Safety Data Sheet
DUNAPOX H 156 HARDENER

Safety Data Sheet dated 9/1/2024, version 11

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

1.1. Product identifier

Mixture identification:

Trade name: DUNAPOX H 156 HARDENER

Trade code: 261017

Product type:

Hardener

UFI: MGM0-U06Y-X00M-T975

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

Component for the production of epoxy polymers

Relevant identified uses

SU3: Industrial uses: uses of substances as such or in preparations at industrial sites

PROC7: Industrial spraying

PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities.

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)

Not recommended uses:

Any use other than the relevant ones identified.

1.3. Details of the supplier of the safety data sheet

Company:

DUNA-Corradini S.p.A.

Via Modena-Carpi, 388

41019 Soliera (MO)

Italy

Phone: +39 059 893911

Competent person responsible for the safety data sheet:

safety@dunagroup.com

1.4. Emergency telephone number

DUNA-Corradini S.p.A.

phone +39 059 893911

(8.00 - 18.00)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

EC regulation criteria 1272/2008 (CLP):

- Warning, Acute Tox. 4, Harmful if swallowed.
- Danger, Skin Corr. 1B, Causes severe skin burns and eye damage.
- Danger, Eye Dam. 1, Causes serious eye damage.

Warning, Skin Sens. 1A, May cause an allergic skin reaction.
Warning, Repr. 2, Suspected of damaging the unborn child.
Aquatic Chronic 3, Harmful to aquatic life with long lasting effects.

Adverse physicochemical, human health and environmental effects:
No other hazards

The full text for substance classification is reported in section 16.

2.2. Label elements
Hazard pictograms:

Danger
Hazard statements:
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H361d Suspected of damaging the unborn child.
H412 Harmful to aquatic life with long lasting effects.
Precautionary statements:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/clothing and eye/face protection.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor/...
Special Provisions:
None
Contains
Isophorondiamine
benzyl alcohol
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with 3-aminomethyl-3,5,5-trimethylcyclohexylamine and triethylenetetramine
Triethylenetetramine
Special provisions according to Annex XVII of REACH and subsequent amendments:
None

2.3. Other hazards
No PBT, vPvB or endocrine disruptor substances present in concentration >= 0.1%
Other Hazards:
No other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances
N.A.
3.2. Mixtures
Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Number	Classification
>= 40% - < 50%	benzyl alcohol	Index number: 603-057-00-5 CAS: 100-51-6 EC: 202-859-9 REACH No.: 01-2119492630-38	3.1/4/Inhal Acute Tox. 4 H332 3.1/4/Oral Acute Tox. 4 H302 3.3/2 Eye Irrit. 2 H319
>= 25% - < 30%	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with 3-aminomethyl-3,5,5-trimethylcyclohexylamine and triethylenetetramine	EC: 947-989-3	3.1/4/Dermal Acute Tox. 4 H312 3.1/4/Oral Acute Tox. 4 H302 3.2/1 Skin Corr. 1 H314 3.4.2/1 Skin Sens. 1 H317 4.1/C3 Aquatic Chronic 3 H412
>= 20% - < 25%	Isophorondiamine	Index number: 612-067-00-9 CAS: 2855-13-2 EC: 220-666-8 REACH No.: 01-2119514687-32	3.1/4/Oral Acute Tox. 4 H302 3.2/1B Skin Corr. 1B H314 3.3/1 Eye Dam. 1 H318 3.4.2/1A Skin Sens. 1A H317
>= 5% - < 7%	Triethylenetetramine	CAS: 90640-67-8 EC: 292-588-2 REACH No.: 01-2119487919-13	3.1/4/Dermal Acute Tox. 4 H312 3.3/1 Eye Dam. 1 H318 3.1/4/Oral Acute Tox. 4 H302 3.2/1B Skin Corr. 1B H314 3.4.2/1 Skin Sens. 1 H317 4.1/C3 Aquatic Chronic 3 H412
>= 5% - < 7%	salicylic acid	CAS: 69-72-7 EC: 200-712-3 REACH No.: 01-2119486984-17	3.1/4/Oral Acute Tox. 4 H302 3.7/2 Repr. 2 H361d 3.3/1 Eye Dam. 1 H318

The full text of the hazard statements can be found in section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of skin contact:

Wash generously with water and soap. Remove contaminated clothes and shoes. Wash carefully contaminated clothes with water before removing them os use gloves. Rinse for at least 10 minutes. Consult a doctor. In case of disorders or symptoms, avoid exposure to the substance. Wash clothes before reusing. Wash shoes carefully before reusing.

In case of eyes contact:

In case of contact with eyes, wash using water for at least 30 minutes, keep the eyes opened

and consult an ophthalmologist. Remove contact lenses if possible.
Protect uninjured eye.

In case of ingestion:
Seek a medicat examination immediately and present this safety-data sheet.

In case of inhalation:
Remove casualty to fresh air and keep warm and at rest.
In case of inhalation, consult a doctor immediately and show him packing or label.
If breathing is irregular or stopped, administer artificial respiration.

4.2. Most important symptoms and effects, both acute and delayed
Information not available.

4.3. Indication of any immediate medical attention and special treatment needed
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Treatment:
Symptomatic treatment.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media:
Carbon dioxide (CO2).
Water spray
Extinguishing media which must not be used for safety reasons:
Direct water jet

5.2. Special hazards arising from the substance or mixture
In case of fire or heating, the pressure can increase causing a rupture of the container.
Do not inhale explosion and combustion gases.
Burning produces heavy smoke.
During a fire, the smoke can contain the original substances aside from combustion products of different compositions which could be toxic or irritating. Hazardous combustion products can be: phenolic compounds, nitrogen oxides, carbon monoxide and carbon dioxide.

