

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 15.04.2025

Version number 208.14 (replaces version 208.13)

Revision: 15.04.2025

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

1.1 Product identifier

Trade name Schwefelsäure 96% techn.**Other trade names:****Article number:** 1000409700001**CAS Number:** 7664-93-9**EINECS Number:** 231-639-5**Index number:** 016-020-00-8**REACH-Registration number** 01-2119458838-20**UFI:** V7T6-80QT-D00N-313S

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

Restrictions on use:

Restrictions on use according to REGULATION (EC) No 1907/2006 ANNEX XVII apply to this product (see section 15).

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:STOCKMEIER Chemie GmbH & Co.KG, Am Stadtholz 37, DE - 33609 Bielefeld
Tel.: +49 521 / 30 37-0, ehs-bielefeld@stockmeier.deSTOCKMEIER Fluids GmbH & Co. KG, Sanssouci 12, DE – 58802 Balve
Tel.: +49 2375 917 310, fluids@stockmeier.comBASSERMANN Minerals GmbH & Co. KG, Rudolf-Diesel-Straße 42, DE – 68169 Mannheim
Tel.: +49 621 15 01 0, verkauf@bassermann.deSTOCKMEIER CHEMIA Sp. z o. o., ul. Obornicka 277, PL - 60-691 Poznań
Tel.: +48 61 666 10 66, zamowienia@stockmeier.plSTOCKMEIER QUIMICA, S.L.U., Avda. del Baix Llobregat, 3- 5, ES – 08970 Sant Joan Despí (Barcelona)
Tel.: +34 93 506 91 83, tecnico-calidad@stockmeier.esSTOCKMEIER NETHERLANDS B.V., Ridderpoort 5, NL - 2984 BG Ridderkerk
Tel.: +31 180 41 5988, info@stockmeier.nlSTOCKMEIER Chemie Austria, Ricoweg 32b, AT - 2351 Wiener Neudorf
Tel.: +43 2236 623-40, office@stockmeier.atKEMTAN AG, Seewenweg 6, CH – 4153 Reinach
Tel.: +41 61 711 20 20, info@kemtan.chSTOCKMEIER CHEMICALS BELUX SA/NV, Rue de la Station 17, BE – 1300 Limal
Tel.: +32 10 421-320, info@stockmeierchemicalsbelux.comHDS – Chemie Handels GES.M.B.H., Bauernmarkt 24, AT - 1010 Wien
Tel.: +43 15 32 0 999, office@hds-chemie.atwww.stockmeier.com**Informing department:**

Product safety department. Tel.: 0049 / 521 / 3037-381

E-mail: ehs-bielefeld@stockmeier.de

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EUE

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1.4 Emergency telephone number:

This is an English-language document designed for the European region. For the emergency number and other country-specific data, please refer to the specific national versions of this safety data sheet.

Counselling Centre for Poisoning, Mainz

Tel. (+49) 61 31 / 19 240.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture**Classification according to Regulation (EC) No 1272/2008**

Met. Corr.1 H290 May be corrosive to metals.

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS05

Signal word Danger**Hazard-determining components of labelling:**

sulphuric acid

Hazard statements

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

Precautionary statements

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

P406 Store in a corrosion resistant container / container with a resistant inner liner.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Additional information:

Product contains: Restricted explosives precursors. Making available, introduction, possession and use according to Regulation (EU) 2019/1148, Article 5 (1) and (3).

2.3 Other hazards**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**Determination of endocrine-disrupting properties** Not applicable.

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* SECTION 3: Composition/information on ingredients

3.1 Substances

CAS No. Designation:

7664-93-9 sulphuric acid

3.2 Mixtures

Description:

Aqueous solution consisting of the following components.

Mixture of the following substances with non-hazardous additions.

Dangerous components:

CAS: 7664-93-9	sulphuric acid	50-100%
EINECS: 231-639-5	Met. Corr. 1, H290; Skin Corr. 1A, H314	
Reg.nr.: 01-2119458838-20	Specific concentration limits: Skin Corr. 1A; H314: $C \geq 15\%$ Skin Irrit. 2; H315: $5\% \leq C < 15\%$ Eye Irrit. 2; H319: $5\% \leq C < 15\%$	
	substance with a Community workplace exposure limit	

SVHC

This preparation does not contain any substances of very high concern (SVHC) in a concentration of $\geq 0.1\%$ according to Regulation (EC) 1907/2006, Article 57.

Additional information For the wording of the listed hazard phrases refer to section 16.

* SECTION 4: First aid measures

4.1 Description of first aid measures

General advice:

Instantly remove any clothing soiled by the product.

If unconscious, position and transport in stable lateral position.

After inhalation

Take affected persons into the open air and position comfortably.

Drink plenty of water.

Seek medical treatment.

After skin contact

Cover wound with a sterile dressing.

Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.

After eye contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Use eye protection.

Call a doctor immediately.

After swallowing

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; instantly call for medical help.

Information for doctor

In case of oral ingestion do not use sodium hydrogencarbonate (NaHCO_3) or calcium carbonate (CaCO_3) for neutralization, since developing carbon dioxide may cause perforation of the stomach. Drink suspension of magnesia in water.

