

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

1.1 Product identifier

Product name: Avgas 100LL

CAS No.: Not applicable.
EC No.: Not applicable.
Index No.: Not applicable.
REACH Registration No.: Not applicable.

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

Identified use(s): Aviation fuel.

Uses advised against: Follow supplier's recommendations on correct use of the product. Uses other than those covered by the exposure scenarios included in this safety data sheet are not supported.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier: Gulf Aviation
Glenbervie Business Park
Tryst House
Larbert
FK5 4RB

Telephone: 0800 685 685

E-mail: aviation@gulfaviation.co.uk

1.4 Emergency telephone number

In case of emergency, call: 0330 123 9940 (24 hours, 7 days)

SECTION 2: Hazard Identification

2.1 Classification of the substance or mixture

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

Flam. Liq. 1; H224
Acute Tox. 4; H302
Asp. Tox. 1; H304
Acute Tox. 4; H312
Skin Irrit. 2; H315
Acute Tox. 4; H332
STOT SE 3; H336
Repr. 2; H361d
Aquatic Chronic 2; H411

2.2 Label elements

2.2.1. Label according to Regulation (EC) No. 1272/2008 (CLP)

Hazard pictogram(s):



Signal Word:

Danger.

Hazard Statement(s):

H224: Extremely flammable liquid and vapour.
H302: Harmful if swallowed.
H304: May be fatal if swallowed and enters airways.
H312: Harmful in contact with skin.
H315: Causes skin irritation.
H332: Harmful if inhaled.
H336: May cause drowsiness or dizziness.
H361d: Suspected of damaging the unborn child.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P260: Do not breathe vapours
P262 – Do not get in eyes, on skin, or on clothing.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331: Do NOT induce vomiting.
P403 + P235: Store in a well-ventilated place. Keep cool.
P501: Dispose of contents/container to approved disposal facility.

Supplemental Hazard information (EU):

None.

2.3 Other hazards

The product does not meet the criteria for PBT or vPvB substances.

The product contains tetraethyl lead which may accumulate in the human body. There are indications from human epidemiological studies that excessive prenatal exposure to tetraethyl lead may cause developmental and neurobehavioral effects in children. This product is intended for use in closed systems only.

Tetraethyl lead is listed on the Candidate List of Substances of Very High Concern for Authorisation due to potential reproductive toxicity.

SECTION 3: Composition/Information on Ingredients

3.2 Mixtures

Chemical name	% w/w	CAS No.	EC No.	Index No.	Classification (Regulation (EC) No. 1272/2008 (CLP))
Gasoline <i>REACH: 01-2119471335-39-XXXX</i> <i>[A complex combination of hydrocarbons consisting primarily of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons having carbon numbers predominantly greater than C3 and boiling in the range of 30°C to 260°C (86°F to 500°F)]</i>	99-100	86290-81-5	289-220-8	649-378-00-4	Flam. Liq. 1; H224 Asp Tox 1; H304 Skin Irrit. 2; H315 Repr. 2; H361d STOT SE 3; H336 Aquatic Chronic 2; H411 Muta.1B; H340* Carc.1B; H350*
Tetraethyllead	≤ 0.125	78-00-2	201-075-4	-	Acute Tox. 2; H300 Acute Tox. 2; H310 Acute Tox. 1; H330 Repr. 1A; H360Df STOT RE 2; H373 (liver, kidney, brain) Aquatic Acute 1; H400 Aquatic Chronic 1; H410

*The Harmonised Classifications of H340 and H350 have not been applied as the benzene content is <0.1%, as per Note P to Annex VI of Regulation (EC) No. 1272/2008 (CLP).

See Section 16 for full description of R phrases and H statements.

SECTION 4: First Aid Measures

4.1 Description of first aid measures

INHALATION:

Remove person to fresh air and keep comfortable for breathing. Keep warm and at rest. If symptoms persist, obtain medical attention.

SKIN CONTACT:

Remove contaminated clothing immediately. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

EYE CONTACT:

Remove contact lenses if present and easy to do. Wash eyes immediately with plenty of water, making sure to rinse under eyelids. If symptoms persist, obtain medical attention.

INGESTION:

Obtain medical attention immediately. Do not induce vomiting. Do not give anything by mouth because of risk of material entering the lungs and causing lung damage. If person is drowsy or unconscious and vomiting, place on left side with head down. If possible, do not leave unattended and observe closely for adequacy of breathing.

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

Skin contact causes irritation, redness and pain. Eye contact may cause slight irritation, watering, redness and pain. Inhalation of vapours may cause drowsiness or dizziness. Inhalation of vapours may cause drowsiness or dizziness. Ingestion may cause irritation of the mouth and digestive tract. If swallowed, aspiration into lungs may result in chemical pneumonia. High exposure may lead to temporary hearing loss and/or ringing in the ears.

