

ESSENCE COUPE C5

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Date of issue: 6/6/2017

Supersedes: 2/2/2016 Version: 13.3

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

1.1. Product identifier

Product form : Substance

Substance name : ESSENCE COUPE C5

Chemical name : Hydrocarbons, C4-6, depentanizer lights, arom. hydrotreater, Low boiling point naphtha - unspecified, [A complex combination of hydrocarbons obtained as first runnings from the depentanizer column before hydrotreatment of the aromatic charges. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C4 through C6, predominantly pentanes and pentenes, and boiling in the range of approximately 25°C to 40°C (77°F to 104°F).]

EC No : 295-298-4

CAS No : 91995-38-9

REACH registration No : Total Olefins Antwerp (01-2119486400-43-0003) -

Synonyms : 91995-38-9

Product group : -

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

1.2.1. Relevant identified uses

Main use category : Professional use

Use of the substance/mixture : Manufacture of substances
 Distribution of substance
 Formulation & (re)packing of substances and mixtures
 Synthesis intermediate
 Functional Fluids
 For the detailed uses of the product see annex of the safety data sheet

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

REFINING & CHEMICALS BRANCH
 TOTAL PETROCHEMICALS & REFINING SA/NV
 Rue de l'Industrie 52 Nijverheidsstraat - B-1040 BRUSSELS - BELGIUM
 T +32 (0)2.288.91.11
rc.fer-sds@total.com - www.total.com

1.4. Emergency telephone number

Emergency number : Emergency call Carechem 24 International :
 • for English speaking countries: +44 (0) 1235 239 670
 • for Europe (in local languages): + 33 1 49 00 00 49
 • for Africa and Middle East: + 44 (0) 1235 239 671 • for China:
 + 86 10 5100 3039
 • for Asia Pacific (Hong-Kong, Singapore, Taiwan, Philippines, India, Vietnam, Sri Lanka, Japan, Korea, Malaysia, Indonesia, Thailand) :
 + 65 3158 1074

Country	Organisation/Company	Address	Emergency number	Comment
	National Poisons Emergency number		08 45 46 47	
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals-24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Flammable liquids, Category 1 H224

Skin corrosion/irritation, Category 2 H315

Germ cell mutagenicity, Category 1B H340

Carcinogenicity, Category 1B H350

Reproductive toxicity, Category 2 H361f



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Specific target organ toxicity — Single exposure, Category 3, Narcosis H336

Aspiration hazard, Category 1 H304

Hazardous to the aquatic environment — Chronic Hazard, Category 2 H411

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

Extremely flammable liquid and vapour. May cause cancer. May cause genetic defects. Suspected of damaging fertility. May be fatal if swallowed and enters airways. Causes skin irritation. May cause drowsiness or dizziness. Toxic to aquatic life with long lasting effects.

2.2. Label elements

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

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

H224 - Extremely flammable liquid and vapour
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H336 - May cause drowsiness or dizziness
H340 - May cause genetic defects
H350 - May cause cancer
H361f - Suspected of damaging fertility
H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (CLP) :

P201 - Obtain special instructions before use
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P243 - Take precautionary measures against static discharge
P262 - Do not get in eyes, on skin, or on clothing
P273 - Avoid release to the environment
P281 - Use personal protective equipment as required
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P309+P311 - IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician
P403+P233 - Store in a well-ventilated place. Keep container tightly closed

2.3. Other hazards

Other hazards not contributing to the classification

: In use, may form flammable/explosive vapour-air mixture. Handling this product may result in electrostatic accumulation. Use proper grounding procedures.

SECTION 3: Composition/information on ingredients

3.1. Substance

Comments :

UVCB

Chemical name :

Hydrocarbons, C4-6, depentanizer lights, arom. hydrotreater, Low boiling point naphtha - unspecified, [A complex combination of hydrocarbons obtained as first runnings from the depentanizer column before hydrotreatment of the aromatic charges. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C4 through C6, predominantly pentanes and pentenes, and boiling in the range of approximately 25°C to 40°C (77°F to 104°F).]

CAS No :

91995-38-9

EC No :

295-298-4

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
n-pentane	(CAS No) 109-66-0 (EC No) 203-692-4	< 35	Flam. Liq. 2, H225 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411



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Isopentane	(CAS No) 78-78-4 (EC No) 201-142-8	< 25	Flam. Liq. 1, H224 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
Benzene	(CAS No) 71-43-2 (EC No) 200-753-7	< 10	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304
n-hexane	(CAS No) 110-54-3 (EC No) 203-777-6	< 5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361f STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Chronic 2, H411

Specific concentration limits:

Name	Product identifier	Specific concentration limits
n-hexane	(CAS No) 110-54-3 (EC No) 203-777-6	(C >= 5) STOT RE 2, H373

Full text of H-statements: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Get medical advice/attention if you feel unwell.
First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician immediately. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration. Place under medical observation.
First-aid measures after skin contact	: Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water. Get medical advice if skin irritation persists.
First-aid measures after eye contact	: Immediately rinse with water for a prolonged period while holding the eyelids wide open. Consult an eye specialist.
First-aid measures after ingestion	: Do not give anything to drink. Do not induce vomiting. If swallowed, rinse mouth with water (only if the person is conscious). Take immediately victim to hospital.

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

Symptoms/effects : Refer to § 11 for more details on effects.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Carbon dioxide. Dry powder. Foam.
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Explosion hazard	: Heavier than air, vapours may travel long distances along ground, ignite and flash back to source. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.
Hazardous decomposition products in case of fire	: Toxic fumes. Carbon oxides (CO, CO2). Aldehydes. Polycyclic-aromatic hydrocarbons (PAH). Carbon (C). Ketones.

