

<b>Marine Fuels</b>	<b>GENERAL TERMS AND CONDITIONS OF SAILS FOR MARINE BUNKERS</b>	<b>February 2021</b>
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<b>1. APPLICABILITY</b>	
<b>1.1</b>	The following General Terms and Conditions shall apply to all Contracts of sale of Marine fuels by Dalmare S.p.A to ship owners (directly or through broker), charterers and traders.
<b>1.2</b>	Unless otherwise agreed in writing, these General Terms and Conditions shall apply to all sales of Marine Fuels in Italy and abroad.
<b>1.3</b>	The present General Terms and Conditions replace all versions previously published.
<b>2. DEFINITIONS</b>	
<b>Buyer</b>	The Company ordering the Marine Fuels which is entitled for the payment.
<b>Ship Agency</b>	Vessel's agent in the Port of delivery.
<b>Bad weather</b>	Strong winds, currents and tides and/or adverse weather conditions such as excessive heat, fog, rainfall, swells and/or any other event that make the refueling and/or berthing operations unsafe.
<b>Bunker confirmation</b>	Confirmation sent by email from the Buyer to the Seller and confirmed by the Seller for each sale of bunker as detailed here below: <ul style="list-style-type: none"> <li>• in case of Contract for a single supply, it makes reference to the ETA/ETD, quantity and quality, economic conditions and the main clauses agreed by the Parties.</li> <li>• in case of Contract for multiple supplies, it makes reference to any single supply in the Contract.</li> </ul>
<b>Contract</b>	A written agreement by the Buyer to buy and corresponding agreement by the Seller to sell Marine Fuels to the conditions set out therein.
<b>ETA</b>	Estimated time of arrival at the Place of Delivery.
<b>ETD</b>	Estimated time of departure from the Place of Delivery.
<b>FOB</b>	Free on Board (as per Incoterms published by the ICC)
<b>Physical Supplier</b>	Company owning Marine fuels at a specific port.

Delivery Ex-wharf	Delivery facilities provided by the Buyer.
Delivery F.O.B.	Delivery facilities provided by the Seller.
Incoterms	Pre-defined commercial terms published by the International Chamber of Commerce (ICC) relating to international commercial law.
Independent inspector	A third-Party inspector.
Independent laboratory	A third-Party laboratory.
BDN	The standard document required by Annex VI of Marpol which contains information of every bunker delivery.
Offer	The offer sent to the Buyer by the Seller in response to an Enquiry.
Business hours	In accordance with port regulations or, without, from 8.00 a.m. to 8.00 p.m.
Mooring	Quay, anchorage, submarine cable, single point of mooring or dock, off- shore buoy or any other place of loading and unloading as defined by the Buyer.
Party/ Parties	Buyer or Seller/ Buyer and Seller collectively
Marine Fuels Products	Bunker fuel/s , Product/s and Bunker/s.
REACH Regulation	Regulation (EC) No. 1907 of 2006 concerning chemicals and further amendments and additions.
Enquiry	<p>A request of offer sent by the Buyer including at least the following data:</p> <ul style="list-style-type: none"> <li>• name of the vessel</li> <li>• IMO</li> <li>• ETA, ETD</li> <li>• delivery port</li> <li>• quality and quantity</li> </ul>

Seller	Dalmare SpA
<b>3. OBJECT</b>	
3.1	These General Terms and Conditions for Sales of Marine Fuels shall, unless otherwise expressly agreed in writing by the Seller, apply to any contract where the Seller agrees to sell and/or deliver, and/or to arrange for the sale and/or delivery of Marine Fuel(s).
3.2	The present General Terms and Conditions are available on the Internet website <a href="http://www.dalesiogroup.it">www.dalesiogroup.it</a>
<b>4. DELIVERY, TITLE AND RISKS</b>	
4.1	Accordingly with Bunker confirmation , the Marine products can be delivered by barge, truck or pipe.
4.2	Free on board deliveries: risk of loss in the Marine Fuels delivered shall pass to the Buyer as the Marine Fuels pass through the flange of the vessel's manifold. The Buyer shall be responsible for making all connections and disconnections of the delivery hose(s) to the Vessel's bunker manifold and ensuring that the hose(s) are properly connected to the Vessel's bunker manifold prior to the commencement of delivery and that they remain properly connected until the completion of delivery. Title shall pass to the Buyer only upon payment by the Buyer of the full amount of invoiced value due for the Marine Fuel(s) delivered, even if the Marine Fuel(s) are no longer in the possession or custody of the Buyer.
4.3	Ex-Wharf deliveries: risk of loss in the Marine Fuels delivered shall pass to the Buyer as the Marine Fuels pass through the flange connecting the delivery facilities provided by the Seller with the receiving facilities provided by the Buyer. The Buyer shall be responsible for making all connections and disconnections of the delivery hose(s) to the receiving facilities manifold and ensuring that the hose(s) are properly connected to the receiving facilities prior to the commencement of delivery and that they remain properly connected until the completion of delivery. Title shall pass to the Buyer only upon payment by the Buyer of the full amount of invoiced value due for the Marine Fuel(s) delivered, even if the Marine Fuel(s) are no longer in the possession or custody of the Buyer.
4.4	All deliveries by barge, weather permitting, will be subject to the vessel priority, if existing, and to business hours of staff responsible of

	<p>transport operations and possible limitations indicated by Port Authorities. In case of vessel arrival outside business hours, all additional costs will be borne by the Buyer.</p>
<p><b>4.5</b></p>	<p>The Seller will not be responsible for any costs, losses or demurrage due to congestion at the terminal or non availability of safe berth.</p> <p>On road deliveries are subject to confirmation by the master of the barge that weather conditions allow the delivery in accordance with the port regulation. Should it not be possible to deliver the Marine Product as a result of the decision of the barge Master, the Seller is not responsible either for the missed or late delivery or any costs related.</p>
<p><b>5. OBLIGATIONS OF THE PARTIES</b></p>	
<p><b>5.1</b></p>	<p>The Buyer shall:</p> <ul style="list-style-type: none"> <li>• Provide a safe berth. All costs due to terminal or berth congestion shall be for Buyer's account.</li> <li>• Pay all costs and port expenses.</li> <li>• Guarantee that the vessel's tanks are clean and suitable to receive the Product in compliance with current regulations and best practices. The Seller shall not be held responsible for any product alterations due to improper cleaning or unsuitability of tanks.</li> <li>• Verify that Bunker on board is compatible with the Bunker ordered to the Seller. The Seller shall not be held responsible for any problems caused by the incompatibility of the two products.</li> <li>• Inform the Seller of the time and place of delivery, through the local agent. Failure of this communication by the Buyer shall exempt the Seller from any obligation to deliver the Product.</li> <li>• Receive Bunker delivery without delay. All costs and expenses due to the delay caused by the Buyer, included but not limited to demurrage and overtime shall be on Buyer's account.</li> <li>• Pay the price of bunker and the costs indicated in article 9.</li> <li>• Should the vessel, for whatsoever reason, arrive more than three days after the ETA indicated in the Bunker Confirmation, the Seller reserves the right to cancel any delivery without liability on the part of the Seller and without prejudice of the right of the Seller to claim from the Buyer all the damages and costs whatsoever arising from such cancellation.</li> </ul> <p>Pay all costs and reimbursing the Seller of all expenses and charges arising from the Buyer's failure to comply with one or more obligations in paragraph 5.1.</p>

