

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

| | |
|-----------------------|---|
| Product form | : Substance |
| Trade name | : Residual fuel Oil, Residual Marine Fuel |
| Chemical name | : Fuel oil, residual, Heavy Fuel oil [The liquid product from various refinery streams, usually residues. The composition is complex and varies with the source of the crude oil.] |
| IUPAC name | : Fuel oil, residual |
| EC index no | : 649-024-00-9 |
| EC no | : 270-675-6 |
| CAS No | : 68476-33-5 |
| REACH registration No | : 01-2119474894-22 |

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

1.2.1. Relevant identified uses

Use of the substance/mixture : Fuels

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Inver Energy Ltd
River House Blackpool Park
Cork - Ireland
T +353 21 4396950
inver@inverenergy.com

1.4. Emergency telephone number

Emergency number : +353 21 4396590
09.00-17.00 GMT

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute Tox. 4 (Inhalation) H332
Carc. 1B H350
Repr. 2 H361
STOT RE 2 H373
Aquatic Acute 1 H400
Aquatic Chronic 1 H410
M = 1

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

Carc.Cat.2; R45
N; R50/53
R66

Full text of R-phrases: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

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according to Regulation (EC) No. 453/2010

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

H332 - Harmful if inhaled
H350 - May cause cancer
H361 - Suspected of damaging fertility or the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (CLP) :

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe dust/fume/gas/mist/vapours/spray
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

EUH phrases

: EUH066 - Repeated exposure may cause skin dryness or cracking

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substance

| Name | Product identifier | % | Classification according to Directive 67/548/EEC |
|---|---|-----|--|
| Fuel oil, residual, Heavy Fuel oil [The liquid product from various refinery streams, usually residues. The composition is complex and varies with the source of the crude oil.] | (CAS No) 68476-33-5 (EC no) 270-675-6 (EC index no) 649-024-00-9 (REACH-no) 01-2119474894-22 | 100 | Carc.Cat.2; R45 N; R50/53 R66 |
| Name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
| Fuel oil, residual, Heavy Fuel oil [The liquid product from various refinery streams, usually residues. The composition is complex and varies with the source of the crude oil.] | (CAS No) 68476-33-5 (EC no) 270-675-6 (EC index no) 649-024-00-9 (REACH-no) 01-2119474894-22 | 100 | Acute Tox. 4 (Inhalation), H332 Carc. 1B, H350 Repr. 2, H361 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 M = 1 |

Full text of R- and H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

| | |
|---------------------------------------|--|
| First-aid measures after inhalation | : Remove victim to fresh air and keep at rest in a position comfortable for breathing. In all cases of doubt, or when symptoms persist, seek medical advice. |
| First-aid measures after skin contact | : Rinse immediately with plenty of water for 15 minutes. If skin irritation occurs: Get medical advice/attention. Never use gasoline, kerosene or other solvents for washing contaminated skin. |
| First-aid measures after eye contact | : In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. |
| First-aid measures after ingestion | : Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. May result in aspiration into the lungs, causing chemical pneumonia. Do NOT induce vomiting. Get immediate medical advice/attention. |

4.2. Most important symptoms and effects, both acute and delayed

| | |
|--------------------------------------|---|
| Symptoms/injuries | : Symptoms may include dizziness, headache, nausea and loss of coordination. |
| Symptoms/injuries after inhalation | : Excessive concentrations may cause nervous system depression, headache, and weakness leading to unconsciousness. Narcosis. Cyanosis may occur (lips and fingernails turn blue). Risk of lung oedema. Proteinuria. |
| Symptoms/injuries after skin contact | : Repeated exposure may cause skin dryness or cracking. |

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4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : carbon dioxide (CO₂), water, dry chemical powder.

Unsuitable extinguishing media : Do not use water jet.

5.2. Special hazards arising from the substance or mixture

Fire hazard : None known.

Explosion hazard : None known.

Hazardous decomposition products in case of fire : Carbon monoxide. Carbon dioxide.

5.3. Advice for firefighters

Firefighting instructions : Move undamaged containers from immediate hazard area if it can be done safely. Cool down the containers exposed to heat with a water spray. Prevent fire-fighting water from entering environment.

Protective equipment for firefighters : In case of fire: Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : In case of fire: Wear self-contained breathing apparatus.

Emergency procedures : Evacuate and limit access. Use care in walking on spilled material. Spilled material may present a slipping hazard. Ensure adequate ventilation.

6.1.2. For emergency responders

Protective equipment : In case of fire: Wear self-contained breathing apparatus.