4.3 Indication of any immediate medical attention and special treatments needed:

In case of accident or if you feel unwell, seek medical advice immediately. If swallowed, patient should be monitored for signs of breathing difficulty as effects of aspiration may be delayed for up to 48 hours. If breathing is laboured, oxygen should be administered by qualified personnel.

SECTION 5: Fire-fighting Measures

5.1 Extinguishing Media

Suitable extinguishing media: Foam, water spray or water fog. Dry powder, CO₂, sand or earth may be used for small fires only.

Unsuitable extinguishing media: Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Extremely flammable liquid and vapour: Vapour may form explosive mixture with air. Vapour is heavier than air and may accumulate in confined spaces. Vapours may travel considerable distances to ignition sources where they can ignite, flash back or explode. The product will float on surface water and can reignite. Containers exposed to heat may burst due to increase in pressure.

Combustion may liberate toxic fumes: Carbon monoxide, carbon dioxide, various hydrocarbons, nitrogen oxides, sulphur oxides.

5.3 Advice for fire-fighters

A self-contained breathing apparatus and suitable protective clothing should be worn in fire conditions. Move undamaged containers from fire area if this can be done safely. Keep fire exposed containers cool by spraying with water. Do not allow product or run-off to enter drains, sewers or watercourses.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 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-sparkling 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).

6.1.2 For emergency responders

Keep unnecessary personnel away. Wear suitable protective clothing (See Section 8). Contaminated clothing should be thoroughly cleaned.

6.2 Environmental precautions

Collect spillage. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses 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.

6.3 Methods and materials for containment and clearing up

6.3.1 For containment

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

6.3.2 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.

6.3.3 Other advice

None.

6.4 Reference to other sections

See Section 8 for personal protective equipment. See Section 13 for waste disposal.

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Extremely flammable liquid and vapour: Vapour may form explosive mixture with air. Vapour is heavier than air and may accumulate in confined spaces. Vapours may travel considerable distances to ignition sources where they can ignite, flash back or explode. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) in or around any fuelling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Provide adequate ventilation, including local extraction, to ensure occupational exposure limits are not exceeded. Avoid breathing vapours/spray. Avoid contact with skin and eyes. Wear suitable personal protective equipment (See Section 8). Avoid release to the environment.

Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Take off immediately all contaminated clothing and wash it before reuse. Contaminated clothing should be thoroughly cleaned or disposed of as hazardous waste.

Product transfer

It is dangerous and/or unlawful to put petrol into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapour and cause fire. Place container on ground when filling and keep nozzle in contact with container.

Be aware of handling operations that may give rise to accumulation of static charges. These include, but are not limited to, pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations and mechanical movement. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/s until fill pipe submerged to twice its diameter, then ≤ 7 m/s). Do NOT use compressed air for filling, discharging or handling operations. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care.

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. Even with proper grounding and bonding this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air/vapour mixtures can occur.

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 explosimeter. Additional precautions are required where the tank may have previously contained the product.

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. Store in a well-ventilated place. 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 metres without the use of racking. Seek specialist advice for the design, construction and operation of bulk storage facilities.

Recommended Storage Container materials

For containers or container linings use mild steel or stainless steel. Aluminium 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 specifically tested for compatibility with the product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

Drums must be earthed and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters.

Unsuitable Storage Container materials

Synthetic materials such as plastics and fiberglass may be unsuitable for containers or container linings depending on the material specification and 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.

7.3 Specific end uses(s)

Refer to supplemental exposure scenarios attached or 'aviation fuel'.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control parameters

Workplace exposure limits

Source: EH40/2005, 2nd Ed., 2011.

Substance	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
		ppm	mg/m ³	ppm	mg/m ³	
Lead alkyls	-	-	0.1	-	-	Sk*
Ethylbenzene	100-41-4	100	441	125	552	Sk
Trimethylbenzenes, all isomers or mixtures	25551-13-7	25	125	-	-	-
n-Hexane	110-54-3	20	72	-	-	-
Toluene	108-88-3	50	191	100	384	Sk
Xylene, <i>o</i> -, <i>m</i> -, <i>p</i> - or mixed isomers	1330-20-7	50	220	100	441	Sk, BMGV
Cyclohexane	110-82-7	100	350	300	1050	-
Cumene	98-82-8	25	125	50	250	Sk

Sk: Can be absorbed through the skin.

Carc: Capable of causing cancer and/or heritable genetic damage.

BMGV: Biological monitoring guidance value assigned.

*Source: Control of Lead at Work Regulations 2002

Community exposure limits

Sources: ILV: 91/322/EEC; IOELV: 2000/39/EC, 2006/15/EC, 2009/161/EU

Substance	Exposure Limit Type	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
			ppm	mg/m ³	ppm	mg/m ³	
Ethylbenzene	IOELV	100-41-4	100	442	200	884	Skin
n-Hexane	IOELV	110-54-3	20	72	-	-	-
Xylene, <i>o</i> -, <i>m</i> -, <i>p</i> - or mixed isomers	IOELV	1330-20-7	50	221	100	442	Skin
Cyclohexane	IOELV	110-82-7	200	700	-	-	-
Cumene	IOELV	98-82-8	20	100	50	250	Skin

IOELV: Indicative Occupational Exposure Limit Value

Skin: Can be absorbed through the skin.

