1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE COMPANY

1.1 Identification of the product

Name of substance:	Virgin naphtha
Synonyms:	Soft naphtha (petroleum); Naphtha with low boiling point - not specified
CAS Number:	64741-87-3
EC Number:	265-089-2
Index Number:	649-350-00-1
Registration Number:	01-2119486791-26-0003

1.2 Identified relevant use of the substance or mixture and uses not recommended

Common uses	engine fuel and other industrial uses
Uses defined in the chemical safety report:	general list of applications:
Industrial use (G26):	production of the substance (GEST1_I), use as an intermediate product (GEST1B_I), distribution of the substance (GEST1A_I), formulation and (re)packaging of the substances and mixtures (GEST2_I), use in linings (GEST3_I), use as fuel (GEST12_I), use in cleaning products (GEST12_I), rubber production and processing (GES19_I)
Professional use (G27):	use as fuel (GEST12_I)
Consumer (G28):	use as fuel (GEST12_I)
	Refer to section 16 for a complete list of uses for which an exposure scenario (ES) is provided, enclosed with this sheet.
Uses not recommended:	the relevant uses are listed above. Other uses are not recommended unless an evaluation has been carried out, before the beginning of the said use, indicating that risks associated with said use will be controlled.

Refer to the enclosure for the complete list of uses for which an exposure scenario is envisaged.

1.3 Information on the Safety Data Sheet supplier:

Company name	IPLOM S.p.A.
Address	via C. Navone, n. 3/b
City / Nation	16012 BUSALLA - (GE) - ITALY
Telephone	0109623401

E –mail of competent technician dott.ssa REPETTO Chiara e-mail: laboratorio@iplom.com

1.4 Emergency telephone number:

Poison Centre,

OSPEDALE	CITTA'	TELEFONO
Az. Osp. Univ. Foggia	Foggia	0881-732326
CAV Policlinico "Umberto I"	Roma	06-4450618
CAV Policlinico "A. Gemelli"	Roma	06-3054343
Az. Osp. "Careggi" U.O. Tossicologia Medica	Firenze	055-7947819

CAV Centro Nazionale di Informazione Tossicologica	Pavia	0382-24444
Osp. Niguarda Ca' Granda	Milano	02-66101029
Osp. Riuniti di Bergamo	Bergamo	800883300

2. IDENTIFICATION OF THE PRODUCT

Physical-chemical hazards: the substance is highly flammable

Health hazards: the substance has skin irritant effects. Inhalation of vapour may cause drowsiness and dizziness. Due to its low viscosity, the product can be aspirated into the lungs either directly following ingestion or subsequently in case of spontaneous or provoked vomiting, in which case chemical pneumonia may develop. It may have neoplastic effects. It may reduce fertility and harm the unborn child.

Environmental hazards the substance has toxic effects on aquatic organisms with long term effects on the aquatic environment.

2.1 Classification of the substance or mixture

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

Flam. Liquid 1:-H224

Asp. Tox. 1: H304

Skin Irrit. 2: H315

STOT Single Exp. 3: H336

Muta. 1B: H340

Carc. 1B: H350

Repr. 2: H361

Aquatic Chronic 2: H411

The list of complete R and H phrases is given in section 16.

2.2 Label elements

Warning: **HAZARD**

Danger signs:

H224: Highly flammable liquid and vapour

H304: Can be lethal in case of ingestion and penetration into the airways

H315: Causes skin irritation

H336: May cause drowsiness or dizziness

H340: May cause genetic alterations

H350: May cause cancer.

H361: Suspected of damaging fertility or the unborn child

H411: Toxic to aquatic life with long lasting effects

Precautionary statements

Prevention:

P201: Obtain specific instructions before use

P210: Keep away from heat sources/sparks/open flames/hot surfaces - Do not smoke

P280: Wear gloves/protective clothing/protect eyes/the face

Reaction

P301+310: IF SWALLOWED: immediately call a POISON CENTRE or a doctor.

P331 Do not provoke vomiting

Storage:

P403+233: Keep the container well closed and in a well ventilated place

Disposal

P501: Dispose of the product/container in compliance with Leg. Decree 152/06 and subsequent amendments and additions.

Further information: H and P Notes

2.3 Other hazards

The vapour forms flammable and explosive mixtures with air. Vapour is heavier than air: it can build up in closed rooms or in hollows, spread at ground level and cause risks of fire and explosion even at a distance. In some circumstances, the product can build considerable amounts of static electricity sparks, with the risk of electricity discharges triggering fires or explosions. **The product does not meet the PBT or VPvB criteria specified in Enclosure XIII of the REACH.**

3. COMPOSITION / INFORMATION ABOUT THE INGREDIENTS

3.1 Substances

The substance is a UVCB (PrC3) complex, CAS 64741-87-3 EINECS 265-089-2 INDEX No. 649-350-00-1 ("Soft Naphtha (petroleum); Naphtha with low boiling point – not specified: complex combination of hydrocarbons obtained by subjecting petroleum naphtha to a softening process to convert mercaptans or remove acid impurities. It includes hydrocarbons with a number of carbon atoms that is prevalently C4 – C12 with boiling point in the range of -10°C – 230°C"): 100% in weight.

Depending on the characteristics and origin of the components, various chemical compounds can be identified in the final composition of naphtha. These compounds are not deliberately added. The following are components that are important for classification purposes.

Note: classification of the component "Soft Naphtha (petroleum)" is attributed with reference to the worst case scenario (contained in single compounds, all exceeding the specific classification limits)

a) Benzene: CAS 71-43-2 EINECS 200-753-7 INDEX NO. 601-020-00-8. Concentration up to 1% vol.

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

Flam. Liquid 2 H225

Carc. 1A H350

Muta.1B H340

STOT RE 1 H372 (**)

Asp.Tox.1. H304

Eye.Irrit.2 H319

Skin.Irrit.2 H315

Classification pursuant to Directive 67/548/EEC

F; R11

Carc. Cat. 1; R45

Muta. Cat. 2; R46

T; R48/23/24/25

Xn; R65

Xi; R36/38

b) Toluene : CAS 108-88-3 EINECS 203-625-9 INDEX NO. 601-021-00-3. Concentration > 1 % vol.

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

Flam. Liquid 2 H225

Repr.2 H361d (***)

STOT RE 2 H373 (**)

Asp.Tox.1. H304

Eye.Irrit.2 H319

Skin.Irrit.2 H315

Classification pursuant to Directive 67/548/EEC

F; R11

Repr. Cat. 3.; R63

Xn; R48/20-65

Xi; R38

R67

c) n-hexane CAS 110-54-3 EINECS 203-777-6 INDEX NO. 601-037-00-0 (> 0.1%)

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

Flam.Liq.2 H225

Repr.2 H361f (***)

Asp.Tox.1 H304

Skin Irrit.2 H315

STOT RE 3 Cat 2 H373(**)

STOT SE 3 H336

Aquatic Chronic 1 H411

Classification pursuant to Directive 67/548/EEC

F; R11

Repr. Cat. 3.; R62

Xn; R65-48/20

Xi; R38

R67

N; R51-53

3.2 Mixtures

n.a.

The list of complete R and H phrases is given in section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

Contact with eyes: Rinse gently with water for a few minutes (814). Remove contact lenses, if worn, if the situation allows it to be done easily (808). **In case of irritation, blurred vision or persistent swelling, see an eye care specialist (817)**.

Skin contact: Remove footwear and contaminated clothing and dispose of them safely (811). Wash the area concerned with soap and water (849).). In case of irritation, swelling or reddening, see a skin care specialist (721).

For minor thermal burns, cool the injured area (705). Keep the burnt area under cold running water for at least 5 minutes, or until the pain disappears (709). Avoid general hypothermia (659).

During the use of high pressure equipment, the product could be injected (850). In case of lesions due to high pressure, immediately seek medical advice (718). Do not wait for symptoms to appear (686).

Ingestion/Aspiration: Do not provoke vomiting to avoid the risk of aspiration (680). Do not administer anything by mouth to an unconscious person (679).

In case of spontaneous vomiting, keep the head lowered in order to avoid risking aspiration of vomit into the lungs.

Inhalation: In case of breathing difficulties, take the injured person outdoors and keep him/her in a comfortable position for breathing (715).

If the injured person has lost consciousness (716) and is not breathing (790), make sure there are no obstructions in the respiratory tract and allow specialised staff to perform artificial respiration (694). If necessary, apply an external cardiac massage and seek medical advice (723).

If the injured person is breathing (660), keep him/her in the lateral safety position (724). Administer oxygen, if necessary (649).

4.2 Principal symptoms and effects, both acute and delayed

The product may cause skin irritation (825), and slight eye irritation (826). Inhalation of vapour can cause headache, nausea, vomiting and a state of altered consciousness (762). In case of ingestion, few or no symptoms are expected (700). Possibly, nausea and diarrhoea can occur (711).

4.3 Indications for the need, if any, to seek immediate medical advice and special treatments

In case of ingestion, always presume aspiration (740). Immediately transfer the injured person to a hospital (823). Do not wait for symptoms to appear (686).

5. FIRE-FIGHTING MEASURES

5.1 Fire extinguishing devices

Small-scale fires: soil or sand (872), carbon dioxide (852), foam (859), dry chemical powder (856).

Large-scale fires: **foam (859), water mist (887). Note: the use of water fog streams (water mist) is reserved for specially trained staff. Other inert gases (allowed by the regulation) (870).**

Fire extinguishing devices that are NOT suitable: do not use water jets directly on the burning product (855); they may cause splashing and spread the fire (881). Avoid simultaneous use of foam and water on the same surface because water destroys foam (873).

5.2 Special hazards deriving from the substance or mixture

Incomplete combustion may generate a complex mixture of airborne solid and liquid particles and gases, including carbon monoxide (CO) (867), SOx (sulphur oxide), or H2SO4 (sulphuric acid) (861), and unidentified organic and inorganic compounds (886).

5.3 Recommendations for fire-fighters

In case of a large-scale fire either in small or poorly ventilated spaces, wear a complete fireproof protection suit and self-contained breathing apparatus with a complete positive pressure mask (864).

6. MEASURES IN CASE OF ACCIDENTAL RELEASE

6.1 Personal precautions, protection devices and procedures in case of an emergency

If the safety conditions allow action, stop or contain the leak at the source (1006). Avoid direct contact with the released material (903). Remain up-wind (1003). In case of a large-scale leak, warn the residents of the down-wind areas (956). Send staff away from the leak area, if not involved. Call the emergency teams (968). Save for small leaks (925), the feasibility of intervention shall always be evaluated and approved, if possible, by qualified and competent staff in charge of managing emergencies (1007). Eliminate all sources of ignition, if the safety conditions allow such action (for example: electricity, sparks, fires and flames) (920). When requested, inform the authorities of the event, in compliance with the applicable law (949).

Small-scale leaks (995): conventional antistatic work clothes are usually appropriate (983).

Large-scale leaks: total protection clothing resistant to chemical agents and made of antistatic material (973). Work gloves that provide adequate resistance to chemical agents, particularly to aromatic hydrocarbons (1021). Gloves made of PVA (polyvinyl alcohol) are not water resistant and are not to be used in case of an emergency (933). Protective helmet (1030). Antistatic and anti-skid safety shoes or boots (899) **resistant to chemical agents.** Protective goggles or face protection devices in case of potential or predictable splashes or contact with eyes (934). Respiratory protection: a half mask or a whole mask fitted with filter(s) for organic vapour (892) or a self-contained breathing apparatus may be used depending on the scale of the leak and the anticipated level of exposure (895). If the situation cannot be completely evaluated or if there is a risk of oxygen deficiency, only use a self-contained breathing apparatus (951).

6.2 Environmental precautions

Do not dispose of the product into sewers, rivers or other waterways (985).

6.3 Containment and clean up methods and materials

Spills on the ground: if necessary, surround the product with dry soil, sand or any other non-flammable material (940). Large-scale leaks can be carefully covered with foam, if available, in order to prevent the risk of fires (970). Do not use direct jets (918). Ensure appropriate ventilation inside buildings or in small spaces (1022). Absorb the spilt product with non-flammable material (896). If necessary, keep the contaminated material for subsequent safe disposal, only using adequate containers (watertight, sealed, waterproof and connected to the ground) (939). In case of contamination of the ground, remove the contaminated soil and treat it in compliance with the local law (959).

Spills in water: in case of small leaks in closed waters (e.g. in harbours) (957), contain the product using floating barriers or other devices (958). Collect the spilt product with specific floating absorbent materials (910). Large-scale leaks (972): if possible, contain major leaks in water by using floating barriers or other mechanical devices (948) only if this is strictly necessary and if the risk of fire or explosion can be adequately controlled, otherwise let the product evaporate and naturally disperse (978). The use of dispersion agents shall be suggested by an expert and, when requested, authorised by the competent local authorities (1012). If possible, collect the product and contaminated material with mechanical devices and store/dispose of in compliance with the applicable law (945).

