

Handy & Harman of Canada, Limited

MATERIAL SAFETY DATA SHEET

SECTION 1 MATERIAL IDENTIFICATION AND USE CODE VTG-13 rev 10/03

MATERIAL NAME IDENTIFIER: SILVER, COPPER VTG ALLOYS

Manufacturer's Name: HANDY & HARMAN OF CANADA, LIMITED **Street Address:** 290 CARLINGVIEW DRIVE

City: REXDALE **Province/State/Country:** ONTARIO, CANADA M9W 5G1 **Emergency Phone No:** (416) 675-1860

Supplier's Name: **Street Address:**

City: **Province/State/Country:** **Emergency Phone No:**

Chemical Name: Silver Alloys	Chemical Family: Precious Metal Alloys	Chemical Formula: Refer To Chart
Molecular Weight: N/Avl.	Trade Names, Synonyms: Refer To Chart	Material Use: Varied

SECTION 2 HAZARDOUS CHEMICAL COMPONENTS

Chemical Component	CAS Number	(Refer to filler metal chart below for nominal composition %)
SILVER (Ag)	7440-22-4	ACGIH: TLVs (2000) 0.1 mg/m ³ TWA (metal) OSHA PEL: 0.01 mg/m ³ TWA LD ₅₀ 100 mg/kg oral-mouse LC ₅₀ N/Avl.
COPPER (Cu)	7440-50-8	ACGIH: TLVs (2000) 0.2 mg/m ³ TWA (fume); 1.0 mg/m ³ TWA (dusts & mists) OSHA PEL: 0.1 mg/m ³ TWA (fume); 1.0 mg/m ³ TWA (dusts & mists) LD ₅₀ 470 mg/kg oral-mouse LC ₅₀ N/Avl.

HANDY & HARMAN SILVER METALS CHART

PRODUCT CODE	Nominal Composition % Wgt.		PRODUCT CODE	Nominal Composition %	
	Ag	Cu		Ag	Cu
27-721	72	28	32-580	58	42
32-503	50	50			

SECTION 3 PHYSICAL DATA

Physical State: Gas ☐ Liquid ☐ Solid ☒ **Odour & Appearance:** No Odour; Solid Metal Strip, Wire, Powder, Grain, White-Yellow-White

Odour Threshold (ppm): N/Avl. **Vapour Pressure (mm.Hg):** N/Avl. **Vapour Density (AIR=1):** Solid-N/Avl.

Evaporation Rate: Solid - N/Avl. **Boiling Point (°C):** Solid - N/Avl. **Freezing Point (°C):** Solid - N/Avl.

% Volatile (By Volume): N/Avl. **Solubility In Water (20°C):** Insoluble **pH:** N/Avl.

Specific Gravity: N/Avl. **Coeff. Water Oil Disp.:** N/Avl.

SECTION 4 FIRE AND EXPLOSION DATA

Flammability: Yes ☒ No ☐ **If yes, under which conditions?**

Dust, powder and fumes are flammable when exposed to flame or by chemical reaction with oxidizing agents (see Section 5 for incompatible materials). Fires or explosions involving these alloys may release potentially toxic emissions of metal or metal oxide fumes (see Section 2 for hazardous components).

Means Of Extinction: Dry powder for metal fires. Do not use water on dust, powder or fume fires.

Special Procedures: Use self-contained breathing apparatus with full face-piece operated in pressure demand or other positive pressure mode.

Flashpoint(°C) & Method: Solid Metal - Non-Flammable **Upper Explosion Limit (% By Volume):** N/Avl.

Lower Explosion Limit (%By Volume): Solid Metal-N/Avl. **Auto Ignition Temperature (°C):** Solid Metal - N/Avl.

TDG Flammability Classification: None **Hazardous Combustion Products:** Solid Metal - N/Avl.

Sensitivity To Impact Explosion Data: N/Avl. **Rate Of Burning:** N/Avl.

Explosive Power: N/Avl. **Sensitivity To Static Discharge:** N/Avl.

SECTION 5 REACTIVITY DATA

AVOID DISPERSION OF FINELY DIVIDED PARTICLES IN AIR

Chemical Stability: Yes ☒ No ☐ **If yes, under which conditions?** Normal ambient environment.