Other exposure limits

Source: American Conference of Governmental Industrial Hygienists (ACGIH)

Substance	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
		ppm	mg/m ³	ppm	mg/m ³	
Tetraethyllead	78-00-2	-	0.1	-	-	Skin

Skin: Can be absorbed through the skin.

Other exposure limits

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

Substance	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
		ppm	mg/m ³	ppm	mg/m ³	
Tetraethyllead	78-00-2	-	0.1	-	-	Skin
Gasoline	86290-81-5	300	-	500	-	-
Toluene	108-88-3	20	-	-	-	-
Ethanol	64-17-5	-	-	1,000	-	A3
n-Hexane	110-54-3	50	-	-	-	Skin
1,3,5-Trimethylbenzene	108-67-8	25	-	-	-	-
Ethylbenzene	100-41-4	20	-	-	-	-
Xylene	1330-20-7	100	-	150	-	-
Cyclohexane	110-82-7	100	-	-	-	-
Naphthalene	91-20-3	10	-	15	-	Skin
Cumene	98-82-8	50	-	-	-	-

Skin: Can be absorbed through the skin.

A3: Confirmed animal carcinogen with unknown relevance to humans.

Biological monitoring guidance values (BMGVs)

Source: EH40/2005, 2nd Ed., 2011.

Substance	Biological monitoring guidance values	Sampling time
Xylene, <i>o</i> -, <i>m</i> -, <i>p</i> - or mixed isomers	650 mmol methyl hippuric acid/mol creatinine in urine	Post shift

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

Substance	Biological monitoring guidance values	Sampling time
Toluene	Toluene in blood: 0.02 mg/L	Prior to last shift of workweek
	Toluene in urine: 0.03 mg/L, end of shift	End of shift
	<i>o</i> -Cresol with hydrolysis in urine: 0.3 mg/g creatinine	End of shift (background)
n-Hexane	2,5-Hexanedione without hydrolysis in urine: 0.4 mg/L	End of shift at end of workweek
Benzene	<i>S</i> -Phenylmercapturic acid in urine: 25 µg/g creatinine	End of shift (background)
	<i>t,t</i> -Muconic acid in urine: 500 µg/g creatinine	End of shift (background)
Ethylbenzene	Sum of maldelic acid and phenylglyoxylic acid in creatinine in urine: 0.7 g/g	End of shift at end of workweek
Xylene	Methyl hippuric acid in creatinine in urine: 1.5 g/g	End of shift

DNELs (Workers)

Substance	Route	Systemic effects		Local effects	
		Acute/short-term exposure	Long-term exposure	Acute/short-term exposure	Long-term exposure
Tetraethyllead	Inhalation	0.68 mg/m ³	0.00058 mg/m ³	-	-
	Dermal	3.13 mg/kg bw/day	0.00067 mg/kg bw/day	-	-
Gasoline	Inhalation	1,300 mg/m ³ /15 min	-	-	-

PNECs

Substance	Aqua (fresh water)	Aqua (marine water)	Aqua (intermittent releases)	Sewage Treatment Plants	Sediment (fresh water)	Sediment (marine water)	Soil	Oral
Tetraethyllead	0.000027 mg/L	0.0000027 mg/L	0.00027 mg/L	0.0005 mg/L	-	-	0.00093 mg/kg soil dw	0.0006 mg/kg food

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Provide adequate ventilation to ensure that occupational exposure limits are not exceeded. Local extraction may be required. Eye wash and quick-drench shower facilities should be available in the work area. Contaminated clothing and shoes should be thoroughly washed before reuse.

8.2.2 Personal protection

Eye protection: Goggles or safety glasses with side shields giving complete protection to eyes. (EN 166). Depending on conditions of use, close-fitting eye protection and a face shield may be necessary.

Skin protection:

Hand protection: Chemical-resistant gloves. (EN 374). Suitable glove material: nitrile or neoprene or PVC. Contact glove supplier to confirm suitable glove material, thickness and breakthrough times.

Other: Long sleeve protective clothing. Plastic apron. Rubber boots.

Respiratory protection: Where airborne levels below the exposure limits cannot be maintained, wear an positive pressure air-purifying respirator (EN 140) with a Type A/P2 filter or better suitable for organic gases and vapours with a boiling point above 65°C. (EN 14387).

Thermal hazards: Wear suitable temperature resistant gloves and protective clothing if the product is heated.

8.2.3 Environmental exposure controls

Inform environmental manager of all incidents involving this product.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Data given below are typical values

Appearance:	Clear, bright blue liquid.
Odour:	Hydrocarbon.
Odour threshold:	Not available.
pH:	Not applicable.
Melting/freezing point:	< -47°C
Initial boiling point and boiling range:	25 - 170°C
Flash point:	< -40°C
Evaporation rate:	Not available.