5.3. Advice for firefighters
In case of fire, isolate promptly the area of the accident removing all the people. Actions which could involve a risk or are undertaken without the suitable training must be avoided.
Use clothes for fire-fighting, such as: self-contained compressed-air-operated breathing apparatus (EN 137), protective suits (EN 469), protective gloves (EN 659) and protective boots (HO A29 or A30).
Use suitable breathing apparatus .
Move undamaged containers from immediate hazard area if it can be done safely.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
General information: cool down containers with water jets in order to avoid product decomposition and development of substances which could be potentially hazardous to health.
Collect estinguishing water which must not be discharged in sewage. Dispose contaminated estinguishing water and fire residue in accordance with current legislation.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Wear personal protection equipment.
Remove persons to safety.
See protective measures under point 7 and 8.

6.2. Environmental precautions
Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

6.3. Methods and material for containment and cleaning up

Place the contaminated material in suitable containers, duly labeled for subsequent disposal in

accordance with current legislation.
Suitable material for taking up: absorbing material, organic, sand.
Wash with plenty of water.
Contain and collect scrubbing water in compliance with the existing legislation.

6.4. Reference to other sections

See also section 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes and inhalation of vapors and mists.
The product may generate vapors under pressure inside the container: open the cap of the container gradually and cautiously, gradually leave vent any vapors.
Before transfer operations, make sure that there are no incompatible residual materials in the receiving container.
Contaminated clothing should be changed before entering eating areas.
At work do not eat, do not drink and do not smoke.

7.2. Conditions for safe storage, including any incompatibilities

Avoid direct exposure to the sun.
Carefully close containers and store them upright to prevent leakage.
Keep the product in the original containers duly labeled.
Keep away from sources of heat, flames and sparks.
Incompatible materials: see section 10.
It is recommended that the premises are cool and well-aerated to ensure fresh air all the time in the storage area.
Store in well-ventilated areas.
Store in stainless steel or plastic-coated containers; do not to use iron containers or other reactive materials (for example aluminum and copper). Keep away from cooling below 5°C and warming above 35°C.
Do not store near acids.

7.3. Specific end use(s)

Refer to subsection 1.2 of this Material Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

benzyl alcohol - CAS: 100-51-6

NDS - TWA(8h): 240 mg/m3 - Notes: POLAND
National - TWA(8h): 45 mg/m3, 10 ppm - Notes: FINLAND
National - TWA(8h): 5 mg/m3 - Notes: LATVIA
National - TWA(8h): 22 mg/m3, 5 ppm - Notes: SWITZERLAND

DNEL Exposure Limit Values

benzyl alcohol - CAS: 100-51-6

Worker Industry: 22 ppm - Consumer: 5.4 ppm - Exposure: Human Inhalation - Frequency: Long Term, systemic effects
Consumer: 4 mg/kg bw/d - Exposure: Human Oral - Frequency: Long Term, systemic effects
Worker Industry: 40 mg/kg bw/d - Consumer: 20 mg/kg bw/d - Exposure: Human Dermal - Frequency: Short Term, systemic effects
Worker Industry: 110 ppm - Consumer: 27 ppm - Exposure: Human Inhalation - Frequency: Short Term, systemic effects
Consumer: 20 mg/kg bw/d - Exposure: Human Oral - Frequency: Short Term, systemic effects
Worker Industry: 8 mg/kg bw/d - Consumer: 4 mg/kg bw/d - Exposure: Human Dermal - Frequency: Long Term, systemic effects

Isophorondiamine - CAS: 2855-13-2

Worker Industry: 0.073 ppm - Exposure: Human Inhalation - Frequency: Long Term, local effects
Worker Industry: 0.073 ppm - Exposure: Human Inhalation - Frequency: Short Term, local

effects
Consumer: 0.3 mg/kg bw/d - Exposure: Human Oral - Frequency: Long Term, systemic effects
Consumer: 0.3 mg/kg bw/d - Exposure: Human Oral - Frequency: Short Term, systemic effects

Triethylenetetramine - CAS: 90640-67-8
Worker Industry: 5380 ppm - Consumer: 1600 ppm - Exposure: Human Inhalation - Frequency: Short Term, systemic effects
Worker Industry: 0.57 mg/kg bw/d - Consumer: 0.25 mg/kg bw/d - Exposure: Human Dermal - Frequency: Long Term, systemic effects
Worker Industry: 1 ppm - Consumer: 0.29 ppm - Exposure: Human Inhalation - Frequency: Long Term, systemic effects
Worker Industry: 0.028 mg/cm2 - Consumer: 0.43 mg/cm2 - Exposure: Human Dermal - Frequency: Long Term, local effects
Consumer: 8 mg/kg bw/d - Exposure: Human Dermal - Frequency: Short Term, systemic effects
Consumer: 20 mg/kg bw/d - Exposure: Human Oral - Frequency: Short Term, systemic effects
Consumer: 1 mg/cm2 - Exposure: Human Dermal - Frequency: Short Term, local effects
Consumer: 0.41 mg/kg bw/d - Exposure: Human Oral - Frequency: Long Term, systemic effects

salicylic acid - CAS: 69-72-7
Worker Industry: 1 ppm - Exposure: Human Inhalation - Frequency: Long Term, local effects
Consumer: 4 mg/kg bw/d - Exposure: Human Oral - Frequency: Short Term, systemic effects
Worker Industry: 2.3 mg/kg bw/d - Consumer: 1 mg/kg bw/d - Exposure: Human Dermal - Frequency: Long Term, systemic effects
Worker Industry: 5 ppm - Consumer: 4 ppm - Exposure: Human Inhalation - Frequency: Long Term, systemic effects
Consumer: 1 mg/kg bw/d - Exposure: Human Oral - Frequency: Long Term, systemic effects
Worker Industry: 5 ppm - Exposure: Human Inhalation - Frequency: Short Term, local effects

