

BASIC GASOLINE

for production of unleaded ES 95A and ES 95 AE, SP 98AE petrol

Date of issue: 17.12.2007 / Updated: 01.06.2015

Issue 1

MATERIAL SAFETY DATA SHEET

acc. to the regulation (EC). No 453/2010

Section 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. PRODUCT IDENTIFIER

Commercial name Base gasoline
EC name **GASOLINE**
Index no. 649-378-00-4
Registration no. **01-2119471335-39-0039**
EC number 289-220-8
CAS number 86290-81-5

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

Identified uses

Identified use	Process category [PROC]	Product category [PC]	Sector of use [SU]	Article category [AC]	Environmental Release Category [ERC]
Production of gasoline (classified as R45, R46, containing up to 1% benzene)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC 15	–	SU3, SU8, SU9	–	ERC1, ERC4
Gasoline as a semi-product (classified as R45, R46, containing up to 1% benzene)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC 15	–	SU3, SU8, SU9	–	ERC6a
Distribution of gasoline (classified as R45, R46, containing up to 1% benzene)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC 15	–	SU3	–	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c,
Formulation and repackaging of gasoline and its mixtures (classified as R45, R46, containing up to 1% benzene)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC 15	–	SU3, SU10	–	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d
Applications for industrial coating (classified as R45, R46, containing up to 1% benzene)	PROC1, PROC2, PROC3, PROC8a, PROC8b PROC 15	–	SU22	–	ERC4
Applications in cleaning agents (classified as R45, R46, containing up to 1% benzene)	PROC1, PROC2, PROC3, PROC8a, PROC8b	--	SU3	–	ERC4
Applications as fuel (classified as R45, R46, containing up to 1% benzene)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16	--	SU22	--	ERC9a, ERC9b
Production and processing of rubber (classified as R45, R46, containing up to 1% benzene)	PROC1, PROC2, PROC3, PROC8a, PROC8b PROC 15	--	SU3, SU10, SU11	--	

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Meaning of descriptors

PROC 1 Use in a closed process, no likelihood of exposure

PROC2 Use in closed, continuous process with occasional controlled exposure PROC3 Use in closed batch process (synthesis or formulation)

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC15 Use as laboratory reagent

PROC16 Using material as fuel sources, limited exposure to unburned product to be expected industrial or non-industrial setting;

SU3 Industrial applications: uses of substance as such or preparations at industrial sites

SU8 Manufacture of bulk, large scale chemicals (including petroleum products) SU9

Manufacture of fine chemicals

SU10 Formulation [mixing] of preparations and/or re-packaging (except for alloys)

SU11 Manufacture of rubber products

SU22 Public domain (administration, education, entertainment, services, craftsmen)

ERC1 Manufacture of organic and inorganic substances in chemical, petro- chemical, primary metals and minerals industry including intermediates, monomers using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions.L

ERC2 Formulation of preparation*

ERC3 Formulation in materials

ERC4 Industrial use of processing aids in continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions.ñ For example, solvents used in chemical reactions or the 'use' of solvents during the application of paints, lubricants in metal working fluids, anti-set off agents in polymer moulding/casting.

ERC5 Industrial use resulting in inclusion into or onto a matrix.0

ERC6a Use of intermediates in primarily the chemical industry using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions, for the synthesis (manufacture) of other substances. For instance the use of chemical building blocks (feedstock) in the synthesis of agrochemicals, pharmaceuticals, monomers, etc.

ERC6b Industrial use of reactive processing aids.

ERC6c Industrial use of monomers for manufacture of thermoplastics.

ERC6d Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers.

ERC7 Industrial use of substances in closed systems. Use in closed equipment, such as the use of liquids in hydraulic systems, cooling liquids in refrigerators and lubricants in engines and dielectric fluids in electric transformers and oil in heat exchangers. 0 No intended contact between functional fluids and products foreseen, and thus low emissions via waste water and waste air to be expected.

ERC9a Indoor use of substances by the public at large or professional (small scale) use in closed systems. 0 Use in closed equipment, such as the use of cooling liquids in refrigerators, oil-based electric heaters.0

ERC9B Outdoor use of substances by the public at large or professional (small scale) use in closed systems. Use in closed equipment, such as the use of hydraulic liquids in automotive suspension, lubricants in motor oil and brake fluids in automotive brake systems. b

* Note: to ensure consistency with the system of descriptors in IUCLID 5.2, the term "preparation" in the above lists has not been replaced with "mixture".

Uses advised against The substance is subject to limitations - Appendix XVII to the regulation EC No. 1907/2006

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

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Manufacturer

Polski Koncern Naftowy ORLEN S.A.

09-411 Płock, ul. Chemików 7

Phone: (+48 24) 365 00 00

Fax: (+48 24) 365 45 55

Phone: (+48 24) 365 35 24

e-mail: reach@orlen.pl (e-mail of the person responsible for the safety data sheet)

1.4. EMERGENCY TELEPHONE NUMBER

Company Fire Brigade

National Help Centre for Transport of Hazardous Substances - SPOT

- Telephones: +48 24 365 70 32 and +48 24 365 70 33 (24 hours a day)

- e-mail straz.pozarna@orlen.pl

Section 2. IDENTIFICATION OF HAZARDS

2.1. CLASSIFICATION OF THE SUBSTANCE OR

MIXTURE acc. to the regulation EC no.

1272/2008(CLP)

Physicochemical hazards

Flam. Liq. 1 H224 Highly flammable liquid and vapour Health hazards

Carc. 1B 1B (H350 May cause cancer.)

Muta. 1B H340 May cause genetic defects.

Repr. 2H361d Suspected of damaging the unborn child. Asp.Tox. 1 May be fatal if swallowed and enters airways. STOT SE 3 H336 May cause drowsiness or dizziness. i

Skin Irrit. 2 H315 Causes skin irritation.

Environmental hazards

Aquatic Chronic 2 H411 Harmful to aquatic life with long lasting effects.

2.2. LABEL ELEMENTS

Hazard pictograms

GHS02  GHS08  GHS07  GHS09 

Signal word

Danger

Hazard statements

H224 Highly flammable liquid and vapour.

H350 May cause cancer.

H340 May cause genetic defects.

H361d Suspected of damaging fertility or the unborn child

H304 May be fatal if swallowed and enters airways.

H336 May cause drowsiness or dizziness H315 Causes skin irritation

H411 Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention

P201: Obtain special instructions before use.

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. - No smoking.

P280 Wear protective gloves/protective clothing/eye protection/face protection. Response

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.

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Storage

P403 + P233 Store in a well-ventilated place Keep container tightly sealed. Disposal

P501: Dispose of contents/container to neutralise.

Additional information

Intended for professional use only

2.3. OTHER HAZARDS

Vapours of base gasoline may form explosive mixtures with air. Vapours are heavier than air, they spread near the surface of the ground and accumulate in lower parts of rooms.

Closed containers exposed to fire or high temperature may explode due to the increased pressure inside.

The product does not meet PBT or vPvB criteria and is not considered as PBT/vPvB substance.