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Flammability (solid; gas):	Not applicable.
Upper/lower flammability or explosive limits:	1% – 8% (v/v in air)
Vapour pressure:	38 – 49 kPa (38°C)
Vapour density:	> 3 (Air = 1)
Relative density:	0.69 – 0.76 (15°C) (Water = 1)
Solubility(ies):	Negligible in water.
Partition coefficient: n-octanol/water:	Log Kow: 2-7
Auto-ignition temperature:	> 250°C
Decomposition temperature:	Not available.
Viscosity:	0.5 – 0.75 mm ² /s (40°C)
Explosive properties:	Not explosive. Vapour may form explosive mixture in air.
Oxidising properties :	Not oxidising.

9.2 Other information

Electrical conductivity: < 100 pS/m (low). The conductivity of this material makes it a static accumulator.

A liquid is typically considered a non-conductor if its conductivity is below 100 pS/m and semi-conductive if below 10,000 pS/m. The precautions are identical for non-conductive and semi-conductive liquids. Factors such as liquid temperature and the presence of contamination and/or anti-static additives can greatly influence the conductivity of a liquid.

SECTION 10: Stability and Reactivity

10.1 Reactivity	Reacts with strong oxidising agents.
10.2 Chemical stability	Stable under normal conditions.
10.3 Possibility of hazardous reactions	No hazardous reactions expected during normal use.
10.4 Conditions to avoid	Keep away from sources of ignition, hot surfaces, direct sunlight. Prevent accumulation of vapours. Contact with incompatible materials.
10.5 Incompatible materials	Strong oxidising agents. Reducing agents.
10.6 Hazardous decomposition products	Combustion may liberate toxic fumes: Carbon monoxide, carbon dioxide, various hydrocarbons, nitrogen oxides, sulphur oxides.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Acute toxicity

Gasoline:

LD₅₀ (oral/rat): > 5,000 mg/kg

LD₅₀ (dermal/rabbit): > 2,000 mg/kg

LC₅₀ (inhalation/rat/male/vapour): > 7,630 mg/L air (analytical), 4 h

LC₅₀ (inhalation/rat/female/vapour): > 5,610 mg/L air (analytical), 4 h

Tetraethyllead:

LD₅₀ (oral/rat): 14.18 mg/kg

LD₅₀ (dermal/rabbit): ca. 547-995 mg/kg

LC₅₀ (inhalation/rat/vapour): ca. 0.85 mg/L air (analytical), 1 h

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/irritation	May cause slight eye irritation.
Skin sensitisation	The product does not contain substances classified as skin sensitisers above the classification thresholds.
Respiratory sensitisation	The product does not contain substances classified as respiratory sensitisers above the classification thresholds.
Germ cell mutagenicity	The product does not contain substances classified as mutagenic above the classification thresholds.
Carcinogenicity	The product does not contain substances classified as carcinogenic above the classification thresholds.
Reproductive toxicity	<p>Suspected of damaging the unborn child.</p> <p>Tetraethyl lead: Exposure to tetraethyl lead is associated with developmental effects including reduced birth weight, reduced gestational age and neurobehavioral effects.</p> <p>Toluene: Causes foetotoxicity at doses which are maternally toxic. Many case studies involving abuse indicate toluene can cause birth defects, growth retardation and learning difficulties.</p> <p>n-Hexane: May impair fertility at doses which produce other toxic effects</p>
Specific Target Organ Toxicity – single exposure	May cause drowsiness or dizziness.
Specific Target Organ Toxicity – repeated exposure	<p>The product does not contain substances classified for Specific Target Organ Toxicity following repeated exposure above the classification thresholds.</p> <p>Toluene: Prolonged and repeated exposures to high concentrations have resulted in hearing loss in rates. Solvent abuse and noise interaction in the work environment may cause hearing loss. Abuse of vapours has been associated with organ damage and death.</p>
Aspiration hazard	May be fatal if swallowed and enters airways. Risk of aspiration into lungs resulting in chemical pneumonia.
Information on likely routes of exposure	
Inhalation	Harmful if inhaled. May cause drowsiness or dizziness.
Skin contact	Harmful by skin contact. Causes skin irritation.
Eye contact	May cause slight eye irritation.
Ingestion	Harmful if swallowed. May be fatal if swallowed and enters airways. Risk of aspiration into lungs resulting in chemical pneumonia. Ingestion may cause irritation of the mouth and digestive tract.

Symptoms related to the physical, chemical and toxicological characteristics

Skin contact causes irritation, redness and pain. Eye contact may cause slight irritation, watering, redness and pain. Inhalation of vapours may cause drowsiness or dizziness. Inhalation of vapours may cause drowsiness or dizziness. Ingestion may cause irritation of the mouth and digestive tract. If swallowed, aspiration into lungs may result in chemical pneumonia. High exposure may lead to temporary hearing loss and/or ringing in the ears.

