

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**1.1 PRODUCT IDENTIFIER**

Chemical Identification: Gasoline
Other names: UNL95; Regular Unleaded; RON95
CAS Number: 86290-81-5
EC Number: 289-220-8
Index Number: 649-378-00-4
REACH Registration Number:

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Product Type and main use: Use only as a motor fuel for spark ignition engines. NOT for aviation use. Should not be used as a solvent nor cleaning agent.
Uses advised against: None other than those specified.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Supplier: World Fuel Services
Supplier address: Portland House,
Bressenden Place
London
SW1E 5BH
UK
Tel: +44 (0) 207 808 5133
Fax: +44 (0) 151 922 0626
Email: marinetechical@wfscorp.co.uk
Emergency Telephone (24hr): +44 (0) 333 333 9957

SECTION 2: HAZARDS IDENTIFICATION**2.1 CLASSIFICATION OF THE SUBSTANCE ACCORDING TO REGULATION (EC) No. 1272/2008 (CLP) Classification**

Flam. Liq. 1 – H224
Asp. Tox. 1 – H304
Skin. Irrit. 2 – H315
STOT SE 3 (Central nervous system) (Inhalation) – H336
Muta. 1B – H340
Carc. 1B – H350*
Aquatic Chronic 2 – H411

*The classification as a carcinogen or mutagen need not apply if it can be shown that the substance contains less than 0,1 % w/w benzene (EINECS No 200-753-7).

2.2 LABEL ELEMENTS ACCORDING TO ACCORDING TO REGULATION (EC) No. 1272/2008 (CLP)

Hazard pictogram(s): GHS02; GHS08; GHS09; GHS07



Signal Word: Danger

Hazard statement(s):

H224: Extremely flammable liquid and vapour,
H304: Maybe fatal if swallowed and enters airways,
H315: Causes skin irritation,
H336: May cause drowsiness or dizziness,
H340: May cause genetic defects,
H350: May cause cancer,
H411: Toxic to aquatic life with long lasting effects,
EUH066: Repeated exposure may cause skin dryness or cracking.

Precautionary statement(s):

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260: Do not breathe vapours
P273: Avoid release to the environment
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331: Do NOT induce vomiting.
P501: Dispose of contents/container to approved disposal facility.

2.3 OTHER HAZARDS:

None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 SUBSTANCE

Paraffinic, olefinic and aromatic hydrocarbons mixture, with a number of carbons in a rank of C4 - C12 and a boiling interval from 25 to 210°C. Sulphur: Max. 10 mg/kg (ppm).

Substance/preparation: Mono-constituent substance

Chemical Name	CAS Number	EC Number	Index Number	Classification
Gasoline	86290-81-5	289-220-8	649-378-00-4	Flam. Liq. 1 – H224 Asp. Tox. 1 – H304 Skin. Irrit. 2 – H315 STOT SE 3 (Central nervous system) (Inhalation) – H336 Muta. 1B – H340 Carc. 1B – H350 Aquatic Chronic 2 – H411

Please see section 16 for the text of the full hazard (H) statements.

SECTION 4: FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES

General notes

Not expected to give rise to an acute hazard under normal conditions of use. Irritating to skin. Aspiration into the lungs may occur directly or following ingestion. This may cause chemical pneumonitis which may be fatal. Splashes into the eye may cause irritation. Prolonged exposure to vapour concentrations above the recommended occupational exposure standard may cause headache, dizziness, nausea, irritation of the eyes, upper respiratory tract, asphyxiation, unconsciousness and even death.

Inhalation: Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If heartbeat absent, give external cardiac compression. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion: Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact: Wash skin with water using soap if available. Note that contaminated clothing may be a fire hazard. Contaminated clothing should be soaked with water before being removed. It must be laundered before reuse. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop.

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Protection of First aiders: No action shall be taken involving any personal risk or where suitable training has not been provided.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light headedness, headache, nausea and loss of coordination. Ingestion may cause irritation of the mouth and digestive tract. If swallowed, aspiration into lungs may result in chemical pneumonia. Suspected of causing cancer and genetic defects.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

Treat symptomatically. In cases of ingestion, consider gastric lavage. Gastric lavage must only be undertaken after cuffed endotracheal intubation in view of the risk of aspiration. Administration of carbon for medicinal use (carbo medicinalis) may reduce absorption from the digestive tract. In cases of chemical pneumonitis, antibiotic and corticosteroid therapy should be considered, but only under expert guidance and with special care facilities. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy, to minimise tissue damage and loss of function.

