

### EC Safety Data Sheet

**BEGO Bremer Goldschlägerei Wilh. Herbst GmbH & Co.**

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#### 1. Product and company identification

*Data on product*

Name of product: **Minoxyd**

*Data on manufacturer/supplier*

Manufacturer/supplier: BEGO Bremer Goldschlägerei Wilh. Herbst GmbH & Co.  
Street/P.O. box: Wilhelm-Herbst-Strasse 1  
Nat. postal code/town: D-28359 Bremen  
Country: Germany  
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Dept. providing information: Material Development  
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#### 2. Composition / information on components

*Chemical characterization of specific substance*

Designation	CAS No.	EC No.	EC Index No.
Potassium hydroxide	1310-58-3	216-181-3	019-002-00-8
Potassium fluoride	7789-23-3	232-151-5	009-005-00-2

Component	Hazard symbols	R provisions	Total formula
Potassium hydroxide	C	R 22-35	KOH
Potassium fluoride	T	R 23/24/25	FK

*Chemical characterization of product*

Description: Complex mixture, contains potassium hydroxide and potassium fluoride  
Hazardous components: potassium hydroxide, potassium fluoride

Component	Concentration	Hazard symbols	R provisions
Potassium hydroxide	< 35%	C	R 22-35
Potassium fluoride	< 20%	Xn	R 20/21/22

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## 3. Possible risks

### *Designation of hazards*

Hazard identification:   C    caustic  
                              Xn   harmful to health

### *Special indications of risk for people and environment*

Harmful to health if inhaled, swallowed and touched with the skin. Causes severe acid burns.

### *Specific risks*

Possible harmful impact on people and possible symptoms:

Acid burns must be treated immediately, otherwise wounds that are difficult to heal result. Skin contact and inhalation of aerosols/vapours of the preparation should be avoided. During work wear suitable protective clothing, safety gloves and safety goggles / face screen.

## 4. First aid measures

### *General instructions*

Call in physician immediately. In case of risk of unconsciousness, place and transport person in a lateral recovery position. Remove dirty, soaked clothing immediately. In the event of contact with the eyes, rinse thoroughly with water and consult a physician. In the case of an accident or indisposition, call in a physician at once (if possible, show this label). In case of cessation of breathing, place person in dorsal position, overstretch head, mouth-to-nose respiration. Do not carry out mouth-to-mouth respiration.

### *After inhalation*

Remove person to fresh air at once. In case of cessation of breathing, carry out artificial respiration. In event of difficulty with breathing, administration of oxygen if necessary. Keep person warm. Have person rest. Call in physician immediately.

### *After skin contact*

In case of contact with the skin, wash off with plenty of water for at least 15 minutes. Dab with polyethylene glycol 400. Remove contaminated clothing at once. In any case call in physician. Acid burns that are not treated lead to wounds that are difficult to heal.

### *After eye contact*

In the event of contact with the eyes, rinse eyes under running water with eyelids open for at least 15 minutes. Consult an eye doctor at once.

### *After swallowing*

Do not induce vomiting. Immediately rinse mouth thoroughly with water. Have person drink plenty of water (at least 0.5 l) in small sips (dilution effect). Obtain medical assistance at once. Rest, warmth, place and transport person in lateral recovery position.

## 5. Fire-fighting measures

### *Suitable extinguishing agents*

CO<sub>2</sub>, fire extinguishing powder, water mist or foam. Adapt fire-fighting measures to surroundings. Suppress vapours with spray jet.

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*Special risk due to substance or the product itself, its products of combustion or resulting gases, further information*

The product itself is not combustible. Hazardous vapours may form due to ambient fire. In the event of fire, hydrogen fluoride (HF) may be released. In case of contact with light metals, hydrogen gas may form (risk of explosion).

*Special protective equipment for fire fighting*

Use suitable breathing apparatus that is independent of ambient air. Use protective clothing for fire-fighting so as to avoid skin and eye contact. Stay in the danger zone only with suitable, impervious chemical protection suit.

*Other instructions*

Avoid penetration of fire-fighting water in surface waters or groundwater.

## 6. Measures in the event of unintentional release

*Personal precautionary measures*

Avoid contact with substance. Do not pick up with unprotected hands. Wear protective clothing in accordance with section 8 of this safety data sheet.

*Environmental protection measures*

Do not allow to enter sewer system or waterbodies.

*Cleaning/collection procedure*

Collect with liquid-binding material (e.g. sand, clay mineral, diatomaceous earth, vermiculite, universal binder). Put leaky receptacles, residues and contaminated material in identified and sealable containers. If necessary, clean again. Disposal as waste in accordance with section 13 of this safety data sheet.