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. SUBSTANCE – N/A

3.2. MIXTURES

Main component identification

EC	name: low boiling point gasoline - unspecified
CAS number	86290-81-5
EC number	289-220-8
Index no.	649-378-00-4
IUPAC name	not applicable – UVCB substance
Molecular formula	not applicable - UVCB
substance, Molecular weight	- not applicable - UVCB
substance Classification	See section 2

Chemical characteristics

Mixture of hydrocarbons from C4 to C12: paraffin, cycloparaffin, olefin (max. 18.9% vol.) and aromatic (max 35% vol. including max 1% benzene [CAS 71-43-2, EC 200-753-7]) and organic oxygen compounds (ETBE - max 6%) and other organic substances acting as enriching additives (max. 1% vol.)

IMPURITIES

No data available.

Section 4. FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID

MEASURES General instructions

Take care of your own safety – use self-contained breathing equipment, protective clothes and eye protection, depending

on the situation. Do not leave individual unattended.

Do not induce vomiting and do not administer anything orally to an unconscious person.

Remove contaminated clothes and shoes.

Inhalation

Remove the victim from the contaminated environment to fresh air and keep warm and quiet. Control and maintain the patency of the airways.

If the victim is conscious, place him/her in a half-sitting position, if unconscious, place him/her in a recovery position.

In the case of breathing disorders give oxygen, if possible. When a person is not breathing, use artificial ventilation (do not use mouth to mouth method).

In the case of cardiac arrest, perform cardiopulmonary resuscitation (by a trained person). Obtain medical aid immediately.

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Skin contact

Remove contaminated clothes and shoes. Wash contaminated skin with soapy water, and then rinse with copious amount of water.

Consult a doctor if irritation or any other symptoms appear and persist.

Eye contact

Remove contact lenses, if applicable. Immediately wash contaminated eyes with running water for approximately 15 minutes, keeping eyelids wide open. Note: protect not contaminated eye.

Consult a doctor if irritation or any other symptoms appear.

In the case of persistent irritation, pain, oedema, tearing or photophobia the victim should be seen by a specialist doctor.

NOTE: Do not use a stream of water which is too strong, so as not to damage the cornea.

Swallowing

Do not induce vomiting. If spontaneous vomiting occurs, bend the victim forwards, so as to limit the risk of aspiration to the lungs.

If the victim is conscious, flush mouth with water. If the victim is conscious, let her/him drink 200 ml of liquid paraffin. **Do not give milk, oils and alcoholic drinks.**

Obtain medical aid immediately.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

May be fatal if swallowed and enters airways. Inhaled base gasoline may have narcotic effect on the central nervous system. High concentrations acting on the central nervous system are apparent in disturbed motor coordination and balance and dizziness. Cardiac arrhythmia and myocardial conduction disorder and loss of consciousness may occur.

Skin contact causes skin redness, desquamation, oedema and irritation. Repeated contact may cause skin dryness and cracking.

Aspiration of benzene or vomit aspiration to the lungs may cause aspiration pneumonia.

Prolonged contact of skin with vapours and liquid base gasoline cause defatting, dryness, cracking and finally irritation and inflammation of skin.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

If swallowed, immediate medical advice is necessary.

Show the Material Safety Data Sheet, label, or container to the medical staff providing first aid. Consider giving activated charcoal in a form of paste (30 g of charcoal in 240 ml of water).

If potentially fatal dose is swallowed, empty the stomach as soon as possible by performing gastric lavage by qualified medical staff, with airway protection by endotracheal intubation.

Use oxygen therapy and artificial breathing. Control heart action (ECG). Do not give adrenaline or other catecholamines.

Further symptomatic treatment.

Section 5. PROCEEDING IN CASE OF FIRE

General recommendations

Notify everyone in the area about breakdown; make everyone not engaged in breakdown elimination leave hazard zone; call rescue parties, Fire Brigade, and the Police, if necessary.

5.1. EXTINGUISHING MEDIA

Suitable: small fires - carbon dioxide, extinguishing powders, foams; big fires – dispersed or foggy water jet, foam.

Unsuitable: **water jet.**

Avoid using foam and water simultaneously on the same surface, since water destroys foam.

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

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Highly flammable liquid and vapour. Vapours are heavier than air and form explosive mixtures with air. Closed containers exposed to fire or high temperature may explode due to the increased pressure inside.

In the fire environment carbon oxides and other non-burnt hydrocarbons (smoke) are formed. Avoid inhaling combustion products, as they may be hazardous for health.

5.3. ADVICE FOR FIREFIGHTERS

Proceed in accordance with the procedures applicable for chemical fire fighting.

Extinguish big fires from a safe distance, from behind shields, using remote spraying equipment or unmanned automatic gun – explosion danger.

Cool the containers exposed to fire or high temperature with dispersed water jet from a safe distance (danger of explosion), remove them from the endangered area if possible and safe and continue sprinkling until completely cooled.

Prevent the wastewater after firefighting from penetrating sewage and waters – explosion danger in sewage is possible, repeated burning on liquid surface is possible.

Remove wastewater and fire residue in accordance with the applicable regulations.

People taking part in fire extinguishing shall have proper training, and shall be equipped with a complete protective clothing and positive pressure self-contained breathing apparatus.

Section 6. ACCIDENTAL RELEASE MEASURES

6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

WARNING: Area endangered with fire and explosion. Prevent accumulation of vapours in low or restricted areas in order to prevent explosive vapour concentrations.

Vapours may translocate along the floor/ground to distant ignition sources and pose the danger due to returning flame.

Notify everyone in the area about breakdown; make everyone not engaged in breakdown elimination leave hazard zone; order evacuation, if necessary.

Avoid direct contact with the liquid being released. Avoid inhaling vapours/mists.

If release occurred in closed/restricted area, ensure adequate ventilation. Use protective clothing and equipment (see section 8).

Eliminate all ignition sources – do not use open fire, do not smoke, do not use spark-producing tools.

Dilute vapours with dispersed water jets.

6.2. ENVIRONMENTAL PRECAUTIONS

Do not allow the product to penetrate into sink basins, waters or soil. If possible and safe, stop or reduce leakage (seal, close liquid supply, put a damaged package in an emergency waste container). Limit spillage spreading by embanking the area.

If large amounts of the product have been released and environment contaminated, notify respective authorities (health and safety at work service, environmental service, administration organs).

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Pump out carefully the bounded liquid - static electricity can be generated. Cover up small spillage with non-flammable absorbent material (sand, soil, diatomic earth, vermiculite) and collect in an appropriate, closed, labelled waste bin.

Utilise according to the applicable regulations (see sections 13 and 15).

Receive the assistance of licensed waste transport and utilisation plants, if necessary.

6.4. REFERENCE TO OTHER SECTIONS

See sections 8, 13 and 15.

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Section 7. HANDLING AND STORAGE

The base gasoline is a mixture of hydrocarbons with varied toxic effects. It is classified as mutagenic and carcinogenic product. It is furthermore suspected of being harmful to unborn child. Therefore, exposure to the product should be minimised by adopting appropriate risk control measures.

Employees should be trained on health risk and safety measures that should be taken in order to limit exposure, hygiene, necessity to use individual protection measures, accident prevention actions and emergency situations, as well as proper rescue actions.

7.1. PRECAUTIONS FOR SAFE HANDLING

In the place where the substance is used and stored easy access to rescue equipment should be ensured (in the case of fire, release, etc.).

Advice on safe handling

Avoid prolonged contact with skin, avoid eye contamination, avoid breathing vapours/fog. Prevent formation of hazardous concentrations of vapour in the air. Ensure efficient ventilation; ensure exhaust ventilation where vapour emission is possible.

Keep unused containers closed. Containers should be opened under the receiving hood of the exhaustive ventilation only. Once opened, the containers should be tightly closed again and stored in a vertical position to prevent leakage.