5.3. Advice for firefighters

Protection during firefighting	: Complete protective clothing. Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	: Notify fire brigade and environmental authorities. Evacuate unnecessary personnel. Use water spray or fog for cooling exposed containers.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: No flames, no sparks. Eliminate all sources of ignition. Do not smoke. Use special care to avoid static electric charges. Prevent any contact with hot surfaces.
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6.1.1. For non-emergency personnel

Protective equipment : Do not attempt to take action without suitable protective equipment. Gloves. Safety glasses.
Emergency procedures for non-emergency personnel : Avoid contact with skin and eyes.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Breathing apparatus.
Emergency procedures for emergency responders : Evacuate unnecessary personnel. Eliminate all ignition sources if safe to do so.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : If spilled, may cause the floor to be slippery. Sweep up or vacuum up the product. Dike for recovery or absorb with appropriate material. Take up liquid spill into absorbent material, e.g.: sand, saw dust. On water, recover/skim from surface and pour out in disposal container.
Other information : Dispose of contaminated material at an authorized site. Notify authorities if product enters sewers or public waters.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. In use, may form flammable/explosive vapour-air mixture. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge during blending and transfer operations. Explosion-free electrical equipment and lighting with earth.
Hygiene measures : Do not eat, drink or smoke when using this product. Keep away from food and drink. Always wash hands after handling the product. Take off contaminated clothing and wash before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Comply with applicable regulations. Proper grounding procedures to avoid static electricity should be followed.
Storage conditions : Store in a well-ventilated place. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Containers (tanks) should be grounded and provided with adequate pressure relief valve. Explosive vapour/air mixtures may be formed. Isolate, drain, wash and purge the systems or equipments before any maintenance or repair.
Storage area : Store away from heat. Earth the equipment. Store in a well-ventilated place.
Packaging materials : Stainless steel.

7.3. Specific end use(s)

Recommended to professional users.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

n-pentane (109-66-0)		
EU	IOELV TWA (mg/m ³)	3000 mg/m ³
EU	IOELV TWA (ppm)	1000 ppm
Ireland	OEL (8 hours ref) (mg/m ³)	3000 mg/m ³
Ireland	OEL (8 hours ref) (ppm)	1000 ppm
Ireland	OEL (15 min ref) (mg/m ³)	2250 mg/m ³
Ireland	OEL (15 min ref) (ppm)	750 ppm
United Kingdom	WEL TWA (mg/m ³)	1800 mg/m ³
United Kingdom	WEL TWA (ppm)	600 ppm
United Kingdom	WEL STEL (mg/m ³)	5400 mg/m ³ (calculated)
United Kingdom	WEL STEL (ppm)	1800 ppm (calculated)
USA - ACGIH	ACGIH TWA (ppm)	1000 ppm
2-methylbutane (78-78-4)		
EU	IOELV TWA (mg/m ³)	3000 mg/m ³
EU	IOELV TWA (ppm)	1000 ppm
Ireland	OEL (8 hours ref) (mg/m ³)	3000 mg/m ³
Ireland	OEL (8 hours ref) (ppm)	1000 ppm



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2-methylbutane (78-78-4)		
Ireland	OEL (15 min ref) (mg/m ³)	2250 mg/m ³
Ireland	OEL (15 min ref) (ppm)	750 ppm
United Kingdom	WEL TWA (mg/m ³)	1800 mg/m ³
United Kingdom	WEL TWA (ppm)	600 ppm
United Kingdom	WEL STEL (mg/m ³)	5400 mg/m ³ (calculated)
United Kingdom	WEL STEL (ppm)	1800 ppm (calculated)
USA - ACGIH	ACGIH TWA (ppm)	1000 ppm
Benzene (71-43-2)		
Ireland	OEL (8 hours ref) (mg/m ³)	3 mg/m ³
Ireland	OEL (8 hours ref) (ppm)	1 ppm
United Kingdom	WEL TWA (mg/m ³)	3.25 mg/m ³
United Kingdom	WEL TWA (ppm)	1 ppm
United Kingdom	WEL STEL (mg/m ³)	9.75 mg/m ³ (calculated)
United Kingdom	WEL STEL (ppm)	3 ppm (calculated)
USA - ACGIH	ACGIH TWA (ppm)	0.5 ppm
USA - ACGIH	ACGIH STEL (ppm)	2.5 ppm
USA - ACGIH	Biological Exposure Indices (BEI)	25 µg/g creatinine (Medium: urine - Time: end of shift - Parameter: S-Phenylmercapturic acid (background) 500 µg/g creatinine (Medium: urine - Time: end of shift - Parameter: t,t-Muconic acid (background))
n-Hexane (110-54-3)		
EU	IOELV TWA (mg/m ³)	72 mg/m ³
EU	IOELV TWA (ppm)	20 ppm
Ireland	OEL (8 hours ref) (mg/m ³)	72 mg/m ³
Ireland	OEL (8 hours ref) (ppm)	20 ppm
United Kingdom	WEL TWA (mg/m ³)	72 mg/m ³
United Kingdom	WEL TWA (ppm)	20 ppm
United Kingdom	WEL STEL (mg/m ³)	216 mg/m ³ (calculated)
United Kingdom	WEL STEL (ppm)	60 ppm (calculated)
USA - ACGIH	ACGIH TWA (ppm)	50 ppm
USA - ACGIH	Biological Exposure Indices (BEI)	0.4 mg/l (Medium: urine - Time: end of shift at end of workweek - Parameter: 2,5-Hexanedione without hydrolysis)

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DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	1300 mg/m ³
Acute - local effects, inhalation	1100 mg/m ³
Long-term - local effects, inhalation	840 mg/m ³
DNEL/DMEL (General population)	
Acute - systemic effects, inhalation	1200 mg/m ³
Acute - local effects, inhalation	640 mg/m ³
Long-term - local effects, inhalation	180 mg/m ³

8.2. Exposure controls

Appropriate engineering controls:

The substance is flammable and therefore the following conditions must be met to ensure safe use: "Risks are controlled by storage and use under conditions which avoid all ignition sources."

