



# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

**Material name** Phosphorus/Copper/Silver Brazing Filler Metal.  
**Version #** 01  
**Issue date** 05-November-2013  
**Revision date** -  
**Supersedes date** -  
**CAS #** Mixture  
**Product names** Stay Silv® 2, Stay Silv® 2 LP, Stay Silv® 2 HP, LAg2P, Stay Silv® 5, Stay Silv® 5LP, Stay Silv® 5HP, LAg5P, Stay Silv® 6, Stay Silv® 6LP, Stay Silv® 6HP, FS70, LCuPSn7, PSN4, Dynaflow®, Blockade®, Phoson Plus™, Stay Silv® 15, Stay Silv® 15 HP, LAg15P, MB15, Stay Silv® 18, Stay Silv® 18M, Stay Silv® 18 LP, LAg18P, Super Dynaflow  
**Product use** Metal brazing.  
**Manufacturer information**  
**Manufacturer/Supplier** Harris Products Group  
4501 Quality Place  
Mason, Ohio 45040 US  
salesinfo@jwharris.com  
**Telephone number** 513-754-2000  
**Emergency Telephone Numbers** 1-866-519-4752 (US, Canada, Mexico only)  
  
(+) 1-760-476-3962  
Please quote 333895

## 2. Hazards Identification

**Physical state** Solid.  
**Appearance** Metallic-copper wire and rods.  
**Emergency overview** May cause eye, skin and respiratory tract irritation.  
**OSHA regulatory status** When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.  
**Potential health effects**  
**Routes of exposure** Inhalation. Skin contact. Eye contact. Ingestion.  
**Eyes** May cause eye irritation.  
**Skin** Contact may cause irritation and redness. Prolonged skin contact may cause dermatitis. Contact with molten material may cause thermal burns.  
**Inhalation** Irritating to the nose, throat, and respiratory tract. Overexposure to Copper fumes may produce metal fume fever. Symptoms of metal fume fever resemble the flu and include sweating, fever, headache, chills, muscle aches, nausea, vomiting, weakness, and tiredness.  
**Ingestion** Copper poisoning can result in hemolytic anemia and kidney, liver and spleen damage.  
**Target organs** Respiratory system Eyes. Skin. Kidneys.  
**Chronic effects** Chronic inhalation of fumes or dust may cause irritation or other respiratory conditions (e.g., bronchitis). Ingestion of silver may cause a permanently benign bluish gray discoloration to the skin (argyria). May cause damage to the liver and kidneys. Phosphorus is toxic and may produce poisoning if taken by mouth. Prolonged exposure to silver may cause damage to the nasal septum. Refer to Section 11 Toxicological Information for more details.  
**Signs and symptoms** Contact may cause irritation and redness. Dust may irritate respiratory system. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. During brazing operations, the most significant route of overexposure is via inhalation of fumes.  
**Potential environmental effects** Alloys in massive forms present a limited hazard for the environment.

## 3. Composition / Information on Ingredients

Components	CAS #	Percent
Silver	7440-22-4	1 - 18

Phosphorus/Copper/Silver Brazing Filler Metal.

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Components	CAS #	Percent
Phosphorus	7723-14-0	5 - 9
Tin	7440-31-5	0 - 7
Copper	7440-50-8	Balance

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

#### 4. First Aid Measures

##### First aid procedures

- Eye contact** Rinse immediately with plenty of water for at least 15 minutes. Remove any contact lenses. Get medical attention if irritation develops or persists.
- Skin contact** Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. Get medical attention if irritation develops and persists.
- Inhalation** Remove person from contaminated area to fresh air. Apply artificial respiration if needed. Call a physician if symptoms develop or persist.
- Ingestion** Do NOT induce vomiting. Immediately rinse mouth and drink a cupful of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

##### Notes to physician

Treat symptomatically.

##### General advice

Show this safety data sheet to the doctor in attendance.

#### 5. Fire Fighting Measures

##### Flammable properties

Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air. Do not use water on molten metal: Explosion hazard could result.

