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

1.1 Product identifier

Trade name: Chlorendic Anhydride PE1 +
REACH registration No.: 01-2119911956-30-0000

CAS-Number: 115-27-5
EC-number: 204-077-3
EU-number: 607-101-00-4

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

General use: Chemical basic material.
For industrial purposes only.

Identified uses: **Industrial use:**

1	Receipt and storage of raw materials SU 3,10; PROC 1,3,8b; PC 32; ERC 2	Page 12
2	Blending or dissolving or dispersion SU 3,10; PROC 2,4,5; PC 32; AC 32; ERC 2	Page 16
3	Filtering and filling SU 3,10; PROC 8a,9; PC 32; ERC 2	Page 20
4	Waste management SU 3,23; PROC 3,8b; ERC 2	Page 23
5	Use in closed batch process (synthesis or formulation) SU 3; PROC 3; PC 32; ERC 2	Page 26
6	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) SU 3; PROC 5; PC 32	Page 29
7	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities SU 3; PROC 8b,9; PC 32; ERC 2	Page 32
8	Research and development SU 3; PROC 15; PC 32; ERC 2	Page 35

1.3 Details of the supplier of the safety data sheet

Company name: Velsicol Chemical Ireland Limited
Regus House
Street/POB-No.: Hartcourt Centre
Hartcourt Road
Postal Code, city: Dublin 2, IRL
Republic of Ireland
WWW: www.velsicol.com
E-mail: sfriedman@velsicol.com
Telephone: 00353 1 477 3143
Telefax: 00353 1 402 9587
Dept. responsible for information:
sfriedman@velsicol.com

1.4 Emergency telephone number

Telephone: +49 51 92 98970 (08:00– 17:00 CET)
or CHEMTREC, Telephone: +1 703 527 3887 (24h; from USA: 1-800-424-9300)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to EC regulation 1272/2008 (CLP)

Skin Irrit. 2; H315	Causes skin irritation.
Eye Irrit. 2; H319	Causes serious eye irritation.
Skin Sens. 1; H317	May cause an allergic skin reaction.
Carc. 2; H351	Suspected of causing cancer.
STOT SE 3; H335	May cause respiratory irritation.
STOT RE 2; H373	May cause damage to organs through prolonged or repeated exposure.
Aquatic Chronic 3; H412	Harmful to aquatic life with long lasting effects.

Classification according to directive 67/548/EEC

Carc. Cat. 2; R45	May cause cancer.
Xn; R48/20/21/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
Xi; R36/37/38	Irritating to eyes, respiratory system and skin.
Sens.; R43	May cause sensitization by skin contact.
R52-53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling (CLP)

Signal word: **Warning**

Hazard statements:

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

Safety precautions:

P201	Obtain special instructions before use.
P260	Do not breathe dust.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
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.

Labelling (67/548/EEC or 1999/45/EC)

T

R phrase(s):	R 45	May cause cancer.
	R 36/37/38	Irritating to eyes, respiratory system and skin.
	R 43	May cause sensitization by skin contact.
	R 48/20/21/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
	R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S phrase(s):	S 53	Avoid exposure - obtain special instructions before use.
	S 22	Do not breathe dust.
	S 26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	S 36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
	S 45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
	S 61	Avoid release to the environment. Refer to special instructions/safety data sheet.

Special labelling

Text for labelling: To avoid risks to human health and the environment, comply with the instructions for use.

2.3 Other hazards

No risks worthy of mention.

SECTION 3: Composition / information on ingredients

3.1 Substances

Chemical characterization: C9 H2 Cl6 O3
1,4,5,6,7,7-Hexachlorobicyclo [2,2,1]hept-5-ene-2,3-dicarboxylic anhydride

CAS-Number: 115-27-5

EC-number: 204-077-3

EU-number: 607-101-00-4

Hazardous impurities: Chlorobenzene: <5%
Chlorendic acid: <3%
Maleic anhydride: <1%

SECTION 4: First aid measures

4.1 Description of first aid measures

In case of inhalation: Move victim to fresh air; if necessary, provide artificial respiration or oxygen.
Seek medical attention.

In case of skin contact: Thoroughly wash skin with soap and water. Immediately remove any contaminated clothing, shoes or stockings. If the symptoms persist, seek medical attention.

After eye contact: Thoroughly flush eyes with water for 15 minutes. Immediately get medical attention.

After swallowing: IF SWALLOWED: Induce vomiting when the affected person is not unconscious. Seek medical attention.
Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Irritation to eyes.
May cause cancer if swallowed.
Repeated exposure (oral, dermal, inhalation): Injuries of the internal organs (Lung, Stomach, Heart, Liver;).

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:

Extinguishing is to be in accordance with the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Fine dust.

Product contains =<5 % Chlorobenzene. May represent a fire hazard at sufficient concentrations in presence of ignition sources.

5.3 Advice for firefighters

Special protective equipment for firefighters:

Advice for fire-fighters: Wear self-contained breathing apparatus, protective clothing and rubber boots.

Additional information: Hazchem-Code: -

Non-flammable; No explosion
Do not allow fire water to penetrate into surface or ground water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use suitable personal protective equipment to protect skin and eyes.
Ventilate affected area.
Avoid generation of dust.

6.2 Environmental precautions

Do not allow to enter into ground-water, surface water or drains.
In case of entry into waterways, soil or drains, inform the responsible authorities.

6.3 Methods and material for containment and cleaning up

Stop leak if safe to do so.
Collect in closed and suitable containers for disposal. Dispose of this material and its container to hazardous or special waste collection point.
Avoid generation of dust.
Remove residual product with water and detergent.