. Ensure adequate ventilation. Safety shower. Eye fountain.

Personal protective equipment:

Gas mask A.

Hand protection:



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hydrocarbons resistant gloves. In case of repeated or prolonged contact wear gloves. recommended material: fluorinated polymer. polyvinyl alcohol. Layer thickness : all thicknesses. Breakthrough time : > 480 min. EN 374-3. In the event of contact with the liquid: Nitrile rubber gloves. Layer thickness : > 0,30 mm. Breakthrough time : > 60 min. EN 374-3. Gloves may degrade in contact with this chemical.

• Carefully check the glove for cracks or damage before reusing it, dispose of gloves where the penetration time is exceeded. • The penetration time depends on temperature, glove material, thickness and construction. Penetration time is measured against EN 374 in laboratory conditions corresponding to permanent static contact and is not necessarily representative of the risk in the workplace. Contact the gloves' supplier for further information on the selection and resistance of gloves.

Eye protection:

Safety glasses. Do not wear contact lenses

Skin and body protection:

Wear suitable protective clothing. Safety foot-wear

Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended



Environmental exposure controls:

Avoid release to the environment. Assure that emissions are compliant with all applicable air pollution control regulations.

Other information:

Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Colourless. Light yellow.
Odour	: Hydrocarbon.
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: 29 - 70 °C
Flash point	: < 0 °C
Auto-ignition temperature	: > 250 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: < 1000 hPa (20°C)
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: < 900 kg/m ³
Solubility	: insoluble in water. Soluble in aromatic hydrocarbons. Soluble in most organic solvents.
Log Pow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 1.4 - 7.8 vol %

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Extremely flammable liquid and vapour.



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10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

In use may form flammable/explosive vapour-air mixture.

10.4. Conditions to avoid

No flames, no sparks. Eliminate all sources of ignition. High temperature. Heat.

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Additional information : Inhalation may affect the nervous system causing headache, possibly dizziness, nausea, weakness, loss of coordination and unconsciousness

ESSENCE COUPE C5 (91995-38-9)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat	> 5610 mg/m ³

n-pentane (109-66-0)	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	3000 mg/kg
LC50 inhalation rat	364 mg/l/4h

2-methylbutane (78-78-4)	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	3000 mg/kg
LC50 inhalation rat	280 mg/l/4h
LC50 inhalation rat (ppm)	> 4094 ppmv/4h

Benzene (71-43-2)	
LD50 oral rat	930 (930 - 6400) mg/kg
LD50 dermal rabbit	> 8272 mg/kg
LC50 inhalation rat	34.4 mg/l/4h

n-Hexane (110-54-3)	
LD50 dermal rabbit	3000 mg/kg
LC50 inhalation rat (ppm)	48000 ppm/4h

Skin corrosion/irritation : Causes skin irritation.

Serious eye damage/irritation : Not classified

Additional information : May cause eye irritation

Respiratory or skin sensitisation : Not classified

Additional information : Based on available data, the classification criteria are not met

Germ cell mutagenicity : May cause genetic defects.

Carcinogenicity : May cause cancer.

Reproductive toxicity : Suspected of damaging fertility.

Specific target organ toxicity (single exposure) : May cause drowsiness or dizziness.

Specific target organ toxicity (repeated exposure) : Not classified

n-pentane (109-66-0)	
NOAEC (inhalation, rat, gas, 90 days)	6660 ppmv/6h/day
NOAEC (inhalation, rat, vapour, 90 days)	20 mg/l/6h/day

Aspiration hazard : May be fatal if swallowed and enters airways.

Additional information : In case of accidental swallowing, due to its low viscosity, the product may be aspirated into the lung and induce a chemical pneumonitis developing over a few hours



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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Toxic to aquatic life with long lasting effects. Do not allow product to spread into the environment.
Ecology - air	: Product evaporates when in contact with the air.
Ecology - water	: the product spreads out on the surface of the water, a small fraction of the constituents may be dissolved.

ESSENCE COUPE C5 (91995-38-9)	
LC50 fish 1	> 8.2 mg/l
EC50 Daphnia 1	> 4.5 mg/l
ErC50 (algae)	> 3.1 mg/l

n-pentane (109-66-0)	
LC50 fish 1	9.87 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
LC50 fish 2	4.6 mg/l (n-pentane, 96h)
EC50 Daphnia 1	9.74 mg/l (Exposure time: 48 h - Species: Daphnia magna)
EC50 other aquatic organisms 1	7.5 mg/l (algae, growth rate, n-pentane, 72-hour)
EC50 other aquatic organisms 2	10.7 mg/l (algae, biomass, n-pentane, 72-hour)

2-methylbutane (78-78-4)	
LC50 fish 1	4.26 mg/l
EC50 Daphnia 1	2.3 mg/l (Exposure time: 48 h - Species: Daphnia magna)
EC50 other aquatic organisms 1	7.5 mg/l
EC50 other aquatic organisms 2	10.7 mg/l

Benzene (71-43-2)	
LC50 fish 1	10.7 - 14.7 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
LC50 fish 2	5.3 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 Daphnia 1	8.76 - 15.6 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 Daphnia 2	10 mg/l (Exposure time: 48 h - Species: Daphnia magna)
EC50 other aquatic organisms 1	29 mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata)
NOEC chronic fish	0.8 mg/l

n-Hexane (110-54-3)	
LC50 fish 1	2.1 - 2.98 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])

12.2. Persistence and degradability

ESSENCE COUPE C5 (91995-38-9)	
Persistence and degradability	Inherently biodegradable.

n-pentane (109-66-0)	
Persistence and degradability	Readily biodegradable.