The recommended measures are based on the most probable scenarios of spillage of the product. Local conditions (wind, air temperature, direction and speed of waves and currents) can, however, significantly affect the decision regarding the action to be taken (990).

6.4 Reference to other sections

For further information regarding personal protective equipment, see the section “Exposure control and individual protection” (1086).

6.5 Further information

No further information is available.

7. HANDLING AND STORAGE

7.1 Precaution for safe handling

7.1.1 Protective measures

Obtain special instructions before use (1105). Risk of explosive mixture of vapour and air (1120). Ensure correct compliance with all provisions regarding explosive atmospheres and structures designed for the management and storage of flammable products (1079).

Take precautionary measures against static electricity (1134). Make sure that the container, tanks and equipment for reception and transfer are earthed (1087). Vapour is heavier than air (1137). Pay particular attention to accumulation in pits and small spaces (1051). Keep away from heat sources/sparks/open flames/hot surfaces (1097). Do not smoke. Use only bottom loading for tanks, in compliance with the relevant European law (1151). Do not use compressed air during filling, discharging or handling operations (1073). Avoid contact with skin and eyes (1041). Do not ingest (1072). Do not inhale the vapour (1070).

Only use and store outdoors or in a well ventilated space (1148). Avoid contact with the product (1045). Use the appropriate personal protective equipment, if necessary (1146).

Do not release into the environment (1046). For further information regarding personal protective equipment and operating conditions, see the section “Exposure scenarios” (1085).

7.1.2 Indications regarding hygiene at work

Do not inhale mist/vapour/aerosols (P260). Avoid contact with skin (1042). Keep away from food and drinks (1096). Do not eat, drink or smoke while handling the product (1041). Wash hands carefully after handling the product (1156). Do not reutilise contaminated clothing.

7.2 Safe storage conditions, including incompatibilities, if any

Storage area structure, tank characteristics, equipment and operating procedures shall comply with the relevant law on a European, national and local scale (1127). Storage plants shall have adequate systems to prevent contamination of the soil and of waters in case of leaks or spillage (1129). Cleaning, inspection and maintenance activities of the internal structure of storage tanks shall be performed by qualified and correctly equipped staff, as established by the national and local law or by corporate regulations (1054), **only after the tank has been cleaned**. **Before entering the storage tanks and starting any type of intervention in a small space, check the atmosphere and establish oxygen content and grade of flammability.** Keep separate from oxidising agents (1133).

Recommended materials (1117): mild steel or stainless steel for containers and linings. (1116) Some synthetic materials can be inadequate for containers and linings based on the characteristics of the material and its intended use (1125). Verify compatibility of materials with the producer in relation to the conditions of use (1055).

If the product is supplied in containers (1094), only keep it in the original containers or in a container which is adequate for the type of product (1099). Store in a well ventilated space (1131).

Keep the containers well closed and correctly labelled (1098). Protect from direct sunlight (1114)

Light hydrocarbon vapour may build up at the top of the containers (1100). This can cause a fire or explosion hazard (1138). Open slowly to keep any pressure release under control (1107). Empty containers may contain flammable product residues (1077). Do not weld, braze, drill, cut or burn empty containers unless they have been adequately cleaned out (1075).

7.3 Specific final uses

See the enclosed exposure scenarios.

8. EXPOSURE CONTROL/ENVIRONMENTAL PROTECTION

8.1 Control parameters

Exposure limit values (substance)

PETROL

ACGIH 2010:

TLV®-TWA: 300 ppm

TLV®-STEL: 500 ppm

Exposure limit values (airborne contaminants)

BENZENE

Leg. Decree 81/2008 and following amendments and additions

Limit values (8 hours): 1 ppm

ACGIH 2010:

TLV®-TWA: 0.5 ppm

TLV®-STEL: 2.5 ppm

N-HEXANE

Leg. Decree 81/2008 and following amendments and additions

Limit values (8 hours): 20 ppm

ACGIH 2010:

TLV®-TWA: 50 ppm

TOLUENE

Leg. Decree 81/2008 and following amendments and additions

Limit values (8 hours): 20 ppm

ACGIH 2010:

TLV®-TWA: 20 ppm

Monitoring procedures: see Leg. Decree 81/2008 and following amendments and additions or good industrial hygiene practices.

Biological limit values (BEI)

BENZENE

BEI: S-Phenyl mercapturic acid in urine 25 µg/g creatinine; trans, trans-muconic acid in urine 500 µg/g creatinine

DNEL (Derived No Effect Level)

	DNEL workers				DNEL general population			
Route of exposure	**Chronic, local effects**	**Chronic, systemic effects**	**Acute, local effects**	**Acute, systemic effects**	**Chronic, local effects**	**Chronic, systemic effects**	**Acute, local effects**	**Acute, systemic effects**
oral	n.a.	n.a.	n.a.	n.a.	n.a.	Note (a) (c)	n.a.	n.a.
skin	Note (c)	Note (a) (b)	Note (c)	Note (a) (b)	Note (c)	Note (a) (b)	Note a	Note (a) (b)
respiratory	840 mg/m^3/8h	Note (a) (b)	1,100 mg/m^3/15 min	1,300 mg/m^3/15 min	180 mg/m^3/8h	Note (a) (b)	640 mg/m^3/15 min	1,200 mg/m^3/15min

Note a: if benzene concentrations in air are sufficiently high, one DMEL-workers-inhalation shall be taken into account for 1 ppm of benzene. If skin exposure is expected, a skin reference value of 23. 4 mg of benzene/kg/day shall be taken into account for workers.

Note b: no hazard has been identified for this route of exposure.

Note c: the data available does not allow a DNEL estimate.

DMEL (Derived Minimal Effect Level)

Not identified because dose descriptors available were not sufficient.

PNEC(S) (Predicted No Effect Concentration)

See the enclosed exposure scenarios.

8.2 Exposure control

8.2.1 Suitable technical control

Minimise exposure to mists/vapour/aerosols. Before entering the storage tanks and starting any type of intervention in a small space, check the atmosphere and establish oxygen content and grade of flammability (1050).

8.2.2 Personal protective measures

(a) Eyes/face protection

Failing containment systems and in case of risk of contact with eyes/face, wear a complete protection for the head and face (visor and/or protective goggles (EN 166)) (1185).

(b) Skin protection:

i) Hand protection

Failing containment systems and in case of potential contact with the skin, use gloves with high cuffs that are hydrocarbon resistant, felt-lined internally. **Presumably adequate materials: nitryl, PVC or PVA (polyvinyl alcohol) with a protection index from chemical agents of at least 5 (permeation time > 240 minutes).** Use gloves in compliance with the conditions and limits of use established by the producer. In case of need, refer to the UNI EN 374 regulation. Gloves shall undergo periodical inspection and shall be replaced in case of wear, perforation or contamination (1174).

ii) Other

In case of contamination of clothing, replace them and immediately clean them.

(c) Respiratory protection

In small environments:

use approved protection devices for airways: full masks with a type AX filter cartridge (brown for organic vapour with low boiling point). If exposure levels cannot be determined or estimated with certainty or in case of potential oxygen deficiency, only use a self-contained breathing apparatus (EN 529)(1183).

Failing containment systems:

use approved protection devices for airways: full masks with a type AX filter cartridge (brown for organic vapour with low boiling point).

(d) Thermal hazards: see previous letter (b)

8.2.3 Environmental exposure control

Do not release into the environment (1046). Storage plants shall have adequate systems to prevent contamination of the soil and of waters in case of leaks or spillage (1129).

Treatment of refluent water is required (TCR13).

Prevent the release of non-dissolved substances or recuperate them from refluent water. (TRC14)

Do not distribute the mud created by the treatment of industrial water on natural land (OMS2).

The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3). For further details, see the enclosed exposure scenarios.

8.3 Further information

For further information regarding personal protective equipment and operating conditions, see the section "Exposure scenarios" (1087).

9. PHYSICAL-CHEMICAL PROPERTIES

9.1 Information about basic physical and chemical properties

a) Aspect	clear liquid
b) Odour	like petroleum
c) Olfactory threshold	n.d.
d) pH	n.a.
e) Melting point/Freezing point	< 60°C
f) Initial boiling point and boiling range	10-230°C (range)
g) Flash point	> - 40°C(EN ISO 13736)
h) Evaporation rate	n.a.
i) Flammability (solid, gas)	n.a.
j) Higher/lower limits of flammability or explosivity	LEL 1.4%; UEL 7.6%
k) Vapour pressure	35-90 kPa at 37.8°C (EN 13016-1)
l) Vapour density	n.a.
m) Density	700-750 kg/m3 at 15°C (EN ISO 12185)
n) Solubility/solubilities	Solubility in water is not applicable because classified as a UVCB substance
o) N-octane/water partition coefficient	Not applicable because classified as a UVCB substance
p) Spontaneous ignition temperature	>200°C
q) Decomposition temperature	n.a.
r) Viscosity	< 1 mm^2/s at 37.8°C
s) Explosive properties	No chemical group can be associated with the molecule, which has explosive properties
t) Oxidising properties	Not required (column 2 of REACH in Enclosure VII)

9.2 Further information

Not available.

10. STABILITY AND REACTIVITY

10.1 Reactivity

The substance does not present further hazards relating to reactivity other than those shown in the following paragraphs.

10.2 Chemical stability

This substance is stable in relation to its intrinsic properties.

10.3 Hazard reaction potential

Contact with strong oxidants (e.g. peroxides and chromates) can cause a fire hazard (612). A mixture with nitrates or other strong oxidants (e.g. chlorates, perchlorates and liquid oxygen) can generate an explosive mass (609). Sensitivity to heat, friction and shock cannot be evaluated in advance (616).

10.4 Conditions to be avoided

Keep separate from oxidising agents (1133).

Keep away from heat sources/sparks/open flames/hot surfaces (1097). Do not smoke.

Avoid the formation of electrostatic charges.

10.5 Incompatible materials

Strong oxidants

10.6 Hazardous decomposition products

This substance does not decompose when used for its intended purpose.

11. TOXICOLOGICAL INFORMATION

11.1 Toxicokinetics, metabolism and distribution

There is no experimental data available about absorption, distribution, metabolism and elimination of the overall product, but there are several toxicokinetic studies on its principal constituents. The major part of components is absorbed by inhalation. Absorption through inhalation is directly proportional to the molecular weight of constituents; therefore, n-paraffins are absorbed more than iso-paraffins, and aromatic hydrocarbons are absorbed more than the corresponding paraffins. Constituents with low molecular weight (butane and pentane) are scarcely absorbed because they are exhaled. The metabolism of absorbed molecules resembles that of alcohols, with excretion through the kidneys. Absorption through the skin of components found in the vapour phase is scarce, about 1% of the total absorption by inhalation. Even skin absorption of liquid components is very low because they evaporate rapidly.

The major part of components is absorbed from the gastrointestinal tract.

11.2 Toxicological information

a) Acute toxicity

Though the product is hazardous if inhaled into the lungs, and causes severe CNS depression in case of prolonged exposure, studies conducted on acute toxicity of naphtha through oral, cutaneous and inhalation routes have highlighted no effects in conditions defined by test protocols based on regulations regarding hazardous substances. Therefore, these results do not lead to any classification in the framework of regulations regarding hazardous substances.

The table below contains a summary of the most indicative studies reported in the registration file.

Method	Result	Comments	Source
Oral			
RAT Oral (gavage) OECD Guideline 401	LD50 > 5,000 mg/kg (M/F)	Key study Reliable without restrictions CAS 86290-81-5	UBTL Inc (1986a)
Inhalation			
RAT Inhalation of vapour OECD Guideline 403	LC50 > 5,610 mg/m^3 (M/F)	Key study Reliable without restrictions CAS 86290-81-5	UBTL Inc (1992g)
Skin contact			
RABBIT OECD Guideline 402	LD50 > 2,000 (M/F)	Key study Reliable with restrictions CAS 86290-81-5	UBTL Inc (1986d)

b) Skin corrosion/irritation

The skin irritation potential of samples belonging to the category of this product was evaluated in a large number of studies carried out generally on rabbits. The conclusions of these studies indicate that the substance is a skin irritant, with no evidence of deep lesions (corrosion). These results allow us to classify the substance Xi; R38 (skin irritant) and Skin Irrit. 2 H315 (Causes skin irritation).

The table below contains a summary of the most indicative studies reported in the registration file.

Method	Result	Comments	Source
RABBIT Occlusive treatment at 24/48/72 hours OECD Guideline 404	Irritant Mean rash score: 2.56	Key study Reliable without restrictions CAS 86290-81-5	American Petroleum Institute (API) 1995

c) Serious eye lesions/serious eye irritation

The skin irritation potential of samples belonging to the category of this product was evaluated in a large number of studies carried out generally on rabbits. The conclusions of these studies indicate a moderate eye irritating potential associated with exposure to vapour at a concentration in excess of 200 ppm; however, the dose-response information is not conclusive.