6.4 Reference to other sections

Refer additionally to chapter 8 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advices on safe handling: Protective measures: Do not handle until all safety precautions have been read and understood. Wear suitable protective clothing, gloves and eye/face protection.
Protective measures at Dust formation: Provide good ventilation. Do not breathe dust/fume/gas/mist/vapours/spray.
Environmental measures: Avoid release to the environment.
Advices on general occupational hygiene: Avoid contact with skin and eyes. Change contaminated clothing. When using do not eat, drink or smoke. Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:
Store at room temperature in a dry and well ventilated area. Keep container tightly closed. Keep away from food, drink and animal feeding stuffs.
Conditions for safe storage, including any incompatibilities: Protect from humidity and water.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Additional information: Contains no substances with occupational exposure limit values.

DNEL/DMEL:

DNEL short-term:
- DNEL Workers, inhalative, local effects: 0,042 mg/m³.
- DNEL Workers, inhalative, Systemic effects: 149 mg/m³.
- DNEL Consumers, dermal, local effects: 0,5 mg/kg bw/d.
- DNEL Consumers, dermal, Systemic effects: 21 mg/kg bw/d.
- DNEL Consumers, oral: 21 mg/kg bw/d.

DNEL Long-term:
- DNEL Consumers, inhalative, local effects: 16,62 mg/m³.
- DNEL Consumers, inhalative, Systemic effects: 12 mg/m³.
- DNEL Consumers, dermal, local effects: 0,28 mg/kg bw/d.
- DNEL Consumers, dermal, Systemic effects: 3 mg/kg bw/d.
- DNEL Consumers, oral: 1,1 mg/kg bw/d.

PNEC:

PNEC water (freshwater): 0,097 mg/L.
PNEC water (marine water): 0,0097 mg/L.
PNEC water (intermittent release): 0,97 mg/L.

PNEC sediment (freshwater): 0,097 mg/kg d.w.
PNEC sediment (marine water): 0,0097 mg/kg d.w.

PNEC soil: 0,106 mg/kg d.w.

PNEC sewage treatment plant: 16,23 mg/L.

8.2 Exposure controls

Provide adequate ventilation, and local exhaust as needed.

Occupational exposure controls

All information for relevant exposure scenarios including operational conditions and risk management measures are listed in 'See attached exposure scenario'.

Respiratory protection: Full face mask with canister for organic vapours and particles.

Hand protection:	Protective gloves according to EN 374. Observe glove manufacturer's instructions concerning penetrability and breakthrough time.
Eye protection:	Tightly sealed goggles according to EN 166
Body protection:	Dust mask, impenetrable coveralls, shoes and gloves.
General protection and hygiene measures:	Avoid contact with skin and eyes. Change contaminated clothing. When using do not eat, drink or smoke. Wash hands before breaks and after work.

Environmental exposure controls

All information for relevant exposure scenarios including operational conditions and risk management measures are listed in 'See attached exposure scenario'.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Physical state: Solid, Crystalline Colour: White
Odour:	Strong odour of aromatic hydrocarbons Odour threshold: Unknown
Odour threshold:	no data available
pH value:	Not available
Melting point/freezing point:	235 - 239 °C
Initial boiling point and boiling range:	266,5 - 322 °C
Flash point/flash point range:	Not applicable
Evaporation rate:	no data available
Flammability:	Non-flammable
Explosive properties:	Not explosive
Explosion limits:	no data available no data available
Vapour pressure:	at 25 °C: 0.00268 Pa
Vapour density:	no data available
Density:	at 20 °C: 1.76 g/cm³ (Pyknometer)
Solubility:	Easily soluble in: Acetone; Soluble in: Methanol, diethyl ether, n-octanol
Water solubility:	at 20 °C: <= 0.0025 g/L
Partition coefficient: n-octanol/water:	at 20 °C: 1.76 log Kow (Chlorendic acid) Appreciable bio-accumulation is not to be expected (log P(o/w 1-3).
Auto-ignition temperature:	Use as flame retardant.
Thermal decomposition:	no data available
Viscosity, dynamic:	no data available
Viscosity, kinematic:	Not applicable
Explosive properties:	no data available
Oxidizing characteristics:	no data available

9.2 Other information

Additional information:

Molecular weight: approx. 371 g/mol
Particle size distribution (median value): 0,1% w/w < 10 µm
Evaporation rate: Not applicable
Decomposition temperature: Not available
Oxidising properties: Not oxidising
Vapour density: not available
Surface tension: 72 mN/m (20°C, 450 mg/L aqueous solution). The product hydrolyses quickly in the presence of water to: Chlorendic acid

SECTION 10: Stability and reactivity

10.1 Reactivity

refer to 10.3

10.2 Chemical stability

Product is stable under normal storage conditions.
The product hydrolyses quickly in the presence of water to: Chlorendic acid

10.3 Possibility of hazardous reactions

No dangerous reactions are known.

10.4 Conditions to avoid

Protect from moisture contamination. Protect from heat and direct sunlight.

10.5 Incompatible materials

Oxidizing or reducing agents, strong bases, acids.

10.6 Hazardous decomposition products

No decomposition when used properly.

Thermal decomposition: no data available

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD50 Rat, oral:	2130 - 2562 mg/kg (EU Method B1)
LD50 Rabbit, dermal:	10000 - 20000 mg/kg (OECD 402)
LD50 Rat, inhalative:	> 203 mg/L (OECD 433)

Toxicological effects:

Acute toxicity (oral): Based on available data, the classification criteria are not met.

Acute toxicity (dermal): Based on available data, the classification criteria are not met.

