

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830

SÜDDEUTSCHE  
**RADORA**  
ERZEUGNISSE

## RADORA-B CLEANÄTZ

Material number R001

Revision date: 7/6/2016  
Version: 5

Language: en-GB,IE

Date of print: 16/3/2017  
Page: 1 of 11

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

### 1.1 Product identifier

Trade name: RADORA-B CLEANÄTZ

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

General use: Glass clearing agent  
Reserved for industrial and professional use.

### 1.3 Details of the supplier of the safety data sheet

Company name: Süddeutsche RADORA Erzeugnisse  
Chemische Fabrik · Klaus Messmer  
Street/POB-No.: Kindlebildstraße 52  
Postal Code, city: 78467 Konstanz  
Germany  
WWW: www.radora.de  
E-mail: info@radora.de  
Telephone: +49 (0)7531-7 71 36  
Telefax: +49 (0)7531-7 31 93  
Dept. responsible for information:  
Herr Klaus Messmer  
Email: info@radora.de  
Telephone: + 49 (0)7531-7 71 36

### 1.4 Emergency telephone number

Herr Klaus Messmer Telephone: + 49 (0)7531-7 71 36

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### Classification according to EC regulation 1272/2008 (CLP)

Acute Tox. 2; H310 Fatal in contact with skin.  
Acute Tox. 3; H301 Toxic if swallowed.  
Acute Tox. 3; H331 Toxic if inhaled.  
Skin Corr. 1B; H314 Causes severe skin burns and eye damage.  
Aquatic Chronic 3; H412 Harmful to aquatic life with long lasting effects.

### 2.2 Label elements

#### Labelling (CLP)



Signal word:

**Danger**

Hazard statements: H301 Toxic if swallowed.  
H310 Fatal in contact with skin.  
H314 Causes severe skin burns and eye damage.  
H331 Toxic if inhaled.  
H412 Harmful to aquatic life with long lasting effects.

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Precautionary statements: P234	Keep only in original container.
P260	Do not breathe fume/gas/mist/vapours/spray.
P262	Do not get in eyes, on skin, or on clothing.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep 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.
P310	Immediately call a POISON CENTER/doctor.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P501	Dispose of contents/container to hazardous or special waste collection point.

### Special labelling

Text for labelling: Contains Hydrofluoric acid 3,2-3,4 %.

### 2.3 Other hazards

Danger of cutaneous absorption.  
Symptoms may occur with delay.

Results of PBT and vPvB assessment:

No data available

## SECTION 3: Composition / information on ingredients

3.1 Substances: not applicable

### 3.2 Mixtures

Chemical characterisation: Hydrofluoric acid (HF), aqueous solution

Hazardous ingredients:

Ingredient	Designation	Content	Classification
REACH 01-2119458860-33-xxxx EC No. 231-634-8 CAS 7664-39-3	Hydrofluoric acid	3.2 - 3.4 %	Acute Tox. 2; H300. Acute Tox. 1; H310. Acute Tox. 2; H330. Skin Corr. 1A; H314.
EC No. 231-847-6 CAS 7758-99-8	Copper sulphate-5-hydrate	< 1 %	Acute Tox. 4; H302. Skin Irrit. 2; H315. Eye Irrit. 2; H319. Aquatic Acute 1; H400. Aquatic Chronic 1; H410.

Full text of H- and EUH-statements: see section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

General information: First aider: Pay attention to self-protection! Suitable protective clothing. Consult immediately first-aid doctor. Symptoms may occur with delay.

Take off immediately all contaminated clothing.  
Put victim at rest and keep warm.

