



SAFETY DATA SHEET

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Revision Number 0

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

GHS product identifier

Product Name Metal Bonded and Surface Core Bits and Reamers, Diamond Impregnated

Other means of identification

Synonyms Coring Bits and Reamers

Recommended use of the chemical and restrictions on use

Recommended Use No information available

Uses advised against No information available

Supplier's details

Supplier Address
Boart Longyear Ltd.
2640 W. 1700 S.
Salt Lake City, UT 84104
TEL: 801-952-8464

Emergency telephone number

Emergency Telephone Number 801-972-6430

2. HAZARDS IDENTIFICATION

Classification

Downstream use of this product, results in hazardous elements being emitted under certain processing conditions such as but not limited to: abrading, cutting, welding, sanding, burning, milling or grinding. The classifications given below pertains to when used during these processes.

Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Respiratory Sensitization	Category 1
Skin Sensitization	Category 1
Carcinogenicity	Category 1B
Specific Target Organ Systemic Toxicity (Single Exposure)	Category 3
Specific Target Organ Toxicity (Repeated Exposure)	Category 1

GHS Label elements, including precautionary statements

Emergency Overview

Signal Word

Danger

Hazard Statements

- Causes skin irritation
- Causes serious eye irritation
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- May cause an allergic skin reaction
- May cause cancer
- May cause respiratory irritation
- Causes damage to organs through prolonged or repeated exposure



Appearance Black, Silver.

Physical State Solid (compressed).

Odor No information available.

Precautionary Statements

Prevention

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Wash face, hands and any exposed skin thoroughly after handling.
- In case of inadequate ventilation wear respiratory protection.
- Contaminated work clothing should not be allowed out of the workplace.
- Use only outdoors or in a well-ventilated area.

General Advice

- If exposed or concerned: Get medical attention/advice
- Specific treatment (see supplemental instructions on the administration of antidotes on this label)

Eyes

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.

Skin

- IF ON SKIN: Wash with plenty of soap and water.
- Take off contaminated clothing and wash before reuse.
- If skin irritation or rash occurs: Get medical advice/attention.

Inhalation

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

Storage

- Store locked up.
- Store in a well-ventilated place. Keep container tightly closed.

Disposal

- Dispose of contents/container to an approved waste disposal plant.

Hazard Not Otherwise Classified (HNOC)

Not applicable.

Other information

Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

0% of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms

Coring Bits and Reamers

Chemical Name	CAS-No	Weight %	Trade secret
Iron	7439-89-6	60-100	*
Tungsten	7440-33-7	30-60	*
Tungsten carbide	12070-12-1	15-40	*
Copper	7440-50-8	15-40	*
Chromium carbide (Cr3C2)	12012-35-0	7-13	*
Zinc	7440-66-6	7-13	*
Manganese	7439-96-5	5-10	*
Tin	7440-31-5	1-5	*
Nickel	7440-02-0	1-5	*
Silicon carbide	409-21-2	1-5	*
Cobalt	7440-48-4	1-5	*
Chromium	7440-47-3	1-5	*
Silicon	7440-21-3	0.1-1	*
Molybdenum	7439-98-7	0.1-1	*

**The exact percentage (concentration) of composition has been withheld as a trade secret.*

4. FIRST AID MEASURES

Description of necessary first-aid measures

- General Advice** If exposed or concerned: Get medical attention/advice
- Eye Contact** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
- Skin Contact** Wash skin with soap and water. If skin irritation or rash occurs: Get medical advice/attention. Contaminated clothing presents a fire hazard and should be removed immediately.
- Inhalation** IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- Ingestion** Call a POISON CENTER or doctor/physician if exposed or you feel unwell.