Acute toxicity (inhalative): Based on available data, the classification criteria are not met.

Skin corrosion/irritation: Skin Irrit. 2; H315 = Causes skin irritation.
Rabbit: mild irritant

Eye damage/irritation: Eye Irrit. 2; H319 = Causes serious eye irritation.
Rabbit: strongly irritant

Sensitisation to the respiratory tract: Lack of data.

Skin sensitisation: Skin Sens. 1; H317 = May cause an allergic skin reaction.
Guinea pig: sensitising (GPMT)

Germ cell mutagenicity/Genotoxicity: Based on available data, the classification criteria are not met. OECD 471, 476, 482: negative

Carcinogenicity: Carc. 2; H351 = Suspected of causing cancer.

Reproductive toxicity: Based on available data, the classification criteria are not met.
NOAEL (Effects on fertility): 223 mg/kg bw/d; NOAEL (Teratogenicity): 400 mg/kg bw/d;

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): STOT SE 3; H335 = May cause respiratory irritation.

Specific target organ toxicity (repeated exposure): STOT RE 2; H373 = May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard: Lack of data.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Acute (short-term) fish toxicity:
- LC50 Oncorhynchus mykiss: 422,7 mg/L/96h (EU Method C.1)
- LC50 Lepomis macrochirus (Bluegill): 422,7 mg/L/96h (EU Method C.1)
- LC50 (freshwater fish): 422.7 mg/L

Acute Daphnia toxicity:
- EC50 Daphnia magna (Big water flea): 110,7 mg/L/48h (EU Method C.2)

Acute (short-term) toxicity to crustacea:
- EC50/LC50: 110,7 mg/L/48h

Algae toxicity (acute):
- EC50/LC50: 97.2 mg/L/72h (Algal Inhibition test)
- EC10/LC10 or NOEC: 48,4 mg/L/72h (Algal Inhibition test)

Algae toxicity (chronic):
- EC50: >97,2mg/L

12.2. Persistence and degradability

Further details:

Abiotic degradation:
- Chlorendic Anhydride hydrolyzed with water (Product: Chlorendic acid).
- Water solubility (Chlorendic acid): 0,499 mg/L.

Biodegradation:
- Chlorendic Anhydride: Not bio-degradable.
- Chlorendic acid: Potentially biologically degradable.

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water: 1,39 log Kow; No accumulation

Partition coefficient: n-octanol/water:

at 20 °C: 1.76 log Kow (Chlorendic acid)

Appreciable bio-accumulation is not to be expected (log P(o/w 1-3).

12.4 Mobility in soil

Chlorendic Anhydride hydrolyzed with water (Product: Chlorendic acid)
log Koc = 0,92 (Chlorendic acid)

12.5 Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6 Other adverse effects

General information: Do not allow to penetrate into soil, waterbodies or drains.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste key number: 07 01 99 = Wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals: Wastes not otherwise specified
MFSU = manufacture, formulation, supply and use

Recommendation: Ensure all waste water is collected and treated via a waste water treatment plant.
Alternative: Incinerate according to applicable local, state and federal regulations.

Contaminated packaging

Recommendation: Dispose of waste according to applicable legislation.

SECTION 14: Transport information

14.1 UN number

not applicable

14.2 UN proper shipping name

ADR/RID, IMDG, IATA: Not restricted

14.3 Transport hazard class(es)

not applicable

14.4 Packing group

not applicable

14.5 Environmental hazards

Marine pollutant: No

14.6 Special precautions for user

No dangerous good in sense of these transport regulations.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

SECTION 15: Regulatory information

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

National regulations - Great Britain

Hazchem-Code: -

National regulations - EC member states

Labelling of packaging with <= 125mL content

Signal word: **Warning**

Hazard statements:	H317	May cause an allergic skin reaction.
	H351	Suspected of causing cancer.
	H412	Harmful to aquatic life with long lasting effects.
Safety precautions:	P201	Obtain special instructions before use.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P309+P311	IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

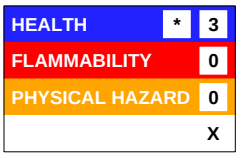
National regulations - USA

TSCA Inventory: listed
TSCA HPVC: not listed

Hazard rating systems:

NFPA Hazard Rating:
Health: 3 (Serious)
Fire: 0 (Minimal)
Reactivity: 0 (Minimal)

HMIS Version III Rating:
Health: 3 (Serious) - Chronic effects
Flammability: 0 (Minimal)
Physical Hazard: 0 (Minimal)
Personal Protection: X = Consult your supervisor



National regulations - Canada

DSL: listed

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

SECTION 16: Other information

Further information

Reason of change: Changes in section 1: REACH registration No.
General revision

Date of first version: 18/01/2013

Department issuing data sheet

Contact person: see section 1: Dept. responsible for information

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.

