SAFETY DATA SHEET

(SOLAS regulation VI/5-1 format)

FUEL OIL - EMF.5™ ROTTERDAM

ExxonMobil

Section 1. Identification

Product name : FUEL OIL - EMF.5™ ROTTERDAM

Product description : Hydrocarbons and Additives

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

Identified uses : Fuel, Fuel oil

Uses advised against : This product is not recommended for any industrial, professional or consumer use other than the Identified Uses above.

MARPOL Annex I Category : Fuel and residual oils, including ship's bunkers

See Section 14 for transportation information related to the Bill of Lading, other shipping documents

Supplier : ExxonMobil Marine Fuels
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MAILPOINT 31, ERMYN WAY
LEATHERHEAD KT22 8UX United Kingdom

Supplier General Contact : (UK) (+44) (0) 1372 222 000 (Switchboard Leatherhead)

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Local Emergency telephone number : Belgium: +(32)-28083237 (CHEMTREC)
China: 400 120 4937
France: +(33)-975181407 (CHEMTREC)
Germany: 0800 181 7059 or +(49)-69643508409 (CHEMTREC)
India: 000-800-100-7141
Italy: 0800 789767 (in country) or +(39)-0245557031 (CHEMTREC)
Japan: 0800-300-5842
Malaysia: +60 3-9212 5794
Netherlands: +(31)-858880596 (CHEMTREC)
Republic of Korea: 080-880-0454
Singapore: 800-101-2201
Spain: 900 868538 or +(34)-931768545 (CHEMTREC)
Thailand: 1800014808
United Kingdom: +44 20 3807 3798
United States: (800) 424-9300 or (703) 527-3887 (CHEMTREC)

This (M)SDS is a generic document with no country specific information included.

Section 2. Hazard identification

This material is hazardous according to UN GHS Criteria. Classification includes all GHS hazard classes. For hazard categories with two cut-off/concentration limits, classification was based on the higher limit.

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 4
ACUTE TOXICITY (inhalation) - Category 4
SKIN CORROSION/IRRITATION - Category 2
GERM CELL MUTAGENICITY - Category 1B
CARCINOGENICITY - Category 1B
REPRODUCTIVE TOXICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2
ASPIRATION HAZARD - Category 1
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1

GHS label elements

Section 2. Hazard identification

Hazard pictograms :

Signal word : Danger

Hazard statements :
H227 - Combustible liquid.
H304 - May be fatal if swallowed and enters airways.
H315 - Causes skin irritation.
H332 - Harmful if inhaled.
H340 - May cause genetic defects.
H350 - May cause cancer.
H361 - Suspected of damaging fertility or the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure. (blood, bone marrow, liver, thymus)
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention :
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 - Do not breathe vapour.
P264 - Wash thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, eye protection, face protection, or hearing protection.

Response :
P301 + P331, P310 - IF SWALLOWED: Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P304 + P312, P340 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell. Remove person to fresh air and keep comfortable for breathing.
P308 + P313 - IF exposed or concerned: Get medical advice or attention.
P332 + P313 - If skin irritation occurs: Get medical advice/attention.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P370 + P378 - In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.
P391 - Collect spillage.

Storage :
P403 - Store in a well-ventilated place.
P405 - Store locked up.

Disposal :
P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Contains : fuel oil, residual; residues (petroleum), catalytic cracking; distillates (petroleum), light catalytic cracked; residues (petroleum), atmospheric; gas oils (petroleum), hydrodesulfurized heavy vacuum; distillates (petroleum), full-range straight-run middle; distillates (petroleum), light thermal cracked; distillates (petroleum), heavy thermal cracked; distillates (petroleum), hydrodesulfurized middle; gas oils (petroleum), heavy vacuum; residues (petroleum), catalytic reformer fractionator; residues (petroleum), steam-cracked light; gas oils (petroleum), heavy vacuum; residues (petroleum), thermal cracked; residues (petroleum), hydrocracked and fuels, diesel

Other hazards which do not result in classification : None known.

Nota : This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% by weight	Identifiers
fuel oil, residual	≤50	CAS: 68476-33-5
residues (petroleum), catalytic cracking	≤20	CAS: 92061-97-7
distillates (petroleum), light catalytic cracked	≤10	CAS: 64741-59-9
residues (petroleum), atmospheric	≤20	CAS: 68333-22-2
gas oils (petroleum), hydrodesulfurized heavy vacuum	≤10	CAS: 64742-86-5
distillates (petroleum), full-range straight-run middle	≤1.11	CAS: 68814-87-9
distillates (petroleum), light thermal cracked	≤10	CAS: 64741-82-8
distillates (petroleum), heavy thermal cracked	≤10	CAS: 64741-81-7
distillates (petroleum), hydrodesulfurized middle	≤10	CAS: 64742-80-9
gas oils (petroleum), heavy vacuum	≤10	CAS: 64741-57-7
residues (petroleum), catalytic reformer fractionator	≤10	CAS: 64741-67-9
oxygenated hydrocarbons, mixture	≤10	CAS: 98072-31-2
residues (petroleum), steam-cracked light	≤10	CAS: 68513-69-9
gas oils (petroleum), heavy vacuum	≥10 - ≤17	CAS: 64741-57-7
residues (petroleum), thermal cracked	≤10	CAS: 64741-80-6
residues (petroleum), hydrocracked	≤10	CAS: 64741-75-9
fuels, diesel	≤10	CAS: 68334-30-5
naphthalene	<1	CAS: 91-20-3