5.2	<p>The Seller shall:</p> <ul style="list-style-type: none"> <li>• Verify that the product to be delivered meets the requested specifications.</li> <li>• Deliver the Bunker to the Buyer in accordance with the terms agreed in the Bunker confirmation.</li> <li>• Issue a formal invoice after bunker has been delivered.</li> </ul>
<b>6. QUANTITY</b>	
6.1	The quantity to be delivered is the one agreed on Bunker confirmation.
6.2	The quantity is the one certified by customs authorities and stated in the document issued by ashore facility. This quantity is binding for both Parties.
6.3	The Buyer has the right to be represented when the product quantity is measured at his own expense and after prior notification to the Seller. Accordingly, he should inform the Seller if he seeks to appoint an Independent Inspector.
6.4	If more than 0,5% of water is found in fuel oil, the Seller will make the necessary adjustments and the volume invoiced will be consequently corrected.
<b>7. QUALITY</b>	
7.1	The Marine products type will be agreed and identified by the Parties in the Bunker Confirmation. The quality of the products shall be in compliance to ISO 8217/2010 regulations.
7.2	<p>According to the delivery methods and for the purpose of verifying the quality, the following samples of the Bunker shall be taken:</p> <ul style="list-style-type: none"> <li>• two for the receiving vessel : <ul style="list-style-type: none"> <li>○ Vessel sample</li> <li>○ Marpol sample</li> </ul> </li> <li>• one for the Seller</li> <li>• one for the transport operator (in case of delivery by barge or by truck only).</li> </ul> <p>Samples shall be taken as follows:</p>

	<ul style="list-style-type: none"> <li>• Pipeline: connection flange between the pipeline and the vessel;</li> <li>• Barge: connection flange between the tanker and the vessel;</li> <li>• Truck: connection flange between the truck and the vessel.</li> </ul> <p>These samples will be recorded into BDN and they will be the only ones used in the event of claim.</p> <p>All samples shall be sealed and labeled . Labels shall indicate the name of the vessel, the name of the product, the time and place of bunkering. Samples shall be countersigned by the Vendor or his representative and by the ship's master <i>or</i> his representative.</p>
<b>8. PRICE</b>	
	<p>The Prices is the one agreed between the Parties in the bunker confirmation.</p>
<b>9. CHARGES</b>	
	<p>In addition to the price of the Marine Fuels Products, the Buyer shall pay the following charges:</p> <ul style="list-style-type: none"> <li>• Transportation cost depending on the delivery type;</li> <li>• Any mooring and unmooring costs, shipping agency fees, port charges and what is necessary for the delivery on board</li> <li>• Any taxes and/or duties in compliance with the reference regulations</li> <li>• Any supplementary costs incurred by the Seller for overtime deliveries outside working hours, on public holidays, week end and/or for the barge demurrage and/or truck demurrage</li> </ul> <p>Charges incurred by the Seller in case of total or partial refusal of the Bunker on behalf of the Buyer.</p>
<b>10. INVOICING</b>	
<b>10.1</b>	<p>The invoice will be sent according to current legislation.</p>
<b>10.2</b>	<p>Quantity invoiced is the one indicated on the customs/financial documentation.</p>
<b>10.3</b>	<p>The invoice will report the price of products and the following data:</p> <ul style="list-style-type: none"> <li>• product and quantity delivered</li> <li>• price agreed</li> </ul>

	<ul style="list-style-type: none"> <li>• customs tax treatment</li> </ul>
<b>11. PAYMENT</b>	
<b>11.1</b>	Payment to the Seller of the Marine Product delivered shall be made in the currency and at the time agreed in the Bunker Confirmation.
<b>11.2</b>	Payment to the Seller shall be made to Seller's bank by wire transfer. Any bank commission will be on Buyer account.
<b>11.3</b>	Payment of the amount due to the Seller shall be made also in case of disputes that shall be solved separately.
<b>12. TAXES</b>	
<b>12.1</b>	Taxes, duties and all other forms of governmental fees of any type or name (hereafter referred as to "taxes") directly or indirectly applicable to the Marine Fuel Products will be charged to the Buyer.
<b>12.2</b>	Should the Seller pay any amount of tax at the expense of the Buyer, the Buyer must reimburse the amount on request.
<b>13. INDEMNITY</b>	
	The Buyer shall indemnify and keep indemnified the Seller against any liability for any consequences and/or responsibility from the use of the Product by the Buyer after the Product has been delivered.
<b>14. USE OF THE MARINE</b>	
	The Buyer guarantee that the Marine Fuel Products supplied by the Seller to the Buyer will be used exclusively by the vessel refueled.
<b>15. BUYER'S REPRESENTATIVE</b>	
<b>15.1</b>	Without prejudice to the Buyer's responsibilities as set out in these General Terms and Conditions, if the Contract is signed by a representative of the Buyer, whether declared or not, the representative will be responsible for the obligations undertaken by the Buyer in accordance with the Contract.
<b>15.2</b>	The Contract is applicable even when the product is not delivered



	<p>directly by the Seller but by third parties acting as agents or representatives of the Buyer.</p>
<p><b>16. CONTRACT MANAGEMENT, COMMUNICATIONS AND ADDRESS FOR SERVICE</b></p>	
<p><b>16.1</b></p>	<p>The contract manager is liable for managing relationships between the Parties, for the application of contractual conditions, the fulfillment of the contract, the management of possible complaints and disputes and any proposals of amendments of the Contract itself.</p> <p>The Contract Manager is:  Simone Andreini – Bunker department – Dalmare SpA.</p> <p>In case of change of the Contract Manager, due notice shall be promptly notified.</p>
<p><b>16.2</b></p>	<p>Any communication relevant to the contract under the Contract Manager's responsibility as referred to in article 16.1. shall be in writing and sent to the aforementioned Contract Manager either by registered letter with return receipt, or email, to the following address:</p> <p>Dalmare SpA – Via Castelli, 6 – 57122 Livorno</p> <p>Simone Andreini – phone Nr : +39 0586 437156/194</p> <p>Email: <a href="mailto:bunker@dalesio.it">bunker@dalesio.it</a></p>
<p><b>16.3</b></p>	<p>Communications regarding operational/executive issues, shall be addressed by email or by phone to:</p> <p>Simone Andreini, phone Nr : +39 0586 437156/194</p> <p>Mobile Nr: +39 335 1216271</p> <p>Email: <a href="mailto:bunker@dalesio.it">bunker@dalesio.it</a></p>
<p><b>16.4</b></p>	<p>Commercial communications regarding every Contract will be sent from/to the following email address:</p> <p><a href="mailto:bunker@dalesio.it">bunker@dalesio.it</a></p>
<p><b>17. HEALTH, SAFETY AND ENVIRONMENT</b></p>	
	<p>The Parties shall undertake to move towards the goal of excellence with regard to occupational health, Safety and Environmental Protection. Within their responsibility, the parties undertake to comply with the current legislation on health, safety and carriage of dangerous goods.</p>

<p><b>17.1</b></p>	<p>The Buyer is responsible for providing its employees, agents, sub-contractors and any other person who utilizes or comes into contact with the Product supplied and covered by these General Terms and Conditions with the attached HSE information (“Material Safety Data Sheets”) and The Buyer must ensure that any recommendation about the use of that Product contained in the HSE information is implemented by the persons referred as above.</p> <p>With reference to Products covered by these General Terms and Conditions, since the risks and title are transferred in his legal area, the Buyer must ensure that all the obligations, conditions or recommendations concerning health, safety and environment relating to the Product are respected in accordance with the law, regulations, provisions or rules in force or in application anywhere the Buyer or person who works on behalf of the Buyer, utilize or come into contact with the Product.</p>
<p><b>17.2</b></p>	<p>The Buyer shall indemnify the Seller from any responsibility, damage, claims or loss directly deriving from or relating to any non-compliance or infringement of any nature committed by the Buyer in compliance with the obligations set out in this article.</p> <p>The observance on the part of the Buyer of the recommendations contained in the HSE information will not kept the Buyer exempted from the obligation to comply with any other obligation or recommendation relating to the Product in accordance with any law, regulations, provision or rule in any place, country, state or jurisdiction nor from any responsibility deriving from the non-compliance with these obligations and recommendations.</p> <p>The Seller will not be responsible under no circumstances for any eventual losses, damages or injuries deriving from dangers inherent in the nature of the Product itself.</p>
<p><b>18. ENVIRONMENTAL MANAGEMENT</b></p>	
	<p>Each Party shall ensure that it carries out its activities in compliance with all environmental legislation throughout the lifetime of the Contract.</p> <p>Each Party shall directly and exclusively respond to any environmental effects caused by or deriving from pollution and/or accidents for which the Party itself is held responsible for any failure to comply with the obligations laid down in this Contract, supporting the relevant costs and keeping the other Party free from any liability, demands or requests derived by anyone.</p>
<p><b>19. CLAIMS</b></p>	
	<p>Any claim related to quantity shall be notified by the Buyer to the Seller immediately after the product is delivered to the vessel indicated by the Buyer, in accordance with the following</p>