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- In case of inhalation: Move victim to fresh air; if necessary, provide artificial respiration or oxygen. Seek medical attention immediately. Keep airway open. If victim is at risk of losing consciousness, position and transport on their side.
- Following skin contact: Rinse with plenty of water for at least 10 minutes. Call a physician in any case! Apply calcium gluconate gel and massage into the skin until the pain subsides, rinse with water and apply fresh gel. Continue gel therapy for at least another 15 minutes after pain has subsided. Preparation Ca-gluconatgel: boil 5 g of calcium gluconate in 85 ml of hot distilled water, add 10 g glycerol and allow 5 g of Tylose C600 to swell in the hot solution. Keep in a cool place. Shelf life: 6 months). If no Ca-gluconate gel is available, apply several dressings thoroughly moistened with calcium gluconate solution 20%.
- After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. Subsequently seek the immediate attention of an ophthalmologist.
- After swallowing: Immediately get medical attention. Do not induce vomiting.  
Caution: Risk of perforation in case of vomiting!  
Immediately give victim repeatedly drink plenty of water, add calcium (as calcium gluconate or calcium lactate).  
As a laxative, affected person should drink sodium sulfate (1 tablespoon in 1/4 L water).

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

Collapse, spasms, cardiovascular disorders, liver and kidney damage.

In case of inhalation:

burns, damage of respiratory tract, bronchitis, pneumonia, pulmonary oedema.

Inhalation may have lethal effect.

In case of ingestion: Burns in the mouth, pharynx, oesophagus, and gastrointestinal tract.

Pain, nausea, vomiting with blood, spasms.

Risk of perforation in the oesophagus and stomach.

Risk of resorption. May be fatal if swallowed.

After contact with skin: Burns. Danger of cutaneous absorption. Necrosis, pain.

After penetration of the material tendency of poor wound-healing.

In case of extensive skin contact serious poisoning possible, which may be fatal.

After eye contact: burns. Risk of corneal clouding.

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

It is recommended to consult a doctor experienced in the treatment of lesions caused by hydrofluoric acid. If a systemic action is suspected, monitoring and treatment in an intensive care unit is urgently required.

Caution: Ventricular fibrillation due to electrolyte imbalance.

Attention: several hours latency period. Countermeasurements must be implemented at once.

Treatment with Ca-Gluconate solution.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media:

Product is non-combustible. Extinguishing materials should therefore be selected according to surroundings.

### 5.2 Special hazards arising from the substance or mixture

Fires in the immediate vicinity may cause the development of dangerous vapours.

Release of: hydrogen fluoride. Seal off endangered area.

Hydrogen may form upon contact with metals (danger of explosion!).

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### 5.3 Advice for firefighters

Special protective equipment for firefighters:

Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information:

Hazchem-Code: 2X

Suppress gases/vapours/mists with water spray jet. Cool endangered containers with water spray and, if possible, remove from danger zone. Do not allow water used to extinguish fire to enter drains, ground or waterways.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Keep unprotected people away.

Remove persons not involved upwind.

On demand: Wear a self-contained breathing apparatus and chemical protective clothing.

Avoid contact with the substance. Do not breathe vapours.

Plug leak if safely possible.

### 6.2 Environmental precautions

Do not allow to penetrate into soil, waterbodies or drains.

If necessary notify appropriate authorities.

### 6.3 Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents) and place in closed containers for disposal. Render harmless: Treat with a mixture of lime in sodium carbonate solution (precipitation as calcium fluoride).

In case of spills of large quantities: Contact expert.

### 6.4 Reference to other sections

Refer additionally to section 8 and 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advices on safe handling:

When not in use, keep containers tightly closed.

The material is to be handled with extreme caution.

Wear appropriate protective equipment.

Make sure there is sufficient air exchange and / or that working rooms are air suctioned.

Avoid aerosol and mist formation.

Avoid contact with liquid and vapour.

Handle and open container with care. Extract vapours by suction at point of emission.

Keep limited supplies at workplace.

Have a breathing apparatus that is not dependent on the circulating air ready for emergencies.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:

Provide acid resistant flooring.

Only use containers specifically approved for the substance/product.

Keep only in the original container in a cool, well-ventilated place.

Keep container tightly closed and dry.

Hints on joint storage:

Avoid contact with strong alkalis, oxidizing agents and surface-active agents.

Further details:

Only trained personnel may be allowed to enter storage area.