##### Extinguishing media

- Suitable extinguishing media** Extinguish with foam, carbon dioxide or dry powder.
- Unsuitable extinguishing media** Do not use water jet as an extinguisher, as this will spread the fire.

##### Protection of firefighters

- Specific hazards arising from the chemical** Fire or high temperatures create: Metal oxides.

##### Fire fighting equipment/instructions

Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Move containers from fire area if you can do it without risk.

#### 6. Accidental Release Measures

##### Personal precautions

Keep unnecessary personnel away. Avoid inhalation of dust from the spilled material. Wear protective clothing as described in Section 8 of this MSDS. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

##### Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

##### Methods for containment

Stop leak if you can do so without risk. Local authorities should be advised if significant spillages cannot be contained.

##### Methods for cleaning up

Large Spills: Sweep up and place into a proper container for disposal. Avoid the generation of dusts during clean-up.

Small Spills: Wipe up spilled material and place in a suitable container for disposal. For waste disposal, see Section 13 of the MSDS.

##### Other information

Clean up in accordance with all applicable regulations.

#### 7. Handling and Storage

##### Handling

Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Avoid inhalation of dust and fumes. Avoid contact with skin and eyes. Wear appropriate personal protective equipment (See Section 8). Do not get this material on clothing. Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Avoid release to the environment.

##### Storage

Store in tightly closed original container in a dry, cool and well-ventilated place. Store in a closed container away from incompatible materials. Keep away from food, drink and animal feedingstuffs.

## 8. Exposure Controls / Personal Protection

### Occupational exposure limits

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup> 0.2 mg/m <sup>3</sup>	Dust and mist. Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m <sup>3</sup>	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m <sup>3</sup>	

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	PEL	1 mg/m <sup>3</sup> 0.1 mg/m <sup>3</sup>	Dust and mist. Fume.
Phosphorus (CAS 7723-14-0)	PEL	0.1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	PEL	0.01 mg/m <sup>3</sup>	
Tin (CAS 7440-31-5)	PEL	2 mg/m <sup>3</sup>	

#### Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup> 0.2 mg/m <sup>3</sup>	Dust and mist. Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m <sup>3</sup>	
Tin (CAS 7440-31-5)	TWA	2 mg/m <sup>3</sup>	

#### Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup> 0.2 mg/m <sup>3</sup>	Dust and mist. Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	STEL TWA	0.03 mg/m <sup>3</sup> 0.01 mg/m <sup>3</sup>	
Tin (CAS 7440-31-5)	TWA	2 mg/m <sup>3</sup>	

#### Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup> 0.2 mg/m <sup>3</sup>	Dust and mist. Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m <sup>3</sup>	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m <sup>3</sup>	

#### Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	0.2 mg/m <sup>3</sup>	Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m <sup>3</sup>	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m <sup>3</sup>	

**Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)**

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Dust and mist.
		0.2 mg/m <sup>3</sup>	Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m <sup>3</sup>	
Tin (CAS 7440-31-5)	TWA	2 mg/m <sup>3</sup>	

**Mexico. Occupational Exposure Limit Values**

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL	2 mg/m <sup>3</sup>	Dust and mist.
		2 mg/m <sup>3</sup>	Fume.
	TWA	1 mg/m <sup>3</sup>	Dust and mist.
		0.2 mg/m <sup>3</sup>	Fume.
Phosphorus (CAS 7723-14-0)	STEL	0.3 mg/m <sup>3</sup>	
	TWA	0.1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m <sup>3</sup>	
Tin (CAS 7440-31-5)	STEL	4 mg/m <sup>3</sup>	
	TWA	2 mg/m <sup>3</sup>	

**Engineering controls** Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Shower, hand and eye washing facilities near the workplace are recommended.

**Personal protective equipment**

**Eye / face protection** Wear safety glasses with side shields (or goggles). When these products are used in conjunction with brazing, it is recommended that safety glasses, goggles, or face-shield with filter lens of appropriate shade number (per ANSI Z49.1-1988, "Safety in Welding and Cutting") be worn.

**Skin protection** Chemical resistant clothing is recommended. When these products are used in conjunction with brazing, wear protective clothing that protects from sparks and flame (per ANSI Z49.1-1988, "Safety in Welding and Cutting").

**Respiratory protection** Use a respirator when local exhaust or ventilation is not adequate to keep exposures below the TLV. In a confined space a supplied respirator may be required. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

**General hygiene considerations** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**9. Physical & Chemical Properties**

<b>Appearance</b>	Metallic-copper wire and rods.
<b>Physical state</b>	Solid.
<b>Form</b>	Solid.
<b>Color</b>	Not available.
<b>Odor</b>	None.
<b>Odor threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Vapor pressure</b>	Not available.
<b>Vapor density</b>	Not available.
<b>Boiling point</b>	Not available.
<b>Melting point/Freezing point</b>	1190 °F (643.33 °C)
<b>Solubility (water)</b>	Not available.
<b>Specific gravity</b>	8.94 (H <sub>2</sub> O=1)
<b>Flash point</b>	Not available.

<b>Flammability limits in air, upper, % by volume</b>	Not available.
<b>Flammability limits in air, lower, % by volume</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.

## 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Conditions to avoid</b>	Extreme temperatures. Contact with incompatible materials.
<b>Incompatible materials</b>	Strong oxidizing agents. Strong acids. Strong bases. Halogens. Acid chlorides.
<b>Hazardous decomposition products</b>	Thermal decomposition may produce copper, phosphorous, and silver compounds and a variety of metal oxides.
<b>Possibility of hazardous reactions</b>	Will not occur.

## 11. Toxicological Information

### Toxicological data

Components	Species	Test Results
Silver (CAS 7440-22-4)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rat	> 2000 mg/kg
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg
<b>Sensitization</b>	Rare cases of allergic contact dermatitis have been reported in people working with copper dust.	
<b>Acute effects</b>	High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. When heated, the vapors/fumes given off may cause respiratory tract irritation.	
<b>Local effects</b>	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract.	
<b>Chronic effects</b>	Prolonged exposure may cause chronic effects. Ingestion of silver may cause a permanently benign bluish gray discoloration to the skin (argyria).	
<b>Carcinogenicity</b>	Not classifiable as to carcinogenicity to humans.	
<b>Epidemiology</b>	No data available.	
<b>Mutagenicity</b>	Not classified.	
<b>Reproductive effects</b>	Not classified.	
<b>Further information</b>	No other specific acute or chronic health impact noted.	

## 12. Ecological Information

### Ecotoxicological data

Components	Species	Test Results
Copper (CAS 7440-50-8)		
<b>Aquatic</b>		
Crustacea	EC50	Water flea (Daphnia obtusa) 0.0076 - 0.026 mg/l, 48 hours
Phosphorus (CAS 7723-14-0)		
<b>Aquatic</b>		
Crustacea	EC50	Water flea (Daphnia magna) 0.025 - 0.037 mg/l, 48 hours
Fish	LC50	Bluegill (Lepomis macrochirus) 0.002 - 0.006 mg/l, 96 hours
Silver (CAS 7440-22-4)		
<b>Aquatic</b>		
Fish	LC50	Fathead minnow (Pimephales promelas) 0.0019 - 0.003 mg/l, 96 hours
<b>Ecotoxicity</b>	Alloys in massive forms present a limited hazard for the environment.	
<b>Environmental effects</b>	Significant environmental persistence and bioaccumulation can be expected.	
<b>Aquatic toxicity</b>	May cause long lasting harmful effects to aquatic life.	

<b>Persistence and degradability</b>	The product is not biodegradable.
<b>Bioaccumulation / Accumulation</b>	The product contains potentially bioaccumulating substances.
<b>Mobility in environmental media</b>	Alloys in massive forms are not mobile in the environment.

