

# Safety data sheet

according to Regulation (EC) No. 1907/2006 and (EU) 2020/878



**Trade name:** Fibre sleeve EXO

**Revised on:** 30/06/2023

**Print date:** 30/06/2023

**Version:** DE 2.0

**Replaces version** DE 1.0

## 1. Designation of the product and company name

### 1.1 Name of the product:

**Designation on the label / trade name:**

Fibre sleeve EXO

**Other designations:**

Exothermic / insulating riser systems; cold box bonded moulding

Note:

The product is not subject to registration according to REACH Regulation, Article 2(7).

### 1.2 Use of the product:

#### 1.2.1 Identified uses:

The product (material) is intended for professional use.

Auxiliary for the foundry industry, for use in the production of risers

#### 1.2.2 Uses advised against:

Uses outside of the identified uses.

No applications in the private sector.

### 1.3 Identification of the company:

**Supplier (manufacturer / dealer):**

For Germany / EU domestic:

GTP Schäfer GmbH  
Benzstrasse 15  
41515 Grevenbroich  
Germany

**Email (competent person):**

[info@gtp-schaefer.de](mailto:info@gtp-schaefer.de)

**Contact point for information:**

GTP Schäfer GmbH  
Benzstrasse 15  
41515 Grevenbroich  
Germany

Phone: +49 2181 233 94-0

Fax: +49 2181 233 94-55

Email: [info@gtp-schaefer.de](mailto:info@gtp-schaefer.de)

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## 1.4 Emergency number:

GTP Schäfer GmbH  
Benzstrasse 15  
41515 Grevenbroich

Phone: +49 2181 233 94-0 (This number is only available during office hours.)

Mobile: +49 172 2026764

## 2. Possible hazards

### 2.1 Classification:

This product (material) contains hazardous ingredients or mixtures (see chapter 3.2) which are not intended to be released under normal or reasonably foreseeable conditions of use.

The product (material) is not classified as hazardous within the meaning of Ordinance (EG) 1272/2008 and is not included under the labelling area of this ordinance; there are also not sufficient data available for classification.

### 2.2 Additional hazard warnings for humans and the environment:

The product (material) releases hazardous substances when thermally decomposed as intended.

Depending on the specific reaction conditions and in some cases during the casting process alone or in contact with water, acids or alkalis, nitrous gases (nitrogen oxides), hydrogen, carbon monoxide / carbon dioxide, soot, hydrocarbons, formaldehyde, phenol or ammonia may be formed.

Avoid release to the environment in excess of immission control limits for the intended use.

May cause harmful effects if swallowed, inhaled or if in contact with skin.

The products are difficult to extinguish after ignition (high fire temperature).

## 3. Composition / information on the ingredients:

### 3.1 Product information:

#### Description:

Fibre sleeve (cold-box bonded moulding (material)) of aluminium powder, aluminium oxide, calcium oxide, magnesium oxide, phenol formaldehyde resin, silicon dioxide (silica sand), organic binders and other fillers; the product is free from fluorine, ceramic fibres and asbestos mixture.

### 3.2 Hazardous ingredients:

| Chemical name                              | CAS No.:  | EC no.:   | INDEX No.:   | REACH Reg. no.:   | Content (%) | Classification according to Ordinance (EG) 1272/2008 |                                                               |                              | Identification | Safety instructions                                             | Remark               |
|--------------------------------------------|-----------|-----------|--------------|-------------------|-------------|------------------------------------------------------|---------------------------------------------------------------|------------------------------|----------------|-----------------------------------------------------------------|----------------------|
|                                            |           |           |              |                   |             | Signal values                                        | Category                                                      | Hazard warnings H-statements |                |                                                                 |                      |
| Aluminium foil grit (powder, phlegmatised) | 7429-90-5 | 231-072-3 | 013-002-00-1 | 01-21195294 3-45  | 10-25       | Hazard                                               | Flam. Solid 1; Water React. Flam. Gas 2                       | H228 H261                    | GHS02          | 210, 233, 280 402+404                                           | Exists in bound form |
| Calcium oxide                              | 1305-78-8 | 215-138-9 | n/a          | 01-21194753 25-36 | 2 - 4       | Hazard                                               | Skin Irrit. 2; Eye Damage 1; STOT Single Exp. 3 (Resp. tract) | H315 H318 H335               | GHS05 GHS07    | 102, 280, 302+352, 304+340, 305+351+338, 310, 501               | Exists in bound form |
| Phenol formaldehyde                        | 9003-35-4 | 500-005-2 | n/a          | 01-21207351 97-51 | < 5         | Caution:                                             | Skin Sens. 1; Eye Irrit. 2                                    | H317 H319                    | GHS07          | 261, 264, 272, 280, 302+352, 305+351+338, 333+313, 337+313, 363 | Exists in bound form |
|                                            |           |           |              |                   |             |                                                      |                                                               |                              |                |                                                                 |                      |

n/a = no information

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## No hazardous ingredients:

| Chemical name                 | CAS No.:   | EC no.:   | INDEX No.: | REACH Reg. no.:  | Content (%) | Classification according to Ordinance (EG) 1272/2008 |          |                             | Identification Pictogram | Safety instructions P-statements | Remark               |
|-------------------------------|------------|-----------|------------|------------------|-------------|------------------------------------------------------|----------|-----------------------------|--------------------------|----------------------------------|----------------------|
|                               |            |           |            |                  |             | Signal values                                        | Category | Hazard notices H-statements |                          |                                  |                      |
| Aluminium oxide               | 1344-28-1  | 215-691-6 | n/a        | 01-2119529248-35 | 40-45       | n/a                                                  | n/a      | n/a                         | n/a                      | n/a                              | Exists in bound form |
| Magnesium oxide               | 1309-48-4  | 215-171-9 | n/a        | n/a              | 1.5 - 3     | n/a                                                  | n/a      | n/a                         | n/a                      | n/a                              | Exists in bound form |
| Silicon dioxide (quartz sand) | 14808-60-7 | 238-878-4 | n/a        | 01-2120770509-45 | ≤ 40        | n/a                                                  | n/a      | n/a                         | n/a                      | 260.270, 314                     | Exists in bound form |

n/a = no information

**3.3 Remark:** Classifications not completely written out in this section are listed in chapter 16, as well as safety instructions for the ingredients used.