Most important symptoms/effects, acute and delayed

Most Important Symptoms/Effects Asthma-like and/ or skin allergy-like symptoms. Difficulty in breathing. Coughing and/ or wheezing. Rashes

Indication of immediate medical attention and special treatment needed, if necessary

Notes to Physician May cause sensitization of susceptible persons.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media None

Specific Hazards Arising from the Chemical

None known

Explosion Data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Downstream use of this product, results in hazardous elements being emitted under certain processing conditions such as but not limited to: abrading, cutting, welding, sanding, burning, milling or grinding. In these case, the following precautions should be taken. Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling.

Environmental Precautions

Environmental Precautions Avoid release to the environment, metal fines produced from abrading, cutting, welding, sanding, burning, milling or grinding.

Methods and materials for containment and cleaning up

Methods for Containment Not applicable

Methods for Cleaning Up Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling If exposed to dust: In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage Store in accordance with local regulations.

Incompatible Products None known based on information supplied.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Tungsten 7440-33-7	STEL: 10 mg/m ³ TWA: 5 mg/m ³	(vacated) TWA: 5 mg/m ³ (vacated) STEL: 10 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³
Tungsten carbide 12070-12-1	STEL: 10 mg/m ³ W TWA: 5 mg/m ³ W	(vacated) TWA: 5 mg/m ³ W (vacated) STEL: 10 mg/m ³ W	TWA: 5 mg/m ³ W STEL: 10 mg/m ³ W

Copper 7440-50-8	TWA: 0.2 mg/m ³ fume	TWA: 0.1 mg/m ³ fume TWA: 1 mg/m ³ dust and mist (vacated) TWA: 0.1 mg/m ³ Cu dust, fume, mist	IDLH: 100 mg/m ³ dust, fume and mist TWA: 1 mg/m ³ dust and mist TWA: 0.1 mg/m ³ fume
Manganese 7439-96-5	TWA: 0.2 mg/m ³	(vacated) TWA: 1 mg/m ³ fume (vacated) STEL: 3 mg/m ³ fume (vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ fume	IDLH: 500 mg/m ³ TWA: 1 mg/m ³ fume STEL: 3 mg/m ³
Tin 7440-31-5	TWA: 2 mg/m ³	TWA: 2 mg/m ³ Sn except oxides (vacated) TWA: 2 mg/m ³	IDLH: 100 mg/m ³ TWA: 2 mg/m ³
Nickel 7440-02-0	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ TWA: 0.015 mg/m ³
Silicon carbide 409-21-2	TWA: 10 mg/m ³ nonfibrous, inhalable fraction, particulate matter containing no asbestos and <1% crystalline silica TWA: 3 mg/m ³ nonfibrous, respirable fraction, particulate matter containing no asbestos and <1% crystalline silica TWA: 0.1 fiber/cm ³ respirable fibers, including whiskers, length >5 μm, aspect ratio ≥3:1 as determined by the membrane filter method at 400-450X magnification (4-mm objective), using phase-contrast illumination.	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 10 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction	TWA: 10 mg/m ³ total dust TWA: 5 mg/m ³ respirable dust
Cobalt 7440-48-4	TWA: 0.02 mg/m ³	TWA: 0.1 mg/m ³ dust and fume (vacated) TWA: 0.05 mg/m ³ dust and fume	IDLH: 20 mg/m ³ dust and fume TWA: 0.05 mg/m ³ dust and fume
Silicon 7440-21-3	-	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 10 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction	TWA: 10 mg/m ³ total dust TWA: 5 mg/m ³ respirable dust
Molybdenum 7439-98-7	TWA: 10 mg/m ³ inhalable fraction TWA: 3 mg/m ³ respirable fraction	(vacated) TWA: 10 mg/m ³	IDLH: 5000 mg/m ³

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits. NIOSH IDLH: Immediately Dangerous to Life or Health.

Appropriate engineering controls

Engineering Measures

- Showers
- Eyewash stations
- Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection
Skin and Body Protection
Respiratory Protection

Always wear approved safety glasses with side shields when operating machinery.
Wear protective gloves/clothing.
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hygiene Measures

Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Provide regular cleaning of equipment, work area and clothing. Wash face, hands and any exposed skin thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Solid (compressed).	Appearance	Black, Silver.
Odor	No information available.	Odor Threshold	No information available.