SECTION 5: FIREFIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

Suitable: Use water spray, carbon dioxide, foam or dry chemical.

Not suitable: Do not use a direct water jet.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Hazardous thermal decomposition products:

Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide and dioxide, hydrocarbons, soot and aldehydes.

Special exposure hazards: In a fire or if heated, a pressure increase will occur and the container may burst. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

5.3 ADVICE FOR FIREFIGHTERS

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Isolate the source of the combustible product. If fire cannot be extinguished, allow it to die out in a controlled manner. Use water to cool down equipment and items exposed to fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES****6.1.01 For non-emergency personnel:**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Use only non-sparking tools. Use explosion-proof electrical, ventilating and lighting equipment. Keep upwind. Ensure adequate ventilation. Avoid inhalation of vapours. Avoid contact with skin and eyes. Wear suitable personal protective equipment. Wear appropriate respirator when ventilation is inadequate. (See Section 8).

6.1.02 For emergency responders:

Keep unnecessary personnel away. Wear suitable protective clothing (See Section 8). Contaminated clothing should be thoroughly cleaned. Beware of the risks of flammable atmospheres.

6.2 ENVIRONMENTAL PRECAUTIONS

Collect spillage. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses may spread and cause the build-up of flammable vapours. Spillages must be alerted to the Environment Agency or other appropriate regulatory body. If spill occurs on water notify the appropriate authorities and advise shipping of any hazard. Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP**6.3.01 For containment:**

Stop the leak if it is safe to do so. Contain the spillage with sand, earth or any suitable adsorbent material.

6.3.02 For cleaning up:

Use sand, earth or any suitable non-combustible adsorbent material to adsorb spillages. Using non-sparking tools transfer the contaminated adsorbent material into a container for disposal. For spillages on water, remove use appropriate methods such as skimming, booms or adsorbents. For spillages onto soil, remove contaminated soil for remediation or disposal in accordance with local regulations. Waste containers used should be plastic-lined sealable drums. Containers should be sealed before being disposed of via an authorised waste disposal contractor.

6.3.03 Other Information:

None

6.4 REFERENCES TO OTHER SECTIONS

Section 8 (protective equipment) and Section 13 (disposal).

SECTION 7: HANDLING AND STORAGE**7.1 PRECAUTIONS FOR SAFE HANDLING**

Avoid naked flames. The vapour is heavier than air, spreads along the ground and distant ignition is possible. When using do not eat, drink or smoke. Never siphon by mouth. When using do not eat, drink or smoke. Avoid contact with skin, eyes and respiratory system. If using pressurised equipment, take extra care to avoid injection under the skin. Only use in well-ventilated areas. Take precautionary measures against static discharges. Ensure all equipment is properly earthed. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Prevent spillages. Cloth, paper and other materials that are used to absorb spills present a fire hazard. Avoid their accumulation by disposing of them safely and immediately. In addition to any specific recommendations given for controls of risks to health, safety and the environment, an assessment of risks must be made to help determine controls appropriate to local circumstances. Wear suitable personal protective equipment (See Section 8). Contaminated clothing should be thoroughly cleaned or disposed of as hazardous waste.

Product transfer

Electrostatic charges may be generated during pumping. Ensure electrical continuity by bonding all equipment. Avoid splash filling. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes. Contamination resulting from product transfer may give rise to light hydrocarbon vapor in the headspace of tanks that have previously contained gasoline. This vapor may explode if there is a source of ignition. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care.

Tank cleaning

Cleaning, inspection and maintenance of storage tanks is a specialist operation that requires the implementation of strict procedures and precautions. These include issue of work permits, gas-freeing of tanks, using a manned safety harness, lifelines and wearing air-supplied breathing apparatus. Prior to entry and while cleaning is underway, the atmosphere within the tank must be monitored using an oxygen meter and/or gas monitor. Additional precautions are required where the tank may have previously contained leaded gasoline.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Keep away from heat and sources of ignition. Keep away from direct sunlight. Store locked up. Keep container tightly closed. Keep cool. Empty containers retain product residue and can be hazardous. Keep away from oxidising agents, reducing agents. This product must never be stored in buildings occupied by people. Drums and small containers should be stored in well-ventilated areas, flameproof cabinets or stores. Keep in a bunded area with a sealed floor to provide containment against spillage. Stack drums to a height not exceeding three meters without the use of racking. Seek specialist advice for the design, construction and operation of bulk storage facilities.

For containers or container linings, use mild steel or stainless steel. Aluminum may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE), polypropylene (PP), and Viton (FKM), which have been specifically tested for compatibility with this product. For container linings, use amine adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

Unsuitable Materials: Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and the intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene. However, some may be suitable for glove materials.

