

Material Safety Data Sheet

Material Name: PDS Boron Nitride Planar Diffusion Sources

ID: MSDS-600

Issue Date: 08/07/01

*** Section 1 - Chemical Product and Company Identification ***

Part Number: BN975, BNHT, BN1100, BN1250

Chemical Name: Boron Nitride Solid

Product Use: Not intended for food and drug use.

Manufacturer Information

Saint-Gobain Advanced Ceramics Corporation

Boron Nitride

168 Creekside Drive

Amherst, NY 14428-2027

Phone: (716) 691-2000

Fax: (716) 691-2090

Emergency # 1-800-424-9300 (CHEMTREC)

NOTE: CHEMTREC emergency telephone number is to be used in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

*** Section 2 - Composition / Information on Ingredients ***

CAS #	Component	Percent
10043-11-5	Boron nitride	35-100
7631-86-9	Silica, amorphous	0-65
1303-86-2	Boron oxide	0-10

Component Information/Information on Non-Hazardous Components

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication). Exact composition of this product will vary with availability of materials. All ingredients listed above may not always be included in final product.

*** Section 3 - Hazards Identification ***

Emergency Overview

This is a non-flammable, non-reactive material. It is supplied in the form of an odorless, white preshaped solid. Exposure to dust may be irritating to eyes, nose and throat. At very high exposure levels the dust may have an effect on the lungs.

Potential Health Effects: Eyes

This product may cause irritation to the eyes. Abrasive action may cause damage to the outer surface of the eye. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Contact with heated material may cause thermal burns.

Potential Health Effects: Skin

This product may cause irritation to the skin. When it is heated, this material may cause thermal burns.

Potential Health Effects: Ingestion

Ingestion of this product may cause nausea, vomiting and diarrhea.

Potential Health Effects: Inhalation

Dusts of this product may cause irritation of the nose, throat, and respiratory tract.

HMIS Ratings: Health: 1 Fire: 1 Reactivity: 0 Pers. Prot.: safety glasses, gloves

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

*** Section 4 - First Aid Measures ***

First Aid: Eyes

Flush immediately with water for at least 15 minutes. Do not rub eyes. If irritation persists get medical attention.

First Aid: Skin

For skin contact, flush with large amounts of water. If irritation persists, get medical attention. If hot product contacts skin, cool under running water and get medical attention.

First Aid: Ingestion

If material is ingested, immediately contact a physician or poison control center. DO NOT induce vomiting unless directed to do so by medical personnel.

First Aid: Inhalation

Move person to non-contaminated air. If symptoms persist, get medical attention.

First Aid: Notes to Physician

None.

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*** Section 5 - Fire Fighting Measures ***

Flash Point: Not available

Method Used: Not available

Upper Flammable Limit (UFL): Not available

Lower Flammable Limit (LFL): Not available

Auto Ignition: Not available

Flammability Classification: Non-flammable

Rate of Burning: Not available

General Fire Hazards

None.

Hazardous Combustion Products

Decomposition of this product may yield oxides of boron and nitrogen.

Extinguishing Media

Use methods for the surrounding fire.

Fire Fighting Equipment/Instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

NFPA Ratings: Health: 1 Fire: 1 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

*** Section 6 - Accidental Release Measures ***

Containment Procedures

None necessary.

Clean-Up Procedures

Sweep up or gather material and place in appropriate container for disposal.

Evacuation Procedures

None necessary.

Special Procedures

Follow all Local, State, Federal and Provincial regulations for disposal.

*** Section 7 - Handling and Storage ***

Handling Procedures

Wash thoroughly after handling. Avoid breathing dusts from this material. Avoid contact with skin and eyes. Use this product with adequate ventilation. Not for food and drug use.

Storage Procedures

Store in original containers away from incompatibles. Keep the container dry.

*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines

A: General Product Information

Follow recommended exposure limits.

B: Component Exposure Limits

Silica, amorphous (7631-86-9)

NIOSH: 6 mg/m³ TWA

Boron oxide (1303-86-2)

ACGIH: 10 mg/m³ TWA

OSHA: total dust: 10 mg/m³ TWA

NIOSH: 10 mg/m³ TWA

Engineering Controls

Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields.

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Personal Protective Equipment: Skin

For molten product, use any type rubber thermal insulating gloves and other clothing as necessary to protect from thermal burns.

Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively prevent buildup of dusts, appropriate NIOSH respiratory protection must be provided.

Personal Protective Equipment: General

Use good industrial hygiene practices in handling this material.