PNEC Exposure Limit Values

benzyl alcohol - CAS: 100-51-6
Target: Soil - Value: 0.45 mg/kg/d
Target: STP - Value: 39 mg/l
Target: Marine water sediments - Value: 0.527 mg/kg/d
Target: Marine water - Value: 0.1 mg/l
Target: Fresh Water - Value: 1 mg/l
Target: Freshwater sediments - Value: 5.27 mg/kg/d
Target: Intermittent release - Value: 2.3 mg/l

Isophorondiamine - CAS: 2855-13-2
Target: Fresh Water - Value: 0.06 mg/l
Target: Marine water - Value: 0.006 mg/l
Target: Intermittent release - Value: 0.23 mg/l
Target: STP - Value: 3.18 mg/l
Target: Freshwater sediments - Value: 5.784 mg/kg/d
Target: Marine water sediments - Value: 0.578 mg/kg/d
Target: Soil - Value: 1.121 mg/kg/d

Triethylenetetramine - CAS: 90640-67-8
Target: Fresh Water - Value: 0.19 mg/l
Target: Marine water - Value: 0.038 mg/l
Target: Freshwater sediments - Value: 95.9 mg/kg/d
Target: Marine water sediments - Value: 19.2 mg/kg/d
Target: Soil - Value: 19.1 mg/kg/d
Target: Sewage treatment plants - Value: 4.25 mg/l

Target: Food chain - Value: 0.18 mg/kg/d
Target: Intermittent release - Value: 0.200 mg/l
salicylic acid - CAS: 69-72-7
Target: Fresh Water - Value: 0.2 mg/l
Target: Intermittent release - Value: 1 mg/l
Target: Marine water - Value: 0.02 mg/l
Target: Freshwater sediments - Value: 1.42 mg/kg/d
Target: Marine water sediments - Value: 0.14 mg/kg/d
Target: Soil - Value: 0.16 mg/kg/d
Target: Microorganisms in sewage treatments - Value: 162 mg/l

8.2. Exposure controls

Eye protection:

Use safety glasses in compliance with regulation EN 166 in order to avoid exposure to liquid drops, sprays or dust.

Protection for skin:

PPE for the body should be selected based on the risks of the job.
Use protective clothing (resistant to chemicals). In case of hypersensitivity of the skin it is not recommended to work with the product.

Protection for hands:

Wear resistant gloves when in contact with chemicals, in accordance with EN 374.
Among the examples of the materials for gloves that can offer appropriate protection are: butyl rubber, chlorinated polyethylene, polyethylene, laminates of copolymers of ethylene / vinyl alcohol (EVAL), polychloroprene (neoprene), nitrile/butadiene rubber (NBR or nitrile), polyvinyl chloride (PVC or vinyl), fluoroelastomer (Viton).
In the case of prolonged or frequently repeated contact, we recommend a protection class of at least 5 (breakthrough time greater than 240 minutes according to the standard EN 374).
If you are planning a short contact, it is recommended a protection class of at least 3 (breakthrough time greater than 60 minutes according to the standard EN 374).
Decontaminate and dispose of contaminated gloves.
Wear protective gloves in the handling of the just obtained polymer to avoid contact with traces of residual material which can be dangerous in contact with the skin.

Respiratory protection:

PPE for respiratory protection must be chosen and used for risks for the job.
Breathing apparatuses should be used (if available) when there's the possibility to exceed the occupational exposure limit values. Otherwise, wear breathing apparatuses when side effects such as irritation to airways appear or when specified in your chemical risk assessment.
In case of exceeding threshold value for daily exposure in the workplace of one or more of the substances present in the mixture, wear a mask with filter type A or universal type, the class of which (1, 2 or 3) will be chosen according to the limit concentration of use (ref. standard EN 141).

Thermal Hazards:

Wear protective gloves when handling the just formed polymer in order to avoid burns.

Environmental exposure controls:

The emissions of production processes, including ventilation systems, should be monitored in order to comply with the existing legislation on environmental protection.
Refer to section 7 and section 13.

Appropriate engineering controls:

Provide a ventilation system (localised or not) in order to keep the concentrations below the occupational exposure limit values. Air intake systems must be designed so that air is removed from vapours/aerosols sources and from people working in the area. Provide eyewash fountains and safety showers.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Method:	Notes:
Physical state:	Liquid	--	--
Colour:	Yellow	--	--
Odour:	Amine like	--	--
Melting point/freezing point:	N.A.	--	--
Boiling point or initial boiling point and boiling range:	N.A.	--	--
Flammability:	N.A.	--	--
Lower and upper explosion limit:	N.A.	--	--
Flash point:	No	--	--
Auto-ignition temperature:	Not pyrophoric	--	--
Decomposition temperature:	Not available	--	--
pH:	N.A.	--	--
Kinematic viscosity:	N.A.	--	--
Solubility in water:	Insoluble	--	--
Solubility in oil:	N.A.	--	--
Partition coefficient n-octanol/water (log value):	Not available	--	--
Vapour pressure:	Not available	--	--
Density and/or relative density:	1.010 g/cc	--	--
Relative vapour density:	N.A.	--	--
Particle characteristics:			
Particle size:	N.A.	--	--

