

total S/S/D

## MATERIAL SAFETY DATA SHEET

### SECTION I, PRODUCT AND COMPANY IDENTIFICATION

**Product:** Crucibles and special refractory shapes, composed predominantly of graphite or silicon carbide.

**Synonyms:** None

**Chemical Family:** Inorganic ceramic

**Manufacturer's Name:** Bartley Crucible & Refractories

**Address:** 15 Muirhead Avenue

PO Box 5464

Trenton, NJ 08638

**Emergency telephone number:** 609-393-0066

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**Contact/Prepared by:** Arthur Shearer

**Date Prepared:** September 9, 1997

### SECTION II, HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

This product as shipped meets the definition of an article under OSHA 29.CFR 1910.1200, and no exposure will occur with normal use.

Dust generation is not expected under normal conditions of use. If the product is cut, crushed, sanded, or ground, dust containing some or all of the following hazardous chemicals (as defined in OSHA Hazard Communication Standard) may be released and precautions should be taken. See section III, Health Hazard Data and section VIII, Control Measures.

<u>Ingredient</u>	<u>CAS Number</u>	<u>Weight (Max%)</u>	<u>OSHA PEL (mg/m<sup>3</sup>)</u>	<u>ACGIH TLV (mg/m<sup>3</sup>)</u>
Graphite, natural	7782-42-5	45	2.5	2
Silicon Carbide	409-21-2	75	10	10
Respirable Fraction			5	NAIF

Clay (aka kaolinite), a raw ingredient in some crucibles, contains minor percentages of free quartz and is stable under ordinary conditions. When exposed to high temperatures, free quartz can change crystal structure to form tridymite (above 870C) or cristobalite (above 1470C) which have greater health hazards than quartz.

Cristobalite & Tridymite	14484-46-1 (&)			
Respirable Fraction	15488-32-3)		0.05	0.05
Crystalline Quartz (free silica)	14808-80-7			
Respirable Fraction			0.1	0.1
Inert or Nuisance Dust (see note 3 below)			15	10
Respirable Fraction			5	3

The chemicals listed below may be a part of the glaze:

Calcium oxide	1305-78-8	<1.2	5	2
Silicon	7740-21-3	<2.0	10	10
Respirable Fraction			5	NAIF

**Notes:** 1. PEL and TLV given as total dust fraction unless otherwise indicated as respirable fraction. PEL and TWA values given above are 8-hour time-weighted averages unless otherwise specified.

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2. Source of exposure limit data: 29CFR1910.1000, tables Z-1, Z-3, revised as of 7/1/88 for OSHA-PEL; 1996 Threshold Limit Values (TLV) for ACGIH.
3. Per table Z-3, "all inert or nuisance dust, whether mineral, inorganic or organic, not listed specifically by substance name are covered by this limit which is the same as the Particulate Not Otherwise Regulated (PNOR) limit in table Z-1.
4. NAIF = no applicable information found

Certain chemicals are listed by individual states. For details on regulatory requirements, contact the appropriate agency in your state.

SARA Title III Section 313 Ingredients: None

**SECTION III, PHYSICAL/CHEMICAL CHARACTERISTICS**

Bolling point: not applicable	Specific gravity (water=1): 1.7-2.2
Vapor pressure: not applicable	Melting point: various, 2800-3100 F
Vapor density: not applicable	Evaporation rate: not applicable
Solubility in water: negligible	Appearance and odor: grey to black, no odor

**SECTION IV, FIRE AND EXPLOSION HAZARD DATA**

General Hazard: This product is non-combustible and does not pose fire or explosion hazards and will not initiate or contribute to the intensity of a fire.

Extinguishing media: as appropriate for surrounding fire  
 Special fire fighting instructions & equipment: as appropriate for surrounding fire  
 Unusual fire & explosion hazards: none known

**SECTION V, REACTIVITY DATA**

The material is stable under ordinary conditions.  
 Conditions to avoid: contact with incompatible material  
 Incompatible materials: no applicable information found  
 Hazardous decomposition &/or polymerization: not applicable

**SECTION VI, HEALTH HAZARD DATA**

Most of the ingredients in their raw state are considered a nuisance dust by OSHA. Excessive inhalation (above PEL) of nuisance dusts over long periods of time (10 years or more) may reduce breathing capacity and increased susceptibility to lung disease.

If the product is cut, crushed, sanded, or ground, abrasive particles and nuisance dust are created may cause irritation of skin, eyes, or respiratory system. Prolonged (over) exposure may cause pulmonary problems.