Do not use compressed air for filling and emptying tanks or transmitting with pipelines.

Use individual protection measures in accordance with the information contained in section 8.

Recommendations related to fire - and explosion protection

Vapours of base gasoline are heavier than air – avoid vapour accumulation and formation of combustible/explosive mixtures, especially in pockets, channels and restricted areas.

Eliminate ignition sources - do not use open fire, do not smoke, do not use spark-producing tools or clothes made of fabrics subject to electric charge. Use precautions to avoid electrostatic discharge. Protect containers against heating.

Install electrical equipment with explosion-proof enclosures, prevent accumulation of static electricity charges, apply bridging and grounding.

Avoid contact with combustible materials.

Ensure compliance with all applicable regulations on explosive atmospheres as well as procedures and storage equipment for flammable products.

See also appendix to the Safety Data Sheet - *Exposure Scenarios*.

Recommendations related to occupational hygiene

Observe generally applicable industrial safety regulations. Proceed in accordance with good industrial hygiene rules.

Do not eat, drink or smoke in workplace. Wash hands with water and soap after handling. Do not use contaminated clothes. Immediately take off contaminated clothing and wash before reuse. CAUTION: Leave contaminated/soaked clothes in a safe place, far away from ignition sources, until it is cleaned.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

The base gasoline should be stored according to the legislation applicable to the storage of flammable liquids, in original, properly labelled and tightly closed containers or stainless or mild steel tanks, in a cool and well ventilated area.

Store the containers far from heat and ignition sources, protect from direct sunlight. Keep away from strong oxidisers. See also section 10.

Warehouse should be equipped with extraction and electrical ventilation with explosion-proof enclosures. Do not smoke, do not use open fire and spark-producing tools in the warehouse area.

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Activities related to cleaning, control or maintenance of the inner structure of storage tanks may be executed by qualified and properly equipped persons, in accordance with applicable regulations.

Warehouse installations should be designed so as to prevent contamination of waters and soil in the case of leakage or spillage.

CAUTION: Empty, unclean containers may contain product residue (liquid, vapours) and may cause fire/explosion hazard. Be careful. Unclean packages/tanks must not be cut, drilled, ground or welded. Do not perform these activities near the containers.

7.3. SPECIFIC END USE(S)

See section 1.2. For extra information contact manufacturer/supplier.

Section 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION EQUIPMENT

8.1. CONTROL PARAMETERS Ingredients, for which acceptable concentrations at workplace have been determined

Regulation of the Minister of Labour and Social Policy of June 6, 2014, on the maximum acceptable concentrations and intensities of the factors hazardous for health at the workplace (Journal of laws 2014, item 817).

No acceptable concentrations and standard test methods have been defined for determination of gasoline in air.

Recommended control of main gasoline ingredient concentrations and of benzene, toluene and n-hexane.

Benzene PEL-TWA: 1.6 mg/m³; TLV-STEL and TLV-CL: –
Determination in air: PN-Z-04016-10:2005

Toluene PEL-TWA: 100 mg/m³, TLV-STEL: 200 mg/m³,
TLV-CL: –

Determination in air: PN-Z-04115-01:1978, PN-Z-04023-02:1989 n-

Hexane PEL-TWA 72 mg/m³, TLV-STEL: –, TLV-CL: –
Determination in air: PN-Z-04136-3:2003

Biological limit values

(Values recommended by occupational medicine bodies)

Benzene DSB: 25 g of Methyl Hippuric Acid/g of creatinine – in urine sample taken individually at the end of daily exposure on any day

DSB: 25 g of trans,trans muconic acid/g of creatinine – in urine sample taken individually at the end of daily exposure on any day

Toluene DSB: 0.3 mg o-cresol/l – in urine sample taken individually at the end of daily exposure on any day
DSB: 0.3 mg toluene/l – in capillary blood specimen taken 15-20 minutes after completion of work

Explanation of the above abbreviations - see p. 16

DNEL and PNEC values

DN(M)EL

Acute:

inhalation: 1300 mg/m³/ 15 min
4320 mg/m³/ 1 h

Prolonged exposure: inhalation:

840 mg/m³/ 8 h
10,000 mg/m³/6h/5 days

PNEC:

- used in risk assessment for fresh water environment: *Tetrahymena pyriformis* LL₅₀ (72 h) 15.41 mg/L
(this value refers to one of the most sensitive aquatic microorganisms).

8.2. EXPOSURE CONTROLS

Technical controls

Process containment is recommended.

Ventilation and electrical installation with explosion-proof enclosures.

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General ventilation and/or local fume hood is recommended in order to maintain vapour pressure in air below hazardous limits. Local fume hood is preferred, since it enables emission control at source and prevents spreading throughout the working area.

See also section 7.

Personal protection measures

The need to use, and selection of proper personal protective equipment should consider a type of hazard posed by the product, conditions at the workplace, and product handling method. Use personal protective equipment made by renowned manufacturers.

Personal protective equipment should meet the requirements specified in the applicable standards and regulations.

Airways Not required under normal conditions, under adequate ventilation. If ventilation is inadequate, use the approved respirator with type A filter.
For activities in the limited space / insufficient oxygen content in air / high uncontrolled emission / any circumstances, in which respirator with filter does not provide adequate protection, use self-contained breathing apparatus.

Protective gloves resistant to the product (e.g. PAV, Viton).

Tight safety eyeglasses (goggles) in the case when activities posing a risk of splashing to the eye or exposure to vapours are done.

Skin and body Apron or protective suit made of coated, solvent-resistant fabrics, antielectrostatic version is recommended.

Environmental exposure control

Do not allow large amounts of the product to penetrate into the environment. Consider protection of the area around storage tanks.

concerning acceptable environmental pollution, specified in the applicable regulations. Observe the standards

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

a) Appearance (20°C, 1013 hPa)	: Yellow, low-viscosity liquid
b) Odour	: Specific, strong
c) Odour threshold	: No data
d) pH	: n/a
e) Melting/solidification point	: < -20°C
f) Initial boiling point and boiling range	: -88 – 260°C [25 - 170°C]
g) Flash point	: < 0°C [- 51 °C]
h) Vapour rate	: No data
i) Flammability (solid, gas):	n/a
For gasoline	Extremely flammable liquid.
j) Upper/lower flammability or explosive limit	: [1.3% vol. - 10.6% vol.]
k) Vapour pressure	: 4 – 240 kPa at 37.8°C [summer: 40.0 – 52.0 kPa, winter: 53.0 – 82.0 kPa]
l) Vapour density	: No data
m) Relative density	: 0.62 – 0.88 g/cm ³ at 15°C [0.866g/cm ³]
n) Solubility:	n/a
o) Partition coefficient n-octanol/water:	n/a
p) Auto-ignition point	: 280 – 470°C [ca. 480 °C]
q) Decomposition temperature	: no data

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- r) Viscosity : <1 mm²/s at 37.8°C
s) Explosive properties: None – the substance has no explosive properties
t) Oxidising properties: None – the substance has no oxidising properties
Data for Concawe registration: L.b.p. Naphthas (gasolines). Actual values for fractions in brackets.

9.2 OTHER INFORMATION

No data available.

Section 10. STABILITY AND REACTIVITY

10.1. REACTIVITY

May react violently with strong oxidisers.

10.2. CHEMICAL STABILITY

The product is stable under normal temperature and pressure conditions, when recommendations as to the use and storage conditions are followed.