These results do not lead to any classification in the framework of regulations regarding hazardous substances.

The table below contains a summary of the most indicative studies reported in the registration file.

Method	Result	Comments	Source
RABBIT Occlusive treatment at 24/48/72 hours OECD Guideline 405	Not irritating Mean conjunctival score: 0.06	Key study Reliable without restrictions CAS 86290-81-5	UBTL Inc (1985a)

d) Respiratory or skin sensitisation

Respiratory sensitisation

This endpoint is not a REACH requisite. The products belonging to the naphtha category do not cause sensitisation of the respiratory tract; no classification of the substance is, therefore, necessary.

Skin sensitisation

Several skin sensitisation studies have been conducted on naphtha (Enclosure V method B.6 (skin sensitisation); Buehler method).

The results obtained by these studies indicate the absence of potential skin sensitisation; no classification of the substance is, therefore, necessary.

The table below contains a summary of the most indicative studies reported in the registration file.

Method	Result	Comments	Source
GUINEA PIG Guideline 406	Not sensitising	Key study Reliable without restrictions CAS 86290-81-5	UBTL Inc (1990i)

e) Germ cell mutagenicity

The mutagenicity potential of naphtha has been widely studied in a series of *in vivo* and *in vitro* tests. Most of the studies did not provide consistent evidence of mutagenicity. The classification as mutagen is attributed due to the presence of benzene in C>0.1%: Muta Cat 2; R46 (May cause heritable genetic damage) and Muta 1 B H340 (May cause heritable genetic damage).

The table below contains a summary of the most indicative studies reported in the registration file.

Method	Result	Comments	Source
In vitro genic mutation in *Salmonella thyphimurium* OECD TG 471	Negative	Key study Reliable without restrictions CAS 86290-81-5	American Petroleum Institute (API) 1977
In vivo chromosomal aberration RAT OECD TG 471	Negative	Key study Reliable without restrictions CAS 86290-81-5	American Petroleum Institute (API) 1977

f) Carcinogenicity

The major part of studies conducted on animals with the atomised product have underscored the prevalence of hepatic tumours. But the atomised product contains the heavier aromatic components, which are responsible for the development of the tumour and they are, instead, not found in the vapour phase to which humans are usually exposed. Studies on carcinogenesis conducted on naphtha types are not sufficient to underpin the classification as carcinogen that is, however, attributed due to the presence of benzene in C>0.1%: Cl Carc. Cat. 2; R45 (May cause cancer) and Carc. 1B H350 (May cause cancer).

The table below contains a summary of the most indicative studies reported in the registration file.

Method	Result	Comments	Source
Skin contact			
MOUSE OECD Guideline 451 Exposure for 102 weeks (3 times a week)	NOAEL (carcinogenicity) 0.05 mL male No neoplastic effect observed	Key study Reliable without restrictions CAS 86290-81-5	American Petroleum Institute (1983b)

NOTE: Carcinogenicity associated with oral intake is not a REACH endpoint.

g) Reproductive toxicity

Reproductive toxicity

Most of the studies did not provide consistent evidence of toxic effects on fertility. The hazard classification for fertility is attributed due to the presence of n-hexane in C>3% (Repr. Cat. 3.; R62 – potential risk of reduced fertility and Repr. 2: H361 (Suspected of damaging fertility or the unborn child).

The table below contains a summary of the most indicative studies reported in the registration file.

Method	Result	Comments	Source
RAT Doses: 5090, 12490, 24690 mg/m^3 OECD Guideline 421 Inhalation of vapour	NOAEL 24700 mg/m^3 (M/F)	Key study Reliable without restrictions CAS 64741-66-8	Bui Q.Q., Burnett D.M.,Breglia R.J., Koschier F.J.,Lapadula E.S. (1998)

Toxicity on development/teratogenesis

Most of the studies did not provide consistent evidence of toxic effects on the unborn child. The classification as teratogenous agent (Repr. Cat. 3.; R63-Possible risk of harm to the unborn child and Repr. 2: H361 - Suspected of damaging fertility or the unborn child) is attributed due to the presence of toluene in C>3%.

The table below contains a summary of the most indicative studies reported in the registration file.

Method	Result	Comments	Source
RAT Doses: 2,653; 7,960; 23,900 mg/m^3 OECD Guideline 414 (Prenatal developmental toxicity study) Inhalation of vapour	NOAEL 23,900 mg/m^3 no adverse effect	Key study Reliable without restrictions	L.Roberts, R White, Q. Bui. W.Daughtrey, F.Koschier, S.Rodney (2001)

h) Specific toxicity for organ targets (STOT) – single exposure

The substance is classified as R67 (Vapours may cause drowsiness and dizziness) and STOT SE3 3 H336 (May cause drowsiness and dizziness).

i) Specific toxicity for organ targets (STOT) – repeated exposure

Oral: no information in the registration file.

Inhalation: at very high doses 20,000 – 30,000 mg/m3, only some studies have proven a slight effect, such as variations in body weight, organ weight and haematological parameters.

Skin: studies show a low systemic toxicity potential.

No classification is required in compliance with the regulations regarding hazardous substances.

The table below contains a summary of the most indicative studies reported in the registration file.

Method	Result	Comments	Source
Oral			
RAT Subacute (gavage) 500 mg/kg/day 500 mg/kg/day 28 days/once a day for 5 days a week	NOAEL< 500 mg/kg (male): Specific renal effects for male rats, not considered as biologically relevant for man.	Support study Reliable with restrictions CAS 64741-63-5	Halder CA et al. 1985
Inhalation			
RAT Systemic effects (M/F) Inhalation (vapour) Dose repeated for 28 days OECD 412	NOAEC: 9,840 mg/m^3 Specific renal effects for male rats, not considered as biologically relevant for man.	Key study Reliable without restrictions CAS 86290-81-5	ARCO 1993 (Atlantic Richfield Company)
RAT Local/systemic effects (M/F) Inhalation (vapour) Dose repeated for 90 days OECD TG 413	NOAEC (local effects): 10,000 mg/m^3 reddish nasal secretions (males/females) Specific renal effects for male rats not considered as biologically relevant for man. NOAEC (systemic effects): 20,000 mg/m^3 Specific renal effects for male rats, not considered as biologically relevant for man.	Key study Reliable without restrictions	EPA 2005
Skin			
OECD Guideline 410 (21/28 days)	NOAEC (systemic effects) 3,750 mg/m^3	Key study Reliable with restrictions CAS 86290-81-5	UBTL Inc. 1985

j) Aspiration hazard

Since the substance has viscosity below 1 mm^2/sec at 37.8°C, there might be aspiration of the product into the lungs, according to classification criteria specified in Enclosure VI of Directive 67/548/EEC amended by Directive 2006/121/EC, and according to criteria specified in Enclosure I section 3 of Regulation No. 1272/2008.
Therefore, the product is classified as Xn R65 (hazardous: May cause damage to the lungs in case of ingestion) and Asp. Tox. 1 H304 (May be lethal in case of ingestion and penetration into the airways).

Further information

No further information is available.

12. ECOLOGICAL INFORMATION

Based on the ecological information shown below on toxicity for invertebrates and seaweed, and on the criteria indicated by regulations regarding hazardous substances, naphtha is classified as hazardous for the environment N; R51-53 or Aquatic Chronic 2 H411.

12.1 Toxicity

The table below contains a summary of the most indicative studies reported in the registration file.

Endpoint	Result	Comments
Aquatic toxicity		
Invertebrates *Daphnia magna* Short term	EL50 48/hours: 4.5 mg/L: NOELR 48/hours: 0.5 mg/L	Key study Exxon Biomedical Sciences, Inc. 1995 Reliable without restrictions OECD Guideline 202
Invertebrates *Daphnia magna* Long term	NOELR 21/days: 2.6 mg/L LL50 21/days: 10 mg/L	Key study Exxon Biomedical Sciences, Inc., East Millstone, NJ 1995 Reliable without restrictions OECD Guideline 211
Seaweed Short term *Selenastrum capricornutum*	EL50 72/hours: 3.1 mg/L EC50 96/hours: 3.7 mg/L NOELR 72/hours: 0.5 mg/L	Key study Exxon Biomedical Sciences, Inc., East Millstone, NJ 1995 Reliable without restrictions OECD Guideline 201
Fish Short term	LC50 48/hours: 5.4 mg/L	Support study CAS 86290-81-5 Lockhart WL, Danell RW and Murray DAJ 1987 Reliable with restrictions OECD Guideline 203
Fish Short term *Pimephales promelas*	LL50 96/hours: 8.2	Key study CAS 64741-66-8 Petroleum Product Stewardship Council (PPSC) 1995 Reliable without restrictions Method ASTM ET29-88a

Endpoint	Result	Comments
Aquatic toxicity		
Fish Long term *Pimephales promelas*	NOELR 14/days: 2.6 mg/L LL50 14 days: 5.2	Support study CAS 64741-55-5 Springborn Laboratories, Inc. 1999 Reliable with restrictions OECD Guideline 204
Microorganisms *Tetrahymena pyriformis*	EC50 40/hours: 15.41 mg/L	Key study Redman, A. et al. 2010 Reliable with restrictions QSAR modeled data

12.2 Persistence and degradability

Abiotic degradability

Hydrolysis: naphthas are resistant to hydrolysis because they lack a hydrolytically reactive functional group. Therefore, this process will not contribute toward a measurable loss of the substance due to degradation in the environment.

Photolysis in air: endpoint not required by REACH regulations.

Photolysis in water and soil: endpoint not required by REACH regulations.

Biotic degradability

Water/sediments/soil: the standard tests for this endpoint are not applicable to UVCB substances.

12.3 Bioaccumulation potential

The standard tests for this endpoint are not applicable to UVCB substances.

12.4 Mobility in soil

Koc absorption: the standard tests for this endpoint are not applicable to UVCB substances.

12.5 Results of the PBT and vPvB evaluation

Comparison with criteria specified in Enclosure XIII of the REACH regulation.

Persistency evaluation: a few of the hydrocarbon structures contained in this category have P (Persistent) or Vp (Very Persistent) characteristics.

Evaluation of the bioaccumulation potential: the structure of most hydrocarbons contained in this category DOES NOT have vB (Very Bioaccumulative) characteristics; however, a few components have B (Bioaccumulative) characteristics.

Toxicity evaluation: toxicity was evaluated for structures that provenly possess P and B characteristics, but no relevant component met the toxicity criteria with the exception of anthracene, which was confirmed as a PBT. Since anthracene is found in concentrations < 0.1%, the product is not PBT/vPvB.

12.6 Other hazardous effects

Not available.

13. COMMENTS ON DISPOSAL

13.1 Waste treatment methods

Do not dispose of the product on ground or in sewers, tunnels or streams.

For the disposal of waste deriving from the product, including uncleaned empty containers, comply with Leg. Decree 152/06 and subsequent amendments and additions.

European Waste Catalogue (EWC): 13 07 01 (Ref: EC Regulation No. 2001/118 and Directive of the Ministry for the Environment 9/04/2002). The code indicated is only a general indication, based on the original composition of the product and its intended uses.

The user (producer of waste) holds the responsibility of choosing the most adequate code based on the actual use of the product, potential alterations and contaminations. The product as such contains no halogenates.

Disposal of containers: do not dispose of containers in the environment. Dispose in accordance with the local regulations in force.

Do not drill, cut, sand, weld, braze, burn or incinerate empty containers or drums that have not been cleaned out.

14. TRANSPORT INFORMATION

14.1 UNO Number

1268

14.2 UNO shipping name

PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.

14.3 Hazard classes in relation to transport:

Road / railway transport (ADR/RID/ADN):

Class	3,
Classification code:	F1
Danger labels:	3+hazardous material for the environment
Hazard identification number:	33
Maritime transport (IMDG):	Class 3
Air transport (ATA):	Class 3, Flam. liquid

14.4 Packaging groups:

II, Label 3 + Environmental Hazard Brand

14.5 Environmental hazards:

environmentally hazardous substance in compliance with ADR, RID, ADN and IMDG codes.

14.6 Special precautions for users:

Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.

14.7 Bulk transport in compliance with Enclosure II of MARPOL 73/78 and the IBC code

In case of bulk transportation, comply with Enclosure II of MARPOL 73/78 and the IBC code, when applicable.

14.8 Further information

Tunnel restriction code (ADR): D/E

15. INFORMATION ON REGULATIONS

15.1 Specific standards and legislation on health, safety and environment for the substance or mixture

Authorisation in compliance with REACH Regulation (EC Regulation No. 1907/2006 and subsequent amendments and additions):

- the product does not appear in the list of substances of very high concern (SVHC), which are candidates for authorisation.