QualiSys approved
www.sumdat.com/approved

Exposure scenario 1: Receipt and storage of raw materials

List of use descriptors

Sector of uses [SU]: SU3: Industrial uses
SU10: Formulation [mixing] of preparations and/or re-packaging

Product Categories: PC32: Polymer preparations and compounds

Application

remark: Process categories [PROC]: 1, 3, 8b

Environmental release categories [ERC]: 2

Methods used: The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Contributing Scenarios:

1	Formulation of preparations (environment)	Page 12
2	General information; Applies to all contributing exposure scenarios related to exposure scenario 1: Receipt and storage of raw materials (worker)	Page 13
3	Use in closed process, no likelihood of exposure. General exposures (closed systems); (worker)	Page 14
4	Use in closed batch process (synthesis or formulation). General exposures (closed systems); (worker)	Page 14
5	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Bulk transfers (closed systems); (worker)	Page 14

Contributing exposure scenario 1

Formulation of preparations (environment)

List of use descriptors

Environmental release categories [ERC]:
ERC2: Formulation of preparations

Operational conditions

Product characteristics: Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:
Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:
250 d/y

Environment factors not influenced by risk management:
Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Environmental exposure assessment with EUSES v2.1:
Release to air from process: 0,548 kg/d
Release to waste water from process: 11 kg/d

Other information: Processing: Indoor

Exposure prediction

Exposure estimation and reference to its source:

Predicted environmental concentration (PEC):
Water (freshwater): 0,00024 mg/L
Water (marine water): 0,000024 mg/L
Sediment (freshwater): 0,00106 mg/L d.w.
Sediment (marine water): 0,000106 mg/L d.w.
Soil: 0,00000000596 mg/L d.w./30d
Sewage treatment plant: 0,0024 mg/L

Risk characterisation ratio (RCR):

Water (freshwater): 0,00247
Water (marine water): 0,00247
Sediment (freshwater): 0,0109
Sediment (marine water): 0,0109
Soil: 0,000000197
Sewage treatment plant: 0,000148

Disposal considerations

Conditions and measures related to municipal sewage treatment plant:

Estimated substance removal from wastewater via domestic sewage treatment (%): 78,9.

Conditions and measures related to external treatment of waste for disposal:

Disposal considerations: Ensure all waste water is collected and treated via a waste water treatment plant. Alternative: Incinerate according to applicable local, state and federal regulations.
Dispose of waste according to applicable legislation.

Contributing exposure scenario 2

General information;
Applies to all contributing exposure scenarios related to exposure scenario 1: Receipt and storage of raw materials (worker)

Operational conditions

Product characteristics:

Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

Exposed skin surface assumed: Both hands; 960 cm².
Frequency of use: 2 workdays/week; 100 d/y.
Exposure time: >4h per day.

Other relevant operational conditions:

Processing: Indoor

Other information: Worst case assumption: see PROC 4

Exposure prediction

Exposure estimation and reference to its source:

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Provide a good standard of general ventilation.
Clear spills immediately.

Operational conditions and risk management measures:

Assumes a good basic standard of occupational hygiene is implemented.
When using do not eat, drink or smoke.

Conditions and measures related to personal protection, hygiene and health evaluation:

Dust mask, impenetrable coveralls, shoes and gloves.
Full face mask with canister for organic vapours and particles.
On demand: Contact expert.
Refer to Safety Data Sheet.

Contributing exposure scenario 3

Use in closed process, no likelihood of exposure.
General exposures (closed systems); (worker)

List of use descriptors

Process categories [PROC]:

PROC1: Use in closed process, no likelihood of exposure

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: 0,01 mg/m³
Dermal: 0,0343 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Contributing exposure scenario 4

Use in closed batch process (synthesis or formulation).
General exposures (closed systems); (worker)

List of use descriptors

Process categories [PROC]:

PROC3: Use in closed batch process (synthesis or formulation)

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a
Dermal: 0,0343 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Contributing exposure scenario 5

Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.
Bulk transfers (closed systems); (worker)

List of use descriptors

Process categories [PROC]:

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

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a

Dermal: 0,686 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

not applicable

Exposure scenario 2: Blending or dissolving or dispersion

List of use descriptors

Sector of uses [SU]: SU3: Industrial uses
SU10: Formulation [mixing] of preparations and/or re-packaging

Product Categories: PC32: Polymer preparations and compounds

Application

remark: Process categories [PROC]: 2, 4, 5

Environmental release categories [ERC]: 2

Article categories [AC]: 32

Methods used: The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Contributing Scenarios:

1	Blending or dissolving or dispersion (environment)	Page 16
2	General information; Applies to all contributing exposure scenarios related to exposure scenario 2: Blending or dissolving or dispersion (worker)	Page 17
3	Use in closed, continuous process with occasional controlled exposure; General exposures (closed systems). With sample collection (worker)	Page 18
4	Use in batch and other process (synthesis) where opportunity for exposure arises. General exposures (open systems); Batch process with sample collection (worker)	Page 18
5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact); (worker)	Page 19

Contributing exposure scenario 1

Blending or dissolving or dispersion (environment)

List of use descriptors

Environmental release categories [ERC]:
ERC2: Formulation of preparations

Operational conditions

Product characteristics: Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:
Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:
250 d/y

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Environmental exposure assessment with EUSES v2.1:
Release to air from process: 0,548 kg/d
Release to waste water from process: 11 kg/d

Other information: Processing: Indoor

Exposure prediction

Exposure estimation and reference to its source:

Predicted environmental concentration (PEC):
Water (freshwater): 0,00024 mg/L
Water (marine water): 0,000024 mg/L
Sediment (freshwater): 0,00106 mg/L d.w.
Sediment (marine water): 0,000106 mg/L d.w.
Soil: 0,00000000596 mg/L d.w./30d
Sewage treatment plant: 0,0024 mg/L

Risk characterisation ratio (RCR):

Water (freshwater): 0,00247
Water (marine water): 0,00247
Sediment (freshwater): 0,0109
Sediment (marine water): 0,0109
Soil: 0,000000197
Sewage treatment plant: 0,000148

Disposal considerations

Conditions and measures related to municipal sewage treatment plant:

Estimated substance removal from wastewater via domestic sewage treatment (%): 78,9

Conditions and measures related to external treatment of waste for disposal:

Disposal considerations: Ensure all waste water is collected and treated via a waste water treatment plant. Alternative: Incinerate according to applicable local, state and federal regulations.
Dispose of waste according to applicable legislation.