## 7. Handling and storage

*Handling – instructions for safe handling*

Only use in well ventilated areas. Keep work area well ventilated when soldering. Suction-extract and discharge safely vapours/aerosols directly at the site of generation. Do not allow paste to dry out. Avoid contact with eyes and skin. Do not inhale gas/smoke/vapour/aerosol.

*Handling – instructions regarding fire and explosion protection*

The product is not combustible. Keep away from ignition sources – do not smoke.

*Storage – storeroom and container requirements*

Keep under lock and key. Keep containers tightly sealed and store in a cool, dry and well ventilated place. Unsuitable material for containers/equipment: aluminium, tin or zinc. VCI storage class: LGK8BS – Non-combustible caustic substances (solid).

## 8. Exposure control and personal protective equipment

*Components with workplace-related or biological limit values that must be monitored*

Maximum permissible workplace concentration (MPWC) for fluorides (calculated as fluorine): 2.5 mg/m<sup>3</sup> breathable dust portion

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## *Limitation and monitoring of exposure*

See section 7. No measures beyond that are necessary.

## *Personal protective equipment*

### *Respiratory protection*

Respiratory protection is necessary if there is increased concentration in the air and dust is generated.

Type of mask: full mask (DIN EN 136) or half-mask (DIN EN 140).

Respiratory protection filter: filter class E 2 (acid gases) or P2 (particles).

### *Hand protection*

Use solvent-resistant safety gloves made of NBR (nitrile rubber) or butyl (butyl rubber) with at least 10 cm long sleeve.

### *Eye protection*

Tightly sealing safety goggles with lenses made of safety glass.

### *Body protection*

Wear alkali-resistant, impervious protective work clothing. Protective aids for the body are to be selected depending on the concentration and amount of hazardous substance and according to the specific workplace. Pay attention to chemical resistance of the protective aids (suppliers).

### *General safety and hygienic measures*

Avoid contact with eyes, skin and clothing. Remove contaminated and/or soaked clothing at once. Keep away from food. Do not eat, drink, smoke or take snuff during work. Wash hands before breaks and at the end of work. Preventive skin protection by means of protective skin ointment. Further suitable skin care measures according to code of practice "Skin protection" of the employer's liability insurance association (e.g. BG Chemie [employer's liability insurance association for chemical industry] No. M 042). Minimum standards for protective measures when handling working substances are listed in TRGS 500 (Technical Rules for Hazardous Substances).

## **9. Physical and chemical properties**

### *Appearance*

State: pasty, viscous

Colour: brown

Odour: odourless

### *Important data on health and environmental protection and on safety*

pH value: approx. 14

Flash point: not applicable

Risk of explosion: not applicable

Density: 1.4 g/cm<sup>3</sup> (20°C)

Aqueous solubility: approx. 50 g/l (20°C)

	Melting temperature	Boiling temperature
Potassium hydroxide	360°C	1320°C
Potassium fluoride	approx. 855°C	1500°C

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## 10. Stability and reactivity

### *Conditions to be avoided*

Do not allow paste to dry out. No further data available.

### *Substances to be avoided*

Materials containing glass and silicate are corroded. In case of contact with metals and light metals: formation of hydrogen fluoride. Pay attention to pungent odour!

Ammonium compounds; organic combustible substances; alkaline earth metals; halogens, halogen compounds and halogen hydrocarbons; non-metallic oxide halogenides, halogen oxides; organic nitro compounds; phosphorous; non-metallic oxides; hydrocarbons; acid anhydrides; strong acids.

### *Hazardous decomposition products*

No decomposition known given proper use. Reaction with strong acids: formation of hydrogen fluoride. Suction-extract vapours and discharge safely. Decomposition products in event of fire: see section 5.

### *Further information*

Dry product is extremely hygroscopic. Extremely exothermic solution reaction with water, incompatible with metals, various plastics, glass, animal/plant fibres.

## 11. Toxicological information

The product has a caustic and harmful effect on the mucous membranes of the eyes and the respiratory organs. In the event of skin injuries and mucous membrane contact, toxic and caustic effect must be expected; if swallowed, damage in the gastrointestinal tract and intoxication must be expected. Harmful if swallowed, inhaled or in the case of contact with the skin.