Restrictions on use in compliance with REACH Regulations (EC Regulation No. 1907/2006 and subsequent amendments and additions):

- the substance is subjected to Restrictions in compliance with Heading VIII (Enclosure XVII, Appendix 2, point 28)

Other EU regulations and national implementations:

- Seveso Category (Directive 96/82/EC and Directive 105/2003/EC and Leg. Decree 334/99 and following amendments and additions): Enclosure I part 1
- Hazardous chemical agent in compliance with Title IX (application of Directive 98/24/EC) of Leg. Decree 81/2008 and following amendments and additions
- Carcinogenic agent in compliance with Title IX (application of Directives 97/42/EC and 99/38/EC) of Leg. Decree 81/08.

For waste disposal, see Leg. Decree 152/06 and following amendments and additions.

15.2 Evaluation of chemical safety

An evaluation was carried out regarding chemical safety.

16. FURTHER INFORMATION

List of relevant R phrases and hazard indications

These phrases are stated for informative purposes and do not necessarily correspond to the product classification.

R phrases

R11:	**Highly flammable**
R12:	**Extremely flammable**
R36/38:	**Irritating to eyes and skin**
R38:	**Irritating to skin**
R45:	**May cause cancer**
R46:	**May cause heritable genetic damage**
R48/20:	**Hazardous: may cause serious damage to health by prolonged exposure through inhalation**
R48/23/24/25:	**Toxic: may cause serious damage to health by prolonged exposure through inhalation, contact with skin and ingestion**
R62:	**Possible risk of impaired fertility**

R63: Possible risk of harm to the unborn child

R65: May cause lung damage if swallowed

R67: Vapours may cause drowsiness and dizziness

R51/53: Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment

H phrase hazard indications

H224: Extremely flammable liquid and vapour
H225: Highly flammable liquid and vapour
H304: May be fatal if swallowed and enters airways
H315: Causes skin irritation
H319: Causes serious eye irritation
H336: May cause drowsiness or dizziness
H340: May cause genetic defects
H350: May cause cancer
H361: Suspected of damaging fertility or the unborn child
H361d: Suspected of damaging fertility or the unborn child
H361f: Suspected of damaging fertility
H372: Causes damage to organs through prolonged or repeated exposure
H373: May cause damage to organs through prolonged or repeated exposure
H411: Toxic to aquatic life with long lasting effects

Training indications:

Adequately train workers who are potentially exposed to this substance considering the contents of this Safety Data Sheet.

Main bibliographical references and data sources:

Registration File

Key to abbreviations and acronyms:

ACGIH = American Conference of Governmental Industrial Hygienists
CSR = Chemical Safety Report
DNEL = Derived No Effect Level
DMEL = Derived Minimal Effect Level
EC50 = Median Effective Concentration
IC50 = Inhibition Concentration, 50%
Klimisch = Evaluation criterion for reliability of the method used
LC50 = Lethal Concentration, 50%
LD50 = Median Lethal Dose
PNEC = Predicted No Effect Concentration
n.a. = Not applicable
n.d. = Not available
PBT = Persistent, Bioaccumulable and Toxic Substance
CNS = Central Nervous System
STOT = Specific Toxicity for Organ Targets
(STOT) RE = Repeated Exposure
(STOT) SE = Single Exposure
Key study= Most relevant study

TLV®TWA = Threshold Limit Value – Time Weighed Average

TLV®STEL = Threshold Limit Value – Short Time Exposure Limit

UVCB = substances of unknown or variable composition

vPvB = Very Persistent and Very Bioaccumulable

Note H = Classification and labelling indicated for this substance related to the hazardous property or properties specified by the hazard indication or indications combined with the hazard class or classes and the indicated category or categories. Provisions in Article 4 relating to producers, importers or users of this substance apply to all hazard classes and categories. For hazard classes for which the exposure or nature of the effects determines a differentiation in the classification of the hazard class, the producer, importer or user shall consider the exposure or nature of the effects that have not yet been considered.

Note P = The classification as carcinogen or mutagen is not required, if it can be proven that the substance contains benzene in a percentage below 0.1% of weight/weight (EINECS No. 200-753-7).

If the substance is not classified as a carcinogen, it shall at least contain precautionary advice (P102-) P260-P262-P301 + P310-P331 (table 3.1) or the S phrase (2-)23-24-62 (table 3.2).

Date of completion	27/07/98
N° of revision	7.0
Date of revision	29/03/2019
Reason for revision	Only formal review

ENCLOSURE 1

EXPOSURE SCENARIOS

Identified name of use	Sector	Sector of use (SU)	Chemical product category (CP)	Process categories (PROC)	Category for release into the environment (ERC).	Specific category for release into the environment (SpERC)
01- Production of the substance (GEST1_I)	Industrial	3, 8, 9	n. a.	1, 2, 3, 8a, 8b, 15	1, 4	ESVOC SpERC 1.1.v1
01b- Use as intermediate product (GEST1B_I) for industrial use (G26)	Industrial	3, 8, 9	n. a.	1, 2, 3, 8a, 8b, 15	6a	ESVOC SpERC 6.1a.v1
01a- Distribution of the substance (GEST1A_I) for industrial use (G26)	Industrial	3	n. a.	1, 2, 3, 8a, 8b, 15	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	ESVOC SpERC 1.1b.v1
02- Formulation and (re)packaging of substances and mixtures (GEST2_I) for industrial use (G26)	Industrial	3, 10	n. a.	1, 2, 3, 8a, 8b, 15	2	ESVOC SpERC 2.2.v1
03a- Use for lining (GEST3_I) Industrial (G26)	Industrial	3	n. a.	1, 2, 3, 8a, 8b, 15	4	ESVOC SpERC 4.3a.v1
04a- Use in cleaning products (GEST4_I) Industrial (G26)	Industrial	3	n. a.	1, 2, 3, 8a, 8b.	4	ESVOC SpERC 4.4a.v1
12a- Use as fuel (GEST12_I): Industrial (G26)	Industrial	3	n. a.	1, 2, 3, 8a, 8b, 16	7	ESVOC SpERC 7.12a.v1
12b- Use as fuel (GEST12_I) Professional (G27)	Professional	22	n. a.	1, 2, 3, 8a, 8b, 16	9a, 9b	ESVOC SpERC 9.12b.v1
12c- Use as fuel (GEST12_I) Professional (G28)	Consumer	21	13	n. a.	9a, 9b	ESVOC SpERC 9.12c.v1
19- Rubber production and processing (GEST19_I) Industrial (G26)	Industrial	3, 10, 11	n. a.	1, 2, 3, 8a, 8b, 9, 15	1, 4, 6d	ESVOC SpERC4.19.v1

Table of Contents

PETROL (Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)

1. Production of the substance

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)	
Title	
Production of the substance	
Descriptions for use	
Sector of use	3, 8, 9
Process categories	1, 2, 3, 8a, 8b, 15
Category for release into the environment	1, 4
Specific category for release into the environment	ESVOC SpERC 1.1.v1
Processes, assignments, positions held	
Processing of the substance or its use as a chemical process product or extraction agent inside closed systems or under containment. Includes accidental exposure during activities of recycling/recovery, transfer of material, storage, sampling, associated laboratory activities, maintenance and loading (including onto boats/barges, rail/road tank cars, and bulk merchandise containers) (CGES1_I).	
Method of evaluation	
See section 3.	
Section 2 Operating conditions and measures for risk management	
Section 2.1 Exposure control for workers	
Characteristics of the product	
Physical status of the product	Liquid, vapour pressure > 10 kPa in standard conditions (OC5).
Concentration of the substance in the product	Covers a percentage of substance in the product up to 100% (unless otherwise specified) (G13).
Quantity used	Not applicable
Frequency and duration of use/exposure	Covers a daily exposure up to 8 hours (unless otherwise specified) (G2).
Human factors not influenced by risk management	Not applicable
Other operating conditions that concern exposure	The operation is carried out at high temperatures (> 20°C above ambient temperature) (OC7). Presupposes the application of an appropriate basic standard for hygiene in the workplace (G1).
Exposure scenarios	**Specific measures for the management of risks and operating conditions**
General measures (irritant agents for the skin)(G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).

General measures (carcinogenic agents)(G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised exhaust air extractor plants. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. In case of potential exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, wear protective gloves and overalls to prevent skin contamination, use a protection device for airways when required by certain exposure scenarios, immediately stop any leaks and dispose of waste in safe conditions. Guarantee the adoption of safe operating systems or of equivalent solutions for risk management. Inspect, check and perform regular maintenance on all devices and controls. Consider the need for a risk-based healthcare surveillance system (G20).
General exposures (closed systems) (CS15) + with sampling (CS56)	Handle the substance in a closed system (E47). Sample in a closed circuit or system designed to prevent exposure (E8). Wear protective gloves that meet the EN374 standard (PPE15).
General exposures (closed systems) (CS15) + continuous process (CS56)	Handle the substance in a closed system (E47).
General exposures (closed systems) (CS15) + discontinuous process (CS55)	Handle the substance in a closed system (E47). Ensure that the operation is performed outdoors (E69).
Laboratory activities (CS36)	Handle only under a chemical hood or resort to equivalent methods to minimise the risks of exposure (E12).
Transfer of bulk products (CS14)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Cleaning and maintenance of equipment (CS39)	Drain and flush the system before opening or before performing maintenance on equipment (E55). Preserve drainage contents in sealed air-tight containers while awaiting disposal or subsequent recycling (ENVT4). Immediately remove any leaks (C&H13). Wear protective gloves against chemical agents (in compliance with the EN374 standard), and ensure that a basic training course has been followed. (PPE16)
Storage (CS67)	Ensure that the operation is performed outdoors (E69). Store the substance in a closed system (E84).
Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	1.87e7
Fraction of regional tonnage used locally (A3)	0.03
Yearly tonnage of the site (tons/year) (A5)	6.0e5
Maximum daily tonnage of the site (kg/year) (A4)	2.0e6
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	300
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100
Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk	0.05

management measures) (OOC4)	
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.003
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0.0001
Technical measures and conditions at process level (source) to prevent releases	
The procedures vary from site to site; therefore, conservative estimates of emissions from the process are adopted (TCS1)	
Technical conditions on-site and measures to reduce or limit discharge, emissions into the air and release into the soil	
Prevent the release of non-dissolved substances or recuperate them from refluent water (TRC14). The environmental risk is correlated with indirect exposure of humans through ingestion (TCR1k). On-site treatment of refluent water is required (TCR13).	
Treat the emissions in order to guarantee typical removal efficacy, (%) (TCR7).	99.0
Treat wastewater on-site (before starting discharge operations) to ensure the removal efficacy required, ≥ (%):	95.2
In case of discharge toward an urban processing plant of refluent water, ensure the removal efficacy required on-site (%)	80.4
Organisational measures designed to prevent/limit release from the site (1286)	
Do not distribute the mud created by the treatment of industrial water on natural land (OMS2). The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3).	
Conditions and measures related to the municipal plant for treatment of refluent water (1273)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Total efficacy of removal of refluent water after adoption of RMMs both on-site and off-site (urban type treatment plant) (%) (STP4).	99.1
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from wastewater (kg/g) (STP6).	2.0e6
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	10000
Conditions and measures related to the outdoor treatment of waste in view of disposal (1272)	
No waste related to the substance to be disposed of is generated during production (ETW4).	
Conditions and measures related to the outdoor recovery of waste (1271)	
No waste related to the substance to be recuperated is generated during production (ERW2).	
Section 3 Estimated exposures	
3.1 Health	
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).	
3.2 Environment	
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).	
Section 4	
4.1 Health	
It has been estimated that exposure levels should not exceed DN(M)EL when Management Measures for Risks /Operating Conditions illustrated in section 3 are applied (G22). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23). Data available on hazard characteristics do not allow irritating effects on the skin to be traced to a DNEL (G32). Data available on hazard characteristics do not underpin the need to establish a DNEL for other effects on health (G36). Risk Management Measures are based on the qualitative characteristics of the risk (G37).	
4.2 Environment	

Guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1).
The efficiency required for removal from refluent waters can be obtained by using on-site/off-site technologies, either individually or in combination (DSU2).
The efficiency required for removal from air can be obtained by using on-site technologies, either individually or in combination (DSU3).
Further information on scaling activities and on control technologies is provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).
Local evaluations on EU refineries have been made using specific site-related data, and are enclosed in the work sheet PETRORISK - “Specific production of the site” (DSU6).