Contributing exposure scenario 2

General information;
Applies to all contributing exposure scenarios related to exposure scenario 2: Blending or dissolving or dispersion (worker)

Operational conditions

Product characteristics: Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

Exposed skin surface assumed: Both hands; 960 cm².
Frequency of use: 2 workdays/week; 100 d/y.
Exposure time: >4h per day.

Other relevant operational conditions:

Processing: Indoor

Other information: Worst case assumption: see PROC 4

Exposure prediction

Exposure estimation and reference to its source:

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Provide a good standard of general ventilation
Clear spills immediately.

Operational conditions and risk management measures:

Assumes a good basic standard of occupational hygiene is implemented.
When using do not eat, drink or smoke.

Conditions and measures related to personal protection, hygiene and health evaluation:

Dust mask, impenetrable coveralls, shoes and gloves.
Full face mask with canister for organic vapours and particles.
On demand: Contact expert.
Refer to Safety Data Sheet.

Contributing exposure scenario 3

Use in closed, continuous process with occasional controlled exposure; General exposures (closed systems). With sample collection (worker)

List of use descriptors

Process categories [PROC]:

PROC2: Use in closed, continuous process with occasional controlled exposure

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: 0,001 mg/m³
Dermal: 0,137 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Contributing exposure scenario 4

Use in batch and other process (synthesis) where opportunity for exposure arises. General exposures (open systems); Batch process with sample collection (worker)

List of use descriptors

Process categories [PROC]:

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: 0,05 mg/m³
dermal: 0,686 mg/kg bw/d

Risk characterisation ratio (RCR):

Inhalative: 0,000476
Dermal: 0,0185
Combined for all exposure routes: 0,0186

Contributing exposure scenario 5

Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact); (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: 0,05 mg/m³
dermal: 0,0686 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

not applicable

Exposure scenario 3: Filtering and filling

List of use descriptors

Sector of uses [SU]: SU3: Industrial uses
SU10: Formulation [mixing] of preparations and/or re-packaging

Product Categories: PC32: Polymer preparations and compounds

Application

remark: Process categories [PROC]: 8a, 9

Environmental release categories [ERC]: 2

Methods used: The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Contributing Scenarios:

1	Filtering and filling (environment)	Page 20
2	General information; Applies to all contributing exposure scenarios related to exposure scenario 3: Filtering and filling (worker)	Page 21
3	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Equipment cleaning and maintenance (worker)	Page 22
4	Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Drum and small package filling (worker)	Page 22

Contributing exposure scenario 1

Filtering and filling (environment)

List of use descriptors

Environmental release categories [ERC]:
ERC2: Formulation of preparations

Operational conditions

Product characteristics: Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:
Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:
250 d/y

Environment factors not influenced by risk management:
Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Environmental exposure assessment with EUSES v2.1:
Release to air from process: 0,548 kg/d
Release to waste water from process: 11 kg/d

Other information: Processing: Indoor

Exposure prediction

Exposure estimation and reference to its source:

Predicted environmental concentration (PEC):
Water (freshwater): 0,00024 mg/L
Water (marine water): 0,000024 mg/L
Sediment (freshwater): 0,00106 mg/L d.w.
Sediment (marine water): 0,000106 mg/L d.w.
Soil: 0,00000000596 mg/L d.w./30d
Sewage treatment plant: 0,0024 mg/L

Risk characterisation ratio (RCR):

Water (freshwater): 0,00247
Water (marine water): 0,00247
Sediment (freshwater): 0,0109
Sediment (marine water): 0,0109
Soil: 0,000000197
Sewage treatment plant: 0,000148

Disposal considerations

Conditions and measures related to municipal sewage treatment plant:

Estimated substance removal from wastewater via domestic sewage treatment (%): 78,9

Conditions and measures related to external treatment of waste for disposal:

Disposal considerations: Ensure all waste water is collected and treated via a waste water treatment plant. Alternative: Incinerate according to applicable local, state and federal regulations.
Dispose of waste according to applicable legislation.

Contributing exposure scenario 2

General information;
Applies to all contributing exposure scenarios related to exposure scenario 3: Filtering and filling (worker)

Operational conditions

Product characteristics:

Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

Exposed skin surface assumed: Both hands; 960 cm².
Frequency of use: 2 workdays/week; 100 d/y.
Exposure time: >4h per day.

Other relevant operational conditions:

Processing: Indoor

Other information: Worst case assumption: see PROC 4

Exposure prediction

Exposure estimation and reference to its source:

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Provide a good standard of general ventilation
Clear spills immediately.

Operational conditions and risk management measures:

Assumes a good basic standard of occupational hygiene is implemented.
When using do not eat, drink or smoke.

Conditions and measures related to personal protection, hygiene and health evaluation:

Dust mask, impenetrable coveralls, shoes and gloves.
Full face mask with canister for organic vapours and particles.
On demand: Contact expert.
Refer to Safety Data Sheet.