In cases of irritation to the respiratory systems, initial treatment with Dexametason metered aerosol.

4.2 Most important symptoms and effects, both acute and delayed

Burning and pain of the eyes, skin and mucous membranes. After swallowing, strong irritant effect on the oral cavity and pharynx as well as danger of perforation of the oesophagus.

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4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media**Suitable extinguishing agents**

Product is non-flammable. Use fire fighting measure that suit the surroundings.

5.2 Special hazards arising from the substance or mixture

Can be released in case of fire:

sulphur oxides (SO_x)

Reacts with base metals forming readily flammable hydrogen.

The substance is highly corrosive and reacts violently with water and foam. Strong heating on contact with water and alkalis.

5.3 Advice for firefighters**Protective equipment:** Wear full protective suit with self-contained breathing apparatus.**Additional information**

Cool endangered containers with water spray jet.

Collect contaminated fire fighting water separately. Do not allow to enter drains.

Avoid direct exposure to water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep off unprotected persons

Avoid contact with skin, eyes and clothing.

Particular danger of slipping on leaked/spilled product.

Ensure adequate ventilation

Use breathing protection against the effects of fumes/dust/aerosol.

6.2 Environmental precautions:

Prevent material from reaching sewage system, holes and cellars.

Dilute with much water.

In case of release of larger quantities, inform competent authorities.

6.3 Methods and material for containment and cleaning up:

Absorb with inert absorbent material (sand, diatomite, acid binders, universal binders). Do not use combustible/oxidizable substances.

Use neutralising agent.

Send for recovery or disposal in suitable containers.

Dispose of contaminated material as waste according to point 13.

6.4 Reference to other sections

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Open and handle container with care.

When diluting, always stir the product into standing water.

Prevent eye and skin contact.

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Information about protection against explosions and fires:

The product is not flammable

Keep ignition sources away - Do not smoke.

7.2 Conditions for safe storage, including any incompatibilities**Storage** Store in cool, dry conditions in well sealed containers.**Requirements to be met by storerooms and containers:**

Observe laws and regulations on the storage and use of substances hazardous to water.

Suitable material for containers and conduit: glass.

Suitable material for containers and pipes: High-grade steel.

Unsuitable material for container: metals

Suitable material for containers: polyethylen

Information about storage in one common storage facility:

Store away from foodstuffs.

Do not store together with alkalis (caustic solutions).

Pay attention to regulations / technical guidelines on mixed storage of toxic substances

Further information about storage conditions:

Protect from humidity and keep away from water.

This product is hygroscopic.

Must be stored in a collecting room.

Keep container tightly sealed.

Storage class 8 B L (VCI - Konzept, 2007)**7.3 Specific end use(s)** No further relevant information available.* **SECTION 8: Exposure controls/personal protection****8.1 Control parameters****Components with critical values that require monitoring at the workplace:****7664-93-9 sulphuric acid**AGW (Germany) Long-term value: 0,1 E mg/m³
1(l);DFG, EU, YIOELV (EU) Long-term value: 0,05 mg/m³**DNELs****7664-93-9 sulphuric acid**Inhalative DNEL (worker) 0,1 mg/m³ (Acute, local effects)
0,05 mg/m³ (Long-term, local effects)**PNECs****7664-93-9 sulphuric acid**PNEC water 0,0025 mg/l (freshwater)
0,00025 mg/l (marine water)PNEC sediment 0,002 mg/kg (freshwater)
0,002 mg/kg (marine water)

PNEC STP 8,8 mg/l (sewage plant)

Additional information: The lists that were valid during the compilation were used as basis.**8.2 Exposure controls****Appropriate engineering controls** No further data; see section 7.**Individual protection measures, such as personal protective equipment****General protective and hygienic measures**

Keep away from food, beverages and fodder.

Instantly remove any soiled and impregnated garments.

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Wash hands during breaks and at the end of the work.

Avoid contact with the eyes and skin.

Gases, fumes and aerosols should not be inhaled.

Breathing equipment:

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

At concentrations above 20% acid breath control possible with test tubes DRÄGER sulphuric acid 1/a.

Recommended filter device for short term use:

Combination filter E-P2

Combination filter B-P3

Hand protection

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Material of glovesFluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material

Note information regarding permeation rate, penetration times and the degradation supplied by the manufacturer of gloves just as workplace-specific conditions.

Change protective gloves if you notice signs of wear.

Material of gloves is recommended for a short-term single use to protect from splashes. For permanent usage contact manufacturer of gloves.

For the permanent contact gloves made of the following materials are suitable:Fluorocarbon rubber (Viton) with 0,7 mm coating thickness (recommended: protective index 6, corresponding to > 480 minutes of permeation time according to EN 374).

Attention! Due to conditions (stressing, temperature) the practical usage of chemical protective gloves may be much shorter than the permeation time according to EN 374.

Not suitable are gloves made of the following materials:

Natural rubber (latex)

Nitrile rubber, NBR

PVC gloves

Eye/face protection Tightly sealed safety glasses.**Body protection:**

Standard protective work clothing. Chemical resistant safety shoes or boots. If skin contact may occur, wear impermeable protective clothing for this solution.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information**Physical state**

Liquid

Colour:

Colourless

Smell:

Odourless

Odour threshold:

Not determined.