2. Use of the substance as an intermediate product

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)	
Title	
Use of the substance as an intermediate product	
Descriptions for use	
Sector of use	3, 8, 9
Process categories	1, 2, 3, 8a, 8b, 15
Category for release into the environment	6a
Specific category for release into the environment	ESVOC SpERC 6.1a.v1
Processes, assignments, positions held	
Use of the substance as an intermediate agent inside closed systems or systems under containment (that do not comply with Rigorously Controlled Conditions). Includes accidental exposure during recycling/recovery activities, transfer of material, storage, sampling, associated laboratory activities, maintenance and loading (including onto boats/barges, rail/road tank cars, and containers for bulk merchandise) (CGES1B_I).	
Method of evaluation	
See section 3.	
Section 2 Operating conditions and measures for risk management	
Section 2.1 Exposure control of workers	
Characteristics of the product	
Physical status of the product	Liquid, vapour pressure > 10 kPa in standard conditions (OC5).
Concentration of the substance in the product	Covers a percentage of substance in the product up to 100% (unless otherwise specified) (G13).
Quantity used	Not applicable
Frequency and duration of use/exposure	Covers a daily exposure up to 8 hours (unless otherwise specified) (G2).
Human factors not influenced by risk management	Not applicable
Other operating conditions that concern exposure	The operation is carried out at high temperatures (> 20°C above ambient temperature) (OC7). Presupposes the application of an appropriate basic standard for hygiene in the workplace (G1).
Characteristics of the scenario	**Specific measures for the management of risks and operating conditions**
General measures (irritant agents for the skin) (G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).
General measures (carcinogenic agents)(G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised exhaust air extractor plants. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. In case of potential exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, wear protective gloves and overalls to prevent skin contamination, use a protection device for

	airways when required by certain exposure scenarios, immediately stop any leaks and dispose of waste in safe conditions. Guarantee the adoption of safe operating systems or of equivalent solutions for risk management. Inspect, check and perform regular maintenance on all devices and control measures. Consider the need for a risk-based healthcare surveillance system (G20).
General exposure (closed systems) (CS15) + with sampling (CS56)	Handle the substance in a closed system (E47). Sample in a closed circuit or system designed to prevent exposure (E8). Wear protective gloves that meet the EN374 standard (PPE15).
General exposure (closed systems) (CS15)	Handle the substance in a closed system (E47). Ensure that the operation is performed outdoors (E69).
Storage (CS67)	Ensure that the operation is performed outdoors (E69). Store the substance in a closed system (E84).
Laboratory activities (CS36)	Handle only under a chemical hood or resort to equivalent methods to minimise the risks of exposure (E12).
Transfer of bulk products (CS14)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Cleaning and maintenance of equipment (CS39)	Drain and flush the system before opening or before performing maintenance on equipment (E55). Preserve drainage contents in sealed air-tight containers while awaiting disposal or subsequent recycling (ENVT4). Immediately remove any leaks (C&H13). Wear protective gloves against chemical agents (in compliance with the EN374 standard), and ensure that a basic training course has been followed. (PPE16)

Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	2.21e6
Fraction of regional tonnage used locally (A3)	0.0068
Yearly tonnage of the site (tons/year) (A5)	1.5e4
Maximum daily tonnage of the site (kg/year) (A4)	5.0e4
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	300
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100
Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk management measures) (OOC4)	0.025
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.003
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0.001
Technical measures and conditions at process level (source) to prevent releases	
The procedures vary from site to site; therefore, conservative estimates of emissions from the process are adopted (TCS1)	
Technical conditions on-site and measures to reduce or limit discharge, emissions into the air and release into the soil	

Prevent the release of non-dissolved substances or recuperate them from refluent water (TRC14). The risk related to environmental exposure is induced by the sediment compartment of soft water (TCR1b). In case of discharge toward an urban refluent water processing plant, no treatment is required (TCR9).	
Treat the emissions in order to guarantee typical removal efficacy (%) (TCR7).	80
Treat wastewater on-site (before starting discharge operations) to ensure the removal efficacy required, ≥ (%):	92.9
In case of discharge toward an urban refluent water processing plant, ensure the removal efficacy required on-site, ≥ (%)	0
Organisational measures designed to prevent/limit release from the site (1286)	
Do not distribute the mud created by the treatment of industrial water on natural land (OMS2). The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3).	
Conditions and measures related to the municipal plant for treatment of refluent water (1273)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Total efficacy of removal of refluent water after adoption of RMMs both on-site and off-site (urban type treatment plant) (%) (STP4).	95.5
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from wastewater (kg/g) (STP6).	7.8e4
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	2000
Conditions and measures related to the outdoor treatment of waste in view of disposal (1272)	
This substance is consumed during use and no waste related to the substance to be disposed of is generated (ETW5).	
Conditions and measures related to the outdoor recovery of waste (1271)	
This substance is consumed during use and no waste related to the substance to be recuperated is generated (ERW3).	
Section 3 Estimated exposures	
3.1 Health	
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).	
3.2 Environment	
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).	
Section 4	
4.1 Health	
It has been estimated that exposure levels should not exceed DN(M)EL when Management Measures for Risks /Operating Conditions illustrated in section 3 are applied (G22). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23). Data available on hazard characteristics do not allow irritating effects on the skin to be traced to a DNEL (G32). Data available on hazard characteristics do not underpin the need to establish a DNEL for other effects on health (G36). Risk Management Measures are based on the qualitative characteristics of the risk (G37).	
4.2 Environment	
Guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1). The efficiency required for removal from refluent waters can be obtained by using on-site/off-site technologies, either individually or in combination (DSU2). The efficiency required for removal from air can be obtained by using on-site technologies, either individually or in combination (DSU3). Further information on scaling activities and on control technologies are provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).	

3. Distribution of the substance

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)	
Title	
Distribution of the substance	
Descriptions for use	
Sector of use	3
Process categories	1, 2, 3, 8a, 8b, 15
Category for release into the environment	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7
Specific category for release into the environment	ESVOC SpERC 1.1b.v1
Processes, assignments, positions held	
Loading of bulk substances (including onto boats/barges, rail/road tank cars and IBC) into systems that are either closed or under containment, including accidental exposure during sampling, storage, unloading, maintenance and associated laboratory activities (CGES1A_I).	
Method of evaluation	
See section 3.	
Section 2 Operating conditions and measures for risk management	
Section 2.1 Exposure control of workers	
Characteristics of the product	
Physical status of the product	Liquid, vapour pressure > 10 kPa in standard conditions (OC5).
Concentration of the substance in the product	Covers a percentage of substance in the product up to 100% (unless otherwise specified) (G13).
Quantity used	Not applicable
Frequency and duration of use/exposure	Covers a daily exposure up to 8 hours (unless otherwise specified) (G2).
Human factors not influenced by risk management	Not applicable
Other operating conditions that concern exposure	Presupposes the use of the product at a temperature not exceeding ambient temperature by more than 20°C, unless otherwise specified (G15). Presupposes the application of an appropriate basic standard for hygiene in the workplace (G1).
Characteristics of the scenario	**Specific measures for the management of risks and operating conditions**
General measures (irritating agents for the skin) (G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).
General measures (carcinogenic agents) (G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised exhaust air extractor plants. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. In case of potential exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, wear protective gloves and overalls to prevent skin contamination, use a protection device for airways when required by certain exposure scenarios, immediately stop any

	leaks and dispose of waste in safe conditions. Guarantee the adoption of safe operating systems or of equivalent solutions for risk management. Inspect, check and perform regular maintenance on all devices and control measures. Consider the need for a risk-based healthcare surveillance system (G20).
General exposure (closed systems) (CS15) + with sampling (CS56)	Handle the substance in a closed system (E47). Sample in a closed circuit or system designed to prevent exposure (E8). Wear protective gloves that meet the EN374 standard (PPE15).
General exposure (closed systems) (CS15) + outdoors (OC9)	Handle the substance in a closed system (E47).
Sampling during the process (CS2).	Sample in a closed circuit or system designed to prevent exposure (E8).
Laboratory activities (CS36)	Handle only under a chemical hood or resort to equivalent methods to minimise the risks of exposure (E12).
Closed system loading and unloading of bulk products (CS501).	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Cleaning and maintenance of equipment (CS39)	Drain and flush the system before opening or before performing maintenance on equipment (E55). Preserve drainage contents in sealed air-tight containers while awaiting disposal or subsequent recycling (ENVT4). Immediately remove any leaks (C&H13). Wear protective gloves against chemical agents (in compliance with the EN374 standard), and ensure that a basic training course has been followed. (PPE16)
Storage (CS67)	Ensure that the operation is performed outdoors (E69). Store the substance in a closed system (E84).

Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	1.87e7
Fraction of regional tonnage used locally (A3)	0.002
Yearly tonnage of the site (tons/year) (A5)	3.75e4
Maximum daily tonnage of the site (kg/year) (A4)	1.2e5
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	300
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100
Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk management measures) (OOC4)	0.001
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.00001
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0.00001
Technical measures and conditions at process level (source) to prevent releases	
The procedures vary from site to site; therefore, conservative estimates of emissions from the process are adopted (TCS1)	
Technical conditions on-site and measures to reduce or limit discharge, emissions into the air and release into the soil	

The environmental risk is correlated with indirect exposure of humans through ingestion (TCR1k). In case of discharge toward an urban refluent water processing plant, no treatment is required (TCR9).	
Treat the emissions in order to guarantee typical removal efficacy (%) (TCR7).	90
Treat wastewater on-site (before starting discharge operations) to ensure the removal efficacy required, ≥ (%):	12
In case of discharge toward an urban refluent water processing plant, ensure the removal efficacy required on-site, ≥ (%)	0
Organisational measures designed to prevent/limit release from the site (1286)	
Do not distribute the mud created by the treatment of industrial water on natural land (OMS2). The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3).	
Conditions and measures related to the municipal plant for treatment of refluent water (1273)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Total efficacy of removal of refluent water after adoption of RMMs both on-site and off-site (urban type treatment plant) (%) (STP4).	95.5
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from wastewater (kg/g) (STP6).	1.1e6
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	2000
Conditions and measures related to the outdoor treatment of waste in view of disposal (1272)	
This substance is consumed during use and no waste related to the substance to be disposed of is generated (ETW5).	
Conditions and measures related to the outdoor recovery of waste (1271)	
Outdoor collection and recycling of waste shall comply with the applicable local and/or national law (ERW1).	
Section 3 Estimated exposures	
3.1 Health	
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).	
3.2 Environment	
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).	
Section 4	
4.1 Health	
It has been estimated that exposure levels should not exceed DN(M)EL when Management Measures for Risks /Operating Conditions illustrated in section 3 are applied (G22). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23). The data available on hazard characteristics do not allow the irritant effects for the skin to be traced to a DNEL (G32). The data available on the hazard characteristics do not underpin the need to establish a DNEL for other effects on health (G36). The risk management measures are based on the qualitative characteristics of the risk (G37).	
4.2 Environment	
The guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1). The efficiency required for removal from refluent water can be obtained by using on-site/off-site technologies, individually or in combination (DSU2). The efficiency required for removal from air can be obtained by using on-site technologies, individually or in combination (DSU3). Further information on scaling activities and on control technologies are provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).	

4. Formulation and (re)packaging of substances and mixtures

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)	
Title	
Formulation and (re)packaging of substances and mixtures	
Descriptions for use	
Sector of use	3, 10
Process categories	1, 2, 3, 8a, 8b, 15
Category for release into the environment	2
Specific category for release into the environment	ESVOC SpERC 2.2.v1
Processes, assignments, positions held	
Formulation of the substance and its mixtures in continuous and discontinuous operations inside closed systems or systems under containment, including accidental exposure during storage, transfer of material, mixing, maintenance, sampling and associated laboratory activities (GES2_I).	
Method of evaluation	
See section 3.	
Section 2 Operating conditions and measures for risk management	
Section 2.1 Exposure control of workers	
Characteristics of the product	
Physical status of the product	Liquid, vapour pressure > 10 kPa in standard conditions (OC5).
Concentration of the substance in the product	Covers a percentage of substance in the product up to 100% (unless otherwise specified) (G13).
Quantity used	Not applicable
Frequency and duration of use/exposure	Covers a daily exposure up to 8 hours (unless otherwise specified) (G2).
Human factors not influenced by risk management	Not applicable
Other operating conditions that concern exposure	Presupposes the use of the product at a temperature not exceeding ambient temperature by more than 20°C, unless otherwise specified (G15). Presupposes the application of an appropriate basic standard for hygiene in the workplace (G1).
Characteristics of the scenario	**Specific measures for the management of risks and operating conditions**
General measures (irritating agents for the skin) (G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).
General measures (carcinogenic agents)(G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised exhaust air extractor plants. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. In case of potential exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, wear protective gloves and overalls to prevent skin contamination, use a protection device for airways when required by certain exposure scenarios, immediately stop any

	leaks and dispose of waste in safe conditions. Guarantee the adoption of safe operating systems or of equivalent solutions for risk management. Inspect, check and perform regular maintenance on all devices and control measures. Consider the need for a risk-based healthcare surveillance system (G20).
General exposure (closed systems) (CS15) + with sampling (CS56)	Handle the substance in a closed system (E47). Sample in a closed circuit or system designed to prevent exposure (E8). Wear protective gloves that meet the EN374 standard (PPE15).
General exposure (closed systems) (CS15) + outdoors (OC9)	Handle the substance in a closed system (E47).
Sampling during the process (CS2)	Sample in a closed circuit or other system to prevent exposure (E8).
Laboratory activities (CS36)	Handle only under a chemical hood or resort to equivalent methods to minimise the risks of exposure (E12).
Transfer of bulk products (CS14)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Transfer of drums/lots (CS8)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Cleaning and maintenance of equipment (CS39)	Drain and flush the system before opening or before performing maintenance on equipment (E55). Preserve drainage contents in sealed air-tight containers while awaiting disposal or subsequent recycling (ENVT4). Immediately remove any leaks (C&H13). Wear protective gloves against chemical agents (conforming with the EN374 standard), and ensure that a basic training course has been followed (PPE16).
Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	1.65e7
Fraction of regional tonnage used locally (A3)	0.0018
Yearly tonnage of the site (tons/year) (A5)	3.0e4
Maximum daily tonnage of the site (kg/year) (A4)	1.0e5
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	300
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100
Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk management measures) (OOC4)	0.025
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.002
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0.0001
Technical measures and conditions at process level (source) to prevent releases	
The procedures vary from site to site; therefore, conservative estimates of emissions from the process are adopted (TCS1)	
Technical conditions on-site and measures to reduce or limit discharge, emissions into the air and release into the soil	
Prevent the release of non-dissolved substances or recuperate them from refluent water (TRC14).	

