BUNTING BEARINGS, LLC

200 Van Buren Street * Delta, Ohio 43515 * (419) 822-3483 * Fax: (419) 822-3372

Safety Data Sheet
Bunting Continuous Cast

Revised: August 1, 2015

Meets the Requirements of OSHA Standard 29 CFR 1910.1200; Hazard Communication and EPA Supplier Notification Requirements under Section 313 of the Emergency Planning and Community Right-to-Know Act

Section 1 – Material Identification

Manufacturer: Bunting Bearings, LLC
200 Van Buren Street
Delta, Ohio 43515

Emergency Telephone Number
419-866-7000
Information Telephone Number
419-522-3323

Product Class: Copper-Bismuth Alloys
C89320, C89325, C89510, C89520, C89550, C89831, C89833, C89835, C89837, C89844, 89940
B02 – B07

Section 2 – Hazards Identifications

Physical hazards	Not Classified	
Health hazards	Sensitization, skin	Category 1
	Carcinogenicity	Category 2
	Specific target organ toxicity, repeated exposure	Category 2 (Lung)

OSHA hazard(s) Not classified.

Label elements

Hazard symbol

Signal word Warning

Hazard statement May cause an allergic skin reaction. May cause damage to organs (Lung) through prolonged or repeated exposure by inhalation. Suspected of causing cancer.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Contaminated work clothing should not be allowed out of the workplace. Do not breathe dust/fume.

Response If on skin: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If exposed or

	concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) Not classified.

Environmental Hazards Hazardous to the aquatic environment, long-term hazard Category 2

Section 3 – Composition/Information on Ingredients

Ingredient(s)	CAS No.	Percent
Base Metal:		
Copper	7440-50-8	64 – 91%
Alloys:		
Aluminum	7429-90-5	≤ 0.6%
Manganese	7439-96-5	0.0 – 0.20%
Iron	7439-89-6	0.15 – 2.0%
Silicon	7440-21-3	≤ 0.25%
Bismuth	7440-69-9	0.6 – 6%
Selenium	7782-49-2	≤ 1.2%
Sulfur	7446-09-5	≤ 0.08%
Phosphorus	7723-14-0	0.02 – 1.5%
Antimony	7440-36-0	≤ 0.5%
Lead	7439-92-1	≤ 0.25%
Tin	7440-31-5	1.2 – 11%
Zinc	7440-66-6	1.0 – 38%
Nickel	7440-02-0	1.0 – 23%

Section 4 – First Aid Measures

Routes of Entry: Inhalation, Eye, Skin and Ingestion

Ingestion: If swallowed and the person is conscious, immediately give large amounts of water. Get medical attention.

Inhalation: If a person breathes in large amounts of dust of fume, move the exposed people to fresh air. Get medical attention.

Eye Contact: Immediately flush with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact: Immediately wash with plenty of soap and water.

Section 5 Fire Fighting Measures

Flash Point:	N/A	**Flammable Limits:**	**Upper:**	N/A
Method:	N/A		**Lower:**	N/A

Extinguishing Media: Solid form – None

Fine Chips/Dust – Use a dry chemical or sand

Special Fire Fighting Procedures: Solid, massive form is not combustible. Fire and explosion hazards are moderate when material is nin the form of dust and exposed to heat, flames, chemical reaction, or contact with powerful oxidizers. Use special mixtures of dry chemical or sand. Protective Clothing, NIOSH-self contained breathing apparatus

Unusual Fire and Explosion Hazards: Fine chips or dust may ignite and should be stored in a well ventilated area.

Section 6 Accidental Release Measures

No special precautions are necessary for spills of bulk materials. If large quantities of dust are spilled, remove by vacuuming or wet sweeping to prevent heavy concentrations of air borne dust. Respirators and protective clothing are recommended.

Section 7 – Handling and Storage

No special requirements. Proper hand and foot protection is recommended.

Section 8 – Exposure Controls/Personal Protection

Engineering Controls:

None Required. There are no health hazards from castings in solid form.

Supplemental Information:

Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.

Fumes from hot processes may contain other compounds with different exposure limits. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Exposure limits for the most common contaminants are offered as reference. Please consult a competent person for guidance on exposure assessment and controls.

Base Metal:	**OSHA PEL**	**ACGIH TLV**	
Copper	1.0 mg/m^3	1.0 mg/m^3	dust
Copper	0.1 mg/m^3	0.2 mg/m^3	fume
Alloys:			
Aluminum	15.0 mg/m^3	10.0 mg/m^3	dust
Aluminum	5.0 mg/m^3		respirable fractions
Manganese	5.0 mg/m^3	5.0 mg/m^3	dust
Manganese	1.0 mg/m^3	1.0 mg/m^3	fume
Iron	10.0 mg/m^3	5.0 mg/m^3	
Silicon	15.0 mg/m^3	10.0 mg/m^3	dust
Silicon	5.0 mg/m^3		repirable fractions
Bismuth	N/A	N/A	
Selenium	0.2 mg/m^3	0.2 mg/m^3	
Sulfur	13.0 mg/m^3	5.2 mg/m^3	

Phosphorus	0.1 mg/m3	0.1 mg/m3	
Antimony	0.5 mg/m^3	0.5 mg/m^3	
Lead	0.05 mg/m^3	0.15 mg/m^3	
Tin	2.0 mg/m^3	2.0 mg/m^3	
Zinc	15.0 mg/m^3	10.0 mg/m^3	dust
Zinc	5.0 mg/m^3	5.0 mg/m^3	fume
Nickel	1.0 mg/m^3	1.0 mg.m^3	

Carcinogen: None for the alloys.
Nickel is considered a possible carcinogen by NTP and IARC.