Incompatibility With Other Substances: Yes ☒ No ☐ **If yes, which ones?**

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SECTION 5 (cont'd)

REACTIVITY DATA

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Silver: Explosive compounds may form if reacted with acetylene or nitric acid in the presence of ethyl alcohol, ethylenamine or hydrogen peroxide. Silver may also be incompatible with ammonia, bromoazide, chlorine trifluoride, oxalic acid, sulfuric acid, and tartaric acid.

Copper: Ammonium nitrate, sodium/potassium peroxides; azides; chlorate, bromate, and iodate salts of alkali and alkali earth metals; lithium; oxygen difluoride.

Silver and Copper can form an explosive acetylide upon contact with uncombusted acetylene.

Hazardous Decomposition Products: Hazardous polymerization will not occur at normal temperatures and pressures. Danger is mostly from inhalation of elemental oxide fumes or dusts. Use appropriate exhaust ventilation to carry all dusts/fumes away from work area.

Avoid overheating. Avoid dust accumulation.

SECTION 6

TOXICOLOGICAL PROPERTIES

Route Of Exposure: *Inhalation* Inhalation of the components of these products are not known to present a significant risk to health when used according to instructions and with appropriate protective measures (see Section 7). Inhalation of the component/elements has been reported to cause one or more of the following symptoms/effects upon excessively high and/or prolonged inhalation/exposure.

SILVER: *Acute* May cause grey discolouration of mucous membranes.
Chronic May produce argyria, a permanent blue-grey discolouration of the skin, eyes, mucous membranes, and the respiratory tract.

COPPER: *Acute* Acute exposure to dust or fume may cause respiratory tract irritation, fever, muscle ache, chills, cough, weakness, and a metallic taste.

Chronic Exposure may cause damage to the liver, kidney, spleen, pancreas, and brain.

Miscellaneous Toxicological Information

None of the listed components or decomposition by-products are classified as potential or demonstrated human carcinogens by IARC, NIOSH, NTP, OSHA, or ACGIH.

Health Conditions Aggravated By Exposure: Pre-existing pulmonary diseases (e.g., bronchitis, emphysema) may be aggravated by inhalation exposure to these materials, particularly as fume.

Route Of Exposure

Skin: In solid form, materials are not known to be hazardous. In finely divided form, skin contact may produce localized irritation, localized argyria, skin discolouration, and contact or allergic dermatitis.

Eyes: Exposure of the eyes to finely divided form of these materials may produce localized argyria, irritation, conjunctivitis, and ulceration of the cornea.

Ingestion: Finely divided form of these materials may produce gastric irritation, vomiting, abdominal pain, hemorrhage, and diarrhea.

LD₅₀ Of Material - Specify Species And Route: N/Avl.

LC₅₀ Of Material Specify Species: N/Avl.

Exposure Limit Of Material: N/Avl.

Irritancy Of Material: N/Avl.

Sensitizing Capability Of Material: N/Avl.

Carcinogenicity Of Material: Unknown

Reproductive Effects Of Material: N/Avl.

Synergistic Materials: N/Avl.

SECTION 7

PREVENTATIVE MEASURES

Personal Protective Equipment: Personal protective equipment will be required when using these materials. The nature of the processing activity will determine what form of equipment is necessary, i.e., safety glasses, respirator, protective clothing, etc. Personal protective equipment should not be substituted for proper handling and engineering controls to maintain exposure limits below applicable standards.

Gloves: Wear appropriate protective gloves to prevent injury from the hazards of processing and/or repeated contact with finely divided material. Avoid flammable fabrics.

Respiratory: Local exhaust, mechanical ventilation, and/or respiratory equipment may be required to maintain a protection factor appropriate to the airborne concentrations of the contaminants generated and provide sufficient clean air for breathing. If exposure levels exceed OSHA PELs, wear a NIOSH/MSHA-approved respirator (or other approving authority) for protection from the airborne contaminants. All adjacent persons in the immediate vicinity of processing operations, or handling of finely divided materials shall be similarly protected as necessary by ventilation or approved respirators.

Eyes: Wear eye protection (safety glasses, dust-proof goggles) adequate to prevent eye contact with this material in finely divided form and to prevent eye injury from the hazards of processing.

Footwear: Refer to workplace safety regulations.

Clothing: Avoid flammable fabrics. Wear appropriate clothing to prevent skin injuries from the hazards of processing.

Other Protection: Practice good housekeeping and personal hygiene procedures. To avoid ingestion of material, wash hands and face before eating, drinking, or using tobacco or cosmetics.