The environmental risk is correlated with indirect exposure of humans through ingestion (TCR1k). In case of discharge toward an urban refluent water processing plant, no treatment is required (TCR9).	
Treat the emissions in order to guarantee typical removal efficacy (%) (TCR7).	56.5
Treat wastewater on-site (before starting discharge operations) to ensure the removal efficacy required, ≥ (%):	95.594.7
In case of discharge toward an urban refluent water processing plant, ensure the removal efficacy required on-site, ≥ (%)	0
Organisational measures designed to prevent/limit release from the site (1286)	
Do not distribute the mud created by the treatment of industrial water on natural land (OMS2). The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3).	
Conditions and measures related to the municipal plant for treatment of refluent water (1273)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Total efficacy of removal of refluent water after adoption of RMMs both on-site and off-site (urban type treatment plant) (%) (STP4).	95.5
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from refluent water (kg/g) (STP6).	1.0e5
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	2000
Conditions and measures related to the outdoor treatment of waste in view of disposal (1272)	
Outdoor treatment and disposal of waste shall comply with the applicable local and/or national law (ETW3).	
Conditions and measures related to the outdoor recovery of waste (1271)	
Outdoor collection and recycling of waste shall comply with the applicable local and/or national law (ERW1).	
Section 3 Estimated exposures	
3.1 Health	
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).	
3.2 Environment	
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).	
Section 4	
4.1 Health	
It has been estimated that exposure levels should not exceed DN(M)EL when Management Measures for Risks /Operating Conditions illustrated in section 3 are applied (G22). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23). Data available on hazard characteristics do not allow irritating effects on the skin to be traced to a DNEL (G32). Data available on hazard characteristics do not underpin the need to establish a DNEL for other effects on health (G36). Risk Management Measures are based on the qualitative characteristics of the risk (G37).	

4.2 Environment
Guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1). The efficiency required for removal from refluent waters can be obtained by using on-site/off-site technologies, either individually or in combination (DSU2). The efficiency required for removal from air can be obtained by using on-site technologies, either individually or in combination (DSU3). Further information on scaling activities and on control technologies are provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).

5. Use for lining

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)	
Title	
Use for lining	
Descriptions for use	
Sector of use	3
Process categories	1, 2, 3, 8a, 8b, 15
Category for release into the environment	4
Specific category for release into the environment	ESVOC SpERC 4.3a.v1
Processes, assignments, positions held	
Covers use for lining (paints, inks, adhesives, etc.) inside closed systems or systems under containment, including accidental exposure during use (receipt of material, storage, preparation and transfer of bulk or semi-bulk products, film forming and application activities), cleaning of equipment, maintenance and associated laboratory activities (GES3_I).	
Method of evaluation	
See section 3.	
Section 2 Operating conditions and measures for risk management	
Section 2.1 Exposure control of workers	
Characteristics of the product	
Physical status of the product	Liquid, vapour pressure > 10 kPa in standard conditions (OC5).
Concentration of the substance in the product	Covers a percentage of substance in the product up to 100% (unless otherwise specified) (G13).
Quantity used	Not applicable
Frequency and duration of use/exposure	Covers a daily exposure up to 8 hours (unless otherwise specified) (G2).
Human factors not influenced by risk management	Not applicable
Other operating conditions that concern exposure	Presupposes the use of the product at a temperature not exceeding ambient temperature by more than 20°C, unless otherwise specified (G15). Presupposes the application of an appropriate basic standard for hygiene in the workplace (G1).
Characteristics of the scenario	**Specific measures for the management of risks and operating conditions**
General measures (irritating agents for the skin) (G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).
General measures (carcinogenic agents)(G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised suction plants for exhaust air. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. When there is the possibility of exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, where protective gloves and overalls to prevent skin contamination, use a

	protection device for airways when required by certain exposure scenarios, immediately stop any leaks and dispose of waste in safe conditions. Guarantee the adoption of safe working systems or of equivalent solutions for risk management. Inspect, check and subject to regular maintenance al devices and control measures. Consider the need for a health care surveillance system based on the risk (G20).
Film formation – accelerated drying, desiccation and other technologies (CS99)	Handle the substance in a closed system (E47). Guarantee an appropriate standard for general ventilation. Natural ventilation is implemented through doors, windows, etc. In environments with controlled ventilation, the air is either added or removed by an electric extractor fan (E1).
General exposure (closed systems) (CS15)	Handle the substance in a closed system (E47). Guarantee an appropriate standard for general ventilation. Natural ventilation is implemented through doors, windows, etc. In environments with controlled ventilation, the air is either added or removed by an electric extractor fan (E1).
Product transfers (C3)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Laboratory activities (CS36)	Handle only under a chemical hood or resort to equivalent methods to minimise the risks of exposure (E12).
Cleaning and maintenance of equipment (CS39)	Drain and flush the system before opening or before performing maintenance on equipment (E55). Preserve drainage contents in sealed air-tight containers while awaiting disposal or subsequent recycling (ENVT4). Immediately remove any leaks (C&H13). Wear protective gloves against chemical agents (in compliance with the EN374 standard), and ensure that a basic training course has been followed. (PPE16)
Storage (CS67)	Store the substance in a closed system (E84).
Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	6.2e3
Fraction of regional tonnage used locally (A3)	1.0
Yearly tonnage of the site (tons/year) (A5)	6.2e3
Maximum daily tonnage of the site (kg/year) (A4)	2.1e4
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	300
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100
Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk management measures) (OOC4)	0.98
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.007
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0

Technical measures and conditions at process level (source) to prevent releases	
The procedures vary from site to site; therefore, conservative estimates of emissions from the process are adopted (TCS1)	
Technical conditions on-site and measures to reduce or limit discharge, emissions into the air and release into the soil	
Prevent the release of non-dissolved substances or recuperate them from refluent water (TRC14). The environmental risk is correlated with indirect exposure of humans through ingestion (TCR1k). In case of discharge toward an urban refluent water processing plant, no treatment is required (TCR9).	
Treat the emissions in order to guarantee typical removal efficacy (%) (TCR7).	94.1
Treat wastewater on-site (before starting discharge operations) to ensure the removal efficacy required, ≥ (%):	92.6
In case of discharge toward an urban refluent water processing plant, ensure the removal efficacy required on-site, ≥ (%)	0
Organisational measures designed to prevent/limit release from the site (1286)	
Do not distribute the mud created by the treatment of industrial water on natural land (OMS2). The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3).	
Conditions and measures related to the municipal plant for treatment of refluent water (1273)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Total efficacy of removal of refluent water after adoption of RMMs both on-site and off-site (urban type treatment plant) (%) (STP4).	95.5
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from refluent water (kg/g) (STP6).	2.1e4
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	2000
Conditions and measures related to the outdoor treatment of waste in view of disposal (1272)	
Outdoor treatment and disposal of waste shall comply with the applicable local and/or national law (ETW3).	
Conditions and measures related to the outdoor recovery of waste (1271)	
Outdoor collection and recycling of waste shall comply with the applicable local and/or national law (ERW1).	
Section 3 Estimated exposures	
3.1 Health	
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).	
3.2 Environment	
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).	
Section 4	
4.1 Health	
It has been estimated that exposure levels should not exceed DN(M)EL when Management Measures for Risks /Operating Conditions illustrated in section 3 are applied (G22). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23). Data available on hazard characteristics do not allow irritating effects on the skin to be traced to a DNEL (G32). Data available on hazard characteristics do not underpin the need to establish a DNEL for other effects on health (G36). Risk Management Measures are based on the qualitative characteristics of the risk (G37).	

4.2 Environment
Guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1). The efficiency required for removal from refluent waters can be obtained by using on-site/off-site technologies, either individually or in combination (DSU2). The efficiency required for removal from air can be obtained by using on-site technologies, either individually or in combination (DSU3). Further information on scaling activities and on control technologies are provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).

6. Use in cleaning products

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)	
Title	
Use in cleaning products (GEST4_I)	
Descriptions for use	
Sector of use	3
Process categories	1, 2, 3, 8a, 8b
Category for release into the environment	4
Specific category for release into the environment	ESVOC SpERC 4.4a.v1
Processes, assignments, positions held	
Covers the use as component of cleaning products inside closed systems or systems under containment, including accidental exposure during transfer from the place of storage, during preparation phase mixing/dilution, during cleaning activities and maintenance of equipment (CGES4_I).	
Method of evaluation	
See section 3.	
Section 2 Operating conditions and measures for risk management	
Section 2.1 Exposure control of workers	
Characteristics of the product	
Physical status of the product	Liquid, vapour pressure > 10 kPa in standard conditions (OC5).
Concentration of the substance in the product	Covers a percentage of substance in the product up to 100% (unless otherwise specified) (G13).
Quantity used	Not applicable
Frequency and duration of use/exposure	Covers a daily exposure up to 8 hours (unless otherwise specified) (G2).
Human factors not influenced by risk management	Not applicable
Other operating conditions that concern exposure	Presupposes the use of the product at a temperature not exceeding ambient temperature by more than 20°C, unless otherwise specified (G15). Presupposes the application of an appropriate basic standard for hygiene in the workplace (G1).
Characteristics of the scenario	**Specific measures for the management of risks and operating conditions**
General measures (irritating agents for the skin) (G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).
General measures (carcinogenic agents)(G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised exhaust air extractor plants. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. In case of potential exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, wear protective gloves and overalls to prevent skin contamination, use a protection device for airways when required by certain exposure scenarios, immediately stop any

	leaks and dispose of waste in safe conditions. Guarantee the adoption of safe operating systems or of equivalent solutions for risk management. Inspect, check and perform regular maintenance on all devices and control measures. Consider the need for a risk-based healthcare surveillance system (G20).
Transfer of bulk products (CS14)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Use in systems under containment (C38), Automated process with (partly) closed systems (CS93).	Handle the substance in a closed system (E47). Wear protective gloves that meet the EN374 standard (PPE15).
Filling/preparation of equipment from drums or container (CS45).	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Cleaning and maintenance of equipment (CS39)	Drain and flush the system before opening or before performing maintenance on equipment (E55). Preserve drainage contents in sealed air-tight containers while awaiting disposal or subsequent recycling (ENVT4). Immediately remove any leaks (C&H13). Wear protective gloves against chemical agents (in compliance with the EN374 standard), and ensure that a basic training course has been followed. (PPE16)
Storage (CS67)	Store the substance in a closed system (E84).
Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	5.12e2
Fraction of regional tonnage used locally (A3)	0.2
Yearly tonnage of the site (tons/year) (A5)	1.0e2
Maximum daily tonnage of the site (kg/year) (A4)	5.0e3
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	20
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100
Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk management measures) (OOC4)	1.0
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.00003
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0
Technical measures and conditions at process level (source) to prevent releases	
The procedures vary from site to site; therefore, conservative estimates of emissions from the process are adopted (TCS1)	

Technical conditions on-site and measures to reduce or limit discharge, emissions into the air and release into the soil	
Prevent the release of non-dissolved substances or recuperate them from refluent water (TRC14). The environmental risk is correlated with indirect exposure of humans through ingestion (TCR1k). In case of discharge toward an urban refluent water processing plant, no treatment is required (TCR9).	
Treat the emissions in order to guarantee typical removal efficacy (%) (TCR7).	70
Treat wastewater on-site (before starting discharge operations) to ensure the removal efficacy required, ≥ (%)	4.4
In case of discharge toward an urban refluent water processing plant, ensure the removal efficacy required on-site, ≥ (%)	0
Organisational measures designed to prevent/limit release from the site (1286)	
Do not distribute the mud created by the treatment of industrial water on natural land (OMS2). The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3).	
Conditions and measures related to the municipal plant for treatment of refluent water (1273)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Total efficacy of removal of refluent water after adoption of RMMs both on-site and off-site (urban type treatment plant) (%) (STP4).	95.5
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from refluent water (kg/g) (STP6).	2.9e4
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	2000
Conditions and measures related to the outdoor treatment of waste in view of disposal (1272)	
Outdoor treatment and disposal of waste shall comply with the applicable local and/or national law (ERW3).	
Conditions and measures related to the outdoor recovery of waste (1271)	
Outdoor collection and recycling of waste shall comply with the applicable local and/or national law (ERW1).	
Section 3 Estimated exposures	
3.1 Health	
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).	
3.2 Environment	
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).	
Section 4	
4.1 Health	
It has been estimated that exposure levels should not exceed DN(M)EL when Management Measures for Risks /Operating Conditions illustrated in section 3 are applied (G22). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23). Data available on hazard characteristics do not allow irritating effects on the skin to be traced to a DNEL (G32). Data available on hazard characteristics do not underpin the need to establish a DNEL for other effects on health (G36). Risk Management Measures are based on the qualitative characteristics of the risk (G37).	

