



# BELLMAN-MELCOR, INC.

B R A Z I N G & S O L D E R I N G P R O D U C T S

## MSDS Data Sheet

Revision Date: 6-1-03  
Supplier: Bellman-Melcor, Incorporated  
P.O. Box 188  
Tinley Park, IL 60477

### Product

Silvacore #A50N

### Section 1: Chemical Product

Common Name: Silver-Copper-Nickel-Tin Brazing Alloy with Flux Core  
Chemical Name: Chemical Mixture  
Formula: Chemical Mixture  
Product CAS No.: CHEMICAL MIXTURE  
Product Use: Brazing

For chemical emergencies, call **Chemtrec** at 800.424.9300 or 703.527.3887

### Section 2: Composition / Information on Ingredients

<u>Ingredient</u>	<u>CAS Number</u>	<u>Weight %</u>
Copper	7440-50-8	20 – 40
Silver	7440-22-4	30 – 60
Zinc (As Oxide)	7440-66-6	10 – 30
Nickel	7440-02-0	1 – 5
Potassium Bifluoride	7789-29-9	1 – 5
Potassium Fluoborate	14075-53-7	1 – 7
Boric Acid	10043-35-3	1 – 7
Potassium Tetraborate	1332-77-0	1 – 5

### Ingredient Notes

The percentage by weight values reported for the ingredients in these products represent approximate formulation values.

See Section 8 for Exposure Limits and Section 11 for Toxicological Information.

### Section 3: Hazardous Identification

#### Emergency Overview

Metallic wire, rod, with flux core.

Odorless.

Flash Point – Not Applicable

Prolonged or repeated exposure may cause damage to the lungs, blood, kidneys and liver. May cause respiratory tract irritation. Overexposure to freshly formed fumes may cause flu-like illness called “metal fume fever”. May cause eye and skin irritation. Harmful if swallowed. Causes gastrointestinal irritation, abdominal pain, nausea, vomiting and diarrhea.

Long-term exposure to fluorides may cause damage to teeth and bones. Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

#### Routs Of Entry

Eyes? YES

Skin? YES

Inhalation? YES

Ingestion? YES

#### Potential Health Effects

Eye Contact: May cause irritation.

Skin Contact: May cause irritation. Prolonged contact may cause irritation.

Inhalation: May cause respiratory tract irritation and coughing. Absorption may cause systemic effects similar to those detailed under ingestion.

Ingestion: Not normally expected. However, ingestion of large amounts may cause abdominal pain, nausea, vomiting, diarrhea, headache, weakness and dizziness. Copper poisoning can result in hemolytic anemia and kidney, liver and spleen damage.

Short-term overexposure may cause a flu-like illness called Metal Fume Fever. Typically, Metal Fume Fever begins four to twelve hours after sufficient exposure to freshly formed fumes. The first symptoms are a metallic taste, dryness and irritation of the throat. Cough and shortness of breath may occur along with headache, fatigue, nausea, vomiting, muscle and joint pain, fever and chills. The syndrome runs its course in 24-48 hours.

Note: The potential health effects described above only apply if dust or fume is formed.

#### Carcinogenicity

NTP? No

IARC? No

OSHA? No

#### Chronic Health Hazard

- The absorption of silver compounds into the circulation and subsequent disposition of reduced silver in various tissues of the body may result in the production of a generalized grayish pigmentation of the skin and mucous membrane (argyria). Generalized argyria develops after 2 – 25 years of exposure. There are no systemic effects or symptoms and no physical disabilities. Once deposited, there is no known means by which this silver can be eliminated; the pigmentation is permanent.
- Exposure to fluorides over years may produce mottling of tooth enamel, embrittlement and calcification of bones, and increased calcification of ligaments and vertebrae resulting in spine stiffness (fluorosis).

- Overexposure may lead to copper poisoning, resulting in hemolytic anemia and liver, kidney and spleen damage.
- Prolonged or repeated inhalation may cause a benign pneumoconiosis.
- Prolonged or excessive exposure may result in Argyria; a permanent localized blue-gray discoloration of the eyes, skin or mucous membranes.
- Prolonged exposure to silver can cause damage to the nasal septum.
- Excessive zinc intake has been associated with Copper Deficiency Anemia.

Refer to Potential Health Effects.

Medical Conditions Generally Aggravated By Exposure

- May adversely affect existing medical conditions, such as eye, skin, respiratory, blood, liver and/or kidney ailments.
- Individuals with Wilson’s Disease are at increased risk of copper poisoning.

Note: See Section 8 for Exposure Limits, Section 11 for Toxicological Information and Section 12 for Ecological Information.

**Section 4: First Aid Measures**

Eye Contact: Flush eyes with plenty of water for at least 15 minutes. Hold eyelids open.

Skin Contact: Immediately wash skin with soap and plenty of water. If irritation persists, call a physician.

Inhalation: If exposed to excessive levels of metal fume, remove to fresh air and seek medical attention.

Ingestion: If person is conscious and able to swallow, give large amounts of water to dilute. If vomiting occurs, keep head below hips to help prevent aspiration. Get medical attention immediately.

**Section 5: Fire-Fighting Measures**

Flash Point: Not Applicable

Auto-Ignition: Not Applicable

LEL: Not Applicable

UEL: Not Applicable

NFPA Hazard Classification

Health: 1                      Flammable: 0                      Reactivity: 0

HMIS Hazard Classification

Health: 1\*                      Flammable: 0                      Reactivity: 0                      Special: B

\* Indicates the possibility of chronic health effects. See Section 3 for Chronic Health Hazards.

Extinguishing Media

Use carbon dioxide, chemical foam or dry chemical. Use any means for extinguishing surrounding fire. Do not use water on metal fires.

### Special Fire Fighting Procedures

Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing as specified in 29 CFR 1910.156.

### Unusual Fire and Explosion Hazards

Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

### **Section 6: Accidental Release Measures**

Contain spillage and scoop up or vacuum. Notification of the National Response Center (800.424.8802) may be required. Refer to EPA, DOT and applicable state and local regulations for current response information.

It is recommended that each user establish a spill prevention, control and countermeasure plan (SPCC). Such plan should include procedures applicable to proper storage, control and clean-up of spills, including reuse and disposal as appropriate – see Section 13: Disposal Considerations.

**\*\*NOTE\*\*** In the event of accidental release of this material, the above procedures should be followed. Additionally, proper exposure controls and personal protection equipment should be used – see Section 8: Exposure Control / Personal Protection, and disposal of the material should be in accordance with Section 13: Disposal Considerations.

### **Section 7: Handling and Storage**

- Wash thoroughly after handling.
- Store in a cool, dry location away from incompatible material.
- Avoid breathing any dust, mist or fumes from the use of this product.
- Avoid contact with any dust, mist or fumes from the use of this product.
- Use only with adequate ventilation.
- Do not eat, drink, or smoke in the work area.

### **Section 8: Exposure Controls / Personal Protection**

Ingredient	Exposure Limits	
	PEL-OSHA	TLV-ACGIH
Copper CAS #7440-50-8	0.1 mg/m <sup>3</sup> (Fume) 1 mg/m <sup>3</sup> (Dust)	0.2 mg/m <sup>3</sup> (Fume) 1 mg/m <sup>3</sup> (Dust)
Silver CAS #7440-22-4	0.01 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Zinc (As Oxide) CAS #7440-66-6	15 mg/m <sup>3</sup> (Total Dust) 5 mg/m <sup>3</sup> (Respirable Fraction) 5 mg/m <sup>3</sup> (Fume)	5 mg/m <sup>3</sup> (Fume) STEL 10 mg/m <sup>3</sup> (Total Dust)

Nickel CAS #7440-31-5	1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>
Potassium Bifluoride CAS #7789-29-9	2.5 mg/m <sup>3</sup> (as F)	2.5 mg/m <sup>3</sup> (as F)
Potassium Fluoborate CAS #14075-53-7	2.5 mg/m <sup>3</sup> (as F)	2.5 mg/m <sup>3</sup> (as F)
Boric Acid CAS #10043-35-3	Not Established	Not Established
Potassium Tetraborate CAS #1332-77-0	Not Established	Not Established

Note: Both OSHA and the ACGIH list welding fumes as having an exposure limit of 5 mg / m<sup>3</sup> (total particulate not otherwise classified). However, the ACGIH states that welding fumes must be tested frequently for individual components which are likely to be present to determine whether specific exposure limits are exceeded.

Note: The permissible exposure limits (PEL's), threshold limit values (TLV's), potential health effects statements and SARA hazard categories may not be applicable as the hazardous ingredients listed are in the solid form. If dust, powder or fume is generated then these statements will be applicable. Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWA's) and total dust (particulates only). All ACGIH TLV's refer to the 1998 Standards. All OSHA PEL's refer to 29 CFR Part 1910 Air Contaminations: Final Rule, January 19, 1989.

### Respiratory Protection

If dust or fume is generated, a NIOSH/MSHA approved respirator may be necessary. Follow all requirements for respiratory programs and selection set forth in the OSHA regulations (29 CFR 1910.139).

### Ventilation

General; local exhaust ventilation as necessary to control any air contaminants to within their PEL's or TLV's during the use of this product.

### Protective Equipment

Refer to ANSI/ASC Z49.1-94 (Safety In Welding, Cutting and Allied Processes), published by the American Welding Society, for further information on the selection of personal protective equipment.

Safety glasses (with side shields).

Body protection as necessary to prevent skin contact.

### Personnel Sampling Procedures

Copper (dust or fume): Refer to NIOSH Manual of Analytical Methods (NMAM), 4<sup>th</sup> Edition #7029.

Zinc Oxide: Refer to NIOSH Manual of Analytical Methods (NMAM), 4<sup>th</sup> Edition #7502.

Zinc Compounds: Refer to NIOSH Manual of Analytical Methods, 4<sup>th</sup> Edition #7030.

Silver: Refer to NIOSH Manual of Analytical Methods, 4<sup>th</sup> Edition #7300.

Nickel: Refer to NIOSH Manual of Analytical Methods, 4<sup>th</sup> Edition #7300.

