

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

NITRIC ACID 20 - <50%

Version 4.0

Print Date 2013/07/22

Revision date / valid from 2013/07/22

MSDS code: MNIA250

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

1.1. Product identifier

Trade name : NITRIC ACID 20 - <50%
 Substance name : nitric acid
 Index-No. : 007-004-00-1
 CAS-No. : 7697-37-2
 EC-No. : 231-714-2
 Registration number : 01-2119487297-23-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
Skin corrosion	Category 1A	---	H314

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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)	R35


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.
- Precautionary statements
- Prevention : P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- Response : P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P310 IF exposed or concerned: Immediately call a POISON CENTER or doctor/ physician.

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Hazardous components which must be listed on the label:

- nitric 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	
nitric acid	≥ 20 - < 50	Ox. Liq.3	H272	Oxidising; O; R 8
Index-No. : 007-004-00-1		Skin Corr.1A	H314	
CAS-No. : 7697-37-2		Met. Corr.1	H290	
EC-No. : 231-714-2				
Registration : 01-2119487297-23-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 : In case of accident by inhalation: remove casualty to fresh air and keep at rest. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.
- In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Call a physician immediately.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician 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. Do NOT induce vomiting. Call a physician immediately.

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

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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.
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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 media	: No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	: Fire may cause evolution of: nitrogen oxides (NOx)
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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	: Cool closed containers exposed to fire with water spray. 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 skin and eyes. Do not breathe gas/fumes/vapour/spray. For personal protection see section 8.
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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.
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6.3. Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up	: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
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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. Handle and open container with care. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Use respirator with appropriate filter if vapours or aerosol are released. 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. Provide adequate ventilation. Avoid contact with the skin and the eyes. Do not breathe gas/fumes/vapour/spray.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep in an area equipped with acid resistant flooring. Keep only in the original container.

Advice on protection against fire and explosion : The product is not flammable. Normal measures for preventive fire protection. Keep away from combustible material.

Further information on storage conditions : Keep tightly closed in a dry and cool place. Protect against light. Protect from contamination. Keep in a well-ventilated place.

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

German storage class : 8B: Non-combustible substances, corrosive

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

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Component: nitric acid

CAS-No.
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Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)

DNEL

Workers, Long-term - local effects, Inhalation : 1.3 mg/m³

DNEL

Workers, Acute - local effects, Inhalation : 2.6 mg/m³

Other Occupational Exposure Limit Values

EU ELV, Short Term Exposure Limit (STEL):

1 ppm, 2.6 mg/m³

Indicative

EH40 WEL, Short Term Exposure Limit (STEL):

1 ppm, 2.6 mg/m³

ELV (IE), Short Term Exposure Limit (STEL):

1 ppm, 2.6 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 exposure limit is exceeded (e.g. OEL).

Recommended Filter type:

Combination filter:NO-P3

Combination filter:E-P2

Combination filter:B-P2

Hand protection

Advice : Wear suitable gloves.

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 : Fluorinated rubber

Break through time : >= 8 h

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Glove thickness : 0.4 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 : 0.29 ppm

pH : < 1

Melting point/range : no data available

Boiling point/boiling range : no data available

Flash point : not applicable

Evaporation rate : no data available

Flammability (solid, gas) : not applicable

Upper explosion limit : not applicable

Lower explosion limit : not applicable

Vapour pressure : no data available

Relative vapour density : no data available

Relative density : no data available

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Water solubility	:	completely miscible
Partition coefficient: n-octanol/water	:	Kow < 1
Auto-ignition temperature	:	not applicable
Thermal decomposition	:	no data available
Viscosity, dynamic	:	0.75 mPa.s
Explosivity	:	Product is not explosive.
Oxidizing properties	:	Oxidizing agents

9.2. Other information

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

10.1. Reactivity

Advice	:	Stable under recommended storage conditions.
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10.2. Chemical stability

Advice	:	Stable under normal conditions.
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10.3. Possibility of hazardous reactions

Hazardous reactions	:	Gives off hydrogen by reaction with metals. Corrosive in contact with metals
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10.4. Conditions to avoid

Thermal decomposition	:	no data available
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10.5. Incompatible materials

Materials to avoid	:	Reducing agents, Bases, Keep away from combustible material. Protect from contamination. Galvanised metals, Brass
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10.6. Hazardous decomposition products

Hazardous decomposition products	:	nitrous gases, hydrogen
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Section 11: Toxicological information

11.1. Information on toxicological effects

NITRIC ACID 20 - <50%
Acute toxicity
Oral

no data available

Inhalation

no data available

Dermal

no data available

Irritation
Skin

Result : Causes severe burns.

