

# MATERIAL DATA SAFETY SHEET

## SECTION I – IDENTIFICATION

Beryllium Oxide Sintered Ceramic Product Name: BERLOX® Common Name & Synonyms: Beryllia Chemical Name: BERYLLIUM OXIDE (BeO) Chemical Family: Beryllium Compound  Customer Service American Beryllia Inc 16 First Avenue Haskell NJ 07420 Phone 973-248-808 Fax 973-248-8013 Website www.AmericanBeryllia.com	24 Hour Emergency Assistance Call Chemtrec at 800-424-9300
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Hazard Rating Least                      Slight 0                                      1 Moderate                      High 2                                      3 Extreme 4	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Health</td> <td style="width: 70%;">2</td> </tr> <tr> <td>Fire</td> <td>0</td> </tr> <tr> <td>Reactivity</td> <td>0</td> </tr> </table>	Health	2	Fire	0	Reactivity	0
Health	2						
Fire	0						
Reactivity	0						

## SECTION II – HAZARDOUS INGREDIENTS

CONSTITUENTS	C.A.S. NO.	PERCENTAGE
BERYLLIUM OXIDE	1304-56-9	99.5%

## SECTION III – OCCUPATIONAL STANDARDS (BERYLLIUM)

\*All Concentrations Are In Milligrams Per Cubic Meter Of Air

<u>Substance</u>	OSHA*			ACGIH*	
	PEL	CEILING	PEAK	TLV	TLV-STEL
BERYLLIUM Niosh rtecs# DS 4025000	0.002	0.005	0.025	0.002	0.01

- ACGIH: =American Conference of Governmental Industrial Hygienists
- OSHA =Occupational Safety and Health Administration
- PEL =Eight Hour Average Permissible Exposure Limit
- CEILING =Not To be Exceeded Except For Peak Limit
- PEAK =30 Minute Maximum Duration Concentration Above Ceiling Limit (OSHA)
- TLV =Eight Hour Average Threshold Limit Value (ACGIH)
- TLV-STEL =15 Minute Short Term Exposure Limit (ACGIH)
- CAS =Chemical Abstract Service
- NIOSH =National Institute for Occupational Safety and Health
- RTECS =Registry of Toxic Effects of Chemical Substances

The American Conference of Governmental Industrial Hygienists (ACGIH) recommends occupational standards for all listed substances. The ACGIH defines a threshold limit value standard as follows:

“Threshold Limit Values refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects. Because of wide variation in individual susceptibility, however, a small percentage may be of workers may experience discomfort from some substances at concentrations at or below the threshold limit; a smaller percentage may be affected more seriously by aggravation of a preexisting condition or by development of an occupational illness.” “Individuals may also be hyper susceptible or otherwise unusually responsive to some industrial chemicals because of genetic factors, age, personal habits (smoking, alcohol, or other drugs), medication, or previous exposures. Such workers may not be adequately protected adverse health effects from certain chemicals at concentrations at or below the threshold limits.”

## SECTION IV – PHYSICAL & CHEMICAL PROPERTIES

Boiling Point ( F): N/A  
Evaporation Rate: N/A  
Freezing Point: N/A  
Odor: None  
PH: N/A  
Physical State: Solid  
Color: White to Off-White  
Density: 2.85 gm/cc

Radioactivity: N/A  
Solubility: Insoluble in water  
Vapor Density: N/A (Air = 1)  
Vapor Pressure: N/A (mm/Hg)  
Melting Point( C): 2547  
% Volatiles by Volume: N/A  
Molecular Weight: 25.01

## SECTION V – STABILITY & REACTIVITY

General reactivity: This material will not further decompose upon heating  
Incompatibility (Materials to avoid): N/A  
Hazardous Decomposition: None under normal use products.  
Hazardous Polymerization: Will not occur  
Flash Point: N/A  
Flammable Limits: LEL N/A UEL N/A  
Conditions and Materials to Avoid: Volatile Beryllium Hydroxide can be formed when firing solid Beryllium Oxide parts at high temperature (over 1200°C) and in moist atmospheres.

## SECTION VI – HEALTH HAZARDS

### Potential Health Effects

Although this material is supplied in a clean, solid state, exposure can occur during subsequent operations involving any form of machining, grinding, sanding, polishing, crushing, or abrading. Operations requiring chemical cleaning, heat treating, melting, brazing, metalization, or laser cutting can also generate respiratable particulates\*  
\*Particulate refers to any dust, fame, mist or fragment.

### Inhalation:

Particulates containing Beryllium can cause irritation to the nose, throat, lungs, and mucous membranes. Inhaling beryllium containing particulates may cause chronic Beryllium Disease, a serious chronic lung disease with cough, chest pain, shortness of breath, weight loss, weakness, fatigue and possibly fatal. Chronic Beryllium Disease may be related to genetic factors in which hypersensitivity or allergic condition cause inflamed lung tissues and fibrosis (scarring).

### Ingestion:

Ingestion can occur from contaminated hand, clothing, food or drink contact. The effects of Beryllium ingestion are unknown.