10.3. POSSIBILITY OF HAZARDOUS REACTIONS

Hazardous reactions are not known.

10.4. CONDITIONS TO AVOID

Eliminat any sources of ignition: sprks, static electricity discharge, open flame, heat sources.

10.5. INCOMPATIBLE MATERIALS

Strong oxidisers.

10.6. HAZARDOUS DECOMPOSITION PRODUCTS

None Products released in fire environment – see section 5.

Section 11. INFORMATION ON THE TOXICOLOGICAL PROPERTIES OF THE SUBSTANCE OR PREPARATION.

General Information

The method for group petroleum product assessment has proved that hydrocarbons included in individual groups based on their composition and properties have been classified as hazardous to health.

The main route of exposure to such products is through the airways, although exposure through the gastrointestinal tract and through the skin is also important. Under occupational exposure conditions gasoline vapour absorption through the airways is of greatest importance.

However, the most recent tests on animals indicate that the products of the group including the base gasoline are characterised by low acute oral (LD 50 > 5000 mg/kg), dermal (LD 50 > 5000 mg/kg) and inhalation (LC 50 5560 mg/l of air) toxicity.

Numerous subjective effects occur in humans, including headaches and dizziness, irritation, sleepiness and an increase of neurobehavioral effects observed as a result of acute exposure.

Central nervous system LOAEL (1 h) 4320 mg/m³ air

Respiratory irritation: LOAEL (1 h): 2400 mg/m³ air

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS Acute toxicity

- LD₅₀ oral, rat : > 5000 mg/kg
LC₅₀ inhalation, rat : > 5610 mg/m³ air LD₅₀
dermal, rabbit : > 5000 mg/kg

Gasoline shows low acute inhalation, oral and dermal toxicity, and is not classified for acute, dermal and inhalation toxicity.

Information for humans

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No data available.

Respiratory tract irritation

Tests of dermal irritating action of gasoline proved that it irritates the rabbit's skin. It has also a defatting effect. Therefore, gasoline should be classified as Xi R38. However, according to CLP, it should be classified respectively as the category 2 H315.

Serious eye damage/irritation

Tests of dermal irritating action of gasoline proved low irritating effect on animal and human eyes and is not classified according to those effects..

Respiratory or skin sensitisation

No information of skin sensitisation by gasoline. 24-hour tests on skin of guinea pig (Albino Himalayan) proved no positive sensitising effects.

Repeated toxic dose by inhalation.

The NOAEL value determined for inhalation exposure to gasoline is: 500 mg/m³ in air per day. This means no significant toxic effect for the highest concentration tested.

Germ cell mutagenicity

In in vitro and in vivo mutagenicity tests of gasoline on approved tests animals and bacteria, after composition, it was discovered that the data available was sufficient for the assessment and proved that gasoline with additives exhibits no significant genotoxicity. It was found by testing its action on Salmonella typhimurium, Saccharomyces cerevisiae and a series of mammal cells, as well as on human lymphoblastoid cells.

Carcinogenicity

Tests on animals prove that high concentrations of gasoline may cause kidney and liver tumour. Such symptoms were not found to be common in animals of both sexes tested. Irreversible pathogenic effect was present at the exposure level of 292 ppm or ca. 1,400 mg/m³. Since kidney or liver tumour in humans are not appropriate, the overall NOALE is 2056 ppm or ca. 10,000 mg/m³.

Reproductive toxicity

Toxicological tests on animals proved no effect on the development or function of their reproductive system, up to the level of 20,000 mg/m³ - the highest concentration applied in the tests. Screening test of reproductive toxicity of fuels composed of gasoline delivered similar results, up to the level >25,000 mg/m².

Toxicity to target organs – STOT

The recent tests of the effects of inhalation exposure to gasoline vapours indicated poor neuropsychological effects in humans in high occupational exposure conditions. LOAEC for the psychological and cognitive effects of humans referred to concentrations above 59 ppm (222 mg/m³).

It can be therefore argued that prolonged occupational exposure to gasoline vapours in concentrations below the occupational exposure of 50 ppm (188 mg/m³) causes no psychological change effects.

For inhalation exposure to gasoline, the LOAEC value: > 222 mg/m³

Aspiration hazard

Viscosity and surface tension (see section 9) indicate that benzene poses aspiration hazard to the lungs after ingestion and it is justifiable to classify benzene as causing toxic effects resulting from aspiration.

Acute exposure symptoms/effects

Inhalation: exposure to vapours can cause irritation of nose and throat mucous membrane, coughing; higher vapour concentration causes nausea, vomiting and dizziness; high concentration lead to central nervous system disorders, motor and balance disorders, sleepiness, respiratory problems, comma; disturbance to myocardial conductivity, loss of consciousness and can be fatal in extreme cases.

Skin contact causes skin degreasing, dryness, cracking and inflammation.

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Eye contact: vapours may cause stinging, tearing, redness of the eyes; liquid splattering into eye may cause irritation.

Ingestion may cause nausea, vomiting, stomach pain, irritation of the gastrointestinal tract. Gasoline or vomit aspiration to the lungs may cause chemical pneumonia that may be fatal. In gasoline intoxication central nervous system disturbances may occur, characterised by agitation, headaches, dizziness, drowsiness, nausea; in a severe case it can lead to loss of consciousness, coma and death from respiratory failure.

Acute intoxications with gasoline may result in psychical disorders and central nervous system damage, as well as temporary solid organ damage.

Chronic exposure effects

Chronic respiratory exposure of rats to gasoline vapours and product containing it had very minute effects. They were present at the highest concentrations used in tests 20,000 - > 30,000 mg/m³.

Section 12. ECOLOGICAL INFORMATION

General Information

The gasoline (base gasoline) is classified as hazardous to the environment based on the acute toxicity to Crustacea (Daphne) and algae. Nevertheless, one should prevent the release of large quantities to sewage and to the environment.

12.1. Aquatic toxicity Acute toxicity

Fish

Oncorhynchus mykiss	LL ₅₀ (96 h)	10 mg/L
Pimephales promelas	LL ₅₀ (96 h)	8.2 mg/L

Crustacea

Daphnia magna	EL ₅₀ (48h)	4.5
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mg/L Algae

Selenastrum capricornutum	EL ₅₀ (72h)	3.1 mg/L
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New name of the algae is: **Pseudokirchnerella subcapitata**

Chronic toxicity

Crustacea

Daphnia magna	NOELR (impeding growth rate) (21 days)	3.1 mg/L
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Algae

Pseudokirchnerella subcapitata	NOELR (impeding growth rate after 72 h)	0.5 mg/L
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Toxicity for soil organisms

No data available.

12.2. PERSISTENCE AND DEGRADABILITY

Hydrolysis Gasoline is not hydrolysed in the environment (lack of hydrolysing functional groups).

Phototransformation/Photolysis

Air	Half-life of gasoline in air (DT 50) is 2.09 day.	Water	n/a
Soil	n/a		

Biodegradation

Water and sludge, soil Gasoline biodegrades readily. According to the tests with the method OECD 301F, hydrocarbons classified under the same number CAS 86290-81-5 as the base gasoline, degraded very fast in a number of standard biodegradability tests. The substance degradation test proved decomposition of 94% after 25 days. Mostly CO₂ was liberated during the test.

12.3. BIOACCUMULATION POTENTIAL

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It is evaluated that gasoline has no bioaccumulation potential.