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.

Nota :

Hydrogen sulfide (H2S) may be present in the material in trace quantities (by weight) and, when present, may accumulate to toxic or flammable concentrations in enclosed spaces such as tanks or tanker/railcar headspaces.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First-aid measures

Skin contact : Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury. For hot product: Immediately immerse in or flush affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze and get prompt medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 10 minutes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Get medical attention.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Harmful if inhaled.

Skin contact : Causes skin irritation.

Ingestion : May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Respiratory and eye irritation, coughing, a sensation of dryness and pain in the nose, and loss of consciousness.

Skin contact : Adverse symptoms may include the following:
irritation
redness
Local necrosis as evidenced by delayed onset of pain and tissue damage a few hours after injection.

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

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

Notes to physician : If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

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.

See toxicological information (Section 11)

Section 6. Accidental release measures

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Personal precautions, protective equipment and emergency procedures

For non-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 spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Put on appropriate personal protective equipment. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and material for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. 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 (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Confine the spill immediately with booms. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants. Warn other shipping. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

Section 6. Accidental release measures

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Section 7. Handling and storage

Precautions for safe handling

Protective measures : Thermal burn hazard - contact with hot material may cause thermal burns. 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 vapour or mist. Do not swallow. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container. Harmful amounts of H2S may be present. Avoid breathing vapours, spray or mists. The toxic and olfactory (sense of smell) fatigue properties of hydrogen sulfide require that air monitoring alarms and respiratory protection be used where the concentration might be expected to reach a harmful level, such as in an enclosed space, heated transport vessel, or in a spill or leak situation. It is dangerous and/or unlawful to put petrol into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapour and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) during safety critical tasks, such as bulk fuel loading or unloading operations, or in storage areas where vapours may be present, unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. For use as a motor fuel only. Do not siphon by mouth.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Static Accumulator : This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

FUEL OIL - EMF.5™ ROTTERDAM	**ExxonMobil (COMPANY)** TWA: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
fuel oil, residual	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
residues (petroleum), catalytic cracking	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
distillates (petroleum), light catalytic cracked	**ExxonMobil (COMPANY)** Absorbed through skin. TWA: 0.1 mg/m³ (benzene solubles).
residues (petroleum), atmospheric	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
gas oils (petroleum), hydrodesulfurized heavy vacuum	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
distillates (petroleum), light thermal cracked	**ExxonMobil (COMPANY)** TWA 8 hours: 5 mg/m³. Form: Stable Aerosol.. TWA 8 hours: 200 mg/m³. Form: Vapour..
distillates (petroleum), heavy thermal cracked	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
distillates (petroleum), hydrodesulfurized middle	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 5 mg/m³. Form: Stable Aerosol.. TWA 8 hours: 200 mg/m³. Form: Vapour..
gas oils (petroleum), heavy vacuum	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
residues (petroleum), catalytic reformer fractionator	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
gas oils (petroleum), heavy vacuum	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
residues (petroleum), thermal cracked	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
residues (petroleum), hydrocracked	**ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 0.1 mg/m³ (benzene solubles). Form: Total oil mist.
fuels, diesel	**ACGIH TLV (United States, 1/2024) [Diesel Fuel]** Absorbed through skin. TWA 8 hours: 100 mg/m³ (measured as total hydrocarbons). Form: Inhalable fraction and vapor. **ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 5 mg/m³. Form: Stable Aerosol.. TWA 8 hours: 200 mg/m³. Form: Vapour..

Section 8. Exposure controls/personal protection

naphthalene	**ACGIH TLV (United States, 1/2024)** Absorbed through skin. TWA 8 hours: 10 ppm. TWA 8 hours: 52 mg/m³.
carbon monoxide	[***Air contaminant - Decomposition product(s)***] **ACGIH TLV (United States, 1/2024)** TWA 8 hours: 25 ppm. TWA 8 hours: 29 mg/m³.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Hydrogen sulfide (H2S) may be present in the material in trace quantities (by weight) and, when present, may accumulate to toxic or flammable concentrations in enclosed spaces such as tanks or tanker/railcar headspaces. The ExxonMobil OEL for H2S is 5 ppm (8-hr TWA) and 10 ppm for 15 min STEL.