## 4. First aid measures:

### 4.1 General information:

Even if the product (substance) is not classified as dangerous, first aid and medical treatment may be required in case of accidents (e.g. intake) and even if poisoning is suspected.

### 4.2 In case of inhalation:

After inhalation of thermal decomposition products (e.g. nitrous gases, carbon monoxide/dioxide, hydrocarbons, ammonia, formaldehyde, phenol, hydrogen), remove the affected person to fresh air and keep calm.

In case of irritation of the respiratory tract / breathing difficulties, consult a doctor immediately.

### 4.3 In case of contact with the skin:

In case of skin contact, wash thoroughly with plenty of soap and water.

Remove wetted clothing, paying attention to protection of self.

In case of skin reactions, redness or pain, consult a doctor.

### 4.4 In case of contact with eyes:

In case of contact with eyes (dusts/thermal decomposition products), immediately rinse with running water for 10 to 15 minutes with the eyelids open and consult an ophthalmologist. For contact lens wearers, remove contact lenses immediately and rinse eyes.

If eye irritation occurs, consult an ophthalmologist.

### 4.5 In case of swallowing:

If large quantities of dust are swallowed or inhaled, have them drink immediately.

Do not induce vomiting.

If swallowed, rinse the mouth with plenty of water (only if the person is conscious) and get medical help immediately.

### 4.6 Self-protection of the first aider:

When rescuing from a danger area: Pay attention to self-protection!

### 4.7 Information for the doctor:

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## Symptoms:

After inhalation of dust:

Calcium oxide: Burning in nose and throat, coughing fits, shortness of breath, development of toxic pulmonary oedema with restriction, increasing dyspnoea, cyanosis.

After inhalation of thermal decomposition products:

Nitrous Oxides: Depending on the concentration, rapid narcotic effect up to oxygen deprivation symptoms. The development of pneumonia (with or without preceding pulmonary oedema) can still occur after 10-30 days as a late consequence of acute poisoning. Damage to the blood count / neurological damage.

Magnesium oxide smoke: weak irritant effect on mucous membranes of the respiratory tract (irritable bronchitis), gastrointestinal disorders, metal smoke fever symptoms

Formaldehyde: Irritation of the nasopharyngeal mucous membranes (burning, sneezing, rhinitis), possibly asthma attacks

Phenol: Irritation of the nose and throat

Ammonia: Cough, breathing difficulties, nausea, feeling sick, later inflammation of the respiratory tract.

## In case of contact with the skin:

Calcium oxide: Blisters, erosion, swelling and liquefaction of affected tissue parts

Formaldehyde: concentration/time-dependent irritation to burns, allergic skin reactions

Phenol: Reddening/whitening of the contact site, later necrotisation

Ammonia: Irritation to burns

## In case of contact with eyes:

Calcium oxide: Opacity, corneal perforation, iris and vitreous damage, loss of vision

Magnesium oxide: slight redness and minor conjunctival irritation

Formaldehyde: mild, reversible irritation up to permanent corneal lesion

Phenol: Corneal opacity

Ammonia: Tear irritation, burning / stabbing pain in the eye

After ingestion:

Calcium oxide: Swelling of affected oral and pharyngeal mucosa, pain in the upper abdomen

Magnesium oxide: Nausea, vomiting, drop in blood pressure

Formaldehyde: depending on concentration, irritation to burns of the mucous membranes with abdominal pain, retching cramps, cyanosis

Phenol: Burning and cauterisation of the mucous membranes, stomach pain, nausea, diarrhoea.

Ammonia: Burns in mouth/throat/ stomach/intestine (risk of perforation)

## Hazards:

See symptoms

## Treatment:

The following literature sources, as well as other information, can provide information on treatment by a doctor:

BGHM: Nitrous gases in welding and allied processes; 02-2017; DGUV-Information 209-047

BG-Information "Nitric Acid Nitrogen Oxides, Nitrous Gases" 03-1998, ZH 1/214

IFA-DGUV-Gestis substance database

Kühn / Birett

Treat symptomatically

## **5. Fire-fighting measures**

### **5.1 Suitable extinguishing agents:**

Sand, dry extinguishing agent

Cover with the aforementioned extinguishing agents and allow to react in a controlled manner, as far as this is possible without danger.

### **5.2 Unsuitable extinguishing agents for safety reasons:**

Water: when extinguishing with water, danger of formation of hydrogen due to violent chemical reactions with aluminium / high combustion temperature

Carbon dioxide extinguishing gases: Decomposition process continues auto-oxidatively.

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## 5.3 Special hazards caused by substances or mixtures contained /the product itself, its combustion products or resulting gases:

Heating or thermal decomposition may result in the release of toxic / corrosive gases or vapours.

See also chapter 2.2

## 5.4 Special protective equipment for fire fighting:

Use suitable respirator (filter types A, B, K, NO-P2 or combination filter ABEK-P2)

If necessary, wear self-contained respirator.

Wear suitable personal protective equipment when fighting fires.

## 5.5 Additional information:

Decomposition processes also continue under water.

Strong exothermic decomposition.

Secure the source of the fire and allow it to burn down in a controlled manner.

Collect contaminated extinguishing water separately. Do not allow to enter drains, soil or bodies of water.

Cool surrounding areas if possible.

The product continues to burn independently.

## 6. Measures in case of unintentional release:

### 6.1 Safety measures related to persons:

Avoid contact with eyes, inhalation and ingestion of dusts; dust mask recommended.

Avoid the formation of dust; vacuum up dust without raising dust.

Keep ignition sources away.

### 6.2 Environmental protection measures:

If necessary, feed any thermal decomposition products produced to an effective exhaust air purification system.

Do not allow product or product residues to enter drains, water bodies or soil.

Ensure waste is collected and stored securely in closed containers.

### 6.3 Procedure for cleaning:

Do not rinse away with water or aqueous cleaning agents, hydrogen evolution may occur.

Collect mechanically (avoid the development of dust) and place in suitable containers for disposal.

Treat the material taken up according to the section Disposal.

