

Safety Data Sheet

in accordance with Regulation (EC) No. 1907/2006 and (EU) 2020/878



Trade name: Thermex CB
Revised on: April 29, 2026
Print date: April 29, 2026
Version: EN 4.0
Replaces Version 3.0

1. Section 1: Identification of the substance or mixture (article) and the company

1.1 Product identifier:

Name on the label / Trade name:

Thermex CB

Other names:

Low-fluorine, exothermic / insulating break cores and feeder systems
Cold-box-bonded mold part

Note:

The mixture (product) is not subject to registration requirements under the REACH Regulation, Article 2(7).

1.2 Relevant identified uses of the substance or mixture (article) and uses that are discouraged:

1.2.1 Identified uses:

The product (article) is intended for professional users.

Auxiliary materials for the foundry industry, used in the manufacture of investment molds

1.2.2 Uses not recommended:

Uses other than those identified:

No applications in the private sector.

1.3 Supplier details:

Supplier (manufacturer / distributor):

For Germany / EU:

GTP Schäfer GmbH
Benzstraße 15
41515 Grevenbroich
Germany

Email (contact person):

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

National contact:

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

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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 staffed during office hours.)

Mobile: +49 0172 / 202 67 64

2. Section 2: Potential Hazards

2.1 Classification of the substance or mixture (article):

The product is not classified as hazardous within the meaning of Regulation (EC) No. 1272/2008; there is also insufficient data available for classification.

2.2 Labeling elements:

The product (article) does not fall within the scope of Regulation (EC) No. 1272/2008; there is also insufficient data available for labeling.

2.3 Other hazards:

This product contains hazardous ingredients or mixtures (see Section 3.2) that may be released during intended thermal decomposition.

During the casting process, either on its own or upon contact with water, acids, or alkalis, depending on the specific reaction conditions, may form, in part, nitrous gases (nitrogen oxides), hydrogen fluoride and/or volatile fluorides, hydrogen, hydrogen cyanide (cyanide), carbon monoxide/dioxide, soot, formaldehyde, phenol, or ammonia.

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

Once ignited, the products are difficult to extinguish (high fire temperature)

3. Section 3: Composition / Information on Ingredients:

3.1 Substances:

Description:

Not applicable; the product is a mixture (article).

3.2 Mixture (article):

Description:

Cold-box-bonded molded part (article) made of aluminum grit, potassium nitrate, organic binders, flux, di-iron-tri-, hollow spheres (ceramic), (lightweight) fireclay, and other fillers

Hazardous ingredients:

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Chemical name	CAS No.:	EC No.:	INDEX No.:	REACH Reg. No.:	Content (%)	Classification according to Regulation (EC) No. 1272/2008			Labeling Pictogram	Safety instructions P-phrases	Remarks
						Hazard	Category	Hazard statements H-phrases			
Cryolite (trisodium hexafluoroaluminate)	13775-53-6	237-410-6	009-016-00-2	01-2119511565-43	≤ 4	Hazard	Acute Tox. (inhal.) 4; STOT Rep. Exp. 1; Aquatic Chronic 2	H332 H372 H411	GHS07 GHS08 GHS09	273 304+340+312, 314	Exists in a bound form
Aluminum foil grit	7429-90-5	231-072-3	013-002-00-1	01-211952943-45	≤ 30	Hazard	Flammable Solid 1; Water Reactive; Flammable Gas 2	H228 H261	GHS02	210, 223, 231+232, 240, 241, 280	Contains hardcover form
Potassium nitrate	7757-79-1	231-818-8	N/A	01-2119488224-35	≤ 14	Caution	Oxid. Solid 3	H272	GHS03	210, 220, 280, 370+378, 501	Contains hardcover form
Phenolic resin solution	N/A	N/A	N/A	N/A	≤ 8	Caution	Eye Irrit. 2; STOT (Single Resp. Expo.) 3	H319 H335	GHS07 EUH208	261,280, 304+340+312, 337+313, 403+233, 501	Located in paperback form
Isocyanate preparation	N/A	N/A	N/A	N/A	≤ 8	Hazard	Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Acute Tox. (inhal.) 4; Resp. Sens. 1; STOT (Single Resp. Expo.) 3; STOT (Resp. Expo.) 2; Carc. 2	H315, H317 H319 H332, H334 H335 H351, H373	GHS07 GHS08	201, 260, 264, 280, 304+340+312, 308+313	Located in hardcover form

Non-hazardous ingredients:

Chemical name	CAS No.:	EC No.:	INDEX No.:	REACH Reg. No.:	Content (%)	Classification according to Regulation (EC) No. 1272/2008			Labeling Pictogram	Safety instructions P-phrases	Remarks
						Hazard	Category	Hazard statements H-phrases			
Di-iron trioxide	1309-37-1	215-168-2	N/A	01-2119457614-35	≤ 8	N/A	N/A	N/A	N/A	N/A	Bound in hardcover form
Hollow spheres (ceramic)	93924-19-7	300-212-6	N/A	01-2119563688-21	10-25	N/A	N/A	N/A	N/A	N/A	Exists in a bound form
Fireclay (calcined kaolinite)	92704-41-1	296-473-8	N/A	01-2119527779-22	≤ 50	N/A	N/A	N/A	N/A	N/A	Available in bound form
Light fireclay (Andalusite)	12183-80-1	235-352-6	N/A	N/A	≤ 20	N/A	N/A	N/A	N/A	N/A	Exists in a bound form
Portaryte (barium sulfate)	7727-43-7	231-784-4	N/A	01-2119491274-35	≤ 2	N/A	N/A	N/A	N/A	N/A	Available in bound form

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N/A = no information available

3.3 Note:

The abbreviations not fully spelled out in this section are listed in Chapter 16, as are safety information regarding the components used.

