1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	**Boron-11 (^{11}Boron) Metal**
Chemical Formula	B
Molecular Weight	11.009305 g/mol
CAS No.	14798-13-1
Recommended Use	For professional use only
Supplier Address*	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview

This material is an odorless, dark gray granular or flake solid.

Health Hazards	May produce irritation of the nasal mucous membranes, the respiratory tract, and eyes. Ingestion of this material may cause harm. Prolonged or chronic exposure may cause adverse effects on the central nervous system and/or gastrointestinal system, as well as liver and/or renal damage.
Flammability Hazards	This material is not flammable; however, finely divided dusts of this material can present a fire or explosion hazard in the presence of spark or open flame. If involved in a fire, this material will decompose to form boron oxides.
Reactivity Hazards	This material is not reactive.
Environmental Hazards	Release of this material to the environment may cause harm to plants and animals.
Emergency Recommendations:	Emergency responders must wear personal protective equipment appropriate for the situation to which they are responding and to the chemical hazards of this material. Caution should be used when responding to releases.

Emergency Overview:

Classification according to Directive 67/548/EEC or Directive 1999/45/EC: Xn; R22
(For full text of R-phrases, see Section 16)

Classification according to Regulation (EC) No. 1272/2008 [CLP]: Acute Tox. 4 (Oral) H302
(For full text of H-phrases, see Section 16)

GHS-US classification: Acute Tox. 4 (Oral) H302

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)
Health Hazard = 1 **Flammability = 0** **Reactivity = 0**

HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)
Health Hazard = 1 **Flammability = 0** **Physical Hazard = 0**

HEALTH HAZARD	1
FLAMMABILITY	0
PHYSICAL HAZARD	0

Label Elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard Pictograms (CLP):

Signal Word: Warning

Hazard Statements: H302 – Harmful if swallowed

Precautionary Statements: P264 – Wash both hands thoroughly after handling
P270 – Do not eat, drink or smoke when using this product
P301+P312 – If swallowed, call a poison center or doctor
P330 – Rinse mouth
P501 – Dispose of contents/container in compliance with applicable regulations

---

3. COMPOSITION/INFORMATION ON INGREDIENTS

Product Name	Boron-11 (^{11}B) Metal
Chemical Formula	B
Molecular Weight	11.009305 g/mol
CAS No.	14798-13-1

4. FIRST AID MEASURES

General	Move victim(s) out of dangerous area. Consult a physician and/or the nearest Poison Control Center for all exposures except minor instances of skin contact. Take copy of this SDS to physician or other health professional.
Inhalation	May be harmful if inhaled. May cause respiratory tract irritation. Remove victim(s) to fresh air as quickly as possible. If not breathing, give artificial respiration. Seek immediate medical attention.
Skin	May be harmful if absorbed through skin. May cause skin irritation. If material contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Do not interrupt flushing. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention if any adverse effect occurs.
Eye Contact	May cause eye irritation. If material enters the eyes, open eyes under gently running water. Use sufficient force to open eyelids. Have contaminated individual "roll" eyes. Minimum flushing is for 15 minutes. Do not interrupt flushing. Seek immediate medical attention if any adverse effect occurs.
Ingestion	Harmful if swallowed. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water, Seek medical attention.

5. FIREFIGHTING MEASURES

Fire Extinguishing Materials:	Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
Firefighting Instructions:	Wear self-contained breathing apparatus for firefighting if necessary.
Protective Equipment:	Do not enter fire area without proper protective equipment, including respiratory protection.

6. ACCIDENTAL RELEASE MEASURES

Release Response

Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist or gas. Ensure adequate ventilation.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and Material for Containment and Cleanup

Pick up and arrange disposal without creating dust. Keep in suitable closed containers for disposal.

7. HANDLING AND STORAGE

Work and Hygiene Practices	As with all chemicals, avoid getting this product on you or in you. Wash thoroughly after handling this product, before breaks and at the end of the workday. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing dusts or particulates generated by this product. Dust deposits should not be allowed to accumulate on surfaces. Use in a well-ventilated location. Wipe down area routinely to avoid the accumulation of dusts of this product. Remove contaminated clothing immediately.

	Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace.
Conditions for Safe Storage	Store at room temperature, away from water/moisture. Keep container tightly sealed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal Protective Equipment	Gloves, safety glasses, protective clothing, respiratory protection
Skin Protection	Complete suit protecting against chemicals; flame-retardant antistatic protective clothing, selected according to the concentration and amount of dangerous substance at the specific workplace.
Eye Protection	Use chemical safety goggles. Maintain eye wash fountain in work area.
Respiratory Protection	Use NIOSH-certified/CEN-approved particulate respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State/Appearance	Granular or flake solid powder
Molecular Weight	11.009305 g/mol
Color	Dark gray
Odor	Odorless

10. STABILITY AND REACTIVITY

Stability	Chemically stable if stored under recommended conditions
Decomposition Products	Under fire conditions: borane/boron oxides
Materials with Which Substance Is Incompatible	Strong oxidizing agents, strong acids, halogens, ammonia
Hazardous Polymerization	No information available
Conditions to Avoid	No information available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Ingestion	Harmful if swallowed

Primary Irritant Effect

Inhalation	Respiratory tract irritation: signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.
Skin	May cause irritation. Signs/symptoms may include abrasion, redness, pain and itching.
Eyes	May cause irritation. Signs/symptoms may include pain, redness, tearing and corneal abrasion.
Ingestion	Gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.
Sensitization	No sensitizing effects known.

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Kidney, Ureter, Bladder - Urine volume increased

Kidney, Ureter, Bladder - Other changes in urine composition

Kidney, Ureter, Bladder - Incontinence

Sense Organs and Special Senses (Olfaction) - Effect, not otherwise specified

Lungs, Thorax or Respiration - Other changes

Nutritional and Gross Metabolic - Weight loss or decreased weight gain

Additional toxicological information:

To the best of our knowledge, the acute and chronic toxicity of this substance is not fully known.

EPA-I: Data are inadequate for an assessment of human carcinogenic potential. May impair fertility. May cause harm to the unborn child.

---

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to Fish	LC50 – *Danio rerio* (zebra fish) – 96h
Toxicity to Daphnia	Static test LC50 – *Daphnia magna* (water flea) – 48h
Persistence and Degradability	No data available
Bioaccumulative Potential	No data available
Mobility in Soil	No data available
Results of PBT and vPvB Assessment	PBT/vPvB assessment not available, as chemical safety assessment not required/not conducted
Other Adverse Effects	No data available

---

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods	Consult state, local or national regulations to ensure proper disposal; dispose of waste as unused product.
Contaminated Packaging	Disposal must be made according to official regulations.

---

14. TRANSPORT INFORMATION

DOT	Not a hazardous material for transport.
IMDG	Not a hazardous material for transport.
IATA	Not a hazardous material for transport.

---

15. REGULATORY INFORMATION

US Federal Regulations:

SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	This material does not contain any chemical components with known CAS numbers that exceed the threshold (de minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards	Immediate (acute) health hazard; Delayed (chronic) health hazard

US State Regulations:

Pennsylvania Right to Know Components	Diboron trioxide / CAS No. 1303-86-2 / Revision Date: 1993-04-24
New Jersey Right to Know Components	Diboron trioxide / CAS No. 1303-86-2 / Revision Date: 1993-04-24
California Prop. 65 Components	This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

International Regulations:

Canadian DSL Inventory	Boron-11 Metal (^{11}B, 99%) / CAS No. 14798-13-1 is listed

---

16. OTHER INFORMATION

This product is not radioactive. Data provided are those for the corresponding unlabeled compound, unless specifically indicated. Health and safety data for labeled compounds are assumed to be similar or identical to those for the corresponding unlabeled compounds.

Full text of R-, H- and EUH-phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
H302	Harmful if swallowed
R22	Harmful if swallowed
Xn	Harmful

NFPA health hazard:	1 – Exposure could cause irritation, but only minor residual injury even if no treatment is given
NFPA flammability hazard:	0 – Materials that will not burn
NFPA reactivity hazard:	0 – Normally stable, even under fire exposure conditions, and not reactive with water
HMIS health hazard:	1 – Slight hazard – irritation or minor reversible injury possible
HMIS flammability hazard:	0 – Minimal hazard
HMIS physical hazard:	0 – Minimal hazard
Prepared By	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Issuing Date	October 10, 2016
Revision Date	April 22, 2024
Revision Number	3
Revision Note	Update Supplier Address

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization

CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

General Disclaimer

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between ISOFLEX USA (or any of its affiliates and subsidiaries) and the purchaser.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. ISOFLEX shall not be held liable for any damage resulting from handling or from contact with the above product.