### 6.4 Additional information:

Attention is drawn to the observance of the protective measures in Chapters 7, 8 and 13.

## 7. Handling and storage:

### 7.1 Handling:

Only remove the packaging in layers immediately before use.

Observe product information / technical data sheet

Handle products carefully - fragile!

### 7.1.1 Advice for safe handling:

Only intended use, e.g. in metallurgical processes, is permissible.

Avoid dust formation.

Keep away from water.

Ensure effective technical extraction during intended use.

The usual precautionary measures when handling chemicals / hazardous substances must be observed.

Wash hands and face thoroughly before breaks and at the end of work.

#### Safety measures:

#### Technical measures:

Measures to prevent aerosol and dust formation:

Handle products in a way that avoids abrasion and dust formation (e.g. no pouring handling).

Measures to protect the environment:

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Effectively extract any thermal decomposition products that arise and, if necessary, feed them to an exhaust air purification system. Treat product residues in accordance with legal regulations.

## **Specific requirements or handling rules:**

Do not eat, drink, smoke or have a cold in the workplace.

Wash hands and/or face before breaks and after work.

Keep away from food, drink and animal feed.

Do not inhale dusts and thermal decomposition products.

Only use the product in quantities corresponding to operational requirements.

## **7.1.2 Information about fire and explosion protection:**

Protect from impermissible heat exposure.

Keep away from sources of ignition - No smoking, no naked flame

Do not store in the immediate vicinity of the casting line or melting and furnace equipment.

Avoid dust deposits / remove dust deposits regularly.

Observe the usual preventive fire protection measures.

## **7.2 Storage:**

### **7.2.1 Technical measures and storage conditions:**

Keep away from sources of ignition - No smoking, no naked flame

Do not carry out high temperature work

Store in tightly closed containers in a cool and dry place.

### **7.2.2 Packing materials:**

Store only in original packaging (cardboard trays).

### **7.2.3 Requirements for storage rooms and containers:**

No special requirements; do not store outside; dry storage.

### **7.2.4 Notes on storage together:**

Do not store together with:

food and feed

Explosive substances (Storage class 1)

Highly flammable substances (storage class 5.1A)

Contaminable substances (storage class 6.2)

Radioactive substances (Storage class 7)

Do not store together with strong acids and alkalis. Store separately from oxidising agents and reducing agents.

Observation of restrictions and requirements for combined storage according to TRGS 509 / TRGS510 with:

Compressed, liquefied or gases dissolved under pressure (storage class 2A)

Flammable liquid or explosive substances (storage class 3A)

Explosive solids (Storage class 4.1A)

Substances liable to spontaneous combustion (storage class 4.2)

Substances which, in contact with water, emit flammable gases (storage class 4.3)

Flammable substances (storage class 5.1 B)

Flammable substances containing ammonium nitrate (storage class 5.1 C)

Organic peroxides (storage class 5.2)

Flammable highly acute toxic substances (cat. 1 and 2) (storage class 6.1A)

Non-flammable highly acute toxic substances (cat. 1 and 2) (storage class 6.1 B)

Flammable corrosive substances (storage class 8 A)

Non-flammable corrosive substances (storage class 8 B)

Flammable liquids (storage class 10)

Flammable solids (storage class 11)

Non-flammable liquids in non-flammable packaging (storage class 12)

Non-flammable solids in non-flammable packaging (storage class 13)

### **7.2.5 Further information on storage conditions:**

Storage temperature (°C): + 5 to + 30 °C

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Rel. Humidity (%): Store dry / protect from moisture  
 Storage stability: No information  
 Maximum storage period: Max. recommended storage period is 1 year. Experience has shown that the product can also be used beyond the specified maximum storage period. A warranty for the guaranteed product properties cannot be assumed after the maximum storage period has expired.  
 Storage class: 4.3 - Substances which form flammable gases in contact with water (acc. to TRGS 509 / TRGS 510) (recommended)

## 7.2.6 Specific use:

Recommendation: Observe product information / technical data sheet

## 8. Limitation and monitoring of exposure / personal protective equipment:

### 8.1 Exposure limits:

#### 8.1.1 Components with workplace limit values to be monitored or biological limit values:

##### 8.1.1.1 Occupational exposure limits:

Related to thermal decomposition products / dust emissions

Air limits:

| Limit type<br>(country of origin) | Working material                                         | EC no.    | CAS no.    | Occupational exposure limit |                           | Recommended monitoring procedures | Peak limit                                                      | Source |
|-----------------------------------|----------------------------------------------------------|-----------|------------|-----------------------------|---------------------------|-----------------------------------|-----------------------------------------------------------------|--------|
|                                   |                                                          |           |            | inhalable aerosol fraction  | alveolar aerosol fraction |                                   |                                                                 |        |
| Germany                           | Dusts (for dusts with a density of 1 g/cm <sup>3</sup> ) | n/a       | n/a        | 4 mg/m <sup>3</sup>         | 0.3 mg/m <sup>3</sup>     | n/a                               | No exceeding of the level of twice the general dust limit value | DFG    |
| Germany                           | Aluminium (powder)                                       | 231-072-3 | 7429-90-5  | 4 mg/m <sup>3</sup>         | 1.5 mg/m <sup>3</sup>     | n/a                               | No exceeding of the level of twice the general dust limit value | DFG    |
| Germany                           | Aluminium oxide                                          | 215-691-6 | 1344-28-1  | 4 mg/m <sup>3</sup>         | 1.5 mg/m <sup>3</sup>     | n/a                               | 15 min, max. 4 times / shift, interval 1 h                      | DFG    |
| Germany                           | Calcium oxide                                            | 215-138-9 | 1305-78-8  | 1 mg/m <sup>3</sup>         | 1 mg/m <sup>3</sup>       | n/a                               | 15 min, max. 4 times / shift, interval 1 h                      | DFG/EU |
| Germany                           | Magnesium oxide (dust)                                   | 215-171-9 | 1309-48-4  | 4 mg/m <sup>3</sup>         | 0.3 mg/m <sup>3</sup>     | n/a                               | None Exceeding the level of twice the general dust limit value  | DFG    |
|                                   |                                                          |           |            |                             |                           |                                   |                                                                 |        |
| Limit type<br>(country of origin) | Working material                                         | EC no.    | CAS no.    | Occupational exposure limit |                           | Recommended monitoring procedures | Peak limit                                                      | Source |
|                                   |                                                          |           |            | Long-term                   | Short-term                |                                   |                                                                 |        |
| Germany                           | Nitrous oxide (nitrous gases)                            | 233-032-0 | 10024-97-2 | 180 mg/m <sup>3</sup>       | 360 mg/m <sup>3</sup>     | n/a                               | 15 min, max. 4 times / shift, interval 1 h                      | DFG    |

