

**CRYSTAL SYSTEMS INC.**

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## MATERIAL SAFETY DATA SHEET

Phone #: (508) 745-0088  
Date: August 12, 1993  
Date Revised:

Common Name: SAPPHIRE  
Chemical Family: Metal Oxide  
D.O.T. Shipping Name, Hazard Class, ID #: not regulated

## SECTION I: MATERIAL DESCRIPTION

Chemical name and formula: Aluminum oxide  $Al_2O_3$   
Other designation: Alumina  
Composition: 99+% aluminum oxide; Impurities: total less than 1.0%  
CAS #: Manufacturer

## SECTION II: PHYSICAL AND CHEMICAL DATA

Physical Form: Solid, White, Clear, Odorless  
Boiling Point: 2977°C  
Melting Point: 2050°C  
Vapor Pressure: 1 mm at 2158°C  
Evaporation Rate: Not Applicable  
Chemical Reactivity: Not Applicable  
Water Solubility: Insoluble  
Specific Gravity: 3.98

## SECTION III: FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable  
Auto-ignition Temperature: Not Applicable  
Flammable Limits Lower/Upper: Not Applicable  
Extinguishing Media: Not Applicable  
Special Firefighting Procedures: Not Applicable  
Explosive Potential: Not Applicable

## SECTION IV: REACTIVITY DATA

Not reactive with: air, water, heat, oxidizers, corrosives, or non-corrosives.

## MSDS - SAPPHIRE Continued (8/12/93)

## SECTION V: HEALTH HAZARD AND FIRST AID

**Inhalation:** Not possible unless material is ground creating a fine powder or dust. Excessive exposure to the powder or dust may cause cough, mucous production, shortness of breath. Remove victim to fresh air immediately. Obtain medical attention if breathing difficulty persists beyond 15 mins.

**Ingestion:** This material is not expected to be an ingestion hazard; no known human or animal health effects exist.

**Eye Contact:** With powder or dust, may cause minor eye irritation. Rinse eyes with clean water for 20-30 minutes, retract eyelids often. Obtain emergency medical attention if pain, blinking, tears or redness persist.

**Skin Contact:** This material is not expected to be a skin irritant; no known human or animal health effects data.

**Other Health Hazards:** Except for the effects of airborne dust which is irritating to the eyes and mucous membranes, chronic exposure to this material is not expected to have any adverse health hazards.

## SECTION VI: SPILL, LEAK, AND DISPOSAL PROCEDURES

Solid material may be disposed of at a licensed sanitary landfill. Not a designated RCRA hazardous waste.

Handle dust as a nuisance, respirator may be required; if not able to recover, material may be disposed of at a licensed sanitary landfill. Not a designated RCRA hazardous waste.

## SECTION VII: OCCUPATIONAL EXPOSURE LIMITS FOR DUST

<u>Substance</u>	<u>Source</u>	<u>Date</u>	<u>Type</u>	<u>Value/Units</u>	<u>Time</u>
Nuisance Dust (Total Dust)	OSHA	1971	PEL	15 mg/m <sup>3</sup>	8 hrs
Nuisance Dust (Respirable Fraction)	OSHA	1971	PEL	5 mg/m <sup>3</sup>	8 hrs
Nuisance Dust (Total Dust)	ACOH	1985	TLV	10 mg/m <sup>3</sup>	8 hrs
Nuisance Dust (Respirable Fraction)	ACOH	1985	TLV	5 mg/m <sup>3</sup>	8 hrs

## SECTION VIII: PROTECTIVE MEASURES AND PRECAUTIONS

If exposure exceeds the PEL/TLV for nuisance particulate, use NIOSH/MSHA approved respiratory protection equipment. Dust service goggles should be worn to prevent eye contact with airborne particles which may be associated with this product. If handling this material results in dust generation, special ventilation may be required to avoid exposure standards for nuisance dust (see Section VII).

The information in this Material Safety Data Sheet was obtained from sources which are believed to be reliable. However, the information is provided without any warranty, express or implied, regarding the correctness.