2-methylbutane (78-78-4)	
Persistence and degradability	Readily biodegradable.

12.3. Bioaccumulative potential

n-pentane (109-66-0)	
BCF fish 1	25 - 81 (n-pentane, isopentane & cyclopentane min/max)
Log Pow	3.39
Log Kow	3.39

2-methylbutane (78-78-4)	
BCF fish 1	25 - 81
Log Pow	3.2 - 3.3
Log Kow	2.72

Benzene (71-43-2)	
BCF fish 1	3.5 - 4.4
Log Pow	1.83

12.4. Mobility in soil

ESSENCE COUPE C5 (91995-38-9)	
Ecology - soil	Avoid sub-soil penetration. it may pass through the soil and is likely to contaminate ground water.

2-methylbutane (78-78-4)	
Log Koc	1.78 (estimated value)



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12.5. Results of PBT and vPvB assessment

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Results of PBT assessment	Not classified
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12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Hazardous waste. Dispose of in accordance with relevant local regulations. Use only registered transporters. Do not discharge the product into the environment. Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.

Additional information : Handle empty containers with care because residual vapours are flammable.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN Number				
1265	1265	1265	1265	1265
14.2. UN proper shipping name				
PENTANES	PENTANES	Pentanes	PENTANES	PENTANES
Transport document description				
UN 1265 PENTANES, 3, I, (D/E), ENVIRONMENTALLY HAZARDOUS	UN 1265 PENTANES, 3, I, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS	UN 1265 Pentanes, 3, I, ENVIRONMENTALLY HAZARDOUS	UN 1265 PENTANES, 3, I, ENVIRONMENTALLY HAZARDOUS	UN 1265 PENTANES, 3, I, ENVIRONMENTALLY HAZARDOUS
14.3. Transport hazard class(es)				
3	3	3	3	3
				
14.4. Packing Group				
I	I	I	I	I
14.5. Environmental hazards				
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine Pollutant : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes
No supplementary information available				

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : F1
 Limited quantities (ADR) : 0
 Excepted quantities (ADR) : E3
 Packing instructions (ADR) : P001
 Mixed packing provisions (ADR) : MP7, MP17
 Portable tank and bulk container instructions (ADR) : T11
 Portable tank and bulk container special provisions (ADR) : TP2
 Tank code (ADR) : L4BN
 Vehicle for tank carriage : FL
 Transport category (ADR) : 1
 Special provisions for carriage - Operation (ADR) : S2, S20
 Hazard identification number (Kemler No.) : 33
 Orange plates :



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Tunnel restriction code (ADR) : D/E
EAC code : 3YE

- Transport by sea (IMDG)

Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E3
Packing instructions (IMDG) : P001
Tank instructions (IMDG) : T11
Tank special provisions (IMDG) : TP2
EmS-No. (Fire) : F-E
EmS-No. (Spillage) : S-D
Stowage category (IMDG) : E

- Air transport (IATA)

PCA Excepted quantities (IATA) : E3
PCA Limited quantities (IATA) : Forbidden
PCA limited quantity max net quantity (IATA) : Forbidden
PCA packing instructions (IATA) : 351
PCA max net quantity (IATA) : 1L
CAO packing instructions (IATA) : 361
CAO max net quantity (IATA) : 30L
ERG code (IATA) : 3H

- Inland waterway transport

Classification code (ADN) : F1
Limited quantities (ADN) : 0
Excepted quantities (ADN) : E3
Carriage permitted (ADN) : T
Equipment required (ADN) : PP, EX, A
Ventilation (ADN) : VE01
Number of blue cones/lights (ADN) : 1

- Rail transport

Classification code (RID) : F1
Limited quantities (RID) : 0
Excepted quantities (RID) : E3
Packing instructions (RID) : P001
Mixed packing provisions (RID) : MP7, MP17
Portable tank and bulk container instructions (RID) : T11
Portable tank and bulk container special provisions (RID) : TP2
Tank codes for RID tanks (RID) : L4BN
Transport category (RID) : 1
Hazard identification number (RID) : 33

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

IBC code : No information available.

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

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

5. Benzene	Benzene
28. Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as Carcinogen category 1A or 1B (Table 3.1) or Carcinogen category 1 or 2 (Table 3.2) and listed as follows: Carcinogen category 1A (Table 3.1)/Carcinogen category 1 (Table 3.2) listed in Appendix 1 Carcinogen category 1B (Table 3.1)/Carcinogen category 2 (Table 3.2) listed in Appendix 2	Benzene



ESSENCE COUPE C5

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

29. Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as Germ cell Mutagen category 1A or 1B (Table 3.1) or Mutagen category 1 or 2 (Table 3.2) and listed as follows: Mutagen category 1A (Table 3.1)/Mutagen category 1 (Table 3.2) listed in Appendix 3 Mutagen category 1B (Table 3.1)/Mutagen category 2 (Table 3.2) listed in Appendix 4	Benzene
40. Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.	Benzene - n-Hexane - 2-methylbutane - n-pentane

ESSENCE COUPE C5 is not on the REACH Candidate List

ESSENCE COUPE C5 is not on the REACH Annex XIV List

15.1.2. National regulations

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Training advice : Training staff on good practice. Manipulations are to be done only by qualified and authorised persons.