4. Section 4: First Aid Measures:

4.1 Description of first aid measures, general information:

Even if the product is not classified as hazardous, first aid and medical treatment may be necessary in the event of accidents (e.g., ingestion) and even if poisoning is suspected.

After inhalation:

After inhalation of thermal decomposition products (e.g., nitrous gases, hydrogen fluoride, hydrogen cyanide, phenol, ammonia), move the affected person to fresh air and keep them at rest.

If respiratory tract irritation or breathing difficulties occur, seek medical attention immediately.

After skin contact:

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

If skin reactions, redness, or pain occur, seek medical attention.

After eye contact:

If the product comes into contact with the eyes (dust/thermal decomposition products), immediately rinse with running water for 10 to 15 minutes while keeping the eyelids open and consult an ophthalmologist. Contact lens wearers should remove their lenses immediately and rinse their eyes.

If eye irritation occurs, consult an ophthalmologist.

If swallowed:

If swallowed or if large amounts of dust are inhaled, have the person drink plenty of water immediately. Do not induce vomiting.

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

First-aider's self-protection:

When rescuing from a hazardous area: Ensure your own safety!

4.2 Most important acute and delayed symptoms and effects:

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Symptoms:

After inhalation of dust:
No acute symptoms are expected.

After inhalation of thermal decomposition products:

Nitrous oxides: Rapid narcotic effects up to symptoms of oxygen deprivation, depending on concentration. The development of pneumonia (with or without preceding pulmonary edema) may occur as a late consequence of acute poisoning even 10–30 days later. Abnormal blood counts / neurological damage.

Hydrofluoric acid: increased secretion, coughing, rapid development of pulmonary edema, possibly lung damage only after a latent period.

Hydrogen cyanide, hydrocyanic acid: Mucosal irritation, burning sensation on the tongue, metallic, scratchy taste in the mouth and

throat; concentration-dependent gradual to sudden onset of systemic effects

Formaldehyde: Irritation of the nasopharyngeal mucous membranes (burning sensation, urge to sneeze, runny nose), possibly asthma attacks

Phenol: Irritation in the nose and throat

Ammonia: Coughing, breathing difficulties, nausea, urge to vomit, later respiratory tract inflammation

After skin contact:

Hydrofluoric acid: Chemical burns that spread over a large area and into deeper tissues

Hydrogen cyanide, prussic acid: initial irritation, followed by redness

Formaldehyde: concentration- and time-dependent irritation up to chemical burns, allergic skin reactions

Phenol: Redness/whitening of the contact site, followed by necrosis

Ammonia: Irritation up to chemical burns

After eye contact:

Hydrofluoric acid: Chemical burns

Hydrogen cyanide: Redness

Formaldehyde: mild, reversible irritation up to permanent corneal lesions

Phenol: corneal opacity

Ammonia: Tearing, burning/stinging pain in the eye

After ingestion:

Hydrogen cyanide, hydrocyanic acid: Mucosal irritation

Formaldehyde: concentration-dependent irritation up to chemical burns of the mucous membranes with abdominal pain, retching, cyanosis

Phenol: Burning and chemical burns of the mucous membranes, stomach pain, nausea, diarrhea

Potassium nitrate: Gastrointestinal disturbances, decreased heart rate, drop in blood pressure, relaxation of blood vessel smooth muscle

4.3 Indications for immediate medical attention or special treatment:

The following literature sources, among others, can provide information on treatment by a physician:
IFA-DGUV-Gestis Substance Database

Treat symptomatically.

5. Section 5: Firefighting Measures

5.1 Extinguishing media:

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Suitable extinguishing media:

Sand, dry extinguishing agents

Cover with the aforementioned extinguishing agents and allow to burn out in a controlled manner, provided it is safe to do so.

Adapt firefighting measures to the surrounding area.

Unsuitable extinguishing media:

Water: When extinguishing with water, there is a risk of hydrogen formation due to violent chemical reactions / high combustion temperature

Extinguishing gases: Decomposition process continues by auto-oxidation

5.2 Special hazards arising from the substance or mixture:

Decomposition processes continue even under water.

Highly exothermic decomposition.

Heating or thermal decomposition may result in the release of toxic gases or vapors.

See also Section 2.2

5.3 Firefighting instructions:

Use appropriate respiratory protection (filter types A, B, K, NO-P2, or combination filter ABEK-P2)

If necessary, wear self-contained breathing apparatus.

Wear appropriate personal protective equipment when fighting the fire.

Collect contaminated firefighting water separately. Do not allow it to enter sewers, the ground, or waterways.

Cool surrounding areas if possible.

Fire class:

Not applicable

6. Section 6: Accidental release measures:

6.1 Personal precautions:

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

Avoid generating dust; vacuum up dust without creating a dust cloud.

Keep away from ignition sources.

6.2 Environmental precautions:

Do not allow the product or product residues to enter the sewer system, waterways, or the ground.

Ensure that waste is collected and stored safely in closed containers.

6.3 Methods and materials for containment and cleanup:

Do not flush with water or aqueous cleaning agents; hydrogen gas may be generated.

Collect mechanically (avoid generating dust) and place in suitable containers for disposal. Use vacuum systems for cleanup.

Dust may cause a slipping hazard.

Handle the collected material in accordance with the Disposal section.

6.4 Additional information:

Please observe the protective measures in Sections 7, 8, and 13

7. Section 7: Handling and Storage:

7.1 Precautions for safe handling:

Refer to the product information / technical data sheet.

Do not remove packaging until immediately before use.

Fire prevention measures:

Protect from excessive heat.

Keep away from ignition sources—do not smoke, no open flames

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

Prevent dust accumulation / remove dust deposits regularly.

Observe standard fire prevention measures.

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Measures to prevent aerosol and dust formation:

Dust should be extracted directly at the source; handle the product in such a way as to avoid abrasion and dust formation (e.g., avoid pouring).

Use enclosed equipment whenever possible.

Provide exhaust air purification if necessary

Environmental protection measures:

Effectively extract any thermal decomposition products generated and, if necessary, feed them into an exhaust air purification system.

Dispose of product residues in accordance with legal regulations.

General workplace hygiene guidelines:

Do not eat, drink, smoke, or use snuff at the workplace.

Wash hands and/or face before breaks and at the end of the workday.

Keep away from food, beverages, and animal feed.

Do not inhale dust or thermal decomposition products.

Use the product only in quantities commensurate with operational requirements.

7.2 Conditions for safe storage, taking incompatibilities into account:

Technical measures and storage conditions:

Keep away from ignition sources—do not smoke, no open flames

Do not perform hot work.

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

Packaging materials:

Store only in the original container (cardboard trays).

Requirements for storage areas and containers:

No special requirements; do not store outdoors; store in a dry place.

Storage compatibility:

Storage class: 11 – flammable solids (according to TRGS 509 / 510) (recommended)

Do not store together with:

Food and animal feed

Explosive substances (storage class 1)

Strongly oxidizing substances (storage class 5.1A)

Infectious substances (storage class 6.2)

Radioactive substances (Class 7)

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

Observe restrictions and requirements for combined storage in accordance with TRGS 509 / TRGS 510 with:

Gases (storage class 2A)

Flammable liquids (storage class 3)

Other explosive substances (storage class 4.1A)

Pyrophoric or self-heating substances (storage class 4.2)

Substances that form flammable gases in contact with water (storage class 4.3)

Oxidizing substances (Class 5.1 B)

Ammonium nitrate and substances containing ammonium nitrate (Class 5.1 C)

Organic peroxides and self-decomposing substances (storage class 5.2)

Flammable acutely toxic substances (Class 6.1A)

Non-flammable acutely toxic substances (storage class 6.1 B)

Additional information on storage conditions:

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

Relative humidity (%): Store in a dry place / protect from moisture

Storage stability: No data available.

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Maximum storage period: The maximum recommended storage period is 1 year. Experience has shown that the product remains usable even beyond the specified maximum storage period. However, we cannot guarantee the product's specified properties after the maximum storage period has expired.

7.3 Specific end uses:

Recommendation: For commercial use only. Not for private use.

8. Section 8: Exposure controls and personal protection:

8.1 Exposure limits:

Components with occupational exposure limits or biological limit values that must be monitored:

Occupational exposure limits:

Related to thermal decomposition products / dust emissions:

Air limits:

Limit value type (country of origin)	Work-Material	EC No.	CAS No.	Occupational exposure limit		Recommended monitoring methods	Peak limit	Source
				Inhalable aerosol fraction	alveolar common aerosol fraction			
Germany	Dusts (for dusts with a density of 1 g/cm ³)	N/A	N/A	4 mg/m ³	0.3 mg/m ³	N/A	No exceedance of twice the general dust limit value	DFG
Germany	Aluminum	231-072-3	7429-90-5	0.5 mg/m ³	0.05 mg/m ³	N/A	Exceedance factor 8 for 15 min., 4 times per shift, 1-hour interval	DFG
Germany	Barium sulfate	231-072-3	231-784-4	4 mg/m ³	0.3 mg/m ³	N/A	Exceedance factor 8 for 15 min., 4 times per shift, 1-hour interval	DFG

Limit value type (country of origin)	Occupational substance	EC No.	CAS No.	Occupational exposure limit		Recommended monitoring methods	Peak limit	Source
				Long-term	Short-term			
Germany	Nitrous oxide (nitric trose Gases)	233-032-0	10024-97-2	180 mg/m ³	360 mg/m ³	N/A	2-fold exceedance in 15 min, max. 4 times per shift, 1-hour interval	DFG
Germany	Hydrofluoric acid	231-634-8	7664-39-3	0.83 mg/m ³	1.66 mg/m ³	N/A	2-fold exceedance in 15 min, max. 4 times per shift, 1-hour interval	DFG
Germany	Cyan hydrogen (hydrocyanic acid)	200-821-6	74-90-8	2.1 mg/m ³	4.2 mg/m ³	N/A	2-fold exceedance in 15 min, max. 4 times per shift, 1-hour interval	DFG

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Germany	Formaldehyde	200-001-8	50-00-0	0.37 mg/m ³	0.74 mg/m ³	N/A	2-fold exceedance in 15 min, max. 4 times per shift, 1-hour interval	DFG
Germany	Ammonia	231-635-3	7664-41-7	14 mg/m ³	28 mg/m ³	N/A	2-fold exceedance in 15 min, max. 4 times per shift, 1-hour interval	DFG
Germany	Carbon monoxide	211-128-3	630-08-0	35 mg/m ³	70 mg/m ³	N/A	2-fold exceedance in 15 min, max. 4 times per shift, 1-hour interval	DFG
Germany	Carbon dioxide	204-696-9	124-38-9	9,100 mg/m ³	18,200 mg/m ³	N/A	2-fold exceedance in 15 min, max. 4 times per shift, 1-hour interval	DFG
No sufficient product-related data available.								

N/A = no data available

During the burning of products made from Thermex CB, the formation of nitrous gases, ammonia, formaldehyde, aldehyde, and hydrogen cyanide. Whether the occupational exposure limits are exceeded when using products made from Thermex CB depends heavily on the conditions. Verification of compliance with occupational exposure limits is recommended at least upon first use.

