

Trade Name: Boron Carbide

1 IDENTIFICATION

Product Identifier: Boron Carbide

Synonyms: B₄C

CAS No. / EC No.: 12069-32-8 / 235-111-5

Recommended Use: Product is intended for use in ceramic armors, wear part manufacturing, dressing sticks, refractory additives, neutron absorption, or as a sintering aid.

Use(s) Advised Against: Contact manufacturer if using product outside of recommended use cases.

Manufacturer/Supplier:	GNPGraystar	GNPGraystar
	37 John Glenn Dr.	9 Simmonsville Road
	Amherst, NY 14228	Bluffton, SC 29910
	Ph: 716-759-6600	Ph: 843-815-5600

Emergency Telephone No.: CHEMTREC (US): 1-800-424-9300

All other regions contact your local poison control center or local chemical authority.

2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture:

Classification has been determined in accordance with United States OSHA HCS (29 CFR 1910.1200) requirements and any corresponding Globally Harmonized System (GHS) classification parameters.

Additional Information: Information in this section may not be accurate for EU or other jurisdictions.

LABEL ELEMENTS

GHS Label Elements

Reproductive Toxicity (oral exposure)

Category 2

Specific target organ toxicity, single exposure

Category 3

Target organ: Lungs

Pictograms:



Signal Word: Warning

Hazard-determining components of labeling: See Section 3 for more information.

Hazard Statements: H355 May cause respiratory irritation.

H361 Suspected of damaging male fertility via oral exposure.

Precautionary Statements: P102 Keep out of reach of children.

P203 Obtain, read and follow all safety instructions before use.

P261 Avoid breathing dust.

P264 Wash hands and face thoroughly after handling.

P270 Do not eat, drink or smoke while using this product.

P280 Wear protective gloves/face protection.

P304 +

Trade Name: Boron Carbide

P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P318 IF exposed or concerned, get medical advice.

P319 Get medical help if you feel unwell.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container in accordance with all applicable local/regional/nation regulations.

HMIS Ratings (scale 0-4):

Health:	*1
Fire:	0
Reactivity:	0
PPE:	E

NFPA Ratings (scale 0-4):

Health:	1
Fire:	0
Reactivity:	0
Specific Hazard:	

Legend

4 - Extreme

3 - Serious

2 - Moderate

1 - Slight

0 - Minimal

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

Other Hazards: No additional information available at time of document authoring.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization: Substance

Identifier	Chemical Name/Description	GHS Hazard(s)	Wt. %
CAS No.: 12069-32-8 EC No.: 235-111-5	Boron Carbide, B ₄ C	STOT, single exposure, Cat 3 (lungs)	> 96
CAS No.: 1303-86-2 EC No.: 215-125-8	Boron Oxide, B ₂ O ₃	Reproductive Toxicity, Cat 2 (oral exposure)	< 3
CAS No.: 7439-89-6 EC No.: 231-096-4	Iron, Fe	Flammable Solid, Cat. 1	< 1

Exact chemical identifier(s) or percentage(s) may vary by batch. Product may contain hazardous chemicals below reportable concentrations; for substances containing byproducts/contaminants, the overall hazard classification may be less severe than that of individual components.

4 FIRST AID MEASURES

General Information: No special measures required.

After inhalation: Supply fresh air. Get medical help if symptoms occur. Provide oxygen treatment if affected person has difficulty breathing.

After contact with eyes: Irrigate with large quantities of water for at least 10 minutes. Remove contact lenses if present and easy to do so. Seek medical help if persistent irritation or tissue damage occur.

After skin contact: Wash thoroughly with soap and water. Seek medical advice if any symptoms occur.

After swallowing: If swallowed, rinse mouth with plenty of water if affected person is fully conscious. Do not give anything by mouth or induce vomiting in an unconscious person. Seek medical advice.

Trade Name: Boron Carbide

Key symptoms and effects, both acute and delayed:

Excessive inhalation, particularly over long periods of time, may lead to permanent lung damage/disease in susceptible individuals. Repeated or excessive oral exposure may reduce sperm count or impact sperm viability in males.

Indication(s) of need for immediate medical help:

Any indication of tissue damage, respiratory distress, or distress of the digestive system from exposure.