Eyes

Result : Causes eye burns.

Sensitisation

Result : No sensitizing effect known.

CMR effects
CMR Properties

Carcinogenicity : no data available

Mutagenicity : no data available

Teratogenicity : no data available

Reproductive toxicity : no data available

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

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toxicant, repeated exposure.

Other toxic properties

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. Inhalation of vapours in high concentration may cause shortness of breath (lung oedema).

Component:	nitric acid	CAS-No. 7697-37-2
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Irritation

Skin

Result : corrosive effects (rabbit)

Eyes

Result : Causes eye burns.

Section 12: Ecological information

12.1. Toxicity

Component:	nitric acid	CAS-No. 7697-37-2
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Acute toxicity

Fish

LC50 : 12.5 mg/l (Oncorhynchus mykiss (rainbow trout); 96 h)

12.2. Persistence and degradability

Component:	nitric acid	CAS-No. 7697-37-2
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Persistence and degradability

Persistence

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Result : no data available

Biodegradability

Result : The methods for determining the biological degradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Component:	nitric acid	CAS-No.
		7697-37-2

Bioaccumulation

Result : Does not bioaccumulate.

12.4. Mobility in soil

Component:	nitric acid	CAS-No.
		7697-37-2

Mobility

Soil : Not expected to adsorb on soil.

Water : The product is water soluble.

12.5. Results of PBT and vPvB assessment

Component:	nitric acid	CAS-No.
		7697-37-2

Results of PBT and vPvB assessment

Result : not applicable

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.

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Component: nitric acid

CAS-No.
7697-37-2

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. Empty remaining contents. Dilute with water. Neutralize with chalk, alkali solution or ammonia.
- 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

2031

14.2. UN proper shipping name

ADR : NITRIC ACID
RID : NITRIC ACID
IMDG : NITRIC ACID

14.3. Transport hazard class(es)

ADR-Class : 8
(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 : II
RID : II
IMDG : II

14.5. Environmental hazards

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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

:

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.

R 8	Contact with combustible material may cause fire.
R35	Causes severe burns.

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

H272	May intensify fire; oxidiser.
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.

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

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|| 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	Industrial use	3	4, 8, 9, 10, 12, 14, 15, 16	12, 14, 15, 19, 20, 21, 33, 35, 37, 0	1, 2, 3, 4, 5, 7, 8b, 9, 10, 13, 15	2, 4, 6a, 6b, 6d	NA	ES0004590
2	Professional use	22	1, 4, 10, 15, 16, 17, 19, 23, 24	NA	5, 8a, 8b, 9, 10, 11, 13, 15, 19	8a, 8b, 8e	NA	ES0004673

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1. Short title of Exposure Scenario 1: Industrial use

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 SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) SU12: Manufacture of plastics products, including compounding and conversion 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	
Chemical product category	PC12: Fertilizers PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products PC19: Intermediate PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents PC21: Laboratory chemicals PC33: Semiconductors PC35: Washing and cleaning products (including solvent based products) PC37: Water treatment chemicals PC0: Other products:	
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) PROC7: Industrial spraying 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) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers	
2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC6a, ERC6b, ERC6d		
Readily biodegradable.		
Product characteristics	Concentration of the Substance in Mixture/Article	Aqueous preparations contain from 25% up to 75%.

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Frequency and duration of use	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	Risk from exposure via the aquatic environment is driven by effluent releases to freshwater., Neutralization is normally necessary before waste water is discharged into water treatment plants., Do not release undiluted and unneutralized to the sewer.
	Soil	Dyke if necessary.
	Prevent entry into sewers, basements or confined areas. Prevent leaks and prevent soil / water pollution caused by leaks.	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Solutions with low pH-value must be neutralized before discharge.
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	
2.2 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC6a, ERC6b		
Readily biodegradable.		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentrated aqueous solutions contain from 75% up to 100% of substance
Frequency and duration of use	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	Risk from exposure via the aquatic environment is driven by effluent releases to freshwater., Neutralization is normally necessary before waste water is discharged into water treatment plants., Do not release undiluted and unneutralized to the sewer.
	Soil	Dyke if necessary.
	Prevent entry into sewers, basements or confined areas. Prevent leaks and prevent soil / water pollution caused by leaks.	
Conditions and measures related to external treatment of waste for disposal	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	
2.3 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8b, PROC13		
Product characteristics	Concentration of the Substance in Mixture/Article	Aqueous preparations contain from 25% up to 75%.
	Physical Form (at time of use)	liquid
	Vapour pressure	61 hPa
Frequency and duration of use	Exposure duration per day	8 h
	Frequency of use	220 days/year
	Frequency of use	5 days/week
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Observe the usage/storage instructions.	
Technical conditions and measures to control dispersion from source towards the worker	Drain or remove substance from equipment prior to break-in or maintenance. provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	