Mixture versus substance information

No data available.

Other information

Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest.

SECTION 12: Ecological Information

12.1 Toxicity

Toxic to aquatic life with long lasting effects.

Gasoline (CAS 86290-81-5):

EL₅₀ (*Pseudokirchnerella subcapitata*): 3.1 mg/L, 72 h (loading rate)(WAF)

NOELR (*Pseudokirchnerella subcapitata*): 0.5 mg/L, 72 h (loading rate)(WAF)

EL₅₀ (*Pseudokirchnerella subcapitata*): 3.7 mg/L, 72 h (growth rate)(WAF)

Naphtha (petroleum), light alkylate (CAS 64741-66-8):

LL₅₀ (*Pimephales promelas*): 8.2 mg/L, 96 h (WAF)

NOELR (*Daphnia magna*): 2.6 mg/L, 21 days

Naphtha (petroleum), light catalytic cracked (CAS 64741-55-5):

LL₅₀ (*Pimephales promelas*): 5.2 mg/L, 48 h (WAF)

Naphtha (petroleum), light straight-run (CAS 64741-46-4):

EL₅₀ (*Daphnia magna*): 4.5 mg/L, 48 h (WAF)

Tetraethyllead:

LC₅₀ (*Lepomis macrochirus*): 2.2 mg/L, 48 h

LC₅₀ (*Pleuronectes platessa*): 0.23 mg/L, 96 h

LC₅₀ (*Mytilus edulis*): 0.1 mg/L, 96 h

LC₅₀ (*Crangon crangon*): 0.027 mg/L, 96 h

EC₅₀ (*Phaeodactylum tricornutum*): 0.1 mg/L, 96 h

12.2 Persistence and degradability

Major product components are not readily biodegradable but are considered inherently biodegradable due to degradation by microorganisms. Contains components that may persist in the environment.

If released to water, the majority of hydrocarbons will evaporate at a moderate rate but a small proportion will dissolve. Dissolved components will be either absorbed in sediments or evaporate to air. In aerobic water and sediments they will biodegrade, but in anaerobic conditions they will persist.

12.3 Bioaccumulative potential

The product components have measured or predicted Log

Kow values in the range 2 – 7 or above and therefore have potential to bioaccumulate. In practice, metabolic practices may reduce bioconcentration.

12.4 Mobility in soil

Evaporates within a day from water and soil surfaces. Large volumes may penetrate soil and could contaminate groundwater. Ether oxygenates are significantly more water-soluble and less biodegradable than benzene, toluene, ethylbenzene and xylenes (BTEX). Consequently, ether oxygenates have the potential to migrate over relatively longer distances than BTEX in groundwater.

The product components are immiscible in water and will float on the surface of water. Lower molecular weight components will evaporate from the surface, reducing the risk to aquatic organisms. In air the hydrocarbon components undergo photodegradation by hydroxyl radicals. The majority of components will be adsorbed onto sediment. Adsorption is the predominant process on release to soil. Adsorbed components will slowly degrade in both water and soil.

12.5 Results of PBT and vPvB assessment

The product does not contain substances assessed to be PBT or vPvB.

12.6 Other adverse effects

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

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

To be disposed of as hazardous waste. Disposal should be in accordance with local, state or national legislation.

Contaminated adsorbent must be removed in sealed, plastic lined drums and disposed of via an authorised waste disposal contractor. Empty containers retain product residue and can be hazardous. Do not empty into drains; dispose of this material and its container in a safe way.

Suggested EU Waste Code: 13 07 02 (Petrol). Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport Information

ADR

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	Read SDS and supplier instructions on correct use of the product.

ADN

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	Read SDS and supplier instructions on correct use of the

product.

RID		
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	Read SDS and supplier instructions on correct use of the product.

IATA/ICAO		
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	Read SDS and supplier instructions on correct use of the product.

IMDG		
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	Marine pollutant.
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.
14.7	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code	The product is not intended to be transported in bulk.

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), Directive 67/548/EEC & Directive 1999/45/EC.

Tetraethyl lead is listed on the Candidate List of Substances of Very High Concern for Authorisation due to potential reproductive toxicity.

15.2 Chemical Safety Assessment

A chemical safety assessment has been carried out. The exposure scenarios are in the Annex to this SDS.

SECTION 16: Other Information

Full text of relevant H-statements:

H224: Extremely flammable liquid and vapour.
H300: Fatal if swallowed.
H302: Harmful if swallowed.
H304: May be fatal if swallowed and enters airways.
H310: Fatal in contact with skin.
H312: Harmful in contact with skin.
H315: Causes skin irritation.
H330: Fatal if inhaled.
H332: Harmful if inhaled.
H336: May cause drowsiness or dizziness.
H340 May cause genetic defects
H350 May cause cancer
H360Df : May damage the unborn child. Suspected of damaging fertility.
H361d: Suspected of damaging the unborn child.
H361: Suspected of damaging fertility or the unborn child.
H373: May cause damage to organs through prolonged or repeated exposure.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
H411: Toxic to aquatic life with long lasting effects.