4.2 Environment
Guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1). The efficiency required for removal from refluent waters can be obtained by using on-site/off-site technologies, either individually or in combination (DSU2). The efficiency required for removal from air can be obtained by using on-site technologies, either individually or in combination (DSU3). Further information on scaling activities and on control technologies are provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).

7. Use as fuel - Industrial sector

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)	
Title	
Use as fuel	
Descriptions for use	
Sector of use	3
Process categories	1, 2, 3, 8a, 8b, 16
Category for release into the environment	7
Specific category for release into the environment	ESVOC SpERC 7.12a.v1
Processes, assignments, positions held	
Covers the use as fuel (or as an additive for fuel or a component of additives) inside closed systems or systems under containment, including accidental exposure during activities associated with transfer, use, maintenance of equipment and handling of discard products (CGES12_I).	
Method of evaluation	
See section 3.	
Section 2 Operating conditions and measures for risk management	
Section 2.1 Exposure control of workers	
Characteristics of the product	
Physical status of the product	Liquid, vapour pressure > 10 kPa in standard conditions (OC5).
Concentration of the substance in the product	Covers a percentage of substance in the product up to 100% (unless otherwise specified) (G13).
Quantity used	Not applicable
Frequency and duration of use/exposure	Covers a daily exposure up to 8 hours (unless otherwise specified) (G2).
Human factors not influenced by risk management	Not applicable
Other operating conditions that concern exposure	Presupposes the use of the product at a temperature not exceeding ambient temperature by more than 20°C, unless otherwise specified (G15). Presupposes the application of an appropriate basic standard for hygiene in the workplace (G1).
Characteristics of the scenario	**Specific measures for the management of risks and operating conditions**
General measures (irritating agents for the skin) (G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).
General measures (carcinogenic agents)(G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised exhaust air extractor plants. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. In case of potential exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, wear protective gloves and overalls to prevent skin contamination, use a protection device for airways when required by certain exposure scenarios, immediately stop any

	leaks and dispose of waste in safe conditions. Guarantee the adoption of safe operating systems or of equivalent solutions for risk management. Inspect, check and perform regular maintenance on all devices and control measures. Consider the need for a risk-based healthcare surveillance system (G20).
Closed system unloading of bulk products (CS502)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Transfer of drums/lots (CS8)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Supplies (CS 507)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Fuel supplies for aircraft (CS508)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
General exposure (closed systems) (CS15)	Handle the substance in a closed system (E47). Guarantee an appropriate standard for general ventilation. Natural ventilation is implemented through doors, windows, etc. In environments with controlled ventilation, the air is either added or removed by an electric extractor fan (E1).
Use as fuel (GEST12_I), (closed systems) (CS107)	Handle the substance in a closed system (E47).
Cleaning and maintenance of equipment (CS39)	Drain the system before opening the equipment or before performing maintenance operations on the same (E65). Preserve drainage contents in sealed air-tight containers while awaiting disposal or subsequent recycling (ENVT4). Immediately remove any leaks (C&H13). Guarantee an appropriate standard for general ventilation. Natural ventilation is implemented through doors, windows, etc. In environments with controlled ventilation, the air is either added or removed by an electric extractor fan (E1). Wear protective gloves against chemical agents (in compliance with the EN374 standard), and ensure that a basic training course has been followed. (PPE16)
Storage (CS67)	Store the substance in a closed system (E84). Guarantee an appropriate standard for general ventilation. Natural ventilation is implemented through doors, windows, etc. In environments with controlled ventilation, the air is either added or removed by an electric extractor fan (E1).

Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	1.4e6
Fraction of regional tonnage used locally (A3)	1
Yearly tonnage of the site (tons/year) (A5)	1.4e6
Maximum daily tonnage of the site (kg/year) (A4)	4.6e6
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	300
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100

Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk management measures) (OOC4)	0.0025
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.00001
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0
Technical measures and conditions at process level (source) to prevent releases	
The procedures vary from site to site; therefore, conservative estimates of emissions from the process are adopted (TCS1)	
Technical conditions on-site and measures to reduce or limit discharge, emissions into the air and release into the soil	
The environmental risk is correlated with indirect exposure of humans through ingestion (TCR1k). In case of discharge toward an urban refluent water processing plant, no treatment is required (TCR9).	
Treat the emissions in order to guarantee typical removal efficacy (%) (TCR7).	99.4
Treat wastewater on-site (before starting discharge operations) to ensure the removal efficacy required, ≥ (%)	76.9
In case of discharge toward an urban refluent water processing plant, ensure the removal efficacy required on-site, ≥ (%)	0
Organisational measure designed to prevent/limit release from the site (1286)	
Do not distribute the mud created by the treatment of industrial water on natural land (OMS2). The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3).	
Conditions and measures related to the municipal plant for treatment of refluent water (1273)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Total efficacy of removal of refluent water after adoption of RMMs both on-site and off-site (urban type treatment plant) (%) (STP4).	95.5
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from refluent water (kg/g) (STP6).	4.6e6
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	2000
Conditions and measures related to the outdoor treatment of waste in view of disposal (1272)	
Emissions of fuel are regulated by the control measures currently in force (ETW1). Emissions of fuel are taken into account for evaluating the regional impact (ETW2).	
Conditions and measures related to the outdoor recovery of waste (1271)	
Outdoor treatment and disposal of waste shall comply with the applicable local and/or national law (ERW3).	
Section 3 Estimated exposures	
3.1 Health	
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).	
3.2 Environment	
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).	

Section 4
4.1 Health
It has been estimated that exposure levels should not exceed DN(M)EL when Management Measures for Risks /Operating Conditions illustrated in section 3 are applied (G22). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23). Data available on hazard characteristics do not allow irritating effects on the skin to be traced to a DNEL (G32). Data available on hazard characteristics do not underpin the need to establish a DNEL for other effects on health (G36). Risk Management Measures are based on the qualitative characteristics of the risk (G37).
4.2 Environment
Guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1). The efficiency required for removal from refluent waters can be obtained by using on-site/off-site technologies, either individually or in combination (DSU2). The efficiency required for removal from air can be obtained by using on-site technologies, either individually or in combination (DSU3). Further information on scaling activities and on control technologies are provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).

8. Use as fuel - Professional sector

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)	
Title	
Use as fuel	
Descriptions for use	
Sector of use	22
Process categories	1, 2, 3, 8a, 8b, 16
Category for release into the environment	9a, 9b
Specific category for release into the environment	ESVOC SpERC 9.12.v1
Processes, assignments, positions held	
Covers the use as fuel (or as an additive for fuel or a component of additives) inside closed systems or systems under containment, including accidental exposure during activities associated with transfer, use, maintenance of equipment and handling of discard products (CGES12_I).	
Method of evaluation	
See section 3.	
Section 2 Operating conditions and measures for risk management	
Section 2.1 Exposure control of workers	
Characteristics of the product	
Physical status of the product	Liquid, vapour pressure > 10 kPa in standard conditions (OC5).
Concentration of the substance in the product	Covers a percentage of substance in the product up to 100% (unless otherwise specified) (G13).
Quantity used	Not applicable
Frequency and duration of use/exposure	Covers a daily exposure up to 8 hours (unless otherwise specified) (G2).
Human factors not influenced by risk management	Not applicable
Other operating conditions that concern exposure	Presupposes the use of the product at a temperature not exceeding ambient temperature by more than 20°C, unless otherwise specified (G15). Presupposes the application of an appropriate basic standard for hygiene in the workplace (G1).
Characteristics of the scenario	**Specific measures for the management of risks and operating conditions**
General measures (irritating agents for the skin) (G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).
General measures (carcinogenic agents)(G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised exhaust air extractor plants. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. In case of potential exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, wear protective gloves and overalls to prevent skin contamination, use a protection device for airways when required by certain exposure scenarios, immediately stop any

	leaks and dispose of waste in safe conditions. Guarantee the adoption of safe operating systems or of equivalent solutions for risk management. Inspect, check and perform regular maintenance on all devices and control measures. Consider the need for a risk-based healthcare surveillance system (G20).
General exposure (closed systems) (CS15) + outdoors (OC9)	Handle the substance in a closed system (E47).
Closed system unloading of bulk products (CS502)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Transfer of drums/lots (CS8)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Supplies (CS 507)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Fuel supplies for aircraft (CS508)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Use as fuel (GEST12_I), (closed systems) (CS107)	Handle the substance in a closed system (E47).
Maintenance of equipment (CS5)	Drain the system before opening the equipment or before performing maintenance operations on the same (E65). Preserve drainage contents in sealed air-tight containers while awaiting disposal or subsequent recycling (ENVT4). Immediately remove any leaks (C&H13). Guarantee an appropriate standard for general ventilation. Natural ventilation is implemented through doors, windows, etc. In environments with controlled ventilation, the air is either added or removed by an electric extractor fan (E1). Ensure that operating staff is correctly trained in order to limit any exposure (EI19).
Storage (CS67)	Store the substance in a closed system (E84). Guarantee an appropriate standard for general ventilation. Natural ventilation is implemented through doors, windows, etc. In environments with controlled ventilation, the air is either added or removed by an electric extractor fan (E1).

Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	1.19e6
Fraction of regional tonnage used locally (A3)	0.0005
Yearly tonnage of the site (tons/year) (A5)	5.9e2
Maximum daily tonnage of the site (kg/year) (A4)	1.6e3
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	365
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100

Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk management measures) (OOC4)	0.01
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.00001
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0.00001
Technical measures and conditions at process level (source) to prevent releases	
The procedures vary from site to site; therefore, conservative estimates of emissions from the process are adopted (TCS1)	
Technical conditions on-site and measures to reduce or limit discharge, emissions into the air and release into the soil	
The environmental risk is correlated with indirect exposure of humans through ingestion (TCR1k). In case of discharge toward an urban refluent water processing plant, no treatment is required (TCR9).	
Treat the emissions in order to guarantee typical removal efficacy (%) (TCR7).	N/A
Treat wastewater on-site (before starting discharge operations) to ensure the removal efficacy required, ≥ (%)	3.4
In case of discharge toward an urban refluent water processing plant, ensure the removal efficacy required on-site, ≥ (%)	0
Organisational measures designed to prevent/limit release from the site (1286)	
Do not distribute the mud created by the treatment of industrial water on natural land (OMS2). The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3).	
Conditions and measures related to the municipal plant for treatment of refluent water (1273)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Total efficacy of removal of refluent water after adoption of RMMs both on-site and off-site (urban type treatment plant) (%) (STP4).	95.5
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from refluent water (kg/g) (STP6).	1.5e4
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	2000
Conditions and measures related to the outdoor treatment of waste in view of disposal (1272)	
Emissions of fuel are regulated by the control measures currently in force (ETW1). Emissions of fuel are taken into account for evaluating the regional impact (ETW2).	
Conditions and measures related to the outdoor recovery of waste (1271)	
Outdoor treatment and disposal of waste shall comply with the applicable local and/or national law (ERW3).	
Section 3 Estimated exposures	
3.1 Health	
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).	
3.2 Environment	
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).	

Section 4
4.1 Health
It has been estimated that exposure levels should not exceed DN(M)EL when Management Measures for Risks /Operating Conditions illustrated in section 3 are applied (G22). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23). Data available on hazard characteristics do not allow irritating effects on the skin to be traced to a DNEL (G32). Data available on hazard characteristics do not underpin the need to establish a DNEL for other effects on health (G36). Risk Management Measures are based on the qualitative characteristics of the risk (G37).
4.2 Environment
Guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1). The efficiency required for removal from refluent waters can be obtained by using on-site/off-site technologies, either individually or in combination (DSU2). The efficiency required for removal from air can be obtained by using on-site technologies, either individually or in combination (DSU3). Further information on scaling activities and on control technologies are provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).

