Silver-Copper-Zinc Alloys

Safety Data Sheet

1. Product and Company Identification -------------------------------------

Manufacturer

Lucas Milhaupt, Inc.
5656 South Pennsylvania Avenue
Cudahy, WI 53110 USA
Telephone: 414-769-6000
www.lucasmilhaupt.com

Emergency Phone Number

CHEMTREC: Within USA and Canada 1-800-424-9300
CHEMTREC: Outside USA and Canada 1-703-741-5970

SDS Number: 82
Product: AG-CU-ZN

Product Codes: 15-902, 21-962, 24-096, 24-201, 24-207, 24-209, 24-260, 24-509, 28-580, 21402 (SILVALOY 051), 35570 (SILVALOY 051), 32-051 (SILVALOY 051), A00000153 (SILVALOY 051), A00000275 (SILVALOY 051), 32-058, 32-059, 32-070, 35575 (SILVALOY 072), A00000158 (SILVALOY 072), 6049 (SILVALOY 090), 32-090 (SILVALOY 090), A00000018 (SILVALOY 090), 35613 (SILVALOY 096), A00000183 (SILVALOY 096), 35531 (SILVALOY 101), A00000133 (SILVALOY 101), 32-180, 35614 (SILVALOY 196), A00000184 (SILVALOY 196), 6114 (SILVALOY 202), 32-202 (SILVALOY 202), A00000271 (SILVALOY 202), 35615 (SILVALOY 236), A00000277 (SILVALOY 236), 30759 (SILVALOY 242), A00000158 (SILVALOY 242), 6791 (SILVALOY 250), 32-250 (SILVALOY 250), A00000274 (SILVALOY 250), 125 (SILVALOY 300), 32-300 (SILVALOY 300), A00000001 (SILVALOY 300), 32-350, 22822 (SILVALOY 351), 32-351 (SILVALOY 351), A00000044 (SILVALOY 351), 273 (SILVALOY 400), 32-400 (SILVALOY 400), A00000004 (SILVALOY 400), 23937 (SILVALOY 401L), A00000047 (SILVALOY 401L), 35582 (SILVALOY 401), 32-401 (SILVALOY 401), A00000163 (SILVALOY 401), 32-441, 35560 (SILVALOY 450), 6189 (SILVALOY 450), 32-450 (SILVALOY 450), A00000019 (SILVALOY 450), 32-451, 32-453, 182 (SILVALOY 501), 32-501 (SILVALOY 501), A00000002 (SILVALOY 501), 6338 (SILVALOY 600), 32-600 (SILVALOY 600), A00000272 (SILVALOY 600), 35610 (SILVALOY 606), A00000275 (SILVALOY 606), 6379 (SILVALOY 650), 32-650 (SILVALOY 650), A00000020 (SILVALOY 650), 32-680, 32-681, 32-682, 7708 (SILVALOY 700), 32-700 (SILVALOY 700), A00000027 (SILVALOY 700), 6767 (SILVALOY 750), 35115 (SILVALOY 750), 32-750 (SILVALOY 750), A00000273 (SILVALOY 750), 32-751, 32-800, 69-051, 69-216

Product Use(s): Alloys for brazing and other metallurgical processes

2. Hazards Identification -------------------------------------

Classification(s)

Specific Target Organ Toxicity, Single Exposure: Hazard Category 3

Label Symbol(s): Exclamation Point

Label Signal Word(s): Warning
Label Hazard Statement(s)
--------------------------------
May cause respiratory irritation.

Label Precautionary Statement(s)
--------------------------------
Avoid breathing dust or fume.
Use only outdoors or in a well-ventilated area. Store locked up.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a Poison Control Center or doctor if you feel unwell.

Dispose of contents and container in accordance with applicable regulations. The acute toxicities of 8-97% of the products’ ingredients are unknown.

3. Composition/Information on Ingredients
----------------------------------------
<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>%</th>
<th>Impurities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>5-92</td>
<td>None known</td>
</tr>
<tr>
<td>Silver</td>
<td>7440-22-4</td>
<td>3-90</td>
<td>None known</td>
</tr>
<tr>
<td>Zinc</td>
<td>7440-66-6</td>
<td>3-40</td>
<td>None known</td>
</tr>
</tbody>
</table>

4. First Aid Measures
---------------------

Eye
---
Flush affected areas with water for at least fifteen minutes. Seek medical assistance if necessary.

Skin
----
Remove contaminated clothing. Wash affected area with large quantities of water for at least five minutes. Seek medical attention if necessary. Launder or dry-clean clothing before reuse.