<u>Property</u>	<u>Values</u>	<u>Remarks/ - Method</u>
pH	No data available	None known
Melting Point/Range	1510 °C	None known
Boiling Point/Boiling Range	> 1600 °C	None known
Flash Point	> 2000 °C	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limits in Air		
upper flammability limit	No data available	
lower flammability limit	No data available	
Vapor Pressure	No data available	None known
Vapor Density	No data available	None known
Specific Gravity	No data available	None known
Water Solubility	No data available	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition Temperature	No data available	None known
Decomposition Temperature	No data available	None known
Viscosity	No data available	None known

Flammable Properties	Not flammable
Explosive Properties	No data available
Oxidizing Properties	No data available

Other information

VOC Content (%)	No data available
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10. STABILITY AND REACTIVITY

Reactivity

No data available.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

None under normal processing.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

Dust formation.

Incompatible materials

None known based on information supplied.

Hazardous decomposition products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information	Product does not present an acute toxicity hazard based on known or supplied information.
Inhalation	May cause allergy or asthma symptoms or breathing difficulties if inhaled. Inhalation of dust in high concentration may cause irritation of respiratory system.
Eye Contact	Dust contact with the eyes can lead to mechanical irritation.
Skin Contact	Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Ingestion	Not an expected route of exposure.

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Iron	= 984 mg/kg (Rat)	-	-
Manganese	= 9 g/kg (Rat)	-	-
Carbon	10000 mg/kg (Rat)	-	-
Nickel	> 9000 mg/kg (Rat)	-	-
Cobalt	= 6170 mg/kg (Rat)	-	> 10 mg/L (Rat) 1 h
Silicon	= 3160 mg/kg (Rat)	-	-

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms	Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing
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Delayed and immediate effects and also chronic effects from short and long term exposure

Sensitization	May cause sensitization by inhalation. May cause sensitization by skin contact.
Mutagenic Effects	No information available.
Carcinogenicity	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Tungsten carbide		Group 2A	Reasonably Anticipated	X
Nickel		Group 2B	Reasonably Anticipated	X
Silicon carbide	A2			
Cobalt	A3	Group 2B	Reasonably Anticipated	X
Chromium		Group 3		

ACGIH: (American Conference of Governmental Industrial Hygienists)

A2 - Suspected Human Carcinogen
 A3 - Animal Carcinogen

IARC: (International Agency for Research on Cancer)

Group 2A - Probably Carcinogenic to Humans
 Group 2B - Possibly Carcinogenic to Humans
 Group 3 - Not Classifiable as to its Carcinogenicity to Humans

Reproductive Toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Aspiration Hazard	No information available.

Numerical measures of toxicity - Product

Acute Toxicity	0% of the mixture consists of ingredient(s) of unknown toxicity.
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12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