Ensure that all local and international regulations regarding handling and storage facilities are followed. The following activities have been associated with high levels of exposure to gasoline vapors: Top-loading of tankers, open ship loading by deck crew, drum filling/emptying and laboratory testing (particularly sample bottle washing).

7.3 SPECIFIC END USE(S)

Use only as a motor fuel for spark ignition engines. NOT for aviation use. Should not be used as a solvent nor cleaning agent.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Workplace exposure limits

Source: American Conference of Governmental Industrial Hygienists (ACGIH).

Exposure limits

Substance	Source	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
			ppm	mg/m ³	ppm	mg/m ³	
Gasoline	ACGIH	68334-30-5	300	-	500	-	

PNECs

None assigned.

8.2 EXPOSURE CONTROLS

Exposure Controls: The level of personal protection and the types of controls necessary will vary depending on exposure conditions. Select controls based on a risk assessment of local circumstances. Use sealed systems as far as possible. Use local, intrinsically safe, exhaust ventilation if there is a risk of inhalation of vapours, mists, or aerosols. Provide eye washes and showers or emergency use.

Respiratory Protection: Care should be taken to keep exposures below applicable occupational exposure limits. If this cannot be achieved, use of a respirator fitted with an organic vapour cartridge combined with a particulate prefilter should be considered. Where air filtering respirators are unsuitable (e.g. where airborne concentrations are high, there is a confined space or a risk of oxygen deficiency) use appropriate positive pressure breathing apparatus.

Hand Protection:	Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When prolonged or frequent repeated contact occurs, Nitrile, Neoprene or PVC gloves may be suitable. (Breakthrough time of >240 minutes). Breakthrough times for gloves vary depending on, e.g. chemical resistance, material thickness, frequency and duration of contact. Selection should also take into account other usage requirements, e.g. dexterity, heat resistance, other chemical substances handled. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
Eye Protection:	Wear safety glasses or full face shield if splashes are likely to occur.
Body Protection:	Minimise all forms of skin contact. In the event of risk from splashing wear e.g. Nitrile, PVC, or neoprene rubber apron. Wear safety shoes or boots which are chemical and petroleum distillate resistant.
Environmental Exposure Controls:	Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.
Exposure Measurement Methods:	Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an Occupational Exposure Limit and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Information on suitable methods can be obtained available on request.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES
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9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Colour:	Colourless/Clear/Green tint
Physical State:	Liquid.
Odour:	Characteristic.
pH Value:	Data not available.
Research Octane No.	RON 95.0 to 96.9
Distillation:	Evaporated at 70°C – 20 to 52% V/V
Vapour Pressure:	6 to 10,7 kPa (45 to 80mm Hg)
Initial Boiling Point:	circa 25°C.
Final Boiling Point:	circa 210°C. (410°F)
Solubility in Water:	Insoluble in the following materials: cold water and hot water.
Density:	720 to 775 kg/m ³ at 15°
Flash Point:	>40°C
Flammable Limits –Upper:	6-8%(V/V) maximum.
Flammable Limits –Lower:	1%(V/V) minimum.
Auto-Ignition Temperature:	>250°C.
Kinematic Viscosity:	0.5 to 0.75 mm ² /s at 40°C.
Vapour Density (Air=1):	Greater than 3.

Partition coefficient, n-octanol/water: log Pow 2 to 7.

9.2 OTHER INFORMATION:

The above properties are generic. There may be parameters for which National Specifications apply.

SECTION 10: STABILITY AND REACTIVITY

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|---|---|
| 10.1 REACTIVITY: | Reacts with oxidising agents. |
| 10.2 CHEMICAL STABILITY: | The product is stable under normal conditions |
| 10.3 POSSIBILITY OF HAZARDOUS REACTIONS: | No hazardous reactions expected during normal conditions. |
| 10.4 CONDITIONS TO AVOID: | Keep away from sources of ignition, hot surfaces, direct sunlight. Prevent accumulation of vapours. Contact with strong oxidizing agents e.g. chlorates and ammonium nitrate. |
| 10.5 INCOMPATIBLE MATERIALS: | Oxidising agents e.g. chlorates and ammonium nitrate which may be used in agriculture. Reducing agents. Reducing agents. |
| 10.6 HAZARDOUS DECOMPOSITION | Combustion may liberate toxic fumes: Carbon monoxide, carbon dioxide, various hydrocarbons, nitrogen oxides, sulphur oxides. |