Respiratory Protection: When required, employees should wear MSHA or NIOSH approved respirators for protection against airborne dust or fumes.

Ventilation: Use general or local exhaust ventilation to keep airborne concentrations of dust and fumes below the TLV.

Protective Gloves: N/A

Eye Protection: Approved safety glasses and/or goggles should be worn during any machining, grinding, cutting, or other operation from which airborne particles may be emitted.

Other Protective Clothing: N/A

Work/Hygienic Practices: Wash hands after handling materials.
Food or drink should not be consumed in the work area.
Wash hands and face prior to eating, drinking or smoking.

Section 9 – Physical and Chemical Properties

Boiling Point:	N/A	**Specific Gravity (H_2O = 1):**	7.5-9.0
Vapor Pressure:	N/A	**Melting Point:**	1500F – 1950F
Vapor Density:	0.27-0.323 l	**Evaporation Rate:**	N/A
Solubility in Water:	Insoluble	**Odor:** None	
Appearance:	Most alloys will be yellow to red, with a few silver/white		

Section 10 – Stability and Reactivity

Stability: Copper alloys are stable under normal conditions of use storage and transportation.

Conditions to Avoid: Molten metal may react violently with water.
Avoid contact of chips and dust with heat, oxidizers, acids, alkali's, molten lithium and halogenated compounds.

Incompatibility: Avoid acids, bases and oxidizers.

Hazardous Decomposition Metal fume, dust in handling

or byproducts:

Hazardous Polymerization: Will not occur.

Section 11 – Toxicological Information

Copper: Under normal handling and use, exposure to the solid form of copper alloys presents few health hazards. Thermal cutting, melting, machining or grinding may produce fumes or dust containing the component elements and breathing these fumes or dust may present potentially significant health hazards. The exposure levels in Section II are relevant to fumes and dust. Fumes of copper and manganese may cause metal fume fever with flu-like symptoms, and copper may cause hair discoloration. Copper fumes and dust irritate the nose and throat. If too many fumes are inhaled, it will cause a sweet or metallic taste in the mouth. Inhaling excessive amounts of copper dust and fume over a long period of time can cause anemia.

Lead – Short Term Exposure: Lead is an accumulative poison. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, constipation, abdominal pains and decreasing appetite. The effects are reversible and complete recovery is possible. Inhalation of large amounts of lead may lead to seizures, coma and death.

Lead – Long Term Exposure: Long-term exposure to lower levels can result in a buildup of lead in the body and more severe symptoms. Prolonged exposure may also result in kidney damage. Continuous exposure can result in decreased fertility, and exposure of the mother during pregnancy can cause birth defects.

Iron Oxide and Tin: Chronic overexposure to iron oxide or tin fumes may cause an apparent benign pneumoconiosis. In the case of iron oxide, this is called siderosis, and for tin it is called stannosis.

Zinc Oxide: Overexposure to zinc oxide fumes can cause "Metal Fume Fever".

Manganese: Chronic manganese poisoning may result from inhalation of dust or fume. The control nervous system is the chief site of the injury. Chronic manganese poisoning is not a fatal disease although it is extremely disabling. Some individuals may be hyper susceptible to manganese. Freshly formed manganese fume has caused fever and chills similar to metal fume fever.

Tin: The inhalation of inorganic tin fumes or dust may cause an apparent benign pneumoconiosis called stannosis, which is reported not to be disabling.

Aluminum: Excessive exposure to aluminum fume and dust has been associated with lung disease, but this effect is probably due to simultaneous silica exposures.

Antimony: Antimony and its compounds are irritating to the skin and mucous membranes and are systemic poisons. Effects are reported to include a Metallic taste in the mouth, vomiting, colic, loss of appetite and weight, and diarrhea. In addition, dermatitis may result which starts as a n inflammation of the hair follicles and can

progress through pus formation and sloughing to leave a contracted scar. Chronic inhalation of antimony trioxide is reported to produce a reduction in white blood cells and damage to the liver. Antimony and its compounds have been identified as potential cancer causing agents.

Bismuth: There are no recognized or reported ill effects in an industrial environment that have been traced to bismuth metal. All reported toxicity data has been determined on soluble bismuth pharmaceuticals that are no longer used.

