



## MATERIAL SAFETY DATA SHEET

## BORON NITRIDE SPRAY

## 1. CHEMICAL PRODUCT &amp; COMPANY IDENTIFICATION

Advanced Ceramics Corporation  
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EMERGENCY TELEPHONE NO.:  
24 hr. CHEMTREC:  
800-424-9300 U.S. & Canada  
202-483-7616 International

## TRADE NAME:

Boron Nitride Spray

## MSDS NUMBER:

400; Revision B

## CHEMICAL NAME:

Boron nitride powder in hydrocarbon solvents  
and carriers.

## SYNONYMS:

None

## PREPARED BY:

Mansdorf &amp; Associates, Inc.

## DATE OF ISSUE/REVISION:

Issue: 12/15/93; Revised: 3/07/94

## 2. INGREDIENTS

Component	CAS #	Percent	ACGIH (TLV)	OSHA (PEL)	Units
Methylene Chloride	75-09-2	50	50, A2	500 2000 (C)	ppm ppm
Isobutane	75-28-5	28	Not Est.	Not Est.	Not Est.
Propane	74-98-6	7	Not Est.	1000	ppm
Ethanol	64-17-5	6	1000	1000	ppm
Boron Nitride	10043-11-5	5	10 (T)	15 (T) 5 (R)	mg/M <sup>3</sup> mg/M <sup>3</sup>
Methanol	67-56-1	4	200 (S) 250 (STEL)	200 (S) 250 (STEL)	ppm ppm

A2 = Suspect Human Carcinogen

C = Ceiling Exposure Limit

S = Skin Notation. Material may be absorbed through the intact skin.

STEL = Short Term Exposure Limit

T = Total Particulates

R = Respirable Particulates

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Product is contained in aerosol cans. Undamaged cans should be picked up and placed in appropriate containers for reuse. If containers are leaking or have ruptured, remove all sources of ignition and allow propellant gases and carrier solvent to escape. Absorb released carrier solvents with suitable sorbent. Sorbents should be treated as hazardous waste. Wear appropriate personal protective equipment. Keep individuals not involved in the clean up out of the area. Do not allow solvents to enter storm or sanitary sewers, ground water, or soil. Solvents may be toxic to aquatic and terrestrial flora and fauna. Releases may be reportable to local, state, or federal authorities. If release is indoors, thoroughly ventilate area before entry and assure that a flammable atmosphere is not present.

#### POTENTIAL HEALTH EFFECTS:

Eye: May cause irritation.

Skin Contact: May cause irritation.

Skin Absorption: The methanol component of the product can be absorbed through the intact skin. Exposures to high concentrations of methanol may cause optic nerve damage and possible blindness.

Ingestion: Not expected to be a major route of entry. May cause severe gastrointestinal distress. Solvents may be aspirated into lungs and cause a severe chemical pneumonitis.

Inhalation: May cause irritation, headache, nausea, dizziness, blurred vision, and central nervous system depression. Very high exposures may cause coma and death. Methylene chloride may decrease the oxygen carrying capacity of the blood due to formation of carboxyhemoglobin. The effects of methylene chloride can be magnified by exposure to carbon monoxide, especially among smokers.

Chronic & Carcinogenicity: Prolonged skin contact may cause dermatitis. The carrier solvents may cause kidney and liver damage. Methylene chloride has been listed as a substance that can be reasonably anticipated to cause cancer in humans by the National Toxicology Program and as possibly carcinogenic to humans (2B) by the International Agency for Research on Cancer. May possibly aggravate pre-existing skin, respiratory, liver, and kidney disorders.

### 4. FIRST AID MEASURES

Inhalation: Remove exposed person to fresh air. If breathing is difficult, oxygen may be administered. If breathing has stopped, artificial respiration should be started immediately. Seek medical attention.

Eyes: Flush with tepid water for at least 20 minutes holding the eyelids wide open. Seek medical attention if irritation develops.

Skin: Wash thoroughly with mild soap and water. Seek medical attention if irritation develops. Remove any contaminated clothing and launder thoroughly before reuse.

Ingestion: Not expected to be an important route of entry into the body. If large amounts of the product are ingested, do not induce vomiting. Solvents may be aspirated into the lungs and cause a severe chemical pneumonitis. Seek medical attention.



## 5. FIRE FIGHTING MEASURES

FLASH POINT: < 0°F      LEL: 1.0      UEL: 36.5      AUTO IGN. TEMP.: Not Determined

Use foam, dry chemical, or carbon dioxide to extinguish fires. Product in or near fires should be cooled with a water spray or fog to prevent over pressuring and possible bursting or explosion of containers. A self contained breathing apparatus (SCBA) operating in the positive pressure mode and full fire fighting protective clothing should be worn for combating fires.

## 6. ACCIDENTAL RELEASE MEASURES

Pick up aerosol cans and return to original packing if reusable. If not reusable, place in DOT approved containers for disposal. Ruptured or leaking cans should be moved outdoors or into a laboratory fume hood and propellant and carrier solvents allowed to dissipate. Isolate leaking or ruptured containers from all sources of ignition until it can be ascertained that a flammable atmosphere is not present. Absorb carrier solvents with a sorbent designed for organic materials. Sorbents should be treated as hazardous waste. Prevent solvents from entering storm or sanitary sewers, ground water, or soil. Releases may be reportable to local, state, and/or federal authorities. Keep unnecessary individuals out of the area. Wear appropriate personal protective equipment.

