



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.

CPH MSDS NA

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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 ³ 0.2 mg/m ³	Dust and mist. Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

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 ³ 0.1 mg/m ³	Dust and mist. Fume.
Phosphorus (CAS 7723-14-0)	PEL	0.1 mg/m ³	
Silver (CAS 7440-22-4)	PEL	0.01 mg/m ³	
Tin (CAS 7440-31-5)	PEL	2 mg/m ³	

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

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

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 ³ 0.2 mg/m ³	Dust and mist. Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silver (CAS 7440-22-4)	STEL TWA	0.03 mg/m ³ 0.01 mg/m ³	
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

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 ³ 0.2 mg/m ³	Dust and mist. Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

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 ³	Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

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 ³	Dust and mist.
		0.2 mg/m ³	Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

Mexico. Occupational Exposure Limit Values

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

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

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

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

10. Chemical Stability & Reactivity Information

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

11. Toxicological Information

Toxicological data

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

12. Ecological Information

Ecotoxicological data

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

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

13. Disposal Considerations

Waste codes	D011: Waste Silver
Disposal instructions	Dispose in accordance with all applicable regulations.
Waste from residues / unused products	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

US federal regulations	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)

Hazard categories	Immediate Hazard - No Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
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Section 302 extremely hazardous substance (40 CFR 355, Appendix A)	No
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SARA 311/312 Hazardous chemical	No
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Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)	Not controlled
Canadian regulations	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.
WHMIS status	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.

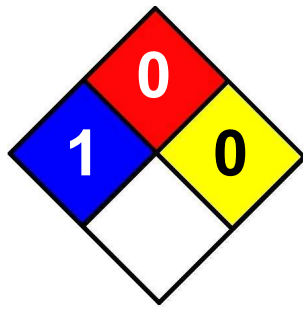
Mexico regulations This safety data sheet was prepared in accordance with the Official Mexican Standard (NOM-018-STPS-2000).

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.