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|---------------------------------------------|-----------------|-----------|-----------|-------------------------|--------------------------|-----|--------------------------------------------|----------|
| Germany                                     | Phenol          | 203-632-7 | 108-95-2  | 8 mg/m <sup>3</sup>     | 16 mg/m <sup>3</sup>     | n/a | 15 min, max. 4 times / shift, interval 1 h | TRGS 900 |
| Germany                                     | Formaldehyde    | 200-001-8 | 50-00-0   | 0.37 mg/m <sup>3</sup>  | 0.74 mg/m <sup>3</sup>   | n/a | 15 min, max. 4 times / shift, interval 1 h | DFG      |
| Germany                                     | Ammonia         | 231-635-3 | 7664-41-7 | 14 mg/m <sup>3</sup>    | 28 mg/m <sup>3</sup>     | n/a | 15 min, max. 4 times / shift, interval 1   | DFG      |
| Germany                                     | Carbon monoxide | 211-128-3 | 630-08-0  | 35 mg/m <sup>3</sup>    | 70 mg/m <sup>3</sup>     | n/a | 15 min, max. 4 times / shift, interval 1 h | DFG      |
| Germany                                     | Carbon dioxide  | 204-696-9 | 124-38-9  | 9,100 mg/m <sup>3</sup> | 18,200 mg/m <sup>3</sup> | n/a | 15 min, max. 4 times / shift, interval 1 h | DFG      |
| No adequate product-related data available. |                 |           |           |                         |                          |     |                                            |          |

n/a = no information

When burning products made of fibre sleeve EXO, the formation of nitrous gases, ammonia, phenol and formaldehyde could be detected. Whether the occupational exposure limit values are exceeded when using products made of fibre sleeve EXO depends strongly on the conditions. Verification of compliance with occupational exposure limits is recommended at least at first use.

## Biological limits:

| Limit type (country of origin)              | Working material   | EC no.    | CAS no.   | Parameter                 | Limit value        | Test material | Source | Remark                                       |
|---------------------------------------------|--------------------|-----------|-----------|---------------------------|--------------------|---------------|--------|----------------------------------------------|
| Germany                                     | Phenol             | 203-632-7 | 108-95-2  | Phenol (after hydrolysis) | 200 mg/l           | Urine         | DFG    | at the end of the shift                      |
| Germany                                     | Aluminium (powder) | 231-072-3 | 7429-90-5 | Aluminium                 | 50 µg/g Creatinine | Urine         | DFG    | at the end of the shift (long-term exposure) |
| Germany                                     | Carbon monoxide    | 211-128-3 | 630-08-0  | CO-Hb                     | 5%                 | Blood         | DFG    | at the end of the shift                      |
| No adequate product-related data available. |                    |           |           |                           |                    |               |        |                                              |

n/a = no information

## 8.1.1.2 DNEL- and PNEC values:

| DNEL employees                              |                    |                              |                        |                                      |
|---------------------------------------------|--------------------|------------------------------|------------------------|--------------------------------------|
| Exposure route                              | Duration of action | Endpoint effect              | Value                  | Remark                               |
| inhalative / systemic and local             | Long-term          | repeated exposure            | 3.72 mg/m <sup>3</sup> | Related to aluminium powder          |
| inhalative / systemic and local             | Long-term          | repeated exposure            | 3 mg/m <sup>3</sup>    | Related to aluminium oxide           |
| inhalative / local                          | Short-term         | Irritation respiratory tract | 4 mg/m <sup>3</sup>    | Related to calcium oxide             |
| inhalative / local                          | Long-term          | Irritation respiratory tract | 1 mg/m <sup>3</sup>    | Related to calcium oxide             |
| inhalative / systemic                       | Long-term          | Fertility                    | 98.7 mg/m <sup>3</sup> | Related to phenol formaldehyde resin |
| dermal / systemic                           | Long-term          | Fertility                    | 28 mg/kg bw/day        | Related to phenol formaldehyde resin |
| No adequate product-related data available. |                    |                              |                        |                                      |

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| DNEL User/consumer                          |                    |                              |                        |                                      |
|---------------------------------------------|--------------------|------------------------------|------------------------|--------------------------------------|
| Exposure route                              | Duration of action | Endpoint effect              | Value                  | Remark                               |
| inhalative / systemic                       | Long-term          | repeated exposure            | 7.9 mg/kg bw/day       | Related to aluminium powder          |
| inhalative / systemic and local             | Long-term          | repeated exposure            | 0.75 mg/m <sup>3</sup> | related to aluminium oxide           |
| oral / systemic and local                   | Long-term          | Neurotoxicity                | 1.32 mg/kg bw/d        | related to aluminium oxide           |
| inhalative / local                          | Short-term         | Irritation respiratory tract | 4 mg/m <sup>3</sup>    | Related to calcium oxide             |
| inhalative / local                          | Long-term          | Irritation respiratory tract | 1 mg/m <sup>3</sup>    | Related to calcium oxide             |
| inhalative / systemic                       | Long-term          | Fertility                    | 17.4 mg/m <sup>3</sup> | Related to phenol formaldehyde resin |
| dermal / systemic                           | Long-term          | Fertility                    | 10 mg/kg bw/day        | Related to phenol formaldehyde resin |
| oral systemic                               | Long-term          | Fertility                    | 10 mg/kg bw/day        | Related to phenol formaldehyde resin |
|                                             |                    |                              |                        |                                      |
| No adequate product-related data available. |                    |                              |                        |                                      |

| PNEC                                        |                                     |                         |                                      |
|---------------------------------------------|-------------------------------------|-------------------------|--------------------------------------|
| Protection target                           | Estimation factor for extrapolation | Value                   | Remark                               |
| Freshwater                                  | 100                                 | 0.37 mg/L               | Related to calcium oxide             |
| Seawater                                    | 100                                 | 0.24 mg/L               | Related to calcium oxide             |
| Sewage treatment plant                      | 100                                 | 2.27 mg/L               | Related to calcium oxide             |
| Soil organisms                              | 1                                   | 817.4 mg/kg soil dw     | Related to calcium oxide             |
| Freshwater                                  | 1000                                | 0.1 mg/L                | Related to phenol formaldehyde resin |
| Seawater                                    | 10000                               | 0.01 mg/L               | Related to phenol formaldehyde resin |
| Freshwater sediment                         |                                     | 6.73 mg/kg sediment dw  | Related to phenol formaldehyde resin |
| Seawater sediment                           |                                     | 0.673 mg/kg sediment dw | Related to phenol formaldehyde resin |
| Soil organisms                              |                                     | 1.29 mg/kg soil dw      | Related to phenol formaldehyde resin |
|                                             |                                     |                         |                                      |
| No adequate product-related data available. |                                     |                         |                                      |

bw = body weight (body weight)  
dw = dry weight

## 8.2 Limitation and monitoring of exposure:

### 8.2.1 Limitation and monitoring of exposure at the workplace:

#### Product-related measures to prevent exposure:

Only intended , identified use permitted. Safety instructions for handling are given in Chapter 16.

#### Instructional measures to avoid exposure:

Only intended , identified use permitted. Safety instructions for handling the individual components are given in Chapter 16.

#### Organisational measures to avoid exposure:

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Only intended , identified use permitted. It must be determined whether the occupational exposure limits are complied with.

## Technical measures to avoid exposure:

See Chapter 7. No additional measures are required.

Technical measures and the use of suitable work processes have priority over the use of personal protective equipment. Good ventilation (without dust whirling up), e.g. by local extraction, is recommended.

## Personal protective equipment:

Respiratory protection: Normally no personal respiratory protection is required.

### Respiratory protection is required for:

If technical extraction or ventilation measures are not possible or insufficient, respiratory protection must be worn (thermal decomposition products / dust).

Exceedance of the respective occupational exposure limit concentration of thermal decomposition products / dust.

### For riser production:

Filter unit with filter or blower filter unit type: P2 or FFP2

### Intended use:

Filter unit with filter or blower filter unit type:

Filter types A, B, K, NO-P2 / combination filter ABEK-P2 or fan-assisted breathing apparatus (at least TH2P).

Self-contained breathing apparatus:

Use at concentrations above the application limit of filter devices, at oxygen contents below 17 vol% or in unclear conditions.

The wearing time limits according to GefStoffV in connection with the rules for the use of respirators (BGR 190) must be observed.

### Hand protection:

Normally no hand protection necessary.

The use of water-insoluble skin protection products is recommended.

### When used as intended and frequent hand contact:

Gloves for protection against mechanical hazards according to DIN EN 388

In case of heavy sweating: Chemical protection glove according to DIN EN 374 and cotton glove liners

It is recommended to clarify the suitability of the respective protective gloves with the glove manufacturer.

The wearing time limits according to GefStoffV in connection with the rules for the use of protective gloves (BGR 195) must be observed.

### Eye protection:

In case of dust accumulation: Dust goggles with side protection (according to EN 166).

### Body protection:

Not required. Normal long-sleeved work clothes are sufficient.

Observe other workplace-related requirements for work clothing.

### Hygiene:

Hands, forearms and face should be washed after handling the product, especially before breaks or at the end of work activities.

## 8.2.2 Limitation and monitoring of environmental exposure:

### Product-related measures to avoid exposure:

No special measures required, but see sections 6 and 7.

### Instructional measures to avoid exposure:

Handle product (material) only within the scope of its intended, identified use.

### Organisational measures to avoid exposure:

Low-dust handling.

Only use the product (material) in the required quantities.

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## Technical measures to avoid exposure:

Use only under effective technical exhaust ventilation.

Effective extraction of thermal decomposition products at the point of origin.

## 9. Physical and chemical properties:

### 9.1 General information

Appearance: Product defined form

State of aggregation: firm      Colour: light brown      Odour: odourless

### 9.2 Important health, safety and environmental information:

Exothermic decomposition of the product after ignition without melting with possible release of e.g. CO, CO<sub>2</sub>, NO<sub>x</sub>, HCHO, phenol, soot, as well as harmful dust.

### 9.3 Safety-relevant basic data:

|                                                    | Value                         | Method    | Remark                                                                                         |
|----------------------------------------------------|-------------------------------|-----------|------------------------------------------------------------------------------------------------|
| pH value (20°C):                                   | No information                |           |                                                                                                |
| Melting point / range (°C):                        | No information                |           |                                                                                                |
| Boiling point / range (°C):                        | > 999                         |           |                                                                                                |
| Flash point (°C):                                  | Not applicable                |           |                                                                                                |
| Ignition temperature (°C):                         | 370                           | DIN 51794 | Product is not self-igniting                                                                   |
| Vapour pressure:                                   | Not applicable                |           | Not applicable, as composed of non-volatile inorganic and high molecular weight organic solids |
| Density (g/cm <sup>3</sup> ) at 20 °C:             | 0.600 – 0.700                 | DIN 51757 |                                                                                                |
| Bulk density (kg/m <sup>3</sup> ):                 | Not determined                |           |                                                                                                |
| Water solubility (20°C in g/l):                    | practically insoluble         |           | Solubility of inorganic components to be expected                                              |
| Partition coefficient n-octanol / water (log Pow): | Not determined                |           |                                                                                                |
| Viscosity, dynamic (mPa*s):                        | Not applicable                |           | Not applicable, as solid                                                                       |
| Dust explosion ability:                            | Product is not dust explosive |           |                                                                                                |
| Explosive limits                                   | Not applicable                |           |                                                                                                |
| Lower:                                             |                               |           |                                                                                                |
| Upper:                                             |                               |           |                                                                                                |

### 9.4 Other information:

Corrosion behaviour was not investigated.