SECTION 11: TOXICOLOGICAL INFORMATION

Basis for Assessment	Fuels are typically made from blending several refinery streams. Toxicological studies have been carried out on a variety of hydrocarbon blends and streams but not those containing additives. Information given is based on a knowledge of the components and the toxicology of similar products.
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11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

Acute Toxicity -Oral	LD50 > 5000 mg/kg. Ingestion may lead to vomiting and aspiration into the lungs, this may result in chemical pneumonitis, which may be fatal.
Acute Toxicity -Dermal	LD50 > 2000 mg/kg.
Acute Toxicity -Inhalation	LC50 expected to be >5mg/l. Vapours may cause drowsiness and dizziness.
Eye Irritation	Slightly irritating.
Skin Irritation	Irritating.
Respiratory Irritation	Expected to be slightly irritating.
Skin Sensitisation	Not a skin sensitizer.
Carcinogenicity	Inhalation exposure to mice causes liver tumours, which are not considered relevant to humans. Inhalation exposure to rats causes kidney tumours which are not considered relevant to humans.
Mutagenicity	There is a large database of mutagenicity studies on gasoline and gasoline blending streams, which use a wide variety of endpoints and give predominantly negative results. All in vivo studies in animals and recent studies in exposed humans (e.g. petrol service

Reproductive Toxicity	station attendants) have shown negative results in mutagenicity assays.
Human Effects	Not a developmental toxicant. Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis and may make the skin more susceptible to irritation and penetration by other materials. Under conditions of poor personal hygiene, excessive exposure may lead to irritation, oil acne and folliculitis and development of warty growths which may subsequently become malignant.
Other Information	This product contains benzene which is known to cause acute myeloid leukemia and n-hexane which has been shown to metabolize to compounds which are neuropathic. This product contains toluene. There are indications from animal studies that prolonged exposure to high concentrations of toluene may lead to hearing loss. This product may contain MTBE. Chronic inhalation of MTBE produced liver tumors in female mice and kidney tumors in male rats. These tumors are of questionable relevance to humans and further studies are being done to address their significance. This product contains ethyl benzene and naphthalene from which there is evidence of tumors in rodents. High pressure injection of product into the skin may lead to local necrosis if the product is not surgically removed.

SECTION 12: ECOLOGICAL INFORMATION

Basis for Assessment: Eco toxicological data have not been determined specifically for this product. Information given is based on knowledge of the components and the ecotoxicology of similar products.

12.1 TOXICITY

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment (CONCAWE recommendation).

12.2 PERSISTENCE AND DEGRADABILITY:

Major components are inherently biodegradable. Persists under anaerobic conditions. The volatile components oxidize rapidly by photochemical reactions in air.

12.3 BIOACCUMULATION POTENTIAL

Contains constituents with the potential to bioaccumulate.

12.4 MOBILITY IN SOIL:

Floats on water. Contains volatile components. Evaporates within 24 hours from water or soil surfaces. Large volumes may penetrate soil and could contaminate groundwater. Ether oxygenates are significantly more water soluble and less biodegradable than benzene, toluene, ethyl benzene and xylenes (BTEX). Consequently ether oxygenated fuels have the potential to develop into longer plumes than BTEX.

12.5 RESULT OF PBT AND VPVB ASSESSMENT:

No assessment has been made on this substance.

12.6 OTHER ADVERSE EFFECTS:

Films formed on water may affect oxygen transfer and damage organisms.

12.7 ADDITIONAL INFORMATION:
None

SECTION 13: DISPOSAL CONSIDERATIONS
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13.1 WASTE TREATMENT METHODS:

Product / packaging disposal Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor to deal satisfactorily with this type of product should be established beforehand. Do not dispose into the environment, in drains or in water courses. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.

Waste Treatment – relevant information

Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

SECTION 14: TRANSPORT INFORMATION
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ADR / RID / ADN

14.1	UN Number	1203
14.2	UN Proper shipping name	MOTOR SPIRIT or GASOLINE or PETROL
14.3	Transport hazard class(es)	3
14.4	Packing group	II
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

IATA

14.1	UN Number	1203
14.2	UN Proper shipping name	GASOLINE
14.3	Transport hazard class(es)	3
14.4	Packing group	II
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

Additional Information

Passenger and Cargo Aircraft

Packing Instruction for LQ: Y341
 Max Net Qty/Pkg for LQ: 1L
 Packing Instruction:353
 Max Net Qty/Pkg: 5L
 ERG code: 3H

Cargo Aircraft Only

Packing Instruction: 364
 Max Net Qty/Pkg: 60L
 Special Provision: A100
 ERG code: 3

IMDG

14.1 UN number	1203
14.2 UN proper shipping name	Motor Spirit or Gasoline or Petrol
14.3 Transport Hazard class	3
14.4 Packing group	II
14.5 Environmental Hazards	YES Marine Pollutant
14.6 Special Precautions for user	Emergency schedules (EmS) F-E, S-E
14.7 Transport in bulk according to Annex II of Marpol 73/78 and the IBC code	MARPOL Annex 1 rules apply for bulk shipments by sea.