9.2. Other information

Properties	Value	Method:	Notes:
Explosive properties:	Not explosive	--	--
Viscosity:	60-90 cps (25°C)	--	--
Oxidizing properties:	Not oxydant	--	--

SECTION 10: Stability and reactivity

10.1. Reactivity
The product reacts with epoxy resin, generating an irreversible polymerization accompanied by a considerable development of heat.
10.2. Chemical stability
The product is stable under the storage conditions described in Section 7.
10.3. Possibility of hazardous reactions
It may catch fire on contact with strong oxidizing agents.
It may generate flammable gases on contact with elementary metals (alcohols and alkaline earth), strong reducing agents.
It may generate toxic gases in contact with oxidising mineral acids, halogenated organics, peroxides, organic hydroperoxides, strong oxidizing agents.
10.4. Conditions to avoid
Avoid static electricity discharges.
Keep away from heat and sources of ignition.
10.5. Incompatible materials
Avoid contact with organic acids (for example acetic acid, citric acid, etc..).
Violent reaction in contact with mineral acids.
Product slowly corrodes metals such as: copper, aluminum, zinc and galvanized surfaces.
10.6. Hazardous decomposition products
Hazardous decomposition products are ammonia, nitrogen oxides and carbon monoxide.
Nitric oxide can react with water vapor, forming corrosive nitric acid.
Thermal decomposition: 250-300°C.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008
Toxicological information of the product:
DUNAPOX H 156 HARDENER
a) acute toxicity
The product is classified: Acute Tox. 4 H302
b) skin corrosion/irritation
The product is classified: Skin Corr. 1B H314
c) serious eye damage/irritation
The product is classified: Eye Dam. 1 H318
d) respiratory or skin sensitisation
The product is classified: Skin Sens. 1A H317
e) germ cell mutagenicity
Not classified
Based on available data, the classification criteria are not met
f) carcinogenicity
Not classified
Based on available data, the classification criteria are not met
g) Reproductive toxicity/toxicity to fertility
The product is classified: Repr. 2 H361d
h) STOT-single exposure
Not classified
Based on available data, the classification criteria are not met
i) STOT-repeated exposure
Not classified
Based on available data, the classification criteria are not met
j) aspiration hazard
Not classified
Based on available data, the classification criteria are not met
Toxicological information of the main substances found in the product:
benzyl alcohol - CAS: 100-51-6

a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat = 1620 mg/kg
Test: LC50 - Route: Aerosol inhalation - Species: Rat > 4178 mg/m3 - Duration: 4h - Source: OCSE 403
Test: LD50 - Route: Dermal - Species: Rabbit = 2000 mg/kg
b) skin corrosion/irritation:
Test: Skin Irritant - Species: Rabbit -Result: Negative - Source: OECD TG 404 - Based on available data, the classification criteria are not met
c) serious eye damage/irritation:
Test: Eye Irritant - Species: Rabbit - Result: Positive - Source: OECD TG 405
d) respiratory or skin sensitisation:
Test: Skin Sensitization - Species: Guinea pig -Result: Negative - Based on available data, the classification criteria are not met
e) germ cell mutagenicity:
-Result: Negative - Source: OECD TG 471 (Ames Test) - Based on available data, the classification criteria are not met
f) carcinogenicity:
Route: Oral - Species: Rat -Result: Negative - Based on available data, the classification criteria are not met
g) Reproductive toxicity/toxicity to fertility:
Test: NOAEL (developmental toxicity) - Route: Oral - Species: Rat = 400 mg/kg - Based on available data, the classification criteria are not met
h) STOT-single exposure:
Based on available data, the classification criteria are not met
i) STOT-repeated exposure:
Test: NOAEC - Route: Inhalation - Species: Rat = 1072 mg/m3 - Duration: 4 w - Based on available data, the classification criteria are not met
Test: NOAEC - Route: Oral - Species: Rat = 400 mg/kg
j) aspiration hazard:
Based on available data, the classification criteria are not met

Isophorondiamine - CAS: 2855-13-2
a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat = 1030 mg/kg - Source: OECD TG 401
Test: LD50 - Route: Aerosol inhalation - Species: Rat > 5.01 mg/l - Duration: 4h - Source: OECD TG 403
Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg - Duration: 24 h - Source: OECD TG 402
b) skin corrosion/irritation:
Test: Skin Corrosive - Route: Dermal - Species: Rabbit - Result: Positive - Source: Deduced from hazard classification of the substance
c) serious eye damage/irritation:
Test: Eye Corrosive - Species: Rabbit - Result: Positive - Source: Deduced from hazard classification of the substance
d) respiratory or skin sensitisation:
Test: Skin Sensitization - Route: Dermal - Species: Guinea pig - Result: Positive - Source: OECD TG 405
e) germ cell mutagenicity:
Test: MUTAG - Species: Mammalian cells -Result: Negative - Source: OECD 473 + 476
g) Reproductive toxicity/toxicity to fertility:
Test: NOEAL - Species: Rat > 160 mg/l - Source: OECD TG 421
h) STOT-single exposure:
Test: LOAEL - No data available for the product
i) STOT-repeated exposure:
Test: NOEAL - Species: Rat = 62 mg/kg - Source: OECD TG 408