*** Section 9 - Physical & Chemical Properties ***

Appearance:	White solid	Odor:	Odorless
Physical State:	solid	pH:	Not available
Vapor Pressure:	Not applicable	Vapor Density:	Not applicable
Boiling Point:	Not applicable	Melting Point:	Not applicable
Solubility (H₂O):	Insoluble	Specific Gravity:	1.8 - 2.1
Evaporation Rate:	Not applicable	Viscosity:	Not applicable
Percent Volatile:	Not applicable	Molecular Weight:	Mixture

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

Stable under normal conditions.

Chemical Stability: Conditions to Avoid

Avoid strong oxidizing agents.

Incompatibility

This product may react with strong acids or oxidizing agents.

Hazardous Decomposition

Thermal decomposition products may include oxides of boron and nitrogen. Decomposition of boron nitride occurs at 2200 C (4000F).

Hazardous Polymerization

Will not occur.

*** Section 11 - Toxicological Information ***

Acute and Chronic Toxicity

A: General Product Information

Product in powdered form is considered a nuisance dust. Excessive airborne concentrations of nuisance dusts may cause irritation to skin or mucous membranes by chemical or mechanical action. Asthma or chronic respiratory conditions may be aggravated by exposure to this product.

Exposure to boron nitride has not been shown to result in boron poisoning. Under normal operating conditions or thermal decomposition, boron nitride has not been shown to liberate free boron. Boron oxide may cause irritation, may alter kidney function, and may produce changes in the blood as a result of occupational exposure. Boron oxide may cause reversible effects that are generally not life threatening.

Amorphous silica is chemically and biologically inert when ingested. In addition, silicosis has rarely been found in cases of chronic inhalation of amorphous silica.

B: Component Analysis - LD50/LC50

Boron oxide (1303-86-2)

Oral LD50 Mouse : 3163 mg/kg

Carcinogenicity

A: General Product Information

No information available.

B: Component Carcinogenicity

Silica, amorphous (7631-86-9)

IARC: Monograph 68, 1997 (Group 3 (not classifiable))

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Epidemiology

No information available.

Neurotoxicity

Some reports of neurological effects due to boron (ingested by infants as boric acid) have been reported. However, no direct effects of boron nitride have been shown.

Mutagenicity

No information available.

Teratogenicity

Chronic ingestion of boron has been reported to cause male and female reproductive damage in experimental animals. However, no direct effects of boron nitride have been shown.

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

No information available.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

No ecotoxicity data are available for this product's components.

Environmental Fate

No information available.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

Waste must be handled in accordance with all federal, state, provincial, and local regulations.

*** Section 14 - Transportation Information ***

US DOT Information

Shipping Name: Not regulated as dangerous goods.

Hazard Class: None

UN/NA #: None

Packing Group: None

Required Label(s): None

Additional Info.: None.

International Transportation Regulations

No additional information available.

*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

No information available.

B: Component Analysis

None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

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B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Silica, amorphous	7631-86-9	Yes	Yes	Yes	Yes	Yes	Yes
Boron oxide	1303-86-2	Yes	Yes	Yes	Yes	Yes	Yes

Other Regulations

A: General Product Information

No additional information available.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Boron nitride	10043-11-5	Yes	Yes	Yes
Silica, amorphous	7631-86-9	Yes	Yes	Yes
Boron oxide	1303-86-2	Yes	Yes	Yes

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Silica, amorphous	7631-86-9	1% item 1403 (1488)
Boron oxide	1303-86-2	1% item 205 (228)

* * * Section 16 - Other Information * * *

Other Information

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists. AICS = Australian Inventory of Chemical Substances. CAS = Chemical Abstract Service. CERCLA = Comprehensive Environmental Response, Compensation and Liability Act. CFR = Code of Federal Regulations. CHEMTREC = Chemical Transportation Emergency Center. DSL = Canadian Domestic Substance List. EINECS = European Inventory of New and Existing Chemical Substances. EPA = Environmental Protection Agency. HEPA = High Efficiency Particulate Air. HMIS = Hazardous Materials Identification System. IARC = International Agency for Research on Cancer. IDLH = Immediately Dangerous to Life and Health. NDSL = Canadian Non-Domestic Substance List. NFPA = National Fire Protection Association. NIOSH = National Institute of Occupational Safety and Health. NJTSR = New Jersey Trade Secret Registry. NTP = National Toxicology Program. OSHA = Occupational Safety and Health Administration. NA = Not available or Not Applicable. SARA = Superfund Amendments and Reauthorization Act. TDG = Transportation of Dangerous Goods. TLV = Threshold Limit Value. TSCA = Toxic Substances Control Act. WHMIS = Workplace Hazardous Materials Information System.

Contact: Technical Service

Contact Phone: (716) 691-2052

This is the end of MSDS # MSDS-600