

1. IDENTIFICATION

Product Identifier	Boron Carbide
Synonyms:	B4C
CAS Number:	1303-86-2
Recommended Use:	Abrasives, ceramics, neutron absorber, anti-oxidant, sintering aid
Restrictions on Use:	Contact manufacturer
Manufacturer/Supplier:	 Stanford Advanced Materials Address : 23661 Birtcher Dr., Lake Forest, CA 92630 U.S.A.
Emergency telephone number:	(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 (B₄C), >96%
 EINECS: 235-111-5

Dangerous Components:

CAS No.: 1303-86-2 Diboron Trioxide (B₂O₃) < 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 (B₂O₃) < 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

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

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment & Emergency Procedures:	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
Environmental Precautions:	Prevent seepage into sewage system, work pits and cellars
Methods and Material for Containment and Cleaning Up:	Dispose contaminated materials as waste according to item 13. Send for recovery or disposal in suitable receptacles.
Reference to other sections:	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

Precautions for Safe Handling:	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.
Information about protection against explosions and fires:	No special measures required
Conditions for safe storage, including incompatibilities:	
Requirements to be met by storerooms and receptacles:	No special requirements
Information about storage in one common storage facility:	Store away from oxidizing agents Store away from foodstuffs Do not store together with acids.
Further information about storage conditions:	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
Specific End Use(s):	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 ³ *total dust
REL (USA)	Long-term value: 10 mg/m ³
TLV (USA)	Long-term value: 10 mg/m ³
EL (Canada)	Long-term value: 10 mg/m ³
EV (Canada)	Long-term value: 10 mg/m ³
Iron (CAS No. 7439-89-6):	
EV (Canada)	Long-term value: 1*, 5** mg/m ³ 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
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Color	Grey Black
Odor	Odorless
Order threshold	Not determined
pH	neutral
Melting/Freezing point	2350 °C (4262 °F)
Initial Boiling point/Boiling Range	Undetermined
Flash point	Not applicable
Flammability	Product is not flammable
Upper/Lower flammability explosive limit	Not determined
Vapor Pressure	Not applicable
Density at 20°C (68°F)	2.52 g/cm ³
Relative density	Not determined
Solubility	Insoluble
Partition coefficient	Not determined
Auto-ignition temperature	Not determined
Decomposition temperature	Not determined
Viscosity	Not applicable
Explosive Properties	Not determined

10. STABILITY AND REACTIVITY

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

Other Adverse Effects:	No further relevant information available
Bio accumulative Potential:	Does not accumulate in organisms
Mobility in soil:	No further relevant information available
General notes:	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

Waste Treatment Methods:	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
Contaminated Packaging:	Disposal must be made according to official regulations

14. TRANSPORT INFORMATION
Note: Not classified as a dangerous according to transport regulations.

DOT (US)	Not regulated
IMDG/IMO	Not regulated
IATA	Not regulated

Environmental Hazards:

Marine pollutant:	No
Special precautions for User Transport in Bulk According to Annex II of MARPOL73/78 and the IBC Code UN "Model Regulation"	Not applicable

15. REGULATORY INFORMATION

SARA 313 Components:	Substance is not listed
SARA 355 Components:	Substance is not listed
TSCA	Substance is listed
California Proposition 65: Chemicals known to cause cancer:	Substance is not listed
Chemicals known to cause reproductive toxicity to females:	Substance is not listed

Chemicals known to cause reproductive toxicity in males:	Substance is not listed
Chemicals known to cause developmental toxicity:	Substance is not listed
Carcinogenic Categories:	
EPA (Environmental Protection Agency):	Diboron Trioxide, CAS No. 1303-86-2
IARC (International Agency for Research on Cancer):	Substance is not listed
TLV (Threshold Limit Value established by ACGIH):	Substance is not listed
NIO SH-Ca (National Institute for Occupational Safety and Health):	Substance is not listed
State Right to Know Listings:	Substance is not listed
Canadian Substance Listings:	
Canadian Ingredient Disclosure list (limit 0.1%)	Substance is not listed
Canadian Ingredient Disclosure list (limit 1%)	14808-60-7 – Quartz (SiO ₂)
Other regulations, limitations and prohibitive regulations	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
Substances of very high concern (SVHC) according to REACH, Article 57:	Diboron Trioxide, CAS No. 1303-86-2
Chemical Safety assessment:	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
NIOSH	National Institute for Occupational Safety and Health
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.