	<p>operational working methods:</p> <ul style="list-style-type: none"> <li>• A letter of protest signed by the Master, giving the alleged differences on the quantity loaded. A formal letter of claim to the Seller shall be sent in due course.</li> </ul> <p>Any claim related to quality delivered shall be notified by the Buyer to the Seller within 10 days after the delivery of the Product to the above vessel, in accordance with the following operational methods:</p> <ul style="list-style-type: none"> <li>• Formal notice shall be given by the Buyer to the Seller underlining the parameter/s off-specification.</li> <li>• The sample, made available by the Seller (refer to 7.2) , shall be analyzed in an Independent Laboratory agreed by the Parties. The results of these analysis shall be binding for both parties.</li> </ul> <p>The Buyer accept to reduce losses or damages which might arise from the off-specification. Therefore the Buyer shall take any measure to soften any loss and/or damage derived from failure or defects as referred to in this paragraph.</p>
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**20. FORCE MAJEURE**

<p><b>20.1</b></p>	<p>The Seller and The Buyer shall not be liable for the delay or the failure of a delivery, when such performance is prevented either totally or partially by force majeure, meaning any cause beyond the reasonable control of the parties, such as act of terrorism, civil strife, earthquakes, breakdown or failure of producing, manufacturing, selling delivery facilities, strike, whether involving the employees of Seller and/or Buyer or otherwise, shortage in sources of supply and/or in means of transport, exceptional weather conditions, closing or limitations of functioning of power plants and/or reception facilities.</p>
<p><b>20.2</b></p>	<p>Should such a contingency prevent or delay one of the party's performance, it shall be made known to the other timely. The party whose performance is delayed shall make the other know the approximate duration of such a contingency, when known, and shall make any reasonable efforts to remove or to mitigate the effects of such event timely.</p>
<p><b>20.3</b></p>	<p>Where the event of force majeure continues for a continuous period of more than 30 days, and unless agreed otherwise between the Buyer and the Seller, each of them may then terminate the Contract, by written notice to the other. Such termination shall not give rise to any liability, compensation or indemnity of any kind.</p>

## 21. CANCELLATION OF THE BUNKER CONFIRMATION

After being confirmed, the cancellation of the Bunker Confirmation by the Buyer is acceptable only for one of the reason mentioned in paragraph 20 of this General Terms and Conditions.

## 22. EXCESSIVE CHARGES OCCURRED

22.1

The Parties agree that events could occur that are not foreseeable at the time of the Contract signature, that would make the Contract excessively onerous for one of the Parties.

22.2

In the case provided for in paragraph 22.1, The Parties will pursue the due diligence to reach an agreement on the measures to adopt with reference to this extraordinary overcharging.

Should the cause not be removable the Party affected may terminate the Contract in accordance with article 1467 and following ones of the Italian Civil Code.

## 23. CONCILIATION

23.1

The Parties agree to come to a friendly solution of any dispute arising from or connected to the Contract not referring to the quantity and/or quality of the delivered Product, which is already regulated by paragraph 19, 90 days after the dispute has arisen.

23.2

With reference to the contents of previous paragraph, the complainant shall inform the other Party about the reason of his claim within 15 days after the claim has arisen and has to make an appointment for meeting with the representative of the other Party.

23.3

Within 15 days after the communication has made, referred as to in the previous paragraph, the Party who receives the claim must either accept or refuse the claim and, if refused, appoint a representative.

23.4

The representatives of the Parties shall meet within 40 days after the claim has arisen and shall use due diligence to settle it and, in any case, inform in writing the other Party about the results within the next 20 days.

## 24. TERMINATION OF THE CONTRACT

24.1	The Contract may be terminated in accordance with article 1456 of the Italian Civil Code when one Party is subject to failure or any other insolvency proceedings.
24.2	<p>Termination shall nonetheless occur without prejudice of the other ordinary protection rights and/or any claim for damages to which one of the Parties can have the right to compensation for damages either according to the Contract or under the Italian law.</p> <p>This contract shall not affect the rights and obligations of the Parties already existing at the time of termination.</p>
<b>25. TRANSFER OF THE CONTRACT</b>	
25.1	The Contract may not be transferred from one of the Parties to a third Party without the written consent of the other Party.
25.2	The transfer of the Contract from the Seller to one of its subsidiaries is admitted without the Buyer's consent and shall be valid after a written notice by the Seller to the Buyer.
<b>26. MUTUAL DATA EXCHANGE</b>	
	<p>Dalmare SpA processes personal data in compliance with EU regulation 2016/679.</p> <p>To consult the full text of the Information on the processing of personal data of customers and suppliers, please consult the site:  <a href="http://www.dalesio.group.it">www.dalesio.group.it</a></p>
<b>27. APPLICABLE LAW AND PLACE OF JURISDICTION</b>	
27.1	Unless otherwise agreed in writing, the Contract, its interpretations, execution and application shall be governed by the Italian law.
27.2	The place of jurisdiction is Livorno.
<b>28. OTHER TERMS AND CONDITIONS</b>	
28.1	<p>Should assumptions occur which are not regulated by the Contract, the Incoterms version in force at the time of the Bunker Confirmation shall apply.</p> <p>Should there be any conflict between the Incoterms and the Contract, the later will prevail.</p>

<b>28.2</b>	Should there be any conflict between the contents of the Bunker Confirmation and these General Terms and Conditions, the Bunker Confirmation will prevail.
<b>29. ANNEXES</b>	
HSE Information (Material Safety Data sheets)	



# F.O. 380 (All Types)

## Safety Data Sheet

According to Regulation (EC) No. 453/2010

Version 2.0

Date: 30/08/2019

### Sect 1. Identification of the substance or mixture and of the supplier

#### 1.1 Product identification

Type: Substance  
Trade name: F.O. 380 (all types)  
Chemical name : Fuel oil, residual - Heavy Fuel oil  
EC index no: 649-024-00-9  
EC no: 270-675-6  
CAS No: 68476-33-5  
Other means of identification: ISO RMG 380

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

##### 1.2.1 Relevant identified uses

Main use category: Industrial use, Professional use  
Industrial/Professional use spec. : Used in closed systems  
Wide dispersive use  
Use of the substance/mixture: Fuels/intermediates  
Function or use category: Fuels/intermediates

Title	Description of use
Manufacture of substance – Industrial (Es rif. 01)	SU3, SU8, SU9 PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15, ERC1 ESVOG SPERC 1.1.v1,
Use as intermediate (ES: Rif: 02)	SU3, SU8, SU9 PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15, ERC6a, ESVOG SPERC 6.1.a.v1,
Distribution of substance (ES: Rif: 03)	SU3 PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7 ESVOG SPERC 1.1b.v1
Formulation & (re)packing of substances and mixtures (ES: Rif: 04)	SU3, SU10 PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 ERC2 ESVOG SPERC 2.2.v1
Use as a fuel (ES: Rif: 05)	SU3 PROC1, PROC2, PROC8a, PROC8b, PROC3, PROC16 ERC7 ESVOG SPERC 7.12a.v1
Use as a fuel (ES: Rif: 06)	SU22 PROC1, PROC2, PROC3, PROC8a, PROC8b, ESVOG SPERC 9.12b.v1 PROC16, ERC9a, ERC9b

Full text of use descriptors: see section 16.

##### 1.2.2. Uses advised against

Relevant uses are listed above. Other uses are not recommended unless an evaluation has been carried out before the start of that use, which demonstrates that the risks associated with such use are controlled.