Melting point/freezing point:

Not determined

Boiling point or initial boiling point and boiling range

295-315 °C (7664-93-9 sulphuric acid)

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Flammability	Not applicable.
Lower and upper explosion limit	
Lower:	Not determined.
Upper:	Not determined.
Flash point:	Not determined
Decomposition temperature:	340 °C
pH at 20 °C	<1
pH-value:	
Viscosity:	
Kinematic viscosity	Not determined.
dynamic at 20 °C:	23 mPas
Not determined.	
Solubility	
Water:	Fully miscible
Partition coefficient n-octanol/water (log value)	Not determined.
Vapour pressure at 20 °C:	<0,01 hPa (7664-93-9 sulphuric acid)
Density and/or relative density	
Density at 20 °C	1,84 g/cm ³
Relative density	Not determined.
Vapour density	Not determined.
9.2 Other information	
Appearance:	
Form:	Fluid
Important information on protection of health and environment, and on safety.	
Self-inflammability:	Product is not selfigniting.
Explosive properties:	Product is not potentially explosive
Molecular weight	98,07 g/mol
Softening point/range	
Oxidising properties	No oxidizing properties
Evaporation rate	Not determined.
Information with regard to physical hazard classes	
Explosives	Void
Flammable gases	Void
Aerosols	Void
Oxidising gases	Void
Gases under pressure	Void
Flammable liquids	Void
Flammable solids	Void
Self-reactive substances and mixtures	Void
Pyrophoric liquids	Void
Pyrophoric solids	Void
Self-heating substances and mixtures	Void
Substances and mixtures, which emit flammable gases in contact with water	Void
Oxidising liquids	Void
Oxidising solids	Void
Organic peroxides	Void
Corrosive to metals	May be corrosive to metals.

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Desensitised explosives

Void

SECTION 10: Stability and reactivity

10.1 Reactivity see section 10.3**10.2 Chemical stability****Thermal decomposition / conditions to be avoided:**

To avoid thermal decomposition do not overheat.

Thermal decomposition: > 340 °C

10.3 Possibility of hazardous reactions

Exothermic reaction with strong alkalies

Reacts violently with water

Corrosive action on metals

When diluting, always add acid to water, never vice versa

Heating occurs when water is added

Reacts with metals forming hydrogen

Acts as an oxidizing agent on organic materials such as wood, paper and fats

10.4 Conditions to avoid No further relevant information available.**10.5 Incompatible materials:** base metals**10.6 Hazardous decomposition products:**Sulphur oxides (SO_x)

Poisonous gases/vapours

Additional information: The solution is hygroscopic

* SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**Acute toxicity** Based on available data, the classification criteria are not met.**LD/LC50 values that are relevant for classification:****7664-93-9 sulphuric acid**

Oral LD50 2140 mg/kg (rat) (OECD TG 401)

7 664-93-9 Sulphuric acid:

Inhalation LC50/4h:

375 mg/m³ (rat) (OECD 403)

Runkle B.K. & Hahn F.F., 1976, Annual Report of the Inhalation Toxicology Research Institute (p435-439)

LC50/2h 510 mg/m³ (rat)**Primary irritant effect:****Skin corrosion/irritation**

Causes severe skin burns and eye damage.

Serious eye damage/irritation

Causes serious eye damage.

Respiratory or skin sensitisation Based on available data, the classification criteria are not met.**Germ cell mutagenicity** Based on available data, the classification criteria are not met.**Carcinogenicity** Based on available data, the classification criteria are not met.**Reproductive toxicity** Based on available data, the classification criteria are not met.**STOT-single exposure** Based on available data, the classification criteria are not met.**STOT-repeated exposure** Based on available data, the classification criteria are not met.**Aspiration hazard** Based on available data, the classification criteria are not met.**Other information (about experimental toxicology):**

The toxicological numerical datas refer to the undilute 100 % substance.

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Experience with humans:

In certain processes involving the formation of mists of strong inorganic acids, which also contain sulphuric acid, there is a risk of cancer to the respiratory tract in humans, according to the IARC.

Additional toxicological information:**CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

According to literature: Animal tests have not revealed any carcinogenic effects.

Ames-test: non mutagenic

From animal studies, there is no indication of a fertility impairing effect.

11.2 Information on other hazards**Endocrine disrupting properties**

None of the ingredients is listed.

SECTION 12: Ecological information

12.1 Toxicity**Aquatic toxicity:****7664-93-9 sulphuric acid**

LC 50 / 96 h 16-28 mg/l (Lepomis macrochirus)

EC 50 / 48 h >100 mg/l (Daphnia magna) (OECD 202)

IC 50 / 72 h >100 mg/l (Desmodemus subspicatus) (ECD 201)

12.2 Persistence and degradability Inorganic product: not biodegradable.

12.3 Bioaccumulative potential No bioaccumulation

12.4 Mobility in soil No further relevant information available.

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6 Endocrine disrupting properties

The product does not contain substances with endocrine disrupting properties.

12.7 Other adverse effects

Ecotoxicological effects: fish, plancton and waterorganism could be damaged by pH - shift

Other information:

Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.

Additional ecological information:

Does not cause any biological oxygen consumption. After neutralization, the toxicity is reduced. Toxic effects refer to pH-values below pH<6 or above pH>9.