Biological exposure indices

Ingredient name	Exposure indices
naphthalene	**ACGIH BEI (United States, 1/2024)** BEI: Nonquantitative: Biological monitoring should be considered for this compound based on the review; however, a specific BEI® could not be determined due to insufficient data., 1-naphthol + 2-naphthol [(sample not specified)]. Sampling time: end of shift.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

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 : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. Face shield.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If product is hot, thermally protective, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): Nitrile, minimum 0.38 mm thickness or comparable protective barrier material

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. If product is hot, thermally protective, chemical resistant apron and long sleeves are recommended.

Section 8. Exposure controls/personal protection

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Positive-pressure, air-supplied respirator in areas where H2S vapours may accumulate is recommended.

Thermal hazards : If there is a risk of contact with a substantial volume of thermally hazardous material, personal protective equipment should be selected to provide protection against temperature-related injury.

Section 9. Physical and chemical properties and safety characteristics

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Liquid. [Viscous]

Colour : Dark Brown

Odour : Petroleum/Solvent

Odour threshold : Not available.

pH : Not applicable.

Melting point/freezing point : Not available.

Boiling point or initial boiling point and boiling range : >120°C (>248°F) [ASTM D86]

Flash point : Closed cup: >60°C (>140°F) [ASTM D-93]

Evaporation rate : Not available.

Flammability : Flammable liquids - Category 4

Lower and upper explosion limit/flammability limit : Lower: 1% [Estimated]
Upper: 6%

Vapour pressure : 0.15 to 5.93 mm Hg [120 °C]

Relative vapour density : Not available.

Relative density : <1

Density : 0.8 to 0.991 g/cm³ [15°C (59°F)] [ISO 12185]

Solubility in water : Negligible

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : >250°C (>482°F) [ASTM E659]

Decomposition temperature : Not available.

Viscosity : >7 cSt [40 °C] [ISO 3104]

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. High energy sources of ignition.

Incompatible materials : Reactive or incompatible with the following materials:,oxidising materials,Halogens, Alkalies, Strong oxidisers, strong acids

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
fuels, diesel	**Rat - Inhalation - LC50 Dusts and mists** 4.1 mg/l [4 hours]
naphthalene	**Mouse - Oral - LD50** 533 mg/kg **Rat - Inhalation - LC50 Vapour** >0.4 mg/l [4 hours]

Conclusion/Summary

Inhalation : Moderately toxic No end point data for material. Based on assessment of the components.

Dermal : Minimally Toxic. No end point data for material. Based on assessment of the components.

Oral : Minimally Toxic. No end point data for material. Based on assessment of the components.

Irritation/Corrosion

Conclusion/Summary

Skin : Irritating to the skin. No end point data for material. Based on assessment of the components.

Eyes : May cause mild, short-lasting discomfort to eyes. No end point data for material. Based on assessment of the components.

Respiratory : Negligible hazard at ambient/normal handling temperatures. No end point data for material. Elevated temperatures or mechanical action may form vapours, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.

Respiratory or skin sensitization

Conclusion/Summary

Skin : Not expected to be a skin sensitizer. No end point data for material. Based on assessment of the components.

Respiratory : Not expected to be a respiratory sensitizer. No end point data for material.

Mutagenicity

Conclusion/Summary : May cause genetic defects. No end point data for material. Based on assessment of the components.

Carcinogenicity

Section 11. Toxicological information

Conclusion/Summary : May cause cancer. No end point data for material. Based on assessment of the components.

Classification

Product/ingredient name	IARC
fuel oil, residual	2B
residues (petroleum), catalytic cracking	2B
distillates (petroleum), light catalytic cracked	1
gas oils (petroleum), hydrodesulfurized heavy vacuum	2B
distillates (petroleum), light thermal cracked	1
distillates (petroleum), heavy thermal cracked	2B
distillates (petroleum), hydrodesulfurized middle	1
gas oils (petroleum), heavy vacuum	1
residues (petroleum), catalytic reformer fractionator	2B
gas oils (petroleum), heavy vacuum	1
residues (petroleum), thermal cracked	2B
residues (petroleum), hydrocracked	2B
naphthalene	2B

Reproductive toxicity

Conclusion/Summary : May damage the unborn child. No end point data for material. Based on assessment of the components.

Specific target organ toxicity (single exposure)

Conclusion/Summary : Not expected to cause organ damage from a single exposure. No end point data for material.

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Target organs
FUEL OIL - EMF.5™ ROTTERDAM	Category 2	blood, bone marrow, liver, thymus

Conclusion/Summary : May cause damage to organs through prolonged or repeated exposure. No end point data for material. Based on assessment of the components.