Ingestion
---------
If subject is conscious, induce vomiting. If unconscious or convulsive, seek immediate medical assistance. Do not give anything by mouth to an unconscious or convulsive person.

Inhalation
---------
If signs and symptoms of toxicity are observed, remove subject from area, administer oxygen, and seek medical attention. Keep the subject warm and at rest. Perform artificial respiration if breathing has stopped.

Note to Physician or Poison Control Center
------------------------------------------
None of the components are acutely toxic by ingestion, nor are they absorbed through the skin. Long-term chronic exposure may cause argyria.

5. Fire Fighting Measures
-------------------------

Fire and Explosion Hazards
--------------------------
These products are non-flammable and non-explosive. If present in a fire or explosion, they may emit fumes of the constituent metals or their oxides.
Extinguishing Media
-------------------
Use dry chemical. Do not use water.

Fire Fighting Instructions
-----------------------------
If fighting a fire in which these products are present, wear a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode.

6. Accidental Release Measures
-------------------------------
Methods and Materials
------------------
If a finely-divided form of product is spilled, clean up spillage so as to minimize dispersion of dust. Either wet sweeping or vacuuming using HEPA filtration is recommended.

Personal Precautions
------------------
Avoid contact with skin, eyes, and mucous membranes.

Environmental Precautions
------------------
Prevent spills from entering sewers or contaminating soil.

7. Handling and Storage
-----------------------
Handling Precautions
-----------------
No special handling precautions are required.

Work and Hygiene Practices
------------------
To prevent ingestion following use of the product, wash hands and face before eating, drinking, applying cosmetics, or using tobacco. Remove contaminated clothing or protective equipment before entering eating/drinking areas.

Storage Precautions
-----------------
Do not store in proximity to incompatible materials (see Section #10).

8. Exposure Controls and Personal Protection
---------------------------------------------
Ingredients - Exposure Limits
---------------------------

Copper
ACGIH TLVs: 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)
OSHA PELs: 0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)

Silver
ACGIH TLV: 0.1 mg/m3 TWA (metal)  OSHA PEL: 0.01 mg/m3 TWA

Zinc
ACGIH TLVs (as ZnO): 2 mg/m3 TWA; 10 mg/m3 STEL (respirable fractions)
OSHA PEL: 5 mg/m3 TWA (as respirable fraction of ZnO dust or fume)
Ingredients - Biological Limits
-----------------------------------
Copper
- No ACGIH BEI(s) or other biological limit(s)
Silver
- No ACGIH BEI(s) or other biological limit(s)
Zinc
- No ACGIH BEI(s) or other biological limit(s)

Engineering Controls
----------------------
Use dilution or local exhaust ventilation adequate to maintain concentrations of all components and their byproducts to within their applicable standards.

Eye/Face Protection
---------------------
Wear eye protection adequate to prevent eye contact with the product and injury if the products are used with a flame. Plastic-frame spectacles with side shields are recommended.

Skin Protection
---------------
Wear protective gloves and clothing to prevent skin injuries if the products are used with a flame and/or for prolonged or repeated contact with finely-divided forms of product. Avoid flammable fabrics.

Respiratory Protection
-----------------------
If an exposure level to a component(s) exceeds an applicable standard, use a NIOSH-approved respirator having a configuration (facepiece, filter media, assigned protection factor, etc.) effective for the concentration of the component(s) generated. For guidance on selection and use of respirators, consult American National Standard Z88.2 (ANSI, New York, NY 10036, USA).

9. Physical and Chemical Properties
------------------------------------
Appearance: White to brass-yellow metals, various forms
Odor: none
Odor threshold: not applicable
pH: not applicable
Melting Point: >1,213°F./656°C.
Freezing point: not applicable
Boiling point/boiling range: not determined
Flash Point: not applicable
Evaporation Rate: not applicable
Flammability Class: not applicable
Lower Explosive Limit: not applicable
Upper Explosive Limit: not applicable
Vapor pressure: not applicable
Vapor density: not applicable
Relative density (H2O): 8.4-10.1
Solubility (H2O): insoluble
Oil-water partition coefficient: not applicable
Autoignition Point: not applicable
Decomposition temperature: not applicable
Viscosity: not applicable
10. Stability and Reactivity
----------------------------
Reactivity: none reasonably foreseeable
Stability: stable
Hazardous Polymerization: will not occur
Risk of Dangerous Reactions: silver and copper can form unstable acetylides in contact with acetylene gas.