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### 7.3 Specific end use(s)

No information available.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
7664-39-3	Hydrofluoric acid	Europe: IOELV: STEL	2.5 mg/m <sup>3</sup> ; 3 ppm (hydrogen fluoride)
		Europe: IOELV: TWA	1.5 mg/m <sup>3</sup> ; 1.8 ppm (hydrogen fluoride)
		Great Britain: WEL-STEL	2.5 mg/m <sup>3</sup> ; 3 ppm (hydrogen fluoride, calculated as F)
		Great Britain: WEL-TWA	1.5 mg/m <sup>3</sup> ; 1.8 ppm (hydrogen fluoride, calculated as F)
		Ireland: 15 minutes	2.5 mg/m <sup>3</sup> ; 3 ppm (hydrogen fluoride, May be absorbed through the skin.)
		Ireland: 8 hours	1.5 mg/m <sup>3</sup> ; 1.8 ppm (hydrogen fluoride, May be absorbed through the skin.)
7758-99-8	Copper sulphate-5-hydrate	Great Britain: WEL-STEL	2 mg/m <sup>3</sup> Dusts and mist calculated as Cu
		Great Britain: WEL-TWA	0.2 mg/m <sup>3</sup> Smoke
		Great Britain: WEL-TWA	1 mg/m <sup>3</sup> Dusts and mist calculated as Cu
		Ireland: 15 minutes	2 mg/m <sup>3</sup> Dusts and mist calculated as Cu
		Ireland: 8 hours	0.2 mg/m <sup>3</sup> Smoke
		Ireland: 8 hours	1 mg/m <sup>3</sup> Dusts and mist calculated as Cu

Biological limit values:

CAS No.	Designation	Type	Limit value	Parameter	Sampling
7664-39-3	Hydrofluoric acid	Europe: BLV, urine	8 mg/L	Hydrogen fluoride (HF)	end of exposure or end of shift

DNEL/DMEL:

Information about Hydrogen fluoride anhydrous:

Systemic effects:

DNEL short-term, workers, inhalative: 2.5 mg/m<sup>3</sup>,

DNEL long-term, workers, inhalative: 1.5 mg/m<sup>3</sup>,

DNEL short-term, consumer, inhalative: 0.03 mg/m<sup>3</sup>,

DNEL long-term, consumer, inhalative: 0.03 mg/m<sup>3</sup>,

DNEL short-term, consumer, oral: 0.01 mg/kg bw/d,

DNEL long-term, consumer, oral: 0.01 mg/kg bw/d,

Effects local:

DNEL short-term, workers, inhalative: 2.5 mg/m<sup>3</sup>,

DNEL long-term, workers, inhalative: 1.5 µg/m<sup>3</sup>,

DNEL short-term, consumer, inhalative: 1.25 mg/m<sup>3</sup>,

DNEL long-term, consumer, inhalative: 0.2 mg/m<sup>3</sup>.

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PNEC: Information about Hydrogen fluoride anhydrous:  
PNEC water (freshwater): 0.9 mg/L (based on NOEC: 8,9 mg/L)  
PNEC water (marine water): 0.9 mg/L  
PNEC STP water (intermittent release): 51 mg/L (based on NOEC: 510 mg/L)  
PNEC soil: 11 mg/kg soil/dw (based on biological nitrification: 106 mg/kg)

### 8.2 Exposure controls

The substance should only be handled in closed apparatus or systems.  
Execute works under fume hood. Avoid generation of vapours/aerosols.  
Provide good ventilation and/or an exhaust system in the work area.

### Personal protection equipment

#### Occupational exposure controls

Respiratory protection: Respiratory protection must be worn whenever the WEL levels have been exceeded.  
Use filter type E-P2/P3 according to EN 14387. Carry along escape equipment (self rescuer).

Have a breathing apparatus that is not dependent on the circulating air ready for emergencies.

Hand protection: protective gloves according to EN 374.  
Glove material: Fluororubber (Viton) (0,4 mm).  
Breakthrough time:  $\geq$  480 min.  
By short-term hand contact Butyl caoutchouc (butyl rubber) (0,5 mm, max. 240 min).  
Unsuitable materials: natural rubber, Nitrile rubber.  
Observe glove manufacturer's instructions concerning penetrability and breakthrough time. Protective gloves have to be replaced at the first sign of deterioration.

Eye protection: Tightly sealed goggles according to EN 166 or face protection shield.