Emergency procedures : Evacuate and limit access. Spilled material may present a slipping hazard. Use care in walking on spilled material. Eliminate all ignition sources if safe to do so. Provide adequate ventilation.

6.2. Environmental precautions

Do not allow run-off from fire-fighting to enter drains or water courses. Relevant water authorities should be notified of any large spillage to water course or drain. Do not discharge into drains or the environment.

6.3. Methods and material for containment and cleaning up

For containment : Stop leak if safe to do so. Ventilate affected area. Prevent entry to sewers and public waters.

Methods for cleaning up : For small spills: dilute with small amount of water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Use only antistatically equipped (spark-free) tools. Dispose of waste according to applicable legislation. move container from spill area . Ensure all waste water is collected and treated via a waste water treatment plant. Large spills: Contain and/or absorb spill with inert material (sand, vermiculite or other appropriate material), then place in suitable container. Contaminated absorbent material may pose the same hazard as the spilled product.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Use only in well-ventilated areas. In case of insufficient ventilation, wear suitable respiratory equipment. Containers remain hazardous when empty. Continue to observe all precautions. Ground/bond container and receiving equipment. Avoid contact with skin, eyes and clothes. Open and handle container with care. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose containers to flames, sparks, heat, or other potential ignition sources. Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Wash contaminated clothing prior to re-use. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Use only antistatically equipped (spark-free) tools.

Storage conditions : Keep container tightly closed. Store in dry, cool, well-ventilated area. Protect against direct sunlight.

Heat and ignition sources : Remove all sources of ignition. Store away from excessive heat.

Storage area : Store in a well-ventilated place. Containers which are opened should be properly resealed and kept upright to prevent leakage. Store according to local legislation. Limit access only to the necessary cleaning personnel.

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- Special rules on packaging : Correctly labelled.
Packaging materials : For containers or container linings use mild steel, stainless steel.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Residual fuel Oil, Residual Marine Fuel (68476-33-5)

DNEL/DMEL (Workers)

| | |
|---------------------------------------|---------------------------|
| Acute - systemic effects, dermal | 1300 mg/kg bodyweight/day |
| Acute - local effects, inhalation | 1100 mg/m ³ |
| Long-term - local effects, inhalation | 840 mg/m ³ |

DNEL/DMEL (General population)

| | |
|--|-----------------------|
| Acute - systemic effects, dermal | 1200 mg/kg bodyweight |
| Acute - local effects, inhalation | 640 mg/m ³ |
| Long-term - systemic effects, inhalation | 180 mg/m ³ |

8.2. Exposure controls

- Appropriate engineering controls : Use explosion-proof equipment. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide local exhaust or general room ventilation to minimize vapour concentrations.
- Personal protective equipment : In case of splash hazard: safety glasses. Face shield. Protective clothing. If excessive exposure exists, use only approved air-purifying or supplied air respirator operated in a positive pressure mode.



- Hand protection : Wear suitable gloves tested to EN374. Use heavy duty gloves constructed of chemical resistant materials such as Viton® or heavy nitrile rubber. Chlorinated polyethylene.
- Eye protection : Use safety glasses with side-shields or goggles. DIN EN 166.
- Respiratory protection : This product should not be used under conditions of poor ventilation unless a protective mask with an appropriate gas filter (i.e. type A1 according to standard EN 14387) is used.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|--------------------------------------|
| Physical state | : Liquid |
| Colour | : black. |
| odour | : Petroleum hydrocarbon odour. |
| Odour threshold | : No data available |
| pH | : No data available |
| Relative evaporation rate (butyl acetate=1) | : No data available |
| Melting point | : No data available |
| Freezing point | : No data available |
| Boiling point | : 160 - 600 °C |
| Flash point | : 62 °C Closed Cup (Pensky-Martens) |
| Auto-ignition temperature | : 263 °C |
| Decomposition temperature | : No data available |
| Flammability (solid, gas) | : No data available |
| Vapour pressure | : < 0,28 kPa estimated |
| Relative vapour density at 20 °C | : > 1 (Air = 1) estimated |
| Relative density | : 0,78 - 0,82 g/cm ³ 15°C |
| Solubility | : Slightly soluble in: Water. |
| Log Pow | : No data available |
| Viscosity, kinematic | : 10 - 55 mm ² /s 100 °C |
| Viscosity, dynamic | : No data available |
| Explosive properties | : No data available |
| Oxidising properties | : No data available |
| Explosive limits | : 1 - 6 vol % |

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9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose containers to flames, sparks, heat, or other potential ignition sources.

10.5. Incompatible materials

Oxidizing agents.

10.6. Hazardous decomposition products

Stable under normal conditions of use.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if inhaled.

| Residual fuel Oil, Residual Marine Fuel (68476-33-5) | |
|--|---|
| LD50 oral rat | 4320 mg/kg OECD Guideline 401 |
| LD50 dermal rat | > 2000 mg/kg bodyweight EU Method B.3 |
| LC50 inhalation rat (mg/l) | 4100 mg/m ³ (4 h) EPA OTS 798.1150 |

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : May cause cancer.

Reproductive toxicity : Suspected of damaging fertility or the unborn child.

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified

| Residual fuel Oil, Residual Marine Fuel (68476-33-5) | |
|--|-----------------------------------|
| Viscosity, kinematic | 10 - 55 mm ² /s 100 °C |

SECTION 12: Ecological information

12.1. Toxicity

| Residual fuel Oil, Residual Marine Fuel (68476-33-5) | |
|--|-----------------------------------|
| LC50 fishes 1 | 79 mg/l OECD Guideline 203 |
| EC50 Daphnia 1 | 0,22 mg/l OECD Guideline 202 |
| NOEC chronic crustacea | 0,27 mg/l 21d, QSAR modelled data |

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

| Residual fuel Oil, Residual Marine Fuel (68476-33-5) | |
|--|--|
| This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII | |
| This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII | |

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according to Regulation (EC) No. 453/2010

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : Dispose of this material and its container to hazardous or special waste collection point.
Waste treatment methods : Recycling the product is recommended. If recycling is not possible, suitable routes of disposal are supervised incineration with energy recovery according to the characteristic of material at the time of disposal and based on local legislation.
Waste disposal recommendations : Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.
European List of Waste (LoW) code : 13 07 01* - fuel oil and diesel

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

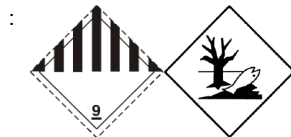
UN-No. (ADR) : 3082

14.2. UN proper shipping name

Proper Shipping Name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Residual Fuel Oil)

14.3. Transport hazard class(es)

Transport hazard class(es) (UN) : 9
Hazard labels (UN) : 9



14.4. Packing group

Packing group (UN) : III

14.5. Environmental hazards

Dangerous for the environment : Yes
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user

14.6.1. Overland transport

Classification code (ADR) : M6
Special provision (ADR) : 274, 335, 601
Limited quantities (ADR) : 5L
Hazard identification number (Kemler No.) : 90
Orange plates :



Transport Category : 3
Tunnel restriction code (ADR) : E
EAC code : •3Z

14.6.2. Transport by sea

Transport regulations (IMDG) : Subject to the provisions
Special provision (IMDG) : 274, 335
EmS-No. : F-A, S-F

14.6.3. Air transport

Transport regulations (IATA) : Subject to the provisions
PCA Limited quantities (IATA) : Y964
PCA packing instructions (IATA) : 964

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CAO packing instructions (IATA) : 964
Special provision (IATA) : A97, A158

14.6.4. Inland waterway transport

Transport regulations (ADN) : Subject to the provisions
Dangers (and) :

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

A chemical safety assessment has been carried out for the substance or the mixture by the supplier

SECTION 16: Other information

Other information : It is the user's responsibility to take the mentioned precautionary measures and to ensure that this information is complete and sufficient for the use of this product. This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Full text of R-, H- and EUH-phrases:

| | |
|---------------------------|---|
| Acute Tox. 4 (Inhalation) | Acute toxicity (inhalation) Category 4 |
| Aquatic Acute 1 | Hazardous to the aquatic environment — Acute Hazard, Category 1 |
| Aquatic Chronic 1 | Hazardous to the aquatic environment — Chronic Hazard, Category 1 |
| Carc. 1B | Carcinogenicity, Category 1B |
| Repr. 2 | Reproductive toxicity, Category 2 |
| STOT RE 2 | Specific target organ toxicity (repeated exposure) Category 2 |
| H332 | Harmful if inhaled |
| H350 | May cause cancer |
| H361 | Suspected of damaging fertility or the unborn child |
| H373 | May cause damage to organs through prolonged or repeated exposure |
| H400 | Very toxic to aquatic life |
| H410 | Very toxic to aquatic life with long lasting effects |
| R45 | May cause cancer |
| R50/53 | Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment |
| R66 | Repeated exposure may cause skin dryness or cracking |
| N | Dangerous for the environment |

SDS EU (REACH Annex II)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product