Incompatible Materials
----------------------
Acetylene; ammonia; azides; nitric acid; halogens; ethylene imine; ethylene oxide; chlorine trifluoride; sulfuric acid; peroxides; peroxyformic acid; oxalic acid; tartaric acid; 1-bromo-2-propyne; permonosulfuric acid; carbon disulfide; hydrazine mononitrate; hydrazoic acid; hydrogen sulfide; bromates, chlorates, and iodates of alkali and alkali earth metals; hydroxylamine; selenium; tellurium.

Hazardous Decomposition Products
---------------------------------
Heating to elevated temperatures may liberate metal/metal oxide fumes.

11. Toxicological Information
----------------------------
This product has not been tested for toxicology by the manufacturer.

Ingredients - Toxicological Data
--------------------------------
Copper
   LD50: No data available   LC50: No data available
Silver
   LD50: >2,000 mg/kg (oral/rat)   LC50: No data available
Zinc
   LD50: No data available   LC50: No data available

Primary Routes(s) of Entry
--------------------------
Ingestion; inhalation.

Eye Hazards
-----------
Eye contact with these products in finely-divided forms may cause irritation, conjunctivitis, ulceration of the cornea, and/or argyria, a permanent gray discoloration of the eyes, skin, mucous membranes, and respiratory tract.

Skin Hazards
------------
Skin contact with these products in finely-divided forms may cause irritation, argyria, discoloration, and/or contact dermatitis.

Ingestion Hazards
-----------------
Ingestion of these products may cause nausea, vomiting, and gastrointestinal irritation.

Inhalation Hazards
------------------
Inhalation of toxicologically-significant quantities of the components is unlikely when the product is used in accordance with instructions and specified protective measures (see Section #8).
Symptoms Related to Overexposure
--------------------------------
Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation overexposure, particularly as fume.

Delayed Effects from Long Term Overexposure
-------------------------------------------
Chronic overexposure by inhalation and/or ingestion may aggravate pre-existing diseases of the liver, kidneys, and gastrointestinal system.

Carcinogenicity
--------------
These products contain no chemicals classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

Germ Cell Mutagenicity
----------------------
These products contain no components determined to be germ cell mutagens.

Reproductive Effects
---------------------
These products contain no components determined to be damaging to fertility or to the unborn child.

Acute Toxicity Estimates
------------------------
LD50 (oral): >2,000 mg/kg
LD50 (dermal): no data available
LC50: no data available

Interactive Effects of Components: no data available

12. Ecological Information
---------------------------
No ecological data is available for the product or its components.

Ozone Depletion Potential: This product contains no ingredients listed in the Annexes to the Montréal Protocol on Substances that Deplete the Ozone Layer.

13. Disposal Considerations
-----------------------------
Do not discharge waste product into sanitary or storm sewers or allow it to contaminate soil. Consult applicable Federal, State/Provincial, and local regulations.

14. Transport Information
--------------------------
Transport is not regulated by USDOT, TDG (Canada), IATA, or IMO.

15. Regulatory Information
---------------------------
United States Regulatory Information
--------------------------------------
All components of this product are listed on the EPA's TSCA inventory.

SARA Hazard Classes: Chronic Health Hazard
SARA Section 313 Notification
--------------------------------
These products contain these components at concentrations >1% (0.1% for carcinogens) subject to Section 313 of the Emergency Preparedness and Community Right-to-Know Act (EPCRA) of 1986 and of 40CFR, Part 372:
1. Copper (CASRN 7440-50-8)
2. Silver (CASRN 7440-22-4)

Canadian Regulatory Information
---------------------------------
All components of these products are listed on either the Domestic Substances List (DSL) or the Nondomestic Substances List (NDSL).

This product has been classified in accordance with Canada’s Hazardous Products Regulations (SOR/DORS/2015-17).

16. Other Information
----------------------
HMIS Ratings (Legend)
----------------------
Health – 2* (moderate chronic hazard)
Flammability – 1 (slight hazard)
Physical Hazard – 1 (slight hazard)
PPE – see Note

Note: Lucas-Milhaupt Inc. recommends use of protective eyewear and gloves (Personal Protection Index "B") as standard PPE. HMIS recommends that its ratings be used only in conjunction with a fully implemented HMIS program, and that specific PPE codes be created by the user, who is familiar with the actual conditions under which the product is used. We cannot anticipate every condition of the product's use, and it is the user's responsibility to evaluate the hazards pertinent to its specific operations, and to determine the specific PPE required.

NFPA Ratings
-------------
Health – 2  Flammability – 1  Reactivity – 1

Preparation Information
------------------------
Date of Preparation: 20 January 2016
Date of Prior SDS: 10 December 2014

Disclaimer
----------
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 therein, 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).

Lucas-Milhaupt, Inc.