## 10. Stability and reactivity:

### 10.1 Conditions to avoid:

The product is chemically stable under normal ambient conditions (room temperature).

Storage in a humid environment favours the formation of hydrogen.

### 10.2 Substances to avoid:

Reacts with oxidising agents with violent heat generation.

Reacts with water to form hydrogen.

Reacts with acid to produce heat and possibly hydrogen.

See also chapter 7.2.4.

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## 10.3 Hazardous decomposition products:

nitrous gases (nitrogen oxides)

Hydrogen

Carbon monoxide / dioxide

Carbon black

Phenol

Formaldehyde

Ammonia

Exposure limit values for individual substances are listed in chapter 8.

## 11. Toxicological information

### 11.1 Toxicokinetics, metabolism and distribution:

Human toxicological data:

|                                                                         | Effective dose | Species | Method | Remark |
|-------------------------------------------------------------------------|----------------|---------|--------|--------|
| No sufficient, product-related, classification-relevant data available. |                |         |        |        |

### 11.2 Acute effects (toxicological effects):

|                                                                         | Effective dose                                  | Species | Method   | Remark                               |
|-------------------------------------------------------------------------|-------------------------------------------------|---------|----------|--------------------------------------|
| Acute oral toxicity                                                     | LD <sub>50/14d</sub> : >15,900 mg/kg            | Rat     | OECD 401 | Related to aluminium powder          |
| Acute oral toxicity                                                     | LD <sub>50/14d</sub> : >10,000 mg/kg            | Rat     | OECD 401 | Related to aluminium oxide           |
| Acute oral toxicity                                                     | LD <sub>50/14d</sub> : >2,000 mg/kg             | Rat     | OECD 425 | Related to calcium oxide             |
| Acute oral toxicity                                                     | LD <sub>50/14d</sub> : >5,000 mg/kg             | Rat     | n/a      | Related to phenol formaldehyde resin |
| Acute dermal toxicity                                                   | LD <sub>50</sub> : > 2,000 mg/kg                | Rat     | n/a      | Related to phenol formaldehyde resin |
| Acute inhalation toxicity:                                              | LC <sub>50/4h</sub> : > 888 mg/m <sup>3</sup>   | Rat     | OECD 403 | Related to aluminium powder          |
| Acute inhalation toxicity:                                              | LC <sub>50/4h</sub> : > 2,300 mg/m <sup>3</sup> | Rat     | OECD 403 | Related to aluminium oxide           |
| No sufficient, product-related, classification-relevant data available. |                                                 |         |          |                                      |

n/a = no information

### Specific target organ toxicity (STOT) at single exposure:

No sufficient, product-related, classification-relevant data available.

### Irritation and corrosion:

|                                     | Exposure duration      | Species                  | Valuation                                                     | Method                  | Remark                               |
|-------------------------------------|------------------------|--------------------------|---------------------------------------------------------------|-------------------------|--------------------------------------|
| Primary irritant effect on the skin | 24 / 72 h              | Rabbit                   | No or slight skin irritation; not relevant for classification | OECD 404                | Related to aluminium oxide           |
| Primary irritant effect on the skin | 24 / 48 / 72 h         | Rabbit                   | No irritation                                                 | OECD 404                | Related to calcium oxide             |
| Primary irritant effect on the skin | 1 h                    | In vitro epidermal cells | No irritation                                                 | OECD 439                | Related to phenol formaldehyde resin |
| Irritation of the eyes              | 24- / 48- / 72-h / 7-d | Rabbit                   | Eye redness; not relevant for classification                  | FDA-Draize test in-vivo | Related to aluminium oxide           |
| Irritation of the eyes              | 1 sec.                 | Rabbit                   | Category 1 (risk of serious eye damage)                       | OECD 405                | Related to calcium oxide             |

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|                                                                         |     |        |                   |     |                                      |
|-------------------------------------------------------------------------|-----|--------|-------------------|-----|--------------------------------------|
| Irritation of the eyes                                                  | 7 d | Rabbit | Slightly irritant | n/a | Related to phenol formaldehyde resin |
| No sufficient, product-related, classification-relevant data available. |     |        |                   |     |                                      |

n/a = no information

## Oral toxicity:

No sufficient, product-related, classification-relevant data available.

## Dermal toxicity:

Contact with dust causes irritation of the skin and mucous membranes.

## Inhalation toxicity:

Inhalation of dusts can lead to irritation of the respiratory tract (nose and throat) and breathing difficulties.

## Irritation of the eyes:

No sufficient product-related data available; contact with dust can cause mechanical irritation and injury.

## Sensitisation:

In case of contact with the skin:

No sufficient, product-related, classification-relevant data available.

Phenol formaldehyde resin:

Sensitising (contact dermatitis, detected in an in vivo patch test (non-LLNA))

In case of inhalation:

No sufficient, product-related, classification-relevant data available.

## Aspiration hazard:

In case of inhalation: No sufficient, product-related, classification-relevant data available.

## Toxicity after repeated exposure (subacute, subchronic, chronic):

No sufficient, product-related, classification-relevant data available.

## Specific target organ toxicity (STOT) at repeated exposure:

No sufficient, product-related, classification-relevant data available.

## CMR effects (carcinogenic, mutagenic and toxic for reproduction):

Silicon dioxide (alveolar fraction):

Carcinogenicity: Carcinogen, category 1; carcinogenic and contributing to cancer risk

Aluminium oxide:

Carcinogenicity: Carcinogenic: Category 4; substance with carcinogenic effect where genotoxic effects play no or only a minor role

Formaldehyde:

Carcinogenicity: Carcinogenic: Category 4; substance with carcinogenic effect where genotoxic effects play no or only a minor role

Germ cell mutagenicity: Mutagenic, category 5; very low contribution to genetic risk

Phenol:

Carcinogenicity: Carcinogenic, category 3; substance data provide evidence of a carcinogenic effect

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Germ cell mutagenicity: Mutagenic; category 3B; suspected mutagenic effect in in vivo germ cells

No sufficient, product-related, classification-relevant data available.

## 11.3 Experiences from practice

Classification relevant observations: No data available regarding product handling.

Other observations: No data available regarding product handling.

## 11.4 Information on other hazards / endocrinology:

Observations, information, data on health effects that may be caused by endocrine-disrupting properties are not available with regard to the use of the product.

