmful if inhaled.

Skin contact Defatting to the skin. May cause skin dryness and irritation. Will cause burns if hot material contacts skin.

Ingestion No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact No specific data.

Inhalation Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Section 11. Toxicological information

Skin contact

Adverse symptoms may include the following:
irritation
dryness
cracking
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion

Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Skin contact

Not applicable.

Potential chronic health effects

General

As with all such products containing potentially harmful levels of PCAs, prolonged or repeated skin contact may eventually result in dermatitis or more serious irreversible skin disorders including cancer. May cause damage to organs through prolonged or repeated exposure. Vapor, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer.

Carcinogenicity

May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity

No known significant effects or critical hazards.

Teratogenicity

Suspected of damaging the unborn child.

Developmental effects

No known significant effects or critical hazards.

Fertility effects

No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Environmental effects

Water polluting material. May be harmful to the environment if released in large quantities.

Persistence/degradability

IOPC Persistent / not persistent. oil: Persistent

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Not available.	-	-	-

Bioaccumulative potential

Not available.

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Not available.	-	-	-

Mobility in soil

Soil/water partition coefficient (K_{OC})

Not available.

Mobility

Spillages may penetrate the soil causing ground water contamination. This material may accumulate in sediments.

Section 12. Ecological information

Other ecological information

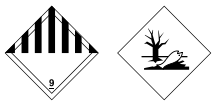
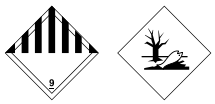
This product has a density close to that of water. Spills are unlikely to form a distinct film on the water surface, and may become dispersed as globules if mixed or agitated. If released to water the product may sink.

Section 13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	IMDG	IATA
UN number	UN 3082	UN 3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Heavy fuel oil). Marine pollutant	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Heavy fuel oil)
Transport hazard class(es)	9 	9 
Packing group	III	III
Environmental hazards	Yes.	Yes.
Special precautions for user	Not available.	Not available.
Additional information	**Emergency schedules (EmS)** F-A, S-F	-

Section 15. Regulatory information

Safety, health and environmental regulations specific for the product

No known specific national and/or regional regulations applicable to this product (including its ingredients).

Regulation according to other foreign laws

REACH Status

The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.

United States inventory (TSCA 8b)

All components are listed or exempted.

Australia inventory (AICS)

All components are listed or exempted.

Section 15. Regulatory information

Canada inventory	All components are listed or exempted.
China inventory (IECSC)	All components are listed or exempted.
Japan inventory (ENCS)	All components are listed or exempted.
Korea inventory (KECI)	Not determined.
Philippines inventory (PICCS)	Not determined.

Section 16. Other information

History

Date of issue/Date of revision	2011 June 27
Date of previous issue	No previous validation
Version	1
Prepared by	Product Stewardship
Key to abbreviations	ACGIH = American Conference of Industrial Hygienists CAS Number = Chemical Abstracts Service Registry Number GHS = Global Harmonized System IATA = International Air Transport Association, the organization IMDG = International Maritime Organization Rules, rules governing shipment of goods by water. OEL = Occupational Exposure Limit SDS = Safety Data Sheet STEL = Short term exposure limit TWA = Time weighted average UN Number = United Nations Number, a four digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods.

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

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