Title	Use descriptors	Reason
Uses in coatings	SU22, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19, ERC8a, ERC8d, ESVOG SPERC8.3b.v1	Overall evaluation of CMR characteristics
Road and building applications	SU22, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC15, ERC8d, ERC8f, ESVOG SPERC 8.15.v1	Overall evaluation of CMR characteristics

Full text of use descriptors: see section 16.

#### 1.3 Supplier details

Dalmare spa  
via Castelli 6  
57122 Livorno,  
ph +39 0586 437111  
email: [info@dalesio.it](mailto:info@dalesio.it)

#### 1.4 Emergency telephone number

CNIT +39 0382 24444 (24h) (IT + EN)  
(CH): Tox Info Suisse (24h):  
+41 44 2515151 (in Switzerland:145)

### Sect 2. Hazards identification

#### 2.1 Classification of the substance/mixture

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

Acute Tox. 4 (Inhalation: dust,mist) :	H332
Carc. 1B:	H350
Repr. 2:	H361d
STOT RE 2:	H373
Aquatic Acute 1:	H400
Aquatic Chronic 1:	H410

Full text of H-phrases: see section 16

##### Adverse physicochemical, human health and environmental effects

Harmful by inhalation. Slight skin irritant. May cause cancer. Suspected of damaging the unborn child. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

#### 2.2. Label elements

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

Hazard pictograms (CLP):



GHS07

GHS08

GHS09

CLP Signal word:

Danger

Hazard statements (CLP):

H332 - Harmful if inhaled  
H350 - May cause cancer  
H361d - Suspected of damaging the unborn child  
H373 - May cause damage to organs (blood, liver, thymus) through prolonged or repeated exposure (dermal)  
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (CLP):

P201 - Obtain special instructions before use  
P260 - Do not breathe mists/vapours/aerosol  
P273 - Avoid release to the environment  
P280 - Wear protective gloves, eye protection, face protection  
P308 + P313 - in case of exposure or possible exposure consult a doctor  
P312 - If you feel unwell, call a poison control center or doctor  
P501 - Dispose of contents/container to according to national or local regulations  
EUH066 - Repeated exposure may cause skin dryness or cracking

EUH phrases:

#### 2.3. Other hazard which do not result in classification

Other hazards that do not contribute to the classification:

If the product is handled or used at high temperature, contact with hot product or vapours may cause burns. Any substance, in case of accidents involving pressurized circuits and the like, may be accidentally injected under the skin, even without external damage. In such a case, the victim should be brought to an hospital as soon as possible, to get specialized medical treatment. Do not wait for symptoms to develop. A potential risk may arise from the release of hydrogen sulfide, when the product is stored or handled at high temperature. Hydrogen sulfide may accumulate in the tanks or other confined spaces, with danger to the workers that enter the spaces. In these cases overexposure to hydrogen sulfide may cause irritation to airways, nausea, dizziness, loss of consciousness and death

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

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



### Sect 3. Composition/information on ingredients

#### 3.1 Substances

Note: Fuel oil, residue: heavy fuel oil (liquid product deriving from various refinery currents. Usually residues. The composition is complex and varies with the source of the crude oil.

Substance type: UVCB

Name	Product identification	%
Fuel oil, residue: heavy fuel oil	CAS Nr:68476-33-5	100
	CE NR:270-675-6	
	Index UE NR:649-024-00-9	

Full text of H- phrases: see section 16

#### 3.2 Mixtures

Not applicable.

### Sect 4. First aid measures

#### 4.1 Description of first aid measures

First-aid measures general:	Seek medical attention in all cases of serious burns.
First-aid measures after inhalation:	In case of disturbances owing to inhalation of vapours or mists, remove the victim from exposure; keep at rest; if necessary, seek medical attention. If casualty is unconscious and not breathing: ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical advice. If the casualty is breathing: Place in the recovery position. Administer oxygen if necessary. If there is any suspicion of inhalation of H <sub>2</sub> S (hydrogen sulphide), Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures. Send patient to hospital. Immediately begin artificial respiration if breathing has ceased. Administer oxygen if necessary.
First-aid measures after skin contact:	Take off contaminated clothing and shoes. Wash thoroughly with soap and water. Never use gasoline, kerosene or other solvents for washing of contaminated skin. If inflammation or irritation persists, seek medical advice. In case of contact with hot product, cool affected part with plenty of cold water, and cover with gauze or clean cloth. Call a doctor or bring to an hospital. Do not use salves or ointments, unless directed by doctor. Body hypothermia must be avoided. Do not put ice on the burn. DO NOT attempt to remove portions of clothing glued to burnt skin but cut round them.
First-aid measures after eye contact:	Rinse eyes thoroughly for at least 15 minutes. Keep eyelids well apart. Remove contact lenses, if present and easy to do so. Continue rinsing. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist. In case of eye contact with hot product, flood with water to dissipate heat. Immediately obtain specialist medical assessment and treatment for the casualty
First-aid measures after ingestion:	Do not induce vomiting to avoid aspiration into the lungs. If the person is conscious, rinse mouth with water without swallowing. Keep at rest. Call for medical assistance or bring to an hospital. If the casualty is unconscious, place in the recovery position. Do not give anything by mouth to an unconscious person. In case of spontaneous vomiting, keep head low, to avoid the risk of aspiration into the lungs.

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

Symptoms / injuries (general indications) :	Contact with hot product or vapours may cause burns.
Symptoms/injuries after inhalation:	None under normal use. Inhalation of fumes or oil mists produced at high temperatures may cause irritation of the respiratory tract.
Symptoms/injuries after skin contact:	Prolonged and repeated skin contact may cause reddening, irritation and dermatitis ,due

Symptoms/injuries after eye contact:	to a defatting effect Repeated or prolonged contact may cause irritation to the skin or cracking. May cause an allergic skin reaction
Symptoms/injuries after ingestion:	Accidental ingestion of small quantities of the product may cause irritation, nausea and gastric disturbances. Taking into account the taste of the product, however, ingestion of dangerous quantities is very unlikely
Symptoms/injuries upon intravenous administration:	No information available.
Chronic symptoms:	May cause cancer in contact with skin. May cause damage to organs (blood, liver, thymus) through prolonged or repeated exposure (dermal).

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

Consult a doctor if the victim is in an altered state of consciousness, or if the symptoms do not disappear. In the presence of persistent frostbite symptoms, such as pain, tingling, tearing or photophobia, or in case of damage caused by high pressure jets, transfer the patient to a specialist health center. Consult a physician in all cases of severe burns. If inhalation of hydrogen sulfide (H<sub>2</sub>S) is suspected, rescuers should wear appropriate respiratory equipment, safety belts and ropes, and adopt the required rescue procedures. Immediately transfer the injured person to the hospital. Initiate artificial respiration immediately if breathing has stopped. Administer oxygen as needed. Immediately transport the injured person to hospital.

## Sect 5. Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media:	Small-size fires: carbon dioxide, dry chemicals, foam, sand or earth. Large fires: foam or water fog (mist). These means should be used by trained personnel only. Other extinguishing gases (according to regulations).
Unsuitable extinguishing media:	Do not use direct water jets on the burning product. they could cause splattering and spread the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

### 5.2 Special hazards arising from the substance or mixture

Fire hazard:	This product is combustible, but not classified as Flammable. The creation of flammable vapour mixtures takes place at temperatures which are higher than normal ambient levels
Explosion hazard:	In case of losses from pressurized circuits, the sprays may form mists. Take into account that in this case the lower explosion limit for mists is about 45 g/m <sup>3</sup> of air.
Hazardous combustion products in case of fire:	Incomplete combustion generates carbon monoxide, carbon dioxide and other toxic gases. Combustion products include sulfur oxides (SO <sub>2</sub> and SO <sub>3</sub> ) and sulphide of hydrogen (H <sub>2</sub> S). Oxygenated compounds (aldehydes, etc.).