0 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Iron 7439-89-6	-	LC50 96 h: = 0.56 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 13.6 mg/L static (Morone saxatilis)	-	-
Copper 7440-50-8	EC50 96 h: 0.031 - 0.054 mg/L static (Pseudokirchneriella subcapitata) EC50 72 h: 0.0426 - 0.0535 mg/L static (Pseudokirchneriella subcapitata)	LC50 96 h: 0.0068 - 0.0156 mg/L (Pimephales promelas) LC50 96 h: < 0.3 mg/L static (Pimephales promelas) LC50 96 h: = 0.052 mg/L flow-through (Oncorhynchus mykiss) LC50 96 h: = 0.112 mg/L flow-through (Poecilia reticulata) LC50 96 h: = 0.2 mg/L flow-through (Pimephales promelas) LC50 96 h: = 0.3 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 0.8 mg/L static (Cyprinus carpio) LC50 96 h: = 1.25 mg/L static (Lepomis macrochirus)	-	EC50 48 h: = 0.03 mg/L Static (Daphnia magna)
Zinc 7440-66-6	EC50 72 h: 0.09 - 0.125 mg/L static (Pseudokirchneriella subcapitata) EC50 96 h: 0.11 - 0.271 mg/L static (Pseudokirchneriella subcapitata)	LC50 96 h: 0.211-0.269 mg/L semi-static (Pimephales promelas) LC50 96 h: 2.16-3.05 mg/L flow-through (Pimephales promelas) LC50 96 h: = 0.24 mg/L flow-through (Oncorhynchus mykiss) LC50 96 h: = 0.41 mg/L static (Oncorhynchus mykiss) LC50 96 h: = 0.45 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 0.59 mg/L semi-static (Oncorhynchus mykiss) LC50 96 h: = 2.66 mg/L static (Pimephales promelas) LC50 96 h: = 3.5 mg/L static (Lepomis macrochirus) LC50 96 h: = 30 mg/L (Cyprinus carpio) LC50 96 h: = 7.8 mg/L static (Cyprinus carpio)	-	EC50 48 h: 0.139 - 0.908 mg/L Static (Daphnia magna)
Nickel 7440-02-0	EC50 72 h: = 0.18 mg/L (Pseudokirchneriella subcapitata) EC50 96 h: 0.174 - 0.311 mg/L static (Pseudokirchneriella subcapitata)	LC50 96 h: > 100 mg/L (Brachydanio rerio) LC50 96 h: = 1.3 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 10.4 mg/L static (Cyprinus carpio)	-	EC50 48 h: > 100 mg/L (Daphnia magna) EC50 48 h: = 1 mg/L Static (Daphnia magna)
Cobalt 7440-48-4	-	LC50 96 h: > 100 mg/L static (Brachydanio rerio)	-	-

Persistence and Degradability No information available.**Bioaccumulation** No information available.

Other Adverse Effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging

Do not re-use empty containers.

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Nickel - 7440-02-0	(hazardous constituent - no waste number)	Included in waste streams: F006, F039		
Chromium - 7440-47-3		Included in waste streams: F032, F034, F035, F037, F038, F039	5.0 mg/L regulatory level	

14. TRANSPORT INFORMATION

DOT Not regulated

TDG Not regulated

MEX Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA Complies

DSL Complies

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Copper	7440-50-8	30	1.0
Zinc	7440-66-6	11	1.0
Manganese	7439-96-5	8	1.0
Nickel	7440-02-0	3	0.1
Chromium	7440-47-3	1	1.0
Cobalt	7440-48-4	1	0.1

SARA 311/312 Hazard Categories

Acute Health Hazard Yes
Chronic Health Hazard Yes

Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Copper		X	X	
Chromium carbide (Cr3C2)		X		
Zinc		X	X	
Nickel		X	X	

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Copper	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ
Zinc	1000 lb		RQ 454 kg final RQ RQ 1000 lb final RQ
Nickel	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ
Chromium			RQ 5000 lb final RQ RQ 2270 kg final RQ

U.S. State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:

Chemical Name	CAS-No	California Prop. 65
Nickel	7440-02-0	Carcinogen
Cobalt	7440-48-4	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Illinois	Rhode Island
Tungsten	X	X	X		X
Tungsten carbide	X				
Copper	X	X	X	X	X
Chromium carbide (Cr3C2)			X	X	
Zinc	X	X	X		X
Manganese	X	X	X	X	X
Nickel	X	X	X	X	X
Tin	X	X	X		X
Silicon carbide	X	X	X		X
Cobalt	X	X	X	X	X
Silicon	X	X	X		X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA	Health Hazard 0	Flammability 0	Instability 0	Physical and Chemical Hazards - Personal Protection X
HMIS	Health Hazard 2*	Flammability 0	Physical Hazard 0	

**Indicates a chronic health hazard.*

Prepared By Product Stewardship
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Latham, NY 12110
1-800-572-6501

Revision Date 17-Feb-2016

Revision Note No information available.

General Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet