

IFGL REFRACTORIES LIMITED

MATERIAL SAFETY DATA SHEET

Issue dated on : 01/11/09

1. IDENTIFICATION

- 1.1. NAME OF PRODUCT : Continuous Casting Refractories, i.e., Sub-Entry Nozzles, Sub-Entry Shrouds, Monoblock Stoppers .
- 1.2. TYPE OF PRODUCT : Cold Isostatic Pressed Alumina Graphite or Zirconia - Graphite or Magnesia - Graphite Refractories.
- 1.3. MANUFACTURER'S NAME & ADDRESS : M/s. IFGL Refractories Limited
Sector "B", Kalunga Industrial Estate,
Kalunga - 770 031,
Sundargarh, Orissa,
INDIA
- 1.4. CONTACT NO. : Tel : + 91 661 2660583 to 585
+ 91 661 2660196
+ 91 661 2660626
Fax : + 91 661 2660173
- 1.5. EMERGENCY CONTACT NO. : Tel : + 91 33 22482411
Fax : + 91 33 22430886, 22480482
- 1.6. DEPARTMENT TO CONTACT : Export

2. COMPOSITION / INFORMATION ABOUT THE COMPONENT

- 2.1 CHEMICAL FAMILY : A) Alumina - Graphite : Monoblock Stopper
B) Zirconia - Lime - Graphite : Sub-Entry Nozzle/Shroud
C) Magnesia - Graphite : Monoblock Stopper
- 2.2 COMPONENTS : Graphite based mixture, Cold Isostatic Pressed, Dried, Fired, Machined & Ceramic Fibre Paper Wrapped wherever required.

2.3 MIXTURE ANALYSIS

Major Component	% of Weight				
	A	B	C		
Al ₂ O ₃	60 ~ 70	-	-		
SiO ₂	-	-	-		
C	20 ~ 33	17 ~ 21	12 ~ 17		
ZrO ₂	-	70 ~ 78	-		
CaO	-	3 ~ 5	-		
MgO	-	-	75 ~ 82		

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3. HAZARDS IDENTIFICATION

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| 3.1 EMERGENCY OVERVIEW | : Black coloured shaped refractory. Avoid inhaling fumes during initial heat up. |
| 3.2 DANGEROUS GOODS CLASS / SUBSIDIARY RISK | : N / A |
| 3.3 PRIMARY ROUTE OF ENTRY | : Inhalation, eye and skin contact. |
| 3.4 ACUTE OVER EXPOSURE | : Dust may cause skin and eye irritation. Fumes may cause headache and respiratory irritation. |
| 3.5 CHRONIC OVER EXPOSURE | : Long term exposure to excessive dust may be harmful causing breathing problem. |
| 3.6 DUST | : In the form delivered, the product carries less risk of dust. |
| 3.7 SMOKE | : No smoke generation in normal operational condition. |

4. FIRST SAFETY PRECAUTIONS

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| 4.1. EYE PROTECTION | : Not necessary, but in case of any excessive dust generation especially during machining, rinse eyes with adequate clean water, use eye drop and if necessary consult with a Doctor. |
| 4.2. INHALATION | : No specific action, but if situations require use a half mask respirator. |
| 4.3. GLOVE TYPE | : Heat resistant, non porous non slip gloves. |
| 4.4. CONTACT WITH SKIN | : No specific action for normal products. For Ceramic Fibre Wrapped products, whiskers/Fibres may penetrate through skin if touched withoutt using gloves and cause pain. |
| 4.5. INGESTION | : No specific action. |
| 4.6. OTHERS | : Safety Foot wear & an overall safety measures are recommended. |

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5. PREVENTION MEASURES AGAINST FIRE

* **THE PRODUCT IS NON FLAMMABLE.**

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| 5.1. HAZARDS OF USE / STORAGE | : None |
| 5.2. LIST OF DANGEROUS DECOMPOSITION PRODUCTS | : None |
| 5.3. FIRE FIGHTING RECOMMENDATIONS | : None |
| 5.4. PROTECTIVE CLOTHING | : Loose clothing to avoid |
| 5.5. REACTIVITY | : Burning of Graphite starts at ~ 500 ^o C in oxidising atmosphere. |
| 5.6. MEANS OF EXTINCTION | : As far general applications on packaging material / pallets. |
| 5.7. EXTINGUISHING MEDIA | : Foam, CO ₂ , Dry Chemical - for packaging & surrounding materials. |
| 5.8. SPECIAL PROCEDURES | : Refractory product. No special risk in the event of fire. |

6. PREVENTION MEASURES IN CASE OF ACCIDENTAL DISPERSION

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| 6.1. VENTILATION | : Local exhaust is sufficient |
| 6.2. EARTHING | : N / A |
| 6.3. SOURCES OF IGNITION DEVICE | : None |
| 6.4. SPECIAL EQUIPMENT | : None |
| 6.5. FLAME PROOFING | : N / A |

7. HANDLING AND STORAGE

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| 7.1 HANDLING | : Handle in compliance with general Industrial Health & Safety Rules i.e. avoid contact with eyes, skin, breathing fumes when heated and use with adequate ventilation system. |
| 7.2 STORAGE | |
| 7.2.1 LOCATION | : Store in a dry place |
| 7.2.2 FIRE SEPARATION DISTANCE | : Should be kept at bay from fire or excessive heat which may cause damage in packing material / pallets. |
| 7.2.3. TEMPERATURE CONDITIONS | : Room temperature |
| 7.2.4. TYPES OF CONTAINER / PACKAGE | : Depends on the type and size of the product. |
| 7.2.5. SOIL / WATER CONTACT | : Product should not be in contact with water, even relative humidity more than 65% may be detrimental for the products. |

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8. DISPOSAL REQUIREMENTS / INDIVIDUAL PROTECTION

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| 8.1. PRECAUTIONS FOR CLEANING CREW | : Hand gloves recommended. |
| 8.2. SPECIAL EQUIPMENT TO CLEAN | : None |
| 8.3. DISPOSAL METHOD | : Disposal of material according to local state or federal regulations. |

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. **PHYSICAL**

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| 9.1.1. APPEARANCE | : Black coloured shaped refractory. |
| 9.1.2. SOLUBILITY | : Negligible |
| 9.1.3. pH | : Not applicable as insoluble product. |
| 9.1.4. BOILING POINT (°C) | : N / A |
| 9.1.5. MELTING POINT (°C) | : N / A |
| 9.1.6. VAPOUR PRESSURE (mm of Hg) | : N / A |
| 9.1.7. VAPOUR DENSITY (AIR = 1) | : N / A |
| 9.1.8. TEMPERATURE LIMIT | : 1700°C |
| 9.1.9. SPECIFIC GRAVITY | : 2.1 ~ 3.8 gm/cc |
| 9.1.10. FLASH POINT | : N / A |

9.2. **CHEMICAL**

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| 9.2.1. CHEMICAL NAME | : Alumina - Graphite / Zirconia - Graphite /
Magnesia - Graphite |
| 9.2.2. PROPERTIES | : Depends on type of the Product. |

10. STABILITY AND REACTIVITY

10.1. **STABILITY**

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| 10.1.1. CHEMICAL STABILITY | : Stable product in the form supplied. |
| 10.1.2. AUTO IGNITION TEMPERATURE | : N / A |
| 10.1.3. EVAPORATION RATE | : N / A |
| 10.1.4. PERCENTAGE VOLATILES | : Nil |
| 10.1.5. HAZARDOUS POLYMERIZATION | : Will not occur. |

10.2. **REACTIVITY**

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| 10.2.1. CORROSIVENESS | : No dangerous reaction under normal condition of use. |
| 10.2.2. OXIDISING PROPERTIES | : Oxidation of Carbon starts at about 500 °C in oxidising atmosphere. |

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11. TOXICOLOGICAL INFORMATION

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| 11.1. TOXICITY | : Products, in the form delivered, possess minimal risk to human safety. |
| 11.2. BIODEGRADABILITY | : Being relatively inert bio-accumulation or aquatic toxicity of Graphite based products in the form delivered is considered to be negligible. |

12. ECOLOGICAL INFORMATION

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| 12.1. INFORMATION ABOUT ELIMINATION | : Destroy according to the rules in effect. |
| 12.1.1 OTHER INFORMATION | : None. |
| 12.2. BEHAVIOUR ON THE ENVIRONMENT | : Unspecified. |
| 12.2.2 MOBILITY / BIOACCUMULATION POTENTIAL | : Unspecified. |
| 12.2.3 OTHER INFORMATION | : None. |
| 12.3 ECOTOXICITY | : Unknown. |
| 12.3.1 INFLUENCE ON THE AQUATIC ORGANISM | : Unknown. |
| 12.3.2 INFLUENCE ON THE INSTALLATIONS OF WASTE WATER TREATMENTS | : Unspecified. |
| 12.3.3. BACTERIOLOGICAL ACTIVITY IN THE MUD | : None. |
| 12.4 OTHER INFORMATION | : |
| CSB-WERT (mg/g) | : Inapplicable. |
| BSB-WERT (mg/g) | : Inapplicable. |
| AOX INFORMARTION | : None. |
| GENERAL INFORMATION | : |
| DANGER CLASS FOR WATER (WGK) | Inapplicable because it is a formed article. |

13. CONSIDERATION IN TERMS OF SUPPRESSION

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| 13.1 WASTE ELIMINATION ADVICES | : The product could be eliminated according to the rules of local authorities. |
| 13.2 ADVICES ON ELIMINATION OF DIRTY PACKAGING | : The infected packaging must be carefully emptied and could be used again after cleaning. |

14. INFORMATION ON TRANSPORTATION

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| 14.1 STATE / TERRITORY TRANSPORT REQUIREMENTS | : Normal |
| 14.2 SPECIAL TRANSPORT REQUIREMENTS | : Fragile items, need safety transportation. |

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15. REGULATIONS

- 15.1 LABELLING : *This product is not classified according to the criteria which are defined into the EEC directives.*
- 15.1.1 DANGER SYMBOL AND DESIGNATION : *None.*
- 15.2 NATIONAL RULE : *Country specific rules and regulation to be adhered wherever applicable.*

16. CONTACT POINT

- 16.1. CONTACT ADDRESS : **Head and corporate office :**
 IFGL Refractories Limited
 3, NETAJI SUBHAS ROAD,
 CALCUTTA - 700 001
 INDIA
- 16.2. CONTACT NO. : Tel : + 91 33 22482411
 Fax : + 91 33 22430886, 22480482
 E-mail : exp@bajoria.com
 ifgl@bajoria.com
 Website: www.ifglref.com

17. GENERAL INFORMATION

NOTICE : Although the informations in this MSDS was obtained from sources which we believe to be reliable, and every effort has been made to ensure that these informations are correct, it can not be guaranteed. In addition though these informations are to provide safety margins, which reflect current knowledge, may be used in a manner beyond our knowledge or control. These has therefore been provided for advice purposes only, without any representation or warranty express or implied.