### 5.3 Advice for firefighters

Firefighting instructions:	Shut off source of product, if possible. If possible, move containers and drums away from danger area. Spilled product which is not burning should be covered with sand or foam. Use water sprays to cool containers and surfaces exposed to the flames. If the fire cannot be controlled, evacuate area
Special protective equipment for firefighters:	In case of a large fire or in confined or poorly ventilated spaces, wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode
Other information:	In case of fire, do not discharge residual product, waste materials and runoff water: collect separately and use a proper treatment

## Sect 6. Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

General measures:	Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). Stop or contain leak at the source, if safe to do so. Avoid direct contact with released material. Keep upwind
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### 6.1.1. For non-emergency personnel

Protective equipment:	See Section 8.
Emergency procedures:	Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency. In case of large spillages, alert occupants in downwind areas. In those cases when the presence of dangerous amounts of H <sub>2</sub> S in the leaked/spilled product is suspected or proved, additional or special actions may be warranted, including access restrictions, use of special protection equipment, procedures and personnel training

### 6.1.2. For emergency responders

Protective equipment:	Small spillages: normal antistatic working clothes are usually adequate. Large spillages: full body suit of chemically resistant and antistatic material. If necessary heat resistant and insulated. Work gloves providing adequate chemical resistance, specifically to aromatic hydrocarbons. Gloves made of PVA are not water-resistant, and are not suitable for emergency use. If contact with hot product is possible or anticipated, gloves should be heat-resistant and thermally insulated. Antistatic nonskid safety shoes or boots, chemical resistant, if necessary heat resistant and insulated. Work helmet. Goggles and /or face shield, if splashes or contact with eyes is possible or anticipated. Respiratory protection: A half or full-face respirator with filter(s) for organic vapours (and when applicable for H <sub>2</sub> S), or a self-contained respirator, according to the extent of the spill and the foreseeable level of exposure. A Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used
Emergency procedures:	Notify local authorities according to relevant regulations

## 6.2 Environmental precautions

Avoid that the product accumulates in confined spaces or below the ground level. Prevent the product from flowing into sewers or water courses, or that however it is dispersed in the environment. In case of contamination of environmental matrices (soil, subsoil, surface and groundwater), possibly remove the contaminated soil and in any case treat the contaminated matrices in accordance with Legislative Decree 152/06 and subsequent amendments. (and legislation applicable local).

## 6.3 Methods and material for containment and cleaning up

For containment:	<p>Soil. Collect free liquid and waste materials in suitable waterproof and resistant containers to hydrocarbons. Clean the contaminated area. If necessary dike the product with dry earth, sand or similar non-combustible materials. Let hot product cool down naturally. When inside buildings or confined spaces, ensure adequate ventilation. Large spillages may be cautiously covered with foam, if available, to limit fire risk. Do not use direct jets. Absorb spilled product with suitable non-combustible materials. Collect free liquid and waste materials in suitable waterproof and oil resistant containers. Clean the contaminated area. Dispose of in accordance with relevant local regulations. If it is necessary to store any contaminated materials for safe disposal, only suitable containers (airtight, labelled, sealed, waterproof, earthed and bonded) should be used.</p> <p>Water: The product is heavier than water and normally this does not allow carry out any intervention. If possible, collect the product and material contaminated with mechanical means and proceed with storage / disposal in accordance with Legislative Decree 152/06 e s.m.i. Do not use solvents or dispersing agents, unless expressly indicated by an expert and, where required, authorized by the competent local authorities.</p>
Other information:	<p>Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken. Concentration of H<sub>2</sub>S in tank/container headspaces may reach hazardous values, especially in case of prolonged storage.</p> <p>This situation is especially relevant for those operations which involve direct exposure to the vapours in the interior. Spillages of limited amounts of product, especially in the open air when vapours will be usually quickly dispersed, are dynamic situations, which will presumably limit the exposure to dangerous concentrations. As H<sub>2</sub>S has a density greater</p>

than ambient air, a possible exception may regard the build-up of dangerous concentrations in specific spots, like trenches, depressions or confined spaces. In all these circumstances, however, the correct actions should be assessed on a case-by-case basis. See also Section 16, "Other information".

### 6.4 Reference to other sections

See Section 8. See also Section 13.

## Sect 7. Handling and storage

### 7.1 Precautions for safe handling

Precautions for safe handling:	Ensure that all relevant regulations regarding handling and storage facilities of flammable products are followed. During transfer and mixing operations, ensure that all equipment is correctly grounded. Avoid the build-up of electric charges. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Keep away from heat/sparks/open flames/hot surfaces. Do not smoke. Do not use electrical equipment (mobile phones etc.) not approved for use, according to the risk rating of the area. Do not use compressed air for filling, discharging, or handling operations. Use and store only outdoors or in a well-ventilated area. Use adequate personal protective equipment as needed. Prevent the risk of slipping. Avoid release to the environment. Emptied containers can contain combustible product residues. Do not cut, weld, drill, burn or incinerate empty containers or drums, unless they have been drained and cleaned. The product may release Hydrogen Sulphide: a specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances. Before entering storage tanks and commencing any operation in a confined area (e.g. tunnels), carry out an adequate clean-up, and check the atmosphere for oxygen content, flammability, and the presence of sulphur compounds. See also Section 16, "Other information".
Handling temperature:	≤ 80 °C If direct heat is applied to improve material flow, use care to avoid localized overheating and possible product degradation and container over pressure
Hygiene measures:	Ensure that proper housekeeping measures are in place. Contaminated materials should not be allowed to accumulate in the workplaces and should never be kept inside the pockets. Avoid contact with skin. Do not breathe fume/ mist/ vapours. Do not eat and do not drink during use. Do not smoke. Keep away from food and beverages. Wash the hands thoroughly after handling. Do not clean hands with dirty or oil-soaked rags. Do not re-use clothes, if they are still contaminated.

### 7.2 Precautions for safe storage, including any incompatibilities

Storage conditions:	Store in dry, well ventilated area. Keep away from open flames, hot surfaces and sources of ignition. Do not smoke
Incompatible products:	Keep away from: strong oxidants
Storage temperature:	≤ 80 °C Excessive heating above the maximum recommended handling and storage temperature may cause degradation of the substance and evolution of irritant vapours and fumes
Storage area:	Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Storage installations should be designed with adequate bunds so as to prevent ground and water pollution incase of leaks or spills. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations. Before entering storage tanks and commencing any operation in a confined area (e.g. tunnels), carry out an adequate clean-up, and check the atmosphere for oxygen content, flammability, and the presence of sulphur compounds
Packages and containers:	If the product is supplied in containers: Keep only in the original container or in a suitable container for this kind of product. Store in a well-ventilated place. Keep containers tightly closed and properly labelled. Empty containers may contain combustible product residues. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned

**Packaging materials:** For containers, or container linings use materials specifically approved for use with this product. Recommended materials for containers, or container linings use mild steel, stainless steel. Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.

### 7.3 Specific end use(s)

No information available.

## Sect 8. Exposure controls/personal protection

### 8.1 Control parameters

Fuel oil, residual - Heavy Fuel oil (68476-33-5)		
Italy - Portugal - USA ACGIH	ACGIH TLV®-TWA (mg/m <sup>3</sup> )	For unrefined mineral oils (carcinogenic), exposure must be kept "as low as possible"
Fuel oil, residual - Heavy Fuel oil (68476-33-5)		
DNEL/DMEL (Workers)		
Acute - systemic effects, inhalation	4700 mg/m <sup>3</sup> (DNEL, 15 min)	
Long-term - systemic effects, dermal	0,065 mg/kg bodyweight/day (DNEL, 8 hrs workday)	
Long-term - systemic effects, inhalation	0,12 mg/m <sup>3</sup> /day (DNEL, 8 hrs workday, inhalable aerosol)	
DNEL/DMEL (General population)		
Long-term - systemic effects, oral	0,015 mg/kg bodyweight/day (DNEL, 24 hrs)	
PNEC (oral)		
PNEC oral (secondary poisoning)	66.7 mg/kg foods	
PNEC (additional information)		
additional information	Substance is complex UVCB. Non applicable	

**Note:** The Derived No Effect Level (DNEL) is an estimated safe level of exposure that is derived from toxicity data in accord with specific guidance within the European REACH regulation. The DNEL may differ from an Occupational Exposure Limit (OEL) for the same chemical. OELs may be recommended by an individual company, a governmental regulatory body or an expert organization, such as the Scientific Committee for Occupational Exposure Limits (SCOEL) or the American Conference of Governmental Industrial Hygienists (ACGIH). OELs are considered to be safe exposure levels for a typical worker in an occupational setting for an 8-hour work shift, 40 hour work week, as a time weighted average (TWA) or a 15 minute short term exposure limit (STEL). While also considered to be protective of health, OEL are derived by a process different from that of REACH.