12.4. MOBILITY IN SOIL

No data available

12.5. Results of PBT and vPvB assessment

Based on the review of the available data gasoline is not considered PBT / vPvB substance.

12.6. OTHER ADVERSE EFFECTS

None

Section 13. HANDLING OF WASTE

General information

Limit or eliminate waste formation, if possible. Observe precautions specified in section 7 and section 8.

13.1 WASTE TREATMENT METHODS

Waste classification: proper for a production plant location, based on criteria contained in the applicable regulations.

If the product is used in any further operation/processes, end users should define the resulting waste and assign a respective code.

Waste product disposal

Do not dispose to sewer. Avoid contamination of surface and ground waters. Do not store in municipal waste dumps. Consider reuse.

Recycling or neutralization of the waste product should be performed according to the applicable regulations.

Recommended neutralisation method: incineration.

Waste packages handling

Emptied, uncleaned containers may contain product residue – ensure proper cleaning.

Recycling or neutralization of package wastes should be performed according to the applicable regulations.

Reusable containers shall be used again after cleaning.



Waste materials shall be disposed of at professional, licensed incinerating plants or waste treatment/disposal plants.

Other information

The Act of 14.12.2012 on waste (Dz.U. no. 2013, item 21 as amended).

The Act of 13 June 2013 on packaging and packaging waste (OJ 2013 No. 0 item 888). Regulation of the Minister of the Environment of 27 September 2001 on waste catalogue (Dz.U. 2014 item 1923).

Section 14. TRANSPORT INFORMATION

 	General information The substance has not been classified as hazardous for transport, is a subject to transport regulations on hazardous goods.
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	RID, ADR	IMDG	IATA
14.1. UN NUMBER	UN 1203	UN 1203	UN 1203
14.2 PROPER UN TRANSPORT NAME	ADR: GASOLINE RID: GASOLINE	GASOLINE	GASOLINE

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	FOR		
14.3 TRANSPORT HAZARD CLASS(ES)	3	3	3
Classification code	F1	--	--
Digital information on hazard	33	--	--
Warning label(s)	No.3	No.3	No.3
14.4. PACKING GROUP	II	II	II
14.5. ENVIRONMENTAL HAZARDS	Hazardous to the environment Specific regulations of 5.2.1.8 and 5.4.1.1.18 apply	Hazardous to the environment	Hazardous to the environment
14.6. SPECIAL PRECAUTIONS FOR USERS	Comply with the detailed regulations. Observe precautions specified in section 7 and section 8.		
14.7 TRANSPORT IN BULK according to Annex II of MARPOL 73/78 and the IBC Code	No data available.		

Section 15. REGULATORY INFORMATION

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

See also section 13 of the MSDS.

Act of 25 February 2011 on chemical substances and their mixtures (Journal of Laws 2011 no. 63 item 322, Journal of Laws 2012 no. 0 item 908, Journal of Laws 2015 no. 0 item 675).

Regulation (EC) No.1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency and amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (correction OJ L 136 of 29 May 2007 as amended)

Regulation of the (UE) Commission no. 453/2010 of 20 May 2010 amending the Regulation (EC) No. 1907/2006 of the European Parliament and Council of 18 December 2006 on registration, evaluation, granting of permissions and restrictions applied in scope of chemicals (REACH) (OJ L 133 of 31.05.2010)

Regulation of the (UE) of the European Parliament and Council no. 1272/2008 of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC and amending the Regulation (EC) No. 1907/2006 (EU OJ L No.353 dated 31.12.2008 as amended)

Regulation of the Minister of Health of 10 August 2012 on the criteria and classification of chemical substances and their mixtures (Journal of laws no.0 item 1018, Journal of Laws 2014 no. 0 item 6)

Regulation of the Minister of Health of 20 April 2012 on the labelling of chemical substances and mixtures, and certain mixtures (Journal of Laws of 2012, item 0, Journal of laws 2014 no. 0 item 145).

Regulation of the Minister of Labour and Social Policy of June 6, 2014, on the maximum acceptable concentrations and intensities of the factors hazardous for health at the workplace (Journal of laws 2014, item 817).

Regulation of the Minister of Economy of 21 December 2005, on the basic requirements for personal protection measures (Journal of Laws 2005, no. 259, item 2173).

Regulation of the Minister of Labour and Social Policy of 26 September 1997 on general regulations for hygiene and safety at work (consolidated text Dz.U. of 2003 no. 169 item 1650, 1650 of 2007, No 49, item330, of 2008, No 108, item 690, of 2011, No 173, item 1034).

Regulation of the Minister of Health of 30 December 2004 on hygiene and safety at work related to occurrence of chemical factors at the workplace (Journal of Laws 2005 no. 11, item 86 of 2008, No 203, item 1275).

Regulation of the Minister of Health of 02.02.2011 on tests and measurements of the factors hazardous for health at the workplace (Journal of Laws 2011 no. 33 item. 166).

Regulation of the Minister of Economy dated 8 July 2010 on minimum requirements for occupational safety and Health, related to the possibility of occurrence of explosive atmosphere in the workplace (Journal of Laws 2010 no. 139, item 931)

The Act of 24 August 1991 on fire protection (consolidated text Journal of Laws of 2009 no. 178, item 1380, of 2010 no. 57, item 353, Journal of Laws of 2012 no. 0 item 908, Journal of Laws 2013 no. 2 item 1635).

The Act of 19 August 2011 on the carriage of dangerous goods (Dz. U. of 2011. No. 227, item. 1367, No. 244, item. 1454) Regulations for the International Carriage of Dangerous Goods RID (Journal of Laws of 2011 No. 137, item. 804 and 805)

European Contract on International road transport of hazardous goods ADR (Annex to Journal of Laws 2013, no. 0, item 815).

Government Declaration of January 16th, 2009, on introduction of changes to Annexes A and B of the European Agreement concerning international road haulage of hazardous goods (ADR) concluded in Geneva on September 30th, 1957 (Journal of Laws 2013 no. 0, item 815).

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Regulation of the Minister of Environment of 26 January 2010 on reference limits for some substances in air (Dz.U. of 2010 no. 16 item 87)

Regulation of the Minister of Environment of 8 July 2004 on conditions that are to be met when introducing sewage to surface or ground waters or to the soil, and on the substances, which are specially harmful for the aquatic environment (Dz.U. 2014 no. 0, item 1800).

15.2. CHEMICAL SAFETY ASSESSMENT

Chemical safety assessment performed for gasoline (base gasoline).

Section 16. OTHER INFORMATION

The Safety Data Sheet was updated based on the information contained in the Chemical Safety Report and applicable regulations.

Updates: updated sections 2, 13, 15. Revising the sheet to comply with Annex II to the regulation EU 453/2010.

The data contained in this MSDS shall be used only as an aid in safe proceeding during the product transport, distribution, handling, and storage. This MSDS is not a quality certificate for the product.

The information contained in this MSDS applies only to the product discussed herein, and shall not be considered up-to-date and/or sufficient for this product being used in combination with other materials, or for other applications. The product user is obliged to observe all applicable standards and regulations, and shall be responsible for improper use of information contained in this MSDS, or improper product application.