5 FIREFIGHTING MEASURES

Flash point: N/A

UEL: N/A

LEL: N/A

Auto-ignition temperature: No data available

Extinguishing media:

Use any suitable media for the environment in which the fire or conflagration is taking place. Be mindful of any surrounding flammable/combustible materials. High volume water jet not preferred due to the risk of spreading fire.

Hazardous decomposition products:

None anticipated.

Firefighting instructions:

Firefighters and other involved individuals should wear self-contained breathing apparatuses and be aware of any other flammable/combustible substances involved in the fire.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Avoid ingestion of material. Ensure adequate ventilation while handling. Avoid dust formation. Use respiratory protective devices when anticipating fumes or dusts. Per best general practices, wear protective clothing and avoid contact with the eyes and skin where possible.

Environmental precautions:

Per best general practices, prevent material from entering drains or water courses. Do not allow to enter soil.

Methods and material for containment and cleanup:

Sweep up and shovel into suitable containers for disposal. If dust formation is anticipated, use wet cleanup methods. Disposal containers should be kept closed and be kept in a cool location.

Other information:

See Section 7 for additional information on safe handling.
See Section 8 for additional information on personal protective equipment.
See Section 13 for additional information on disposal.

7 HANDLING AND STORAGE

Precautions for safe handling:

Wear protective clothing. Prevent formation of dust. Any deposit of dust which cannot be avoided must be regularly removed. Provide suction extractors if dust is formed. Handle only in well-ventilated areas. Avoid product contact with the eyes or skin. Wash hands and face after handling.

Information about protection against explosions and fires:

No special measures required.

Trade Name: Boron Carbide

Requirements for storerooms and receptacles:

Storage should occur in cool, dry, well-ventilated areas.

Information regarding storage in common storage facility:

Product should be stored away from strong oxidizers. Store away from foodstuffs. Do not store near acids.

Further information about storage conditions:

Keep receptacles sealed: product is hygroscopic and should be protected from humidity and water.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Applicable component occupational exposure limits requiring monitoring at the workplace:

Boron Oxide (CAS# 1303-86-2)

OSHA PEL, TWA (8-hr): 15 mg/m³ (total dust)

NIOSH REL, TWA (10-hr): 10 mg/m³

ACGIH TLV, TWA (8-hr): 10 mg/m³

California: CAL/OSHA PEL, TWA (8-hr): 10 mg/m³

Additional limit information:

No additional relevant information at time of document authoring.

Engineering controls:

Ensure good ventilation in the workplace.

Risk management:

Keep away from foodstuffs, beverages, and feed. Wash hands before breaks and at the end of work. Avoid buildup of dusts.

PERSONAL PROTECTIVE EQUIPMENT

Breathing equipment:

Respiratory protective devices such as a N-95 dust mask or other suitable device recommended.

Hand protection:

Wear protective gloves to ensure against mechanical hazards.

Eye protection:

Wear safety glasses or goggles to protect against eye exposure.

Body protection:

Wear general protective work clothing.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical state:

Granules

Color:

Grey/Black

Odor:

Odorless

Odor threshold:

N/A

pH:

N/A

Melting/Freezing point:

4262°F (2350°C)

Initial boiling point:

No data available

Boiling point range:

No data available

Flash point:

No data available

Flammability:

Product is not flammable

Upper explosive limit:

N/A

Lower explosive limit:

N/A

Trade Name: Boron Carbide

Auto-ignition temperature:	N/A
Evaporation rate:	N/A
Vapor pressure:	N/A
Vapor density:	N/A
Relative density:	2.52, Water = 1.00 (at 68°F/20°C)
Water solubility:	Insoluble
Partition coefficient:	No data available
Kinematic viscosity:	No data available
Particle characteristics:	Granule size: variable

10 STABILITY AND REACTIVITY

Thermal decomposition / conditions to be avoided:	No decomposition anticipated under standard use, transport and storage conditions.
Hazardous reaction potential:	No hazardous reactions anticipated. Hazardous polymerization does not occur.
Incompatible materials:	May react with strong acids and oxidizers.
Hazardous decomposition products:	No known hazardous decomposition products.
Other Information:	No additional relevant information at time of document authoring.