Abbreviations:

CAS:	Chemical Abstracts Service;
EINECS:	European Inventory of Existing Commercial Chemical Substances
EC ₅₀ :	Effective Concentration 50%
EL ₅₀ :	Effective Loading rate 50%
LC ₅₀ :	Lethal Concentration 50%
LD ₅₀ :	Lethal Dose 50%
LL ₅₀ :	Lethal Loading rate 50%
LOEL:	Lowest Observed Effect Level
NOEL:	No Observed Effect Level
PBT:	Persistent, Bioaccumulative and Toxic.
RD ₅₀ :	Concentration associated with a 50% reduction in respiratory rate
RMM:	Risk Management Measures
UVCB:	Substance of Unknown or Variable composition, Complex reaction products or Biological materials
vPvB:	Very Persistent and Very Bioaccumulative
WAF:	Water Accommodated Fraction

References:

Supplier's Safety Data Sheets



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ECHA disseminated REACH dossiers
ECHA Classification and Labelling Inventory
Regulation (EC) No. 1272/2008 of the European Parliament and of the council.

Further information:

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.

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>) and to the IP Codes of Practice available from the Energy Institute (website: <http://www.energyinst.org.uk>)

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.

Version history:

Version:	8.0
Issue date:	19/11/2016
Previous Version:	7.1
Issue date of previous version:	10/09/2014
Sections changed from previous version:	2, 3, 8, 11, 15, 16

Annex to extended Safety Data Sheet (eSDS)

1. Manufacture of substance – Industrial

Section 1: Exposure scenario	
LBP Naphtha (< 0.1% benzene)	
Title	
Manufacture of substance – Industrial	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 8: Manufacture of bulk, large scale chemicals (including petroleum products). SU 9: Manufacture of fine chemicals.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 1: Manufacture of substances. ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.
Specific Environmental Release Category:	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
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: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: > 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
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 is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	No other specific measures identified.
General exposures (closed systems) with sample collection:	No other specific measures identified.
General exposures (open systems):	Provide extract ventilation to points where emissions occur.
Mixing operations (closed systems):	No other specific measures identified.
Process sampling:	No other specific measures identified.

Laboratory activities:	Handle in a fume cupboard or under extract ventilation.
Bulk transfers:	No other specific measures identified.
Drum/batch transfers:	No other specific measures identified.
Equipment maintenance:	No other specific measures identified.
Storage:	No other specific measures identified.
2.2 Control of Environmental Exposure	
Product Characteristics Substance is a 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:	0.032
Annual site tonnage (tonnes/year):	600,000
Maximm 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 given 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 estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). Prevent discharge of undissolved substance to or recover from onsite wastewater. Onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	99.0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 99.1
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 80.4
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
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	
3.1 Health The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	

Section 4: Guidance to check the compliance with the exposure scenario
4.1 Health
Predicted exposures are not expected to exceed the DNEL or DMEL when the Risk Management Measures/ Operational Conditions outlined in Section 2 are implemented. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.
4.2 Environment
Guidance is based on assumed operating conditions which may or 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 onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).

2. Use of substance as an intermediate – Industrial

Section 1: Exposure scenario LBP Naphtha (< 0.1% benzene)	
Title	
Use as an intermediate – Industrial	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 8: Manufacture of bulk, large scale chemicals (including petroleum products). SU 9: Manufacture of fine chemicals.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)
Specific Environmental Release Category:	ESVOC SpERC 6.1a.v1
Processes, tasks, activities covered	
Use of the substance as an intermediate (not related to Strictly Controlled Conditions). 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: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: > 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
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 is implemented.

Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. 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):	No other specific measures identified.
General exposures (closed systems) with sample collection:	No other specific measures identified.
General exposures (open systems):	Provide extract ventilation to points where emissions occur.
Mixing operations (closed systems):	No other specific measures identified.
Process sampling:	No other specific measures identified.
Laboratory activities:	Handle in a fume cupboard or under extract ventilation.
Bulk transfers:	No other specific measures identified.
Drum/batch transfers:	No other specific measures identified.
Equipment maintenance:	No other specific measures identified.
Storage:	No other specific measures identified.
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a 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:	0.0068
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 given 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 estimated 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. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
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 (%):	≥ 92.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	

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 (M _{safe}) based on release following total wastewater treatment removal (Kg/d):	78,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
This substance is consumed during use and no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or 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 onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

