

## **EUCOR - MATERIAL SAFETY INFORMATION**

(not subject to Act no. 353/2003 and Decree no. 231/2004 on Material Safety Data Sheets)

### **1. Substance Identification**

#### **Zircon Oxide (corundum-baddeleyite material)**

Characteristics: Silicate casts prepared by means of melting of suitable raw materials.

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### **2. Information on Substance Composition**

#### **Chemical composition - typical value (in % of mass)**

SiO<sub>2</sub> 12 - 18%  
Al<sub>2</sub>O<sub>3</sub> 34 - 52%  
ZrO<sub>2</sub> 30 - 35%  
N<sub>2</sub>O + K<sub>2</sub>O 2 - 5%

#### **Mineralogical composition - typical values (in % of mass)**

Corundum 47 - 52%  
Baddeleyite 30 - 34%  
Vitreous phase 17 - 21%

### **3. Possible Dangers**

Zircon oxide material is not dangerous. Dust particles are created in the treatment of casts. No health effects have been identified. Nuklid Plzen company, authorised to measure natural radio nuclides, has issued Report no. 60051 S2, stating the following: Zircon oxide is used as pipe lining, and is not used as a construction material. According to Decree no. 307/2002 CoII., Section 87, Item e), workplaces where this material is processed are places of increased natural radiation risk, and affected workers have to have annual doses specified.

Following is the statement of the National Nuclear Safety Authority in Prague concerning the results of measurements of natural radioactivity and the specific effective workplace doses:

*"Having read the reports thoroughly, we state that the measurements made detected no excess of the guideline value established by Decree no. 307/2002 CoII., Section 88, Paragraph 2, as "amended by Decree no. 499/2005 CoII.; and detected no excess of investigation values according to Section 88, Paragraphs 1a) and 1b) of the aforementioned Decree; and therefore., in accordance with the provision of Section 89, Paragraph 3d) of the aforementioned Decree, no measurements have to be made and no effective doses have to be specified in the future, unless working conditions, manufacturing procedures, or raw materials change."*

### **4. First Aid Measures**

Zircon oxide material is safe for health. Mucous membranes may be irritated under increased dust formation due to cutting and treatment of casts. In the event of skin contact, washing with water and soap is recommended. In the event of eye contact, rinse with running clean water. No first aid measures are required in the event of ingestion.

### **5. Fire Precautions**

Products made of zircon oxide are non-inflammable, non-explosive, and release no dangerous chemicals.

### **6. Accidental Release Measures**

No measures are required. Rinsing floor spaces with water is sufficient under increased dust formation due to treatment. Dust sweeping or exhaust is good prevention. Operators should use filter respirators for increased exposure.

## **7. Handling and Storage**

Products of various shapes are mostly stored and handled on EUR pallets in roofed storage areas.

## **8. Personal Inspection, Exposure and Protection**

The exposure limit for the dust is 0.1 *mg/m<sup>3</sup>*. Persons are to use a filter respirator when cutting the material. Hands have to be washed after work. Eating and drinking while working with zircon oxide is prohibited. Greasy creams should be used after work for better hand skin protection. Hand, body and eye protection in normal handling is not required.

## **9. Physical and Chemical Properties**

State: solid; Odour: none; Water solubility: negligible; Solubility in HF (hydrofluoric acid): total (silicate); Density in *g/cm<sup>3</sup>*: 3.85. The physical and chemical properties of zircon oxide are provided in catalogue sheet E-02.

## **10. Stability and Reactivity**

The product is stable throughout the function period. Natural radioactivity is measured biannually (protocol available from the manufacturer).

## **11. Toxicological Information**

Acute toxicity has not been proved as natural components are present. The material causes no irritant reactions.

## **12. Ecological Information**

The material is not toxic to aqueous or other environments. Zircon oxide can be recycled after-use. It is collected in designated roofed storage areas. Its storage poses no environmental burden.

## **13. Processing and Disposal Instructions**

Used material is crushed. It is picked and loaded for repeated melting. It is stored in roofed storage areas.

## **14. Transportation Information**

In the form of solid products, the material is transported on pallets, mostly protected with foil wrap. The goods are not considered hazardous substances by law. The so-called Harmless Clause by the National Nuclear Safety Authority (see document) should be enclosed for transportation.

## **15. Regulations**

Zircon oxide is DOT classified as a hazardous substance. It was evaluated according to the Toxic Substances and Preparations Act (no. 356/2003 Coll.). This Czech law is compatible with EU provisions. As zircon oxide is not classified under the so-called Binding Qualification List of Hazardous Substances and Preparations, it is not subject to registration under the aforementioned law. Orders for the event of an accident are not taken into consideration.

## **16. Special Information**

Zircon oxide is a material produced from the raw material by means of multiple melting, during which phase alterations of corundum and baddeleyite take place. Crystallization develops the material properties of high abrasion and heat resistance. The so-called catalogue sheet E-02 is a binding standard. The above information describes the safety requirements on the material according to state-of-the-art scientific and technological knowledge.

The user is responsible for the completeness and usability of the information for their specific uses. The statement of the National Nuclear Safety Authority in Prague is an appendix to this document.

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