### *Acute toxicity*

LD<sub>50</sub> (oral, rat): 744 mg/kg

Literature data LD<sub>50</sub> (oral, rat)

Potassium hydroxide 273 mg/kg

Potassium fluoride 245 mg/kg

### *Primary irritating effect – potassium hydroxide*

Skin, human 50 mg/24 h

Skin, rabbit 50 mg/24 h

Skin, guinea pig 50 mg/24 h

Eye, rabbit 1 mg/24 h

### *Specific symptoms in animal experiment*

Test for skin irritation (rabbit): acid burns

Test for eye irritation (rabbit): acid burns

### *Subacute to chronic toxicity*

Sensitization test (guinea pig): not skin-sensitizing

### *Bacterial mutagenicity*

Escherichia coli: negative

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## *Further toxicological information*

### *After inhalation*

Causes acid burns to the mucous membrane and may be harmful if inhaled. Inhalation may lead to spasms, inflammation and oedema of larynx and bronchial tubes, chemical pneumonia and pulmonary oedema. Extremely damaging effect on the tissue of the mucous membranes and upper respiratory tracts as well as on eyes and skin.

### *After skin contact*

Causes acid burns and may be harmful in the event of intake via the skin.

### *After eye contact*

Causes acid burns. Risk of corneal clouding. Risk of blindness!

### *After swallowing*

Causes acid burns and is harmful if swallowed in the mouth, throat, oesophagus and gastrointestinal tract. Tissue damage. Risk of perforation for oesophagus and stomach.

### *After resorption*

Spasms, unconsciousness, cardiac dysrhythmia, cessation of breathing, shock. If allowed to react for a longer period: damage to bone marrow. For soluble inorganic fluorides the following generally applies. Contact with eyes, skin and mucous membranes leads to irritation or even acid burns. Symptoms of excessive exposure to fluorides are salivation, nausea, vomiting, abdominal pains, fever and shortness of breath. Systemic effect of fluoride ions: reduction of blood serum-calcium level with risk of fatal hypocalcaemia, agitation, spasms, cardiovascular disorders, central nervous system disorders. Exposure to fluoride dust, vapours or mist for a longer period leads to perforation of the nasal septum. Chronic effects include excessive calcification of the bones, ligaments and tendons.

### *Organs affected*

Kidneys, heart, bones, nerves, gastrointestinal tract, teeth

### *Further information*

The product must be handled with special care.

## **12. Ecological information**

### *Ecotoxic effects*

Harmful effect on water organisms. Toxic effect on fish and plankton. Harmful effect due to pH shift. In spite of dilution, still forms caustic mixtures with water. Does not cause any biological oxygen depletion. Neutralization possible in treatment plants. Hazardous for drinking water. Do not allow to enter waterbodies, sewer system or soil!

### *Biological effects – data for potassium fluoride*

Data for potassium hydroxide

Fish toxicity:                      Gambusia affinis                      LC<sub>50</sub> > 80 mg/l (96 h)

Data for potassium fluoride

Fish toxicity:                      fish    LC<sub>50</sub> > 2.3 mg/l

Protozoa                              Entosiphon sulcatum                      EC<sub>5</sub>: 101 mg/l

### *Further ecological information*

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Biological effects for inorganic fluorides (all data as sodium fluoride):

Fish toxicity:	L. idus	LC <sub>50</sub> = 660 mg/L
Bacterial toxicity:	Ps. putida	toxic from 231 mg/l and up
Algae toxicity:	Sc. quadricauda	toxic from 249 mg/l and up
Protozoa toxicity:	E. sulcatum	toxic from 101 mg/l and up
	U. parduczci	toxic from 71 mg/l and up

## *Biological degradability*

Methods for determination of biodegradability are not applicable for inorganic substances.

## *Behaviour in the environment*

Accumulation in organisms is not expected.

## **13. Disposal considerations**

### *Product*

Uniform regulations on disposal of chemicals in the Member States of the EU do not exist. In Germany the requirement of recycling is stipulated by the Closed Substance Cycle and Waste Management Act. The waste producer has to differentiate between "wastes for recycling" and "wastes for disposal" and carry out waste determination according to defined rules. This determination is geared to the material characteristics and in particular to the origin of the wastes. Furthermore, additional special features regarding the implementation of disposal are regulated by the German *Länder*. It is recommended that contact be made with the authorities and/or waste management companies and further information be obtained on recycling or disposal.

### *Waste regulations according to Ordinance on the List of Wastes (AVV)*

Due to the hazardous components, the wastes require special monitoring. Accountability for disposal. Proposals for waste determination:

Waste group 06 02      Wastes from production, preparation, distribution and use of bases

Waste key	Waste designation
06 02 04*	sodium hydroxide and potassium hydroxide
06 02 05*	other bases

### *Packaging*

Disposal according to the provisions of the waste law. Packaging contaminated with the product is considered to be waste requiring special monitoring.

Waste key	Waste designation
15 01 10*	Packaging that contains residues of hazardous substances or is contaminated with hazardous substances.

If not expressly stipulated, non-contaminated packaging can be recycled without documentary proof.