11 TOXICOLOGICAL INFORMATION

Component LC₅₀/LD₅₀ values relevant for classification: None

Probable routes of exposure:	Ingestion, inhalation, physical contact with skin/eyes
Effects on skin:	May produce mild irritation on skin and mucous membranes
Effects on eye:	May produce irritant effects in line with that of other particulates
Inhalation effects:	Produces respiratory irritation when inhaled. Product form is not readily inhalable in the absence of dusts. Long-term inhalation of dusts may lead to lung damage and lung disease.
Ingestion effects:	Repeated or excessive oral exposure may reduce sperm count or impact sperm viability in males.
Sensitization effects:	No sensitization effects known.
Subacute/chronic toxicity:	No information available.
Carcinogenicity:	
NTP Listing Status:	Not listed
IARC Listing Status:	Not listed
OSHA Listing Status:	Not listed
Cell mutagenicity:	No information available.
Reproductive effects:	Repeated or excessive oral exposure may reduce sperm count or impact sperm viability in males.

Trade Name: Boron Carbide

12 ECOLOGICAL INFORMATION

Aquatic toxicity: Product not determined to be toxic to the aquatic environment.

Persistence and degradability: Inorganic product, not eliminable from water by biological means.

Results of PBT assessment: No data available

Results of vPvB assessment: No data available

LogK_{ow} , BCF values: No data available

Bioaccumulative potential: No significant accumulation in organisms

Mobility in soil: No data available

Other adverse effects: No relevant information available at time of document authoring.

Additional information: No relevant information available at time of document authoring.

13 DISPOSAL CONSIDERATION

Waste treatment methods:

Do not dispose of product via sewage system or other liquid waste streams. Product not typically designable as household or general waste. Contact your local hazardous waste disposal authority to determine necessary steps for disposal in your locality.

Contaminated packaging:

Contaminated packaging should be scrubbed clean prior to disposal if possible. Else follow all applicable guidelines for product.

Additional information:

Refer to Section 8 for exposure controls, personal protective equipment

14 TRANSPORT INFORMATION

DOT (US) Not regulated for transport

IMDG/IMO Not regulated for transport

IATA Not regulated for transport

General Information: No additional information.

15 REGULATORY INFORMATION

SARA 355 Components: Not listed

SARA 313 Components: Not listed

TSCA listing status: Listed

Determinations of carcinogenic status:

California Prop. 65: Not listed as a carcinogen or reproductive toxin

EPA: Not likely to be carcinogenic to humans.

IARC: Not listed

ACGIH: Not listed

NIOSH: Not listed

State right-to-know listings:
Minnesota: Diboron Trioxide (CAS# 1303-86-2)
New York City: Boron Oxide (CAS# 1303-86-2)
New Jersey: Boron Oxide (CAS# 1303-86-2)
Rhode Island: Boron Oxide (CAS# 1303-86-2)

Information pertaining to Canadian regulations:

Trade Name: Boron Carbide

Canadian Domestic Substances List: Listed

Other regulations, limitations, and prohibitive regulations:

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations, SOR/2015-17.

16 OTHER INFORMATION

All information provided is based on GNPGraystar's present knowledge and understanding of this product and any applicable regulations and data. Any information provided does not constitute a guarantee for specific product features nor does it establish a legally valid contractual relationship.

Abbreviations and acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
DOT (US)	Department of Transportation (United States)
EPA	Environmental Protection Agency (United States)
HMIS	Hazardous Materials Identification System (United States)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG/IMO	International Maritime Dangerous Goods/International Maritime Organization
NFPA	National Fire Protection Association (United States)
NIOSH	National Institute for Occupational Safety and Health (United States)
NTP	National Toxicology Program (United States)
OSHA	Occupational Safety and Health Administration (United States)
PEL	Permissible Exposure Limit
SARA	Superfund Amendment and Reauthorization Act
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time-Weighted Average

NOTICE: This safety data sheet complements technical data sheets but does not replace them. The information contained within is based on our present knowledge of the product on the document revision date. All information provided is done so in good faith. Product users should be warned about the risks associated with using the product for a different purpose than that for which it was intended as stated within this safety data sheet and any associated technical data sheets. GNPGraystar does not provide advice or indicate qualification for giving advice for uses outside of stated intended use cases. Statements regarding applicable regulations are provided to help users meet their regulatory obligations when using this product. Statements are not exhaustive of all potential regulatory parameters a user may be bound by and does not exempt users from ensuring their own compliance with applicable regulations regarding handling, use, and storage of the product, for which they are solely responsible.

Date of Preparation: April 26, 2023