Biological limit values:

Limit value type (Country of origin)	Substance	EC No.	CAS No.	Parameter	Limit value	Test material	Source	Remarks
Germany	Hydrofluoric acid and inorganic fluorine compounds (fluorides)	231-634-8	7664-39-3	Fluoride	4.0 mg/L	Urine	DFG	at the end of the shift
Germany	Phenol	203-632-7	108-95-2	Phenol (after hydrolysis)	200 mg/L	Urine	DFG	at end of shift
Germany	Aluminum	231-072-3	7429-90-5	Aluminum	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 end of shift
No sufficient product-related data available.								

DNEL and PNEC values:

DNEL for workers				
Route of exposure	Duration of effect	Endpoint effect	Value	Remarks
Inhalation / systemic and local	Long-term	Repeated exposure	3.72 mg/m ³	Based on aluminum grit
Inhalation / systemic and local	Long-term	Repeated exposure	10.0 mg/m ³	Based on barium sulfate
Inhalation / systemic and local	Short-term	acute toxicity	99.8 mg/m ³	Based on cryolite

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Inhalation / Local	Long-term	repeated exposure	0.1 mg/m ³	Based on cryolite
dermal / systemic	Long-term	Developmental toxicity	1,020 mg/kg bw/day	Based on cryolite
Inhalation Systemic and local	Short-term / Long-term	Short-term/repeated exposure	3 mg/m ³	Based on hollow spheres (ceramic)
Inhalation, local	Long-term	Repeated exposure	0.113 mg/m ³	Based on hollow spheres (ceramic)
inhalation systemic/local	Short-term / Long-term	Short-term/repeated exposure	3 mg/m ³	Based on fireclay
No sufficient product-specific data available.				

DNEL User/Consumer				
Route of exposure	Duration of effect	Endpoint effect	Value	Remarks
Inhalation / systemic	Long-term	Repeated exposure	7.9 mg/kg bw/day	Based on aluminum grit
Inhalation / systemic and local	Long-term	repeated toxicity	10.0 mg/m ³	Based on barium sulfate
Inhalation / systemic and local	Short-term	acute toxicity	74.5 mg/m ³	Based on cryolite
Inhalation / Local	Long-term	repeated exposure	25 µg/m ³	Based on cryolite
dermal / systemic	Long-term	Repeated exposure	510 mg/kg bw/day	Based on cryolite
No sufficient product-related data available.				

PNEC			
Protection target	Extrapolation factor	Value	Remarks
Seawater		0.0005 mg/L	Based on cryolite
Freshwater	1,000	0.005 mg/L	Based on cryolite
Wastewater treatment plant	10	8.7 mg/L	Based on cryolite
Freshwater sediment		30.5 mg/kg (dw)	Based on cryolite
Seawater sediment		3.05 mg/kg (dw)	Based on cryolite
Soil organisms		6.02 mg/kg (dw)	Based on cryolite
Freshwater	2	20.2 mg/L	Based on potassium nitrate
Seawater	2	20.1 mg/L	Based on potassium nitrate
Wastewater treatment plant	10	21.4 mg/L	Based on potassium nitrate
Freshwater	50	2 mg/L	Based on hollow spheres (ceramic)
Seawater	500	0.2 mg/L	Based on hollow spheres (ceramic)
Wastewater treatment plant	10	100 mg/L	Based on hollow spheres (ceramic)
Soil organisms	1000	333.3 mg/kg soil dw	Based on hollow spheres (ceramic)
Freshwater	10	4.1 mg/L	Based on fireclay
Seawater	100	0.41 mg/L	Based on fireclay
Wastewater treatment plant	1	1,400 mg/L	Based on fireclay
No sufficient product-specific data available.			

bw = body weight
 dw = dry weight

Result:
 Potassium nitrate is not expected to pose a risk to the environment.

8.2 Exposure Limits and Monitoring:

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8.2.1 Exposure control and monitoring in the workplace:

Product-specific measures to prevent exposure:

Only intended, identified use is permitted.

Instructional measures to prevent exposure:

Safety instructions for handling are listed in Section 16.

Organizational measures to prevent exposure:

Only intended, identified use is permitted.

It must be determined whether occupational exposure limits are being complied with. Reference is made to European Directive EN 689 on the assessment of exposure to chemical substances.

Technical measures to prevent exposure:

See Chapter 7. No further measures are required.

Technical measures and the use of appropriate work procedures take precedence over the use of personal protective equipment.

Personal protective equipment:

Respiratory protection: Personal respiratory protection is not normally required.

Respiratory protection is required in the following cases:

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

Exceedance of the applicable occupational exposure limit for thermal decomposition products / dust.

During food preparation:

Filtering respirator with filter or powered air-purifying respirator, type: P2 or FFP2

When used as intended:

Filter device with filter or powered air-purifying respirator, type:

Filter types A, B, K, NO-P2, or combination filter ABEK-P2, or powered air-purifying respirator (at least TH2P).

Self-contained breathing apparatus:

For concentrations exceeding the application limit of filtering devices, for oxygen levels below 17% by volume, or under unclear conditions, use respiratory protection in accordance with EN 143 / EN 14387.

The wearing time limits according to GefStoffV in conjunction with the rules for the use of respiratory protective equipment (BGR 190) must be observed.

Hand protection: Hand protection is not normally necessary; depending on the other substances used, wearing gloves is recommended. The use of water-insoluble skin protectants is recommended.

In case of frequent hand contact:

Gloves for protection against mechanical hazards in accordance with DIN EN 388

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

Eye protection: In case of dust formation: Dust goggles with side protection (in accordance with EN 166).

Body protection: Not required. Normal long-sleeved work clothing is sufficient. Recommendation: Protective clothing in accordance with EN 13034, EN 14605.

Hygiene: After handling the mixture, wash hands, forearms, and face, especially before breaks or at the end of work activities.

