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

Hydrochloric Acid 25% - 38%

Version 6.1 Print Date 2014/02/13

Revision date / valid from 2014/02/13 **MSDS code: MHCL100**

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

1.1. Product identifier

Trade name	:	Hydrochloric Acid 25% - 38%
Substance name	:	hydrochloric acid
Index-No.	:	017-002-01-X
CAS-No.	:	7647-01-0
EC-No.	:	231-595-7
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	:	Food additive

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
Skin corrosion	Category 1B	---	H314

Specific target organ toxicity - single exposure	Category 3	Respiratory system	H335

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

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

Directive 67/548/EEC or 1999/45/EC	
Hazard symbol / Category of danger	**Risk phrases**
Corrosive (C)	R34
Irritant (Xi)	R37

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

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 : Danger

Hazard statements :

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

Precautionary statements

Prevention :

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

Response :

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact

	lenses, if present and easy to do. Continue rinsing.
P308	IF exposed or concerned:
P310	Immediately call a POISON CENTER or doctor/ physician.

Hazardous components which must be listed on the label:

- hydrochloric acid

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

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 CAS-No. : 7647-01-0 EC-No. : 231-595-7 Registration : 01-2119484862-27-xxxx	>= 25 - <= 38	Met. Corr.1 STOT SE3 Skin Corr.1B	H290 H335 H314	Corrosive; C; R34 Irritant; Xi; R37

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 : If unconscious place in recovery position and seek medical advice. Remove to fresh air.

In case of skin contact : Wash off immediately with soap and plenty of water. Call a physician immediately.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.

If swallowed	: Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting - seek medical advice.

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

Symptoms	: corrosive effects
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.

Section 5: Firefighting measures

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Under fire conditions: Hydrogen chloride gas, Gives off hydrogen by reaction with metals.

5.3. Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.Wear appropriate body protection (full protective suit)
Further information	:	Cool closed containers exposed to fire with water spray.Heating will cause a pressure rise - with risk of bursting.Suppress (knock down) gases/vapours/mists with a water spray jet.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. Keep people away from and upwind of spill/leak. Provide adequate ventilation. Avoid contact with the skin and the eyes. Do not breathe vapours.

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. If material

reaches soil inform authorities responsible for such cases.

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	:	Handle and open container with care. Use personal protective equipment. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist. 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. Take off all contaminated clothing immediately. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep in an area equipped with acid resistant flooring. Suitable materials for containers: glass; Polypropylene; polyethylene containers; Unsuitable materials for containers: Metals
Advice on protection against fire and explosion	:	The product is not flammable. Gives off hydrogen by reaction with metals. Risk of explosion.
Further information on storage conditions	:	Keep container tightly closed. Keep in a well-ventilated place. Keep away from heat.
Advice on common storage	:	Keep away from food, drink and animal feedingstuffs. Corrosive in contact with metals Materials to avoid sodium hypochlorite alkalis
German storage class	:	8 Corrosive Substances

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

Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)

DNEL
Workers, Acute - local effects, Inhalation : 15 mg/m3

DNEL
Workers, Long-term - local effects, Inhalation : 8 mg/m3

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):
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	:	In case of insufficient ventilation, wear suitable respiratory equipment. Required, if exposure limit is exceeded (e.g. OEL). 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	:	Nitrile rubber
Break through time	:	>= 8 h
Glove thickness	:	0.35 mm
Material	:	polychloroprene
Break through time	:	>= 8 h
Glove thickness	:	0.5 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	:	Tightly fitting safety goggles

Skin and body protection

Advice : Acid resistant 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.
If material reaches soil inform authorities responsible for such cases.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	:	liquid
Colour	:	colourless to yellowish
Odour	:	stinging
Odour Threshold	:	no data available
pH	:	< 0.1 (20 °C)
Solidification point	:	-40 °C
Boiling point/boiling range	:	ca. 90 °C
Flash point	:	not applicable
Evaporation rate	:	no data available
Flammability (solid, gas)	:	does not ignite
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	21.8 hPa (20 °C)
Relative vapour density	:	no data available
Density	:	1.15 - 1.17 g/cm3 (20 °C)
Water solubility	:	completely miscible
Partition coefficient: n-octanol/water	:	log Kow -0.25 log Pow

Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	1.74 mPa.s (20 °C)
Explosivity	:	Product is not explosive.
Oxidizing properties	:	no data available

9.2. Other information

Corrosion to metals	:	Corrosive to metals

Section 10: Stability and reactivity

10.1. Reactivity

Advice	:	No decomposition if stored and applied as directed.

10.2. Chemical stability

Advice	:	No decomposition if stored and applied as directed. Decomposes on heating.

10.3. Possibility of hazardous reactions

Hazardous reactions	:	Hydrogen, by reaction with metals Explosive properties May develop chlorine if mixed with sodium hypochlorite or oxidizing agents (e.g. potassium permanganate, magnesium oxide and hydrogen peroxide).

10.4. Conditions to avoid

Conditions to avoid	:	Heat.

10.5. Incompatible materials

Materials to avoid	:	Metals, sodium hypochlorite, Amines, fluorine, Strong oxidizing agents, Chlorite, Cyanides, alkalines

10.6. Hazardous decomposition products

Hazardous decomposition products	:	Hydrogen chloride gas

Section 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

Oral

no data available

Inhalation

no data available

Dermal

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

Irritation

Skin

Result : Causes skin burns.

Eyes

Result : Causes eye burns.

Sensitisation

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

CMR effects

CMR Properties

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

Inhalation : Target Organs: Respiratory system
May cause respiratory irritation.

Repeated exposure		
remark	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Other toxic properties		
Repeated dose toxicity		
		no data available
Aspiration hazard		
		No aspiration toxicity classification
Further information		
Other relevant toxicity information	:	If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.
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		
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

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
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	:	Harmful effects to aquatic organisms due to pH-shift. Neutralization is normally necessary before waste water is discharged into water treatment plants. Do not flush into surface water or sanitary sewer system.

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 remaining contents. Packagings that cannot be cleaned are to be disposed of in the same manner as the product. Dispose of in accordance with local regulations.
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 (Labels; Classification Code; Hazard identification No; Tunnel restriction code)	:	8 8; C1; 80; (E)
RID-Class (Labels; Classification Code; Hazard identification No)	:	8 8; C1; 80
IMDG-Class (Labels; EmS)	:	8 8; F-A, S-B

14.4. Packaging group

ADR	:	II
RID	:	II

IMDG : II

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
Classified as “P” according to 2.10 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

UK ISR	:	hydrochloric acid: Annual reporting level threshold: 10,000 kg
Other regulations	:	Occupational restrictions: Take note of Dir 92/85/EEC on the safety and health of pregnant workers at work and of Dir 94/33/EC on the protection of young people at work.

hydrochloric acid

EU. Regulation 273/2004, Drug Precursors, Category 3
Scheduled substance Combined Nomenclature (CN) code: 2806 10 00

EU. Regulation No 1451/2007 [Biocides], Annex I, Active substances identified as existing (OJ (L 325)
Listed EC Number: 231-595-7

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

EU. Directive 98/8/EC, Annex 1, Active substances in biocidal 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

:

Notification status

hydrochloric acid:

Regulatory List	Notification	Notification number
AICS	YES	
DSL	YES	
INV (CN)	YES	
ENCS (JP)	YES	(1)-215
ISHL (JP)	YES	(1)-215
TSCA	YES	
EINECS	YES	231-595-7
KECI (KR)	YES	97-1-203
KECI (KR)	YES	KE-20189
PICCS (PH)	YES	

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 : Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use.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.

Hydrochloric Acid 25% - 38%

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

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)

	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)	
	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.	
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
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m³	0.4
PROC3	---	Worker - inhalative, long-term - local	3.75mg/m³	0.5
PROC8a, PROC8b, PROC9	---	Worker - inhalative, long-term - local	7.50mg/m³	0.9
PROC15	---	Worker - inhalative, long-term - local	1.8mg/m³	0.9

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that

risks are managed to at least equivalent levels.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
For scaling see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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)

	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/m³	0.5
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m3	0.4
PROC9	---	Worker - inhalative, long-term - local	7.5mg/m³	0.9
PROC15	---	Worker - inhalative, long-term - local	1.8mg/m³	0.9

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

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.
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
For scaling see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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	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)	
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, tabletting, 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	

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/m3	0
PROC2	---	Worker - inhalative, long-term - local	1.50mg/m3	0.2
PROC3	---	Worker - inhalative, long-term - local	3.75mg/m³	0.5
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m3	0.4
PROC5, PROC8a, PROC8b, PROC9	---	Worker - inhalative, long-term - local	7.50mg/m³	0.9

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that

risks are managed to at least equivalent levels.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
For scaling see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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)

	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)	
	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	
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/m³	0
PROC2	---	Worker - inhalative, long-term - local	1.50mg/m3	0.2
PROC3	---	Worker - inhalative, long-term - local	3.75mg/m³	0.5
PROC9, PROC10,	---	Worker - inhalative, long-term - local	3.00mg/m3	0.4

PROC13, PROC19				
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m3	0.4
PROC15	---	Worker - inhalative, long-term - local	1.8mg/m³	0.9

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
For scaling see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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,	

	PROC8a)
	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, PROC8a, PROC11)
	Handle substance within a predominantly closed system provided with extract ventilation. (Efficiency: 90 %)(PROC8a)
	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) (Efficiency: 90 %)(PROC10)
	Carry out in a vented booth provided with laminar airflow. Allow time for product to drain from workpiece. Automate activity where possible.(PROC13)
	Provide extract ventilation to material transfer points and other openings. (Efficiency: 90 %)(PROC13)
	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 minimization of manual phases(PROC13)
	Avoid carrying out operation for more than 4 hours.(PROC15)
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, PROC11, PROC13, PROC19)
	Wear a half face respirator conforming to EN140 Type A filter or better(PROC11, PROC19)
	Do not carry out the operation for more than 15 min. without respiratory protection(PROC11, PROC19)
	Wear suitable gloves tested to EN374.(PROC3)
	Wear a respirator conforming to EN140 with Type A filter or better.
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/m3	0.2
PROC3	---	Worker - inhalative, long-term - local	3.75mg/m³	0.5
PROC8a, PROC10, PROC13, PROC11, PROC19	---	Worker - inhalative, long-term - local	7.50mg/m³	0.9
PROC4	---	Worker - inhalative, long-term - local	3.00mg/m3	0.4

PROC15	---	Worker - inhalative, long-term - local	1.8mg/m³	0.9

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
For scaling see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2