ADDITIONAL INFORMATION RELEVANT FOR HEALTH AND ENVIRONMENTAL PROTECTION

Additional information relevant for health and environmental protection

The employer shall comply with the following provisions of the regulations set out in section 15 of the material safety data sheet (as the case may be):

- training employees on risks for health, hygiene, use of individual protection, accident preventive actions, rescue actions, etc.,
- employees' health surveillance,
- control of the working environment, especially using methods for early detection of exposure,
- keeping the record of works and employees,

undertaking actions and measures to minimise the exposure.

Abbreviations and acronyms used in the Safety Data Sheet

TLV-TWA occupational exposure limit

TLV-STEL - threshold limit value; TLV-CL - ceiling exposure limit; DSB - admissible concentration in biological material

vPvB very persistent and very biodegradable substance, PBT - persistent substance with bio-accumulative potential and toxic

PNEC - Predicted No Effect Concentration, DN(M)EL derived no effect level

BCF - Bioconcentration factor (BCF)

LD50 - dose for which death of 50% tested animals is reported LC50 - concentration for which death of 50% of tested animals is reported

ECX - concentration for which X% increase or increase rate is reported IC50 - concentration for which 50% inhibition of the parameter tested is reported

STOT Toxicity to target organs OECD - Organization for Economic Co-operation and Development

LOEC Lowest Observed Effect Concentration

NOAEL - no observable adverse effect level NOEC - no observed effect concentration NOELR - inhibition of growth rate !!

RID Regulations for the International Rail Transport of Hazardous Goods

ADR European Contract on International road transport of hazardous goods IMDG - International Maritime Dangerous Goods Code

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IATA International Air Transport Association

Section 1 Short title of the exposure scenario No.1	
Title	
Manufacture of substances – industrial use	
Symbol of use	
Sector(s) of Use (SU)	3, 8, 9
Process category [PROC]	1, 2, 3, 8a, 8b, 15
Environmental Release Category [ERC]	1, 4
Specific Environmental Release Category [SPERC]	ESVOC SpERC 1.1.v1
Processes, tasks, actions included	
Production of substance and its use as a process additive or extraction agent should be performed in closed or protected systems. This applies to accidental exposure during the recycling/recovery, transfer, material sampling and related laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Assessment method	
See Section 3	
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 standard temperature and pressure OC.5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amounts Used	Not applicable
Frequency and duration of	Covers daily exposures up to 8 hours (unless otherwise stated) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting the exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7 . Assumes a good basic standard of occupational hygiene is implemented. G1 .
Contributing scenarios	
Operational conditions (OC) and specific risk management measures (RMM)	
General Measures (skin irritants). G19	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves

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	and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure implementation of safe work systems or similar risk management findings. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20
CS15 General exposures (closed systems) + CS56 Batch process	Handle substance within a closed system. E47 Sample via a closed loop or other system intended to avoid exposure. E8 Wear suitable gloves tested to EN374. PPE15
CS15 General exposures (closed systems) + CS54 Continuous process	Handle substance within a closed system. E47
General exposures (closed systems) + CS55 Batch process	Handle substance within a closed system. E47 Ensure operation is undertaken outdoors. E69
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66 .
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance E55 . Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENV4 Clear spills immediately. C&H13 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
CS67 Storage.	Ensure operation is undertaken outdoors. E69 Store substance within a closed system. E84
Section 2.2 Control of environmental exposure	
Product characteristics	
The substance is classified as UVCB (Unknown substances, of Variable Composition, or of Biological Origin) [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	1.87E7
Fraction of Regional tonnage used locally:	0.03
Annual site tonnage (tonnes/year):	6.0e5
Maximum daily site tonnage (kg/day):	2.0e6
Duration and frequency of use	
Continuous release [FD2].	
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

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Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Prevent discharge of undissolved substance to or recover from wastewater [TCR14]. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TVR1k]. Onsite wastewater treatment required [TCR13].	
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 > (%):	95.2
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 [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
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) (kg/d):	2.0e6
Assumed domestic sewage treatment plant flow (m3/d):	10000
Conditions and measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated [ETW4].	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated [ERW2].	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21].	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
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. G22	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32 . Available hazard data do not support the need for a DNEL to be established for other health effects. G36 . Risk Management Measures are based on qualitative risk characterisation. G37	
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	

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risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>) [DSU4]. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file in IUCLID section 13 – “Site-Specific Production” worksheet [DSU6]. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required [DSU8].

Section 1 Title of Exposure Scenario No.2

Title

Use as Intermediate – industrial use

Symbol of use

Sector(s) of Use (SU)	3, 8, 9
Process category [PROC]	1, 2, 3, 8a, 8b, 15
Environmental Release Category [ERC]	6a
Specific Environmental Release Category [SPERC]	ESVOC SpERC 6.1a.v1

Processes, tasks, actions included

Use of substance as an intermediate (not related to strictly controlled conditions). Concerns recycling/recovery, transfer, material sampling and related laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

Assessment method

See Section 3

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 standard temperature and pressure OC.5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amounts Used	Not applicable
Frequency and duration of	Covers daily exposures up to 8 hours (unless otherwise stated) [G2]
Human factors not influenced by risk	Not applicable
Other Operational Conditions affecting the exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7 . Assumes a good basic standard of occupational hygiene is implemented. G1 .

Contributing scenarios

Operational conditions (OC) and specific risk management measures (RMM)

General Measures (skin irritants). G19	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin
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	effects that may develop.E3
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure implementation of safe work systems or similar risk management findings. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20
CS15 General exposures (closed systems) + CS56 Batch process	Handle substance within a closed system E47. Sample via a closed loop or other system intended to avoid exposure E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures (closed	Handle substance within a closed system E47. Ensure operation is undertaken outdoors. E69
CS67 Storage.	Ensure operation is undertaken outdoors.E69 Store substance within a closed system. E84
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation E66.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
Section 2.2 Control of environmental exposure	
Product characteristics	
The substance is classified as UVCB (Unknown substances, of Variable Composition, or of Biological Origin) [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	2.21E6
Fraction of Regional tonnage used locally:	0.0068
Annual site tonnage (tonnes/year):	1.5e4
Maximum daily site tonnage (kg/day):	5.0e4
Duration and frequency of use	
Continuous release [FD2].	
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	

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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 [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Prevent discharge of undissolved substance to or recover from wastewater [TCR14]. Risk from environmental exposure is driven by freshwater sediment [TCR1b]. If discharging to domestic sewage treatment plant, no on-site wastewater treatment required [TCR9].	
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 [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
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) (kg/d):	7.8e4
Assumed domestic sewage treatment plant flow (m3/d):	2000
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 [ETW5].	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated [ERW3].	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21].	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
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. G22	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23	
Available hazard data do not enable the derivation of a DNEL	

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for dermal irritant effects. **G32.** Available hazard data do not support the need for a DNEL to be established for other health effects. **G36.** Risk Management Measures are based on qualitative risk characterisation. **G37.**

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 [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>) [DSU4].

Section 1 Short title of the exposure scenario No.3

Title

Distribution of substances – industrial use

Symbol of use

Sector(s) of Use (SU)	3
Process category [PROC]	1, 2, 3, 8a, 8b, 15
Environmental Release Category [ERC]	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7
Specific Environmental Release Category [SPERC]	ESVOC SpERC 1.1b.v1

Processes, tasks, actions included

Loading substances in bulk (including marine vessel/barge, road/rail car and bulk container) within closed or contained systems, including incidental exposures during sampling, storage, unloading, maintenance and associated laboratory activities.