SECTION 15: REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

This Safety Data Sheet was prepared in accordance with EC Regulation (EC) No. 1907/2006 as amended. The product has been classified in accordance with Regulation (EC) No. 1272/2008 (CLP).

15.2 CHEMICAL SAFETY ASSESSMENT

REACH information: A chemical safety assessment has been carried out for this substance residual has been registered according to Regulation (EC) No. 1907/2006 (REACH).

SECTION 16: OTHER INFORMATION

Full text of Hazard Statements in section 3.1

H statements:

H224: Extremely flammable liquid and vapour,
 H304: Maybe fatal if swallowed and enters airways,

H315: Causes skin irritation,
H336: May cause drowsiness or dizziness,
H340: May cause genetic defects,
H350: May cause cancer,
H411: Toxic to aquatic life with long lasting effects,
EUH066: Repeated exposure may cause skin dryness or cracking.

Abbreviations:

CAS: Chemical Abstracts Service;
LC₅₀: Lethal Concentration 50%
LD₅₀: Lethal Dose 50%
NOEL: No Observed Effect Level
NOELR: No Observed Effect Level Rate
PNEC: Predicted No Effect Concentration
DNEC: Derived No Effect Concentration
STEL: Short term exposure limit
TWA: Time Weighted Average
EC: EINECS Number (European Inventory of Existing Commercial Substances)
PBT: Persistent, Bioaccumulative and Toxic.
vPvB: Very Persistent and Very Bioaccumulative

SDS Distribution: This document contains important information to ensure the safe storage, handling and use of this product. The information in this document should be brought to the attention of the person in your organisation responsible for advising on safety matters.

References:

Suppliers' Safety Data Sheets.
Dangerous Goods Regulations – ADR/RID, ADN/ADNR, IMDG, IATA.
Regulation (EC) No. 1272/2008 (CLP).

History:

Version 01	Issued 17/09/2012;	First Release
Version 02	Issued 14/04/2016;	Updated for CLP and harmonised classification. Revised Sections 1-16

Disclaimer:

The above information is based on our current knowledge of the product. The purpose of this data sheet is to describe the product in terms of its safety and environmental requirements. It is the user's responsibility to satisfy themselves as to the application of this information and/or recommendations for their own use. This safety data sheet contains important information to ensure the safe storage, handling and use of this product; it does not however constitute an assessment of workplace risks.

Further information:

Users are advised to refer to relevant legislation, approved codes of practice and guidance available from the Health & Safety Executive (website: <http://www.hse.gov.uk>).

Exposure Scenarios – According to the User Descriptor System.

- ES01-Uses – Worker (Manufacture of substance – Industrial)
- ES02-Uses – Worker (Use as an intermediate – Industrial)
- ES03-Uses – Worker (Distribution of substance – Industrial)
- ES04-Uses – Worker (Formulation & (re)packing of substances and mixtures – Industrial)
- ES05-Uses – Worker (Use as a fuel – Industrial)
- ES06-Uses – Worker (Use as a fuel – Professional)
- ES07-Uses – Consumer (Use as a fuel – Consumer)

Exposure Scenario 01 - Worker	
LBP Naphtha (0.1-1% Benzene)	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Manufacture of substance - Industrial
Use Descriptor	Sector of Use: SU 3, SU8, SU9 Process Categories: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 15 Environmental Release Categories: ERC 1, ERC 4, ESVOC SpERC 1.1.v1
Scope of process	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.
SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure >10 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene has been implemented.	
Contributing Scenarios	Risk Management Measures
General measures applicable to all activities. (carcinogens)	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Restrict access to authorise persons; Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; provide specific training to operators to minimise exposures; wear respiratory protection when its use is identified; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems) with sample collection	Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure. Wear suitable gloves tested to EN374.

