


## 1. IDENTIFICATION

<b>Product Identifier</b>	<b>Boron Carbide</b>
<b>Synonyms:</b>	B4C
<b>CAS Number:</b>	1303-86-2
<b>Recommended Use:</b>	Abrasives, ceramics, neutron absorber, anti-oxidant, sintering aid
<b>Restrictions on Use:</b>	Contact manufacturer
<b>Manufacturer/Supplier:</b>	 Stanford Advanced Materials Address : 23661 Birtcher Dr., Lake Forest, CA 92630 U.S.A.
<b>Emergency telephone number:</b>	(949) 407-8904

## 2. HAZARD(S) IDENTIFICATIONS

### Classification of a Substance or Mixture:

#### Classification according to Regulation (EC) No 1272/2008

The following Hazard Statements are applicable only according to OSHA regulations within the United States. These Statements are NOT applicable for the CLP regulation (1272/2008/EL) in the EU: H360



**GHS08 Health Hazard**  
**Repr. 1B, H360: May damage fertility or the unborn child**

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC:** Not applicable

#### Information concerning particular hazards for human and environment:

The product does not have to be labeled due to the calculation procedure of the "General Classification Guideline for preparation of the EU" in the latest valid version

#### Classification System:

The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

The classification is according to the latest editions of international substance lists, and is supplemented by information from technical literature and by information provided by the manufacturer

### Label Elements

#### Labelling according to Regulation (EC) No. 1272/2008:

The substance is classified and labelled according to the Globally Harmonized System (GHS) within the USA.

This product does not have a classification according to the CLP regulation.

The product is classified and labelled according to the CLP regulation.

**Hazard Pictograms:** (Not applicable within the EU; only applicable for North America)



GHS08

**Signal Word:** **DANGER**  
Not applicable within the EU; only applicable for North America

**Hazard-determining components of labeling:** Diboron Trioxide (B2O3)

**Hazard Statements:** (Not applicable within the EU; only applicable for North America):

H360 May damage fertility or the unborn child.

The substance is classified and labeled according to the OSHA Globally Harmonized System (GHS) within the USA

**Precautionary Statements:**

**P281** Use personal protective equipment as required

**P202** Do not handle until all safety precautions have been read and understood

**P308+P313** If exposed or concerned: Get medical advice/attention

**P501** Dispose of contents/container in accordance with local/regional/national/international regulations

**Hazard Description:**

**WHMIS- Symbols:** WHMIS system is being replaced by the GHS system.



D2A Very toxic material causing other toxic effects

**Classification System:**



**NFPA Ratings (scale 0-4)**

Health = 1  
Fire = 0  
Reactivity = 0



**HMIS Ratings (scale 0-4)**

Health = \*1  
Fire = 0  
Reactivity = 0

\*Indicates a long term health hazard from repeated or prolonged exposures

**HMIS Long Term Health Hazard Substances**

1303-86-27 Diboron Trioxide (B2O3)

**Other Hazards:**

### Results of PBT and vPvB Assessment

**PBT:** Not applicable  
**vPvB:** Not applicable

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical Characterization:** Mixture of substances listed below with nonhazardous additions

**Main Component:** CAS No.: 12069-32-8 Boron Carbide (B<sub>4</sub>C), >96%  
 EINECS: 235-111-5

#### Dangerous Components:

CAS No.: 1303-86-2 Diboron Trioxide (B<sub>2</sub>O<sub>3</sub>) < 3%

EINEC: 215-125-8  T Repr. Cat. 2 R60-61

Index No.: 005-008-00-8  Repr. 1B, H360FD

CAS No.: 7439-89-6 Iron ≤ 1%

EINECS: 231-096-4 Substance with a Community workplace exposure limit

#### SVHC:

CAS No.: 1303-86-2 Diboron Trioxide (B<sub>2</sub>O<sub>3</sub>) < 3%

**Additional Information:** For the wording of the listed risk phrases refer to Section 16.

### 4. FIRST-AID MEASURES

**General Information:** No special measures required

**After inhalation:** Supply fresh air, consult doctor in case of complaints.  
 Provide oxygen treatment if affected person has difficulty breathing

**After skin contact:** Brush off loose particles from skin  
 Clean with water and soap  
 If skin irritation continues, consult doctor

**After eye contact:** Immediately remove contact lenses if possible.  
 Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor

**After swallowing:** Rinse out mouth and then drink plenty of water.  
 Do not induce vomiting; immediately call for medical help

**Most important symptoms and effects, both acute and delayed:** Coughing  
 Breathing difficulty  
 Gastric or intestinal disorders

**Indication of any immediate medical attention and special treatment needed** Contains Boron Compounds

**Hazards:** Danger of impaired breathing  
 May damage fertility or the unborn child

## 5. FIRE-FIGHTING MEASURES

<b>Flash Point:</b>	Not Applicable
<b>Flammable Limits:</b>	Not Applicable
<b>Auto Ignition Temperature:</b>	Not Applicable
<b>Extinguishing Media:</b>	Use media appropriate for surrounding conditions
<b>Fire &amp; Explosion Hazards:</b>	Non-flammable, non-combustible. Product will not burn.
<b>Hazardous Decomposition Products:</b>	None
<b>Advice for firefighters:</b>	Wear self-contained respiratory protective device. Wear fully protective suit
<b>NFPA Classification:</b>	<b>Health: 1 Flammability: 0 Reactivity: 0</b>

## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions, Protective Equipment &amp; Emergency Procedures:</b>	Avoid formation of dust Ensure adequate ventilation For large spills, wear protective clothing. For large spills, use respiratory protective device against the effects of fumes/dust/aerosol
<b>Environmental Precautions:</b>	Prevent seepage into sewage system, work pits and cellars
<b>Methods and Material for Containment and Cleaning Up:</b>	Dispose contaminated materials as waste according to item 13. Send for recovery or disposal in suitable receptacles.
<b>Reference to other sections:</b>	See section 7 for information on safe handling. See section 8 for information on personal protection equipment. See section 13 for disposal information

## 7. HANDLING AND STORAGE

<b>Precautions for Safe Handling:</b>	Prevent formation of dust. Any unavoidable deposit of dust must be regularly removed. Do not dry clean dust covered objects and floors. Wash thoroughly with plenty of water. Use only in well ventilated areas Avoid breathing dust.
<b>Information about protection against explosions and fires:</b>	No special measures required
<b>Conditions for safe storage, including incompatibilities:</b>	
<b>Requirements to be met by storerooms and receptacles:</b>	No special requirements
<b>Information about storage in one common storage facility:</b>	Store away from oxidizing agents Store away from foodstuffs Do not store together with acids.
<b>Further information about storage conditions:</b>	Store in cool, dry conditions in well-sealed receptacles Store receptacle in a well-ventilated area Protect from humidity and water; This product is hygroscopic
<b>Specific End Use(s):</b>	No further information available

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Control Parameters** Components with limit values that require monitoring at the workplace:

**Diboron trioxide (CAS No. 1303-86-2):**

**PEL (USA)** Long-term value: 15\* mg/m<sup>3</sup>  
\*total dust

**REL (USA)** Long-term value: 10 mg/m<sup>3</sup>

**TLV (USA)** Long-term value: 10 mg/m<sup>3</sup>

**EL (Canada)** Long-term value: 10 mg/m<sup>3</sup>

**EV (Canada)** Long-term value: 10 mg/m<sup>3</sup>

**Iron (CAS No. 7439-89-6):**

**EV (Canada)** Long-term value: 1\*, 5\*\* mg/m<sup>3</sup>  
As iron; \*salts, water-soluble; \*\*welding flux

**Additional Information:** The lists that were valid during the creation were used as basis

**Exposure Controls:**

**General Protective and Hygienic Measures:**

The usual precautionary measures for handling chemicals should be followed.  
 Keep away from foodstuffs, beverages and feed  
 Wash hand before breaks and at the end of work.  
 Avoid contact with the eyes  
 Avoid close or long-term contact with the skin  
 Do not inhale dust/smoke/mist.  
 Pregnant women should strictly avoid inhalation or skin contact

**Eye/Face Protection:**

Safety glasses

**Skin Protections:**

Wear gloves for the protection against mechanical hazards according to OSHA and NIOSH rules. The glove material has to be impermeable and resistant to the product/ the substance/the preparation.

**Respiratory Protection:**

Suitable respiratory protective device recommended  
 Use suitable respiratory protective device in case of insufficient ventilation  
 For spills, respiratory protection may be advisable

**Material of Gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer

**Body Protection:**

Not required under normal conditions of use.  
 Protection may be required for spills

**Limitation and Supervision of Exposure into the Environment:**

No special requirements

**Risk Management Measures:**

No special requirements

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

**Physical state** Granulate

<b>Color</b>	Grey Black
<b>Odor</b>	Odorless
<b>Order threshold</b>	Not determined
<b>pH</b>	neutral
<b>Melting/Freezing point</b>	2350 °C (4262 °F)
<b>Initial Boiling point/Boiling Range</b>	Undetermined
<b>Flash point</b>	Not applicable
<b>Flammability</b>	Product is not flammable
<b>Upper/Lower flammability explosive limit</b>	Not determined
<b>Vapor Pressure</b>	Not applicable
<b>Density at 20°C (68°F)</b>	2.52 g/cm <sup>3</sup>
<b>Relative density</b>	Not determined
<b>Solubility</b>	Insoluble
<b>Partition coefficient</b>	Not determined
<b>Auto-ignition temperature</b>	Not determined
<b>Decomposition temperature</b>	Not determined
<b>Viscosity</b>	Not applicable
<b>Explosive Properties</b>	Not determined

## 10. STABILITY AND REACTIVITY

<b>Thermal Decomposition / Conditions to be Avoided:</b>	No decomposition if used and stored according to specifications
<b>Possibility of Hazardous Reactions:</b>	Reacts with strong acids. Reacts with oxidizing agents. Reacts with strong alkali
<b>Incompatible Materials:</b>	No further relevant information available
<b>Hazardous Decomposition:</b>	Carbon monoxide and carbon dioxide
<b>Conditions to Avoid:</b>	No further relevant information available