Contributing exposure scenario 3

Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.
Equipment cleaning and maintenance (worker)

List of use descriptors

Process categories [PROC]:

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

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a
Dermal: 0,137 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Contributing exposure scenario 4

Transfer of substance or preparation into small containers (dedicated filling line, including weighing).
Drum and small package filling (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a
Dermal: 0,686 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

not applicable

Exposure scenario 4: Waste management

List of use descriptors

Sector of uses [SU]: SU3: Industrial uses
SU23: Electricity, steam, gas water supply and sewage treatment

Application

remark: Process categories [PROC]: 3, 8b

Environmental release categories [ERC]: 2

Methods used: The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Contributing Scenarios:

1	Waste management (environment)	Page 23
2	General information; Applies to all contributing exposure scenarios related to exposure scenario 4: Waste management (worker)	Page 24
3	Use in closed batch process (synthesis or formulation). General exposures (closed systems); (worker)	Page 25
4	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Bulk transfers (closed systems); (worker)	Page 25

Contributing exposure scenario 1

Waste management (environment)

List of use descriptors

Environmental release categories [ERC]:
ERC2: Formulation of preparations

Operational conditions

Product characteristics: Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:
Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:
250 d/y

Environment factors not influenced by risk management:
Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Environmental exposure assessment with EUSES v2.1:
Release to air from process: 0,548 kg/d
Release to waste water from process: 11 kg/d

Other information: Processing: Indoor

Exposure prediction

Exposure estimation and reference to its source:

Predicted environmental concentration (PEC):
Water (freshwater): 0,00024 mg/L
Water (marine water): 0,000024 mg/L
Sediment (freshwater): 0,00106 mg/L d.w.
Sediment (marine water): 0,000106 mg/L d.w.
Soil: 0,00000000596 mg/L d.w./30d
Sewage treatment plant: 0,0024 mg/L

Risk characterisation ratio (RCR):

Water (freshwater): 0,00247
Water (marine water): 0,00247
Sediment (freshwater): 0,0109
Sediment (marine water): 0,0109
Soil: 0,000000197
Sewage treatment plant: 0,000148

Disposal considerations

Conditions and measures related to municipal sewage treatment plant:

Estimated substance removal from wastewater via domestic sewage treatment (%): 78,9

Conditions and measures related to external treatment of waste for disposal:

Disposal considerations: Ensure all waste water is collected and treated via a waste water treatment plant. Alternative: Incinerate according to applicable local, state and federal regulations.
Dispose of waste according to applicable legislation.

Contributing exposure scenario 2

General information;
Applies to all contributing exposure scenarios related to exposure scenario 4: Waste management (worker)

Operational conditions

Product characteristics:

Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

Exposed skin surface assumed: Both hands; 960 cm².
Frequency of use: 2 workdays/week; 100 d/y.
Exposure time: >4h per day.

Other relevant operational conditions:

Processing: Indoor

Other information: Worst case assumption: see PROC 4

Exposure prediction

Exposure estimation and reference to its source:

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Provide a good standard of general ventilation
Clear spills immediately.

Operational conditions and risk management measures:

Assumes a good basic standard of occupational hygiene is implemented.
When using do not eat, drink or smoke.

Conditions and measures related to personal protection, hygiene and health evaluation:

Dust mask, impenetrable coveralls, shoes and gloves.
Full face mask with canister for organic vapours and particles.
On demand: Contact expert.
Refer to Safety Data Sheet.

Contributing exposure scenario 3

Use in closed batch process (synthesis or formulation). General exposures (closed systems); (worker)

List of use descriptors

Process categories [PROC]:

PROC3: Use in closed batch process (synthesis or formulation)

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a
Dermal: 0,0343 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Contributing exposure scenario 4

Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Bulk transfers (closed systems); (worker)

List of use descriptors

Process categories [PROC]:

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

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a
Dermal: 0,686 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

not applicable

Exposure scenario 5: Use in closed batch process (synthesis or formulation)

List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

Product Categories: PC32: Polymer preparations and compounds

Application

remark: Process categories [PROC]: 3

Environmental release categories [ERC]: 2

Methods used: The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Contributing Scenarios:
1 Use in closed batch process (synthesis or formulation); (environment) Page 26
2 General information; Page 27
Applies to all contributing exposure scenarios related to exposure scenario 5: Use in closed batch process (synthesis or formulation); (worker)
3 Use in closed batch process (synthesis or formulation). General exposures (closed systems); (worker) Page 28

Contributing exposure scenario 1

Use in closed batch process (synthesis or formulation); (environment)

List of use descriptors

Environmental release categories [ERC]:

ERC2: Formulation of preparations

Operational conditions

Product characteristics:
Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

250 d/y

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Environmental exposure assessment with EUSES v2.1:
Release to air from process: 0,548 kg/d
Release to waste water from process: 11 kg/d

Other information: Processing: Indoor

Exposure prediction

Exposure estimation and reference to its source:

Predicted environmental concentration (PEC):
Water (freshwater): 0,00024 mg/L
Water (marine water): 0,000024 mg/L
Sediment (freshwater): 0,00106 mg/L d.w.
Sediment (marine water): 0,000106 mg/L d.w.
Soil: 0,00000000596 mg/L d.w./30d
Sewage treatment plant: 0,0024 mg/L

Risk characterisation ratio (RCR):

Water (freshwater): 0,00247
Water (marine water): 0,00247
Sediment (freshwater): 0,0109
Sediment (marine water): 0,0109
Soil: 0,000000197
Sewage treatment plant: 0,000148

Disposal considerations

Conditions and measures related to municipal sewage treatment plant:

Estimated substance removal from wastewater via domestic sewage treatment (%): 78,9

Conditions and measures related to external treatment of waste for disposal:

Disposal considerations: Ensure all waste water is collected and treated via a waste water treatment plant. Alternative: Incinerate according to applicable local, state and federal regulations.
Dispose of waste according to applicable legislation.

Contributing exposure scenario 2

General information;
Applies to all contributing exposure scenarios related to exposure scenario 5: Use in closed batch process (synthesis or formulation); (worker)

Operational conditions

Product characteristics:

Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

Exposed skin surface assumed: Both hands; 960 cm².
Frequency of use: 2 workdays/week; 100 d/y.
Exposure time: >4h per day.

