SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Material number: 1400603
Trade name: 1400603
PTCR LTL 970-1250°C (3.5 mm), 1200/Box

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

Use of the Substance/Mixture: Ceramic coating suited for firing, for glass and ceramics.

1.3 Details of the supplier of the safety data sheet

Company: Ferro GmbH
Gutleutstraße 215
60327 Frankfurt am Main
Telephone: +4969271160
Telefax: +496927116333
E-mail address: sdb@ferro.com
Responsible/issuing person

1.4 Emergency telephone number

CHEMTREC Global Number: +(1)-703-527-3887(Call Collect)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)
Not a hazardous substance or mixture.
This document has been developed with the exclusive purpose of complying with the obligation of informing the supply chain according to article 32 of the Reach regulation, because this material is not classified and does not require a material safety data sheet.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Not a hazardous substance or mixture.

Additional Labelling:
EUH210 .Safety data sheet available on request.
2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. Prolonged inhalation of fine quartz dust may cause silicosis when the maximum admissible concentration at the work place is exceeded. Symptoms of a silicosis may be cough and chronic inflammation of the respiratory system. There is some evidence of increased risk of lung cancer in people who suffer from silicosis.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical nature: inorganic salt
silicatic material

Hazardous components

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Classification (REGULATION (EC) No 1272/2008)</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>barium carbonate</td>
<td>513-77-9</td>
<td>208-167-3 /</td>
<td>Acute Tox. 4; H302</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>quartz</td>
<td>14808-60-7</td>
<td>238-878-4 /</td>
<td></td>
<td>&lt; 10</td>
</tr>
<tr>
<td>ethanol</td>
<td>64-17-5</td>
<td>200-578-6 /</td>
<td>Flam. Liq. 2; H225</td>
<td>&lt; 10</td>
</tr>
</tbody>
</table>

Substances with a workplace exposure limit:

For explanation of abbreviations see section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice: Do not leave the victim unattended.

If inhaled: If unconscious place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact: Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.

In case of eye contact: Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
If swallowed:
Clean mouth with water and drink afterwards plenty of water. Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms: None known.
Risks: None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media: High volume water jet

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products: No hazardous combustion products are known

5.3 Advice for firefighters

Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus.

Further information: Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions: Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas.
6.2 Environmental precautions

Environmental precautions: No special environmental precautions required.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up:
- Pick up and arrange disposal without creating dust.
- Sweep up and shovel.
- Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling:
- For personal protection see section 8.
- No special handling advice required.
- Smoking, eating and drinking should be prohibited in the application area.

Advice on protection against fire and explosion:
- Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures:
- General industrial hygiene practice.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers:
- Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

Advice on common storage:
- No special restrictions on storage with other products.
- No materials to be especially mentioned.

Other data:
- No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s):
- Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure Limits
### Components

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters</th>
<th>Expressed as</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>quartz</td>
<td>14808-60-7</td>
<td>VLE-MP (Respirable fraction)</td>
<td>0.025 mg/m³</td>
<td>PT OEL</td>
<td></td>
</tr>
<tr>
<td>Further information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substances that are suspected of being carcinogenic for humans, pulmonary fibrosis, lung cancer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>barium carbonate</td>
<td>513-77-9</td>
<td>VLE-MP</td>
<td>0.5 mg/m³ (Barium)</td>
<td>Barium</td>
<td>PT OEL</td>
</tr>
<tr>
<td>Further information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Included by specific national legislation or by not transposed communitary legislation, Substances that are not classified as carcinogenic for humans, Eye irritation, Skin irritation, gastrointestinal irritation, muscular stimulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.5 mg/m³ (Barium)</td>
<td>Barium</td>
<td>2006/15/EC</td>
</tr>
<tr>
<td>Further information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ethanol</td>
<td>64-17-5</td>
<td>VLE-MP</td>
<td>1,000 ppm</td>
<td>Barium</td>
<td>PT DL 305/2007</td>
</tr>
<tr>
<td>Further information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substances that are not classified as carcinogenic for humans, irritation of the upper respiratory tract, Eye irritation, damage of central nervous system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 8.2 Exposure controls

#### Engineering measures

No data available

#### Personal protective equipment

**Eye protection**: Safety glasses

**Hand protection**

**Remarks**: For prolonged or repeated contact use protective gloves.

**Skin and body protection**: Protective suit

**Respiratory protection**: No personal respiratory protective equipment normally required.

**Protective measures**: Wear suitable protective equipment.

When using do not eat, drink or smoke.

#### Environmental exposure controls

**General advice**: No special environmental precautions required.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1 Information on basic physical and chemical properties
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>pellets</td>
</tr>
<tr>
<td>Colour</td>
<td>red</td>
</tr>
<tr>
<td>Odour</td>
<td>characteristic</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Burning rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Bulk density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td></td>
</tr>
<tr>
<td>Water solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Thermal decomposition</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>
9.2 Other information

Refractive index : Not applicable

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
Stable under recommended storage conditions.
No decomposition if stored and applied as directed.

10.2 Chemical stability
No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions
Hazardous reactions : No hazards to be specially mentioned.

10.4 Conditions to avoid
Conditions to avoid : No data available

10.5 Incompatible materials
Materials to avoid : No data available

10.6 Hazardous decomposition products
Hazardous decomposition products : Stable under normal conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
Not classified based on available information.

Product:

Acute oral toxicity : Remarks: No data available

Acute toxicity estimate : > 2,000 mg/kg
Method: Calculation method

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available
### Components:

**quartz:**
Acute oral toxicity: LD50 Oral (Rat): 500 mg/kg  
Assessment: The substance or mixture has no acute oral toxicity

**ethanol:**
Acute dermal toxicity: LD50 (Rabbit): 15,800 mg/kg

### Skin corrosion/irritation
Not classified based on available information.

### Product
Remarks: According to the classification criteria of the European Union, the product is not considered as being a skin irritant.

### Components:

**barium carbonate:**
Species: human skin  
Assessment: No skin irritation  
Method: EPISKIN Human Skin Model Test  
Result: No skin irritation  
GLP: yes  
Test substance: anhydrous substance  
Remarks: According to the classification criteria of the European Union, the product is not considered as being a skin irritant.

**ethanol:**
Species: Rabbit  
Exposure time: 24 h  
Method: OECD Test Guideline 404  
Result: No skin irritation

### Serious eye damage/eye irritation
Not classified based on available information.

### Product
Remarks: According to the classification criteria of the European Union, the product is not considered as being an eye irritant.

### Components:

**barium carbonate:**
Species: Rabbit  
Exposure time: 1 h  
Method: OECD Test Guideline 405  
Result: No eye irritation
Remarks: According to the classification criteria of the European Union, the product is not considered as being an eye irritant.

**ethanol:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Moderate eye irritation

**Respiratory or skin sensitisation**
Skin sensitisation: Not classified based on available information. Respiratory sensitisation: Not classified based on available information.

**Product:**
Remarks: No data available

**Components:**
**barium carbonate:**
Exposure routes: dermal
Species: Mouse
Assessment: Does not cause skin sensitisation.
Method: OECD Test Guideline 429
Result: Did not cause sensitisation on laboratory animals.
GLP: yes
Test substance: anhydrous substance

**Germ cell mutagenicity**
Not classified based on available information.

**Carcinogenicity**
Not classified based on available information.

**Reproductive toxicity**
Not classified based on available information.

**STOT - single exposure**
Not classified based on available information.

**STOT - repeated exposure**
Not classified based on available information.

**Aspiration toxicity**
Not classified based on available information.

**Further information**

**Product:**
Remarks: No data available

**Components:**
SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

**Product:**
Ecotoxicology Assessment
Acute aquatic toxicity  :  This product has no known ecotoxicological effects.
Chronic aquatic toxicity :  This product has no known ecotoxicological effects.

**Components:**
barium carbonate:
Toxicity to fish  :  LC50 (Gambusia affinis (Mosquito fish)): 6,950 mg/l
  Exposure time: 96 h
  Test Type: static test
  Method: OECD Test Guideline 203
  GLP: yes

ethanol:
Toxicity to daphnia and other aquatic invertebrates  :  LC50 (Daphnia (water flea)): 9,268 mg/l
  Exposure time: 48 h

12.2 Persistence and degradability

**Product:**
Biodegradability  :  Remarks: No data available

**Components:**
barium carbonate:
Biodegradability  :  Remarks: No data available
quartz:
Biodegradability  :  Remarks: No data available
ethanol:
Biodegradability  :  Remarks: No data available

12.3 Bioaccumulative potential

**Product:**
Bioaccumulation  :  Remarks: No data available
Components:

barium carbonate:
  Bioaccumulation: Remarks: No data available

quartz:
  Bioaccumulation: Remarks: No data available

ethanol:
  Bioaccumulation: Remarks: No data available
  Partition coefficient: n-octanol/water: log Pow: -0.349 (24 °C)

12.4 Mobility in soil

Product:
  Distribution among environmental compartments: Remarks: No data available

Components:

barium carbonate:
  Distribution among environmental compartments: Remarks: No data available

quartz:
  Distribution among environmental compartments: Remarks: No data available

ethanol:
  Distribution among environmental compartments: Remarks: No data available

12.5 Results of PBT and vPvB assessment

Product:
  Assessment: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Product:
  Additional ecological information: Remarks: No data available
  There is no data available for this product.
SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product: Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging: Empty remaining contents. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number
Not regulated as a dangerous good

14.2 UN proper shipping name
Not regulated as a dangerous good

14.3 Transport hazard class(es)
Not regulated as a dangerous good

14.4 Packing group
Not regulated as a dangerous good

14.5 Environmental hazards
Not regulated as a dangerous good

14.6 Special precautions for user
Remarks: Not classified as dangerous in the meaning of transport regulations.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Ship type: N/A
Pollution category: N/A

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
International Chemical Weapons Convention (CWC): Neither banned nor restricted
Schedules of Toxic Chemicals and Precursors: Neither banned nor restricted

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances,
SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

<table>
<thead>
<tr>
<th>Material number</th>
<th>PTCR LTL 970-1250°C (3.5 mm), 1200/Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>1400603</td>
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</tr>
</tbody>
</table>

Product specification: RS_FP_304384
Version: 1.4
Material number: 1400603
Revision Date: 06/10/2016
Print Date: 06/29/2016
Page: Page 13 of 14

preparations and articles (Annex XVII)

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals: Neither banned nor restricted

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59): This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

REACH - List of substances subject to authorisation (Annex XIV): Neither banned nor restricted

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer: Neither banned nor restricted

Regulation (EC) No 850/2004 on persistent organic pollutants: Neither banned nor restricted


The components of this product are reported in the following inventories:

REACH: This mixture contains only ingredients which have been subject to a pre-registration according to Regulation (EC) No. 1907/2006 (REACH).

CH INV: Not in compliance with the inventory

TSCA: On TSCA Inventory

DSL: All components of this product are on the Canadian DSL.

AICS: On the inventory, or in compliance with the inventory

NZIoC: On the inventory, or in compliance with the inventory

ENCS: Not in compliance with the inventory

ISHL: Not in compliance with the inventory

KECI: On the inventory, or in compliance with the inventory

PICCS: On the inventory, or in compliance with the inventory

IECSC: On the inventory, or in compliance with the inventory

Inventories
SECTION 16: OTHER INFORMATION

Full text of H-Statements
H225 : Highly flammable liquid and vapour.
H302 : Harmful if swallowed.

Full text of other abbreviations
Acute Tox. : Acute toxicity
Flam. Liq. : Flammable liquids

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.