## 11. TOXICOLOGICAL INFORMATION

### Information on Toxicological Effects

#### Primary Irritant Effect:

**On the skin:** No irritant effect

**On the eye:** No irritant effect

**Sensitization:** No sensitizing effects known

**Additional Toxicological Information:** Product is suspected to cause damage to fertility.

Product is suspected to cause birth defects

**CMR (carcinogeny, mutagenicity and toxicity for reproduction) Effects:** Classification for the United States only.

Repr. 1B

## 12. ECOLOGICAL INFORMATION

**Aquatic Toxicity:** No further relevant information available

**Persistence and degradability:** No further relevant information available

<b>Other Adverse Effects:</b>	No further relevant information available
<b>Bio accumulative Potential:</b>	Does not accumulate in organisms
<b>Mobility in soil:</b>	No further relevant information available
<b>General notes:</b>	Water Hazard Class 2 (German Regulation) (self-assessment): hazardous for water Danger to drinking water if even small quantities leak into the ground. Due to available data on eliminability/decomposition and bioaccumulation, potential prolonged term damage of the environment cannot be excluded.

**Results of PBT and vPvB Assessment**

PBT: Not applicable.

vPvB: Not applicable.

Other Adverse Effects: No further relevant information available

**13. DISPOSAL CONSIDERATIONS**

<b>Waste Treatment Methods:</b>	Smaller quantities can be disposed of with household waste Can be reused after reprocessing Contact waste processors for recycling information. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous
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<b>Contaminated Packaging:</b>	Disposal must be made according to official regulations
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**14. TRANSPORT INFORMATION**
**Note: Not classified as a dangerous according to transport regulations.**

<b>DOT (US)</b>	Not regulated
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<b>IMDG/IMO</b>	Not regulated
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<b>IATA</b>	Not regulated
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**Environmental Hazards:**

<b>Marine pollutant:</b>	No
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<b>Special precautions for User Transport in Bulk</b>	Not applicable
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**According to Annex II of MARPOL73/78 and the IBC Code UN "Model Regulation"**
**15. REGULATORY INFORMATION**

<b>SARA 313 Components:</b>	Substance is not listed
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<b>SARA 355 Components:</b>	Substance is not listed
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<b>TSCA</b>	Substance is listed
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<b>California Proposition 65:</b> Chemicals known to cause cancer:	Substance is not listed
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<b>Chemicals known to cause reproductive toxicity to females:</b>	Substance is not listed
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<b>Chemicals known to cause reproductive toxicity in males:</b>	Substance is not listed
<b>Chemicals known to cause developmental toxicity:</b>	Substance is not listed
<b>Carcinogenic Categories:</b>	
<b>EPA (Environmental Protection Agency):</b>	Diboron Trioxide, CAS No. 1303-86-2
<b>IARC (International Agency for Research on Cancer):</b>	Substance is not listed
<b>TLV (Threshold Limit Value established by ACGIH):</b>	Substance is not listed
<b>NIO SH-Ca (National Institute for Occupational Safety and Health):</b>	Substance is not listed
<b>State Right to Know Listings:</b>	Substance is not listed
<b>Canadian Substance Listings:</b>	
<b>Canadian Ingredient Disclosure list (limit 0.1%)</b>	Substance is not listed
<b>Canadian Ingredient Disclosure list (limit 1%)</b>	14808-60-7 – Quartz (SiO <sub>2</sub> )
<b>Other regulations, limitations and prohibitive regulations</b>	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations
<b>Substances of very high concern (SVHC) according to REACH, Article 57:</b>	Diboron Trioxide, CAS No. 1303-86-2
<b>Chemical Safety assessment:</b>	A Chemical Safety Assessment has not been carried out

## 16 OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

### Relevant Phrases:

H360FD	May damage fertility. May damage the unborn child.
R60	May impair fertility.
R61	May cause harm to the unborn child.

### Abbreviation and Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CARC. 1A	Carcinogenicity, Hazard Category 1A
DNEL	Derived No-Effect Level (REACH)
DOT	Department of Transportation
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
GHS	Globally harmonized System of Classification and Labeling of Chemicals.
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IMDG	International Maritime Dangerous Goods



NFPA	National Fire Protection Association
<b>NIOSH</b>	<b>National Institute for Occupational Safety and Health</b>
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PNEC	Predicted No-effect Concentration (REACH)
Repr. 1B	Reproductive toxicity, Hazard Category 1B
SARA	Superfund Amendment and Reauthorization Act
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
WHMIS	Workplace hazardous Materials Information System (Canada)

**NOTICE:**

This material safety data sheet complements the technical data sheets but does not replace them. The information it contains is based on our present knowledge of the product on the date indicated. It is given in good faith. Users should be warned about the risks associated with using the product for a different purpose than that for which it was developed, and particularly for uses for which we are not qualified to give advice.

These regulatory prescriptions are provided with a view to helping users meet their obligations when using this product. This list should not be considered exhaustive and does not exempt users from ensuring that they are not required to comply with any further prescriptions other than those mentioned above concerning product possession and handling for which they are solely responsible.