9. Use as fuel - Consumers

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)		
Title		
Use as fuel		
Descriptions for use		
Sector of use	21	
Chemical product categories	13	
Category for release into the environment	9a, 9b	
Specific category for release into the environment	ESVOC SpERC 9.12c.v1	
Processes, assignments, positions held		
Covers the use as liquid fuel on the part of the consumer (GES12_C)		
Method of evaluation		
See section 3.		
Section 2 Operating conditions and measures for risk management		
Section 2.1 Exposure control of workers		
Characteristics of the product		
Physical status of the product	Liquid, vapour pressure > 10 kPa in standard conditions (OC5).	
Concentration of the substance in the product	Covers concentrations up to 100 (%), unless otherwise specified.	
Quantity used	Includes consumptions up to 37,500 g (ConsOC2) unless otherwise specified; covers a skin contact area up to 420 cm^2 (ConsOC5).	
Frequency and duration of use/exposure	Includes usage frequencies up to 0.413 times a day, unless otherwise specified (ConsOC2); covers exposures up to 2 hours for each event (ConsOC14).	
Other operating conditions that concern exposure	Use at ambient temperature is assumed unless otherwise specified (ConsOC15); assumed for use in a room of 20 m^3 (ConsOC11); assumed for use in typical ventilation conditions (ConsOC8).	
Characteristics of the scenario	**Specific measures for the management of risks and operating conditions**	
Fuel – liquid – added subcategory: fuel supplies for cars (PC13)	OC	Unless otherwise specified, it includes concentrations up to 1 (%) (ConsOC1); includes usage up to 52 days/year (ConsCO3); includes usage frequencies up to once a day (ConsOC4); includes a skin contact area up to 210.00 cm^2 (ConsOC5); for every use, it includes consumption up to 37,500 g (ConsOC2); includes outdoor uses (ConsOC12); assumed for use in a room of 100 m^3 (ConsOC11); for every use, it includes exposure rates up to 0.04 hours per event (ConsOC14).
	RMM	No specific RMM value developed beyond the reported OCs.
Fuel – liquid – added subcategory: Fuel supplies for scooters (PC13)	OC	Unless otherwise specified, it includes concentrations up to 1 (%) (ConsOC1); includes usage up to 52 days/year (ConsCO3); includes usage frequencies up to once a day (ConsOC4); includes a skin contact area up to 210.00 cm^2 (ConsOC5); for every use, it includes consumptions up to 3,750 g (ConsOC2); includes outdoor uses (ConsOC12); assumed for use in a room of 100 m^3 (ConsOC11); for every use, it includes exposure rates up to 0.04 hours per event (ConsOC14).
	RMM	No specific RMM value developed beyond the reported OCs.

Fuel – liquid – added subcategory: garden equipment – use (PC13)	OC	Unless otherwise specified, it includes concentrations up to 1 (%) (ConsOC1); includes usage up to 26 days/year (ConsCO3); includes usage frequencies up to once a day (ConsOC4); for every use, it includes consumption up to 750 g (ConsOC2); includes outdoor uses (ConsOC12); assumed for use in a room of 100 m^3 (ConsOC11); for every use, it includes exposure rates up to 2.00 hours per event (ConsOC14).
	RMM	No specific RMM value developed beyond the reported OCs.
Fuel – liquid – added subcategory: garden equipment – supplies (PC13)	OC	Unless otherwise specified, it includes concentrations up to 1 (%) (ConsOC1); includes usage up to 26 days/year (ConsCO3); includes usage frequencies up to once a day (ConsOC4); includes a skin contact area up to 420.00 cm^2 (ConsOC5); for every use, it includes consumption up to 750 g (ConsOC2); includes use in a garage for cars (34 m3) in typical conditions of ventilation (ConsOC10); assumed for use in a room of 34 m^3 (ConsOC11); for every use, it includes exposure rates up to 0.03 hours per event (ConsOC14).
	RMM	No specific RMM value developed beyond the reported OCs.

Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	1.39e7
Fraction of regional tonnage used locally (A3)	0.0005
Yearly tonnage of the site (tons/year) (A5)	7.0e3
Maximum daily tonnage of the site (kg/year) (A4)	1.9e4
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	365
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100
Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk management measures) (OOC4)	0.01
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.00001
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0.00001
Conditions and measures related to the municipal recovery plan	
The environmental risk is correlated with indirect exposure of humans (principally through inhalation)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from refluent water (kg/g) (STP6).	1.8e5
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	2000
Conditions and measures related to the outdoor treatment of discards	
Emissions of fuel are regulated by the control measures currently in force (ETW1). Emissions of fuel are taken into account for evaluating the regional impact (ETW2).	
Conditions and measures related to the recovery treatment of discards	
This substance is consumed during use and no waste related to the substance to be recuperated is generated (ERW3).	

Section 3 Estimated exposures
3.1 Health
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).
3.2 Environment
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).
Section 4
4.1 Health
No evaluation of exposure rates for human health has been presented (G39). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23).
4.2 Environment
Guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1). Further information on scaling activities and on control technologies are provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).

10. Rubber production and processing

Section 1 Exposure to the scenario entitled Naphthas with low boiling point classified as R45 and/or R46 and/or R62 and/or R63 (containing 0% to 1% of benzene)	
Title	
Rubber production and processing	
Descriptions for use	
Sector of use	3, 10, 11
Process categories	1, 2, 3, 8a, 8b, 9, 210
Category for release into the environment	1, 4, 6d
Specific category for release into the environment	ESVOC SpERC 4.19.v1
Processes, assignments, positions held	
Production of tyres and general rubber items inside closed systems or systems under containment, including accidental exposure during raw rubber processing (unprocessed), handling and mixing of rubber additives, classification, vulcanisation, cooling, finish and maintenance (CGES19_I).	
Method of evaluation	
See section 3.	
Section 2 Operating conditions and measures for risk management	
Section 2.1 Exposure control of workers	
Characteristics of the product	
Physical status of the product	
Concentration of the substance in the product	Covers a percentage of substance in the product up to 100% (unless otherwise specified) (G13).
Quantity used	Not applicable
Frequency and duration of use/exposure	Covers a daily exposure up to 8 hours (unless otherwise specified) (G2).
Human factors not influenced by risk management	Not applicable
Characteristics of the scenario	**Specific measures for the management of risks and operating conditions**
General measures (irritating agents for the skin) (G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).
General measures (carcinogenic agents)(G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised exhaust air extractor plants. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. In case of potential exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, wear protective gloves and overalls to prevent skin contamination, use a protection device for airways when required by certain exposure scenarios, immediately stop any leaks and dispose of waste in safe conditions. Guarantee the adoption of safe operating systems or of equivalent solutions for risk management. Inspect, check and perform regular maintenance on all

	devices and control measures. Consider the need for a risk-based healthcare surveillance system (G20).
General measures (irritating agents for the skin) (G19)	Avoid direct contact of the product with the skin. Identify potential areas of indirect contact with skin. Wear protective gloves (tested according to the EN374 standard) in case of potential contact of the substance with hands. Remove contaminations/leaks as soon as they occur. Immediately remove any contamination with the skin. Provide basic training for personnel targeted at prevention/limitation of exposure, and notify the onset of any dermatological problems (E3).
General measures (carcinogenic agents)(G18)	Consider technical progress and updates of processes (including automation) to remove dispersions. Limit exposure by adopting measures such as closed systems, dedicated plants and special general/localised exhaust air extractor plants. Drain the systems and clean the transfer lines before interrupting containment. Clean/flush the equipment, when possible, prior to maintenance. In case of potential exposure: limit access only to authorised personnel, guarantee operators specific training on activities and operations to be carried out in order to minimise the risk of exposure, wear protective gloves and overalls to prevent skin contamination, use a protection device for airways when required by certain exposure scenarios, immediately stop any leaks and dispose of waste in safe conditions. Guarantee the adoption of safe operating systems or of equivalent solutions for risk management. Inspect, check and perform regular maintenance on all devices and control measures. Consider the need for a risk-based healthcare surveillance system (G20).
Product transfers (C3) (closed systems) (CS107)	Store the substance in a closed system (E84). Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
General exposure (closed systems) (CS15)	Handle the substance in a closed system (E47).
Product transfers (CS3)	Make sure that transfer of the material takes place in contained and extracting ventilation (E66) conditions.
Transfer of bulk products (CS91)	Handle the substance in a closed system (E47). Wear protective gloves that meet the EN374 standard (PPE15).
Laboratory activities (CS36)	Handle only under a chemical hood or resort to equivalent methods to minimise the risks of exposure (E12).
Maintenance of equipment (CS5)	Drain the system before opening the equipment or before performing maintenance operations on the same (E65). Preserve drainage contents in sealed air-tight containers while awaiting disposal or subsequent recycling (ENVT4). Immediately remove any leaks (C&H13). Guarantee an appropriate standard for general ventilation. Natural ventilation is implemented through doors, windows, etc. In environments with controlled ventilation, the air is either added or removed by an electric extractor fan (E1).

Section 2.2 Environmental exposure control	
Characteristics of the product	
The substance is a UVCB complex (PrC3). Prevalently hydrophobic (PrC4a)	
Quantities used	
Fraction of EU tonnage used locally (A1)	0.1
Regional tonnage (tons/year) (A2)	94
Fraction of regional tonnage used locally (A3)	1
Yearly tonnage of the site (tons/year) (A5)	94

Maximum daily tonnage of the site (kg/year) (A4)	4.7e3
Frequency and duration of use	
Continuous release (FD2)	
Days of emission (days/year) (FD4)	20
Environmental factors not influenced by risk management	
Local dilution factor in soft water (EF1)	10
Local dilution factor in seawater (EF2)	100
Other operating conditions that concern environmental exposure	
Fraction released into air by the process (initial release prior to application of risk management measures) (OOC4)	0.003
Fraction released into wastewater by the process (initial release prior to application of risk management measures) (OOC5)	0.01
Fraction released into the soil by the process (initial release prior to application of risk management measures) (OOC6)	0.0001
Technical measures and conditions at process level (source) to prevent releases	
The procedures vary from site to site; therefore, conservative estimates of emissions from the process are adopted (TCS1)	
Technical conditions on-site and measures to reduce or limit discharge, emissions into the air and release into the soil	
Prevent the release of non-dissolved substances or recuperate them from refluent water (TRC14). The environmental risk is correlated with indirect exposure of humans through ingestion (TCR1k). In case of discharge toward an urban refluent water processing plant, no treatment is required (TCR9).	
Treat the emissions in order to guarantee typical removal efficacy (%) (TCR7).	0
Treat wastewater on-site (before starting discharge operations) to ensure the removal efficacy required, ≥ (%)	23.9
In case of discharge toward an urban refluent water processing plant, ensure the removal efficacy required on-site, ≥ (%)	0
Organisational measures designed to prevent/limit release from the site (1286)	
Do not distribute the mud created by the treatment of industrial water on natural land (OMS2). The mud created by the treatment of industrial water shall be incinerated, kept contained or treated (OMS3).	
Conditions and measures related to the municipal plant for treatment of refluent water (1273)	
Estimated removal of the substance from refluent water by means of an urban processing plant (%) (STP3).	95.5
Total efficacy of removal of refluent water after adoption of RMMs both on-site and off-site (urban type treatment plant) (%) (STP4).	95.5
Maximum tonnage allowed for the site (MSafe) based on release subsequent to total removal treatment from refluent water (kg/g) (STP6).	4.2e4
Theoretical capacity for the urban refluent water processing plant (m3/d) (STP5).	2000
Conditions and measures related to the outdoor treatment of waste in view of disposal (1272)	
Outdoor treatment and disposal of waste shall comply with the applicable local and/or national law (ERW3).	
Conditions and measures related to the outdoor recovery of waste (1271)	
Outdoor collection and recycling of waste shall comply with the applicable local and/or national law (ERW1).	
Section 3 Estimated exposures	
3.1 Health	
The ECETOC TRA method was used for evaluating exposure levels in the workplace, when they are not expressly indicated (G21).	
3.2 Environment	
The HBM (Hydrocarbon Block Method) method was used to calculate environmental exposure with the Petrorisk model (EE2).	
Section 4	

4.1 Health
It has been estimated that exposure levels should not exceed DN(M)EL when Management Measures for Risks /Operating Conditions illustrated in section 3 are applied (G22). When various Management Measures for Risks/Operating Conditions are adopted, users shall guarantee that the risks are handled at least at an equivalent level (G23). Data available on hazard characteristics do not allow irritating effects on the skin to be traced to a DNEL (G32). Data available on hazard characteristics do not underpin the need to establish a DNEL for other effects on health (G36). Risk Management Measures are based on the qualitative characteristics of the risk (G37).
4.2 Environment
Guidelines are based on the presupposed conditions of use that might not be applicable to all sites; therefore, a scaling operation to define adequate management measures for specific site-related risks might be necessary (DSU1). The efficiency required for removal from refluent waters can be obtained by using on-site/off-site technologies, either individually or in combination (DSU2). The efficiency required for removal from air can be obtained by using on-site technologies, either individually or in combination (DSU3). Further information on scaling activities and on control technologies are provided by the Technical Fact Sheets SpERC (http://cefic.org/en/reach-for-industries-libraries.html) (DSU4).