## 7. HANDLING AND STORAGE

Do not store near sources of ignition. Do not store at temperatures above 120° F. (50° C.) or near potential sources of heat.

## 8. EXPOSURE CONTROL - PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Local exhaust ventilation should be provided to maintain exposures below the limits cited in Section 2. Design details for local exhaust ventilation systems may be found in the latest edition of "Industrial Ventilation: A Manual of Recommended Practices" published by the ACGIH Committee on Industrial Ventilation, P.O. Box 16153, Lansing, MI 48910. The need for local exhaust ventilation should be evaluated by a professional industrial hygienist. Local exhaust ventilation systems should be designed by a professional engineer.

**RESPIRATORY:** If exposures exceed the limits cited in Section 2 by less than a factor of ten, use as a minimum a NIOSH approved 1/2 facepiece respirator equipped with cartridges approved for organic vapors and particulate matter with an exposure limit of not less than 0.05 mg/M<sup>3</sup>. If exposures exceed 10 times the recommended limits or 1,000 ppm, consult a professional industrial hygienist or your respiratory protective equipment supplier for selection of the proper equipment. The evaluation of the need for respiratory protection should be determined by a professional industrial hygienist.

**EYE PROTECTION:** Chemical protective goggles are recommended where there is a possibility of eye contact with the product. Safety glasses with side shields are recommended for all other operations.

**PROTECTIVE GLOVES:** Polyvinyl alcohol or silver shield gloves should be worn where there will be skin contact with the product. Polyvinyl alcohol gloves cannot be used if water is present because of severe degradation problems.

**GENERAL:** All soiled or dirty clothing and personal protective equipment should be thoroughly cleaned before reuse.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE & PHYSICAL STATE: Aerosol Can

MELT POINT: Not Applicable

VAPOR DENSITY (AIR=1): 1.7 - 3.3

OCTANOL/WATER PARTITION COEFFICIENT: Not Determined

### VAPOR PRESSURE:

Isobutane & Propane > 760mm Hg @ 25° C.;

Methylene chloride = 420mm Hg @ 25° C.

EVAPORATION RATE BuOAC = 1: >> 1,  
Propellants

ODOR: Sweetish

SPECIFIC GRAVITY/BULK DENSITY: SG =  
0.85 g/cc; product without propellant

% VOLATILE BY VOLUME: 95

BOILING POINT: Not Determined

% SOLUBILITY (H<sub>2</sub>O): 10

pH: Not Applicable

OTHER: Not Applicable

## 10. STABILITY AND REACTIVITY

STABILITY & POLYMERIZATION: Product is stable. Hazardous polymerization will not occur.

INCOMPATIBILITY (CONDITIONS TO AVOID): Do not expose aerosol cans to temperatures above 120°F.

HAZARDOUS DECOMPOSITION PRODUCTS: May produce dense smoke, oxides of carbon, and low molecular weight organic species whose composition and toxicity have not been determined.

SPECIAL SENSITIVITY: None that are known.

## 11. TOXICOLOGICAL INFORMATION

Methylene chloride is carcinogenic in rats and mice. A two year inhalation study near the maximum tolerated dose caused a significant increase in cancers in mice and female rats. These included lung, liver, and mammary gland tumors.

Soluble boron compounds are known to have a toxic effect on the central nervous system at high exposure levels. The boron compounds present in the product are present in an insoluble, inert matrix and are not expected to be bio-available.

## 12. ECOLOGICAL INFORMATION

Detailed studies have not been conducted concerning the environmental fate of the product. The carrier solvents may be toxic to aquatic and terrestrial flora and fauna.

## 13. DISPOSAL CONSIDERATIONS

Aerosol containers should be disposed of by a specialized disposal service equipped to safely dispose of pressurized containers. Any materials contaminated with the product during clean up of spills or releases are considered hazardous waste and must be disposed of in accordance with all local, state, and federal regulations.



## 14. TRANSPORTATION INFORMATION

DOT Classification = ORM-D Consumer Commodity

Methylene chloride and methanol have been classified as hazardous wastes. The RCRA hazardous waste numbers for these materials are U080 and U154 respectively.

## 15. REGULATORY INFORMATION

OSHA Hazard Communication Classification: Irritant, CNS, Kidney, Liver, Carcinogen

WARNING! : Methylene chloride has been listed as a Special Hazardous Substance by the State of Pennsylvania, an Extraordinarily Hazardous Substance by the State of Massachusetts, and as a substance known to cause cancer by the State of California. Methylene chloride and methanol are reportable under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986.

The Reportable Quantities (RQ) for methylene chloride and methanol are 1000 and 5000 pounds respectively.

## 16. OTHER INFORMATION

HMIS Classifications: Health = 2, Fire = 4, Reactivity = 0

Does not contain chlorofluorocarbons (CFCs).

All components of the product are included in the Toxic Substances Control Act (TSCA) inventory.

Reasons for revision: 1. Deletion of toluene from formulation.  
2. Addition of propane to the propellant mixture.  
3. Change in formulation percentages for all components.

Reasons for revision B: 1. Added CHEMTREC phone numbers

NOTICE TO USERS: Advanced Ceramics requests the users of this product to study this material safety data sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents, and contractors of the information on this MSDS and any product hazard and safety information, (2) furnish this same information to each of its customers for the product and, (3) request such customers to notify their employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Advanced Ceramics. We believe that the information contained herein is current as of the date of this MSDS. Since the use of this product is not within the control of Advanced Ceramics, it is the user's obligation to determine the conditions of safe use of this product.