Triethylenetetramine - CAS: 90640-67-8
a) acute toxicity:
Test: LD50 - Route: Dermal - Species: Rabbit = 1465 mg/kg - Source: OECD TG 402
Test: LD50 - Route: Oral - Species: Rat = 1716.2 mg/kg - Source: OECD TG 401

b) skin corrosion/irritation:
Test: Skin Corrosive - Species: Rabbit - Result: Positive - Duration: 4h - Source: OECD TG 404
c) serious eye damage/irritation:
Test: Eye Corrosive - Species: Rabbit - Result: Positive - Duration: 1h - Source: OECD TG 405
d) respiratory or skin sensitisation:
Test: Skin Sensitization - Species: Guinea pig - Result: Positive - Source: OECD TG 406
e) germ cell mutagenicity:
Test: MUTAG -Result: Negative - Source: OECD 474
f) carcinogenicity:
Based on available data, the classification criteria are not met
g) Reproductive toxicity/toxicity to fertility:
Test: NOEAL - Route: Dermal - Species: Rabbit > 125 mg/kg - Source: OECD TG 414
Test: NOEAL - Route: Oral - Species: Rat > 750 mg/kg - Source: OECD TG 414
h) STOT-single exposure:
No data available for the product
i) STOT-repeated exposure:
No data available for the product
j) aspiration hazard:
No data available for the product

salicylic acid - CAS: 69-72-7

a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat = 891 mg/kg
Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg
Test: LC50 - Route: Inhalation - Species: Rat > 0.9 mg/l - Duration: 1h
b) skin corrosion/irritation:
Test: Skin Irritant -Result: Negative
c) serious eye damage/irritation:
Notes: It causes serious eye damage.
d) respiratory or skin sensitisation:
-Result: Negative
e) germ cell mutagenicity:
Based on available data, the classification criteria are not met
f) carcinogenicity:
Based on available data, the classification criteria are not met
g) Reproductive toxicity/toxicity to fertility:
Based on available data, the classification criteria are not met
h) STOT-single exposure:
Based on available data, the classification criteria are not met
i) STOT-repeated exposure:
Based on available data, the classification criteria are not met
j) aspiration hazard:
Irrelevant.

11.2. Information on other hazards
Endocrine disrupting properties:
No endocrine disruptor substances present in concentration >= 0.1%

SECTION 12: Ecological information

12.1. Toxicity
Adopt good working practices, so that the product is not released into the environment.

DUNAPOX H 156 HARDENER
The product is classified: Aquatic Chronic 3 - H412

benzyl alcohol - CAS: 100-51-6
a) Aquatic acute toxicity:
Endpoint: LC50 - Species: Fish - Pimephales promelas = 460 mg/l - Duration h: 96

Endpoint: LC50 - Species: Fish - Pimephales promelas = 770 mg/l - Duration h: 1
Endpoint: EC50 - Species: Daphnia = 230 mg/l - Duration h: 48 - Notes: OCSE 202
Endpoint: EC50 - Species: Algae - Pseudokirchnerella subcapitata = 770 mg/l - Duration h: 72 - Notes: OCSE 201

b) Aquatic chronic toxicity:
Endpoint: NOEC - Species: Daphnia = 51 mg/l - Duration h: 504 - Notes: OCSE 211

Isophorondiamine - CAS: 2855-13-2

a) Aquatic acute toxicity:
Endpoint: LC50 - Species: Fish - Leuciscus Idus = 110 mg/l - Duration h: 96
Endpoint: EC50 - Species: Daphnia - Daphnia Magna = 23 mg/l - Duration h: 48

b) Aquatic chronic toxicity:
Endpoint: NOEC - Species: Daphnia - Daphnia Magna = 3 mg/l - Duration h: 504

c) Toxicity to microorganism:
Endpoint: EC10 - Species: Bacteria - Pseudomonas Putida = 1120 mg/l - Duration h: 18

e) Plant toxicity:
Endpoint: EC50 - Species: Algae - Desmodesmus subcapitata > 50 mg/l - Duration h: 72

Triethylenetetramine - CAS: 90640-67-8

a) Aquatic acute toxicity:
Endpoint: EC50 - Species: Algae - Pseudokirchnerella subcapitata = 20 mg/l - Duration h: 72 - Notes: OECD TG 201 - CONSID09
Endpoint: EC50 - Species: Daphnia = 31.1 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish - Pimephales promelas = 330 mg/l - Duration h: 96

b) Aquatic chronic toxicity:
Endpoint: NOEC - Species: Algae - Pseudokirchnerella subcapitata = 1.34 mg/l - Duration h: 72 - Notes: OECD TG 201 - CONSID09
Endpoint: EC10 - Species: Daphnia = 1.9 mg/l - Duration h: 504 - Notes: OECD TG 202

salicylic acid - CAS: 69-72-7

a) Aquatic acute toxicity:
Endpoint: LC50 - Species: Fish - Pimephales promelas = 1370 mg/l - Duration h: 96 - Notes: OECD TG 203
Endpoint: EC50 - Species: Daphnia - Daphnia Magna = 870 mg/l - Duration h: 48 - Notes: OECD TG 202

12.2. Persistence and degradability

benzyl alcohol - CAS: 100-51-6
Biodegradability: Easily biodegradable - Test: Oxygen consumption - Duration: 14 d - %: 94 - Notes: OECD TG 301C

Isophorondiamine - CAS: 2855-13-2
Biodegradability: not biodegradable - Duration: 31 d - %: 42