General notes:

Do not allow to enter drainage system, surface or ground water

Water hazard class 1 (Self-assessment): slightly hazardous for water.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

The note below refers to the product left as it is and not to further processed products. When mixed with other products, other disposal routes may be required; if in doubt, consult the supplier of the product or the local authority.

Recommendation

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

A used product should be recycled or used in other contexts, otherwise be handed over to an appropriate disposal, e.g. neutralisation.

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Waste disposal key number:

Since 1 January 1999, the waste code numbers have not only been product-related but essentially application-related. The waste code number valid for the application can be taken from the European Waste Catalogue.

Uncleaned packagings: Disposal in accordance with official regulations.**Recommendation:**

Development: After optimal emptying, immediately return to the supplier tightly closed and without cleaning. Make sure that no foreign matter gets into the packaging!

Other containers: Empty completely and clean for reconditioning or reprocessing.

Recommended cleaning agent: Water, if necessary with cleaning agent.

* SECTION 14: Transport information

14.1 UN number or ID number ADR/RID, IMDG, IATA	UN1830
14.2 UN proper shipping name ADR/RID IMDG, IATA	1830 SULPHURIC ACID SULPHURIC ACID
14.3 Transport hazard class(es) ADR/RID Class Label	8 (C1) Corrosive substances. 8
IMDG, IATA Class Label	8 Corrosive substances. 8
14.4 Packing group ADR/RID, IMDG, IATA	II
14.5 Environmental hazards: Marine pollutant:	Not applicable. No
14.6 Special precautions for user Kemler Number: EMS Number: Segregation groups Stowage Category Stowage Code Segregation Code	Warning: Corrosive substances. 80 F-A,S-B (SGG1a) Strong acids C SW15 For metal drums, stowage category B. SG36 Stow "separated from" SGG18-alkalis. SG49 Stow "separated from" SGG6-cyanides
14.7 Maritime transport in bulk according to IMO instruments	Not applicable.
Transport/Additional information:	
ADR/RID Limited quantities (LQ) Excepted quantities (EQ)	1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml

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IMDG**Limited quantities (LQ)**

1L

Excepted quantities (EQ)

Código E4

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 500 ml

UN "Model Regulation":

UN 1830 SULPHURIC ACID, 8, II

* SECTION 15: Regulatory information

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

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Hazard pictograms



GHS05

Signal word Danger

Hazard-determining components of labelling:

sulphuric acid

Hazard statements

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

Precautionary statements

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

P406 Store in a corrosion resistant container / container with a resistant inner liner.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Directive 2012/18/EU

Named dangerous substances - ANNEX I None of the ingredients is listed.

LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV)

None of the ingredients is listed.

REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3

DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II

None of the ingredients is listed.

REGULATION (EU) 2019/1148

Acquisition, introduction, possession or use of this product by the general public is restricted by Regulation (EU) 2019/1148. All suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point. Please see https://ec.europa.eu/home-affairs/sites/homeaffairs/files/what-we-do/policies/crisis-and-terrorism/explosives/explosives-precursors/docs/list_of_competent_authorities_and_national_contact_points_en.pdf.

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Regulation (EC) No 273/2004 on drug precursors

7664-93-9 sulphuric acid

3

Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors

7664-93-9 sulphuric acid

3

National regulations**Information about limitation of use:**

Employment restrictions concerning young persons must be observed.

Other regulations, limitations and prohibitive regulations

This product is licensed as a raw material for explosives restrictions on disclosure to private end-users according to Regulation EC 98/2013.

Substances of very high concern (SVHC) according to REACH, Article 57

None of the ingredients is listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has been carried out.**SECTION 16: Other information**

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

This safety data sheet complies with Regulation (EC) No 1907/2006, Article 31 as amended by Regulation (EU) 2020/878.

UFI market placements:

Germany, Bulgaria, Denmark, DKE, ESE, European Union, Finland, SFS, France, Greece, Ireland, ISE, Croatia, Latvia, FL, Lithuania, LTE, Malta, Netherland, Norway, Germany, Poland, Portugal, Romania, Sweden, Slovakia, Slovenia, Spain, Czechia, Cyprus

Relevant phrases

Complete wording of hazard statements and risk phrases (H-phrases) mentioned in section 3. These phrases refer to the constituents. The labelling for this product is stated in section 2.

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

Department issuing data specification sheet: See section 1.3: Responding area**Date of previous version:** 17.01.2025**Version number of previous version:** 208.13**Abbreviations and acronyms:**

RPE: Respiratory Protective Equipment

RCR: Risk Characterisation Ratio (RCR= PEC/PNEC)

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

CLP: Classification, Labelling and Packaging (Regulation (EC) No. 1272/2008)

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

TRGS: Technische Regeln für Gefahrstoffe (Technical Rules for Dangerous Substances, BAuA, Germany)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

SVHC: Substance of Very High Concern

SVHC: Substances of Very High Concern

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vPvB: very Persistent and very Bioaccumulative

Met. Corr.1: Corrosive to metals – Category 1

Skin Corr. 1A: Skin corrosion/irritation – Category 1A

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

*** Data compared to the previous version altered.****ANNEX****Exposure Scenarios:**

Use as an intermediate in the manufacture of inorganic and organic chemicals including fertilisers (industry)

Use as processing aid.

