

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

HYDROCHLORIC ACID <10%

Version 8.0

Print Date 2013/07/23

Revision date / valid from 2013/07/23

MSDS code: MHCL009

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

1.1. Product identifier

Trade name : HYDROCHLORIC ACID <10%
 Substance name : hydrochloric acid
 Index-No. : 017-002-01-X
 CAS-No. : 7647-01-0
 Registration number : 01-2119484862-27-xxxx

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

Use of the Substance/Mixture : Identified use: See table in front of appendix for a complete overview of identified uses.
 Uses advised against : At this moment we have not identified any uses advised against

1.3. Details of the supplier of the safety data sheet

Company : Brenntag UK & Ireland
 Albion House, Rawdon Park
 GB LS19 7XX Leeds Yeadon
 Telephone : +44 (0) 113 3879 200
 Telefax : +44 (0) 113 3879 280
 E-mail address : msds@brenntag.co.uk

1.4. Emergency telephone number

Emergency telephone number : Emergency only telephone number (open 24 hours):
 +44 (0) 1865 407333 (N.C.E.C. Culham)

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008			
Hazard class	Hazard category	Target Organs	Hazard statements
Corrosive to metals	Category 1	---	H290

For the full text of the H-Statements mentioned in this Section, see Section 16.

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Classification according to EU Directives 67/548/EEC or 1999/45/EC

EU. Directive 67/548/EEC

Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.

Most important adverse effects

Human Health : See section 11 for toxicological information.

Physical and chemical hazards : See section 9 for physicochemical information.

Potential environmental effects : See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols :



Signal word : Warning

Hazard statements : H290 May be corrosive to metals.

Precautionary statements

Prevention : P234 Keep only in original container.

Response : P390 Absorb spillage to prevent material damage.

Other labelling information:

Further information : Handle in accordance with good industrial hygiene and safety practice.

2.3. Other hazards

For Results of PBT and vPvB assessment see section 12.5.

Section 3: Composition/information on ingredients

3.1. Substances

Chemical nature : Aqueous solution

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Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)		Classification (67/548/EEC)
		Hazard class / Hazard category	Hazard statements	
hydrochloric acid				
Index-No. : 017-002-01-X		Met. Corr.1	H290	Corrosive; C; R34
CAS-No. : 7647-01-0		STOT SE3	H335	Irritant; Xi; R37
EC-No. : 231-595-7	< 10	Skin Corr.1B	H314	
Registration : 01-2119484862-27-xxxx				

For the full text of the R-phrases mentioned in this Section, see Section 16.

For the full text of the H-Statements mentioned in this Section, see Section 16.

Section 4: First aid measures

4.1. Description of first aid measures

- General advice : Take off all contaminated clothing immediately.
- If inhaled : Remove to fresh air. If symptoms call a physician.
- In case of skin contact : Wash off immediately with plenty of water. If skin irritation persists, call a physician.
- In case of eye contact : Rinse thoroughly with plenty of water, also under the eyelids. Call a physician immediately.
- If swallowed : Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. If symptoms call a physician.

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

- Symptoms : See Section 11 for more detailed information on health effects and symptoms.
- Effects : See Section 11 for more detailed information on health effects and symptoms.

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

- Treatment : Treat symptomatically.No further information available.

Section 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. The product itself does not burn.
- Unsuitable extinguishing : No information available.

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media

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting : In case of fire hazardous decomposition products may be produced such as: Hydrogen chloride gas

5.3. Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Wear personal protective equipment.
Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment. Avoid contact with skin and eyes.

6.2. Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3. Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up : Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders). Keep in suitable, closed containers for disposal. Flush away residuals with plenty of water.

Further information : Treat recovered material as described in the section "Disposal considerations".

6.4. Reference to other sections

See Section 1 for emergency contact information.
See Section 8 for information on personal protective equipment.
See Section 13 for waste treatment information.

Section 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling : Keep container tightly closed. Avoid contact with the skin and the eyes. Do not breathe vapour. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.