## **14. Transport information**

*Overland transport: Road transport ADR/GGVSE and rail transport RID/GGVSE*

UN no.:	2923
Designation of product:	CORROSIVE SOLID, TOXIC, N.O.S. (potassium hydroxide and

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potassium fluoride  
Class: 8  
Classification code: CT2  
Packaging group: II  
Hazard label: 8 + 6.1  
Hazard identification no.: 86  
Remark: Product is pasty in accordance with 2.3.4 ADR/RID

## *Inland shipping transport (ADNI/ADNR)*

UN no.: 2923  
Designation of product: CORROSIVE SOLID, TOXIC, N.O.S. (potassium hydroxide and potassium fluoride)  
Class: 8  
Classification code: CT2  
Packaging group: II  
Hazard label: 8 + 6.1  
Remark: Product is pasty in accordance with 2.3.4 ADR/RID

## *Maritime shipping transport (IMDG code)*

UN no.: 2923  
Proper Shipping Name: CORROSIVE SOLID, TOXIC, N.O.S. (potassium hydroxide and potassium fluoride)  
Class: 8  
Packaging group: II  
EmS no.: 8-15  
Marine pollutant: No  
Hazard identification: 8 + 6.1  
Remark: Product is pasty in accordance with 2.3.4 ADR/RID (not a liquid substance in accordance with 1.2.1 IMDG code)

## *Air transport (ICAO-TI/IATA-DGR)*

UN / ID no.: 2923  
Designation of product: CORROSIVE SOLID, TOXIC, N.O.S. (contains potassium hydroxide and potassium fluoride)  
Proper Shipping Name: CORROSIVE SOLID, TOXIC, N.O.S. (potassium hydroxide and potassium fluoride)  
Class: 8  
Packaging group: II  
Hazard identification: corrosive (RCM), toxic (RPB)  
Remark: Product is pasty in accordance with 2.3.4 ADR/RID (not a liquid substance in accordance with Annex A IATA-DGR)

## *Further information*

The product is not approved for postal delivery.

## **15. Regulatory information**

The product was classified according to the specifications of the Dangerous Substance Directive (EC Directive 1999/45/EEC). Hazard-determining component for labelling: potassium hydroxide (caustic C), potassium fluoride (toxic, T).

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## *Labelling according to EC directives*

Hazard symbols:	C	caustic
	Xn	harmful to health
R provisions:	R 35	Causes severe acid burns.
	R 20/21/22	Harmful if inhaled or swallowed and in case of contact with skin.
S provisions:	S (1/2)	Keep under lock and key such that inaccessible to children (if designed for the general public).
	S 26	In the event of contact with the eyes, rinse thoroughly with water at once and consult a physician.
	S 28	In the event of contact with the skin, wash off with plenty of water at once.
	S 36/37/39	During work wear suitable protective clothing, safety gloves and safety goggles / face screen.
	S 45	In event of accident or indisposition call in physician immediately (show this label if possible).
	S 61	Avoid release into the environment. Obtain special instructions / consult safety data sheet.

## *German regulations*

The national legal regulations must additionally be observed!

Employment restriction:	Comply with Section 22 of Youth Employment Protection Law (JarbSchG) and Section 5 of Maternity protection Guideline Regulation (MuSchRiv)!
Hazardous Incident Ordinance:	Product is not subject to Hazardous Incident Ordinance.
Classification acc. to VbF:	Product is not subject to VbF.
Clean Air Directive:	Not applicable.
Water hazard class:	WGK 1 (low degree of water endangerment) classification of the components in accordance with Administrative Regulation on the Classification of Substances Hazardous to Waters (VwVwS), Annex 2 potassium hydroxide (identification no. 345: WGK 1) potassium fluoride (identification no. 341: WGK 1)

## *Other national regulations*

Swiss toxin class: 3

## *Miscellaneous regulations, restrictions and prohibitory regulations*

VCI storage class:	LGK8BS – Non-combustible caustic substances (solid)
BG-Chemie codes of practice:	M004 Irritating substances / caustic substances
	M005 Hydrogen fluoride, hydrofluoric acid and inorganic fluorides
	M050 Handling harmful substances
	M051 Hazardous chemical substances
Application restrictions:	The product may be used exclusively as a flux for soldering dental alloys in the dental laboratory.

## **16. Other information**

Data sheet issued by: Material Development Department

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Contact person:	Dr. Thomas Wiest
Reasons for change:	Complete revision
Revised on:	20.12.2002
Replaces issue dated:	22.11.1999

The data are based on the current level of our knowledge. They are intended in particular to describe our product with regard to the hazards related to its use and the safety precautions to be taken. They do not represent any guarantee of product and quality characteristics.