Body protection: Acid-proof protective clothing, rubber boots

General protection and hygiene measures:

Avoid contact with skin and eyes. When using do not eat or drink.

Take off immediately all contaminated clothing.

After work, wash hands and face.

Safety shower and eye wash station should be easily accessible to the work area.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance:	Form: liquid Colour: violet
Odour:	weak stinging
Odour threshold:	No data available
pH value:	$\leq$ 1.0
Melting point/freezing point:	approx. 0 °C
Initial boiling point and boiling range:	approx. 100 °C
Flash point/flash point range:	not combustible
Evaporation rate:	No data available
Flammability:	No data available
Explosion limits:	No data available
Vapour pressure:	No data available
Vapour density:	No data available
Density:	approx. 1 g/mL
Water solubility:	at 20 °C: soluble

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Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity, kinematic:	No data available
Explosive properties:	Product is not explosive.
Oxidizing characteristics:	No data available

### 9.2 Other information

Additional information: Odour threshold: 0,03 - 0,13 mg/m<sup>3</sup> (hydrogen fluoride)

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Hydrogen may form upon contact with metals (danger of explosion!).

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Violent reaction with Chlorosulfonic acid and sulphuric acid.

### 10.4 Conditions to avoid

Keep away from heat.

### 10.5 Incompatible materials

Acids, metals, strong alkalis, oxidizing agents, solvents,

### 10.6 Hazardous decomposition products

In case of fire may be liberated: hydrogen fluoride

Thermal decomposition: No data available

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Toxicological effects: The statements are derived from the properties of the single components. No toxicological data is available for the product as such.  
Acute toxicity (oral): Acute Tox. 3; H301 = Toxic if swallowed.  
ATEmix calculated: 167 mg/kg  
Acute toxicity (dermal): Acute Tox. 2; H310 = Fatal in contact with skin.  
ATEmix calculated: > 167 mg/kg  
Acute toxicity (inhalative): Acute Tox. 3; H331 = Toxic if inhaled.  
ATEmix calculated: > 8,8 mg/L  
Skin corrosion/irritation, eye damage/irritation: Skin Corr. 1B; H314 = Causes severe skin burns and eye damage.  
Sensitisation to the respiratory tract: Lack of data.  
Skin sensitisation: Lack of data.  
Germ cell mutagenicity/Genotoxicity: Lack of data.  
Carcinogenicity: Lack of data.  
Reproductive toxicity: Lack of data.  
Effects on or via lactation: Lack of data.  
Specific target organ toxicity (single exposure): Lack of data.  
Specific target organ toxicity (repeated exposure): Lack of data.  
Aspiration hazard: Lack of data.

Other information: Attention: several hours latency period. Countermeasurements must be implemented at once.

### Symptoms

Collapse, spasms, cardiovascular disorders, liver and kidney damage.  
In case of inhalation:  
burns, damage of respiratory tract, bronchitis, pneumonia, pulmonary oedema.  
Inhalation may have lethal effect.  
In case of ingestion: Burns in the mouth, pharynx, oesophagus, and gastrointestinal tract.  
Pain, nausea, vomiting with blood, spasms.  
Risk of perforation in the oesophagus and stomach.  
Risk of resorption. May be fatal if swallowed.  
After contact with skin: Burns. Danger of cutaneous absorption. Necrosis, pain.  
After penetration of the material tendency of poor wound-healing.  
In case of extensive skin contact serious poisoning possible, which may be fatal.  
After eye contact: burns. Risk of corneal clouding.

## SECTION 12: Ecological information

### 12.1 Toxicity

Aquatic toxicity: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
Toxic effect on fishes and plankton. Harmful effects by modification of pH-value.  
Forms corrosive mixtures with water even if diluted.  
Hydrofluoric acid: Fish toxicity: lethal at  $\geq 60$  mg/L.

### 12.2. Persistence and degradability

Further details: No data available



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Effects in sewage plants: Do not release undiluted and unneutralized to the sewer.

### 12.3 Bioaccumulative potential

None.

Partition coefficient: n-octanol/water:

No data available

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

No data available

### 12.6 Other adverse effects

General information: Do not allow to enter into ground-water, surface water or drains. Danger to drinking water.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Waste key number: 06 01 03\* = Hydrofluoric acid

\* = Evidence for disposal must be provided.

