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| <p>P-D Refractories CZ a.s.</p>  <p>Nádražní 218 679 63 Velké Opatovice</p> | MATERIAL SAFETY DATA SHEET (Nr.24) according to the Regulation of the European Parliament and Council Regulation (EC) no. 1907/2006 (REACH), as amended by Commission Regulation (EU) No. 2015/830 | |
| | Date of issue: 1 January 2006 | Page: 1/7 |
| | Revision date: 03.January 2020 | Rev.: 6 |
| Product name: Refractory mastic Product group: RUDOKIT Quality class: ST1500, VT1700, VT1700-U, K85-04PV | | |

SECTION 1. SUBSTANCE/MIXTURE AND MANUFACTURER IDENTIFICATION

1.1 Product identifier:

Business name: **Refractory mastic**

CAS no: n/a (mixture)

EC (EINECS) no: n/a (mixture)

Index no: n/a (mixture)

REACH registration no: N/A for mixtures

Other names: None.

1.2 Designed applications of substance or mixture and non-recommended applications:

Building industry – wet refractory mastic with a chemical binding agent. It is designed for masonry work and sealing refractory and fibrous materials and for forming a levelling or protective layer

Not recommended for: Not applicable.

1.3 Detailed data of material safety data sheet supplier:

Manufacturer: P-D Refractories CZ a.s.

Address: Nádražní 218, 679 63 Velké Opatovice

Phone: +420 516 493 111, Fax: +420 516 477 338

Email address of competent person responsible for material safety data sheet:

Milan.Mazura@pd-group.com

1.4 Emergency phone:

Toxicological information centre --+420 224919293, 224915402

Na Bojišti 1, 128 08 PRAGUE 2

SECTION 2. HAZARD IDENTIFICATION

2.1 Classification of substance or mixture:

The product is not classified as hazardous pursuant to Dangerous Preparation Directive (1999/45/EC) nor pursuant to Regulation of the European Parliament and of the Council (EC) no 1272/2008 CLP.

2.2 Identification elements:

The product is not subject to compulsory identification.

2.3 Other hazards:

Persistent, bio-accumulative and toxic, highly persistent and highly bio-accumulative substances:

Results of PBT and vPvB:

The product does not contain PBT and vPvB.

The mixture does not meet the criteria for PBT or vPvB in accordance with Annex XIII of Regulation 1907/2006 / EC the constituents are not listed on the Candidate List of substances of very high concern (SVHC).

SECTION 3. COMPOSITION/COMPONENT INFORMATION

3.1. Substances:

Not applicable.

3.2. Mixes:

Wet refractory mastic based on refractory grog with phosphate binding that is self-setting in air. Plastic mastic with a chemical binder comprising of 40-85% non-fibrous aluminium oxide (CAS: 1344-28-1, EC: 215-691-6), 0-20% silicon dioxide - quartz (CAS: 14808-60-7, EC:238-878-4), 0–5% cristobalite (CAS: 14464-46-1, EC: 238-455-4) and up to 2% sodium hexametaphosphate (CAS:10361-03-2, EC:233-782-9).

Substances dangerous for health or the environment:

| Name of component | Concentration % mass | CAS EC Index number Registration number | Classification according to 1272/2008/EC |
|---|-------------------------|---|--|
| Quartz (SiO ₂) (micronized Střeleč sand) | <9,8* | 14808-60-7 238-878-4 Not given | STOT RE 1: Toxicity for specific target organs - repeated exposure, Cat. 1 H372: Causes damage to lungs |

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| | | Not subject to registration | through prolonged or repeated exposure through inhalation. |
| <p>*) Expressed as respirable fraction content</p> <p>Note: The components stated above only manifest the hazardous properties when in the dry phase in the form of dust. The hazardous properties are not manifested in the application form (wet compound).</p> <p><u>Substances with workplace exposure limits:</u> Does not contain any in the form for application and after hardening; for separation (working) of the hardened product, see data in Section 8.1.</p> | | | |

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| <p>SECTION 4. FIRST AID INSTRUCTIONS</p> <p><u>4.1 First aid description:</u> <u>4.1.1 First aid instructions:</u> <u>General instructions:</u> When working observe work hygiene. In the event of serious difficulties, seek medical advice. Immediate medical attention is not necessary. <u>Inhalation:</u> The sealant is in a plastic state, it does not irritate airways. <u>Skin contact:</u> Remove the exposed person away from the source of contamination. Remove contaminated clothing and boots, clean both before further use. Quickly and carefully wash the exposed skin with warm water and soap or other skin cleansing agents and treat with a suitable cream. <u>Eye contact:</u> Wash with plenty of lukewarm water. After rinsing use a suitable eye lotion. Wash the eye surroundings with water too. In the case of eye injury seek medical attention. <u>Swallowing:</u> Never evoke vomiting in unconscious person! Do not serve drinks to unconscious person! Rinse the mouth with water carefully, drink a couple of glasses of water.</p> <p><u>4.1.2 Additional data:</u> a) Immediate medical attention is recommended in the case of swallowing. b) In the case of inhalation moving the exposed person to fresh air is recommended. c) Remove contaminated parts of clothing. d) Recommended personal protective means to persons providing first aid: See section 8</p> <p><u>4.2 Major acute and delayed symptoms and effects:</u> It may cause skin irritation. Exposed eye irritation even burning. A burning sensation in the mouth upon ingestion. Gastrointestinal symptoms include nausea, vomiting.</p> <p><u>4.3 Instruction concerning immediate medical attention and special treatment:</u> Visit a doctor in the case of nausea.</p> |
| <p>SECTION 5. FIRE-FIGHTING MEASURES</p> <p><u>5.1 Extinguishing agents:</u> Suitable: Non-flammable. Packaging material used may be flammable, use appropriate extinguishing agent depending on the surrounding fire. Non-suitable: None are specified.</p> <p><u>5.2 Special hazards following from the substance or mixture:</u> None are known.</p> <p><u>5.3 Instructions for fire-fighters:</u> Use equipment depending on the surrounding fire. Non-flammable material.</p> |
| <p>SECTION 6. PRECAUTIONS IN CASE OF ACCIDENTAL LEAK</p> <p><u>6.1 Precautions for personnel protection, protective means and emergency procedures:</u> <u>6.1.1 For staff except for emergency intervention staff</u> Restrict unauthorised access to the exposed area until emergency elimination. In the case of large leaks secure the area against unauthorised access. <u>6.1.2 For emergency intervention staff</u> Prevent further dust spread through the air. In the case of dusty environment use personal protective equipment (see section 8). Other special precautions are not necessary.</p> |

**MATERIAL SAFETY DATA SHEET (Nr.24)**

according to the Regulation of the European Parliament and Council Regulation (EC) no. 1907/2006 (REACH), as amended by Commission Regulation (EU) No. 2015/830

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Product group: RUDOKIT

Quality class: **ST1500, VT1700, VT1700-U, K85-04PV**

6.2 Environment protection measures: No acute negative effects on the environment. Place the devalued product in specified waste collection containers.

6.3 Methods and materials for leak minimisation and cleaning: Spilled product should be placed in designated waste containers. Other special precautions are not necessary.

6.4 References to other sections: Personal protective equipment – section 8.
Waste disposal – section 13.

SECTION 7. STORAGE AND HANDLING

7.1 Precautions for safe handling:

7.1.1 Particular recommendations: Prevent leakage of product during handling.

7.1.2 General hygienic instructions for work: Use personal protective equipment where necessary. Other special precautions are not necessary.

7.2 Conditions for safe storage: Store in a dry place. Storage limits: None are specified.

7.3 Specific final application requirements: No other requirements and instructions except for the data included in section 1.2.

SECTION 8. EXPOSURE LIMITATIONS/PERSONAL PROTECTIVE EQUIPMENT

8.1 Control parameters: Governed by Government Regulation no 361/2007 Coll., stipulating conditions of occupational health protection, as amended, Annex 3:

No hygienic limits are specified for the product.

With regard to the character of the preparation, it is possible to use the following values **for conditions when dust is produced (i.e. division and working of the hardened compound):**

For dust with prevalingly fibrogenic effect:

| Substance | PEL _r (mg.m ⁻³) (respirable fraction) | PEL _c (mg.m ⁻³) (total fraction) |
|---|---|--|
| Quartz, cristobalite | 0,1 | -- |
| Substance | PEL (mg.m ⁻³) F _r ≤ 5% F _r > 5% | PEL _c (mg.m ⁻³) |
| Other silicates (F _r = respirable fraction) | 2.0 10 : F _r | 10 |

For dust with potential fibrogenic effect:

| Substance | PEL _c (mg.m ⁻³) (total fraction) |
|----------------------------|--|
| Amorphous SiO ₂ | 4.0 |

For dust with prevalingly non-specific effect

| Substance | PEL (mg.m ⁻³) |
|---|---------------------------|
| Aluminium and its oxides (except for gamma Al ₂ O ₃) | 10 |

8.2 Exposure limitations:

8.2.1 Appropriate technical controls: Ventilation – Where dust content in the air may be controlled with technical methods (local exhaust, ventilation etc.)

8.2.2 Individual protective measures including personal protective equipment:


Hygienic conditions: Prevent eye contact, do not inhale.
Do not stay in places with higher dust concentrations without cause
Observe routine personal hygiene before eating, drinking, toilet use and after work.

Personal protective equipment:

Eye and face protection: Use protective goggles with side pieces in the places of excessive dust formation.

Skin – hand protection: Protective work gloves (for example leather).

Skin – other protection: Work clothes and boots.

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Respiratory tract protection: In the case of exceeded NPK (exposure limit) use a respirator with filter against fibrogenic dust

Thermal hazard: N/A

8.2.3 Limitations of environment exposure:

Prevent flying dust during cutting, grinding, breaking etc.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

The information relates to mixture.

9.1 Information about basic physical and chemical properties

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| a) Appearance | Solid state – wet mix with a granularity below 0.5 mm, different colours |
| b) Odour | None. |
| c) Odour threshold | Not specified. |
| d) pH | 6 - 9 |
| e) Melting / solidification point | Not specified. |
| f) Initial boiling point and range | Not specified. |
| g) Ignition point | Non-flammable. |
| h) Evaporation speed | Not specified. |
| i) Flammability (solid subst., gas) | Non-flammable. |
| j) Upper/lower limit of flammability or explosiveness | Not specified. |
| k) Vapour pressure | Not specified. |
| l) Vapour density | Not specified |
| m) Relative density | 1.9 – 2.9 g/cm ³ (bulk density) |
| n) Solubility | Non-soluble |
| o) Differentiation coefficient: n-octanol/water | Not specified. |
| p) Self-ignition temperature | Non-flammable. |
| q) Decomposition temperature | Not specified. |
| r) Dynamic viscosity | Not specified. |
| s) Explosive properties | None. |
| t) Oxidisation properties | None. |

9.2. Other information

Solvent content (VOC) 0% (according to definition of the air protection act)

Note:

"Not specified": irrelevant for the product

"None": not available for the product.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: No decomposition under appropriate storage and use conditions.

10.2 Chemical stability: The product is stable under normal conditions.

10.3 Possible dangerous reactions: None.

10.4 Conditions to be avoided: None.

10.5 Incompatible materials: None.

10.6 Dangerous decomposition products: None.


SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information about toxicological effects:

Ways of entry to organism: No acute or chronic effects when entering through common ways of entry.

a) Acute toxicity:

- LD₅₀, oral, rat (mg.kg⁻¹): not specified
- LD₅₀, dermal, rat or rabbit (mg.kg⁻¹): not specified
- LC₅₀, inhalation, rat, for aerosols or particles (mg.kg⁻¹): not specified
- LC₅₀, inhalation, rat, for gases and vapours (mg.kg⁻¹): not specified

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Swallowing: Not specified.

b) skin corrosion/irritation:

Skin irritant: Not classified.

c) serious eye damage/irritation:

Eye irritant: Not classified.

d) Sensitisation of respiratory tract / skin:

Not classified.

e) Mutagenicity in embryonic cells:

Not classified.

f) Carcinogenicity:

Not classified.

g) Toxicity for reproduction:

Not classified.

h) Toxicity for specific target organs – single exposition: Not classified.

i) Toxicity for specific target organs – multiple expositions:

This product contains respirable quartz as an impurity and therefore is classified as STOT RE 2 according to the criteria defined in EC Regulation 1272/2008. Prolonged or excessive inhalation of respirable crystalline quartzite dust may cause pulmonary fibrosis, which is nodular pulmonary fibrosis caused by the deposition of fine respirable particles of crystalline quartzite in the lungs.

In 1997, the IARC (International Agency for Research on Cancer) concluded that crystalline quartzite inhaled from occupational sources can cause lung cancer in humans. It stressed, however, that not all industrial circumstances, nor all types of crystalline quartzite can be blamed. (Monograph IARC risk evaluation of cancer in humans caused by chemicals, silicon, quartzite powder and organic fibres, 1997, Vol 68, IARC, Lyon, France). In June 2003, the EU Scientific Committee on Occupational Exposure Limits to chemical agents (SCOEL) concluded that the main result of inhaling respirable crystalline quartzite dust in humans is silicosis. "There is sufficient information to conclude that the relative lung cancer risk is increased in persons with silicosis (and apparently, not in employees without silicosis exposed to quartzite dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..."(SCOEL SUM Doc 94-final, June 2003).

Thus, there is evidence supporting the fact that increased cancer risk is limited to persons who are already suffering from silicosis. Protection of workers from silicosis should be assured by respecting the existing exposure limits at work and using additional risk management measures where required (see section 16 below).

j) Dangers on inhalation: Not classified.

Other information: The product may contain crystalline quartzite. Product dust inhalation is considered a source of minimum risk of lung fibrosis (silicosis). Chronic obstructive lung disorder is only suspected after very long exposition times (years) under exposure concentrations exceeding the permitted limits. Carcinogenicity of cristobalite for humans has not been unambiguously proved.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity for aqueous organisms: A natural material by origin, no assumed toxic effects on aqueous organisms.

12.2 Persistence and degradability: The product is inert and does not degrade.

12.3 Bioaccumulation potential: Data not available.

12.4 Mobility in soil: Data not available.

12.5. Results of PBT and VPvB assessment: Not required.

12.6. Other unfavourable effects: The product is inert and other potential negative effects are connected with mechanical effects of dust formation.

SECTION 13. DISPOSAL INSTRUCTIONS


13.1 Methods of waste disposal: Dumping on specified dumps. Disposal by release to sewerage: Excluded by the product nature.

Waste classification according to Decree 93/2016 Coll. (Waste Catalogue):

10 12 01 Waste ceramic material before thermal processing, cat. O.

13.2 Methods of contaminated waste disposal: According to the nature of package construction material the waste is classified in group 15 01 Packaging materials (including separately collected communal waste packaging materials), cat. O. Empty package without content residues may be disposed of by procedures dictated by the construction material of the package (repurchase, recycling, dumping, incineration).

13.3 Waste legislation: Act no 185/2001 Coll., on Waste
93/2016 Coll., On the Waste Catalogue

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Decree no 383/2001 Coll. on waste Disposal Details

SECTION 14. TRANSPORT INFORMATION

14.1 UN no:

Not subject to regulations for dangerous object transport.

14.2 Official (UN) shipping name:

Not subject to regulations for dangerous object transport.

14.3 Class/classes of dangers for transport:

Not subject to regulations for dangerous object transport.

14.4 Package group:

Not subject to regulations for dangerous object transport.

14.5 Environment hazards:

Not subject to regulations for dangerous object transport.

14.6 Special safety precautions for users:

Not subject to regulations for dangerous object transport.

14.7 Bulk transport according to Annex II MARPOL 73/78 and IBC regulation:

Not subject to regulations for dangerous object transport.

SECTION 15. REGULATORY INFORMATION

15.1 Regulations concerning safety, health and environment/specific legislation concerning substance or mixture

Act no 254/2001 Coll. on Waters (Water Act), as amended

Act no 185/2001 Coll., on Waste, as amended

Act no 201/2012 Coll., on Air Protection

Act no 258/2000 Coll., on Public Health Protection, as amended

Act no 350/2011 Coll. of 27 October 2011 on Chemical Substances and Mixtures and on amendment to certain other acts (Chemical Act)

Government Regulation no 361/2007 Coll., as amended, stipulating conditions for occupational health, including PEL and NPK exposure limits (see 8 above).

Regulation (EC) no 1907/2006 on Registration, Evaluation, Authorisation & Restriction of Chemicals and on Establishment of European Chemical Agency, as amended (REACH).

Regulation (EC) no 1272/2008 of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC and on amendment of Regulation (EC) no 907/2006 (CLP)

15.2 Chemical safety assessment

There are no available data for assessment of safety of chemical substances for this material.

SECTION 16. OTHER INFORMATION

Data on amendments and revisions:

| Rev. no | Date | Amendment description |
|---------|-------------|---|
| 1. | 6 Nov 2007 | Change of structure and form of the whole material safety data sheet according to Annex II to Regulation of the European Parliament and of the Council (EC) no 1907/2006 (REACH) |
| 2. | 20 Nov 2012 | Periodic revision |
| 3. | 3 Sep 2013 | Overall reformulation of MSDS in compliance with the effective Annex II to Regulation (EC) no 1907/2006 |
| 4. | 11 Dec 2015 | Modifications to the wording the titles of the subsections in accordance with Commission Regulation (EU) no. 2015/830. Review of quality groups pertaining to the MSDS depending on the product's constituents. Changes are reflected in the subsections: Header, 1.2, 2.1, 2.2, 2.3, 3.1, 3.2, 11.1, |

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| | | 14.1, 14.2, 15.1, 16. |
| 5. | 18 Nov 2016 | Omitting items VT1700 U and K85 O4PV Section 2.1, 2.2: Change in the classification and labelling with regard to the form of application. Modification of the text in Section 1.2, 3.2, 8.1, 13.3, 15.1 and 16 – without any impact on the stated principles of manipulation. |
| 6. | 03.Jan.2020 | Updates to Chapters 1.3, 13.1, 15.1, 16 |

Important literature references and data sources: Data contained in this material safety data sheet were compiled from materials of the manufacturer, according to the documents of the supplier of the item “micronized Štřeleč sand” and on the basis of the legislation in force in the CR and the EU.

In the case of mixture information about which information evaluation method according to Article 9 of Regulation (EC) no 1272/2008 was used for classification purposes:
Calculation method pursuant to Regulation (EC) No. 1272/2008 of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 907/2006 (the CLP).
List of relevant standard phrases and instructions for safe use. Full wording of all phrases and instructions not included in sections 2 to 15:
None are included.

Instructions concerning all training courses for staff responsible for human health and environment protection:
Staff should be informed about the principles of work with the product and required personal protective equipment in the context of regular OHS training.

Recommended limitations for use:
Use exclusively for purposes specified by the manufacturer.
The following recommendations should be preserved when handling the product. For the sake of unification the recommendations are formulated in the form of P-phrases (Instructions for safe handling):
P262 Avoid contact with eyes, skin or clothing.
P302+P352 DURING SKIN CONTACT: Wash with plenty of soap and water.
P280 Wear protective gloves / protective clothing / eye protection / face protection.

Social dialogue on respirable crystalline quartzite:
The Multi-sectoral Social Agreement on Workers Health Protection Through the Good Handling and Use of Crystalline quartzite and Products Containing It, signed on 25 April 2006. This autonomous agreement, which received financial support from the European Commission, is based on a Good Practices Guide. The requirements of the Agreement came into force on 25 October 2006. The Agreement was published in the Official Journal of the European Union (2006/C 279/02). The text of the Agreement and its annexes, including the Good Practices Guide, are available at <http://www.nepsi.eu> and provide useful information and guidance for the handling of products containing respirable crystalline quartzite. References are available on request from EUROSIL, the European Association of Industrial Producers of silica products.

Other information:
The above data describe exclusively safety requirements for products and are based on current knowledge. They do not describe product properties in the sense of quality parameters and legislative regulations for warranty compliance.

End of material safety data sheet.