## 12. Environment-related information:

### 12.1 Ecotoxicity:

| Aquatic toxicity                                                        | Effective dose               | Exposure duration | Species | Method   | Valuation        | Remark                               |
|-------------------------------------------------------------------------|------------------------------|-------------------|---------|----------|------------------|--------------------------------------|
| Acute fish toxicity                                                     | LC <sub>50</sub> : 18.5 mg/l | 48 h              | Fish    | n/a      |                  | Related to phenol formaldehyde resin |
| Acute daphnia toxicity                                                  | EC <sub>50</sub> : 17.2 mg/l | 48 h              | Daphnie | OECD 202 |                  | Related to phenol formaldehyde resin |
| Acute algal toxicity                                                    | EC <sub>50</sub> : 57.5 mg/l | 24 h              | Alga    | n/a      |                  | Related to phenol formaldehyde resin |
| Acute algal toxicity                                                    | NOEC: $\geq 0.103$ mg/l      | 72 h              | Alga    | OECD 201 | no toxic effects | Related to aluminium oxide           |
|                                                                         |                              |                   |         |          |                  |                                      |
| No sufficient, product-related, classification-relevant data available. |                              |                   |         |          |                  |                                      |

n/a = no information

### 12.2 Mobility:

#### Known or expected distribution to environmental compartments:

No surface tension or adsorption/desorption data available.

### 12.3 Bio-accumulative potential:

Due to the inert character of the product (material) (composed of inorganic substances), no data are available on the bio-accumulation potential, nor on the individual substances.

### 12.4 Persistence and degradability:

No sufficient, product-related data available (inorganic product, not affected by degradation)

Phenol formaldehyde resin: readily biodegradable: >60 % after 18 days (undiluted) or >80 % after 10 days (diluted) (ISO DIS 9408)

### 12.5 Result of the determination of the PBT properties:

The PBT properties of the substances used were not determined.

### 12.6 Endocrine disrupting effects on the environment:

No adverse effects known.

### 12.7 Other harmful effects:

No other adverse effects known.

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## 13. Notes on disposal

### 13.1 Disposal / waste (product):

#### Unused product:

Contact manufacturer regarding recycling. Check the possibility of recycling.

Otherwise disposal according to the Closed Substance Cycle Waste Management Act (KrWG): hazardous waste according to § 3 Waste Catalogue Ordinance (AVV).

#### Consumed product:

Only dispose of completely reacted and cooled product.

Disposal in accordance with the Closed Substance Cycle Waste Management Act (KrWG).

### 13.2 EAK / AVV waste code:

Suggested list for waste codes/waste designations according to AVV:

#### Unused product:

10 10 05\* casting moulds and sands containing dangerous substances before casting

10 10 06 casting moulds and sand before casting other than those mentioned in 10 10 05\*

#### Consumed product:

10 10 07\* casting moulds and sands containing dangerous substances after casting

10 10 08 foundry moulds and sand after casting other than those mentioned in 10 10 07\*

### 13.3 Packaging:

#### **Uncleaned packaging:**

Packaging emptied of residues, with residual adhesions, are to be disposed of as containers with harmful residual adhesions.

15 01 10 packaging containing residues of or contaminated by hazardous substances.

#### **Cleaned packaging:**

Non-contaminated and empty packaging can be recycled.

## 14. Transport information

### 14.1 Transport hazard classes:

#### **Land transport (ADR (RID)):**

Official designation: Not classified for this mode of transport. Hazard label:

Class: UN number:

Classification code: Packing group:

#### **Water transport (ADN(R) /IMDG-code):**

Official designation: Not classified for this mode of transport. Hazard label:

Class: UN number:

Classification code: Packing group:

EmS: Marine Pollutant:

IMDG Code: Product is not transported in bulk.

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

Official designation: Not classified for this mode of transport. Hazard label:

Class: UN number:

Classification code: Packing group:

### 14.2 Special precautions for the user:

No special precautions required for transport or movement within or outside the premises.

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## 15. Legislation

### 15.1 EU Regulations

#### Chemical safety assessment:

For individual substances in this product, risk assessments were carried out and registration dossiers prepared:

- Registration dossiers on aluminium powder, aluminium oxide, calcium oxide, phenol formaldehyde resin and silicon dioxide (silica sand) by the European Chemicals Agency (ECHA).

#### Labelling:

##### **Hazard symbols and hazard designation:**

Hazard-determining components for labelling:

H-statements:

P-statements:

Special labelling of certain products:

n/a, as not subject to compulsory labelling

n/a, as not subject to compulsory labelling

n/a, as not subject to compulsory labelling

n/a, as not subject to compulsory labelling

#### Approval and / or restrictions on use:

##### Approvals:

No information.

##### Usage restrictions:

No information.

### 15.2 National regulations (Germany)

Notes on employment restrictions:

The respective national regulations for the protection of young people at work and the protection of expectant mothers must be observed.

Major Accident Ordinance (12th Federal Immission Control Ordinance (BImSchV)):

As a product, it is not subject to the 12. BImSchV

Water hazard class:

1 hazardous to water (self-classification according to VwVwS not applicable, as it is a product)

Technical Instructions Air (TA-Luft):

The respective emission limit values must be observed:

Ammonia: 30 mg/m<sup>3</sup>

Nitrogen oxides: 350 mg/m<sup>3</sup> (as nitrogen dioxide)

Total dust, including fine dust: 20 mg/m<sup>3</sup>

Carbon monoxide: 150 mg/m<sup>3</sup>

Fluorides: 3 mg/m<sup>3</sup> (as hydrogen fluoride)

Formaldehyde: 20 mg/m<sup>3</sup>

Phenol: 50 mg/m<sup>3</sup> (as ammonia)

Other regulations, restrictions and prohibition ordinances: TRGS 900 limit values in the air at the workplace; DFG

## 16. Other information

### 16.1 Wording of the H and P statements:

Full text of the H- and P-phrases of the individual components of the product (material) mentioned in chapter 3 as well as abbreviations of the labels of the individual substances mentioned in chapter 2:

#### Hazard warnings:

|      |                                             |
|------|---------------------------------------------|
| H228 | Flammable solid                             |
| H261 | Contact with water produces flammable gases |
| H315 | Causes skin irritation                      |
| H317 | May cause an allergic skin reaction         |
| H318 | Causes severe eye damage                    |
| H319 | Causes severe eye irritation                |

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H335

May irritate the respiratory tract

## **Safety instructions:**

### **General:**

P102 Keep out of the reach of children.