8.2.2 Control and monitoring of environmental exposure:

Product-related measures to prevent exposure:

No special measures required.

Instructional measures to prevent exposure:

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

Organizational measures to prevent exposure:

Minimize dust generation during handling.
Use the product only in the quantities necessary.

Technical measures to prevent exposure:

Effective extraction of dust and thermal decomposition products at the source.

9. Section 9: Physical and chemical properties:

9.1 Information on basic physical and chemical properties:

	Value	Method	Remarks
Physical state	Solid		
Color	red-brown / gray		
Odor	Odorless		
pH value (20°C):	approx. 7	DIN 19260	Measurement in aqueous suspension
Melting point / range (°C):	Not applicable		Not applicable, as decomposition occurs
Boiling point / range (°C):	Not applicable		
Flash point (°C):	Not applicable		
Ignition temperature (°C):	250° or 1,400°	DIN 51794	Product is not self-igniting
Vapor pressure:	Not applicable		Product consisting of non-volatile inorganic and highly molecular organic solids
Density (g/cm³):	800 - 1,400	DIN 51757	
Bulk density (g/cm³):	Not determined		
Water solubility (20°C in g/l):	practically insoluble		Solubility of inorganic components is expected
Partition coefficient n-octanol/water (log Pow):	not applicable		
Dynamic viscosity (mPa·s):	not applicable		Solid
Dust explosibility:	Not applicable		Product is not dust explosive
Explosion limits	Not applicable		
Lower:			
Upper:			

a) for 1-hour temperature exposure b) for 20–50-second temperature exposure

9.2 Other information:

No additional data

10. Section 10: Stability and reactivity:

10.1 Conditions to avoid:

If heated / exposed to heat:
Risk of ignition

The product is not dust-explosive in its delivered form; however, any fine dust generated may exhibit increased flammability.

10.2 Substances to avoid:

Acids, oxidizing agents, and reducing agents. See also Section 7.2.4.

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10.3 Hazardous decomposition products:

Nitrous gases (nitrogen oxides)
Hydrogen cyanide (cyanide)
Hydrofluoric acid and/or volatile fluorides
Hydrogen
Carbon monoxide / dioxide
Soot
Phenol
Formaldehyde
Ammonia

Exposure limits for individual substances are listed in Chapter 8.

11. Section 11: Toxicological Information:

11.1 Acute toxicity:

	Effective dose	Species	Assessment	Method	Remarks
Acute oral toxicity	LD ₅₀ /14d: >5,000 mg/kg	Rat		OECD 401	Based on cryolite
Acute oral toxicity	LD ₅₀ /14d: >15,900 mg/kg	Rat		OECD 401	Based on aluminum gri
Acute oral toxicity	LD ₅₀ /14d: >2,000 mg/kg	Rat	No effects	OECD 425	Based on potassium nitrate
Acute oral toxicity	LD ₅₀ /14d: >5,000 mg/kg	Rat	No effects	EU B.1	Based on Di-iron trioxide
Acute oral toxicity	LD ₅₀ /14d: >5,000 mg/kg	Rat	No effects	OECD 401	Based on Barium sulfate
Acute oral toxicity	LD ₅₀ : > 2,000 mg/kg	N/A		Calculation method	Based on phenolic resi solution
Acute dermal toxicity	LD ₅₀ : > 2,100 mg/kg	Rat		N/A	Based on cryolite
Acute dermal toxicity	LD ₅₀ /24h: > 5,000 mg/kg	Rat	No effects	OECD 402	Based on potassium nitrate
Acute dermal toxicity	LD ₅₀ : > 2,000 mg/kg	N/A		Calculation method	Based on phenolic resi solution
Acute inhalation toxicity	LC ₅₀ /4h: 4,470 mg/m ³	Rat		OECD 403	Based on cryolite
Acute inhalation toxicity:	LC ₅₀ /4h: > 888 mg/m ³	Rat		OECD 403	Based on aluminum gri
Acute inhalation toxicity:	LC ₅₀ /4h: > 0.527 mg/m ³	Rat	No effects	OECD 403	Based on potassium nitrate
Acute inhalation toxicity	LC ₅₀ /4h: 5.05 g/m ³	Rat	No effects	OECD 403	Based on Di-iron trioxide
Acute inhalation toxicity	LC ₅₀ /4h: > 20 g/m ³	N/A		Calculation method	Based on phenolic resi solution
Acute inhalation toxicity	LC ₅₀ /4h: 1.54 g/m ³	N/A		Calculation method	Based on isocyanate preparation
Acute inhalation toxicity	LC ₅₀ /4h: >2.07 g/m ³	Rat		EPA OPP 81-3	Based on Fireclay

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Mixture (product):

Oral toxicity:

No sufficient product-related data relevant for classification is available.

Dermal toxicity:

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

Inhalation toxicity:

Inhalation of dust may cause irritation of the respiratory tract (nose and throat) and respiratory impairment

Components that may contribute to *acute inhalation toxicity*:

- Cryolite: LD 50 (oral): ATE 4.47 mg/kg
- Isocyanate preparation: LD 50 (oral): ATE 1.5 mg/kg

Specific target organ toxicity (STOT) following single exposure:

Phenolic resin solution and isocyanate preparation may irritate the respiratory tract; the relevant ingredients are general limit values (GCL) must be observed: Category 3: 20%

No sufficient product-related data relevant for classification is available.

Specific symptoms in animal testing:

No sufficient product-related data relevant for classification is available.

11.2 Skin corrosion/irritation:

	Duration of exposure	Species	Assessment	Method	Remarks
Primary irritant effect on the skin	24 / 72 h	Rabbit	No irritation	N/A	Based on cryolite
Primary skin irritation	4 h	Rabbit	No irritation	OECD 404	Based on di-iron trioxide
Primary skin irritation	15 min	Model epidermis	No irritation	OECD 439	Based on potassium nitrate

Isocyanate preparation causes skin irritation and/or dermatitis.