Fluoride Compounds: Refer to NIOSH Manual of Analytical Methods, 4<sup>th</sup> Edition, Methods 7902,7906

### **Section 9: Physical and Chemical Properties**

Appearance: Metallic Wire, rod with flux core  
Odor: Odorless.  
Boiling Point: Not Determined.  
Specific Gravity (H<sub>2</sub>O=1): 8.50 – 9.50  
Melting Point (F): Metal = 1305 , Flux = 600 - 1050  
Vapor Pressure (mm Hg): Not Applicable.  
Vapor Density (Air=1): Not Applicable.  
Evaporation Rate: Not Applicable.  
Percent Soluble in Water: Metal: Not Soluble, Flux: 100%  
PH: Flux = 8.9 – 9.6

### **Section 10: Stability and Reactivity**

Stability: Generally considered stable.  
Avoid: Temperatures at or above 225 Degrees C

#### **Incompatibility ( Materials to avoid)**

Strong acids and bases, strong oxidizers, acetylene, ammonia, hydrogen peroxide, chlorine, bromine, iodine, magnesium metal, ammonium nitrate, hydrogen sulfide.

#### **Hazardous Decomposition or By-Products**

Toxic metal oxides are emitted when heated above the melting point. The amount of fume evolved increases as the temperature rises.  
Polymerization: Polymerization is not expected to occur.  
Avoid: Not Applicable.

### **Section 11: Toxicological Information**

<u>Chemical Name</u>	<u>% Wt.</u>	<u>LD50</u>	<u>LC50</u>
Copper CAS #7440-50-8	20-40	3.5 mg/kg MOUSE Intraperitoneal	Not Available
Silver CAS #7440-22-4	30–60	Not Available	Not Available
Zinc (As Oxide) CAS #7440-66-6	10-30	7,950 mg/kg MOUSE Oral	2,500 mg/kg MOUSE
Nickel CAS #7440-02-0	1-5	Not Available	Not Available
Potassium Bifluoride CAS #7789-29-9	1 – 5	Not Available	Not Available
Potassium Fluoborate CAS #14075-53-7	1 – 7	Not Available	Not Available

Boric Acid CAS #10043-35-3	1 – 7	3,450 mg/kg MOUSE, oral	9,600 ug/m <sup>3</sup> /4 Hr. RAT
Potassium Tetraborate CAS #1332-77-0	1 – 5	Not Available	Not Available

Note: See Section 3, 8 and 12 for additional information.

**Section 12: Ecological Information**

Ecotoxicity: No data available.

Environmental Fate: No data available.

**Section 13: Disposal Considerations**

EPA Waste Number: D011

If disposed of by itself, this product should be considered a hazardous waste on the basis of Toxicity Characteristic Leaching Procedure (TCLP) under EPA hazardous waste regulations. Before disposal, this product or mixtures containing this product should be tested for toxicity characteristics (TC) under the current EPA Hazardous Waste Regulations TCLP testing procedures, 40 CFR Part 261 at seq. Disposal/recycling/reclamation requirements will vary by location and type of disposal selected. Consult with state and local regulatory authorities.

**\*\*NOTE\*\*** Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate. As local regulations may vary; all waste must be disposed/recycled/reclaimed in accordance with federal, state, and local environmental control regulations.

**Section 14: Transport Information**

International: UN Number – Not Regulated  
 United States: EPA Waste Number: D011  
 DOT Classification: Not Regulated  
 Canada: PIN Number – Not Regulated  
 TDG Class – Not Regulated  
 EC: DGL – Not Determined

**Section 15: Regulatory Information**

US Federal Regulations

TSCA: In TSCA

SARA 311 and 312 Hazardous Categories

Immediate (acute) Health Hazard: Yes  
 Delayed (chronic) Health Hazard: Yes  
 Fire Hazard: No  
 Reactivity Hazard: No

Sudden Release of Pressure: No

SARA Section 313 Notification

This product contains toxic chemical (or chemicals) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 986 and 40 CFR Part 372.

<u>Chemical Name</u>	<u>CAS Number</u>	<u>% Weight</u>
Copper	7440-50-8	22-40
Silver	7440-22-4	25-56
Zinc (As Oxide)	7440-66-6	17-33
Nickel	7440-02-0	2-5

Ozone Depleting Substances (ODS)

This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1990 and 40 CFR Part 82.

Volatile Organic Compounds (VOC) – None.

US Regulations

Volatile Organic Compounds (CARB): Not Determined

Canadian Regulations

DSL/NDSL: DSL

WHMIS Classification: Class D, Division 2, Subdivision B

European Regulations

EINECS: Yes

Other Regulations

MITI (Japan): Yes

AICS (Australia): Yes

**Section 16: Other Information**

Revisions

Revision Number:

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The information in this MSDS should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations, and management and for persons working with or handling this product. The information presented in this MSDS is premised upon proper handling and anticipated uses and is for the material without chemical additions/alterations. We believe this information to be reliable and up-to-date as of the date of publication, but make no warranty that it is. Additionally, if this MSDS is more than three years old, please contact the supplier at the phone number listed to make certain that this sheet is current.



**BELLMAN-MELCOR, INC.**

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