Use for extraction and processing of minerals and ores. (Industrial)

Use for surface treatment. (Industrial)

Use in electrolytic processes. (Industrial)

Use in gas purification.

Use in production of lead acid batteries. (Industrial)

Maintenance of lead acid batteries. (Professional)

Recycling of lead acid batteries. (Industrial)

Use as laboratory chemical.

Use for industrial cleaning

Use in formulations

Use of lead acid batteries. (Consumer)

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Annex: Exposure scenario 1

Short title of the exposure scenario

Use as an intermediate in the manufacture of inorganic and organic chemicals including fertilisers (industry)

Sector of Use

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

SU4 Manufacture of food products

SU6b Manufacture of pulp, paper and paper products

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

SU9 Manufacture of fine chemicals

SU14 Manufacture of basic metals, including alloys

Product category PC19 Intermediate

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

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

Environmental release category ERC6a Use of intermediate

Description of the activities / processes covered in the Exposure Scenario

See section 1 of the annex to the Safety Data Sheet.

Conditions of use

Duration and frequency 5 workdays/week.

Worker

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year

Physical parameters

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture Raw material.

Used amount per time or activity 300 000 tons per year

Other operational conditions

Other operational conditions affecting environmental exposure

Due to the properties of the substance, the process should be as closed as possible.

Emission to air: 94.9 kg/day (measured data)

Other operational conditions affecting worker exposure

Due to the properties of the substance, the process should be as closed as possible.

High temperatures can occur in the process. (PROC01,PROC02,PROC03,PROC04)

Process is completely enclosed. (PROC01,PROC03,PROC8b,PROC09)

Outdoors not near buildings (PROC01,PROC02,PROC8a,PROC8b)

Outdoors near buildings. (PROC03,PROC04)

Inside with good natural ventilation. (PROC09)

Avoid contact with eyes.

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Avoid contact with the skin.

Other operational conditions affecting consumer exposure Keep out of the reach of children.**Other operational conditions affecting consumer exposure during the use of the product**

Not applicable.

Risk management measures
Worker protection**Organisational protective measures**

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures

Vapour recovery system (PROC02,PROC04,PROC09)

Use exhaust gas recirculation and local extraction (PROC01,PROC03,PROC8b)

Complete separation. (PROC01,PROC02)

Ensure that suitable extractors are available on processing machines

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

At concentrations above 20% acid breath control possible with test tubes DRÄGER sulphuric acid 1/a.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical resistant safety shoes or boots. If skin contact may occur, wear impermeable protective clothing for this solution.

Tightly sealed safety glasses.

Measures for consumer protection

Ensure adequate labelling.

Keep locked up and out of the reach of children.

Environmental protection measures**Air** An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.**Water**

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m³/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.**Disposal measures** Disposal must be made according to official regulations.**Disposal procedures**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Waste type Partially emptied and uncleaned packaging

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

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The calculated individual exposure numbers are below the DNELs (RCR < 1).

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Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Consumer Not relevant for this Exposure Scenario.

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Annex: Exposure scenario 2

Short title of the exposure scenario Use as processing aid.

Sector of Use

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

SU4 Manufacture of food products

SU6b Manufacture of pulp, paper and paper products

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

SU9 Manufacture of fine chemicals

SU11 Manufacture of rubber products

SU23 Electricity, steam, gas water supply and sewage treatment

Product category

PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

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

PROC13 Treatment of articles by dipping and pouring

Environmental release category

ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)

Conditions of use

Worker

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year

Physical parameters

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture Raw material.

Used amount per time or activity 100 000 tons per year

Other operational conditions

Other operational conditions affecting environmental exposure

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Due to the properties of the substance, the process should be as closed as possible.

Process is completely enclosed. (PROC01,PROC03,PROC08b, PROC09)

Outdoors not near buildings (PROC01,PROC02,PROC08a,PROC08b)

Outdoors near buildings. (PROC03,PROC04)

Inside with good natural ventilation. (PROC09,PROC13)

Risk management measures

Worker protection

Organisational protective measures

Ensure that activities are executed by specialists or authorised personnel only.

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Handling procedures must be well documented.

Technical protective measures

Vapour recovery system (PROC02,PROC04,PROC09)

Use exhaust gas recirculation and local extraction (PROC01,PROC03,PROC08b)

Complete separation. (PROC01,PROC02)

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Bei Konzentrationen über 20 % Säure Atemluftkontrolle möglich mit Prüfröhrchen DRÄGER Schwefelsäure 1/a.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical-resistant safety shoes or boots. If skin contact may occur, wear protective clothing impermeable to this substance.

Environmental protection measures**Air** An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.**Water**

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m^3/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.**Disposal measures** Disposal must be made according to official regulations.**Exposure estimation**

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

— EUE —

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Annex: Exposure scenario 3

Short title of the exposure scenario Use for extraction and processing of minerals and ores. (Industrial)
Sector of Use

SU2a Mining, (without offshore industries)

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

SU14 Manufacture of basic metals, including alloys

Product category

PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents

PC40 Extraction agents

Process category

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

Environmental release category

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

ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)

Conditions of use**Worker**

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year**Physical parameters**

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture Raw material.**Used amount per time or activity** 438 tons per year**Other operational conditions****Other operational conditions affecting environmental exposure**

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Due to the properties of the substance, the process should be as closed as possible.