### 8.2 Exposure controls

**Appropriate engineering controls:** Before entering storage tanks and commencing any operation in a confined area, carry out an adequate clean-up, and check the atmosphere for oxygen content, flammability, and the presence of sulphur compounds. Minimize exposure to mists / vapors / aerosols. When handling hot product in confined spaces, ensure effective ventilation. See also sect. 16 "Other information".

**Personal protective equipment (for industrial or professional use) :** Face shield. Gloves. Protective clothing. Safety glasses. Safety shoes or boots. Dust/aerosol mask.

**Hand protection:** When there is a risk of contact with the skin, use hydrocarbon-resistant, felt-lined gloves. Materials that are presumably adequate: nitrile (NBR) or PVC with a protection index > 5 (permeation time > 240 mins). If contact with hot product is possible or anticipated, gloves should be heat-resistant and thermally insulated. Use gloves respecting all the conditions and within the limits set by the manufacturer. Replace gloves immediately in case of cuts, holes or other signs of damages or degradation. If necessary, refer to the EN 374 standard

**Eye protection:** When there is a risk of contact with the eyes, use safety goggles or other means of protection (face shield). If necessary, refer to national standards or to the EN 166 standard

Skin and body protection:	Wear protective clothing for operations with hot material: heat resistant coveralls (with trousers legs over boots and sleeves over cuffs of gloves), heat resistant heavy duty antiskid boots (e. g. leather) (EN 943-13034-14605), chemical resistant. Coveralls should be changed at the end of the work shift and cleaned as necessary to avoid transfer of product to clothes or underwear
Respiratory protection:	Independently from other possible actions (technical modifications, operating procedures, and other means to limit the exposure of workers), personal protection equipment can be used according to necessity. Open or well ventilated spaces: in presence of oil mists and if the product is handled without adequate containment means: use full or half-face masks with filter for mists/aerosols. In case there is a significant presence of vapours (e.g. through handling at high temperature), use full or half-face masks with a filter for organic vapours, and H2S where applicable. Approved respiratory protection equipment shall be used in spaces where hydrogen sulphide may accumulate: full face mask with cartridge/filter type "B" (grey for inorganic vapours including H2S) or self-contained breathing apparatus (SCBA). Closed or confined areas (e.g. tank interiors): the use of protection measures for airways (masks or self-contained breathing apparatus), must be assessed according to the specific activity, as well as level and duration of predicted exposure. If exposure levels cannot be determined or estimated with adequate confidence, or an oxygen deficiency is possible, only SCBA's should be used.
Personal protective equipment symbols:	
Thermal hazard protection:	If contact with hot product is possible or anticipated, gloves should be heat-resistant and thermally insulated
Environmental exposure controls:	Do not discharge the product into the environment. Storage areas/installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Onsite wastewater treatment required. Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed
Consumer exposure controls:	Not applicable

## Sect 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Physical state:	Viscous liquid
Appearance:	Opaque liquid
Molecular mass:	Not applicable (UVCB)
Colour:	Dark brown to off-black
Odour:	Petroleum-like
Odour threshold:	0,15 ppm Hydrogen sulfide.
pH:	not applicable
Relative evaporation rate (butylacetate=1)	Negligible.
Melting point:	≤ 30 °C (Pour point) (ASTM D 97)
Freezing point:	No data available
Boiling point :	≥ 250 °C
Flash point :	≥ 61 °C (ASTM D 93)
Self ignition temperature :	≥ 250 °C (ASTM E 659)
Decomposition temperature :	No data available
Flammability (solid, gas) :	No data available
Vapour pressure :	0,02 - 0,79 kPa (120°C - ASTM D 2878)
Relative vapour density at 20 °C :	No data available
Relative density :	No data available
Density :	≤ 991 kg/m <sup>3</sup> (ASTM D 4052)
Solubility :	Water: Immiscible and insoluble
Log Pow :	No data available

Log Kow :	No data available
Viscosity, kinematic :	≤ 380 mm <sup>2</sup> /s (50 °C) (ASTM D 445)
Viscosity, dynamic :	No data available
Explosive properties :	None.
Oxidising properties :	None.
Explosive limits :	≥ 45 g/m <sup>3</sup> (mineral oil mists)

### 9.2 Other information

softening point:	-2 - 35 °C (CONCAWE, 1998)
Sulphur content:	1.4 - 1.5 %m/m

## Sect 10. Stability and reactivity

### 10.1 Reactivity

This mixture does not offer any further hazard for reactivity, except what is reported in the following paragraphs.

### 10.2 Chemical stability

Stable product, according to its intrinsic properties.

### 10.3 Possibility of hazardous reactions

Contact with strong oxidizers (peroxides, chromates, etc.) may cause a fire hazard. A mixture with nitrates or other strong oxidisers (e.g. chlorates, perchlorates, liquid oxygen) may create an explosive mass. Sensitivity to heat, friction or shock cannot be assessed in advance.

### 10.4. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Avoid the build-up of electrostatic charge.

### 10.5. Incompatible materials

Strong oxidants.

### 10.6. Hazardous decomposition products

A potential risk may arise from the release of hydrogen sulfide, when the product is stored or handled at high temperature. Hydrogen sulfide may accumulate in the tanks or other confined spaces, with danger to the workers that enter the spaces. In these cases overexposure to hydrogen sulfide may cause irritation to airways, nausea, dizziness, loss of consciousness and death.

## Sect 11. Toxicological information

### 11.1 Information on toxicological effects

Acute toxicity (oral):	Not classified (Conclusive but not sufficient data for classification)
Acute toxicity (cutaneous):	Not classified (Conclusive but not sufficient data for classification)
Acute toxicity (inhalation):	Inhalation: dust, mist: Harmful if inhaled.

Fuel oil, residual - Heavy Fuel oil (68476-33-5)	
LD50 oral rat	>5000 mg/kg (OECD 401; ARCO 1992)
LD50 dermal rabbit	≥ 2000 mg/kg (EPA OTS 798.1150; ARCO, 1987)
LC50 inhalation rat (mg/l)	4,1 - 4,5 mg/l/4h (EU B.3; CAS 68476-33-5 - ARCO, 1987)

Skin corrosion/irritation:	Not classified (Conclusive but not sufficient for classification) pH: not applicable
Further indications:	Repeated and prolonged contact can cause skin redness, irritation and contact dermatitis due to the degreasing effect. (EU B.4 - CAS 68476-33-5 - ARCO, 1987)
Serious eye damage/irritation:	Not classified (Conclusive but not sufficient for classification) pH: not applicable



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Further indications:	Contact with eyes may cause temporary reddening and irritation. (EU B.5 – CAS 68476-33-5 - ARCO, 1988)
Respiratory or skin sensitization: Further indications	Not classified (Conclusive but not sufficient for classification) Based on test data. (EU test B.6) (ARCO 1988) Guinea pig not sensitizing.
Germ cell mutagenicity: Further indications	Not classified (Conclusive but not sufficient for classification) (OECD 471 - Ames test) (CAS 64741-62-4 - API, 1986) (EU Test B.12) (CAS 64741-62-4 - Przygoda, McKee, Amoroso, Freeman, 1999)
Carcinogenicity: Further indications	May cause cancer. Guidelines: not specified (CAS 64741-62-4 - API, 1989)
Reproductive toxicity: Further indications	Suspected of damaging the unborn child. (EPA OTS 798.4700) (CAS 64741-62-4 - ARCO, 1992) (EPA OTS 798.4900) (NOAEL 0,05 mg/kg - CAS 64741-62-4 - Hoberman, Christian, Lovre, Roth, Koschier, 1995)
Specific target organ toxicity (single exposure) :	Not classified (Lack of data)
Specific target organ toxicity (repeated exposure) :	May cause damage to organs (blood, liver, thymus) through prolonged or repeated exposure (dermal).