General exposures (closed systems). Continuous process	Handle substance within a closed system.
General exposures (closed systems). Batch process	Handle substance within a closed system. Ensure operation is undertaken outdoors.
Bulk transfers	Ensure material transfers are under containment or extract ventilation
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately.
Laboratory activities.	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Storage.	Store substance within a closed system. Ensure operation is undertaken outdoors.
Section 2.2	Control of Environmental Exposure
Substance is complex UVCB.	
Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	18,700,000
Fraction of Regional tonnage used locally:	0.03
Annual site tonnage (tonnes/year):	600,000
Maximum daily site tonnage (kg/day):	2,000,000
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0.05
Release fraction to wastewater from process (initial release prior to RMM):	0.003
Release fraction to soil from process (initial release prior to RMM):	0.0001

Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	99
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	99.1
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	80.4
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99.1
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	2,000,000
Assumed domestic sewage treatment plant flow (m ³ /d)	10,000

Conditions and Measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
Section 3.2 - Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management	
Measures/Operational Conditions outlined in Section 2 are implemented.	
Where other Risk Management Measures/Operational Conditions are adopted, then users	
should ensure that risks are managed to at least equivalent levels.	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.	
Risk Management Measures are based on qualitative risk characterisation.	
Section 4.2 -Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.	
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.	
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.	
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).(http://cefic.org).	

Exposure Scenario 02 - Worker	
LBP Naphtha (0.1-1% Benzene)	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as an intermediate - Industrial
Use Descriptor	Sector of Use: SU 3, SU 8, SU9 Process Categories: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 15 Environmental Release Categories: ERC6a, ESVOC SpERC 6.1a.v1
Scope of process	Use of substance as an intermediate (not related to StrictlyControlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).
SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure >10 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene has been implemented.	
Contributing Scenarios	Risk Management Measures
General measures applicable to all activities. (carcinogens)	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Restrict access to authorise persons; Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; provide specific training to operators to minimise exposures; wear respiratory protection when its use is identified; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems) with sample collection	Handle substance within a closed system. Ensure operation is undertaken outdoors. Wear suitable gloves tested to EN374.

General exposures (closed systems).	Handle substance within a closed system. Ensure operation is undertaken outdoors.
Bulk transfers	Ensure material transfers are under containment or extract ventilation
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately.
Laboratory activities.	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Storage.	Store substance within a closed system. Ensure operation is undertaken outdoors.
Section 2.2	Control of Environmental Exposure
Substance is complex UVCB.	
Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	2,210,000
Fraction of Regional tonnage used locally:	0.068
Annual site tonnage (tonnes/year):	15,000
Maximum daily site tonnage (kg/day):	50,000
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0.025
Release fraction to wastewater from process (initial release prior to RMM):	0.003
Release fraction to soil from process (initial release prior to RMM):	0.001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	92.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	78,000
Assumed domestic sewage treatment plant flow (m3/d)	2,000
Conditions and Measures related to external treatment of waste for disposal	
This substance is consumed during use and no waste of substance is generated.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of substance is generated.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
Section 3.2 - Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not enable the derivation of a DNEL for dermal carcinogenic effects. Risk Management Measures are based on qualitative risk characterisation.	
Section 4.2 -Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.	
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.	
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.	
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/reach-for-industries-libraries.html).	

Exposure Scenario 03 - Worker	
LBP Naphtha (0.1-1% Benzene)	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Distribution of substance - Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 15 Environmental Release Categories: ERC 1, ERC 2, ERC 3, ERC 4, ERC 5, ERC 6a, ERC 6b, ERC6c, ERC 6d, ERC 7, ESVOC SpERC 1.1b.v1
Scope of process	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.
SECTION 2	
OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure >10 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently),.
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	
Contributing Scenarios	
Risk Management Measures	
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Restrict access to authorise persons; Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; provide specific training to operators to minimise exposures; wear respiratory protection when its use is identified; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems) with sample collection	Handle substance within a closed system. Ensure operation is undertaken outdoors. Wear suitable gloves tested to EN374.

General exposures (closed systems).	Handle substance within a closed system. Ensure operation is undertaken outdoors.
Bulk transfers	Ensure material transfers are under containment or extract ventilation
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately.
Laboratory activities.	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Storage.	Store substance within a closed system. Ensure operation is undertaken outdoors.
Section 2.2	Control of Environmental Exposure
Substance is complex UVCB.	
Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	18,700,000
Fraction of Regional tonnage used locally:	0.002
Annual site tonnage (tonnes/year):	37,500
Maximum daily site tonnage (kg/day):	120,000
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0.001
Release fraction to wastewater from process (initial release prior to RMM):	0.00001
Release fraction to soil from process (initial release prior to RMM):	0.00001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	12
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	1,100,000
Assumed domestic sewage treatment plant flow (m ³ /d)	2,000
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	
SECTION 3	EXPOSURE ESTIMATION

Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
Section 3.2 - Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
Section 4.1 - Health	
<p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not enable the derivation of a DNEL for dermal carcinogenic effects. Risk Management Measures are based on qualitative risk characterisation.</p>	
Section 4.2 -Environment	
<p>Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.</p>	
<p>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.</p>	
<p>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.</p>	
<p>Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/reach-for-industries-libraries.html).</p>	

Exposure Scenario 04 - Worker	
LBP Naphtha (0.1-1% Benzene)	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Formulation & (Re)Packing of substances and mixtures - Industrial
Use Descriptor	Sector of Use: SU 3 SU 10 Process Categories: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 15 Environmental Release Categories: ERC 2, ESVOC SpERC 2.2.v1
Scope of process	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.
SECTION 2	
OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure >10 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently),.
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	
Contributing Scenarios	
Risk Management Measures	
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Restrict access to authorised persons; Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; provide specific training to operators to minimise exposures; wear respiratory protection when its use is identified; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
Process sampling	Sample via a closed loop or other system to avoid exposure

General exposures (closed systems) with sample collection	Handle substance within a closed system. Ensure operation is undertaken outdoors. Wear suitable gloves tested to EN374.
General exposures (closed systems).	Handle substance within a closed system. Ensure operation is undertaken outdoors.
Bulk transfers	Ensure material transfers are under containment or extract ventilation
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately.
Laboratory activities.	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Storage.	Store substance within a closed system. Ensure operation is undertaken outdoors.
Section 2.2	Control of Environmental Exposure
Substance is complex UVCB.	
Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	16,500,000
Fraction of Regional tonnage used locally:	0.0018
Annual site tonnage (tonnes/year):	30,000
Maximum daily site tonnage (kg/day):	100,000
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0.0025
Release fraction to wastewater from process (initial release prior to RMM):	0.0003
Release fraction to soil from process (initial release prior to RMM):	0.0001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	56.5
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	94.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	100,000
Assumed domestic sewage treatment plant flow (m3/d)	2,000
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
Section 3.2 - Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not enable the derivation of a DNEL for dermal carcinogenic effects. Risk Management Measures are based on qualitative risk characterisation.	
Section 4.2 -Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.	
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.	
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.	
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/reach-for-industries-libraries.html).	

Exposure Scenario 05 - Worker	
LBP Naphtha (0.1-1% Benzene)	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as a fuel - Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 16 Environmental Release Categories: ERC 7, ESVOC SpERC 7.12a.v1
Scope of process	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.
SECTION 2	
OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure >10 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently),
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	
Contributing Scenarios	
Risk Management Measures	
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Restrict access to authorise persons; Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; provide specific training to operators to minimise exposures; wear respiratory protection when its use is identified; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
Bulk transfers	Ensure material transfers are under containment or extract ventilation
Drum/batch transfers	Ensure material transfers are under containment or extract ventilation
Refuelling	Ensure material transfers are under containment or extract ventilation

General exposures (closed systems)	Handle substance within a closed system. Ensure operation is undertaken outdoors. Wear suitable gloves tested to EN374.
Use as a fuel (closed systems)	Handle substance within a closed system.
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately.
Storage.	Store substance within a closed system. Provide a good standard of general ventilation, Natural ventilation is form doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.
Section 2.2	Control of Environmental Exposure
Substance is complex UVCB.	
Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	1,400,000
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	1,400,000
Maximum daily site tonnage (kg/day):	4,600,000
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0.0025
Release fraction to wastewater from process (initial release prior to RMM):	0.00005
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	

Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	99.4
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	76.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	4,600,000
Assumed domestic sewage treatment plant flow (m3/d)	2,000
Conditions and Measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls. Waste combustion emissions considered in regional exposure assessment.	
Waste combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of substance is generated.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
Section 3.2 - Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not enable the derivation of a DNEL for dermal carcinogenic effects. Risk Management Measures are based on qualitative risk characterisation.	
Section 4.2 -Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.	
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.	
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.	
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/reach-for-industries-libraries.html).	

Exposure Scenario 06 - Worker	
LBP Naphtha (0.1-1% Benzene)	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as a fuel - Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b, PROC 16 Environmental Release Categories: ERC 9A, ERC 9B, ESVOC SpERC 9.12b.v1
Scope of process	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.
SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure >10 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently),
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	
Contributing Scenarios	Risk Management Measures
General measures applicable to all activities.	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
Bulk transfers	Ensure material transfers are under containment or extract ventilation
Refuelling	Ensure material transfers are under containment or extract ventilation
General exposures (closed systems)	Handle substance within a closed system. Ensure operation is undertaken outdoors. Wear suitable gloves tested to EN374.

Use as a fuel (closed systems)	Handle substance within a closed system.
Equipment cleaning and maintenance.	Drain down system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately.
Storage.	Store substance within a closed system. Provide a good standard of general ventilation, Natural ventilation is form doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.
Section 2.2	Control of Environmental Exposure
Substance is complex UVCB.	
Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	1,190,000
Fraction of Regional tonnage used locally:	0.0005
Annual site tonnage (tonnes/year):	590
Maximum daily site tonnage (kg/day):	0.0016
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0.01
Release fraction to wastewater from process (initial release prior to RMM):	0.00001
Release fraction to soil from process (initial release prior to RMM):	0.00001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment.	

If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	3.4
Prevent discharge of undissolved substance to or recover from onsite wastewater.	0
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	15,000
Assumed domestic sewage treatment plant flow (m3/d)	2,000
Conditions and Measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls. Waste combustion emissions considered in regional exposure assessment.	
Waste combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of substance is generated.	
SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 - Environment	
	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
Section 4.1 - Health	
	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not enable the derivation of a DNEL for dermal carcinogenic effects. Risk Management Measures are based on qualitative risk characterisation.
Section 4.2 -Environment	
	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
	Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
	Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/reach-for-industries-libraries.html).

Exposure Scenario 07 - Consumer	
LBP Naphtha (0.1-1% Benzene)	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as a fuel - Consumer
Use Descriptor	Sector of Use: SU 21 Product Categories: PC13 Environmental Release Categories: ERC 9A, ERC 9B, ESVOC SpERC 9.12c.v1
Scope of process	Covers consumer uses of automotive fuels only
SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure > 10 Pa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently),
Amounts Used - Unless otherwise stated	
for each use event, covers amount up to (g):	37,500
covers skin contact area (cm ²):	420
Frequency and Duration of Use - Unless otherwise stated	
covers use up to (times/day of use):	0.143
covers use up to (hours/event):	2
Other operational conditions affecting exposure (Unless otherwise stated)	
Covers use at ambient temperatures	
Covers use in room size of 20m ³	
Covers use under typical household ventilation	
Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Fuels. Liquid: Automotive Refuelling	Covers concentration up to (%) 100%
	Covers use up to (days/year): 52 day/year
	Covers use up to 1 times/day of use
	Covers skin contact area up to 210cm ²
	For each use event, covers amount up to 37,500g
	Covers outdoor use
	Covers use in room size of 100m ³
	Covers exposure to 0.05 hours/event
Fuels. Liquid: Scooter refuelling	Covers concentration up to (%) 100%
	Covers use up to (days/year): 52 day/year
	Covers use up to 1 times/day of use

	Covers skin contact area up to 210cm ²
	For each use event, covers amount up to 3,750g
	Covers outdoor use
	Covers use in room size of 100m ³
	Covers exposure to 0.03 hours/event
Fuels. Liquid: Garden Equipment - Use	Covers concentration up to (%) 100%
	Covers use up to (days/year): 26 day/year
	Covers use up to 1 times/day of use
	For each use event, covers amount up to 750g
	Covers outdoor use
	Covers use in room size of 100m ³
	Covers exposure to 2.00 hours/event
Fuels. Liquid: Garden Equipment - Refuelling	Covers concentration up to (%) 100%
	Covers use up to (days/year): 26 day/year
	Covers use up to 1 times/day of use
	Covers skin contact area up to 420cm ²
	For each use event, covers amount up to 750g
	Covers use in a one car garage (34m ³) under typical ventilation
	Covers use in room size of 34m ³
	Covers exposure to 0.03 hours/event
Section 2.2	Control of Environmental Exposure
Substance is complex UVCB.	
Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	13,900,000
Fraction of Regional tonnage used locally:	0.0005
Annual site tonnage (tonnes/year):	7,000
Maximum daily site tonnage (kg/day):	19,000
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	



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Release fraction to air from process (initial release prior to RMM):	0.01
Release fraction to wastewater from process (initial release prior to RMM):	0.00001
Release fraction to soil from process (initial release prior to RMM):	0.00001
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	180,000
Assumed domestic sewage treatment plant flow (m3/d)	2,000
Conditions and Measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls. Waste combustion emissions considered in regional exposure assessment.	
Waste combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of substance is generated.	
SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
Section 3.2 - Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	
Section 4.2 - Environment	



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Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/reach-for-industries-libraries.html>).