Silver alloys may be used with a separately applied flux which, when heated, may emit irritating and/or toxic gases and fumes. Consult the MSDS for the specific flux in use to determine its hazards and appropriate protective measures. For general guidance, refer to American National Standards Institute (ANSI) Z49.1, "Safety in Welding and Cutting" (American Welding Society, Miami, FL 33135).

Engineering Controls: Adequate ventilation, sinks, showers, and eyewash stations should be provided. The best industrial control practice is to maintain concentrations of all chemical fumes and dusts as low as is practical.

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SECTION 7 (cont'd) PREVENTATIVE MEASURES CODE VTG-13 rev 10/03

Leak And Spill Procedure: If metal is molten, allow to solidify and cool. Clean up any spilled material so as to minimize dispersion of dusts. Wet sweeping or vacuuming using HEPA, or similarly approved filtration, are recommended methods.

Waste Disposal: Return to manufacturer for reclaim.

Handling Procedure And Equipment: Avoid overheating as excessive fumes may result. Use sufficient flux or atmosphere to protect the metals and minimize oxidation/vapourization during use. Handling finely divided material see *Section 7- "Respiratory", "Eyes", "Skin"*.

Storage Requirements: Avoid storage near incompatible materials (see also *Section 5*). Also avoid conditions which create toxic fumes or dusts. Wash exposed skin after handling material. Stable at room temperature.

Special Shipping Information: No special requirements. **WHMIS Classification:** Not controlled products.

SECTION 8 FIRST AID MEASURES

Emergency And First Aid Procedures

Inhalation: Move victim to fresh air at once. Give oxygen if breathing is laboured, artificial respiration if victim is not breathing. Keep person warm and quiet. Get medical attention immediately.

Skin: Contact in solid forms is not known to be hazardous. If clothing is contaminated with finely divided particles, remove. Wash affected area with large quantities of water for at least 5 minutes. Get medical attention if necessary.

Eyes: Flush immediately with large amounts of water for at least 15 minutes while lifting the lower and upper eyelids. If irritation continues, get medical attention.

Ingestion: If person is conscious, give large amounts of water and induce vomiting. Seek medical attention. If person is unconscious or convulsive, get immediate medical attention.

*****SEEK MEDICAL ATTENTION IN ALL CASES OF EXPOSURE*****

SIGNS AND SYMPTOMS OF EXPOSURE:

Acute

Inhalation: Chills, fever, aching muscles, sneezing, dry throat, coughing, constriction of throat, nausea, irritation of nose and trachea, discolouration of mucous membranes, difficulty in breathing, chest pain, headache, metallic taste, failure of the kidney to produce urine.

Skin: Particles may cause irritation.

Eyes: Irritation, redness, itching.

Ingestion: Nausea, vomiting, headache, diarrhea, fever, abdominal pain.

Chronic

Inhalation: Cough, difficulty in breathing, laryngitis, discolouration of mucous membranes, argyria.

Skin: May cause argyria, discolouration.

Eyes: Irritation and/or localized argyria.

Ingestion: Pigmentation of skin (argyria) and eyes.

Medical Conditions Generally Aggravated By Exposure: Respiratory and skin disorders (e.g., dermatitis) may be aggravated.

Sources Used: Canadian Centre For Occupational Health And Safety, Hamilton, Ontario; American Welding Society, Miami, Florida; ACGIH, Cincinnati, Ohio; Lucas-Milhaupt Inc., Cudahy, Wisconsin.

Additional Information: The information contained herein is only for the manufactured alloy product. The alloy is processed with manufacturing equipment designed to protect the high purity of the composition elements, (i.e., non-oxidizing, non-vapourizing). It is the responsibility of the user/employer to ensure the suitability of further processing equipment for the intended use of these alloy materials and that exposure level TLV, TWA, and STEL values are not exceeded.

Assessment of the possible exposure to the worker(s) to hazardous fumes or dusts, when required, should be carried out by a competent person and may/should involve air concentration measurements.

SARA Title III Notifications and Information

SARA Title III - Hazard Classes: Acute Health Hazard; Chronic Health Hazard

SARA Title III - Section 313 Supplier Notification: This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS #	Chemical Name	Percent of Mixture
7440-22-4	Silver	49.5 - 72.5
7440-50-8	Copper	27.5 - 50.5

This information must be included on all MSDSs that are copied and distributed for this material.

SECTION 9 PREPARATION DATE OF MSDS

PREPARED BY:
Marketing Department

PHONE NO:
(416) 675-1860

DATE:
Revised 10/03