Safety data sheet
according to Regulation (EC) No 1907/2006 and (EU) 2020/878

Trade name:	Thermex CB	
Revised on:	15/06/2023	**Version:** EN 3.0
Print date:	15/06/2023	**Replaces version DE 2.0**

1. Designation of the product and company name

1.1 Name of the product:

Designation on the label / trade name:

Thermex CB

Other designations:
Low fluorine, exothermic / insulating breaker cores and 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 is intended for the professional user.
Auxiliary for the foundry industry, use for 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

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

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.
May form nitrous gases (nitrogen oxides), hydrogen fluoride and/or volatile fluorides, hydrogen, hydrogen cyanide (hydrocyanic acid), carbon monoxide/dioxide, soot, hydrocarbons, formaldehyde, phenol or ammonia during the casting process alone or in contact with water as well as acids or alkalis, depending on the respective reaction conditions.
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:
Cold-box bonded moulding (product) of aluminium grit, potassium nitrate, organic binders, flux, di-iron trioxide, hollow spheres (ceramic), silicon dioxide (quartz sand), (light) chamotte and other fillers.

3.2 Hazardous ingredients:

Chemical name	CAS No.:	EC no.:	INDEX No.:	REACH Reg. no.:	Content (%)	Classification according to Ordinance (EG) 1272/2008			Labelling	Safety notes	Remark
						Signal-values	Category	Hazard warnings H-statements	Pictogram	P-statements	
Cryolite (Trisodium hexafluoroaluminate)	13775-53-6	237-410-6	009-016-00-2	01-2119511565-43	≤ 1	Hazard	Acute Tox. (inhal.) 4; STOT Rep. Exp. 1; Aquatic Chronic 2	H332 H362 H372 H411	GHS07 GHS08 GHS09	260.263, 270.273 308+313, 501	Exists in bound form
Aluminium foil grit	7429-90-5	231-072-3	013-002-00-1	01-2119529443-45	≤ 30	Hazard	Flam. Solid 1; Water React. Flam. Gas 2	H228 H261	GHS02	210, 233, 280 402+404	Exists in bound form
Potassium nitrate	7757-79-1	231-818-8	n/a	01-2119488224-35	≤ 14	Caution:	Oxide. Solid 3	H272	GHS03	210220221 280, 370+378	Exists in bound form

Isocure GTP 1 Part 1 (resin)	n/a	n/a	n/a	n/a	≤ 7,5	Hazard	Acute Tox. (oral) 4; Skin Corr. 1B; Eye Dam. 1; Muta. 2;	H302 H314 H341	GHS05 GHS07 GHS08 EU208	201.280, 301+330+331, 303+361+353, 304+340, 305+351+338, 310	Exists in bound form
Isocure GTP 2/1 Part 2 (binder)	n/a	n/a	n/a	n/a	≤ 7,5	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;	H315 H317 H319 H332 H334 H335 H351 H373	GHS07 GHS08 EU204	201,260,280, 284, 304+340, 312, 362+364	Exists in bound form

n/a = no information

No hazardous ingredients:

Chemical name	CAS No.:	EC no.:	INDEX No.:	REACH Reg. no.:	Content (%)	Classification according to Ordinance (EG) 1272/2008			Labelling	Safety notes	Remark
						Signal-values	Category	Hazard notices H-statements	Picto-gram	P-statements	
Hollow balls (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 bound form
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	Exists in bound form
Chamotte (calcined kaolinite)	92704-41-1	296-473-8	n/a	01-2119527779-22	≤ 50	n/a	n/a	n/a	n/a	n/a	Exists in bound form
Light chamotte	n/a	n/a	n/a	n/a	≤ 50	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, hydrogen fluoride, hydrogen cyanide, hydrocarbons, phenol, ammonia), 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.
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:
Symptoms:

After inhalation of dust:

No acute symptoms expected.

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.
Hydrogen fluoride: increased secretion, coughing irritation, rapid development of pulmonary oedema, possibly lung damage only after latency.
Hydrogen cyanide, hydrocyanic acid: Irritation of mucous membranes, burning sensation on the tongue, metallic-scratchy taste in mouth and throat; depending on concentration, gradual to sudden onset of systemic effects.
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:

Hydrogen fluoride: Burns that spread over a wide area and into deeper tissues
Hydrogen cyanide, hydrocyanic acid: first irritation, then redness
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:

Hydrogen fluoride: Burns
Hydrogen cyanide, hydrocyanic acid: Redness
Formaldehyde: mild, reversible irritation up to permanent corneal lesion
Phenol: Corneal opacity
Ammonia: Tear irritation, burning / stabbing pain in the eye

After ingestion:

Hydrogen cyanide, hydrocyanic acid: Mucous membrane irritation
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.
Potassium nitrate: Gastrointestinal disturbances, reduction in heart rate, drop in blood pressure, slackening of the blood vessel muscles

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
BGI RCI: Hydrogen fluoride, hydrofluoric acid and inorganic fluorides, 12-2018; DGUV-Information 213-071
BG information "Hydrogen cyanide (prussic acid), cyanides", 12-1989; BGI 569
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 / high combustion temperature
Extinguishing gases: Decomposition process continues auto-oxidatively.

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 breathing apparatus.
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.

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:
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

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 sufficient ventilation, especially in closed rooms.
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:

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)

7.2.5 Further information on storage conditions:
Storage temperature (°C): + 5 to + 30 °C

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: 11 - flammable solids (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 (country of origin)	Working material	EC no.	CAS no.	Occupational exposure limit		Recommended monitoring procedures	Peak limit	Source
Germany	Dusts (for dusts with a density of 1 g/cm³)	n/a	n/a	4 mg/m³ (inhalable aerosol fraction)	0.3 mg/m³ (alveolar respirable aerosol fraction)	n/a	No exceeding of the level of twice the general dust limit value	DFG
Germany	Aluminium	231-072-3	7429-90-5	4 mg/m³ (inhalable aerosol fraction)	1.5 mg/m³ (alveolar aerosol fraction)	n/a	No exceeding of the level of twice the general dust limit value	DFG

Limit type (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/m³	360 mg/m³	n/a	15 min, max. 4 times / shift, interval 1 h	DFG
Germany	Fluorine-hydrogen	231-634-8	7664-39-3	0.83 mg/m³	1.66 mg/m³	n/a	15 min, max. 4 times / shift, interval 1 h	DFG
Germany	Hydrogen cyanide (prussic acid)	200-821-6	74-90-8	2.1 mg/m³	4.2 mg/m³	n/a	15 min, max. 4 times / shift, interval 1 h	DFG
Germany	Mould aldehyde	200-001-8	50-00-0	0.37 mg/m³	0.74 mg/m³	n/a	15 min, max. 4 times / shift, interval 1 h	DFG
Germany	Ammonia	231-635-3	7664-41-7	14 mg/m³	28 mg/m³	n/a	15 min, max. 4 times / shift, interval 1	DFG

Germany	Carbon monoxide	211-128-3	630-08-0	35 mg/m³	70 mg/m³	n/a	15 min, max. 4 times / shift, interval 1 h	DFG
Germany	Carbon dioxide	204-696-9	124-38-9	9,100 mg/m³	18,200 mg/m³	n/a	15 min, max. 4 times / shift, interval 1 h	DFG
No adequate product-related data available.								

n/a = no information

During the burning of Thermex CB products, the formation of nitrous gases, hydrocyanic acid and ammonia was detected. Whether the occupational exposure limits are exceeded when using Thermex CB products 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	Hydrogen fluoride and anorganic 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 the end of the shift
Germany	Aluminium	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 DNELand PNEC values:

DNEL employees				
Exposure route	**Duration of action**	**Endpoint effect**	**Value**	**Remark**
inhalative / systemic and local	Long-term	repeated exposure	3.72 mg/m³	Related to aluminium grit
inhalative / systemic and local	Short-term	acute toxicity	99.8 mg/m³	Related to cryolite
inhalative / local	Long-term	repeated exposure	0.1 mg/m³	Related to cryolite
dermal / systemic	Long-term	Developmental toxicity	1,020 mg/kg bw/day	Related to cryolite
inhalative systemic and local	Short-term	repeated exposure	3 mg/m³	Related to hollow spheres (ceramic)
inhalative local	Long-term	repeated exposure	0.113 mg/m³	Related to hollow spheres (ceramic)
inhalative systemic/local	Long-term		3 mg/m³	Related to chamotte
inhalative systemic/local	Short-term		3 mg/m³	Related to chamotte
No adequate product-related data available.				

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 grit
inhalative / systemic and local	Short-term	acute toxicity	74.5 mg/m³	Related to cryolite
inhalative / local	Long-term	repeated exposure	25 µg/m³	Related to cryolite
dermal / systemic	Long-term	Repeated exposure	510 mg/kg bw/day	Related to cryolite
No adequate product-related data available.				

PNEC			
Protection target	**Estimation factor for extrapolation**	**Value**	**Remark**
Freshwater	1000	0.005 mg/L	Related to cryolite
Sewage treatment plant	10	8.7 mg/L	Related to cryolite
Freshwater sediment		30.5 mg/kg (dw)	Related to cryolite
Seawater sediment		3.05 mg/kg (dw)	Related to cryolite
Soil organisms		6.02 mg/kg (dw)	Related to cryolite
Sewage treatment plant	10	18 mg/L	Related to potassium nitrate
Freshwater	50	2 mg/L	Related to hollow spheres (ceramic)
Seawater	500	0.2 mg/L	Related to hollow spheres (ceramic)
Sewage treatment plant	10	100 mg/L	Related to hollow spheres (ceramic)
Soil organisms	1000	333.3 mg/kg soil dw	Related to hollow spheres (ceramic)
Freshwater	10	4.1 mg/L	Related to chamotte
Seawater	100	0.41 mg/l	Related to chamotte
Sewage treatment plant	1	1,400 mg/L	Related to chamotte
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:

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.

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.

In case of frequent hand contact:
Gloves for protection against mechanical hazards according to DIN EN 388
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.

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.

Instructional measures to avoid exposure:

Only handle the product within the scope of its intended use.

Organisational measures to avoid exposure:

Low-dust handling.
Only use the product (material) in the required quantities.

Technical measures to avoid exposure:

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: Red-brown / grey 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_2, NO, soot.
Health hazardous dust

9.3 Safety-relevant basic data:

	Value	Method	Remark
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):	250a) resp. 1,400b)	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/cm³):	800 - 1,400	DIN 51757	
Bulk density (kg/m³):	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:			

a)at 1-hour temperature exposure b)at 20-50-second temperature exposure

10. Stability and reactivity:

10.1 Conditions to avoid:
When heated / exposed to heat:
Risk of ignition

The product as delivered is not dust explosive; however, any fine dusts that may be produced have an increased flammability.

10.2 Substances to avoid:
Acids and oxidising agents
See also chapter 7.2.4.

10.3 Hazardous decomposition products:
nitrous gases (nitrogen oxides)
Hydrogen cyanide (prussic acid)
Hydrogen fluoride and/or volatile fluorides
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	$LD_{50/14d}$: >5,000 mg/kg	Rat	OECD 401	Related to cryolite
Acute oral toxicity	$LD_{50/14d}$: >15,900 mg/kg	Rat	OECD 401	Related to aluminium grit
Acute oral toxicity	$LD_{50/14d}$: >2,000 mg/kg	Rat	OECD 425	Related to potassium nitrate
Acute oral toxicity	$LD_{50/14d}$: >5,000 mg/kg	Rat	EU B.1	Related to di-iron trioxide
Acute oral toxicity	LD_{50}: 1,909 mg/kg	n/a	Calculation method	Related to Isocure GTP 1 Part 1 (resin)
Acute dermal toxicity	LD_{50}: > 2,100 mg/kg	Rat	n/a	Related to cryolite
Acute dermal toxicity	LD_{50}/24h: > 5,000 mg/kg	Rat	OECD 402	Related to potassium nitrate
Acute dermal toxicity	LD_{50}: > 2,000 mg/kg	n/a	Calculation method	Related to Isocure GTP 1 Part 1 (resin)
Acute inhalation toxicity	LC_{50}/4h: 4,470 mg/m³	Rat	OECD 403	Related to cryolite
Acute inhalation toxicity:	LC_{50}/4h: > 888 mg/m³	Rat	OECD 403	Related to aluminium grit
Acute inhalation toxicity:	LC_{50}/4h: > 0.527 mg/m³	Rat	OECD 403	Related to potassium nitrate
Acute inhalation toxicity	LC_{50}/4h: 5.05 g/m³	Rat	OECD 403	In relation to Di-iron trioxide
Acute inhalation toxicity	LC_{50}: > 20 g/m³	n/a	Calculation method	Related to Isocure GTP 1 Part 1 (resin)
Acute inhalation toxicity	LC_{50}/4h: 12.59 g/m³	n/a	Calculation method	Related to Isocure GTP 2/1 Part 2 (binder)
Acute inhalation toxicity	LC_{50}/4h: > 2.07 g/m3	Rat	EPA OPP 81-3	Related to chamotte
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 irritation	n/a	Related to cryolite
Primary irritant effect on the skin	24 / 48 / 72 h	Rabbit	No irritation	OECD 404	Related to di-iron trioxide
Irritation of the eyes	24 / 48 / 72 / 96 h / 7 d	Rabbit	No irreversible damage	n/a	Related to cryolite
Irritation of the eyes	72 h	Rabbit	No irreversible damage	OECD 405	Related to potassium nitrate
Irritation of the eyes	14 d	Rabbit	No irreversible damage	OECD 405	Related to di-iron trioxide
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.
Isocure GTP 1 Part 1 (resin) causes burns on the skin.
Isocure GTP 2/1 Part 2 (binder) may cause skin irritation and/or dermatitis with prolonged contact.

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.
Isocure GTP 1 Part 1 (resin) causes acute eye irritation/corrosivity.
Isocure GTP 2/1 Part 2 (binder) causes severe irritation to eyes.

Sensitisation:
In case of contact with the skin: No sufficient, product-related, classification-relevant data available.

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

Isocure GTP 2/1 Part 2 (binder): May cause sensitisation in susceptible persons by skin contact or inhalation of aerosols or dust.

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.

Chronic exposure to cryolite can produce hydrogen fluoride or soluble or volatile fluorides in metallurgical processes by reaction with suitable reactants and lead to characteristic changes in the teeth and bone system in the bodies of workers.
Cryolite showed fluoride accumulation in urine, bones and teeth as well as irritant effects in the respiratory tract in a 90-d inhalation test according to OECD 413 in rats. The NOAEC for systemic effects was 0.5 mg/m³, the NOAEC for local effects in the respiratory tract was 0.21 mg/m³.

Isocure GTP 2/1 Part 2 (binder) may cause lung damage with prolonged or repeated inhalation.

Specific target organ toxicity (STOT) at repeated exposure:
No sufficient, product-related, classification-relevant data available.

Potassium nitrate:
A 28-d test according to OECD 422 with rats resulted in a NOAEL of 1,500 mg/kg bw/d.

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

Silicon dioxide (alveolar fraction):
Carcinogenicity: Carcinogen, category 1; carcinogenic and contributing to cancer risk

Cryolite:
Carcinogenicity: Non carcinogenic (rat)
In-vitro mutagenicity: Negative (Ames test activated / non-activated; Salmonella typhimurium)

In-vivo mutagenicity: No cell changes (mouse)
Germ cell mutagenicity: No embryotoxic effects observed (rat) (NOAEL 100 mg/kg/bw/d).

Reproductive toxicity: Not harmful to fertility (rat) (NOAEL 128 mg/kg/bw/d).

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

Isocure GTP 1 Part 1 (resin)
Germ cell mutagenicity: Mutagenic, category 2; substance with increased mutation rate in offspring of exposed mammals

Isocure GTP 2/1 Part 2 (binder)
Carcinogenicity: Carcinogen, category 2; Determined from epidemiology data to be carcinogenic and contributing to cancer risk.

Di-iron trioxide:
Carcinogenicity: Carcinogenic, category 3; substance data provide evidence of a carcinogenic effect

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
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_{50}: 99 mg/l	96 h	Fish	OECD 203		Related to cryolite
Acute fish toxicity	LC_{50}: 1378 mg/l	96 h	Fish	OECD 203		Related to potassium nitrate
Acute fish toxicity	LC0: 10 g/ml	96 h	Fish	OECD 203	no toxic effects	Based on diiron trioxide
Acute daphnia toxicity	EC_{50}: 156 mg/l	48 h	Daphnie	OECD 202		Related to cryolite
Acute daphnia toxicity	EC_{50}: > 490 mg/l	48 h	Daphnie	OECD 202		Related to potassium nitrate
Acute daphnia toxicity	EC_{50}: ≥ 100 mg/l	48 h	Daphnie	OECD 202	no toxic effects	Based on diiron trioxide

Acute algal toxicity	EbC_{50}: 3.2 mg/l	72 h	Algae (biomass)	OECD 201		Related to cryolite
Acute algal toxicity	ErC_{50}: 8.8 mg/l	72 h	Alga (growth)	OECD 201		Related to cryolite
Algal toxicity	ErC_{50}: > 1,700 mg/l	10 d	Saltwater diatoms (growth)	n/a		Related to potassium nitrate
Acute algal toxicity	NOEC: > 20 mg/l	72 h	Alga	OECD 201	no toxic effects	Based on diiron trioxide
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 on bioaccumulation potential are available, nor on the individual substances.

12.4 Persistence and degradability:

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

Cryolite: Biodegradation test according to OECD 209: $_{EC50}$ / 30min. and 3h: >160 mg/l (poorly biodegradable)

Diiron trioxide: Biodegradation test according to ISO 8192: EC_{50} / 3 h: > 10 g/l (no significant impairment)

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.

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:

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.

15. Legislation

15.1 EU Regulations

Chemical safety assessment:

For individual substances in this product, risk assessments were carried out and registration dossiers prepared:
- EU risk assessments for cryolite;
- Registration dossiers on cryolite, aluminium, potassium nitrate, dieisen trioxide and on cenospheres by the European Chemicals Agency (ECHA).

Labelling:

Hazard symbols and hazard designation:

Hazard-determining components for labelling:	n/a, as not subject to compulsory labelling
H-statements:	n/a, as not subject to compulsory labelling
P-statements:	n/a, as not subject to compulsory labelling
Special labelling of certain products:	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/m³ Nitrogen oxides: 350 mg/m³ (as nitrogen dioxide) Total dust, including fine dust: 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) Cyanide: 1 mg/m3(as CN)
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
H272:	May intensify fire; oxidiser
H302:	Harmful if swallowed
H314:	Causes severe skin burns and eye damage
H315:	Causes skin irritation
H317:	May cause an allergic skin reaction
H319:	Causes severe eye irritation
H332:	Hazardous to health when inhaled
H334:	May cause allergy, asthma-like symptoms or breathing difficulties if inhaled
H335:	May irritate the respiratory tract
H341:	May presumably cause genetic defects
H351:	May presumably cause cancer
H362:	May harm infants through breast milk
H372:	Damages the organs in case of prolonged and repeated exposure
H373:	May cause damage to organs through prolonged or repeated exposure
H411:	Toxic to aquatic organisms, with long lasting effects
EU204	Contains isocyanates. May cause allergic reactions.
EU208	Contains: Formaldehyde. May cause allergic reactions.

Safety instructions:

Prevention:
P201 Obtain special instructions before use
P210 Keep away from heat, sparks, open flames, hot surfaces. Do not smoke.
P220 Keep away from clothing, combustible materials, store away from
P221 Avoid mixing with flammable substances under all circumstances
P233 Keep container tightly closed
P260 Do not inhale dust, smoke, gas, mist, vapour, aerosol
P261 Avoid inhalation of dust, smoke, gas, mist, vapour, aerosol
P263 Avoid contact during pregnancy and lactation
P270 Do not eat, drink or smoke after use
P273 Avoid release into the environment
P280 Wear protective gloves, clothing, eye protection, face protection
P284 Wear respiratory protection

Reaction:
P301+330+331 If swallowed: Rinse out mouth. Do not induce vomiting
P303+361+353 In case of contact with skin (or hair): Immediately remove all soiled, soaked garments . Wash skin with water, shower.
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.
P308+313 In case of exposure or if affected: Seek medical advice / seek medical help
P310 Call a POISON CENTRE or doctor immediately
P312 If you feel unwell, call a poison centre or doctor
P314 If you feel unwell, seek medical advice
P362+364 Remove contaminated clothing and wash before reuse
P370+P378 In case of fire: Use to extinguish: Special powder for metal fires

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.

16.5 Data sources:

1.) Current material safety data sheets
2.) IFA-DGUV-Gestis substance database "cryolite"; search status: 04/06/2023
3.) IFA-DGUV-Gestis substance database "Potassium nitrate"; search status: 11/06/2023
4.) RIGOLETTO database "Catalogue of substances hazardous to water" Federal Environment Agency (UBA); revision: 11/04/2023
5.) TA Air 2021
6.) TRGS 900 Technical Rules for Hazardous Substances - Occupational Exposure Limits; revision: 23/06/2022
7.) DFG (German Research Foundation) - MAK- und BAT-Werte-Liste, Mitteilungen 58, Wiley-VCH, 2022
8.) ECHA/EU - REACH Registration Dossier Potassium Nitrate, dated 15.09.2022
9.) ECHA/EU - REACH Registration Dossier Ashes (residues), cenospheres, (hollow spheres) dated 21.11.2022
10.) ECHA/EU - REACH Registration Dossier Aluminium Grit, dated 7/5/2023
11.) ECHA/EU - REACH Registration Dossier Di-iron trioxide, dated 09.05.2023
12.) ECHA/EU - REACH Registration Dossier Calcined Kaolinite (Chamotte), dated 30.12.2021
13.) ECHA/EU - REACH Registration Dossier Silicon Dioxide, dated 27/5/2018
14.) ECHA/EU - REACH Registration Dossier Trisodium hexafluoroaluminate (Cryolite), dated 20.10.2020
15.) EU - Risk Assessment Report "Trisodiumhexafluoroaluminate", 04-2006
16.) TRGS 509 Technical Rules for Hazardous Substances - Storage of Liquid and Solid Hazardous Substances in Stationary Containers; dated: 20/07/2022
17.) TRGS 510 Technical Rules for Hazardous Substances - Storage of hazardous substances in portable containers; revision: 16/02/2021
18.) DGUV I 209-095 Dust containing quartz in the foundry industry; Stand: 03-2023