Triethylenetetramine - CAS: 90640-67-8
Biodegradability: Not easily biodegradable - Test: Dissolved oxygen - Duration: 162 d - %: 0 - Notes: OECD TG 301 D

12.3. Bioaccumulative potential

benzyl alcohol - CAS: 100-51-6
Bioaccumulation: Low bioaccumulation potential - Test: BCF - Bioconcentrantion factor 1.37 - Notes: Method: calculated

Isophorondiamine - CAS: 2855-13-2
Bioaccumulation: Bioaccumulative - Test: BCF - Bioconcentrantion factor 3.16

Triethylenetetramine - CAS: 90640-67-8
Bioaccumulation: Low bioaccumulation potential - Test: Log Kow - Partition coefficient n-octanol/water -2.65

salicylic acid - CAS: 69-72-7
Notes: Bioaccumulation potential is not predicatble

12.4. Mobility in soil

Isophorondiamine - CAS: 2855-13-2
Mobility in soil: Mobile - Test: Koc 928

Triethylenetetramine - CAS: 90640-67-8
Mobility in soil: Mobile - Test: Partition coefficient soil/water 4000 - Notes: Low mobility

12.5. Results of PBT and vPvB assessment

vPvB Substances: None - PBT Substances: None

12.6. Endocrine disrupting properties

No endocrine disruptor substances present in concentration >= 0.1%

12.7. Other adverse effects

No data available for the product

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Immediately after the last withdrawal of product, completely empty the containers (drained, free of granules and pasty residues). Empty packaging without residue can be delivered to a company specializing in disposal.In the EU this is done specifically by type of packaging taken from the collection centres of the existing recovery systems of the chemical industry. To this end, product and hazard markings must remain on the packaging. Recovery must be carried out in accordance with national legislation and environmental protection provisions. Do not dispose of in wastewater.

SECTION 14: Transport information

14.1. UN number or ID number

ADR-UN Number:	2735
IATA-UN Number:	2735
IMDG-UN Number:	2735

14.2. UN proper shipping name

ADR-Shipping Name:	POLYAMINES, LIQUID, CORROSIVE, N.O.S.(Isophorondiamine)
IATA-Shipping Name:	POLYAMINES, LIQUID, CORROSIVE, N.O.S.(Isophorondiamine)
IMDG-Shipping Name:	POLYAMINES, LIQUID, CORROSIVE, N.O.S.(Isophorondiamine)

14.3. Transport hazard class(es)

ADR-Class:	8
ADR - Hazard identification number:	80
IATA-Class:	8
IATA-Label:	8
IMDG-Class:	8

14.4. Packing group

ADR-Packing Group:	II
IATA-Packing group:	II
IMDG-Packing group:	II

14.5. Environmental hazards

ADR-Enviromental Pollutant:	No
IMDG-Marine pollutant:	No
IMDG-EmS:	F-A , S-B

14.6. Special precautions for user

ADR-Subsidiary hazards:	-
ADR-S.P.:	274
ADR-Transport category (Tunnel restriction code):	2 (E)
IATA-Passenger Aircraft:	851
IATA-Subsidiary hazards:	-
IATA-Cargo Aircraft:	855
IATA-S.P.:	A3 A803
IATA-ERG:	8L

IMDG-Subsidiary hazards: -
IMDG-Stowage and handling: Category A
IMDG-Segregation: SG35 SGG18

14.7. Maritime transport in bulk according to IMO instruments
N.A.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Dir. 98/24/EC (Risks related to chemical agents at work)
Dir. 2000/39/EC (Occupational exposure limit values)
Regulation (EC) n. 1907/2006 (REACH)
Regulation (EC) n. 1272/2008 (CLP)
Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013
Regulation (EU) n. 2020/878
Regulation (EU) n. 286/2011 (ATP 2 CLP)
Regulation (EU) n. 618/2012 (ATP 3 CLP)
Regulation (EU) n. 487/2013 (ATP 4 CLP)
Regulation (EU) n. 944/2013 (ATP 5 CLP)
Regulation (EU) n. 605/2014 (ATP 6 CLP)
Regulation (EU) n. 2015/1221 (ATP 7 CLP)
Regulation (EU) n. 2016/918 (ATP 8 CLP)
Regulation (EU) n. 2016/1179 (ATP 9 CLP)
Regulation (EU) n. 2017/776 (ATP 10 CLP)
Regulation (EU) n. 2018/669 (ATP 11 CLP)
Regulation (EU) n. 2018/1480 (ATP 13 CLP)
Regulation (EU) n. 2019/521 (ATP 12 CLP)

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:
Restrictions related to the product:
Restriction 3
Restrictions related to the substances contained:
Restriction 75

Where applicable, refer to the following regulatory provisions :
Directive 2012/18/EU (Seveso III)
Regulation (EC) nr 648/2004 (detergents).
Dir. 2004/42/EC (VOC directive)

Provisions related to directive EU 2012/18 (Seveso III):
Seveso III category according to Annex 1, part 1
None

15.2. Chemical safety assessment
No Chemical Safety Assessment has been carried out for the mixture.

The exposure scenarios of the substances considered relevant in the determination of the hazard classification of the mixture are attached to the safety data sheet:
Isophorondiamine (CAS: 2855-13-2) - 8 pages
Benzyl alcohol (CAS: 100-51-6) - 3 pages

SECTION 16: Other information

Text of phrases referred to under heading 3:
H332 Harmful if inhaled.
H302 Harmful if swallowed.
H319 Causes serious eye irritation.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.
H412 Harmful to aquatic life with long lasting effects.
H318 Causes serious eye damage.
H361d Suspected of damaging the unborn child.