Mixture (product):

No sufficient product-specific data relevant for classification is available; contact with dust may cause mechanical irritation and injury.

11.3 Serious eye damage / eye irritation:

Eye irritation	24 h / 192 h	Rabbit	No irreversible damage	OECD 405	Based on di-iron trioxide
Eye irritation	1 h	Rabbit	No irreversible damage	OECD 405	Based on barium sulfate
Eye irritation	24 hours	Rabbits	No irreversible damage	OECD 405	Based on potassium nitrate

Phenolic resin solution and isocyanate preparation cause severe eye irritation. The general limit values (GCL) must be observed: Category 2: 3%

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Mixture (product):

Eye irritation:

No sufficient product-specific data available; contact with dust may cause mechanical irritation and injuries.

11.4 Respiratory or skin sensitization:

Isocyanate preparation: In sensitive individuals, skin contact or inhalation of aerosols or dust.

Mixture (product):

After inhalation:

No sufficient product-specific data relevant for classification is available.

Components that may contribute to *respiratory sensitization*:

- Isocyanate preparation: The general concentration limits (GCL) must be observed: Category 1: 1%

After skin contact:

No sufficient product-specific data relevant for classification is available.

Components that may contribute to *skin sensitization*:

- Isocyanate preparation: The general concentration limits (GCL) must be observed: Category 1: 1%

11.5 Toxicity following repeated exposure (subacute, subchronic, chronic):

Chronic exposure to cryolite in metallurgical processes can result in the formation of hydrogen fluoride or soluble or volatile fluorides through reaction with suitable reagents, leading to characteristic changes in the teeth and skeletal system of workers. In a 90-day inhalation test on rats according to OECD 413, cryolite showed fluoride accumulation in urine, bones, and teeth, as well as irritant effects in the respiratory tract. The NOAEC for systemic effects was 0.5 mg/m³, and the NOAEC for local effects in the respiratory tract was 0.21 mg/m³.

Di-iron(III) oxide:

A 13-week test in rats according to OECD 408 showed no significant effects at a NOAEL of $\geq 1,000$ mg/kg bw/d.

Mixture (product):

Repeated inhalation of high amounts of dust can lead to mucosal irritation and impairment of the respiratory tract, as well as coughing, sore throat, sneezing fits, and shortness of breath.

Otherwise, no sufficient product-related data relevant for classification is available.

Specific target organ toxicity (STOT) following repeated exposure:

Isocyanate preparations may cause organ damage (lungs) upon prolonged or repeated inhalation.

Cryolite: As a relevant ingredient, the general concentration limits (GCL) must be observed: Category 3: 20%

No sufficient product-related data relevant for classification is available.

11.6 CMR effects (carcinogenic, mutagenic, and toxic to reproduction):

Cryolite:

Carcinogenicity:	Not carcinogenic (rat)
In vitro mutagenicity:	Negative (Ames test: activated / non-activated; Salmonella typhimurium)
In vivo mutagenicity:	No cellular changes (mouse)
Germ cell mutagenicity:	No embryotoxic effects observed (rat) (NOAEL 100 mg/kg/bw/d).
Reproductive toxicity:	Not toxic to fertility (rat) (NOAEL 128 mg/kg/bw/d).

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Potassium nitrate:

Carcinogenicity: No data available
In vitro mutagenicity: Negative (mouse lymphoma assay according to OECD 476, activated/non-activated)
In vivo mutagenicity: No clear dose-response effects (rat)
Germ cell mutagenicity: No chromosomal aberrations observed.
Reproductive toxicity: A 53-day test according to OECD 422 in rats yielded a NOAEL of 1,500 mg/kg bw/d (no dose-response effects).

Barium sulfate:

Carcinogenicity: Carcinogen: Category 4; substance with carcinogenic effects in which genotoxic effects play no role or only a minor role

Isocyanate preparation:

Carcinogenicity: Carcinogen, Category 2; identified as carcinogenic and contributing to cancer risk based on epidemiological data.
For relevant ingredients, the general concentration limits (GCL) must be observed: Category 2: 1%.

Iron(III) oxide:

Carcinogenicity: Carcinogen, Category 3; substance data (tests with rats) provide evidence of a carcinogenic effect (lung tumors), without genotoxic effects being the primary concern.

Formaldehyde:

Carcinogenicity: Carcinogen: Category 4; Substance with carcinogenic effects in which genotoxic effects play no role or only a minor role
Germ cell mutagenicity: Mutagen, Category 5; very low contribution to genetic risk

Phenol:

Carcinogenicity: Carcinogen, Category 3; substance data provide evidence of a carcinogenic effect
Germ cell mutagenicity: Mutagen; Category 3B; suspected mutagenic effect in in vivo germ cells

Mixture (product):

Carcinogenicity: No sufficient product-related data available.
In vitro mutagenicity: No sufficient product-related data available.
In vivo mutagenicity: No sufficient product-related data available.
Germ cell mutagenicity: No adequate product-related data available.
Reproductive toxicity: No sufficient product-related data available.

11.6 Practical experience / Aspiration hazard:

Observations relevant to classification: No data available regarding product handling.

Other observations: No data available regarding product handling.

11.7 Information on other hazards:

No observations or data available regarding endocrine-disrupting properties or blindness/phototoxicity during product handling.