Silicon: Airborne dust generated through the use of handling of this product may result in respiratory and/or eye irritation. Avoid prolonged exposure to concentrations above the recommended exposure limit unless protective equipment is used. IARC: Not classified as a human carcinogen (Group 3); human evidence-inadequate, animal evidence-inadequate.

Selenium: may cause amyotropic lateral sclerosis, bronchial irritation, gastrointestinal distress, vasopharyngeal irritation, garlic odor on breath and sweat, metallic taste, pallor, irritability, excessive fatigue, loss of fingernails and hair, pulmonary edema, anemia and weight loss.

Phosphorous: Red phosphorus does not react with the air and is extremely insoluble making it harmless. Yellow phosphorus is extremely flammable. The liquid ignites spontaneously in the presence of air. It is normally stored as a solid kept underwater and is transferred as a liquid. Yellow phosphorus is toxic and may produce poisoning if taken by mouth. Chronic poisoning takes the form of general weakness, including anemia, loss of appetite, indigestion, and chronic cough resulting from irritation of the gastrointestinal system and fatty degeneration of the liver.

Nickel: Under normal handling, exposure to nickel presents few health hazards. Dust may cause headache, coughing, dizziness or difficult breathing. Prolonged exposure may cause dermatitis. Ingestion may cause nausea, vomiting, headaches, dizziness, and gastrointestinal irritation

Section 12 – Ecological Information

No special precautions are necessary for spills of bulk materials. If large quantities of dust are spilled, remove by vacuuming or wet sweeping to prevent heavy concentrations of airborne dust. Respirators and protective clothing are recommended.

Section 13 – Disposal Considerations

Follow Federal, State and local regulations regarding disposal. Scrap metals can generally be reclaimed and recycled.

Section 14 – Transportation Information

Non-dangerous product for transportation by road, sea and air. No labels are required.

Section 15 – Regulatory Information

US-OSHA (Hazard Communication Standard)

References: 29 CFR 1910.1200 Hazard Communication Standard

A finished casting is an article as defined in 29CFR 1910.1200 (c)

29 CFR 1910. 1000 Air Contaminants

29 CFR 1910. 1025 Lead

Dust or fumes generated by cleaning, machining, grinding, or welding of the casting may produce airborne contaminants, such as bismuth, cobalt, copper, lead, nickel, selenium, tin, zinc and silica.

US-EPA (Toxic Substances Control Act-TSCA)
All components of these products are on the TSCA inventory list or are excluded from listing.

US-EPA (SARA Title Ill)
Releases to the environment of Cobalt, Copper, Lead, Nickel, Selenium and Zinc (fume or dust) may be subject to reporting under Section 313 of Title Ill of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

CANADA-WHMIS (Workplace Hazardous Materials Information System)
This SDS has been prepared according to the hazard criteria of the Controlled Product Regulations (CPR) and the SDS contains the information required by the CPR.

CANADA DSL (Domestic Substances List) Inventory Status
All components of these products are on the DSL Inventory.

CEPA (Canadian Environmental Protection Act)
Lead is on the Toxic Substances List.

EINECS No. (European Inventory of Existing Commercial Chemical Substances)
All components of these products are on the EINECS list.

RoHS (Restriction of Certain Hazardous Substances) Compliance
Castings comply with RoHS

CALIFORNIA PROPOSITION 65 Compliance
WARNING: This product contains or produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code 25248.5 et seq.)

US STATE REGULATORY INFORMATION
Some of the components listed in Section 3 may be covered under specific state regulations.

Section 16 – Other Information

HMIS Rating:	Lead/Copper, Health 2, Flammability 0, Reactivity 0
NFPA Rating:	Lead/Copper, Health 2, Flammability 0, Reactivity 0
Revised:	August 1, 2015

The above information is based on upstream suppliers and furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Bunting Bearings LLC. The data on these sheets relates only to the specific material designated

herein. Bunting Bearings LLC assumes no legal responsibility for use or reliance upon this data.

Addendum: Label Information

PRODUCT IDENTIFIER

Copper-Bismuth Alloys
C89320, C89325, C89510, C89520, C89550, C89831, C89833, C89835, C89837, C89844, 89940
B02 – B07

HAZARD PICTOGRAMS* **SIGNAL WORD*** Warning

Street Address: 1001 Holland Park Blvd.
Mailing Address: Same as Above
City: Holland State: OH
Zip/Postal Code 43528 Country U.S.A.

Emergency Phone Number 419-866-7000

HAZARD STATEMENTS

May cause an allergic skin reaction. May cause damage to organs (Lung) through prolonged or repeated exposure by inhalation. Suspected of causing cancer.

PRECAUTIONARY STATEMENTS

Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Contaminated work clothing should not be allowed out of the workplace. Do not breathe dust/fume.
Response	If on skin: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If exposed or concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

*Castings do not present hazards in their original form.

OTHER INFORMATION

1. Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.

2. Fumes from hot processes may contain other compounds with different exposure limits. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Consult Sections 3 & 8 of the SDS for further information.