High temperatures can occur in the process. (PROC03)

Process is completely enclosed. (PROC03)

Outdoors not near buildings (PROC02,PROC03,PROC04)

Risk management measures**Worker protection****Organisational protective measures**

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures

Vapour recovery system (PROC02,PROC04)

Use exhaust gas recirculation and local extraction (PROC02)

Complete separation. (PROC02)

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Bei Konzentrationen über 20 % Säure Atemluftkontrolle möglich mit Prüfröhrchen DRÄGER Schwefelsäure

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1/a.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical-resistant safety shoes or boots. If skin contact may occur, wear protective clothing impermeable to this substance.

Environmental protection measures**Air** An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.**Water**

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m^3/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.**Disposal measures** Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

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Annex: Exposure scenario 4

Short title of the exposure scenario Use for surface treatment. (Industrial)

Sector of Use

SU2a Mining, (without offshore industries)

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

SU14 Manufacture of basic metals, including alloys

SU15 Manufacture of fabricated metal products, except machinery and equipment

SU16 Manufacture of computer, electronic and optical products, electrical equipment

Product category

PC14 Metal surface treatment products

PC15 Non-metal-surface treatment products

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

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

PROC13 Treatment of articles by dipping and pouring

Environmental release category

ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)

Conditions of use

Worker

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year

Physical parameters

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture Raw material.

Used amount per time or activity 10 000 tons per year

Other operational conditions

Other operational conditions affecting environmental exposure

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Due to the properties of the substance, the process should be as closed as possible.

High temperatures can occur in the process. (PROC01, PROC02, PROC03, PROC04)

Process is completely enclosed. (PROC01, PROC03, PROC08, PROC09)

Outdoors not near buildings (PROC01, PROC02, PROC08a, PROC09)

Outdoors near buildings. (PROC03, PROC13)

Risk management measures

Worker protection

Organisational protective measures

Ensure that activities are executed by specialists or authorised personnel only.

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Handling procedures must be well documented.

Technical protective measures

Ensure that suitable extractors are available on processing machines

Vapour recovery system (PROC02, PROC04, PROC09)

Use exhaust gas recirculation and local extraction (PROC01, PROC03, PROC08b)

Complete separation. (PROC01, PROC02)

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.

Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical resistant safety shoes or boots. If skin contact may occur, wear impermeable protective clothing for this solution.

Tightly sealed safety glasses.

Environmental protection measures

Air An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.

Water

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m^3/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.

Disposal measures Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs ($RCR < 1$).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1 .

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Annex: Exposure scenario 5

Short title of the exposure scenario Use in electrolytic processes. (Industrial)

Sector of Use

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

SU14 Manufacture of basic metals, including alloys

SU15 Manufacture of fabricated metal products, except machinery and equipment

SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Product category

PC14 Metal surface treatment products

PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

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

PROC13 Treatment of articles by dipping and pouring

Environmental release category

ERC5 Use at industrial site leading to inclusion into/onto article

ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)

Conditions of use

Worker

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year

Physical parameters

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture Raw material.

Used amount per time or activity 2 306 000 tons per year

Other operational conditions

Other operational conditions affecting environmental exposure

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Due to the properties of the substance, the process should be as closed as possible.

High temperatures can occur in the process. (PROC01,PROC02)

Process is completely enclosed. (PROC01, PROC8b, PROC09)

Outdoors not near buildings (PROC01,PROC02,PROC8a,PROC08b)

Inside with good natural ventilation. (PROC09,PROC13)

Risk management measures

Worker protection

Organisational protective measures

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures

Ensure that suitable extractors are available on processing machines

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Vapour recovery system (PROC02, PROC09)

Use exhaust gas recirculation and local extraction (PROC01, PROC08b)

Complete separation. (PROC01, PROC02)

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Bei Konzentrationen über 20 % Säure Atemluftkontrolle möglich mit Prüfröhrchen DRÄGER Schwefelsäure 1/a.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.

Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical resistant safety shoes or boots. If skin contact may occur, wear impermeable protective clothing for this solution.

Environmental protection measures

Air An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.

Water

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m^3/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.

Disposal measures Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

— EUE —

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Annex: Exposure scenario 6

Short title of the exposure scenario

Use in gas purification.

Industry

Sector of Use

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

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

Product category

PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

Environmental release category

 ERC7 Use of functional fluid at industrial site

Conditions of use

Worker

8 h (full working shift).

5 workdays/week.

Environment

 < 365 days/year

Physical parameters

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture

 Raw material.

Used amount per time or activity

 30 000 tons per year

Other operational conditions

Other operational conditions affecting environmental exposure

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Due to the properties of the substance, the process should be as closed as possible.