Other relevant operational conditions:

Processing: Indoor

Other information: Worst case assumption: see PROC 4

Exposure prediction

Exposure estimation and reference to its source:

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Provide a good standard of general ventilation
Clear spills immediately.

Operational conditions and risk management measures:

Assumes a good basic standard of occupational hygiene is implemented.
When using do not eat, drink or smoke.

Conditions and measures related to personal protection, hygiene and health evaluation:

Dust mask, impenetrable coveralls, shoes and gloves.
Full face mask with canister for organic vapours and particles.
On demand: Contact expert.
Refer to Safety Data Sheet.

Contributing exposure scenario 3

Use in closed batch process (synthesis or formulation). General exposures (closed systems); (worker)

List of use descriptors

Process categories [PROC]:

PROC3: Use in closed batch process (synthesis or formulation)

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a
Dermal: 0,0343 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

not applicable

Exposure scenario 6: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

Product Categories: PC32: Polymer preparations and compounds

Application

remark: Process categories [PROC]: 5

Environmental release categories [ERC]: 2

Methods used: The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Contributing Scenarios:

1	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact); (environment)	Page 29
2	General information; Applies to all contributing exposure scenarios related to exposure scenario 6: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact); (worker)	Page 30
3	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact); (worker)	Page 31

Contributing exposure scenario 1

Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact); (environment)

Operational conditions

Product characteristics: Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:
Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:
250 d/y

Environment factors not influenced by risk management:
Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Environmental exposure assessment with EUSES v2.1:
Release to air from process: 0,548 kg/d
Release to waste water from process: 11 kg/d

Other information: Processing: Indoor

Exposure prediction

Exposure estimation and reference to its source:

Predicted environmental concentration (PEC):
Water (freshwater): 0,00024 mg/L
Water (marine water): 0,000024 mg/L
Sediment (freshwater): 0,00106 mg/L d.w.
Sediment (marine water): 0,000106 mg/L d.w.
Soil: 0,00000000596 mg/L d.w./30d
Sewage treatment plant: 0,0024 mg/L

Risk characterisation ratio (RCR):

Water (freshwater): 0,00247
Water (marine water): 0,00247
Sediment (freshwater): 0,0109
Sediment (marine water): 0,0109
Soil: 0,000000197
Sewage treatment plant: 0,000148

Disposal considerations

Conditions and measures related to municipal sewage treatment plant:

Estimated substance removal from wastewater via domestic sewage treatment (%): 78,9

Conditions and measures related to external treatment of waste for disposal:

Disposal considerations: Ensure all waste water is collected and treated via a waste water treatment plant. Alternative: Incinerate according to applicable local, state and federal regulations.
Dispose of waste according to applicable legislation.

Contributing exposure scenario 2

General information;
Applies to all contributing exposure scenarios related to exposure scenario 6: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact); (worker)

Operational conditions

Product characteristics:

Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

Exposed skin surface assumed: Both hands; 960 cm².
Frequency of use: 2 workdays/week; 100 d/y.
Exposure time: >4h per day.

Other relevant operational conditions:

Processing: Indoor

Other information: Worst case assumption: see PROC 4

Exposure prediction

Exposure estimation and reference to its source:

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Provide a good standard of general ventilation
Clear spills immediately.

Operational conditions and risk management measures:

Assumes a good basic standard of occupational hygiene is implemented.
When using do not eat, drink or smoke.

Conditions and measures related to personal protection, hygiene and health evaluation:

Dust mask, impenetrable coveralls, shoes and gloves.
Full face mask with canister for organic vapours and particles.
On demand: Contact expert.
Refer to Safety Data Sheet.

Contributing exposure scenario 3

Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact); (worker)

List of use descriptors

Process categories [PROC]:

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: 0,05 mg/m³
Dermal: 0,0686 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

not applicable

Exposure scenario 7: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

Product Categories: PC32: Polymer preparations and compounds

Application

remark: Process categories [PROC]: 8b, 9

Environmental release categories [ERC]: 2

Methods used: The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Contributing Scenarios:

1	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (environment)	Page 32
2	General information; Applies to all contributing exposure scenarios related to exposure scenario 7: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (worker)	Page 33
3	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Bulk transfers (closed systems); (worker)	Page 34
4	Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Drum and small package filling (worker)	Page 34

Contributing exposure scenario 1

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

List of use descriptors

Environmental release categories [ERC]:

ERC2: Formulation of preparations

Operational conditions

Product characteristics:

Solid, Crystalline;
Water solubility: 2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 [log P(o/w)];
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

250 d/y

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Environmental exposure assessment with EUSES v2.1:
Release to air from process: 0,548 kg/d
Release to waste water from process: 11 kg/d

Other information: Processing: Indoor

Exposure prediction

Exposure estimation and reference to its source:

Predicted environmental concentration (PEC):
Water (freshwater): 0,00024 mg/L
Water (marine water): 0,000024 mg/L
Sediment (freshwater): 0,00106 mg/L d.w.
Sediment (marine water): 0,000106 mg/L d.w.
Soil: 0,00000000596 mg/L d.w./30d
Sewage treatment plant: 0,0024 mg/L

Risk characterisation ratio (RCR):

Water (freshwater): 0,00247
Water (marine water): 0,00247
Sediment (freshwater): 0,0109
Sediment (marine water): 0,0109
Soil: 0,000000197
Sewage treatment plant: 0,000148

Disposal considerations

Conditions and measures related to municipal sewage treatment plant:

Estimated substance removal from wastewater via domestic sewage treatment (%): 78,9

Conditions and measures related to external treatment of waste for disposal:

Disposal considerations: Ensure all waste water is collected and treated via a waste water treatment plant. Alternative: Incinerate according to applicable local, state and federal regulations.
Dispose of waste according to applicable legislation.