### Skin:

Skin contact with Beryllium may cause an allergic response with redness, itching, and pain in some sensitive individuals. Particles lodged under the skin or in open wounds may reduce may induce infections, skin lesions, and sensitization.

### Eyes:

Eye exposure to airborne particulates or contaminated hands or clothing may cause irritation or mechanical injury.

### Carcinogenic References:

Beryllium Oxide: The International Agency for Research on Cancer (IARC) lists beryllium as a Group 1- Known human Carcinogen. The National Toxicology Program (NTP) lists beryllium s reasonably anticipated to be a human carcinogen. The ACGIH lists beryllium as an A1- Confirmed Human Carcinogen.  
The above determinations are based on intense exposure to beryllium, pre 1950 to workers involved in the refining, machining, and production of beryllium metal.

## SECTION VII – FIRST AID

**Inhalation:** Remove from source of exposure to fresh air. Perform artificial respiration if breathing has stopped and obtain medical help.

**Ingestion:** Find solid beryllium oxide ceramics are indigestible. Induce vomiting if necessary as directed by medical personnel.

**Eyes:** Immediately flush eyes with plenty of water for 15-20 minutes. Obtain medical attention.

**Skin:** Use standard first aid procedures to clean, disinfect, and cover all wounds to avoid infections and contamination before continuing work. Obtain medical attention for wounds that result in material implanted or lodge under the skin.

## SECTION VIII – EMPLOYEE PROTECTION

**Respiratory Protection:** NIOSH approved high efficiency cartridge or supplied air mask is required if Beryllium in air concentrations exceeds OSHA standards.

**Eye Protection:** None required except as related to normal operations.

**Protective Gloves:** None normally required except where skin abrasions or cuts may occur during handling.

**Other Protective Equipment:** Personnel performing operations where there are exposures to dust, mists, or fumes should be provided full-body protective clothing.

**Ventilation:** Provide adequate local exhaust ventilation when performing operations such as machining, grinding, laser trimming, sand blasting, chemical etching, etc. where respirable dusts, mists, or fumes are generated. Powdered materials must be stored in sealed containers; transfers must be made in ventilated hoods. Operations generating airborne material must be sampled to determine exposure level. Medical surveillance should be conducted for employees where warranted by exposure date. Concentrations of suspended Beryllia in liquid coolants used for machinery should be kept low to avoid particulate matter from becoming airborne.

## SECTION IX – SPECIAL PRECAUTIONS

**Precautions for Handling and Storing:** Store in closed containers. Handling solid Beryllium Oxide ceramics is harmless so long as they are kept dust-free. Avoid any operations which would create respirable dusts or mists.

**Spill or Leakage Precautions:** Clean any loose material using wet cleaning or properly equipped vacuum cleaner supplied with Hepa filters. Personnel involved in cleanup should wear proper respirator and protective clothing.

## SECTION X – SPECIAL PRECAUTIONS

**EPA Emission Standard (As Beryllium)** - National Emission Standard for Beryllium (40 CFR 61, Subpart C)

0.01 Micrograms per cubic meter (30 day average) Ambient Air Standard

10 Grams /24 Hrs. Total Site Emission Limit

**EPA Wastewater Regulations** - Regulations are pending contact local and state governments for applicable standards.

NOTE: State and Local Regulations may vary

**D.O.T. REGULATIONS-** None for shipment of BeO Ceramic high fired material. Inner package warning label denoting beryllium product as shown below.

### BERYLLIA CERAMIC

**DANGER-INHALATION OF DUST OR FUMES MAY CAUSE SERIOUS CHRONIC LUNG DISEASE  
POTENTIAL CANCER HAZARD BASED PRINCIPALLY ON ANIMAL TESTS**

This product contains beryllium and may contain nickel. Overexposure to beryllium by inhalation may cause berylliosis, a serious chronic lung disease. Hazard Communication Regulations of the Occupational Safety & Health Administration require that caution labels for materials listed as potential carcinogens in either the International Agency for Cancer Research Monograph Series or the National Toxicology Program Annual Report on Carcinogens must contain a cancer warning. Beryllium and nickel have so listed.

\* If processing produces dust or fumes, use only with exhaust ventilation or other controls designed to meet OSHA standards.

\* Solid for manufacturing purposes only.

See Material Safety Data Sheets on file with your employer for further details concerning OSHA standards and precautionary measures.

## SECTION XI – WASTE DISPOSAL METHOD

Because of its value Beryllium Oxide scrap is normally recycled. In cases where economics do not justify the segregation of Beryllium Oxide scrap for resale, solid material may be landfilled. Because of the potential inhalation hazard of handling this material as a discarded powder (such as baghouse fines) we recommend it be: 1) Sealed in two plastic bags, 2) placed within a DOT container approved for Poison B compounds, 3) label the outer container with the appropriate DOT Hazard Warning Labels, and 4) Ship to an approved hazardous waste disposal site.

Solid wastes must be managed and disposed of, in accordance with federal, state and local requirements. This material is not classified a hazardous waste under federal law.