Safety Data Sheet (1907/2006/EC)

Material: **SALZSÄURE fast chemisch rein**

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

1.1 Product identifier

Commercial product name: **SALZSÄURE fast chemisch rein**

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

Use of substance / preparation:
Industrial.
base chemical

For this product, uses according to REACH have been identified. To provide a better readibility, more specific information on uses is given in section 16.

1.3 Details of the supplier of the safety data sheet

Manufacturer/distributor:	Vinnolit GmbH & Co. KG	
Street/POB-No.:	Carl-Zeiss-Ring 25	
Postal code/city:	85737 Ismaning	
Country:	Germany	
Telephone:	+49 89 96-103-0	
Telefax:	+49 89 96-103-103	
Information about the Safety Data Sheet:	Telephone	+49 8679 7-5680
	eMail	sdb@vinnolit.com

1.4 Emergency telephone number

Emergency Information (German):	Plant fire brigade	**+49 8677 83-2222**
Emergency Information (internat.):	National Response Center	**+49 621 60-43333**

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008:

Hazard class	Hazard category	Route of exposure	H-Code
Corrosive to metals	Category 1		H290
Skin corrosion/irritation	Category 1B		H314
Serious eye damage/eye irritation	Category 1		H318
Specific target organ toxicity - single exposure	Category 3		H335

2.2 Label elements

Labelling according to Regulation (EC) No. 1272/2008:

Pictogram(s):

Signal Word: Danger

H-Code	Hazard Statements
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H335	May cause respiratory irritation.

P-Code	Precautionary Statements
P280	Wear protective gloves/protective clothing/eye protection.
P271	Use only outdoors or in a well-ventilated area.
P234	Keep only in original packaging.
P310	Immediately call a POISON CENTER/ doctor.

Hazard ingredients (labelling):
Hydrochloric acid

2.3 Other hazards

No data available.

SECTION 3: Composition/information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

3.2.1 Chemical characteristics

inorganic acid

3.2.2 Hazardous ingredients

Type	CAS No.	EC-No. REACH no.	Substance	Content %	Classification according to Regulation (EC) No. 1272/2008*	Comment
INHA	7647-01-0	231-595-7 01-2119484862-27	Hydrochloric acid	<=31	Skin Corr. 1B; H314 STOT SE 3; H335 Met. Corr. 1; H290 Eye Dam. 1; H318	[1]

Type: INHA: ingredient, VERU: impurity

[1] = Hazardous or environmentally harmful substance; [2] = substance with a Community workplace exposure limit; [3] = PBT substance; [4] = vPvB substance

*Classification codes are explained in section 16.

This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57) in amounts above ≥ 0.1%.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information:
Remove contaminated clothes at once. Observe self-protection for first aid. In case of accident or if you feel unwell seek medical advice immediately (show the label if possible). Keep warm, in restful position, cover up. Take persons to a safe place.

After contact with the eyes:
Rinse immediately with plenty of water for 10-15 minutes and seek medical advice. Keep eyelids well open to rinse the whole eye surface and eyelids with water. Continue to bathe eyes during transport to medical practitioner.

After contact with the skin:
Wash with plenty of water or soap and water; immediately remove all contaminated clothing. In serious cases, use emergency shower immediately. Seek medical advice and clearly identify substance. Do not use ointments or plasters unless recommended by medical practitioner. Do not take clothing home for washing.

After inhalation:
Move to fresh air, keep the victim laying down and restful. If breathing has stopped, give artificial respiration. Administer oxygen in case of breathing difficulties. Seek medical advice and clearly identify substance.

After swallowing:
Rinse mouth with water. If conscious, give several small portions of water to drink. Do not induce vomiting. Seek medical advice immediately and produce the label or packaging. Never give an unconscious person anything by mouth!

4.2 Most important symptoms and effects, both acute and delayed

Any relevant information can be found in other parts of this section.

4.3 Indication of any immediate medical attention and special treatment needed

Symptomatic treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:
not applicable .

Extinguishing media which must not be used for safety reasons:
According to our present state of knowledge: none known .

5.2 Special hazards arising from the substance or mixture

hydrogen chloride .

5.3 Advice for firefighters

Special protective equipment for fire fighting:
Use respiratory protection independent of recirculated air.

General information:
Product does not burn. Use extinguishing measures appropriate to the source of the fire.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment (see section 8). Avoid inhaling mists and vapours. Avoid contact with eyes and skin. Ensure adequate ventilation.

6.2 Environmental precautions

Prevent material from entering sewers or surface waters. Contain any fluid that runs out using suitable material (e.g. earth). Dispose of in prescribed marked containers.

6.3 Methods and material for containment and cleaning up

Absorb with liquid, mainly acid binding material and dispose of according to local/state/federal regulation. Dilute with plenty of water and dispose of according to local/state/federal regulations. Contain larger amounts and pump up into suitable containers.

6.4 Reference to other sections

Relevant information in other sections has to be considered. This applies in particular for information given on personal protective equipment (section 8) and on disposal (section 13).

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Precautions for safe handling:
Ensure adequate ventilation. Must be syphoned off in situ. Keep away from incompatible substances in accordance with section 10. Open and handle container with care.

Precautions against fire and explosion:
No special precautions against fire and explosion required.

7.2 Conditions for safe storage, including any incompatibilities

Conditions for storage rooms and vessels:

Advice for storage of incompatible materials:

Further information for storage:
Keep container tightly closed and store in a cool, well ventilated place.

7.3 Specific end use(s)

No data available.

If the annex to this safety data sheet contains exposure scenarios for end uses, the information provided therein has to be observed.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Maximum airborne concentrations at the workplace:

CAS No.	Substance	Type	mg/m³	ppm	Dust fract.	Fibre/m³
7647-01-0	Hydrogen chloride	TLV_GB	2,0	1,0		
7647-01-0	Hydrogen chloride	EU	8,0	5,0		

-
hydrogen chloride (CAS no. 7647-01-1): the short-time exposure value of the EU threshold is 15 mg/m3 (= 10 ppm).

Derived No-Effect Level (DNEL):

Hydrochloric acid

Area of use:	Value:
Worker; by inhalation; local (acute)	15 mg/m³
Worker; by inhalation; local (long term)	8 mg/m³

Predicted No Effect Concentration (PNEC):

Hydrochloric acid

Area of use:	Value:
freshwater	36 µg/l
marine water	36 µg/l
Intermittent release	45 µg/l
sewage treatment plant	36 µg/l

8.2 Exposure controls

8.2.1 Exposure in the work place limited and controlled

General protection and hygiene measures:
Do not breathe vapours. Avoid contact with eyes and skin. Do not eat, drink or smoke when handling. Wash hands at the end of work and before eating.

Personal protection equipment:

Respiratory protection

If handled uncovered, use respiratory protective equipment. Observe the equipment manufacturer's information and wear time limits for respirators.
Recommended Filter type: Combined filter type ABEK-P2 (certain inorganic, organic and acidic gases and vapors; ammonia/amines; particles), according to acknowledged standards such as EN 14387

Eye protection

tight fitting protective goggles . Where there is risk of splashing: protective shield . Provide work station with eye bathing equipment. Do not wear contact lenses.

Hand protection

Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Recommended glove types: Chloroprene rubber (neoprene)
thickness of the material: 0,5 mm
Wearing time: 8 h
Breakthrough time: > 480 min

Recommended glove types: Protective gloves made of nitrile rubber
thickness of the material: 0,4 mm
Wearing time: 8 h
Breakthrough time: > 480 min

Recommended glove types: PVC gloves
thickness of the material: 0,5 mm
Wearing time: 8 h
Breakthrough time: > 480 min

Recommended glove types: Protective gloves made of butyl rubber
thickness of the material: 0,5 mm
Wearing time: 8 h
Breakthrough time: > 480 min

Recommended glove types: Protective gloves made of fluorinated rubber
thickness of the material: 0,7 mm
Wearing time: 8 h
Breakthrough time: > 480 min

Skin protection

apron , protective clothing, face protection, neck protection , acid-proof protective clothing .

8.2.2 Exposure to the environment limited and controlled

Prevent material from entering surface waters and soil. Normally neutralisation is required before waste water is introduced into purification plants. Do not introduce large amounts into purification plants.

8.3 Further information for system design and engineering measures

Observe information in section 7.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Property:	Value:	Method:
Appearance		
Physical state	liquid (25 °C / 1.013 hPa)	
Colour	colourless	
Odour		
Odour	pungent	
Odour limit		
Odour limit	no data available	
pH-Value		
pH-Value	< 1 at 20 °C	
Melting point/freezing point		
Melting point / melting range	-50 °C	
Initial boiling point and boiling range		
Boiling point / boiling range	83 - 90 °C	
Flash point		
Flash point	not applicable	
Evaporation rate		
Evaporation rate	no data available	
Upper/lower flammability or explosive limits		
Lower explosion limit (LEL)	not applicable	
Upper explosion limit (UEL)	not applicable	
Vapour pressure		
Vapour pressure	21,3 hPa / 20 °C	
Solubility(ies)		
Water solubility / miscibility	completely miscible	

Vapour density
Relative gas/vapour density .....: No data known.
Relative Density
Relative Density .....: 1,15 (20 °C)
(Water / 4 °C = 1,00)
Density .....: 1,15 g/cm³ (20 °C)
Partition coefficient: n-octanol/water
Partition coefficient: n-octanol/water.....: No data known.
Auto-ignition temperature
Ignition temperature .....: not applicable
Viscosity
Viscosity (dynamic) .....: 1,9 mPa.s at 15 °C
Molecular mass
Molecular mass .....: not applicable

9.2 Other information

The color may change during storage.

SECTION 10: Stability and reactivity

10.1 – 10.3 Reactivity; Chemical stability; Possibility of hazardous reactions

If stored and handled in accordance with standard industrial practices no hazardous reactions are known.

Relevant information can possibly be found in other parts of this section.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Reacts violently with: alkalis , amines . The reaction takes place with the formation of heat. Reacts with: metals . The reaction takes place with the formation of hydrogen.

10.6 Hazardous decomposition products

None known.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

11.1.1 Acute toxicity

Assessment:

Based on the corrosive properties an examination of this toxicological endpoint is not necessary.

11.1.2 Skin corrosion/irritation

Product details:

Result/Effect	Species/Test system	Source
Corrosive	Rabbit	ECHA OECD 404

11.1.3 Serious eye damage / eye irritation

Product details:

Result/Effect	Species/Test system	Source
serious damages to eyes	Rat	ECHA OECD 405

11.1.4 Respiratory or skin sensitization

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.5 Germ cell mutagenicity

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.6 Carcinogenicity

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.7 Reproductive toxicity

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.8 Specific target organ toxicity (single exposure)

Assessment:

Route of exposure	Result/Effect	Source
by inhalation	Target organs: respiratory tract Irritating to respiratory system.	ECHA

11.1.9 Specific target organ toxicity (repeated exposure)

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.10 Aspiration hazard

Assessment:

For this endpoint no toxicological test data is available for the whole product.

SECTION 12: Ecological information

12.1 Toxicity

Assessment:

Despite its pH effects hydrogen chloride does not show any acute or chronic toxicity to aquatic organisms.

12.2 Persistence and degradability

Assessment:

The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Assessment:

Bioaccumulation is not expected to occur.

12.4 Mobility in soil

Assessment:

For the product as a whole, no test data is available.

12.5 Results of PBT and vPvB assessment

No data available.

12.6 Other adverse effects

none known

SECTION 13: Disposal considerations

13.1 Waste treatment methods

13.1.1 Material

Recommendation:
Return to supplier. Ensure special chem./phys. treatment after discussion with the supplier. Observe local/state/federal regulations.

13.1.2 Uncleaned packaging

Recommendation:
Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local/state/federal regulations.

13.1.3 Waste Disposal Legislation Ref.No.(EC)

It is not possible to determine a waste code for this product in accordance with the European Waste Catalogue (EWC) since it is only possible to classify it according to how it is used by the customer. The waste code is to be determined within the EU in liaison with the waste-disposal operator.

SECTION 14: Transport information

14.1 – 14.4 UN number; UN proper shipping name; Transport hazard class(es); Packing group

Road ADR:

Valuation	Dangerous Goods
14.1 UN no.	1789
14.2 Proper Shipping Name	Chlorwasserstoffsäure
14.2 Proper Shipping Name (national)	HYDROCHLORIC ACID
14.3 Class	8
14.4 Packaging Group	II

Railway RID:

Valuation	Dangerous Goods
14.1 UN no.	1789
14.2 Proper Shipping Name	Chlorwasserstoffsäure
14.2 Proper Shipping Name (national)	HYDROCHLORIC ACID
14.3 Class	8
14.4 Packaging Group	II

Transport by sea IMDG-Code:

Valuation	Dangerous Goods
14.1 UN no.	1789
14.2 Proper Shipping Name	Hydrochloric acid
14.3 Class	8
14.4 Packaging Group	II

Air transport ICAO-TI/IATA-DGR:

Valuation	Dangerous Goods
14.1 UN no.	1789
14.2 Proper Shipping Name	Hydrochloric acid
14.3 Class	8
14.4 Packaging Group	II

14.5 Environmental hazards

Hazardous to the environment: no
Marine Pollutant (IMDG): no

14.6 Special precautions for user

Relevant information in other sections has to be considered.

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

Bulk transport in tankers is not intended.

SECTION 15: Regulatory information

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

National and local regulations must be observed.

For information on labelling please refer to section 2 of this document.

Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances (Seveso III):

Not applicable

Relevant regulations:
SI 2002/1689: CHIP Regulations 2002
SI 2002/2677: COSHH Regulations 2002
SI 1999/3242: Management of Health & Safety at Work Regulations 1999
Health & Safety at Work Act 1974
SI 1993/1643: Environmental Protection Act 1993 & Subsidiary Regulations.
Other national and local measures relating to the workplace, pollution control, environmental protection and waste control.

Other specifications, restrictions and prohibitions:

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals: Not applicable

15.2 Chemical safety assessment

For this product, a chemical safety assessment according to (EC) regulation 1907/2006 (REACH) has been carried out.

15.3 Details of international registration status

Relevant information about individual substance inventories, where available, is given below.

Japan	**ENCS** (Handbook of Existing and New Chemical Substances): This product is listed in, or complies with, the substance inventory.
Australia	**AICS** (Australian Inventory of Chemical Substances): This product is listed in, or complies with, the substance inventory.
China	**IECSC** (Inventory of Existing Chemical Substances in China): This product is listed in, or complies with, the substance inventory.
Canada	**DSL** (Domestic Substance List): This product is listed in, or complies with, the substance inventory.
Philippines	**PICCS** (Philippine Inventory of Chemicals and Chemical Substances): This product is listed in, or complies with, the substance inventory.
United States of America (USA)	**TSCA** (Toxic Substance Control Act Chemical Substance Inventory): All components of this product are listed as active or are in compliance with the substance inventory.
European Economic Area (EEA)	**REACH** (Regulation (EC) No 1907/2006): General note: the registration obligations for substances imported into the EEA or manufactured within the EEA by the supplier mentioned in section 1 are fulfilled by the said supplier. The registration obligations for substances imported into the EEA by customers or other downstream users must be fulfilled by the latter.
South Korea (Republic of Korea)	**AREC** (Act on Registration and Evaluation of Chemicals; “K-REACH”): Please approach your regular WACKER contact for more detailed information.

SECTION 16: Other information

16.1 Material

The details in this document are based on the state of our knowledge at the time of revision. They do not constitute an assurance of the described product properties in terms of statutory warranty requirements.

The providing of this document to a recipient does not relieve the recipient of his or her responsibility toward compliance with all laws and stipulations applicable to the product. This applies in particular to the further sale or distribution of the product or substances or items containing the product, in other jurisdictions and with regard to the protection of third-party intellectual property rights. If the described product is processed or mixed with other substances or materials, the details stated in this document cannot be conferred to the resultant new product unless this has been expressly mentioned. If the product is repackaged, the recipient is obligated to additionally provide the required safety-related information.

16.2 Identified uses (REACH)

General information:

Please send requests for additional uses or for extension of exposure scenarios to the following e-mail address: REACH-USES@wacker.com

All identified uses have been summarized tabularly. The uses are linked to the subsequently described exposure scenarios by the sequential exposure scenario number given in the table.

Identified uses with exposure scenarios:

Conditions for safe use, and - if applicable - a more detailed specification of the categories, can be found in related the exposure scenarios (ES) which are indicated in the right column.
Please note: Exposure scenarios usually are based only on single registered substances and their uses. Mixtures might contain other hazardous substances which require additional measures.

Production and on-site uses; industrial	ES No.
SU 3 – ERC1, ERC2 – PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15 – SU8, SU9	**1**

Use as chemical intermediate; industrial	ES No.
SU 3 – ERC6a – PROC1, PROC2, PROC3, PROC4, PROC9 – SU4, SU8, SU9, SU11, SU12, SU13, SU19	**2**

Formulation and (re)packing of substances and mixtures; industrial	ES No.
SU 3 – ERC2 – PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9 – SU 10	**3**

Industrial use	ES No.
SU 3 – ERC4, ERC6b – PROC1, PROC2, PROC3, PROC4, PROC9, PROC10, PROC13, PROC15, PROC19 – SU2a, SU2b, SU4, SU5, SU9, SU14, SU15, SU16	**4**

16.3 Further information:

Commas appearing in numerical data denote a decimal point. Vertical lines in the left-hand margin indicate changes compared with the previous version. This version supersedes all previous versions.

Explanation of the GHS classification code:

Skin Corr. 1B; H314 ...: Skin corrosion/irritation Category 1B; Causes severe skin burns and eye damage.
STOT SE 3; H335 .....: Specific target organ toxicity - single exposure Category 3; May cause respiratory irritation.
Met. Corr. 1; H290.....: Corrosive to metals Category 1; May be corrosive to metals.
Eye Dam. 1; H318.....: Serious eye damage/eye irritation Category 1; Causes serious eye damage.

Classification	Rationale:
Corrosive to metals, Category 1	Calculation method
Skin corrosion/irritation, Category 1B	Calculation method
Serious eye damage/eye irritation, Category 1	Calculation method
Specific target organ toxicity - single exposure, Category 3	Calculation method

This safety data sheet contains an annex on the following pages. (Annex to the Safety Data Sheet According to Article 31(7) of Regulation 1907/2006/EC (REACH))

ES1 Production and on-site uses; industrial

1. Processes and activities covered by this description

The use includes associated laboratory activities. The use includes recycling and recovery of the substance.

Relevant use descriptors for this scenario:

SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
ERC1: Manufacture of substances; **ERC2:** Formulation of preparations
PROC1: Use in closed process, no likelihood of exposure; **PROC2:** Use in closed, continuous process with occasional controlled exposure; **PROC3:** Use in closed batch process (synthesis or formulation); **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises; **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities; **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities; **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing); **PROC15:** Use as laboratory reagent
SU8: Manufacture of bulk, large scale chemicals (including petroleum products); **SU9:** Manufacture of fine chemicals

Concentration of substance in preparation/mixture or article:

The exposure scenario is based on the following ingredients:
Hydrochloric acid

Relevant substance concentrations are given in the contributing scenarios. Unless otherwise stated, values in the exposure scenarios are related to the following substances, and not to the complete product.

2. Exposure scenarios

2.1 Contributing scenario controlling environmental exposure:
ERC1; ERC2

Concentration of substance in preparation/mixture or article:

<=100% Hydrochloric acid

Amounts used:

Assessment of environmental exposure is not appropriate. Rationale: The substances on which this scenario is based are neither classified as dangerous for the environment nor do they fulfill the criteria relating to environmental hazards. Therefore according to REACH Annex I (5.0) an environmental exposure estimation is not necessary. The impact on the environment mainly consists in the possibility of a pH shift in waste water.

2.2 Contributing scenario controlling worker exposure:
PROC1

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

Clear transfer lines prior to de-coupling.

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately. Retain drain downs in sealed storage pending disposal or for subsequent recycle.

2.3 Contributing scenario controlling worker exposure:
PROC2

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

Clear transfer lines prior to de-coupling.

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Ensure material transfers are under containment or extract ventilation. (Effectiveness: 90 %)

In case of aerosol- or mist formation use respiratory protection.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately. Retain drain downs in sealed storage pending disposal or for subsequent recycle.

2.4 Contributing scenario controlling worker exposure:
PROC3

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Clear transfer lines prior to de-coupling. Drain down and flush system prior to equipment break-in or maintenance.

Ensure material transfers are under containment or extract ventilation. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately. Retain drain downs in sealed storage pending disposal or for subsequent recycle.

2.5 Contributing scenario controlling worker exposure:
PROC4

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Use bulk or semi-bulk handling systems. Use drum pumps.
Of these measures, at least one has to be applied.

Drain down and flush system prior to equipment break-in or maintenance.

Provide extract ventilation to points where emissios occur. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately. Retain drain downs in sealed storage pending disposal or for subsequent recycle.

2.6 Contributing scenario controlling worker exposure:
PROC8a; PROC8b

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Handle substance within a predominantly closed system provided with extract ventilation. Provide extract ventilation to points where emissios occur. (Effectiveness: 90 %)
Of these measures, at least one has to be applied.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately. Retain drain downs in sealed storage pending disposal or for subsequent recycle.

2.7 Contributing scenario controlling worker exposure:
PROC9

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Handle substance within a predominantly closed system provided with extract ventilation. Fill containers/cans at dedicated fill points supplied with local extract ventilation. (Effectiveness: 90 %)
Of these measures, at least one has to be applied.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately. Retain drain downs in sealed storage pending disposal or for subsequent recycle.

2.8 Contributing scenario controlling worker exposure:
PROC15

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 4 h; per day (with local exhaust ventilation)

Exposure time..... : < 1 h; per day (without local exhaust ventilation)

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Carry out in a vented booth or extracted enclosure. Handle in a fume cupboard or under extract ventilation. (Effectiveness: 80 %)
Of these measures, at least one has to be applied.

Avoid carrying out activities involving exposure for more than 1 hour.
These details refer to the following aspects: without local exhaust ventilation .

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately. Retain drain downs in sealed storage pending disposal or for subsequent recycle.

3. Exposure estimation and reference to its source

DNEL and PNEC values of relevant ingredients are given in section 8 of the main part of this document.
Small numeric values in the scenario may be rounded for technical reasons.
Unless otherwise specified in the scenario, default parameters of the methods and conditions have been used.
For each type of exposure usually only the most critical value is given, without differentiation between, e.g., short term and long term exposure.
For a complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.
RCR = Risk Characterization Ratio

Exposure type	Specific conditions	Level of exposure	RCR	Method
dermal	For acute local dermal effects based on corrosion, an RCR cannot be quantified.			
by inhalation	PROC 1.	0,02 mg/m³	0,0025	ECETOC TRA v2.0
by inhalation	PROC 2.	1,50 mg/m³	0,19	ECETOC TRA v2.0
by inhalation	PROC 3.	3,75 mg/m³	0,47	ECETOC TRA v2.0
by inhalation	PROC 4.	3,00 mg/m³	0,38	ECETOC TRA v2.0
by inhalation	PROC 8a.	7,50 mg/m³	0,94	ECETOC TRA v2.0

by inhalation	PROC 8b.	7,50 mg/m³	0,94	ECETOC TRA v2.0
by inhalation	PROC 9.	7,50 mg/m³	0,94	ECETOC TRA v2.0
by inhalation	PROC 15. with local exhaust ventilation	1,80 mg/m³	0,23	ECETOC TRA v2.0
by inhalation	PROC 15. without local exhaust ventilation	3,0 mg/m³	0,38	ECETOC TRA v2.0

4. Evaluation guidance to downstream user

no data available .

ES2 Use as chemical intermediate; industrial

1. Processes and activities covered by this description

Relevant use descriptors for this scenario:

SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
PROC1: Use in closed process, no likelihood of exposure; **PROC2:** Use in closed, continuous process with occasional controlled exposure; **PROC3:** Use in closed batch process (synthesis or formulation); **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises; **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU4: Manufacture of food products; **SU8:** Manufacture of bulk, large scale chemicals (including petroleum products); **SU9:** Manufacture of fine chemicals; **SU11:** Manufacture of rubber products; **SU12:** Manufacture of plastics products, including compounding and conversion; **SU13:** Manufacture of other non-metallic mineral products, e.g. plasters, cement; **SU19:** Building and construction work

Concentration of substance in preparation/mixture or article:

The exposure scenario is based on the following ingredients:
Hydrochloric acid

Relevant substance concentrations are given in the contributing scenarios. Unless otherwise stated, values in the exposure scenarios are related to the following substances, and not to the complete product.

2. Exposure scenarios

2.1 Contributing scenario controlling environmental exposure:
ERC6a

Concentration of substance in preparation/mixture or article:

<=100% Hydrochloric acid

Amounts used:

Assessment of environmental exposure is not appropriate. Rationale: The substances on which this scenario is based are neither classified as dangerous for the environment nor do they fulfill the criteria relating to environmental hazards. Therefore according to REACH Annex I (5.0) an environmental exposure estimation is not necessary. The impact on the environment mainly consists in the possibility of a pH shift in waste water.

2.2 Contributing scenario controlling worker exposure:
PROC1

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

In case of aerosol- or mist formation use respiratory protection.

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Clear transfer lines prior to de-coupling.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.3 Contributing scenario controlling worker exposure:
PROC2

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

In case of aerosol- or mist formation use respiratory protection.

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Clear transfer lines prior to de-coupling.

Ensure material transfers are under containment or extract ventilation. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.4 Contributing scenario controlling worker exposure:
PROC3

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

In case of aerosol- or mist formation use respiratory protection.

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Clear transfer lines prior to de-coupling. Drain down and flush system prior to equipment break-in or maintenance.

Ensure material transfers are under containment or extract ventilation. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.5 Contributing scenario controlling worker exposure:
PROC4

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

In case of aerosol- or mist formation use respiratory protection.

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Use bulk or semi-bulk handling systems. Use drum pumps.
Of these measures, at least one has to be applied.

Drain down and flush system prior to equipment break-in or maintenance.

Provide extract ventilation to points where emissios occur. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.6 Contributing scenario controlling worker exposure:
PROC9

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature. Process temperatures may be higher where contact with the substance can be excluded.

Risk management measures related to human health (worker):

In case of aerosol- or mist formation use respiratory protection.

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Handle substance within a predominantly closed system provided with extract ventilation. Fill containers/cans at dedicated fill points supplied with local extract ventilation. (Effectiveness: 90 %)
Of these measures, at least one has to be applied.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

3. Exposure estimation and reference to its source

DNEL and PNEC values of relevant ingredients are given in section 8 of the main part of this document.
Small numeric values in the scenario may be rounded for technical reasons.
Unless otherwise specified in the scenario, default parameters of the methods and conditions have been used.
For each type of exposure usually only the most critical value is given, without differentiation between, e.g., short term and long term exposure.
For a complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.
RCR = Risk Characterization Ratio

Exposure type	Specific conditions	Level of exposure	RCR	Method
dermal	For acute local dermal effects based on corrosion, an RCR cannot be quantified.			
by inhalation	PROC 1.	0,02 mg/m³	0,0025	ECETOC TRA v2.0
by inhalation	PROC 2.	1,50 mg/m³	0,19	ECETOC TRA v2.0
by inhalation	PROC 3.	3,75 mg/m³	0,47	ECETOC TRA v2.0
by inhalation	PROC 4.	3,00 mg/m³	0,38	ECETOC TRA v2.0
by inhalation	PROC 9.	7,50 mg/m³	0,94	ECETOC TRA v2.0

4. Evaluation guidance to downstream user

no data available .

ES3 Formulation and (re)packing of substances and mixtures; industrial

1. Processes and activities covered by this description

Relevant use descriptors for this scenario:

SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
ERC2: Formulation of preparations
PROC1: Use in closed process, no likelihood of exposure; **PROC2:** Use in closed, continuous process with occasional controlled exposure; **PROC3:** Use in closed batch process (synthesis or formulation); **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises; **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact); **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities; **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities; **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)

Concentration of substance in preparation/mixture or article:

The exposure scenario is based on the following ingredients:
Hydrochloric acid

Relevant substance concentrations are given in the contributing scenarios. Unless otherwise stated, values in the exposure scenarios are related to the following substances, and not to the complete product.

2. Exposure scenarios

2.1 Contributing scenario controlling environmental exposure:
ERC2

Concentration of substance in preparation/mixture or article:

<=100% Hydrochloric acid

Amounts used:

Assessment of environmental exposure is not appropriate. Rationale: The substances on which this scenario is based are neither classified as dangerous for the environment nor do they fulfill the criteria relating to environmental hazards. Therefore according to REACH Annex I (5.0) an environmental exposure estimation is not necessary. The impact on the environment mainly consists in the possibility of a pH shift in waste water.

2.2 Contributing scenario controlling worker exposure:
PROC1

Concentration of substance in preparation/mixture or article:

<=20% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Vapour pressure ..... : 22,1 Pa
Process temperature..... : 20 °C

Vapour pressure ..... : 51 Pa
Process temperature..... : 30 °C

Vapour pressure ..... : 112 Pa
Process temperature..... : 40 °C
The vapour pressure is related to the pure substance on which the exposure scenario is based.

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time ..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Clear transfer lines prior to de-coupling.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.3 Contributing scenario controlling worker exposure:
PROC2

Concentration of substance in preparation/mixture or article:

<=20% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Vapour pressure ..... : 22,1 Pa
Process temperature..... : 20 °C

Vapour pressure ..... : 51 Pa
Process temperature..... : 30 °C

Vapour pressure ..... : 112 Pa
Process temperature..... : 40 °C
The vapour pressure is related to the pure substance on which the exposure scenario is based.

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time ..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Clear transfer lines prior to de-coupling.

Ensure material transfers are under containment or extract ventilation. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.4 Contributing scenario controlling worker exposure:
PROC3

Concentration of substance in preparation/mixture or article:

<=20% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Vapour pressure ..... : 22,1 Pa
Process temperature..... : 20 °C

Vapour pressure ..... : 51 Pa
Process temperature..... : 30 °C

Vapour pressure ..... : 112 Pa
Process temperature..... : 40 °C
The vapour pressure is related to the pure substance on which the exposure scenario is based.

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Clear transfer lines prior to de-coupling. Drain down and flush system prior to equipment break-in or maintenance.

Ensure material transfers are under containment or extract ventilation. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.5 Contributing scenario controlling worker exposure:
PROC4

Concentration of substance in preparation/mixture or article:

<=20% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Vapour pressure ..... : 22,1 Pa
Process temperature..... : 20 °C

Vapour pressure ..... : 51 Pa
Process temperature..... : 30 °C

Vapour pressure ..... : 112 Pa
Process temperature..... : 40 °C
The vapour pressure is related to the pure substance on which the exposure scenario is based.

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Use bulk or semi-bulk handling systems. Use drum pumps.
Of these measures, at least one has to be applied.

Drain down and flush system prior to equipment break-in or maintenance.

Provide extract ventilation to points where emissios occur. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.6 Contributing scenario controlling worker exposure:
PROC5

Concentration of substance in preparation/mixture or article:

<=20% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Vapour pressure ..... : 22,1 Pa
Process temperature..... : 20 °C

Vapour pressure ..... : 51 Pa
Process temperature..... : 30 °C

Vapour pressure ..... : 112 Pa
Process temperature..... : 40 °C
The vapour pressure is related to the pure substance on which the exposure scenario is based.

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Drain down and flush system prior to equipment break-in or maintenance. Transfer materials directly to mixing vessels.

Use drum pumps. If pouring from container is necessary, use extra safeguards like spill containment, splash protection and respirator.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.7 Contributing scenario controlling worker exposure:
PROC8a; PROC8b

Concentration of substance in preparation/mixture or article:

<=20% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Vapour pressure ..... : 22,1 Pa
Process temperature..... : 20 °C

Vapour pressure ..... : 51 Pa
Process temperature..... : 30 °C

Vapour pressure ..... : 112 Pa
Process temperature..... : 40 °C
The vapour pressure is related to the pure substance on which the exposure scenario is based.

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Handle substance within a predominantly closed system provided with extract ventilation. Provide extract ventilation to points where emissios occur. (Effectiveness: 90 %)
Of these measures, at least one has to be applied.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.8 Contributing scenario controlling worker exposure:
PROC9

Concentration of substance in preparation/mixture or article:

<=20% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Vapour pressure ..... : 22,1 Pa
Process temperature..... : 20 °C

Vapour pressure ..... : 51 Pa
Process temperature..... : 30 °C

Vapour pressure ..... : 112 Pa
Process temperature..... : 40 °C
The vapour pressure is related to the pure substance on which the exposure scenario is based.

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

Handle substance within a predominantly closed system provided with extract ventilation. Fill containers/cans at dedicated fill points supplied with local extract ventilation. (Effectiveness: 90 %)
Of these measures, at least one has to be applied.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

3. Exposure estimation and reference to its source

DNEL and PNEC values of relevant ingredients are given in section 8 of the main part of this document.
Small numeric values in the scenario may be rounded for technical reasons.
Unless otherwise specified in the scenario, default parameters of the methods and conditions have been used.
For each type of exposure usually only the most critical value is given, without differentiation between, e.g., short term and long term exposure.
For a complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.
RCR = Risk Characterization Ratio

Exposure type	Specific conditions	Level of exposure	RCR	Method
dermal	For acute local dermal effects based on corrosion, an RCR cannot be quantified.			
by inhalation	PROC 1.	0,02 mg/m³	0,0025	ECETOC TRA v2.0
by inhalation	PROC 2.	1,50 mg/m³	0,19	ECETOC TRA v2.0
by inhalation	PROC 3.	3,75 mg/m³	0,47	ECETOC TRA v2.0
by inhalation	PROC 4.	3,00 mg/m³	0,38	ECETOC TRA v2.0
by inhalation	PROC 5.	7,50 mg/m³	0,94	ECETOC TRA v2.0
by inhalation	PROC 8a.	7,50 mg/m³	0,94	ECETOC TRA v2.0
by inhalation	PROC 8b.	7,50 mg/m³	0,94	ECETOC TRA v2.0
by inhalation	PROC 9.	7,50 mg/m³	0,94	ECETOC TRA v2.0

4. Evaluation guidance to downstream user

no data available .

ES4 Industrial use

1. Processes and activities covered by this description

Relevant use descriptors for this scenario:

SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles; **ERC6b:** Industrial use of reactive processing aids
PROC1: Use in closed process, no likelihood of exposure; **PROC2:** Use in closed, continuous process with occasional controlled exposure; **PROC3:** Use in closed batch process (synthesis or formulation); **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises; **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing); **PROC10:** Roller application or brushing; **PROC13:** Treatment of articles by dipping and pouring; **PROC15:** Use as laboratory reagent; **PROC19:** Hand-mixing with intimate contact and only PPE available
SU2a: Mining, (without offshore industries); **SU2b:** Offshore industries; **SU4:** Manufacture of food products; **SU5:** Manufacture of textiles, leather, fur; **SU9:** Manufacture of fine chemicals; **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

Concentration of substance in preparation/mixture or article:

The exposure scenario is based on the following ingredients:
Hydrochloric acid

Relevant substance concentrations are given in the contributing scenarios. Unless otherwise stated, values in the exposure scenarios are related to the following substances, and not to the complete product.

2. Exposure scenarios

2.1 Contributing scenario controlling environmental exposure:
ERC4; ERC6b

Concentration of substance in preparation/mixture or article:

<=100% Hydrochloric acid

Amounts used:

Assessment of environmental exposure is not appropriate. Rationale: The substances on which this scenario is based are neither classified as dangerous for the environment nor do they fulfill the criteria relating to environmental hazards. Therefore according to REACH Annex I (5.0) an environmental exposure estimation is not necessary. The impact on the environment mainly consists in the possibility of a pH shift in waste water.

2.2 Contributing scenario controlling worker exposure:
PROC1

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature.

Risk management measures related to human health (worker):

Clear transfer lines prior to de-coupling.

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.3 Contributing scenario controlling worker exposure:
PROC2

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Clear transfer lines prior to de-coupling.

Ensure material transfers are under containment or extract ventilation. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.4 Contributing scenario controlling worker exposure:
PROC3

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Clear transfer lines prior to de-coupling. Drain down and flush system prior to equipment break-in or maintenance.

Ensure material transfers are under containment or extract ventilation. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.5 Contributing scenario controlling worker exposure:
PROC4

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature.

Risk management measures related to human health (worker):

Drain down and flush system prior to equipment break-in or maintenance.

Use bulk or semi-bulk handling systems. Use drum pumps.
Of these measures, at least one has to be applied.

Provide extract ventilation to points where emissios occur. (Effectiveness: 90 %)

In case of aerosol- or mist formation use respiratory protection.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.6 Contributing scenario controlling worker exposure:
PROC9

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time ..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Handle substance within a predominantly closed system provided with extract ventilation. Fill containers/cans at dedicated fill points supplied with local extract ventilation. (Effectiveness: 90 %)
Of these measures, at least one has to be applied.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.7 Contributing scenario controlling worker exposure:
PROC10

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time ..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour). (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.8 Contributing scenario controlling worker exposure:
PROC13

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time ..... : < 8 h; per day

Other given operational conditions affecting worker exposure:

Temperature ..... : Process temperatures may be significantly higher than the ambient temperature. For scaling purpose, the corresponding partial vapour pressure at process temperature has to be taken into account.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Automate activity where possible. Allow time for product to drain from workpiece.

Carry out in a vented booth provided with laminar airflow.

Provide extract ventilation to material transfer points and other openings. (Effectiveness: 90 %)

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.9 Contributing scenario controlling worker exposure:
PROC15

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time ..... : < 4 h; per day (with local exhaust ventilation)

Exposure time ..... : < 1 h; per day (without local exhaust ventilation)

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Avoid carrying out activities involving exposure for more than 1 hour.
These details refer to the following aspects: without local exhaust ventilation .

Carry out in a vented booth or extracted enclosure. Handle in a fume cupboard or under extract ventilation. (Effectiveness: 80 %)
Of these measures, at least one has to be applied.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

2.10 Contributing scenario controlling worker exposure:
PROC19

Concentration of substance in preparation/mixture or article:

<=40% Hydrochloric acid

Physical state during application:

liquid

Vapour pressure ..... : 0,5 - 10 kPa

Amounts used:

Not of relevance.

Duration and frequency of use:

Exposure time..... : < 8 h; per day

Exposure time..... : < 15 min; per day (without respiratory protection equipment)

Other given operational conditions affecting worker exposure:

Temperature ..... : It is assumed that use takes place at no more than 20 °C above ambient temperature.

Risk management measures related to human health (worker):

Ensure operatives are trained to minimize exposure.Wear suitable gloves (EN374), coverall and eye protection.

In case of aerosol- or mist formation use respiratory protection.

Avoid carrying out activities involving exposure for more than 15 minutes.Wear a respirator conforming to EN140 with Type A filter or better.
Of these measures, at least one has to be applied.

Additional good practice advice beyond the REACH CSA:

Drain down and flush system prior to equipment break-in or maintenance. Clear spills immediately.

3. Exposure estimation and reference to its source

DNEL and PNEC values of relevant ingredients are given in section 8 of the main part of this document.
Small numeric values in the scenario may be rounded for technical reasons.
Unless otherwise specified in the scenario, default parameters of the methods and conditions have been used.
For each type of exposure usually only the most critical value is given, without differentiation between, e.g., short term and long term exposure.
For a complete exposure estimation, the values for different routes of exposure and activities may have to be summed up.
RCR = Risk Characterization Ratio

Exposure type	Specific conditions	Level of exposure	RCR	Method
dermal	For acute local dermal effects based on corrosion, an RCR cannot be quantified.			
by inhalation	PROC 1.	0,02 mg/m³	0,0025	ECETOC TRA v2.0
by inhalation	PROC 2.	1,50 mg/m³	0,19	ECETOC TRA v2.0
by inhalation	PROC 3.	3,75 mg/m³	0,47	ECETOC TRA v2.0
by inhalation	PROC 4.	3,00 mg/m³	0,38	ECETOC TRA v2.0
by inhalation	PROC 9.	7,50 mg/m³	0,94	ECETOC TRA v2.0
by inhalation	PROC 10.	7,50 mg/m³	0,94	ECETOC TRA v2.0
by inhalation	PROC 13.	7,50 mg/m³	0,94	ECETOC TRA v2.0
by inhalation	PROC 15. with local exhaust ventilation	1,80 mg/m³	0,23	ECETOC TRA v2.0
by inhalation	PROC 15. without local exhaust ventilation	3,0 mg/m³	0,38	ECETOC TRA v2.0
by inhalation	PROC 19.	7,50 mg/m³	0,94	ECETOC TRA v2.0

4. Evaluation guidance to downstream user

no data available .

- End of Safety Data Sheet -