Other information : Use good personal hygiene practices.

Full text of H- and EUH-statements:

Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic Hazard, Category 2
Asp. Tox. 1	Aspiration hazard, Category 1
Carc. 1A	Carcinogenicity, Category 1A
Carc. 1B	Carcinogenicity, Category 1B
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 1	Flammable liquids, Category 1
Flam. Liq. 2	Flammable liquids, Category 2
Muta. 1B	Germ cell mutagenicity, Category 1B
Repr. 2	Reproductive toxicity, Category 2
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 1	Specific target organ toxicity — Repeated exposure, Category 1
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis
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
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

SDS EU (REACH Annex II)

This information applies to the PRODUCT AS SUCH and conforming to specifications of TOTAL.

In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear.

The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. However the revision of some data is in progress.

Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes.

The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive.

It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product.

It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product. (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.





Exposure scenario of Low Boiling Point Naphthas
[containing 5% to 20% benzene]

1. Manufacture of Low Boiling Point Naphthas (Gasoline) — industrial	2
2. Use of Low Boiling Point Naphthas (Gasoline) as intermediate — industrial.....	6
3. Distribution of Low Boiling Point Naphthas (Gasoline) - Industrial.....	10
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5. Use of low boiling point naphthas in functional fluids – Industrial	18
6. Use of low boiling point naphthas in functional fluids – Professional	21



1. Manufacture of Low Boiling Point Naphthas (Gasoline) — industrial

1.1 Exposure scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) (containing 5% to 20% benzene)	
Title	
Manufacture of substances	
Use Descriptor	
Sector(s) of Use	3, 8, 9
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	1, 4
Specific Environmental Release Category	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
Manufacture of the substance within closed or contained systems. Includes incidental exposures during recycling / recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Worker exposure was estimated using ECETOC TRAv2 otherwise indicated otherwise indicated.	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure is > 10 kPa at STP OC5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amount used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General Measures (skin irritants). G19.	Avoid all skin contact with product. Clean up contamination / spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. E3.



General Measures (carcinogens). G18.	<p>Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance.</p> <p>Where there is potential for exposure: Restrict access to authorized staff; provide specific activity training to operators to minimize exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.</p> <p>Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.</p>
CS15 General exposures (closed systems). + CS56 With sample collection.	<p>Handle substance within closed systems. E47. Sample via a closed loop or other system to avoid exposure. E8. Ensure operation is undertaken outdoors. E69. Wear suitable gloves tested to EN374. PPE15.</p>
CS15 General exposures (closed systems).	<p>Provide extract ventilation to points where emissions occur. E54. Handle substance within closed systems. E47. Wear suitable gloves tested to EN374. PPE15. Ensure operation is undertaken outdoors. E69. Avoid carrying out activities involving exposure for more than 4 hours. OC26.</p>
CS36 Laboratory activities	<p>Handle within a fume cupboard or implement suitable equivalent methods to minimize exposure. E12.</p>
CS14 Bulk transfers	<p>Ensure material transfers are under containment or extract ventilation. E66. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17. Avoid carrying out activities involving exposure for more than 1 hour. OC27.</p>
CS39 Equipment cleaning and maintenance	<p>Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18. Avoid carrying out activities involving exposure for more than 1 hour. OC27. or, Wear a respirator conforming to EN140 with Type A filter or better. PPE22. Ensure operation is undertaken outdoors. E69.</p>
CS67 Storage.	<p>Wear suitable gloves tested to EN374. PPE15. Store substance within a closed system. E84.</p>
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tons/year)	1.87E7
Fraction of Regional tonnage used locally	0.03
Annual site tonnage (tons/year)	6.0e5
Maximum daily site tonnage (kg/day)	2.0e6
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	



Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.05
Release fraction to wastewater from process (initial release prior to RMM)	0.003
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Prevent discharge of undissolved substance to or recover from wastewater [TCR14]. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TCR1k]. Onsite wastewater treatment required [TCR13].	
Treat air emission to provide a required efficiency of (%)	99.0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	95.2
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	80.4
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99.1
Maximum allowable site tonnage (Msafe) (kg/d)	2.0e6
Assumed domestic sewage treatment plant flow (m3/d)	10000
Conditions and measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated [ETW4].	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated [ERW2].	
Section 3 Exposure Estimation	
3.1. Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1. Health	



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

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

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>) [DSU4]. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file in IUCLID section 13 — "Site-Specific Production" worksheet [DSU6]. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required [DSU8]. Measured data have been used to demonstrate that the PETRORISK predicted fence-line concentrations in air are overestimated. These data support the conclusion that no refineries have RCRs>1.



2. Use of Low Boiling Point Naphthas (Gasoline) as intermediate — industrial

2.1. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) (containing 5% to 20% benzene)	
Title	
Use of substance as intermediate	
Use Descriptor	
Sector(s) of Use	3, 8, 9
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	6a
Specific Environmental Release Category	ESVOC SpERC 6.1a.v1
Processes, tasks, activities covered	
Use of substance as an intermediate (not related to strictly controlled conditions) within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Worker exposure was estimated using ECETOC TRAv2 otherwise indicated otherwise indicated.	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure is > 10 kPa at STP OC5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amount used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Il lumen factors not influenced by risk management	Not applicable
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General Measures (skin irritants). G19.	Avoid all skin contact with product. Clean up contamination / spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. E3.
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance.