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	<p>Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation.(PROC1, PROC2, PROC3, PROC4, PROC8b, PROC13)</p> <p>Automate activity where possible.</p> <p>Provide local exhaust ventilation (LEV). (Efficiency: 95 %)(PROC7)</p>
Organisational measures to prevent /limit releases, dispersion and exposure	<p>Ensure that the task is not carried out overhead.</p> <p>Ensure minimization of manual phases</p> <p>Ensure the ventilation system is regularly maintained and tested.</p>
Conditions and measures related to personal protection, hygiene and health evaluation	<p>Avoid frequent and direct contact with substance</p> <p>Do not breathe gas/vapour/aerosol.</p> <p>Wear eye protection/ face protection.</p> <p>Chemically resistant gloves tested to EN374.</p> <p>Avoid contact with skin and mucous membranes.</p> <p>Wear acid-resistant protective clothing.</p> <p>Wear respiratory protection. (Efficiency: 95 %)(PROC7)</p> <p>If no respiratory protection is used</p> <p>Avoid carrying out operation for more than 15 minutes.(PROC7)</p>

2.4 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b, PROC9, PROC13, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Concentrated aqueous solutions contain from 75% up to 100% of substance
	Physical Form (at time of use)	liquid
Frequency and duration of use	Exposure duration per day	8 h
	Frequency of use	220 days/year
	Frequency of use	5 days/week
Other operational conditions affecting workers exposure	<p>Indoor/Outdoor use.</p> <p>Observe the usage/storage instructions.</p>	
Technical conditions and measures to control dispersion from source towards the worker	<p>Drain or remove substance from equipment prior to break-in or maintenance. provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation.(PROC1)</p> <p>Provide local exhaust ventilation (LEV).(except PROC1)</p>	
Organisational measures to prevent /limit releases, dispersion and exposure	<p>Ensure that the task is not carried out overhead.</p> <p>Ensure minimization of manual phases</p> <p>Ensure the ventilation system is regularly maintained and tested.</p>	
Conditions and measures related to personal protection, hygiene and health evaluation	<p>Avoid frequent and direct contact with substance</p> <p>Do not breathe gas/vapour/aerosol.</p> <p>Wear eye protection/ face protection.</p> <p>Chemically resistant gloves tested to EN374.</p> <p>Avoid contact with skin and mucous membranes.</p> <p>Wear acid-resistant protective clothing.</p> <p>Wear air purifying mask APF20(except PROC1)</p> <p>If no respiratory protection is used</p> <p>Avoid carrying out operation for more than 4 hours.(PROC15)</p>	

3. Exposure estimation and reference to its source

Environment

Qualitative approach used to conclude safe use. 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

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Workers

MEASE

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2	See section 2.3	Worker - inhalative, long-term - local	0.001mg/m ³	0.0008
PROC3, PROC8b, PROC13	See section 2.3	Worker - inhalative, long-term - local	0.01mg/m ³	0.0077
PROC4	See section 2.3	Worker - inhalative, long-term - local	0.05mg/m ³	0.0385
PROC7	See section 2.3, With respiratory protection	Worker - inhalative, long-term - local	0.05mg/m ³	0.0385
PROC7	See section 2.3, during <15 mins	Worker - inhalative, long-term - local	0.1mg/m ³	0.077
PROC2	See section 2.4	Worker - inhalative, long-term	0.129mg/m ³	0.1
PROC1	See section 2.4	Worker - inhalative, long-term - local	0.026mg/m ³	0.02
PROC3	See section 2.4	Worker - inhalative, long-term - local	0.322mg/m ³	0.25
PROC4	See section 2.4	Worker - inhalative, long-term - local	0.258mg/m ³	0.2
PROC8b	See section 2.4, With respiratory mask APF 20	Worker - inhalative, long-term - local	0.193mg/m ³	0.15
PROC9, PROC13	See section 2.4	Worker - inhalative, long-term - local	0.644mg/m ³	0.5
PROC15	See section 2.4, With respiratory mask APF 20	Worker - inhalative, long-term	0.129mg/m ³	0.1
PROC8b	See section 2.4, during 15 mins - 1 hour	Worker - inhalative, long-term	0.773mg/m ³	0.60
PROC15	See section 2.4, during 15 mins - 1 hour	Worker - inhalative, long-term	0.515mg/m ³	0.399

Qualitative assessment dermal. If risk reduction measures are taken into account no dermal exposure is expected

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

The product is not expected to harm the environment when used properly according to directions
 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.
 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
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
 For scaling see : <http://www.ebrc.de/ebrc/ebrc-mease.php>
 For scaling see : <http://www.ebrc.de/ebrc/ebrc-mease.php>

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1. Short title of Exposure Scenario 2: Professional use

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU1: Agriculture, forestry, fishery SU4: Manufacture of food products SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) SU15: Manufacture of fabricated metal products, except machinery and equipment SU16: Manufacture of computer, electronic and optical products, electrical equipment SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU19: Building and construction work SU23: Electricity, steam, gas water supply and sewage treatment SU24: Scientific research and development
Process categories	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) 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

Readily biodegradable.

Product characteristics	Concentration of the Substance in Mixture/Article	Aqueous preparations contain from 25% up to 75%.
Frequency and duration of use	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	Risk from exposure via the aquatic environment is driven by effluent releases to freshwater., Neutralization is normally necessary before waste water is discharged into water treatment plants., Do not release undiluted and unneutralized to the sewer.
	Soil	Dyke if necessary.
		Prevent entry into sewers, basements or confined areas. Prevent leaks and prevent soil / water pollution caused by leaks.
Conditions and measures related to sewage treatment plant	The pH of wastewater released from manufacturing sites should be between 6 and 9.	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Solutions with low pH-value must be neutralized before discharge.
	Contain and dispose of waste in accordance with environmental legislation and	

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	according to local regulations.	
2.2 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Aqueous preparations contain from 25% up to 75%.
	Physical Form (at time of use)	liquid
	Vapour pressure	61 hPa
Frequency and duration of use	Exposure duration per day	8 h
	Frequency of use	5 days/week
	Frequency of use	220 days/year
Other operational conditions affecting workers exposure	Indoor/Outdoor use. Observe the usage/storage instructions.	
Technical conditions and measures to control dispersion from source towards the worker	Drain or remove substance from equipment prior to break-in or maintenance. provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Clear spills immediately.	
Organisational measures to prevent /limit releases, dispersion and exposure	Consider technical advances and process upgrades (including automation) for the elimination of releases. Ensure operatives are trained to minimise exposures. Ensure the ventilation system is regularly maintained and tested. Ensure minimization of manual phases	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN374. Wear eye protection/ face protection. Wear respiratory protection. Avoid direct eye contact with product, also via contamination on hands. Wear acid-resistant protective clothing. Avoid contact with skin and mucous membranes. Do not breathe gas/vapour/aerosol. Wear suitable respiratory protection (Efficiency: 97 %)(PROC11)	
2.3 Contributing scenario controlling worker exposure for: PROC11		
Product characteristics	Concentration of the Substance in Mixture/Article	Aqueous preparations contain from 25% up to 75%.
	Physical Form (at time of use)	liquid
	Vapour pressure	61 hPa
Frequency and duration of use	Exposure duration per day	4 h
	Frequency of use	5 days/week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain or remove substance from equipment prior to break-in or maintenance. Clear spills immediately.	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure operatives are trained to minimise exposures. Consider technical advances and process upgrades (including automation) for the elimination of releases. Ensure the ventilation system is regularly maintained and tested. Ensure minimization of manual phases	
Conditions and measures related to personal protection, hygiene	Wear respiratory protection. (Efficiency: 95 %)	
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and health evaluation

Wear acid-resistant protective clothing.
Wear suitable gloves (tested to EN374), coverall and eye protection.
Avoid direct eye contact with product, also via contamination on hands.
Avoid contact with skin and mucous membranes.
Do not breathe gas/vapour/aerosol.
Wear eye protection/ face protection.

3. Exposure estimation and reference to its source

Environment

Qualitative approach used to conclude safe use. 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

Workers

MEASE

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC5	---	Worker - inhalative, long-term - local	0.1mg/m ³	0.08
PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19	---	Worker - inhalative, long-term - local	0.05mg/m ³	0.04
PROC11	See section 2.2	Worker - inhalative, long-term - local	0.5mg/m ³	0.38
PROC15	---	Worker - inhalative, long-term - local	0.01mg/m ³	0.01
PROC11	See section 2.3	Worker - inhalative, long-term - local	0.6mg/m ³	0.46

Qualitative assessment dermal. If risk reduction measures are taken into account no dermal exposure is expected

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

The product is not expected to harm the environment when used properly according to directions
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.
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
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see : <http://www.ebrc.de/ebrc/ebrc-mease.php>