Aspiration hazard

Product/ingredient name	Result
FUEL OIL - EMF.5™ ROTTERDAM	Category 1

Conclusion/Summary : May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material. Data available.

Other information

Contains : Middle distillates with cracked stocks: Carcinogenic in animal tests. Caused mutations in-vitro. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/ accumulation, and reduction in lung function. HYDROGEN SULPHIDE: Chronic health effects due to repeated exposures to low levels of H2S have not been established. High level (700 ppm) acute exposure can result in sudden death. High concentrations will lead to cardiopulmonary arrest due to nervous system toxicity and pulmonary edema. Lower levels (150 ppm) may overwhelm sense of smell, eliminating warning of exposure. Symptoms of overexposure to H2S include headache, fatigue, insomnia, irritability, and gastrointestinal problems. Repeated exposures to approximately 25 ppm will irritate mucous membranes and the respiratory system and have been implicated in some eye damage. Middle distillates: Carcinogenic in animal tests. Lifetime skin painting tests produced tumours, but the mechanism is due to repeated cycles of skin damage and restorative hyperplasia. This mechanism is considered unlikely in humans where such prolonged skin irritation would not be tolerated. Did not cause mutations in-vitro. Inhalation of vapours did not

Section 11. Toxicological information

result in reproductive or developmental effects in laboratory animals. Inhalation of high concentrations in animals resulted in respiratory tract irritation, lung changes and some reduction in lung function. Non-sensitising in test animals. NAPHTHALENE: Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts. Naphthalene caused cancer in laboratory animal studies, but the relevance of these findings to humans is uncertain. Residual fuel oil: Carcinogenic in animal tests. Caused mutations in-vitro. Dermal exposure to high concentrations resulted in maternal toxicity, decreased fetal weight and fetal survival, and some external fetal malformations. Dermal studies in animals: increased mortality, skin irritation, liver, kidney, thymus, bone marrow, blood and lymphoid tissue toxic effects. Possible allergen and photoallergen.

Product : Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Section 12. Ecological information

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

Toxicity

Conclusion/Summary

Acute toxicity : Very toxic to aquatic life.

Chronic toxicity : Very toxic to aquatic life with long lasting effects.

Persistence and degradability

Biodegradability : Material -- Expected to be inherently biodegradable

Bioaccumulative potential

Conclusion/Summary : Majority of components -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

Mobility in soil

Mobility : Majority of components -- Expected to partition to sediment and wastewater solids. Low potential to migrate through soil. Low solubility and floats and is expected to migrate from water to the land.

Other ecological information

Other adverse effects : No known significant effects or critical hazards.

INTERNATIONAL OIL POLLUTION COMPENSATION (IOPC)

Material is considered a persistent oil.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimised wherever possible. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

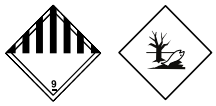
Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for

Section 13. Disposal considerations

recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

MARPOL : see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships.

Section 14. Transport information

	IMDG
UN number	UN3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (fuel oil, residual, residues (petroleum), catalytic cracking)
Transport hazard class(es)	9
Label(s) / Mark(s)	
Packing group	III
Environmental hazards	Yes.

Additional information

IMDG : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.
Emergency schedules F-A, S-F
Special provisions 274, 335, 375, 969
Flash point >60 °C C.C.

Note - this material is being carried under the scope of MARPOL Annex I

Section 15. Regulatory information

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia inventory (AIIC) : At least one component is not listed.
Canada inventory (DSL-NDSL) : Restrictions Apply
China inventory (IECSC) : At least one component is not listed.

Section 15. Regulatory information

Japan inventory (CSCL) : At least one component is not listed.

Japan inventory (Industrial Safety and Health Act) : Not determined.

New Zealand Inventory of Chemicals (NZIoC) : At least one component is not listed.

Philippines inventory (PICCS) : At least one component is not listed.

Korea inventory (KECI) : At least one component is not listed.

Taiwan Chemical Substances Inventory (TCSI) : At least one component is not listed.

United States inventory (TSCA 8b) : At least one component is not listed.

Section 16. Other information

History

Date of issue/Date of revision : 6 August 2025

Date of previous issue : No previous edition

Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 4	On basis of test data
ACUTE TOXICITY (inhalation) - Category 4	Calculation method
SKIN CORROSION/IRRITATION - Category 2	Calculation method
GERM CELL MUTAGENICITY - Category 1B	Calculation method
CARCINOGENICITY - Category 1B	Calculation method
REPRODUCTIVE TOXICITY - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2	Calculation method
ASPIRATION HAZARD - Category 1	Calculation method
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1	Calculation method
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1	Calculation method

References : Not available.

Indicates information that has changed from previously issued version.

Product code : 1216101_13812702

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Section 16. Other information

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