Hazard class and hazard category	Code	Description
Acute Tox. 4	3.1/4/Dermal	Acute toxicity (dermal), Category 4
Acute Tox. 4	3.1/4/Inhal	Acute toxicity (inhalation), Category 4
Acute Tox. 4	3.1/4/Oral	Acute toxicity (oral), Category 4
Skin Corr. 1	3.2/1	Skin corrosion, Category 1
Skin Corr. 1B	3.2/1B	Skin corrosion, Category 1B
Eye Dam. 1	3.3/1	Serious eye damage, Category 1
Eye Irrit. 2	3.3/2	Eye irritation, Category 2
Skin Sens. 1	3.4.2/1	Skin Sensitisation, Category 1
Skin Sens. 1A	3.4.2/1A	Skin Sensitisation, Category 1A
Repr. 2	3.7/2	Reproductive toxicity, Category 2
Aquatic Chronic 3	4.1/C3	Chronic (long term) aquatic hazard, category 3

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
Acute Tox. 4, H302	Calculation method
Skin Corr. 1B, H314	Calculation method
Eye Dam. 1, H318	Calculation method
Skin Sens. 1A, H317	Calculation method
Repr. 2, H361d	Calculation method
Aquatic Chronic 3, H412	Calculation method

This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This MSDS cancels and replaces any preceding release.

EXPOSURE SCENARIO

CAS: 2855-13-2 ***Isophorone diamine***

1. Short title of exposure scenario

Use as Monomer, (use in industrial settings)
SU3; ERC6c; PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14

Control of exposure and risk management measures

Contributing exposure scenario		
Use descriptors covered	FEICA SPERC 5.1b.v1: FEICA SPERC 5.1b.v1	
Operational conditions		
Annual amount per site	7.600.000 kg	
Minimum emission days per year Continuous	220	
Emission factor air	1,7 %	
Emission factor water	0,0 %	
Emission factor soil	0,0 %	
Receive Surf. Water (Flow Rate).	18.000 m3/d	
Dilution factor river	10	
Dilution factor coast	100	
Other Factors: Environment	Indoor use.	
Risk Management Measures		
Treat soil emissions to provide a typical removal efficiency of (%)		100 %
Soil treatment measures considered suitable are, e.g.		Sewage Sludge incineration
Type of STP		Municipal STP
Assumed sewage treatment plant flow (m3/d)		2.000 m3/d
Sludge Treatment		Do not use sludge as fertiliser
Exposure estimate and reference to its source		
Assessment method	ECETOC TRA v2.0 Environment	
Risk Characterization Ratio (RCR)	0,054	
	Risk from environmental exposure is driven by soil.	
Maximum amount of safe use	14.728 kg/d	
Risk from environmental exposure is driven by soil.		

EXPOSURE SCENARIO

CAS: 2855-13-2 ***Isophorone diamine***

Contributing exposure scenario	
Use descriptors covered	PROC7: Industrial spraying Use domain: industrial
Operational conditions	
Concentration of the substance	3-aminomethyl-3,5,5-trimethylcyclohexylamine Content: >= 0 % - <= 20 %
Physical state	Liquid, low fugacity
Vapour pressure of the substance during use	0,0157 hPa
Duration and Frequency of activity	Application duration: 480 min <= 240 days per year
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid skin contact. Wash off any skin contamination immediately. Avoid contact with eyes.	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with intensive	Effectiveness: 98 %
management supervision control.	
Use suitable eye protection. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation.	
Wear suitable working clothes.	
Risk Management Measures are based on qualitative risk characterisation.	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker- inhalation, short-term - local und systemic
Exposure estimate	1,419 mg/kg bw/day
Risk Characterization Ratio (RCR)	0,071
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

EXPOSURE SCENARIO

CAS: 2855-13-2 ***Isophorone diamine***

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	3-aminomethyl-3,5,5-trimethylcyclohexylamine Content: >= 0 % - <= 20 %
Physical state	Liquid, low fugacity
Vapour pressure of the substance during use	0,0157 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Both hands (960 cm²)
Risk Management Measures	
industrial	
Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Ensure minimization of manual phases	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 98 %
Wear suitable coveralls to prevent	
exposure to the skin. Use suitable eye protection.	
Risk Management Measures are based on qualitative risk characterisation.	
Exposure estimate and reference to its source	
PROC8a	
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker- inhalation, short-term - local und systemic
Exposure estimate	2,838 mg/m³
Risk Characterization Ratio (RCR)	0,141
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

EXPOSURE SCENARIO

CAS: 2855-13-2 ***Isophorone diamine***

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	3-aminomethyl-3,5,5-trimethylcyclohexylamine Content: >= 0 % - <= 20 %
Physical state	Liquid, low fugacity
Vapour pressure of the substance during use	0,0157 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm²)
Risk Management Measures	
industrial	
Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Ensure minimization of manual phases	
Local exhaust ventilation	Effectiveness: 97 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 98 %
Wear suitable coveralls to prevent exposure to the skin. Use suitable eye protection.	
Risk Management Measures are based on qualitative risk characterisation.	
Exposure estimate and reference to its source	
PROC8a	
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker- inhalation, short-term - local und systemic
Exposure estimate	0,426 mg/m³
Risk Characterization Ratio (RCR)	0,021
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