Recommendation: Neutralize larger quantities with lime or other alkalis. Dispose of in accordance with local, state, and federal regulations. Dispose of waste according to applicable legislation.

#### Contaminated packaging

Waste key number: 15 01 02 = Plastic packaging

Recommendation: Dispose of waste according to applicable legislation.  
Handle contaminated packages in the same way as the substance itself.

## SECTION 14: Transport information

### 14.1 UN number

ADR/RID, IMDG, IATA-DGR:

UN 1790

### 14.2 UN proper shipping name

ADR/RID, IMDG, IATA-DGR:

UN 1790, Hydrofluoric acid

### 14.3 Transport hazard class(es)

ADR/RID: Class 8, Code: CT1

IMDG, IATA-DGR: Class 8, Subrisk 6.1

### 14.4 Packing group

ADR/RID, IMDG, IATA-DGR:

II

### 14.5 Environmental hazards

Marine pollutant: no



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### 14.6 Special precautions for user

#### Land transport (ADR/RID)

Warning board: ADR/RID: Kemmler-number 86, UN number UN 1790  
Hazard label: 8+6.1  
Limited quantities: 1 L  
EQ: E2  
Contaminated packaging - Instructions: P001 IBC02  
Special provisions for packing together: MP15  
Portable tanks - Instructions: T8  
Portable tanks - Special provisions: TP2  
Tank coding: L4DH  
Tunnel restriction code: E  
Remarks: ADR/RID: The Limited Quantity specifies the inner packaging size. The gross package may not exceed a mass of 30kg (trays: 20kg).

#### Sea transport (IMDG)

EmS: F-A, S-B  
Special provisions: -  
Limited quantities: 1 L  
Excepted quantities: E2  
Contaminated packaging - Instructions: P001  
Contaminated packaging - Provisions: PP81  
IBC - Instructions: IBC02  
IBC - Provisions: B20  
Tank instructions - IMO: -  
Tank instructions - UN: T8  
Tank instructions - Provisions: TP2  
Stowage and handling: Category D. SW1 SW2 H2  
Properties and observations: Colourless liquid with an irritating odour. Highly corrosive to glass, other siliceous materials and most metals. Toxic if swallowed, by skin contact or by inhalation. Both the liquid and its fumes cause severe burns to skin, eyes and mucous membranes.

Segregation group: 1

#### Air transport (IATA)

Hazard label: Corrosive & Toxic  
Excepted Quantity Code: E2  
Passenger and Cargo Aircraft: Ltd.Qty.: Pack.Instr. Y840 - Max. Net Qty/Pkg. 0.5 L  
Passenger and Cargo Aircraft: Pack.Instr. 851 - Max. Net Qty/Pkg. 1 L  
Cargo Aircraft only: Pack.Instr. 855 - Max. Net Qty/Pkg. 30 L  
Emergency Response Guide-Code (ERG): 8P

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

No data available

## SECTION 15: Regulatory information

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

#### National regulations - Great Britain

Hazchem-Code: 2X  
No data available

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### 15.2 Chemical Safety Assessment

For this mixture a chemical safety assessment is not required.

## SECTION 16: Other information

### Further information

Wording of the H-phrases under paragraph 2 and 3:

H300 = Fatal if swallowed.  
H301 = Toxic if swallowed.  
H302 = Harmful if swallowed.  
H310 = Fatal in contact with skin.  
H314 = Causes severe skin burns and eye damage.  
H315 = Causes skin irritation.  
H319 = Causes serious eye irritation.  
H330 = Fatal if inhaled.  
H331 = Toxic if inhaled.  
H400 = Very toxic to aquatic life.  
H410 = Very toxic to aquatic life with long lasting effects.  
H412 = Harmful to aquatic life with long lasting effects.

Literature: :

Reason of change: Changes in section 2: classification, labelling  
Changes in section 3: Information on ingredients  
General revision

Date of first version: 27/2/2012

### Department issuing data sheet

Contact person: see section 1: Dept. responsible for information

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.