12. Section 12: Environmental Information:

12.1 Ecotoxicity:

Aquatic toxicity	Effective dose	Exposure duration	Species	Method	Assessment	Remarks
Acute fish toxicity	LC ₅₀ : 99 mg/L	96 h	Fish	OECD 203		Based on cryolite
Acute fish toxicity	LC ₅₀ : 1,378 mg/L	96 h	Fish	OECD 203		Based on potassium nitrate
Acute fish toxicity	LC ₀ : ≥ 10 g/l	96 h	Fish	OECD 203	No toxic effects	Based on dihydroxido-iron(III) oxide

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Acute daphnia toxicity	EC ₅₀ : 156 mg/L	48 h	Daphnia	OECD 202		Based on cryolite
Acute invertebrate toxicity	LC ₅₀ : 496	96	Saltwater crab	N/A	Lethal effects	Based on Potassium nitrate
Acute daphnia toxicity	EC ₅₀ : > 490	48		OECD 202		Based on potassium nitrate
Acute daphnia toxicity	EC ₅₀ : ≥ 100 mg/l	48 h	Daphnia	OECD 202	No toxic effects	Based on Di-iron trioxide
Acute algal toxicity	EC ₅₀ : 3.2 mg/L	72 h	Algae (biomass)	OECD 201		Based on cryolite
Acute algal toxicity	ErC ₅₀ : 8.8	72	Algae (growth)	OECD		Based on cryolite
Algal toxicity	ErC ₅₀ : > 1,048 mg/l	10 d	Saltwater diatoms (growth)	N/A	No toxic effects	Based on potassium nitrate
Acute algal toxicity	NOEC: ≥ 20 mg/L	72 h	Algae	OECD 201	No toxic effects	Based on dihydroxido-iron(III) oxide

Components that may contribute to *chronic aquatic hazard*:

- Cryolite: The general concentration limits (GCL) must be observed: Category 2: 25% Category 3: 2.5% Category 4: 25%

Mixture (article):

No sufficient product-specific data relevant for classification is available. Due to the inert nature of the mixture (product), no harmful effects on the living and non-living environment are expected.

12.2 Persistence and degradability:

Cryolite:

Biodegradability test according to OECD 209: EC₅₀/ 30 min. and 3 h: >160 mg/L (poorly biodegradable)

Dihydroxido-iron(III) oxide:

Biodegradation test according to ISO 8192: EC₅₀/ 3 h: > 10 g/l (no significant adverse effects)

Mixture (product):

Due to the inert nature of the mixture (product composed of inorganic substances, not subject to degradation), no data are available regarding either physicochemical or photochemical elimination.

12.3 Bioaccumulation potential:

Mixture:

Due to the inert nature of the mixture (product composed of inorganic substances), no data on bioaccumulation potential are available.

12.4 Mobility:

Known or expected distribution among environmental compartments:

Mixture (article):

No data are available for the mixture (product) regarding surface tension, adsorption/desorption, or distribution in environmental compartments.

12.5 Result of the PBT assessment:

Neither the individual substances nor the mixture (article) meet the criteria for classification as PBT or vPvB.

12.6 Endocrine-disrupting properties:

Due to the inert nature of the mixture (article composed of inorganic substances), no data is available.

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12.7 Other adverse effects:

No other harmful effects related to ozone depletion potential, global warming potential, or photochemical ozone formation are known.

12.8 Other information:

Separation of the aqueous phase by filtration is possible.

13. Section 13: Disposal Considerations:

13.1 Disposal / Waste (Product):

Unused product:

Contact the manufacturer regarding recycling. Check for recycling options.

Otherwise, dispose of in accordance with the German Closed Substance Cycle Waste Management Act (KrWG): non-hazardous waste pursuant to Section 3 of the Waste Catalogue Ordinance (AVV)

Used product:

Dispose of only fully reacted and cooled-down product.

Dispose of in accordance with the German Closed Substance Cycle Waste Management Act (KrWG).

13.2 EAK / AVV waste codes:

Suggested list of waste codes/waste descriptions according to AVV:

Unused product:

10 10 05* casting molds and sands containing hazardous substances prior to casting

10 10 06 Molds and molding sands prior to casting, excluding those covered by 10 10 05*

Used product:

10 10 07* casting molds and sands containing hazardous substances after casting

10 10 08 Casting molds and sands after casting, excluding those covered by 10 10 07*

13.3 Packaging:

Uncontaminated and completely empty packaging may be recycled.

14. Section 14: Transport Information:

14.1 Transport hazard classes:

Land transport (ADR / RID):

Official name: Not classified for this mode of transport.

Class:

Classification code:

Hazard label:

UN No.:

Packing group:

Water transport (ADN(R) / IMDG Code):

Proper shipping name: Not classified for this mode of transport.

Class:

Classification code:

Hazard label:

UN No.:

Packing group:

EmS:

Marine Pollutant:

IMDG Code: Product is not transported in bulk.

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

Proper shipping name: Not classified for this mode of transport.

Class:

Classification code:

Hazard label:

UN No.:

Packing group:

14.2 Special precautions for the user:

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

15. Section 15: Regulatory information:

15.1 EU regulations:

Chemical Safety Assessment:

Risk assessments have been conducted for individual substances in this product, and registration dossiers have been prepared:

- Registration dossiers for cryolite, aluminum, potassium nitrate, di-iron trioxide, fireclay, barium sulfate, and cenospheres (hollow ceramic spheres) by the European Chemicals Agency (ECHA).

Labeling:

Hazard symbols and hazard statements:

Hazard-determining components for labeling:

H-statements:

P-phrases:

Special labeling:

Not applicable, as not subject to labeling requirements

Not applicable, as not subject to labeling requirements

Not applicable, as not subject to labeling requirements

Not applicable, as not subject to labeling requirements

Approval and/or restrictions on use:

Approvals:

No information

Restrictions on use:

Not for use in the private sector.

15.2 National regulations (Germany):

Notes on employment restrictions:

The relevant national regulations regarding the protection of young workers and expectant mothers must be observed.

Major Accidents Ordinance (12th BImSchV):

Not subject to the 12th BImSchV.

Water hazard class:

WGK 1 = slightly hazardous to water (self-classification according to AwSV; Annex 1 not applicable, as this is a product)

Technical Instructions on Air Quality Control (TA-Luft):

The respective emission limit values must be observed:

Ammonia: 30 mg/m³

Nitrogen oxides: 350 mg/m³ (as nitrogen dioxide)

Total dust, including particulate matter: 20 mg/m³

Carbon monoxide: 150 mg/m³

Fluorides: 3 mg/m³ (as hydrogen fluoride)

Formaldehyde: 20 mg/m³

Hydrogen cyanide: 3 mg/m³

Phenol: 50 mg/m³ (as ammonia)

Cyanides: 1 mg/m³ (as CN)

Other regulations, restrictions, and prohibitions:

TRGS 900 on occupational exposure limits in the workplace;

TRGS 720 on hazards from explosive mixtures;

DFG

16. Section 16: Other information:

16.1 Wording of H- and P-phrases:

Full text of the H- and P-phrases for the individual components of the mixture listed in Chapter 3, the mixture itself, and the abbreviations for the labeling of the individual substances mentioned in Chapter 2:

Hazard statements:

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- H228 Flammable solid
- H261: Contact with water liberates flammable gases
H272 May intensify fire; oxidizer
- H315: Causes skin irritation
H317: May cause an allergic skin reaction
H319: Causes serious eye irritation
H332: Harmful if inhaled
H334: May cause allergies, asthma-like symptoms, or breathing difficulties if inhaled
H335: May irritate the respiratory tract
H351: May cause cancer
H372: Causes damage to organs with prolonged or repeated exposure.
H373: May cause damage to organs through prolonged or repeated exposure
- H411: Toxic to aquatic organisms, with long-term effects.
- EUH208** Contains: Formaldehyde. May cause allergic reactions.

Safety instructions:

Prevention:

- P201: Obtain special instructions before use
P210: Keep away from heat, sparks, open flames, and hot surfaces. Do not smoke.
P220: Keep away from clothing and combustible materials; store away from them
P223: Avoid contact with water at all costs due to violent reaction and possible flash fire.
P231+232: Handle under inert gas. Protect from moisture.
P240: Ground the container and the equipment to be filled.
P241: Use explosion-proof electrical equipment/ventilation systems/lighting/...
P260: Do not breathe dust, fumes, gas, mist, vapor, or aerosol
P261: Avoid inhaling dust/smoke/gas/mist/vapor/aerosol.
P264: Wash ... thoroughly after use.
P273: Avoid release into the environment.
P280: Wear protective gloves, protective clothing, eye protection, and face protection.

Response:

- P304+340+312: If inhaled: Move to fresh air and keep at rest in a position that facilitates breathing and call a poison control center or doctor if you feel unwell.
P308+313: If exposed or affected: Get medical advice/attention.
P314: If you feel unwell, seek medical advice/attention.
P337+313: If eye irritation persists: Get medical advice/attention.
P370+P378: In case of fire: Use the following to extinguish: Special powder for metal fires.

Storage:

- P403+233 Keep container tightly closed in a well-ventilated place.

Disposal:

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

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16.2 Training

Instructions:

Employees must be regularly trained in accordance with legal requirements regarding the scope and associated hazards.

16.3 Recommended restrictions on use:

No private use.

16.4 Additional information:

The information in this Safety Data Sheet is based on our best knowledge at the time of printing. The information is intended to provide guidance on the safe handling of the product described in this Safety Data Sheet during storage, processing, transport, and disposal. The information is not transferable to other products. If the product mentioned in this safety data sheet is blended, mixed, or processed with other materials, or subjected to further processing, the information in this safety data sheet cannot be applied to the new material produced in this way, unless expressly stated otherwise.

16.5 Data sources:

- 1.) Current safety data sheets for the ingredients
- 2.) IFA-DGUV (Institute for Occupational Safety and Health of the German Social Accident Insurance), GESTIS Substance Database
- 3.) DFG (German Research Foundation) – MAK and BAT Values List 2025, Bulletin 61, <https://mak-dfg.publisso.de>
- 4.) ECHA/EU - REACH Registration Dossier for Trisodium Hexafluoroaluminate (Cryolite), as of February 27, 2026
- 5.) ECHA/EU - REACH Registration Dossier for Potassium Nitrate, as of January 8, 2026
- 5.) ECHA/EU - REACH Registration Dossier: Ashes (residues), cenospheres (hollow spheres), as of March 17, 2026
- 7.) ECHA/EU - REACH Registration Dossier: Aluminum grit, as of January 14, 2026
- 3.) ECHA/EU - REACH Registration Dossier: Di-iron trioxide, as of December 3, 2025
- 3.) ECHA/EU - REACH Registration Dossier: Calcined Kaolinite (Fireclay), as of August 8, 2025
- 10.) ECHA/EU - REACH Registration Dossier: Barium Sulfate, as of April 13, 2026
- 11.) RIGOLETTO database "Catalog of Water-Hazardous Substances" Federal Environment Agency (UBA) in accordance with AwSV (Ordinance on Facilities Handling Water-Hazardous Substances); Version 3.8.5 / 2026
- 12.) TA-Luft 2021
- 13.) TRGS 509 Technical Rules for Hazardous Substances – Storage of Liquid and Solid Hazardous Substances in Stationary Containers; as of: March 26, 2024
- 14.) TRGS 510 Technical Rules for Hazardous Substances – Storage of Hazardous Substances in Portable Containers; as of: February 16, 2021
- 15.) TRGS 900 Technical Rules for Hazardous Substances – Occupational Exposure Limits; as of May 6, 2025