Fuel oil, residual - Heavy Fuel oil (68476-33-5)	
LOAEL (dermal, rat/rabbit, 90 days)	= 0,01 mg/kg bodyweight/day (Guidelines: not specified - CAS 84741-62-4 - ARCO, 1993)
NOAEL (dermal, rat/rabbit, 90 days)	1 - 10 mg/kg bodyweight/day (Guidelines: not specified - CAS 84741-62-4 - ARCO, 1993)

Aspiration hazard: Not classified (Based on available data, the classification criteria are not met)  
Viscosity, kinematic: > 20,5 mm<sup>2</sup>/s (40 °C) (ASTM D 445)

Fuel oil, residual - Heavy Fuel oil (68476-33-5)	
Viscosità, cinematica	<= 380 mm <sup>2</sup> /s (50 °C) (ASTM D 445)

Possible harmful effects on humans and possible symptoms: Harmful if inhaled. May cause cancer. Suspected of damaging the unborn child.  
May cause damage to organs (blood, kidneys, thymus) through prolonged or repeated exposure (in contact with skin)

Other information: None

## Sect 12. Ecological information

### 12.1 Toxicity

Ecology - general:	Very toxic to aquatic life with long lasting effects. The dispersion in the environment can lead to the contamination of environmental matrices (soil, subsoil, surface and groundwater). Use according to good working practice, avoiding disperse the product in the environment. Inform the authorities if the product is placed in the sewer system or in public waters
Ecology - air:	This product has a low vapour pressure. A significant exposure may happen only if the product is used at high temperature, or in case of sprays and mists
Ecology - water:	This product is not soluble in water. It floats on water and forms a film on the surface. The damage to aquatic organisms is of mechanical kind (immobilization and entrapment)
Ecology - water:	Very toxic to aquatic organisms
Acute aquatic toxicity	Very toxic to aquatic organisms
Chronic aquatic toxicity	Very toxic to aquatic organisms with long lasting effects

Fuel oil, residual - Heavy Fuel oil (68476-33-5)	
LC50 fish 1	79 mg/l (LL50 / 96 h) (OECD 203; Oncorhynchus mykiss - EMBSI, 2008)
EC50 Daphnia 1	0.22 -2 mg/l (EL50 / 48 h) (OECD 202; Daphnia magna - EMBSI, 2012)
ErC50 (algae)	0,75-6.3 mg/l (ErL50 / 72 h) (OECD 201; Pseudokirchnerella subcapitata - EMBSI, 2008))
NOEC (chronic)	0,27 mg/l (21d - QSAR, Daphnia magna, Redman et al, 2010)
NOEC chronic fish	0,1 mg/l (28d; QSAR, Oncorhynchus mykiss - Redman et al, 2010)
NOEC chronic algae	0,32 mg/l (NOELR, EMBSI 2012b)



### 12.2 Persistence and degradability

Fuel oil, residual - Heavy Fuel oil (68476-33-5)	
Persistence and degradability	The substance is a UVCB complex. The main constituents of the product are to be considered "inherently" biodegradable, but not "readily" biodegradable: therefore they can be moderately persistent, particularly in anaerobic conditions. The methods of tests for this endpoint are not applicable to UVCB substances.

### 12.3 Bioaccumulative potential

Fuel oil, residual - Heavy Fuel oil (68476-33-5)	
potential for bioaccumulation	Not applicable ( UVCB)

### 12.4 Mobility in soil

Fuel oil, residual - Heavy Fuel oil (68476-33-5)	
soil ecology	The test methods for this endpoint are not applicable to UVCB substances.

### 12.5 Results of PBT and vPvB assessment

Fuel oil, residual - Heavy Fuel oil (68476-33-5)	
This substance/mixture does not meet the PBT criteria of REACH, annex XIII.	
This substance/mixture does not meet the vPvB criteria of REACH, annex XIII.	

### 12.6 Other adverse effects

Other adverse effects:	None
Other information:	This product has no specific properties for inhibition of bacterial activity. In any case, wastewater containing this product should be treated in plants that are suited for the specific purpose.

## Sect 13. Disposal considerations

### 13.1 Waste treatment methods

Waste treatment methods:	Do not dispose of the product, either new or used, by discharging into sewers, tunnels, lakes or water courses. Deliver to a qualified official collector
Sewage disposal recommendations:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed. Dispose of safely in accordance with Legislative Decree 152/06 and subsequent amendments
Waste disposal recommendations:	European Waste Catalogue code(s) (Decision 2001/118/CE): 13 07 01* ("fuel oil and diesel"). This EWC code is only a general indication, and takes into account the original composition of the product and its intended use. The user has the responsibility of choosing the right EWC code, considering the actual use of the product, alterations and contaminations
Additional information:	Empty containers may contain combustible product residues. Do not cut, weld, drill, burn or incinerate empty containers or drums, unless they have been cleaned, and declared safe
Ecology - waste materials:	The product as it is does not contain halogenated substances

## Sect 14. Transport considerations

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA



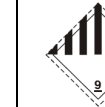
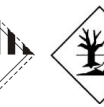

ADR	IMDG	IATA	ADN	RID
<b>14.1 UN Nr</b>				
3082	3082	3082	3082	3082
<b>14.2 UN proper shipping name</b>				
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Transport document description				
UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel oil, residual), 9, III	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ENVIRONMENTALLY	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., III	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III

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	HAZARDOUS SUBSTANCE, LIQUID, N.O.S.), 9, III, MARINE POLLUTANT				
<b>14.3 Transport hazard class(es)</b>					
9	9	9	9	9	
					
<b>14.4 Packing group</b>					
III	III	III	III	III	
<b>14.5 Environmental hazards</b>					
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine pollutant : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	

### 14.6 Special precautions for user

#### Overland Transport

Transport regulations (ADR):	Subject to the provisions
Classification code (UN):	M6
Limited quantities (ADR):	5I
Excepted quantities (ADR):	E1
Transport category (ADR):	3
Hazard identification number (Kemler No.):	90
Orange plates:	

#### Transport by sea

Transport regulations (IMDG):	Subject to the provisions
Limited quantities (IMDG):	5 L
EmS-No. (Fire):	F-A
EmS-No. (Spillage):	S-F

#### Air transport

Transport regulations (IATA):	Subject to the provisions
PCA max net quantity (IATA):	30kgG

#### Inland waterway transport

Transport regulations (ADN):	Subject to the provisions
Limited quantities (ADN):	5 L
Excepted quantities (ADN):	E1

#### Rail transport

Transport regulations (RID):	Subject to the provisions
Classification code (RID):	M6
Limited quantities (RID):	5 L
Excepted quantities (RID):	E1
Transport category (RID):	3
Hazard identification number (RID):	90

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

IBC code : Not applicable

### Sect 15. Regulatory information

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

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

3(b) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10	Fuel oil, residual - Heavy Fuel oil
3(c) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1	Fuel oil, residual - Heavy Fuel oil
28. Substances which are classified as carcinogen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 1 or Appendix 2, respectively.	Fuel oil, residual - Heavy Fuel oil

Fuel oil, residual - Heavy Fuel oil is not on the REACH Candidate List

Fuel oil, residual - Heavy Fuel oil is not on the REACH Annex XIV List

Other information, restriction and prohibition regulations

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). (et sequens). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (et sequens). Directives 89/391/CEE, 89/654/CEE, 89/655/CEE, 89/656/CEE, 90/269/CEE, 90/270/CEE, 90/394/CEE, 90/679/CEE, 93/88/CEE, 95/63/CE, 97/42/CE, 98/24/CE, 99/38/CE, 99/92/CE, 2001/45/CE, 2003/10/CE, 2003/18/CE (Health and safety on the workplace). Directive 98/24/EC (protection of the health and safety of workers from the risks related to chemical agents at work). Directive 92/85/CE (measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding). Directive 2012/18/CE (Control of major accident hazards involving dangerous substances). Directive 2004/42/CE (Limitation of emissions of Volatile Organic Compounds). Substances Depleting the Ozone layer (1005/2009) - Annex I Substances (ODP). Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC. Regulation EU (649/2012) - Export and Import of hazardous chemicals (PIC).