Hygiene measures : Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Provide

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adequate ventilation. Avoid contact with the skin and the eyes.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container.

Advice on protection against fire and explosion : The product is not flammable. Normal measures for preventive fire protection.

Further information on storage conditions : Keep container tightly closed. Keep in a well-ventilated place. Store in cool place.

Advice on common storage : Keep away from food, drink and animal feedingstuffs.

7.3. Specific end use(s)

Specific use(s) : Identified use: See table in front of appendix for a complete overview of identified uses.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Component:	hydrochloric acid	CAS-No.	7647-01-0
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Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)

DNEL	
Workers, Acute - local effects, Inhalation	: 15 mg/m ³
DNEL	
Workers, Long-term - local effects, Inhalation	: 8 mg/m ³

Predicted No Effect Concentration (PNEC)

Fresh water	: 36 µg/l
Marine water	: 36 µg/l
Intermittent releases	: 45 µg/l
Sewage treatment plant (STP)	: 36 µg/l

Other Occupational Exposure Limit Values

EU ELV, Short Term Exposure Limit (STEL):

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10 ppm, 15 mg/m³
Indicative

EU ELV, Time Weighted Average (TWA):
5 ppm, 8 mg/m³
Indicative

EH40 WEL, Time Weighted Average (TWA):, Gas and aerosol mists.
1 ppm, 2 mg/m³

EH40 WEL, Short Term Exposure Limit (STEL):, Gas and aerosol mists.
5 ppm, 8 mg/m³

ELV (IE), Time Weighted Average (TWA):
5 ppm, 8 mg/m³
Indicative OELV

ELV (IE), Short Term Exposure Limit (STEL):
10 ppm, 15 mg/m³
Indicative OELV

8.2. Exposure controls

Appropriate engineering controls

Refer to protective measures listed in sections 7 and 8.

Personal protective equipment

Respiratory protection

Advice : Required if vapours or aerosol are released.
Combination filter:E-P2

Hand protection

Advice : The glove material has to be impermeable and resistant to the product / the substance / the preparation.
Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
Protective gloves should be replaced at first signs of wear.

Material : butyl-rubber
Break through time : ≥ 8 h
Glove thickness : 0.5 mm

Material : polychloroprene
Break through time : ≥ 8 h
Glove thickness : 0.5 mm

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Material : natural rubber
Break through time : ≥ 8 h
Glove thickness : 0.5 mm

Material : Nitrile rubber
Break through time : ≥ 8 h
Glove thickness : 0.35 mm

Material : Fluorinated rubber
Break through time : ≥ 8 h
Glove thickness : 0.4 mm

Material : Polyvinylchloride
Break through time : ≥ 8 h
Glove thickness : 0.5 mm

Eye protection

Advice : Safety glasses with side-shields

Skin and body protection

Advice : Wear suitable protective clothing.

Environmental exposure controls

General advice : Do not flush into surface water or sanitary sewer system.
Avoid subsoil penetration.
If the product contaminates rivers and lakes or drains inform respective authorities.

Section 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Form : liquid
Colour : colourless
Odour : stinging
Odour Threshold : no data available
pH : < 2
Melting point/range : < 0 °C
Boiling point/boiling range : ca. 100 °C
Flash point : not applicable

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Evaporation rate	:	no data available
Flammability (solid, gas)	:	not applicable
Upper explosion limit	:	not applicable
Lower explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Density	:	1.04 g/cm ³ (20 °C)
Water solubility	:	completely miscible
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	not applicable
Thermal decomposition	:	Heating can release hazardous gases.
Viscosity, dynamic	:	no data available
Explosivity	:	Product is not explosive.
Oxidizing properties	:	no data available

9.2. Other information

Corrosion to metals	:	Corrosive to metals
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Section 10: Stability and reactivity

10.1. Reactivity

Advice	:	Is corrosive to metals.
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10.2. Chemical stability

Advice	:	No decomposition if stored and applied as directed. Decomposes on heating.
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10.3. Possibility of hazardous reactions

Hazardous reactions	:	Hydrogen, by reaction with metals
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10.4. Conditions to avoid

Conditions to avoid	:	Heat.
Thermal decomposition	:	Heating can release hazardous gases.

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10.5. Incompatible materials

Materials to avoid : Aluminium, alkalis, ammonia, fluorine, Bases, Oxidizing agents

10.6. Hazardous decomposition products

Hazardous decomposition products : Hydrogen chloride gas

Section 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

Oral

Acute toxicity estimate : 9000.9 mg/kg) (Calculation method)

Inhalation

no data available

Dermal

Please find this information in the listing of the component/components below in the MSDS.

Irritation

Skin

Result : Please find this information in the listing of the component/components below in the MSDS.

Eyes

Result : Please find this information in the listing of the component/components below in the MSDS.

Sensitisation

Result : Please find this information in the listing of the component/components below in the MSDS.

CMR effects

CMR Properties

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- Carcinogenicity : Please find this information in the listing of the component/components below in the MSDS.
- Mutagenicity : Please find this information in the listing of the component/components below in the MSDS.
- Teratogenicity : Please find this information in the listing of the component/components below in the MSDS.
- Reproductive toxicity : Please find this information in the listing of the component/components below in the MSDS.

Specific Target Organ Toxicity

Single exposure

remark : The substance or mixture is not classified as specific target organ toxicant, single exposure.

Repeated exposure

remark : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Other toxic properties

Aspiration hazard

No aspiration toxicity classification

Component:	hydrochloric acid	CAS-No.
		7647-01-0

Acute toxicity

Oral

|| no data available

Inhalation

|| no data available

Dermal

LD50 Dermal : > 5010 mg/kg (rabbit)

Irritation

Skin

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Result : corrosive effects (rabbit)

Eyes

Result : corrosive effects (rabbit)
Risk of serious damage to eyes.

Sensitisation

Result : not sensitizing (guinea pig) (Maximisation Test)

CMR effects

CMR Properties

Carcinogenicity : Did not show carcinogenic effects in animal experiments.

Mutagenicity : In vitro tests did not show mutagenic effects

Teratogenicity : no data available

Reproductive toxicity : Animal testing did not show any effects on fertility.

Specific Target Organ Toxicity

Single exposure

Inhalation : May cause respiratory irritation.

Repeated exposure

remark : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Other toxic properties

Aspiration hazard

No aspiration toxicity classification

Section 12: Ecological information

12.1. Toxicity

Component:	hydrochloric acid	CAS-No.
		7647-01-0

Acute toxicity

Fish

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LC50 : 7.45 mg/l (Oncorhynchus mykiss; 96 h)

LC50 : 24.6 mg/l (Lepomis macrochirus; 96 h)

Toxicity to daphnia and other aquatic invertebrates

EC50 : 0.492 mg/l (Daphnia magna; 48 h)

algae

EC50 : 0.78 mg/l (Pseudokirchneriella subcapitata; 72 h)

12.2. Persistence and degradability

Component:	hydrochloric acid	CAS-No.
		7647-01-0

Persistence and degradability

Biodegradability

Result : Inorganic product which is not removable from water by biological processes.

12.3. Bioaccumulative potential

Component:	hydrochloric acid	CAS-No.
		7647-01-0

Bioaccumulation

Result : Bioaccumulation is not expected.

12.4. Mobility in soil

Component:	hydrochloric acid	CAS-No.
		7647-01-0

Mobility

Soil : Not expected to adsorb on soil.

12.5. Results of PBT and vPvB assessment

Component:	hydrochloric acid	CAS-No.
		7647-01-0

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Results of PBT and vPvB assessment

Result : This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)., This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

12.6. Other adverse effects

Additional ecological information

Result : Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

Component: hydrochloric acid

CAS-No.
7647-01-0

Section 13: Disposal considerations

13.1. Waste treatment methods

Product : Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.

Contaminated packaging : Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. Packagings that cannot be cleaned are to be disposed of in the same manner as the product.

European Waste Catalogue Number : No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

Section 14: Transport information

14.1. UN number

1789

14.2. UN proper shipping name

ADR : HYDROCHLORIC ACID
RID : HYDROCHLORIC ACID
IMDG : HYDROCHLORIC ACID

14.3. Transport hazard class(es)

ADR-Class : 8

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(Labels; Classification Code; Hazard identification No; Tunnel restriction code)	8; C1; 80; (E)
RID-Class	: 8
(Labels; Classification Code; Hazard identification No)	8; C1; 80
IMDG-Class	: 8
(Labels; EmS)	8; F-A, S-B

14.4. Packaging group

ADR	: III
RID	: III
IMDG	: III

14.5. Environmental hazards

Labeling according to 5.2.1.8 ADR	: no
Labeling according to 5.2.1.8 RID	: no
Labeling according to 5.2.1.6.3 IMDG	: no
Classification as environmentally hazardous according to 2.9.3 IMDG	: no

14.6. Special precautions for user

Not applicable.

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

IMDG : Not applicable.

Section 15: Regulatory information

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

<p>UK ISR hydrochloric acid</p>	<p>: hydrochloric acid: Annual reporting level threshold: 10,000 kg</p> <p>EU. Regulation 273/2004, Drug Precursors, Category 3 Scheduled substance Combined Nomenclature (CN) code: 2806 10 00</p> <p>EU. Regulation No 1451/2007 [Biocides], Annex I, Active substances identified as existing (OJ (L 325) Listed EC Number: 231-595-7</p> <p>EU. Directive 98/8/EC, Annex 1, Active substances in biocidal products Special provisions may apply; see text of legislation. Minimum purity: 999 g/kg Private area and public health area disinfectants and other biocidal products</p> <p>EU. Directive 98/8/EC, Annex 1, Active substances in biocidal</p>
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products
Expiry Date of Inclusion: 30 Apr 2024

EU. Directive 98/8/EC, Annex 1, Active substances in biocidal products
Inclusion Date: 1 May 2014

EU. Directive 98/8/EC, Annex 1, Active substances in biocidal products
Deadline for Compliance: 30 Apr 2016

15.2. Chemical Safety Assessment

|| A Chemical Safety Assessment has been carried out for this substance.

Section 16: Other information

Full text of R-phrases referred to under sections 2 and 3.

R34	Causes burns.
R37	Irritating to respiratory system.

Full text of H-Statements referred to under sections 2 and 3.

H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H335	May cause respiratory irritation.

Further information

Other information : The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship. The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

|| Indicates updated section.

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No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 9, 15	1, 2	NA	ES0004963
2	Use as an intermediate	3	4, 8, 9, 11, 12, 13, 19	NA	1, 2, 3, 4, 9, 15	6a	NA	ES0004629
3	Formulation & (re)packing of substances and mixtures	3	10	NA	1, 2, 3, 4, 5, 8a, 8b, 9	2	NA	ES0004648
4	Industrial use	3	2a, 2b, 5, 14, 15, 16	NA	1, 2, 3, 4, 9, 10, 13, 15, 19	4, 6b	NA	ES0004683
5	Professional use	22	20, 23	NA	1, 2, 3, 4, 8a, 10, 11, 13, 15, 19	8a, 8b, 8e	NA	ES0004748
6	Consumer use	21	NA	20, 21, 35, 37, 38	NA	8b, 8e	NA	ES0004794

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1. Short title of Exposure Scenario 1: Manufacture of substance		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals	
Process categories	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	
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations	
2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2		
No exposure assessment presented for the environment.		
Amount used	not applicable	
Frequency and duration of use	Continuous exposure	360 days/year
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Application Area	Industrial use
	Water	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.
	Prevent leaks and prevent soil / water pollution caused by leaks. Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 40 %
	Physical Form (at time of use)	Liquid, moderate fugacity
	Vapour pressure	0.5 - 10 kPa
	Process Temperature	20 °C
	Assumes use at not more than 20°C above ambient temperature., It should be noted that the process temperature may be higher, but the substance temperature is down to ambient at worker contact points.	
Amount used	Varies between milliliters (sampling) and cubic meters (material transfers).	
Frequency and duration of use	Exposure duration per day	480 min
	Exposure duration per day	240 min(only PROC15)
R50277 / Version 8.0		
17/33		
EN		

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	Frequency of use	5 days/week(only PROC15)
Technical conditions and measures to control dispersion from source towards the worker	Avoid splashing.	
	Handle substance within a closed system.(PROC1, PROC2, PROC3)	
	Clear transfer lines prior to de-coupling.(PROC1, PROC2, PROC3, PROC4)	
	Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC2, PROC3)	
	Use drum pumps.	
	Use bulk or semi-bulk handling systems.(PROC4)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC4, PROC8a, PROC8b)	
	Handle substance within a predominantly closed system provided with extract ventilation.(PROC8a, PROC8b, PROC9)	
	Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC9)	
Organisational measures to prevent /limit releases, dispersion and exposure	Handle in a fume cupboard or under extract ventilation.	
	Carry out in a vented booth or extracted enclosure. (Efficiency: 80 %)(PROC15)	
Conditions and measures related to personal protection, hygiene and health evaluation	Provide basic employee training to prevent/minimize exposures	
	Ensure that no inhalable aerosols are generated	
Risk Management Measures are based on qualitative risk characterisation.		

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment. Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk.

Workers

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local	0.02mg/m ³	0
PROC2	---	Worker - inhalative, long-term - local	1.50mg/m ³	0.2
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m ³	0.4
PROC3	---	Worker - inhalative, long-term - local	3.75mg/m ³	0.5
PROC8a, PROC8b, PROC9	---	Worker - inhalative, long-term - local	7.50mg/m ³	0.9
PROC15	---	Worker - inhalative, long-term - local	1.8mg/m ³	0.9

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

For scaling see: <http://www.ecetoc.org/tra>

Additional good practice advice beyond the REACH Chemical Safety Assessment

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Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 2: Use as an intermediate

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	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
Process categories	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) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered

2.1 Contributing scenario controlling environmental exposure for: ERC6a

No exposure assessment presented for the environment.

Amount used	not applicable	
Frequency and duration of use	Continuous exposure	360 days/year
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.
		Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases. Prevent leaks and prevent soil / water pollution caused by leaks.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC9, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 40 %
	Physical Form (at time of use)	Liquid, moderate fugacity
	Vapour pressure	0.5 - 10 kPa
	Process Temperature	20 °C
	Assumes use at not more than 20°C above ambient temperature., It should be noted that the process temperature may be higher, but the substance temperature is down to ambient at worker contact points.	
Amount used	Varies between milliliters (sampling) and cubic meters (material transfers).	
Frequency and duration of use	Exposure duration per day	< 8 h
	Exposure duration per	< 4 h(only PROC15)

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	day	
	Frequency of use	5 days/week(only PROC15)
Technical conditions and measures to control dispersion from source towards the worker	Avoid splashing.	
	Handle substance within a closed system.(PROC1, PROC2, PROC3)	
	Clear transfer lines prior to de-coupling.(PROC1, PROC2, PROC3, PROC4)	
	Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC2, PROC3)	
	Drain down and flush system prior to equipment opening or maintenance.(PROC3, PROC4)	
	Use drum pumps.	
	Use bulk or semi-bulk handling systems.(PROC4)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC4)	
	Handle substance within a predominantly closed system provided with extract ventilation.	
	Fill containers/cans at dedicated filling points supplied with local extract ventilation. (Efficiency: 90 %)(PROC9)	
Handle in a fume cupboard or under extract ventilation.		
Carry out in a vented booth or extracted enclosure. (Efficiency: 80 %)(PROC15)		
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent/minimize exposures	
	Ensure that no inhalable aerosols are generated	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable coveralls to prevent exposure to the skin.	
	Use suitable eye protection.	
	Wear chemically resistant gloves.	
	Wear suitable gloves tested to EN374.(PROC3)	
Risk Management Measures are based on qualitative risk characterisation.		

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment. Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk.

Workers

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local	0.02mg/m3	0
PROC2	---	Worker - inhalative, long-term - local	1.50mg/m3	0.2
PROC3	---	Worker - inhalative, long-term - local	3.75mg/m ³	0.5
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m3	0.4
PROC9	---	Worker - inhalative, long-term - local	7.5mg/m ³	0.9
PROC15	---	Worker - inhalative, long-term - local	1.8mg/m ³	0.9

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

HYDROCHLORIC ACID <10%

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

For scaling see: <http://www.ecetoc.org/tra>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

HYDROCHLORIC ACID <10%

1. Short title of Exposure Scenario 3: Formulation & (re)packing of substances and mixtures

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p>
Environmental Release Categories	ERC2: Formulation of preparations
Activity	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC2

No exposure assessment presented for the environment.

Amount used	not applicable	
Frequency and duration of use	Continuous exposure	360 days/year
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.
		Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases. Prevent leaks and prevent soil / water pollution caused by leaks.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 %.
	Physical Form (at time of use)	Liquid, moderate fugacity
	Vapour pressure	0.5 - 10 kPa
	Process Temperature	20 °C
Amount used	Varies between milliliters (sampling) and cubic meters (material transfers).	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	5 days/week
Other operational conditions	Operation is carried out at elevated temperature (> 20°C above ambient)	

HYDROCHLORIC ACID <10%

affecting workers exposure	temperature).
Technical conditions and measures to control dispersion from source towards the worker	Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC2, PROC3)
	Drain down and flush system prior to equipment opening or maintenance.(PROC3, PROC4, PROC5)
	Avoid splashing.(PROC9, PROC15)
	Handle substance within a predominantly closed system provided with extract ventilation. (Efficiency: 90 %)(PROC8a, PROC8b, PROC9, PROC15)
	Clear transfer lines prior to de-coupling.
	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Use bulk or semi-bulk handling systems.(PROC4)
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC4, PROC8a, PROC8b, PROC15)
	Use drum pumps.(PROC4, PROC5)
	Transfer materials directly to mixing vessels.(PROC5)
Fill containers/cans at dedicated filling points supplied with local extract ventilation. (Efficiency: 90 %)(PROC9, PROC15)	
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent/minimize exposures
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable coveralls to prevent exposure to the skin.
	Use suitable eye protection.
	Wear chemically resistant gloves.
	Wear suitable gloves tested to EN374.(PROC3)
Risk Management Measures are based on qualitative risk characterisation.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment. Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk.

Workers

PROC1, PROC5, PROC8a, PROC8b, PROC9 Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local	0.02mg/m ³	0
PROC2	---	Worker - inhalative, long-term - local	1.50mg/m ³	0.2
PROC3	---	Worker - inhalative, long-term - local	3.75mg/m ³	0.5
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m ³	0.4
PROC5, PROC8a, PROC8b, PROC9	---	Worker - inhalative, long-term - local	7.50mg/m ³	0.9

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

For scaling see: <http://www.ecetoc.org/tra>

Additional good practice advice beyond the REACH Chemical Safety Assessment

HYDROCHLORIC ACID <10%

Assumes a good basic standard of occupational hygiene is implemented.

HYDROCHLORIC ACID <10%

1. Short title of Exposure Scenario 4: Industrial use

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU2a: Mining (without offshore industries) SU2b: Offshore industries SU5: Manufacture of textiles, leather, fur 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
Process categories	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
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6b: Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b

No exposure assessment presented for the environment.

Amount used	not applicable	
Frequency and duration of use	Continuous exposure	360 days/year
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments. Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases. Prevent leaks and prevent soil / water pollution caused by leaks.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC9, PROC10, PROC13, PROC15, PROC19

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 40 %
	Physical Form (at time of use)	Liquid, moderate fugacity
	Vapour pressure	0.5 - 10 kPa
	Process Temperature	< 100 °C
Amount used	Varies between milliliters (sampling) and cubic meters (material transfers).	
Frequency and duration of use	Exposure duration per day	< 8 h
	Exposure duration per day	240 min(PROC15)

HYDROCHLORIC ACID <10%

	Frequency of use	5 days/week(PROC15)
Other operational conditions affecting workers exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature).(PROC13)	
Technical conditions and measures to control dispersion from source towards the worker	Clear transfer lines prior to de-coupling.(PROC1, PROC2, PROC3)	
	Handle substance within a closed system.(PROC1, PROC2, PROC3)	
	Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC2, PROC3)	
	Drain down and flush system prior to equipment opening or maintenance.(PROC3, PROC4)	
	Use bulk or semi-bulk handling systems. Use drum pumps.(PROC4)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC4)	
	Handle substance within a predominantly closed system provided with extract ventilation. Fill containers/cans at dedicated filling points supplied with local extract ventilation. (Efficiency: 90 %)(PROC9)	
	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) (Efficiency: 90 %)(PROC10)	
	Provide extract ventilation to material transfer points and other openings. (Efficiency: 90 %)(PROC13)	
	Carry out in a vented booth provided with laminar airflow.(PROC13)	
Organisational measures to prevent /limit releases, dispersion and exposure	Handle in a fume cupboard or under extract ventilation. Carry out in a vented booth or extracted enclosure. (Efficiency: 80 %)(PROC15)	
	Provide basic employee training to prevent/minimize exposures	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable coveralls to prevent exposure to the skin.	
	Use suitable eye protection.	
	Wear chemically resistant gloves.	
	Wear suitable gloves tested to EN374.(PROC3, PROC10, PROC13, PROC19)	
	Do not carry out the operation for more than 15 min. without respiratory protection Wear a respirator conforming to EN140 with Type A filter or better.(PROC19)	

Risk Management Measures are based on qualitative risk characterisation.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment. Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk.

Workers

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local	0.02mg/m ³	0
PROC2	---	Worker - inhalative, long-term - local	1.50mg/m ³	0.2
PROC3	---	Worker - inhalative, long-term - local	3.75mg/m ³	0.5
PROC9, PROC10,	---	Worker - inhalative, long-term - local	3.00mg/m ³	0.4

HYDROCHLORIC ACID <10%

PROC13, PROC19				
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m ³	0.4
PROC15	---	Worker - inhalative, long-term - local	1.8mg/m ³	0.9

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

For scaling see: <http://www.ecetoc.org/tra>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

HYDROCHLORIC ACID <10%

1. Short title of Exposure Scenario 5: Professional use

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU20: Health services SU23: Electricity, steam, gas water supply and sewage treatment
Process categories	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 PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8e

No exposure assessment presented for the environment.

Frequency and duration of use	Continuous exposure	360 days/year
	Continuous exposure	8 hours/day
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	Ensure all waste water is collected and treated via a WWTP., All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.
		Prevent leaks and prevent soil / water pollution caused by leaks.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC10, PROC11, PROC13, PROC15, PROC19

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 40 %
	Physical Form (at time of use)	Liquid, moderate fugacity
	Vapour pressure	0.5 - 10 kPa
	Process Temperature	20 °C
		Assumes use at not more than 20°C above ambient temperature.
Amount used	Varies between milliliters (sampling) and cubic meters (material transfers).	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	5 days/week
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system.(PROC1, PROC2, PROC3)	
	Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC2, PROC3, PROC4)	
	Clear transfer lines prior to de-coupling.(PROC1, PROC2, PROC3, PROC4,	

HYDROCHLORIC ACID <10%

	<p>PROC8a)</p> <p>Drain down and flush system prior to equipment opening or maintenance.(PROC3, PROC4)</p> <p>Use bulk or semi-bulk handling systems. Use drum pumps.(PROC4)</p> <p>Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC4, PROC8a, PROC11)</p> <p>Handle substance within a predominantly closed system provided with extract ventilation. (Efficiency: 90 %)(PROC8a)</p> <p>Provide a good standard of controlled ventilation (10 to 15 air changes per hour) (Efficiency: 90 %)(PROC10)</p> <p>Carry out in a vented booth provided with laminar airflow. Allow time for product to drain from workpiece. Automate activity where possible.(PROC13)</p> <p>Provide extract ventilation to material transfer points and other openings. (Efficiency: 90 %)(PROC13)</p> <p>Handle in a fume cupboard or under extract ventilation. Carry out in a vented booth or extracted enclosure. (Efficiency: 80 %)(PROC15)</p>
Organisational measures to prevent /limit releases, dispersion and exposure	<p>Provide basic employee training to prevent/minimize exposures</p> <p>Ensure minimization of manual phases(PROC13)</p> <p>Avoid carrying out operation for more than 4 hours. (PROC15)</p>
Conditions and measures related to personal protection, hygiene and health evaluation	<p>Wear suitable coveralls to prevent exposure to the skin. Use suitable eye protection. Wear chemically resistant gloves.</p> <p>Wear suitable gloves tested to EN374.(PROC3, PROC10, PROC11, PROC13, PROC19)</p> <p>Wear a half face respirator conforming to EN140 Type A filter or better(PROC11, PROC19)</p> <p>Do not carry out the operation for more than 15 min. without respiratory protection(PROC11, PROC19)</p> <p>Wear suitable gloves tested to EN374.(PROC3)</p> <p>Wear a respirator conforming to EN140 with Type A filter or better.</p>
Risk Management Measures are based on qualitative risk characterisation.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment. Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk.

Workers

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC2	---	Worker - inhalative, long-term - local	1.50mg/m ³	0.2
PROC3	---	Worker - inhalative, long-term - local	3.75mg/m ³	0.5
PROC8a, PROC10, PROC13, PROC19	---	Worker - inhalative, long-term - local	7.50mg/m ³	0.9
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m ³	0.4
PROC15	---	Worker - inhalative, long-	1.8mg/m ³	0.9

HYDROCHLORIC ACID <10%

term - local

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

For scaling see: <http://www.ecetoc.org/tra>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

HYDROCHLORIC ACID <10%

1. Short title of Exposure Scenario 6: Consumer use		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents PC21: Laboratory chemicals PC35: Washing and cleaning products (including solvent based products) PC37: Water treatment chemicals PC38: Welding and soldering products (with flux coatings or flux cores), flux products	
Environmental Release Categories	ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC8e		
No exposure assessment presented for the environment.		
Amount used	not applicable	
Frequency and duration of use	Continuous exposure	360 days/year
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.
		Prevent leaks and prevent soil / water pollution caused by leaks. Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
2.2 Contributing scenario controlling consumer exposure for: PC20, PC21, PC35, PC37, PC38		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 %.
	Physical Form (at time of use)	Liquid, moderate fugacity
	Vapour pressure	0.5 - 10 kPa
	Process Temperature	20 °C
Amount used	Amount used per event	500 ml
Frequency and duration of use	Exposure duration per event	240 min
	Frequency of use	5 Times per year:
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Application Route	Consumer use
	Exposure routes	Dermal exposure
	Consumer Measures	The substance may cause local irritating effects
	Risk Management Measures are based on qualitative risk characterisation.	
3. Exposure estimation and reference to its source		
Environment		
No exposure assessment presented for the environment. Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk.		
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HYDROCHLORIC ACID <10%

Consumers

Exposures have not been estimated as the substance only causes local dermal and/or inhalatory effects and no systemic effects. The use is assessed to be safe.

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