	<p>Where there is potential for exposure: Restrict access to authorized staff; provide specific activity training to operators to minimize exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.</p> <p>Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.</p>
CS15 General exposures (closed systems). + CS56 With sample collection.	<p>Handle substance within closed systems. E47. Sample via a closed loop or other system to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15. Ensure operation is undertaken outdoors. E69.</p>
CS15 General exposures (closed systems).	<p>Provide extract ventilation to points where emissions occur. E54. Handle substance within closed systems. E47. Wear suitable gloves tested to EN374. PPE15. Ensure operation is undertaken outdoors. E69. Avoid carrying out activities involving exposure for more than 4 hours. OC26.</p>
CS36 Laboratory activities	<p>Handle within a fume cupboard or implement suitable equivalent methods to minimize exposure. E12.</p>
CS14 Bulk transfers	<p>Ensure material transfers are under containment or extract ventilation. E66. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17. Avoid carrying out activities involving exposure for more than 1 hour. OC27.</p>
CS39 Equipment cleaning and maintenance	<p>Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18. Avoid carrying out activities involving exposure for more than 1 hour. OC27. or, Wear a respirator conforming to EN140 with Type A filter or better. PPE22. Ensure operation is undertaken outdoors. E69.</p>
CS67 Storage.	<p>Wear suitable gloves tested to EN374. PPE15. Store substance within a closed system. E84.</p>
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tons/year)	2.21 E6
Fraction of Regional tonnage used locally	0.0068
Annual site tonnage (tons/year)	1.5e4
(Maximum daily site tonnage (kg/day)	5.0e4
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10



Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.025
Release fraction to wastewater from process (initial release prior to RMM)	0.003
Release fraction to soil from process (initial release prior to RMM)	0.001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Prevent discharge of undissolved substance to or recover from wastewater [TCR14]. Risk from environmental exposure is driven by freshwater sediment [TCR1 b]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	92.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	0
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (kg/d)	7.8e4
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for disposal	
This substance is consumed during use and no waste of the substance is generated [ETW5].	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated [ERW3].	
Additional information on the basis for the allocation of the identified OCs and RMMs is contained in Petrorisk file	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1. Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterization. G37.	
4.2. Environment	



Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>) [DSU4].

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



3. Distribution of Low Boiling Point Naphthas (Gasoline) - Industrial

3.1. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) (containing 5% to 20% benzene)	
Title	
Distribution of substance	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 8a, 8b, 9,15
Environmental Release Categories	1, 2, 3, 4, 5, 6a, 6b, 6c 6d, 7
Specific Environmental Release Category	ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Worker exposure was estimated using ECETOC TRAv2 otherwise indicated.	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure is > 10 kPa at STP OC5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amount used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General Measures (skin irritants). G19.	Avoid all skin contact with product. Clean up contamination / spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. E3.
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance.



	<p>Where there is potential for exposure: Restrict access to authorized staff; provide specific activity training to operators to minimize exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.</p> <p>Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.</p>
CS15 General exposures (closed systems). + CS56 With sample collection.	<p>Handle substance within closed systems. E47. Sample via a closed loop or other system intended to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15.</p>
CS15 General exposures (closed systems).	<p>Provide extract ventilation to points where emissions occur. E54. Handle substance within closed systems. E47. Wear suitable gloves tested to EN374. PPE15. Avoid carrying out activities involving exposure for more than 4 hours. OC28.</p>
CS2 Process sampling	<p>Sample via a closed loop or other system intended to avoid exposure. E8 Wear suitable gloves tested to EN374. PPE15.</p>
CS36 Laboratory activities.	<p>Handle within a fume cupboard or implement suitable equivalent methods to minimize exposure. E12</p>
CS500 Bulk closed loading.	<p>Ensure material transfers are under containment or extract ventilation. E66. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17. Avoid carrying out activities involving exposure for more than 1 hour. OC27.</p>
CS501 Bulk closed loading and unloading.	<p>Ensure material transfers are under containment or extract ventilation. E66. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17. Avoid carrying out activities involving exposure for more than 1 hour. OC27.</p>
CS14 Bulk transfers + CS6 Drum and small package filling	<p>Ensure material transfers are under containment or extract ventilation [E66], wear suitable gloves tested to EN 134 PPE 15 and avoid carrying out activities involving exposure for more than 1 hour OC 27</p>
CS39 Equipment cleaning and maintenance	<p>Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENV4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18. Avoid carrying out activities involving exposure for more than 1 hour. OC27. Wear a respirator conforming to EN140 with Type A filter or better. PPE22. Ensure operation is undertaken outdoors. E69.</p>
CS67 Storage.	<p>Wear suitable gloves tested to EN374. PPE15. Store substance within a closed system. E84.</p>
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1



Regional use tonnage (tons/year)	1.87E7
Fraction of Regional tonnage used locally	0.002
Annual site tonnage (tons/year)	3.75E4
Maximum daily site tonnage (kg/day)	1.2E5

Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.001
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TCR1 k]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	12
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	0
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (kg/d)	1.1E6
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].	
Additional information on the basis for the allocation of the identified OCs and RMMs is contained in Petrorisk file	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.	
3.2. Environment	



The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
<p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.</p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterization. G37.</p>

4.2. Environment
<p>ensure that risks are managed to at least equivalent levels. G23.</p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.</p> <p>Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].</p>