Routes of entry for dust: eye contact, ingestion, inhalation.

**Health Hazards:**

Acute effects of exposure to dust when cutting, crushing, sanding or grinding:  
 Inhalation: may cause congestion and irritation of the throat and nasal passages, coughing, shortness of breath.  
 Ingestion: may cause irritation  
 Eye: particulates may cause irritation  
 Skin Contact: may cause irritation

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Chronic effects of exposure: Prolonged overexposure to respirable crystalline silica may cause a progressively degenerative (delayed) lung injury called silicosis characterized by coughing, shortness of breath, and loss of lung capacity.

### Carcinogenicity:

IARC: The IARC has placed crystalline silica in group 1: carcinogenic to humans; and, amorphous silica in group 3: unclassifiable as to carcinogenicity in humans.

NTP: In its Sixth Annual Report on Carcinogens, 1991, has added crystalline silica to its list of substances that are reasonable anticipated to be carcinogens.

Signs and symptoms associated with dust exposure over TLV: redness of skin and eyes, irritation, shortness of breath.

Medical conditions which may be aggravated by exposure to particulates and dust: Individuals with lung disorders such as emphysema and asthma should not be exposed to conditions where large airborne quantities of nuisance dust exist without precautions taken to alleviate the aggravated pre-existing medical condition.

### Emergency and First Aid Procedures:

Inhalation of dust created:	remove to clean air
Ingestion of dust created:	no applicable information found
Eye contact with dust created:	flush with water, use eye wash
Skin contact with dust created:	wash with mild soap and water

## SECTION VII, PRECAUTIONS FOR SAFE HANDLING/USE

Steps to be Taken in Case Material is Released or Spilled: No special precautions are necessary for spills of bulk material. If large quantities of dust are spilled, remove by vacuuming or wet sweeping to prevent heavy concentration of airborne dust. If a vacuum is used, exhaust air should be filtered by high efficiency particulate air (HEAP) filter to avoid generation of airborne dust.

Waste Disposal Method: Use waste containers suitable for transportation and dispose in accordance with federal, state and local regulations.

Precautions to be Taken in Handling and Storing: None.

## SECTION VIII, CONTROL MEASURES

**Respiratory Protection:** When cutting, crushing, sanding or grinding the product and airborne concentrations exceed the TLV or are unknown, use a NIOSH/MSHA approved respirator for crystalline silica in accordance with OSHA respiratory protection requirements (29CFR1910.134). The specific respirator selected must be based on contamination levels found in the work place, must be based on the specific operation, must not exceed the working limits of the respirator and must be jointly approved by the NIOSH and MSHA.

**Protective Gloves:** Recommended for melt, grind, cut operations. Select glove approved for specific operation

**Eye Protection:** Recommended for melt, grind, cut operations. Melting may require special eye protection including face shields and specially tinted glass. Grinding operations may also require face shields.

**Other Protective Clothing or Equipment:** As required for the work done with the crucible

**Ventilation requirements:** Normal fresh air room standard

**Ventilation when cutting or crushing:** Local exhaust/dilution ventilation is recommended when cutting, crushing, sanding, or grinding the product or melting with the product to reduce employee exposure to below applicable OSHA PEL's and ACGIH TLV's.

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Work/Hygienic Practices: Employees should wash hands and face before eating, drinking or using tobacco products.

**SECTION IX, SPECIAL PRECAUTIONS AND COMMENTS**

HIGH TEMPERATURE CERAMIC PRODUCTS CAN BE HAZARDOUS. CRUCIBLES ARE CERAMIC IN NATURE, THEREFORE RELATIVELY BRITTLE, AND MUST BE TREATED ACCORDINGLY. CRUCIBLES ARE ALSO CONSUMABLE PRODUCTS. THE SAFE SERVICEABLE LIFE OF THESE PRODUCTS IS DETERMINED BY THE USER. IF AT ANY TIME YOU ARE DOUBTFUL AS TO THE CONTINUED SAFE USE OF THESE PRODUCTS, IMMEDIATELY REMOVE THIS PRODUCT FROM SERVICE AND DESTROY IT.

Manufacturers who cut, crush, sand, and grind ceramic bodies fired to high temperatures should recognize the possible presence of tridymite and/or cristobalite which have greater health hazards than quartz. Keep dust in work area at a minimum and maintain air concentration of dust as far below PEL as feasible. Use good housekeeping techniques.

Regulatory Information: See notes to hazardous materials in section III.

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