EXPOSURE SCENARIO

CAS: 2855-13-2 ***Isophorone diamine***

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	3-aminomethyl-3,5,5-trimethylcyclohexylamine Content: >= 0 % - <= 20 %
Physical state	Liquid, low fugacity
Vapour pressure of the substance during use	0,0157 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm²)
Risk Management Measures	
industrial	
Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Ensure minimization of manual phases	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 98 %
Wear suitable coveralls to prevent exposure to the skin. Use suitable eye protection.	
Risk Management Measures are based on qualitative risk characterisation.	
Exposure estimate and reference to its source	
PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker- inhalation, short-term - local und systemic
Exposure estimate	0,426 mg/m³
Risk Characterization Ratio (RCR)	0,071
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

EXPOSURE SCENARIO

CAS: 2855-13-2 ***Isophorone diamine***

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: industrial
Operational conditions	
Concentration of the substance	3-aminomethyl-3,5,5-trimethylcyclohexylamine Content: >= 0 % - <= 20 %
Physical state	Liquid, low fugacity
Vapour pressure of the substance during use	0,0157 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Both hands (960 cm²)
Risk Management Measures	
industrial	
Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Ensure minimization of manual phases	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 98 %
Wear suitable coveralls to prevent exposure to the skin. Use suitable eye protection.	
Risk Management Measures are based on qualitative risk characterisation.	
Exposure estimate and reference to its source	
PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker- inhalation, short-term - local und systemic
Exposure estimate	2,838 mg/m³
Risk Characterization Ratio (RCR)	0,141
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

EXPOSURE SCENARIO

CAS: 2855-13-2 ***Isophorone diamine***

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: industrial
Operational conditions	
Concentration of the substance	3-aminomethyl-3,5,5-trimethylcyclohexylamine Content: >= 0 % - <= 20 %
Physical state	Liquid, low fugacity
Vapour pressure of the substance during use	0,0157 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm²)
Risk Management Measures	
industrial	
Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Ensure minimization of manual phases	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 98 %
Wear suitable coveralls to prevent exposure to the skin. Use suitable eye protection.	
Risk Management Measures are based on qualitative risk characterisation.	
Exposure estimate and reference to its source	
PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker- inhalation, short-term - local und systemic
Exposure estimate	2,838 mg/m³
Risk Characterization Ratio (RCR)	0,141
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

EXPOSURE SCENARIO

CAS: 2855-13-2 ***Isophorone diamine***

Contributing exposure scenario	
Use descriptors covered	PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation. Use domain: industrial
Operational conditions	
Concentration of the substance	3-aminomethyl-3,5,5-trimethylcyclohexylamine Content: >= 0 % - <= 20 %
Physical state	Liquid, low fugacity
Vapour pressure of the substance during use	0,0157 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm²)
Risk Management Measures	
industrial	
Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid frequent and direct contact with substance. Ensure minimization of manual phases	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 98 %
Wear suitable coveralls to prevent exposure to the skin. Use suitable eye protection.	
Risk Management Measures are based on qualitative risk characterisation.	
Exposure estimate and reference to its source	
PROC4	
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker- inhalation, short-term - local und systemic
Exposure estimate	1,419 mg/m³
Risk Characterization Ratio (RCR)	0,071
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

EXPOSURE SCENARIO

CAS:100-51-6 ***Benzyl Alcohol***

1. Short title of Exposure Scenario 6: Uses in coatings/surface treatment products		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Chemical product category	PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC9c: Finger paints PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products PC18: Ink and toners	
Process categories	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC12: Use of blowing agents in manufacture of foam PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
Amount used	Annual site tonnage (tons/year):	422 ton(s)/year
Frequency and duration of use	Continuous exposure	300 days/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	9,8 %
	Emission or Release Factor: Water	2 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Water	The waste water has to be directed to a dedicated sewage treatment plant or treated by other suitable techniques
	Soil	Floor should be impervious and resistant to liquid

releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %

2.2 Contributing scenario controlling worker exposure for: PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 40 %
	Physical Form (at time of use)	liquid
	Vapour pressure	0,22 hPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	230 days/year
Human factors not influenced by risk management	Breathing volume	10 m3/day
	Body weight	70 kg
Other operational conditions affecting workers exposure	Indoor	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide local exhaust ventilation (LEV). (Efficiency: > 90 %)	
Organisational measures to prevent /limit releases, dispersion and exposure	Only properly trained and authorised personal shall handle the substance Substance-handling procedures shall be well documented and strictly supervised	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective clothing. Use suitable eye protection.	
	Wear respiratory protection. (Efficiency: 95 %)(PROC7)	

3. Exposure estimation and reference to its source

Environment

ERC4: EUSES 2.1

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	---	Fresh water	PEC	0,0263mg/L	---
ERC4	---	Marine water	PEC	2,61µg/L	---
ERC4	---	Fresh water sediment	PEC	0,136mg/kg	---
ERC4	---	Marine sediment	PEC	0,0135mg/kg	---
ERC4	---	Soil	PEC	0,0106mg/kg	---
ERC4	---	Sewage treatment plant (STP)	PEC	0,215mg/L	---

ESVOC spERC 4.3a.v1 has been used to evaluate the exposure for the environment.

EXPOSURE SCENARIO

CAS:100-51-6 ***Benzyl Alcohol***

Workers

Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	---	Worker - inhalative, long-term - systemic	4,51mg/m³	0,050
---	---	Worker - dermal, long-term - systemic	0,856mg/kg bw/day	0,090

Given exposure estimates are based on the PROC with the highest exposure levels in this scenario.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: hiip://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES