


<p><b>P-D Refractories CZ a.s.</b></p>  <p>Nádražní 218 679 63 Velké Opatovice</p>	<h2 style="margin: 0;">MATERIAL SAFETY DATA SHEET</h2> <p style="margin: 0;">Pursuant to Regulation of the European Parliament and of the Council (EC) no 1907/2006 (REACH)</p>	
	<p>Date of issue: 6 February 2008</p> <p>Revision date: 01. January 2016</p>	<p>Page: 1/6</p> <p>Revision No.: 4</p>
	<p>Product name: <b>Refractory products made by casting or vibrating</b> (content of Al<sub>2</sub>O<sub>3</sub> 45 – 98 %)</p> <p>Product group: OPAFLO;</p> <p>Quality class: <b>A45F, A45FB, A45FBH, A45ZM35F, A50F, A55ZM25F, A65SF, A65MZ11F, A65MZ11F-Ex, A65ZK20F, A75MF, A85MKF, A95KF, A98KF, A90FLK</b> <b>ZBH115-TV, ZBH130-TV, ZBH140-TV, ZBH145TB, ZBH145TBUF</b> <b>ZBU155-25SiC-TV, ZBU155-70SiC-TV, ZBU160BCR-TV</b> <b>ZBC130-1,5-TV</b></p>	

### SECTION 1. SUBSTANCE/MIXTURE AND MANUFACTURER IDENTIFICATION

#### 1.1 Product identifier:

**Business name: Refractory products made by casting or vibrating**  
(content of Al<sub>2</sub>O<sub>3</sub> 45 – 98 %)

CAS no: n/a (mixture)

ES ( 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 – masonry lining of walls, vaults and other parts of thermal aggregates.

#### 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: kovar@mslz.cz

#### 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:

None are specified

### SECTION 3. COMPOSITION/COMPONENT INFORMATION

#### 3.1. Description and characteristics:

Moulded dense refractory material based on aluminium-silicates with ceramic bond created by sintering at temperatures higher than 800°C. Refractory material made by casting or vibrocasting with non-fibrous aluminium oxide content over 45 % (CAS: 1344-28-1, ES: 215-691-6), 0-10% of silicon dioxide – silica (CAS: 14808-60-7, ES:238-878-4), 0–5% of cristobalite (CAS: 14464-46-1, ES: 238-455-4) and 0-30% of zirconium dioxide.

#### 3.2. Substances dangerous for health or the environment:

The product does not contain substances classified as dangerous in the sense of Act no 350/2011 Coll., or in the sense of Dangerous Preparation Directive (1999/45/EC) or Regulation of the European Parliament and of the Council (EC) no. 1272/2008 CLP.

#### Substances with workplace exposure limits:

Does not contain any in the solid state, otherwise see data in 8.1.

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

The product does not contain PBT and vPvB type substances.

### SECTION 4. FIRST AID INSTRUCTIONS

#### 4.1 First aid description:

##### 4.1.1 First aid instructions:

**General instructions:** Dust resulting from cutting, grinding, breaking etc. mainly consists of a mixture of aluminium-silicates. Exposure to dust particles may cause irritation of eyes and upper respiratory tract.

Dust particles may contain a small amount of crystalline silicon dioxide.

Immediate medical attention is not necessary.

# MATERIAL SAFETY DATA SHEET

Pursuant to Regulation of the European Parliament and of the Council (EC) no 1907/2006 (REACH)

P-D Refractories CZ a.s.



Nádražní 218  
679 63 Velké Opatovice

Date of issue: 6 February 2008

Page: 2/6

Revision date: 01. January 2016

Revision No.: 4

Product name: **Refractory products made by casting or vibrating**  
(content of Al<sub>2</sub>O<sub>3</sub> 45 – 98 %)

Product group: OPAFLO;

Quality class: **A45F, A45FB, A45FBH, A45ZM35F, A50F, A55ZM25F, A65SF, A65MZ11F, A65MZ11F-Ex, A65ZK20F, A75MF, A85MKF, A95KF, A98KF, A90FLK, ZBH115-TV, ZBH130-TV, ZBH140-TV, ZBH145TB, ZBH145TBUF, ZBU155-25SiC-TV, ZBU155-70SiC-TV, ZBU160BCR-TV, ZBC130-1,5-TV**

<u>Inhalation:</u>	Move the exposed person to the fresh air. Rinse the oral cavity with water and clear the nose to remove the inhaled dust.
<u>Skin contact:</u>	First aid not needed, observe routine personal hygiene practice.
<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.
4.1.2 Additional data:	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
4.2 Major acute and delayed symptoms and effects:	Respiratory tract irritation. Exposed eye irritation. Temporary irritation of the digestive tract after swallowing the dust.
4.3 Instruction concerning immediate medical attention and special treatment:	Visit a doctor in the case of nausea.

## SECTION 5. FIRE-FIGHTING MEASURES

- 5.1 Extinguishing agents: **Suitable:** Non-flammable. Packaging material used may be flammable, use appropriate extinguishing agent depending on the surrounding fire.  
**Non-suitable:** None are specified.
- 5.2 Special hazards following from the substance or mixture: None are known.
- 5.3 Instructions for fire-fighters: Use equipment depending on the surrounding fire. Non-flammable material.

## SECTION 6. PRECAUTIONS IN CASE OF ACCIDENTAL LEAK

- 6.1 Precautions for personnel protection, protective means and emergency procedures:
- 6.1.1 For staff except for emergency intervention staff  
Restrict unauthorised access to the exposed area until emergency elimination. In the case of large leaks secure the area against unauthorised access.
- 6.1.2 For emergency intervention staff  
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.
- 6.2 Environment protection measures: No acute negative effects on the environment. Prevent further dust spread through the air. Place the devalued product in specified waste collection containers.
- 6.3 Methods and materials for leak minimisation and cleaning: Sweep up the spilled product and place in specified waste collection containers. Prevent excessive dust formation during cleaning. 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 excessive (undesirable) dust formation 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. Prevent dust formation. 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.

# MATERIAL SAFETY DATA SHEET

Pursuant to Regulation of the European Parliament and of the Council (EC) no 1907/2006 (REACH)

P-D Refractories CZ a.s.



Nádražní 218  
679 63 Velké Opatovice

Date of issue: 6 February 2008

Page: 3/6

Revision date: 01. January 2016

Revision No.: 4

Product name: **Refractory products made by casting or vibrating**  
(content of Al<sub>2</sub>O<sub>3</sub> 45 – 98 %)

Product group: OPAFLO;

Quality class: **A45F, A45FB, A45FBH, A45ZM35F, A50F, A55ZM25F, A65SF, A65MZ11F, A65MZ11F-Ex, A65ZK20F, A75MF, A85MKF, A95KF, A98KF, A90FLK, ZBH115-TV, ZBH130-TV, ZBH140-TV, ZBH145TB, ZBH145TBUF, ZBU155-25SiC-TV, ZBU155-70SiC-TV, ZBU160BCR-TV, ZBC130-1,5-TV**

## 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. Due to the nature of the mixture the following values may be applied:

For dust with prevailing fibrogenic effect:

Substance	PEL <sub>r</sub> (mg.m <sup>-3</sup> ) (respirable fraction)	PEL <sub>c</sub> (mg.m <sup>-3</sup> ) (total concentration)
Silica, cristobalite	0,1	--
Substance	PEL (mg.m <sup>-3</sup> ) F <sub>r</sub> ≤ 5%    F <sub>r</sub> > 5%	PEL <sub>c</sub> (mg.m <sup>-3</sup> )
Other silicates (F <sub>r</sub> = respirable fraction)	2.0    10 : F <sub>r</sub>	10

For dust with potential fibrogenic effect:

Substance	PEL <sub>c</sub> (mg.m <sup>-3</sup> ) (total fraction)
Amorphous SiO <sub>2</sub>	4.0
For dust with prevailing non-specific effect	
Substance	PEL (mg.m <sup>-3</sup> )
Aluminium and its oxides (except for gamma Al <sub>2</sub> O <sub>3</sub> )	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.

**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

- |                                    |   |
|------------------------------------|---|
| a) Appearance                      | Solid state – refractory moulded pieces, different colours. |
| b) Odour                           | None.   |
| c) Odour threshold                 | Not specified.  |
| d) pH                              | 6 - 8   |
| e) Melting / solidification point  | Not specified.  |
| f) Initial boiling point and range | Not specified.  |

# MATERIAL SAFETY DATA SHEET

Pursuant to Regulation of the European Parliament and of the Council (EC) no 1907/2006 (REACH)

P-D Refractories CZ a.s.



Nádražní 218  
679 63 Velké Opatovice

Date of issue: 6 February 2008

Page: 4/6

Revision date: 01. January 2016

Revision No.: 4

Product name: **Refractory products made by casting or vibrating**  
(content of Al<sub>2</sub>O<sub>3</sub> 45 – 98 %)

Product group: OPAFLO;

Quality class: **A45F, A45FB, A45FBH, A45ZM35F, A50F, A55ZM25F, A65SF, A65MZ11F, A65MZ11F-Ex, A65ZK20F, A75MF, A85MKF, A95KF, A98KF, A90FLK, ZBH115-TV, ZBH130-TV, ZBH140-TV, ZBH145TB, ZBH145TBUF, ZBU155-25SiC-TV, ZBU155-70SiC-TV, ZBU160BCR-TV, ZBC130-1,5-TV**

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	2.1 – 3.5 g/cm <sup>3</sup> (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.
<u>9.2. Other information</u>	
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

<u>10.1 Reactivity:</u>	No decomposition under appropriate storage and use conditions.
<u>10.2 Chemical stability:</u>	The product is stable under normal conditions.
<u>10.3 Possible dangerous reactions:</u>	None.
<u>10.4 Conditions to be avoided:</u>	None.
<u>10.5 Incompatible materials:</u>	None.
<u>10.6 Dangerous decomposition products:</u>	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.

#### Acute toxicity:

- LD<sub>50</sub>, oral, rat (mg.kg<sup>-1</sup>): not specified
- LD<sub>50</sub>, dermal, rat or rabbit (mg.kg<sup>-1</sup>): not specified
- LC<sub>50</sub>, inhalation, rat, for aerosols or particles (mg.kg<sup>-1</sup>): not specified
- LC<sub>50</sub>, inhalation, rat, for gases and vapours (mg.kg<sup>-1</sup>): not specified

Swallowing: Not specified.

Skin contact: Skin irritant: Not classified.

Eye contact: Eye irritant: Not classified.

Sensitisation of respiratory tract / skin: Not classified.

Mutagenicity in embryonic cells: Not classified.

Carcinogenicity: Not classified.

Toxicity for reproduction: Not classified.

Toxicity for specific target organs – single exposition:

Toxicity for specific target organs – multiple expositions: STOT - repeated expositions: Not classified.

Dangers on inhalation: Not classified.

Other information: The product may contain crystalline silica. Product dust inhalation is considered a source of minimum risk of lung fibrosis (silicosis). Chronic obstructive lung disorder is only suspected

# MATERIAL SAFETY DATA SHEET

Pursuant to Regulation of the European Parliament and of the Council (EC) no 1907/2006 (REACH)

P-D Refractories CZ a.s.



Nádražní 218  
679 63 Velké Opatovice

Date of issue: 6 February 2008

Page: 5/6

Revision date: 01. January 2016

Revision No.: 4

Product name: **Refractory products made by casting or vibrating**  
(content of Al<sub>2</sub>O<sub>3</sub> 45 – 98 %)

Product group: OPAFLO;

Quality class: **A45F, A45FB, A45FBH, A45ZM35F, A50F, A55ZM25F, A65SF, A65MZ11F, A65MZ11F-Ex, A65ZK20F, A75MF, A85MKF, A95KF, A98KF, A90FLK, ZBH115-TV, ZBH130-TV, ZBH140-TV, ZBH145TB, ZBH145TBUF, ZBU155-25SiC-TV, ZBU155-70SiC-TV, ZBU160BCR-TV, ZBC130-1,5-TV**

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 381/2001 Coll. (Waste Catalogue):

10 12 08 Waste ceramic goods, bricks, tiles and construction materials (after 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).

13.2 Appropriate methods of disposal of substance of mixture:

13.3 Waste legislation: Act no 185/2001 Coll., on Waste  
Decree no 381/2001 Coll. (Waste Catalogue)  
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 UN name for consignment:

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

# MATERIAL SAFETY DATA SHEET

Pursuant to Regulation of the European Parliament and of the Council (EC) no 1907/2006 (REACH)

P-D Refractories CZ a.s.



Nádražní 218  
679 63 Velké Opatovice

Date of issue: 6 February 2008

Page: 6/6

Revision date: 01. January 2016

Revision No.: 4

Product name: **Refractory products made by casting or vibrating**  
(content of Al<sub>2</sub>O<sub>3</sub> 45 – 98 %)

Product group: OPAFLO;

Quality class: **A45F, A45FB, A45FBH, A45ZM35F, A50F, A55ZM25F, A65SF, A65MZ11F, A65MZ11F-Ex, A65ZK20F, A75MF, A85MKF, A95KF, A98KF, A90FLK, ZBH115-TV, ZBH130-TV, ZBH140-TV, ZBH145TB, ZBH145TBUF, ZBU155-25SiC-TV, ZBU155-70SiC-TV, ZBU160BCR-TV, ZBC130-1,5-TV**

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

Decree no 402/2011 Coll. on Assessment of Dangerous Properties of Chemical Substances and Mixtures and Packaging and Labelling of Dangerous Chemical Mixtures

ČSN 75 3415 Water Protection against Oil Substances. Objects for Oil Substance Handling and Storage

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)

Directive 67/548/EEC (DSD) – Dangerous Substances Directive

Directive 1999/45/EC (DPD) – Dangerous Preparations Directive

## 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.	20 Nov 2012	Quality class update
2.	20 Aug 2013	Overall reformulation of SPC in compliance with the effective Annex II to Regulation (EC) no 1907/2006
3.	15 Jan 2015	Replenishment of product assortment
4.	01 Jan 2016	Replenishment of product assortment

Important literature references and data sources: Data contained in this material safety data sheet were compiled from materials of the manufacturer and on the basis of effective CR and EU legislation.

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:

Approximation according to hazards of components and physical nature of product.

List of relevant R-phrases, standard risk phrases, safety phrases and/or instructions for safe handling. 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.

Other information: This safety data sheet is issued by P-D Refractories CZ a.s. Velké Opatovice on request of customer. Regulation (EC) no 1907/2006 on Registration, Evaluation, Authorisation & Restriction of Chemicals and on Establishment of European Chemical Agency, as amended (REACH) does not apply to the product in question.

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 safety data sheet.**