Contributing exposure scenario 2

General information;
Applies to all contributing exposure scenarios related to exposure scenario 7: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (worker)

Operational conditions

Product characteristics:

Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

Exposed skin surface assumed: Both hands; 960 cm².
Frequency of use: 2 workdays/week; 100 d/y.
Exposure time: >4h per day.

Other relevant operational conditions:

Processing: Indoor

Other information:

Worst case assumption: see PROC 4

Exposure prediction

Exposure estimation and reference to its source:

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Provide a good standard of general ventilation
Clear spills immediately.

Operational conditions and risk management measures:

Assumes a good basic standard of occupational hygiene is implemented.
When using do not eat, drink or smoke.

Conditions and measures related to personal protection, hygiene and health evaluation:

Dust mask, impenetrable coveralls, shoes and gloves.
Full face mask with canister for organic vapours and particles.
On demand: Contact expert.
Refer to Safety Data Sheet.

Contributing exposure scenario 3

Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.
Bulk transfers (closed systems); (worker)

List of use descriptors

Process categories [PROC]:

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

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a
Dermal: 0,686 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Contributing exposure scenario 4

Transfer of substance or preparation into small containers (dedicated filling line, including weighing).
Drum and small package filling (worker)

List of use descriptors

Process categories [PROC]:

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Operational conditions

Duration and frequency of use:

Frequency of use: 2 workdays/week; 100 d/y.
Exposure time: >4h per day.

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a
Dermal: 0,686 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

not applicable

Exposure scenario 8: Research and development

List of use descriptors

Sector of uses [SU]: SU3: Industrial uses

Product Categories: PC32: Polymer preparations and compounds

Application

remark: Process categories [PROC]: 15

Environmental release categories [ERC]: 2

Methods used: The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Contributing Scenarios:
1 Research and development (environment) Page 35
2 General information; Page 36
Applies to all contributing exposure scenarios related to exposure scenario 8: Research and development (worker)
3 Receipt and storage of raw materials (worker) Page 37

Contributing exposure scenario 1

Research and development (environment)

List of use descriptors

Environmental release categories [ERC]:

ERC2: Formulation of preparations

Operational conditions

Product characteristics: Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

250 d/y

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Environmental exposure assessment with EUSES v2.1:
Release to air from process: 0,548 kg/d
Release to waste water from process: 11 kg/d

Other information: Processing: Indoor

Exposure prediction

Exposure estimation and reference to its source:

Predicted environmental concentration (PEC):
Water (freshwater): 0,00024 mg/L
Water (marine water): 0,000024 mg/L
Sediment (freshwater): 0,00106 mg/L d.w.
Sediment (marine water): 0,000106 mg/L d.w.
Soil: 0,00000000596 mg/L d.w./30d
Sewage treatment plant: 0,0024 mg/L

Risk characterisation ratio (RCR):

Water (freshwater): 0,00247
Water (marine water): 0,00247
Sediment (freshwater): 0,0109
Sediment (marine water): 0,0109
Soil: 0,000000197
Sewage treatment plant: 0,000148

Disposal considerations

Conditions and measures related to municipal sewage treatment plant:

Estimated substance removal from wastewater via domestic sewage treatment (%): 78,9

Conditions and measures related to external treatment of waste for disposal:

Disposal considerations: Ensure all waste water is collected and treated via a waste water treatment plant. Alternative: Incinerate according to applicable local, state and federal regulations.
Dispose of waste according to applicable legislation.

Contributing exposure scenario 2

General information;
Applies to all contributing exposure scenarios related to exposure scenario 8: Research and development (worker)

Operational conditions

Product characteristics:

Solid, Crystalline;
Water solubility: <2,5 mg/L at 20 °C
Vapour pressure: 0,003 Pa at 25 °C
Distribution coefficient: 1,39 log P(o/w)
Annual amount used in the EU: 1200 t/y
Fraction of regional tonnage used locally: 20 t/y
Daily amount per site: 200 kg/d
Fraction of regional tonnage used locally: 1

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 40 % (unless stated differently).

Duration and frequency of use:

Exposed skin surface assumed: Both hands; 960 cm².
Frequency of use: 2 workdays/week; 100 d/y.
Exposure time: >4h per day.

Other relevant operational conditions:

Processing: Indoor

Other information: Worst case assumption: see PROC 4

Exposure prediction

Exposure estimation and reference to its source:

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Risk management measures

Technical conditions and measures at process level (source) to prevent release:

Provide a good standard of general ventilation
Clear spills immediately.

Operational conditions and risk management measures:

Assumes a good basic standard of occupational hygiene is implemented.
When using do not eat, drink or smoke.

Conditions and measures related to personal protection, hygiene and health evaluation:

Dust mask, impenetrable coveralls, shoes and gloves.
Full face mask with canister for organic vapours and particles.
On demand: Contact expert.
Refer to Safety Data Sheet.

Contributing exposure scenario 3

Receipt and storage of raw materials (worker)

List of use descriptors

Process categories [PROC]:

PROC15: Use as laboratory reagent

Exposure prediction

Exposure estimation and reference to its source:

Inhalative: n/a
Dermal: 0,0343 mg/kg bw/d

Risk characterisation ratio (RCR):

Combined for all exposure routes: <1

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

not applicable