High temperatures can occur in the process. (PROC01,PROC08b)

Outdoors not near buildings (PROC01,PROC02,PROC08a,PROC08b)

Outdoors near buildings. (PROC01,PROC02,PROC08b)

Risk management measures

Worker protection

Organisational protective measures

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures

Ensure that suitable extractors are available on processing machines

Vapour recovery system (PROC02)

Use exhaust gas recirculation and local extraction (PROC01,PROC08b)

Complete separation. (PROC01,PROC02)

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Bei Konzentrationen über 20 % Säure Atemluftkontrolle möglich mit Prüfröhrchen DRÄGER Schwefelsäure

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1/a.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical-resistant safety shoes or boots. If skin contact may occur, wear protective clothing impermeable to this substance.

Environmental protection measures**Air** An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.**Water**

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m^3/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.**Disposal measures** Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

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Annex: Exposure scenario 7

Short title of the exposure scenario Use in production of lead acid batteries. (Industrial)

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

Product category PC0 Other

Process category

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

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

Environmental release category

ERC2 Formulation into mixture

ERC5 Use at industrial site leading to inclusion into/onto article

Conditions of use

Worker

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year

Physical parameters

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture Raw material.

Used amount per time or activity 2 500 tons per year

Other operational conditions

Other operational conditions affecting environmental exposure

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Due to the properties of the substance, the process should be as closed as possible.

Process is completely enclosed. (PROC02)

Inside with good natural ventilation. (-)

Risk management measures

Worker protection

Organisational protective measures

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures Ensure that suitable extractors are available on processing machines

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Bei Konzentrationen über 20 % Säure Atemluftkontrolle möglich mit Prüfröhrchen DRÄGER Schwefelsäure 1/a.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.

Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of

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quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical resistant safety shoes or boots. If skin contact may occur, wear impermeable protective clothing for this solution.

Tightly sealed safety glasses.

Environmental protection measures

Air An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.

Water

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m³/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.

Disposal measures Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

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Annex: Exposure scenario 8

Short title of the exposure scenario Maintenance of lead acid batteries. (Professional)

Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Product category PC0 Other

Process category PROC19 Manual activities involving hand contact

Environmental release category

ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

ERC9b Widespread use of functional fluid (outdoor)

Conditions of use

Worker

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year

Physical parameters

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Concentration of the substance in the mixture or in the product: 25-50%

Other operational conditions

Other operational conditions affecting environmental exposure

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Keep windows open during application to ensure natural ventilation.

Due to the properties of the substance, the process should be as closed as possible.

Risk management measures

Worker protection

Organisational protective measures

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures Ensure that suitable extractors are available on processing machines

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Bei Konzentrationen über 20 % Säure Atemluftkontrolle möglich mit Prüfröhrchen DRÄGER Schwefelsäure 1/a.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.

Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical-resistant safety shoes or boots. If skin contact may occur, wear protective clothing impermeable to this substance.

Environmental protection measures

Air An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.

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Water

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m³/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.

Disposal measures Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

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Annex: Exposure scenario 9

Short title of the exposure scenario Recycling of lead acid batteries. (Industrial)**Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites**Product category** PC0 Other**Process category**

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Environmental release category ERC1 Manufacture of the substance**Conditions of use****Worker**

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year**Physical parameters**

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture The substance is minor component.**Used amount per time or activity** 2 500 tons per year**Other operational conditions****Other operational conditions affecting environmental exposure**

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Due to the properties of the substance, the process should be as closed as possible.

Enter closed rooms only if ventilation is adequate.

Risk management measures**Worker protection****Organisational protective measures**

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures Ensure that suitable extractors are available on processing machines**Personal protective measures**

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

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Avoid contact with the eyes.

Standard protective work clothing. Chemical-resistant safety shoes or boots. If skin contact may occur, wear protective clothing impermeable to this substance.

Environmental protection measures

Air An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.

Water

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m³/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.

Disposal measures Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

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Annex: Exposure scenario 10

Short title of the exposure scenario

Use as laboratory chemical.

Professional

Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Product category PC21 Laboratory chemicals**Process category** PROC15 Use as laboratory reagent**Environmental release category**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

Conditions of use**Worker**

8 h (full working shift).

5 workdays/week.

Environment Emission days (days/year): < 330**Physical parameters**

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture The substance is main component.**Used amount per time or activity** 5 000 tons per year**Other operational conditions****Other operational conditions affecting environmental exposure**

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Due to the properties of the substance, the process should be as closed as possible.

Inside with good natural ventilation. (-)

Risk management measures**Worker protection****Organisational protective measures**

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures Extractor required on object.**Personal protective measures**

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Bei Konzentrationen über 20 % Säure Atemluftkontrolle möglich mit Prüfröhrchen DRÄGER Schwefelsäure 1/a.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

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Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical-resistant safety shoes or boots. If skin contact may occur, wear protective clothing impermeable to this substance.

Measures for consumer protection Ensure adequate labelling.**Environmental protection measures****Air** An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.**Water**

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m³/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.**Disposal measures** Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

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Annex: Exposure scenario 11

Short title of the exposure scenario Use for industrial cleaning**Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites**Product category** PC35 Washing and cleaning products (including solvent based products)**Process category**

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

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

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

Conditions of use**Worker**

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year**Physical parameters**

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture 10%**Used amount per time or activity** 5 000 tons per year**Other operational conditions****Other operational conditions affecting environmental exposure**

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Due to the properties of the substance, the process should be as closed as possible.

Inside with good natural ventilation. (-)

Risk management measures**Worker protection****Organisational protective measures**

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures

Extractor required on object.

(PROC02, PROC05)

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Bei Konzentrationen über 20 % Säure Atemluftkontrolle möglich mit Prüfröhrchen DRÄGER Schwefelsäure 1/a.

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Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical-resistant safety shoes or boots. If skin contact may occur, wear protective clothing impermeable to this substance.

Measures for consumer protection Ensure adequate labelling.**Environmental protection measures****Air** An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.**Water**

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m^3/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.**Disposal measures** Disposal must be made according to official regulations.**Exposure estimation**

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

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Annex: Exposure scenario 12

Short title of the exposure scenario

Use in formulations

Industry

Sector of Use

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

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

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

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

Environmental release category ERC2 Formulation into mixture

Conditions of use

Worker

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year

Physical parameters

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture Raw material.

Used amount per time or activity 300 000 tons per year

Other operational conditions

Other operational conditions affecting environmental exposure

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Due to the properties of the substance, the process should be as closed as possible.

High temperatures can occur in the process. (PROC01,PROC03)

Process is completely enclosed. (PROC01,PROC03,PROC08b,PROC09)

Outdoors not near buildings (PROC01,PROC08a,PROC08b)

Outdoors near buildings. (PROC03)

Inside with good natural ventilation. (PROC05,PROC09)

Risk management measures

Worker protection

Organisational protective measures

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Technical protective measures

Vapour recovery system (PROC02,PROC09)

Use exhaust gas recirculation and local extraction (PROC01,PROC03,PROC08b)

Complete separation. (PROC01)

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Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.

Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical-resistant safety shoes or boots. If skin contact may occur, wear protective clothing impermeable to this substance.

Measures for consumer protection Ensure adequate labelling.

Environmental protection measures

Air An exhaust air purification system, e.g. air washer or filter, should be used for the exhaust air.

Water

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

All contaminated wastewater should be neutralised before discharge to surface water or a wastewater treatment plant.

Size of the waste water treatment plant (m^3/day): 2000

Sewage sludge treatment: incineration or landfill

Soil The soil should be impermeable and resistant to liquids.

Disposal measures Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.

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Annex: Exposure scenario 13

Short title of the exposure scenario Use of lead acid batteries. (Consumer)

Sector of Use

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

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

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

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

Environmental release category ERC2 Formulation into mixture

Conditions of use

Worker

8 h (full working shift).

5 workdays/week.

Environment < 365 days/year

Physical parameters

The information on the physicochemical properties in the exposure scenario is based on the properties of the pure substance.

Physical state

Liquid

Vapour pressure: < 0,1 hPa (20°C)

Concentration of the substance in the mixture

Raw material.

25-40%

Used amount per time or activity 2 500 tons per year

Other operational conditions

Other operational conditions affecting environmental exposure

Due to the properties of the substance, the process should be as closed as possible.

Other operational conditions affecting worker exposure

Avoid contact with the skin and eyes.

Due to the properties of the substance, the process should be as closed as possible.

Inside with good natural ventilation. (-)

Do not get in eyes, on skin or on clothing.

Batteries should only be opened in a well-ventilated place.

Batteries should not be opened unnecessarily.

Batteries should be placed on solid ground to prevent leakage.

Other operational conditions affecting consumer exposure during the use of the product

Wear suitable coveralls to avoid contact with the skin.

Acid resistant gloves must be worn.

Wear safety goggles to protect against splashes.

Risk management measures

Worker protection

Organisational protective measures

Ensure that activities are executed by specialists or authorised personnel only.

Handling procedures must be well documented.

Personal protective measures

In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.

Bei Konzentrationen über 20 % Säure Atemluftkontrolle möglich mit Prüfröhrchen DRÄGER Schwefelsäure

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1/a.

Protective gloves (EN 374).

Check the permeability prior to each renewed use of the glove.

Fluorocarbon rubber (Viton), recommended thickness of the material: $\geq 0,4$ mm, penetration time: ≥ 480 min.Butyl rubber, recommended material thickness: $\geq 0,5$ mm, breakthrough time: ≥ 120 min.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Tightly sealed safety glasses.

Do not inhale gases / fumes / aerosols.

Avoid contact with the skin.

Avoid contact with the eyes.

Standard protective work clothing. Chemical-resistant safety shoes or boots. If skin contact may occur, wear protective clothing impermeable to this substance.

Measures for consumer protection Ensure adequate labelling.**Environmental protection measures****Water**

Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

Size of the waste water treatment plant (m³/day): 2000

Sewage sludge treatment: incineration or landfill

Disposal measures Disposal must be made according to official regulations.

Exposure estimation

Man

The exposure estimation was carried out in accordance with ECETOC TRA.

The exposure assessment was carried out according to the Advanced REACH Tool (Tier 2).

The calculated individual exposure numbers are below the DNELs (RCR < 1).

Environment

The estimation of environmental exposure was carried out in accordance with EUSES.

The calculated value is smaller than the PNEC.

Guidance for downstream users

Under the conditions listed above, the procedure is considered safe.

Other conditions should only be considered if measurements or appropriate calculations demonstrate that the RCR is < 1.