Assessment method

See Section 3

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 standard temperature and pressure OC.5
concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amounts Used	Not applicable
Frequency and duration of	Covers daily exposures up to 8 hours (unless otherwise stated) [G2]
Human factors not influenced by risk	Not applicable
Other Operational Conditions affecting the exposure	Assumes use at not more than 20°C above ambient temperature unless stated otherwise [G15]. Assumes a good basic standard of occupational hygiene is implemented. G1.

Contributing scenarios

Operational conditions (OC) and specific risk management measures (RMM)

General Measures (skin irritants). G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand
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	contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop.E3.
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure implementation of safe work systems or similar risk management findings. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20
CS15 General exposures (closed systems) + CS56 Batch process	Handle substance within a closed system E47. Sample via a closed loop or other system intended to avoid exposure E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures (closed systems). OC9 Outside	Handle substance within a closed system E47.
CS2 Process sampling	Sample via a closed loop or other system intended to avoid exposure E8.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12
CS501 Bulk loading and unloading in closed system.	Ensure material transfers are under containment or extract ventilation E66.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately C&H13. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
CS67 Storage.	Ensure operation is undertaken outdoors.E69 Store substance within a closed system. E84
Section 2.2 Control of environmental exposure	
Product characteristics	
The substance is classified as UVCB (Unknown substances, of Variable Composition, or of Biological Origin) [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	1.87E7
Fraction of Regional tonnage used locally:	0.002
Annual site tonnage (tonnes/year):	3.75E4
Maximum daily site tonnage (kg/day):	1.2E5

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Duration and frequency of use	
Continuous release [FD2].	
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):	0.001
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 [TCS1].	
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) [TVR1k]. If discharging to domestic sewage treatment plant, no on-site wastewater treatment required [TCR9].	
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 [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
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) (kg/d):	1.1E6
Assumed domestic sewage treatment plant flow (m3/d):	2000
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 [ETW3].	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1].	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21].	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	

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<p>4.1. Health</p> <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. G22</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23</p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not enable the derivation of a DNEL for carcinogenicity G33. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.</p>
<p>4.2. Environment</p> <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 [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].</p>

Section 1 Short title of the exposure scenario No.4	
Title	
Formulation (mixing) mixtures and repackaging of substances and mixtures - industrial applications	
Symbol of use	
Sector(s) of Use (SU)	3, 10
Process category [PROC]	1, 2, 3, 8a, 8b, 15
Environmental Release Category [ERC]	2
Specific Environmental Release Category [SPERC]	ESVOC SpERC 2.2.v1
Processes, tasks, actions included	
Formulation (mixing) substances and its mixtures in batch or continuous operations, in closed or contained systems, including incidental exposure during storage, materials transfers, mixing, maintenance, material sampling and associated laboratory activities.	
Assessment method	
See Section 3	
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 standard temperature and pressure OC.5
concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amounts Used	Not applicable
Frequency and duration of	Covers daily exposures up to 8 hours (unless otherwise stated) [G2]

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Human factors not influenced by risk	Not applicable
Other Operational Conditions affecting the exposure	Assumes use at not more than 20°C above ambient temperature unless stated otherwise [G15]. Assumes a good basic standard of occupational hygiene is implemented. G1.
Contributing scenarios	Operational conditions (OC) and specific risk management measures (RMM)
General Measures (skin irritants). G19	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop.E3.
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure implementation of safe work systems or similar risk management findings. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20
CS15 General exposures (closed systems) + CS56 Batch process	Handle substance within a closed system E47. Sample via a closed loop or other system intended to avoid exposure E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures (closed systems). OC9 Outside.	Handle substance within a closed system E47.
CS2 Process sampling	Sample via a closed loop or other system intended to avoid exposure E8.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation E66.
CS8 Drum/batch transfer	Ensure material transfers are under containment or extract ventilation E66.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately C&H13. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
CS67 Storage.	Store substance within a closed system E84. Wear suitable gloves tested to EN374. PPE15.

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Section 2.2 Control of environmental exposure	
Product characteristics	
The substance is classified as UVCB (Unknown substances, of Variable Composition, or of Biological Origin) [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	1.65e7
Fraction of Regional tonnage used locally:	0.0018
Annual site tonnage (tonnes/year):	3.0e4
Maximum daily site tonnage (kg/day):	1.0e5
Duration and frequency of use	
Continuous release [FD2].	
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 estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Prevent discharge of undissolved substance to or recover from wastewater [TCR14]. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TVR1k]. If discharging to domestic sewage treatment plant, no on-site wastewater treatment required [TCR9].	
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 [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
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) (kg/d):	1.0E5
Assumed domestic sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	

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External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].
Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1].
Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21].
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].
Section 4 Guidance to check compliance with the Exposure Scenario
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. G22</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23</p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.</p>
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 [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].</p>

Section 1 Short title of the exposure scenario No.5	
Title	
Use as fuel – industrial use	
Symbol of use	
Sector(s) of Use (SU)	3
Process category [PROC]	1, 2, 3, 8a, 8b, 16
Environmental Release Category [ERC]	7
Specific Environmental Release Category [SPERC]	ESVCC SpERC 7.12a.v1
Processes, tasks, actions included	
Covers the use as a fuel (or fuel additives and their ingredients) in closed or contained systems, including incidental exposure during activities associated with its transfer, use, equipment maintenance and handling of waste.	
Assessment method	
See Section 3	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	

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physical form of product	Liquid, vapour pressure > 10 kPa at standard temperature and pressure OC.5
concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amounts Used	Not applicable
Frequency and duration of	Covers daily exposures up to 8 hours (unless otherwise stated) [G2]
Human factors not influenced by risk	Not applicable
Other Operational Conditions affecting the exposure	Assumes use at not more than 20°C above ambient temperature unless stated otherwise [G15]. Assumes a good basic standard of occupational hygiene is implemented. G1.
Contributing scenarios	Operational conditions (OC) and specific risk management measures (RMM)
General Measures (skin irritants). G19	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop.E3.
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure implementation of safe work systems or similar risk management findings. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20
CS502 Bulk loading and unloading in closed system.	Ensure material transfers are under containment or extract ventilation E66.
CS8 Drum/batch transfer	Ensure material transfers are under containment or extract ventilation E66.
CS507 Refuelling	Ensure material transfers are under containment or extract ventilation E66.
CS508 Refuelling aircraft	Ensure material transfers are under containment or extract ventilation E66.
CS15 General exposures (closed systems)	Handle substance within a closed system E47. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1.
GEST_12I Use as a fuel, CS107 (closed systems)	Handle substance within a closed system E47.
CS39 Equipment cleaning	Drain down system prior to equipment break-in or maintenance E65. Retain

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and maintenance.	<p>drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately C&H13. Provide a good standard of general ventilation. Natural ventilation is provided by doors, windows etc., while controlled ventilation involves the intake and extraction of air with a proper powered ventilator E1. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16.</p>
CS67 Storage.	<p>Store substance within a closed system E84. Provide a good standard of general ventilation. Natural ventilation is provided by doors, windows etc., while controlled ventilation involves the intake and extraction of air with a proper powered ventilator E1.</p>
Section 2.2 Control of environmental exposure	
Product characteristics	
<p>The substance is classified as UVCB (Unknown substances, of Variable Composition, or of Biological Origin) [PrC3]. Predominantly hydrophobic [PrC4a].</p>	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	1.4E6
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	1.4E6
Maximum daily site tonnage (kg/day):	4.6E6
Duration and frequency of use	
Continuous release [FD2].	
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 estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
<p>Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TVR1k]. If discharging to domestic sewage treatment plant, no on-site wastewater treatment required [TCR9].</p>	
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

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Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
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) (kg/d):	4.6E6
Assumed domestic sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated [ERW3].	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21].	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
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. G22	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32 . Available hazard data do not support the need for a DNEL to be established for other health effects. G36 . Risk Management Measures are based on qualitative risk characterisation. G37 .	
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 [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].	