### 13. Disposal Considerations

<b>Waste codes</b>	D011: Waste Silver
<b>Disposal instructions</b>	Dispose in accordance with all applicable regulations.
<b>Waste from residues / unused products</b>	Scrapped material should be sent for refining to recover precious metal content. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.

### 14. Transport Information

#### DOT

Not regulated as a hazardous material by DOT.

#### IATA

Not regulated as dangerous goods.

#### IMDG

Not regulated as dangerous goods.

#### TDG

Not regulated as dangerous goods.

### 15. Regulatory Information

<b>US federal regulations</b>	This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.
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#### TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

#### Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Phosphorus (CAS 7723-14-0)

#### US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity

Phosphorus (CAS 7723-14-0) 1 lbs

#### US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity

Phosphorus (CAS 7723-14-0) 100 lbs

#### US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Copper (CAS 7440-50-8) 1.0 %

Phosphorus (CAS 7723-14-0) 1.0 %

Silver (CAS 7440-22-4) 1.0 %

#### US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Copper (CAS 7440-50-8) Listed.

Phosphorus (CAS 7723-14-0) Listed.

Silver (CAS 7440-22-4) Listed.

#### CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

Silver: 1000

Phosphorus: 1

Copper: 5000

#### Superfund Amendments and Reauthorization Act of 1986 (SARA)

<b>Hazard categories</b>	Immediate Hazard - No Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
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<b>Section 302 extremely hazardous substance (40 CFR 355, Appendix A)</b>	No
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<b>SARA 311/312 Hazardous chemical</b>	No
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<b>Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)</b>	Not controlled
<b>Canadian regulations</b>	This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
<b>WHMIS status</b>	Non-controlled

### Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

**State regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

#### US - California Hazardous Substances (Director's): Listed substance

Copper (CAS 7440-50-8)	Listed.
Phosphorus (CAS 7723-14-0)	Listed.
Silver (CAS 7440-22-4)	Listed.
Tin (CAS 7440-31-5)	Listed.

#### US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

#### US - New Jersey RTK - Substances: Listed substance

Copper (CAS 7440-50-8)	Listed.
Phosphorus (CAS 7723-14-0)	Listed.
Silver (CAS 7440-22-4)	Listed.
Tin (CAS 7440-31-5)	Listed.

#### US - Pennsylvania RTK - Hazardous Substances: All compounds of this substance are considered environmental hazards

Copper (CAS 7440-50-8)	LISTED
Silver (CAS 7440-22-4)	LISTED

#### US. Massachusetts RTK - Substance List

Copper (CAS 7440-50-8)	Listed.
Phosphorus (CAS 7723-14-0)	Listed.
Silver (CAS 7440-22-4)	Listed.
Tin (CAS 7440-31-5)	Listed.

#### US. New Jersey Worker and Community Right-to-Know Act

Copper (CAS 7440-50-8)	500 lbs
Phosphorus (CAS 7723-14-0)	100 lbs
Silver (CAS 7440-22-4)	500 lbs

#### US. Pennsylvania RTK - Hazardous Substances

Copper (CAS 7440-50-8)	Listed.
Phosphorus (CAS 7723-14-0)	Listed.
Silver (CAS 7440-22-4)	Listed.
Tin (CAS 7440-31-5)	Listed.

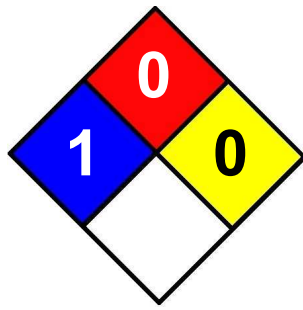
**Mexico regulations** This safety data sheet was prepared in accordance with the Official Mexican Standard (NOM-018-STPS-2000).

## 16. Other Information

**Further information** HMIS® is a registered trade and service mark of the NPCA.

**HMIS® ratings**  
 Health: 1  
 Flammability: 0  
 Physical hazard: 0

**NFPA Ratings**



**Disclaimer**

The information in the sheet was written based on the best knowledge and experience currently available.