4. Formulation & (re)packing of Low Bowling point naphthas (Gasoline) – industrial

4.1. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) (containing equal to or greater than 5% to 20% benzene)	
Title	
Formulation & (re)packing of substances and mixtures	
Use Descriptor	
Sector(s) of Use	3, 10
Process Categories	1, 2, 3, 8a, 8b, 9,15
Environmental Release Categories	2
Specific Environmental Release Category	ESVOC SpERC 2.2.v1
Processes, tasks, activities covered	
Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Worker exposure was estimated using ECETOC TRAv2 otherwise indicated.	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure is > 10 kPa at STP OC5
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Human factors not influenced by risk	Not applicable
Other Operational Conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions

General Measures (skin irritants). G19.	Avoid all skin contact with product. Clean up contamination / spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. E3.
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General Measures (carcinogens). G18.	<p>Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance.</p> <p>Where there is potential for exposure: Restrict access to authorized staff; provide specific activity training to operators to minimize exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.</p> <p>Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.</p>
CS15 General exposures (closed systems). + CS56 With sample collection.	<p>Handle substance within closed systems. E47.</p> <p>Sample via a closed loop or other system intended to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15.</p> <p>Avoid carrying out activities involving exposure for more than 4 hours. OC28.</p>
CS15 General exposures (closed systems).	<p>Provide extract ventilation to points where emissions occur. E54.</p> <p>Handle substance within closed systems. E47. Wear suitable gloves tested to EN374. PPE15.</p> <p>Avoid carrying out activities involving exposure for more than 4 hours. OC28.</p> <p>Ensure operation is undertaken outdoors. E69.</p>
CS67 Storage.	<p>Wear suitable gloves tested to EN374. PPE15.</p> <p>Store substance within a closed system. E84.</p> <p>Avoid carrying out activities involving exposure for more than 4 hours. OC28.</p>
CS2 Process sampling	<p>Handle substance within closed systems. E47.</p> <p>Sample via a closed loop or other system intended to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15.</p> <p>Avoid carrying out activities involving exposure for more than 4 hours. OC28.</p>
CS36 Laboratory activities	<p>Handle within a fume cupboard or implement suitable equivalent methods to minimize exposure. E12.</p>
CS14 Bulk transfers	<p>Ensure material transfers are under containment or extract ventilation. E66.</p> <p>Wear suitable gloves tested to EN374. PPE15. Ensure material transfers are</p>
CS8 Drum/batch transfers	<p>under containment or extract ventilation. E66.</p> <p>Wear suitable gloves tested to EN374. PPE15.</p>
CS39 Equipment cleaning and maintenance	<p>Drain down and flush system prior to equipment break-in or maintenance. E55.</p> <p>Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4.</p> <p>Clear spills immediately. C&H13.</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18.</p> <p>Avoid carrying out activities involving exposure for more than 1 hour. OC27.or,</p> <p>Wear a respirator conforming to EN140 with Type A filter or better. PPE22.</p>

Ensure operation is undertaken outdoors. E69.



Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tons/year)	1.65e7
Fraction of Regional tonnage used locally	0.0018
Annual site tonnage (tons/year)	3.0e4
Maximum daily site tonnage (kg/day)	1.0e5
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year) 1300	
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.025
Release fraction to wastewater from process (initial release prior to RMM)	0.002
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Prevent discharge of undissolved substance to or recover from wastewater [TCR14]. Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TCR1 k]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a required efficiency of (%)	56.5
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	94.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	0
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (kg/d)	1.0E5
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment disposal of waste should comply with applicable regulations [ETW3].	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].	
Additional information on the basis for the allocation of the identified OCs and RMMs is contained in Petrorisk file	



Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterization. G37.
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].



5. Use of low boiling point naphthas in functional fluids - Industrial

5.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use of low boiling point naphthas in functional fluids (containing equal to or greater than 5 to 20% benzene)
Use Descriptor	Sector of Use: Industrial (SU 3)
	Process Category: PROC 1, 2, 3 8a, 9
	Environmental Release Category: ERC 7
	Specific Environmental Release Category: ESVOC Spere 7.13b.v1
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Liquid, vapour pressure >10 kPa
Concentration of substance in product	Covers percentage substance in the product up to 100 %
Frequency and duration of use	Covers daily exposures up to 8 hours
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient. Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	Risk Management Measures
Bulk transfers [CS14]	No specific measures identified [E118]
Bulk transfers [CS14]. With occasional controlled exposure [CS137]	Sample via closed loop or other system to avoid exposure [E8], ensure operation is undertaken outdoors [E69] and wear suitable gloves tested to EN 134 [PPE 15].
Bulk transfers [CS14]. Batch process [CS55].	Ensure material transfers are under containment or extract ventilation [E66], avoid carrying out activities involving exposure for more than 4 hours [OC 28], ensure operation is undertaken outdoors [E69] and wear suitable gloves tested to EN 134 [PPE 15].
Drum/batch transfers [CS8]. Dedicated facility [CS81].	Ensure material transfers are under containment or extract ventilation [E66] and avoid carrying out activities involving exposure for more than 1 hour [OC 27] and wear suitable gloves tested to EN 134 [PPE 15].
Pelletizing [CS53]. Closed systems [CS107].	Ensure material transfers are under containment or extract ventilation [E66], avoid carrying out activities involving exposure for more than 1 hour [OC 27] and wear suitable gloves tested to EN 134 [PPE 15].
Filling / preparation of equipment from drums or containers [CS45]. Manual [CS34].	Ensure material transfers are under containment or extract ventilation [E66], ensure operation is undertaken outdoors [E69], avoid carrying out activities involving exposure for more than 1 hour [OC 27] and wear suitable gloves tested to EN 134 [PPE 15].