Section 1 Short title of the exposure scenario No.6	
Title	
Use as fuel – professional use	
Symbol of use	
Sector(s) of Use (SU)	22

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Process category [PROC]	1, 2, 3, 8a, 8b, 16
Environmental Release Category [ERC]	9a, 9b
Specific Environmental Release Category [SPERC]	ESVCC SpERC 9.12b.v1
Processes, tasks, actions included	
Covers the use as a fuel (or fuel additives and their ingredients) in closed or contained systems, including incidental exposure during activities associated with its transfer, use, equipment maintenance and handling of waste.	
Assessment method	
See Section 3	
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 standard temperature and pressure OC.5
concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amounts Used	Not applicable
Frequency and duration of	Covers daily exposures up to 8 hours (unless otherwise stated) [G2]
Human factors not influenced by risk	Not applicable
Other Operational Conditions affecting the exposure	Assumes use at not more than 20°C above ambient temperature unless stated otherwise [G15]. Assumes a good basic standard of occupational hygiene is implemented. G1.
Contributing scenarios	
Operational conditions (OC) and specific risk management measures (RMM)	
General Measures (skin irritants). G19	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop.E3.
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure implementation of safe work systems or similar risk management findings. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20
CS15 General exposures (closed systems). OC9	Handle substance within a closed system E47.

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Outside	
CS502 Bulk loading and unloading in closed system.	Ensure material transfers are under containment or extract ventilation E66.
CS8 Drum/batch	Ensure material transfers are under containment or extract ventilation E66.
CS507 Refuelling	Ensure material transfers are under containment or extract ventilation E66.
GEST_12I Use as a fuel, CS107 (closed systems)	Handle substance within a closed system E47.
CS5 Equipment maintenance	Drain down system prior to equipment break-in or maintenance E65. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENV4. Clear spills immediately C&H13. Provide a good standard of general ventilation. Natural ventilation is provided by doors, windows etc., while controlled ventilation involves the intake and extraction of air with a proper powered ventilator E1. Ensure operatives are trained to minimise exposures E119.
CS67 Storage.	Store substance within a closed system E84. Provide a good standard of general ventilation. Natural ventilation is provided by doors, windows etc., while controlled ventilation involves the intake and extraction of air with a proper powered ventilator E1.
Section 2.2 Control of environmental exposure	
Product characteristics	
The substance is classified as UVCB (Unknown substances, of Variable Composition, or of Biological Origin) [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	1.19E6
Fraction of Regional tonnage used locally:	0.0005
Annual site tonnage (tonnes/year):	5.9E2
Maximum daily site tonnage (kg/day):	1.6E3
Duration and frequency of use	
Continuous release [FD2].	
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 estimates used [TCS1].	
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) [TVR1k]. If discharging to domestic sewage treatment plant,	

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no on-site wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%):	N/A
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 [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
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) (kg/d):	1.5E4
Assumed domestic sewage treatment plant flow (m3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated [ERW3].	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrорisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
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. G22	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32 . Available hazard data do not support the need for a DNEL to be established for other health effects. G36 . Risk Management Measures are based on qualitative risk characterisation. G37 .	
3.2. 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 [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].	

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Section 1 Short title of the exposure scenario No.7		
Title		
Use as fuel – consumer use		
Symbol of use		
Sector(s) of Use (SU)	21	
Product category [PC]	13	
Environmental Release Category [ERC]	9a, 9b	
Specific Environmental Release Category [SPERC]	ESVOC SpERC 9.12c.v1	
Processes, tasks, actions included		
Includes consumer use in liquid fuels		
Assessment method		
See Section 3		
Section 2 Operational conditions and risk management measures		
Section 2.1 Control of consumer exposure		
Product characteristics		
physical form of product	Liquid	
Vapour pressure (Pa)	Liquid, vapour pressure > 10 kPa at standard temperature and pressure. OC5	
concentration of substance in product	Unless otherwise stated, cover concentrations up to 100% [ConsOC1]	
Amounts Used	Unless otherwise stated, covers use amounts up to 37500 g [ConsOC2]; covers skin contact area up to 420 cm ² [ConsOC5]	
Frequency and duration of use/exposure	Unless otherwise stated, covers use frequency up to 0.143 times per day [ConsOC4]; covers exposure up to 2 hours per hour/event [ConsOC14]	
Other Operational Conditions affecting the exposure	Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m ³ room [ConsOC11]; assumes use with typical ventilation [ConsOC8].	
Contributing scenarios		
Operational conditions (OC) and specific risk management measures (RMM)		
PC13: Fuels-Liquid fuel for automotive refuelling	OC	Unless otherwise stated, cover concentrations up to 100% [ConsOC1]; Covers use up to 52 days/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; covers skin contact area up to 210.00 cm ² [ConsOC5]; foreach use event, covers use amounts up to 3750g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m ³ [ConsOC11]; for each use event, covers exposure upto 0.05 hr/event ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated.
PC13: Fuels-Liquid fuels for scooter refuelling	OC	Unless otherwise stated, cover concentrations up to 100% [ConsOC1]; Covers use up to 52 days/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; covers skin contact area up to 210.00 cm ² [ConsOC5]; foreach use event, covers use amounts up to 3750g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m ³ [ConsOC11]; for each use event, covers exposure upto 0.05 hr/event ConsOC14];

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	RMM	No specific RMMs identified beyond those OCs stated.
PC13: Fuels--Liquid fuel for garden equipment - Use	OC	Unless otherwise stated, cover concentrations up to 100% [ConsOC1]; Covers use up to 52 days/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; for each use event, covers use amounts up to 750g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m3 [ConsOC11]; for each use event, covers exposure upto 2.00 hr/event ConsOC14];
	RM M	No specific RMMs identified beyond those OCs stated.
Section 2.2 Control of environmental exposure		
Product characteristics		
The substance is classified as UVCB (Unknown substances, of Variable Composition, or of Biological Origin) [PrC3]. Predominantly hydrophobic [PrC4a].		
Amounts Used		
Fraction of EU tonnage used in region:		0.1
Regional use tonnage (tonnes/year):		1.39E7
Fraction of Regional tonnage used locally:		0.0005
Annual site tonnage (tonnes/year):		7.0E3
Maximum daily site tonnage (kg/day):		1.9E4
Duration and frequency of use		
Continuous release [FD2].		
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) [STP7k].		
Estimated substance removal from wastewater via domestic sewage treatment (%):		95.5
Maximum allowable site tonnage (MSafe) (kg/d):		1.8E5
Assumed domestic sewage treatment plant flow (m3/d):		2000
Conditions and measures related to external treatment of waste for disposal		
Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].		
Conditions and measures related to external recovery of waste		
This substance is consumed during use and no waste of the substance is generated [ERW3].		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC Report #107 and the Chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these sources, then they are indicated. G42		
3.2. Environment		

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The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented. **G39**

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. **G23**

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 [DSU1]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>) [DSU4].