3. Distribution of substance – Industrial

Section 1: Exposure scenario LBP Naphtha (< 0.1% benzene)	
Title	
Distribution of the substance – Industrial	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 1: Manufacture of substances. ERC 2: Formulation of preparations. ERC 3: Formulation in materials. ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles. ERC 5: Industrial use resulting in inclusion into or onto a matrix. ERC 6a: Industrial use resulting in manufacture of another substance (use of

	intermediates). ERC 6b: Industrial use of reactive processing aids. ERC 6c: Industrial use of monomers for manufacture of thermoplastics. ERC 6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers. ERC 7: Industrial use of substances in closed systems.	
Specific Environmental Release Category:	ESVOC SpERC 1.1b.v1	
Processes, tasks, activities covered		
Loading (including marine vessel/barge, road/rail car and IBC loading), and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.		
Section 2: Operation conditions and risk management measures		
2.1 Control of worker exposure		
Product Characteristics		
Physical form of product:	Liquid. Vapour pressure: > 10 kPa at standard temperature and pressure.	
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).	
Frequency of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).	
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.	
Contributing Scenarios		
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions	
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. 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):	No other specific measures identified.	
General exposures (closed systems) with sample extraction:	No other specific measures identified.	
General exposures (open systems):	Provide extract ventilation to points where emissions occur.	
Process sampling:	No other specific measures identified.	
Laboratory activities:	Handle in a fume cupboard or under extract ventilation.	
Bulk closed loading and unloading:	No other specific measures identified.	
Drum and small package filling:	Fill containers/cans at dedicated fill points supplied with local extract ventilation.	
Equipment cleaning and maintenance:	No other specific measures identified.	
Bulk product storage:	No other specific measures identified.	
2.2 Control of Environmental Exposure		
Product Characteristics		
Substance is a 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):	100	
Environmental factors not influenced by risk management		

Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given 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 estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
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 (%):	≥ 12
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
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 national regulations.	
Conditions and measures related to external recovery of waste External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or 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 onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

4. Formulation and (Re)packing of substances and mixtures – Industrial

Section 1: Exposure scenario LBP Naphtha (< 0.1% benzene)
Title

Formulation and (re)packing of substances and mixtures - Industrial	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 14: Production of preparations or articles by tableting, compression, extrusion, palletisation. PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 2: Formulation of preparations.
Specific Environmental Release Category:	ESVOC SpERC 2.2.v1
Processes, tasks, activities covered	
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, material transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: > 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. 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):	No other specific measures identified.
General exposures (closed systems) with sample collection:	No other specific measures identified.
General exposures (open systems):	Provide extract ventilation to points where emissions occur.
Process sampling:	No other specific measures identified.
Mixing operations (closed systems):	Provide extract ventilation to points where emissions occur.
Laboratory activities:	Handle in a fume cupboard or under extract ventilation.
Bulk transfers:	Ensure material transfers are under containment or extract ventilation.
Manual transfer/pouring from containers:	Ensure material transfers are under containment or extract ventilation.

Drum/batch transfers:	Ensure material transfers are under containment or extract ventilation.
Drum and small package filling:	Fill containers/cans at dedicated fill points supplied with local extract ventilation.
Equipment cleaning and maintenance:	No other specific measures identified.
Storage:	No other specific measures identified.
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a 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 given 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)	0.002
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 estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
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 (%):	≥ 94.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
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 (M _{safe}) based on release following total wastewater treatment removal (Kg/d):	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 national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.

Section 4: Guidance to check the compliance with the exposure scenario

4.1 Health

Predicted exposures are not expected to exceed the DNEL or DMEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.

4.2 Environment

Guidance is based on assumed operating conditions which may or 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 onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf>).

5. Use as a fuel – Industrial

Section 1: Exposure scenario LBP Naphtha (< 0.1% benzene)

Title

Use as a fuel – Industrial

Use Descriptor

Sector(s) of use: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.

Process Category(ies): PROC 1: Use in closed process, no likelihood of exposure.
PROC 2: Use in closed, continuous process with occasional controlled exposure.
PROC 3: Use in closed batch process (synthesis or formulation).
PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.
PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.
PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected.

Environmental Release Category(ies): ERC 7: Industrial use of substances in closed systems.

Specific Environmental Release Category: ESVOC SpERC 7.12a.v1

Processes, tasks, activities covered

Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

Section 2: Operation conditions and risk management measures

2.1 Control of worker exposure

Product Characteristics

Physical form of product: Liquid. Vapour pressure: > 10 kPa at standard temperature and pressure.

Concentration of substance in product: Covers percentages of substance in product up to 100% (unless stated otherwise).

Frequency and duration of use: Covers daily exposures of up to 8 hours (unless stated otherwise).

Other operational conditions affecting exposure: Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios

Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact

	with the substance is likely. Clean up contamination/spills immediately. 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):	No other specific measures identified.
Bulk closed unloading:	No other specific measures identified.
Drum/batch transfers:	No other specific measures identified.
Refuelling:	No other specific measures identified.
Refuelling aircraft:	Ensure material transfers are under containment or extract ventilation.
Use as a fuel (closed systems):	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Bulk product storage:	No other specific measures identified.
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a 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 given 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)	0.00001
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 estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
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 (%):	≥ 76.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
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 (M _{safe}) based on release following total wastewater treatment removal (Kg/d):	4,600,000
Assumed domestic sewage treatment plant flow (m ³ /d):	2,000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls.	

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 the substance is generated.
Section 3: Exposure Estimation
3.1 Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.
3.2 Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.
Section 4: Guidance to check the compliance with the exposure scenario
4.1 Health
Predicted exposures are not expected to exceed the DNEL or DMEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.
4.2 Environment
Guidance is based on assumed operating conditions which may or 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 onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).

10. Use as a fuel – Professional

Section 1: Exposure scenario LBP Naphtha (< 0.1% benzene)	
Title	
Use as a fuel – Professional	
Use Descriptor	
Sector(s) of use:	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected.
Environmental Release Category(ies):	ERC 9a: Wide dispersive indoor use of substances in closed systems. ERC 9b: Wide dispersive outdoor use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 9.12b.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: > 10 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).

Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. 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):	No other specific measures identified.
Preparation of material for application:	No other specific measures identified.
Mixing operations (closed systems):	No other specific measures identified.
Bulk closed unloading:	No other specific measures identified.
Drum/batch transfers:	No other specific measures identified.
Refuelling:	No other specific measures identified.
Use as a fuel (closed systems):	No other specific measures identified.
Equipment maintenance:	Drain down system prior to equipment break-in or maintenance. Wear chemical-resistant gloves (tested to EN 374) in combination with intensive management supervision controls.
Storage:	No other specific measures identified.
2.2 Control of Environmental Exposure	
Product Characteristics	
Substance is a 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):	1,600
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 given 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 estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	Not applicable.
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 3.4
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0

Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
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 (m ³ /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.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or 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 onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	

11. Use as a fuel – Consumer

Section 1: Exposure scenario	
LBP Naphtha (< 0.1% benzene)	
Title	
Use as a fuel - Consumer	
Use Descriptor	
Sector(s) of use:	SU 21: Consumer uses: Private households (= general public = consumers).
Product Category(ies):	PC 13: Fuels.
Environmental Release Category(ies):	ERC 9a: Wide dispersive indoor use of substances in closed systems. ERC 9b: Wide dispersive outdoor use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 9.12c.v1
Processes, tasks, activities covered	
Covers consumer uses of liquid fuels.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: > 10 kPa at standard temperature and pressure.

Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Amounts used:	For each use event, covers use amounts of up to 37,500 g. Covers skin contact area of up to 420 cm ² .
Frequency and duration of use:	Covers use up to 0.143 times per day (i.e. one use every 7 days). Covers exposure of up to 2 hours per use event.
Other operational conditions affecting exposure:	Covers use at ambient temperature. Covers use in room size of 20 m ³ . Covers use under typical household ventilation.

Contributing Scenarios

Contributing Scenarios/Product Category	Specific Risk Management Measures & Operating Conditions
Liquid fuels: Automotive refuelling	Covers concentrations of up to 100%. Covers use up to 52 days/year. Covers use up to 1 time a day. Covers skin contact area up to 210 cm ² . For each use event, covers use amounts up to 37,500 g. Covers outdoor use. Covers use in room size of 100 m ³ . Covers exposure of up to 0.05 hours (3 min). No specific risk management measures identified beyond those operational conditions stated.
Liquid fuels: Scooter refuelling	Covers concentrations of up to 100%. Covers use up to 52 days/year. Covers use up to 1 time a day. Covers skin contact area up to 210 cm ² . For each use event, covers use amounts up to 3,750 g. Covers outdoor use. Covers use in room size of 100 m ³ . Covers exposure of up to 0.03 hours (1.8 min). No specific risk management measures identified beyond those operational conditions stated.
Liquid: Garden equipment - Use	Covers concentrations of up to 100%. Covers use up to 26 days/year. Covers use up to 1 time a day. For each use event, covers use amounts up to 750 g. Covers outdoor use. Covers use in room size of 100 m ³ . Covers exposure of up to 2 hours. No specific risk management measures identified beyond those operational conditions stated.
Liquid: Garden equipment - refuelling	Covers concentrations of up to 100%. Covers use up to 26 days/year. Covers use up to 1 time a day. Covers skin contact area up to 420 cm ² . For each use event, covers use amounts up to 750 g. Covers use in a one car garage (34 m ³) under typical ventilation. Covers use in room size of 34 m ³ . Covers exposure of up to 0.03 hours (1.8 min). No specific risk management measures identified beyond those operational conditions stated.

2.2 Control of Environmental Exposure

Product Characteristics

Substance is a 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 given 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
Conditions and measures related to municipal sewage treatment plant	
Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation).	
Estimated substance removal from wastewater via domestic sewage treatment (%):	95.5
Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (Kg/d):	180,000
Assumed domestic sewage treatment plant flow (m ³ /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.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or 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://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf).	