



MATERIAL SAFETY DATA SHEET

BRAZING ALLOYS (WITH CADMIUM)

SECTION 1 - MATERIAL IDENTIFICATION

Manufacturers Name J. W. Harris Co., Inc. Distributor Name (If Applicable) _____

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Address Cincinnati, Ohio 45242

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The following table lists the trade name and composition of products covered by this Material Safety Data Sheet. **See Section 2 and especially Section 6 for important health hazard data.**

Trade Name	Nominal Chemical Composition (%)					
	Ag	Cu	Zn	Cd	Ni	Sn
Stay-Silv® 20	20	45	30	5		
Stay-Silv® 30	30	27	23	20		
Stay-Silv® 31	31.5	34	15.5	19		
Stay-Silv® 35	35	26	21	18		
Stay-Silv® 40	40	18	15	27		
Stay-Silv® 41	41	17	18	24		
Stay-Silv® 45	45	15	16	24		
Stay-Silv® 50N	50	15.5	15.5	16	3	
Stay-Silv® 50	50	15.5	16.5	18		
Stay-Silv® 60	60	20	7	10		3.0

SECTION 2 - HAZARDOUS MATERIALS

Brazing rod or wire is a nonhazardous solid at ambient temperature. Hazards (as defined by OSHA 29CFR 1910.1200) may result from fume generated during brazing. Section 1 lists product designations and composition as manufactured. **IMPORTANT - See Section 6 for information on potential fume hazard resulting from use of the product.**

SECTION 3 - PHYSICAL DATA

Solid wire or rod. Rods may be coated with a chemical flux. Flux coating may be red or other colors.

SECTION 4 - FIRE AND EXPLOSION DATA

(Nonflammable) Open flame and sparks can ignite combustibles, See ANSI/ASC Z49.1-1983 Section 6.

SECTION 5 - HEALTH HAZARD DATA - BRAZING ALLOYS

Exposure - Section 1 lists nominal composition of brazing filler metals. Section 6 lists exposure limits for hazardous decomposition products which might be present in fume generated during brazing. Actual exposure should be determined by monitoring fume in the operator's breathing zone.

Primary Route of Exposure - Inhalation of fume.

Pre-existing medical conditions - Individuals with impaired pulmonary functions or illness may have symptoms exacerbated by fume irritants.

Possible Effects of Exposure - Copper and zinc fume may cause metal fume fever. Short term symptoms may include a metallic taste in the mouth, dryness or irritation of the throat followed by coughing, shortness of breath, nausea, fever, body ache, and chills. Long term exposure to brazing fume, gases or dust may contribute to pulmonary irritation or pneumoconiosis. Nickel should be considered a possible carcinogen per OSHA 29 CFR 1910.1200. Certain nickel compounds have been implicated based on experience in some nickel refining operations. The specific compounds, however, have not been determined and a direct association between nickel in welding fume and cancer has not been demonstrated. Short term exposure to cadmium fume causes irritation of the nose and throat. Chest pain, cough, fever and (or) shortness of breath may develop after several hours. Severe overexposure can cause pulmonary edema, which may be fatal. Prolonged inhalation exposure may cause lung or kidney damage. Cadmium compounds should be considered suspected carcinogens based on some animal tests and recent epidemiological studies.

Emergency First Aid - Remove from dust or fume exposure. If breathing has stopped, perform artificial respiration. Summon medical aid immediately.

Other Health Considerations - Brazing alloys are frequently used with a fluoride type flux. If applicable, flux fume should be considered in evaluation of hazards.

SECTION 6 - REACTIVITY DATA

Hazardous Decomposition Products

Brazing fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being brazed, the process, procedures, and filler metals used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being brazed (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities). When the filler metal is consumed, the fume and gas decomposition products generated are different in percent and form from the solid wire or rod ingredients listed in Section 1. Fume and gas decomposition products, and not the ingredients in the rod or wire are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the rod or wire. Also, new compounds not in the rod or wire may form. Decomposition products of normal operation include those originating from the volatilization reaction, or oxidation of the wire or rod plus those from the base metal and coating, etc., as noted above.

Section 1 lists composition of the brazing filler metal. The chart below lists those constituents, defined as hazardous, which are likely to be present in the fume.

Element	CAS#	PEL mg/m³(1)	TLV mg/m³(2)
Silver (metal)	7440-22-4	0.01	0.1
Silver (soluble compounds)	7440-22-4	0.01	0.01
Copper (fume)	7440-50-8	0.1	0.2
Zinc (oxide)	1314-13-2	5.0	5.0 (fume)
Cadmium (oxide fume)	1306-19-0	0.1	0.05
		(ceiling limit) 0.3	(ceiling limit) 0.3
Nickel	7440-02-0	1.0	0.3
Tin (oxide)	7440-31-5	2.0	2.0

Some of these products are coated with a chemical flux. For flux coated rod the following should be included with the above bare rod fume constituent.

Element	CAS#	PEL	TLV
Boric Acid (Boron Oxide)	1303-86-2	15.0	10.0
Fluorides (F)	Not Listed	2.5	2.5

(1) Permissible exposure limit OSHA 29CFR 1910.1000 Subpart Z

(2) Threshold limit value American Conference of Government Industrial Hygienists

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample in the worker's breathing zone. See ANSI/AWS F1. 1 available from the American Welding Society, P.O. Box 351040, Miami, Florida 33135.

SECTION 7 - SPILL OR LEAK PROCEDURES

NOT APPLICABLE

SECTION 8 AND 9 - SPECIAL PROTECTION INFORMATION AND PRECAUTIONS

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, *Safety in Welding and Cutting* published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402 for more detail on many of the following.

Ventilation

Use enough ventilation, local exhaust at the flame to keep the fumes and gases below TLV's in the worker's breathing zone and the general area. Train the employee to keep his head out of the fumes. See ANSI/ASC Z49.1 Section 5.

Respiratory Protection

Use respirable fume respirator or air supplied respirator when brazing in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Eye Protection

Wear safety glasses, goggles or use face shield with filter lens of appropriate shade number (see ANSI/ASC Z49.1 - Section 4.2). Provide protection screens and flash goggles, if necessary, to shield others.

Protective Clothing

Wear head and body protection which help to prevent injury from radiation, sparks, and flame. See ANSI Z49.1. At a minimum this includes gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing.

The information and recommendations contained in this publication have been compiled from sources believed to be reliable and to represent the best information on the subject at the time of issue. No warranty, guarantee, or representation is made by Unibraze Corp. or J.W. Harris Co., Inc. as to the absolute correctness or sufficiency of any representation contained in this and other publications; Unibraze Corp. and J.W. Harris Co., Inc. assume no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this (and other publications), or that other or additional measures may not be required under particular or exceptional conditions or circumstances.



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