General exposures (closed systems) [CS15].	Ensure material transfers are under containment or extract ventilation [E66], ensure operation is undertaken outdoors [E69] and wear suitable gloves tested to EN 134 [PPE 15].	
Remanufacture of reject articles [CS19].	Ensure material transfers are under containment or extract ventilation [E66], wear suitable gloves tested to EN 134 [PPE 15] and avoid carrying out activities involving exposure for more than 1 hour [OC 27].	
Equipment maintenance [CS5].	Ensure material transfers are under containment or extract ventilation [E66], wear suitable gloves tested to EN 134 [PPE 15] and avoid carrying out activities involving exposure for more than 1 hour [OC 27].	
Storage [CS67]	No specific measures identified [EI18]	
Section 2.2		
Control of environmental exposure		
	Local tonnage used for the estimation	100 tons/year
Frequency and duration of use	Emission days per year	20
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in ERC give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0,01
	Release fraction to waste water from process before RMMs	0,0003
	Release fraction to soil from process before RMMs	0,001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Offsite Removal Efficiency - wastewater (%): 95.5%	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to external treatment of waste for disposal	During manufacturing no waste of the substance is generated. [ETW 4]	
Conditions and measures related to external recovery of waste	During manufacturing no waste of the substance is generated. [EWR 2]	
Other environmental control measures additional to above	None	
Msafe	133 tons/day	
Section 3		
Exposure Estimation		



3.1. Environment	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1</i>
3.2. Workers	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1</i>
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Environment	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency.</i>
4.2. Workers	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency.</i>



6. Use of low boiling point naphthas in functional fluids - Professional

6.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use of low boiling point naphthas in functional fluids (containing equal to or greater than 5 to 20% benzene)
Use Descriptor	Sector of Use: Professional (SU 22)
	Process Category: PROC 1, 2, 8a, 9, 20
	Environmental Release Categories: ERC 9A, ERC 9B
	Specific Environmental Release Category: ESVOC Sperc 9.13b-c.v1
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Liquid, vapour pressure >10 kPa
Concentration of substance in product	Covers percentage substance in the product up to 100 %
Frequency and duration of use	Covers daily exposures up to 8 hours
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient. Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	Risk Management Measures
Drum/batch transfers [CS8]. Non-dedicated facility [CS82].	Ensure material transfers are under containment or extract ventilation [E66], ensure operation is undertaken outdoors [E69], avoid carrying out activities involving exposure for more than 1 hour [OC 27] , wear a respirator conforming to EN140 with Type A filter or better [PPE22] and wear suitable gloves tested to EN 134 [PPE15]
Transfer from/pouring from containers [CS22].	Ensure material transfers are under containment or extract ventilation [E66], ensure operation is undertaken outdoors [E69], avoid carrying out activities involving exposure for more than 1 hour [OC 27] and wear suitable gloves tested to EN 134 [PPE15]
Filling / preparation of equipment from drums or containers. [CS45].	Ensure material transfers are under containment or extract ventilation [E66], ensure operation is undertaken outdoors [E69], avoid carrying out activities involving exposure for more than 1 hour [OC 27] and wear suitable gloves tested to EN 134 [PPE15]
General exposures (closed systems) [CS15].	No specific measures identified [E118]
General exposures (closed systems) [CS15]. With occasional controlled exposure [CS137]	Ensure material transfers are under containment or extract ventilation [E66], avoid carrying out activities involving exposure for more than 1 hour [OC27], wear suitable gloves tested to EN 134 [PPE15]



General exposures (open systems) [CS16].	Ensure material transfers are under containment or extract ventilation [E66], avoid carrying out activities involving exposure for more than 1 hour [OC27] and wear suitable gloves tested to EN 134 [PPE15]	
Remanufacture of reject articles [CS19].	Ensure material transfers are under containment or extract ventilation [E66], ensure operation is undertaken outdoors [E69], avoid carrying out activities involving exposure for more than 1 hour [OC 27] and wear suitable gloves tested to EN 134 [PPE15]	
Equipment maintenance [CS5].	Ensure material transfers are under containment or extract ventilation [E66], ensure operation is undertaken outdoors [E69], avoid carrying out activities involving exposure for more than 1 hour [OC 27], wear a respirator conforming to EN140 with Type A filter or better [PPE22] and wear suitable gloves tested to EN 134 [PPE15]	
Storage [CS67]	No specific measures identified [EI18]	
Section 2.2		
	Control of environmental exposure	
	Local tonnage used for the estimation	100 tons/year
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in ERC give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0,05
	Release fraction to waste water from process before RMMs	0,025
	Release fraction to soil from process before RMMs	0,025
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Offsite Removal Efficiency - wastewater (%): 95.5%	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2]	
	Sludge should be incinerated, contained or reclaimed [OMS3]	
Conditions and measures related to external treatment of waste for disposal	During manufacturing no waste of the substance is generated. [ETW 4]	
Conditions and measures related to external recovery of waste	During manufacturing no waste of the substance is generated. [EWR 2]	
Other environmental control measures additional to above	None	
Msafe	5,8 tons/day	



Section 3	Exposure Estimation
3.1. Environment	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1</i>
3.2. Workers	<i>When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1</i>
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Environment	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency.</i>
4.2. Workers	<i>Confirm that RMMs and OCs are as described or of equivalent efficiency.</i>