### **Prevention:**

P210 Keep away from heat, sparks, open flames, hot surfaces. Do not smoke.

P233 Keep containers tightly closed.

P260 Do not breathe dust, fume, gas, mist, vapour, aerosol.

P261 Avoid breathing dust, fume, gas, mist, vapour, aerosol.

P264 Wash thoroughly after use.

P270 Do not eat, drink or smoke after use.

P272 Do not wear contaminated work clothing outside the work.

P280 Wear protective gloves, clothing, eye protection, face protection

### **Reaction:**

P302+352 In case of contact with the skin: Wash with plenty of water and soap.

P304+340 In case of inhalation: Remove to fresh air and immobilise in a position that facilitates breathing.

P305+351+338 In case of contact with the eyes: Rinse gently with water for a few minutes.

Remove any contact lenses if possible. Continue rinsing.

P310 Call a POISON CENTRE or doctor immediately.

P314 If you feel unwell seek medical advice/attention.

P333+313 In case of skin irritation or rash: Seek medical advice/medical help.

P337+313 If eye irritation persists: Seek medical advice/medical help.

P363 Wash contaminated clothing before reuse.

### **Storage:**

P402+404 Store in a tightly closed container in a dry place.

### **Disposal:**

P501 Dispose of contents, container in accordance with local, regional, national, international regulations

## **16.2 Training notes:**

The employees are to be regularly instructed in accordance with the legal requirements about the scope and the associated hazard.

## **16.3 Recommended restriction of use:**

No private application.

## **16.4 Further information:**

The information in this safety data sheet corresponds to the best of our knowledge at the time of printing. The information is intended to provide points of reference for the safe handling of the product named in this safety data sheet for storage, processing, transport and disposal. The information cannot be transferred to other products. Insofar as the product specified in this safety data sheet is blended, mixed or processed with other materials, or is subjected to processing, the information in this safety data sheet cannot be transferred to the new material produced in this way, unless expressly stated otherwise.

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## 16.5 Data sources:

- 1.) Current material safety data sheets
- 2.) IFA-DGUV-Gestis substance database "Ammonia"; search status: 29/06/2023
- 3.) IFA-DGUV-Gestis substance database "Formaldehyde"; search status: 28/06/2023
- 4.) IFA-DGUV-Gestis substance database "Magnesium oxide"; search status: 29/06/2023
- 5.) IFA-DGUV-Gestis substance database "Phenol"; search status: 28/06/2023
- 5.) RIGOLETTO database "Catalogue of substances hazardous to water" Federal Environment Agency (UBA); revision: 11/04/2023
- 7.) TA Air 2021
- 8.) TRGS 900 Technical Rules for Hazardous Substances - Occupational Exposure Limits; revision: 23/06/2022
- 9.) DFG (German Research Foundation) - MAK- und BAT-Werte-Liste, Mitteilungen 58, Wiley-VCH, 2022
- 10.) ECHA/EU - REACH Registration Dossier on Aluminium Oxide, dated 20/04/2023
- 11.) ECHA/EU - REACH Registration Dossier Aluminium Grit, dated 7/5/2023
- 12.) ECHA/EU - REACH Registration Dossier Calcium Oxide, dated 15/05/2023
- 13.) ECHA/EU - REACH Registration Dossier Phenol Formaldehyde Resin, dated 14/12/2021
- 14.) ECHA/EU - REACH Registration Dossier Silicon Dioxide, dated 27/5/2018
- 15.) TRGS 509 Technical Rules for Hazardous Substances - Storage of Liquid and Solid Hazardous Substances in Stationary Containers; dated: 20/07/2022
- 16.) TRGS 510 Technical Rules for Hazardous Substances - Storage of hazardous substances in portable containers; revision: 16/02/2021
- 17.) DGUV I209-095 Dust containing quartz in the foundry industry; dated: 03-2023

## 16.6 List of abbreviations

|                    |                                                                                                          |
|--------------------|----------------------------------------------------------------------------------------------------------|
| ADR                | European Agreement concerning the International Carriage of Dangerous Goods by Road                      |
| BImSchV            | Ordinance on the Implementation of the Federal Immission Control Act                                     |
| CAS                | Chemical Abstracts Service                                                                               |
| DIN                | Norm for Deutschen Instituts für Normung                                                                 |
| EC                 | Effective concentration                                                                                  |
| EC                 | European Community                                                                                       |
| EN                 | European standard                                                                                        |
| IATA-DGR           | International Air Transport Association-Dangerous Goods Regulations                                      |
| IBC                | Code International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk |
| ICAO-TI            | International Civil Aviation Organization-Technical Instructions                                         |
| IMDG Code          | International Maritime Code for Dangerous Goods                                                          |
| ISO                | standard of the International Standards Organization                                                     |
| IUCLID             | International Uniform Chemical Information Database                                                      |
| LC                 | Lethal concentration                                                                                     |
| LD                 | Lethal dose                                                                                              |
| log <sub>Kow</sub> | Partition coefficient between octanol and water                                                          |
| MARPOL             | Maritime Pollution Convention = Convention for the Prevention of Pollution from Ships                    |
| OECD               | Organisation for Economic Co-operation and Development                                                   |
| PBT                | Persistent, bioaccumulative, toxic                                                                       |
| RID                | Regulations concerning the International Carriage of Dangerous Goods by Rail                             |
| STOT               | Specific target organ toxicity                                                                           |
| TRGS               | Technical Rules for Hazardous Substances                                                                 |
| UN                 | United Nations                                                                                           |
| VOC                | Volatile Organic Compounds (volatile organic compounds)                                                  |
| vPvB               | very persistent and very bio-accumulative                                                                |
| VwVwS              | Administrative Regulation on Substances Hazardous to Water                                               |
| WGK                | Water hazard class                                                                                       |