#### 15.1.2. National regulations

National adoption of EU Directives concerning health and safety on the workplace.

National adoption of EU Directives concerning control of major-accident hazards involving dangerous substances (2012/18/CE). (annex I, part 1)

Relevant national laws on prevention of water pollution.

Relevant national laws on protection of the health of pregnant workers (National adoption of Dir. 92/85/EEC).

National adoption of Directives 75/439/CEE - 87/101/CEE concerning disposal of used oils.

#### France

Maladies professionnelles (F): RG 36 - Affections provoquées par les huiles et graisses d'origine minérale ou de Synthèse

#### Germany

Riferimento allegato AwSV Water hazard class (WGK) (D) 3, Highly hazardous to water (Classification according to AwSV; ID No. 443)

WGK (osservazioni) Classification in compliance with Verwaltungsvorschriftwassergefährdender Stoffe (VwVwS) of 27 July 2005

Classe VbF A III - Liquids with a flashpoint above 55 °C up to 100 °C

LGK Classe di stoccaggio LGK 10 - Combustible liquids

12th Ordinance Implementing the Federal Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Immission Control Act - 12.BImSchV

Other information, restrictions and

prohibition regulations

TRGS 400: Hazard assessment for activities involving Hazardous Substances  
TRGS 401: Risks resulting from skin contact - identification, assessment, measures  
TRGS 402: Identification and Assessment of the Risks from Activities involving Hazardous Substances: Inhalation Exposure  
TRGS 500: Protective measures  
TRGS 510: Storage of hazardous substances in non-stationary containers  
TRGS 526: Laboratories

TRGS 555: Working instruction and information for workers  
 TRGS 559: Mineral dust  
 TRGS 560: Air recirculation in activities involving carcinogenic, mutagenic or toxic for reproduction dusts  
 TRGS 900: Occupational Exposure Limits  
 TRGS 905: List of carcinogenic, mutagenic or toxic for reproduction substances  
 TRGS 910: Risk-related concept of measures for activities involving carcinogenic hazardous substances  
 TRGS 903: Biological limit values  
 TRGS 900: Limiti di esposizione professionale  
 TRGS 905: Lista delle sostanze cancerogene, mutagene o tossiche per la riproduzione  
 TRGS 910: Misure relative al rischio per attività che comportano sostanze cancerogene pericolose  
 TRGS 903: Valori limite biologici

### Netherlands

Waterbezwaarlijkheid : 4 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment  
 5 - Very toxic to aquatic organisms

Saneringsinspanningen C - Minimize discharge

SZW-lijst van kankerverwekkende stoffen Fuel Oil 380 mm2/s -0.5%S – RMG 380 is listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling The substance is not listed

### Denmark

Classification remarks: Emergency management guidelines for the storage of flammable liquids must be followed

Danish National Regulations: Pregnant/breastfeeding women working with the product must not be in direct contact with it  
 The requirements from the Danish Working Environment Authorities regarding work with

## 15.2 Chemical safety assessment

A chemical safety assessment has been carried out.

## Sect 16. Regulatory information

### Indication of changes:

SECTION 1: Identification of the substance / mixture and of the company. SECTION 2: Hazards identification. SECTION 3: Composition / information on ingredients. SECTION 4: First aid measures. SECTION 5: Firefighting measures. SECTION 6: Accidental release measures. SECTION 7: Handling and storage. SECTION 8: Exposure control / individual protection. SECTION 9: Physical and chemical properties. SECTION 10: Stability and reactivity. SECTION 11: Toxicological information. SECTION 12: Ecological information. SECTION 13: Disposal considerations. SECTION 14: Transport information. SECTION 15: Regulatory information. SECTION 16: Other information.

### Abbreviations and acronyms

	N/A = not applicable
	N/D = not available
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
STA	Acute Toxicity Estimate
BCF	Bioconcentration factor
Calcolatore CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Effective concentration for 50 percent of test population (median effective concentration)
IARC	International Agency for Research on Cancer

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IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Lethal concentration for 50 percent of test population (median lethal concentration)
LD50	Lethal dose for 50 percent of test population (median lethal dose)
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals, Regulation (EC) No 1907/2006
RID	Regulation concerning the International Carriage of Dangerous Goods by Railways
SDS	Safety Data Sheet
STP	Sewage treatment plant
TLM	Median Tolerance Limit
vPvB	Very Persistent and Very Bioaccumulative

Data sources:	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (et sequens).
Training advice:	Provide adequate training to professional operators for the use of PPEs, according to the information contained in this Safety Data Sheet. The hazard of asphyxiation is often overlooked and must be stressed during operator training.
Other information:	Do not use the product for any purposes that have not been advised by the manufacturer. In exceptional cases (i.e prolonged storage in tanks contaminated with water, and presence of anaerobic sulfate-reducing microbial colonies), the product may undergo a degradation and generate small amounts of sulfur compounds, including H <sub>2</sub> S. This situation is especially relevant in all those circumstances which require to enter a confined space, with direct exposure to the vapours. If this possibility is suspected, a specific assessment of inhalation risks from the presence of H <sub>2</sub> S in confined spaces must be made, to help determine prevention measures and controls (i.e. PPE) appropriate to local circumstances, and adequate emergency procedures. This situation is especially relevant for those operations which involve direct exposure to the vapours in the interior of tanks or other confined spaces. Therefore, it is very important to follow the above mentioned precautionary measures also with used oils

### Full text of H- and EUH-statements:

Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) 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
H361d	Suspected of damaging 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
EUH066	Repeated exposure may cause skin dryness or cracking

### Full text of use descriptors

ERC1	Manufacture of substances
ERC2	Formulation of preparations
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC5	Industrial use resulting in inclusion into or onto a matrix
ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b	Industrial use of reactive processing aids
ERC6c	Industrial use of monomers for manufacture of thermo-plastics
ERC6d	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
ERC7	Industrial use of substances in closed systems
ERC8a	Wide dispersive indoor use of processing aids in open systems
ERC8d	Wide dispersive outdoor use of processing aids in open systems

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ERC8f	Wide dispersive outdoor use resulting in inclusion into or onto a matrix
ERC9a	Wide dispersive indoor use of substances in closed systems
ERC9b	Wide dispersive outdoor use of substances in closed systems
ESVOC SPERC 1.1.v1	Manufacture of substances: Industrial (SU8, SU9)
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
ESVOC SPERC 2.2.v1	Formulation & (re)packing of substances and mixtures: Industrial (SU10)
ESVOC SPERC 6.1a.v1	Manufacture of substance: Industrial (SU8, SU9)
ESVOC SPERC 7.12a.v1	Use as a fuel: Industrial (SU3)
ESVOC SPERC 8.15.v1	Road and construction applications: Professional (SU22)
ESVOC SPERC 8.3b.v1	Uses in Coatings: Professional (SU22)
ESVOC SPERC 9.12b.v1	Use as a fuel: Professional (SU 22)
PROC1	Use in closed process, no likelihood of exposure
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC13	Treatment of articles by dipping and pouring
PROC15	Use as laboratory reagent
PROC16	Using material as fuel sources, limited exposure to unburned product to be expected
PROC19	Hand-mixing with intimate contact and only PPE available
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
SU10	Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU22	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
SU3	Industrial uses: Uses of substances as such or in preparations* at industrial sites
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals

### SDS EU ( Annex II) GENERAL

*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.*