THE PRINCE/IZANT COMPANIES

SAFETY DATA SHEET

SILVER BRAZING ALLOYS

PRODUCT NAME: **SILVER BRAZING ALLOYS**

MANUFACTURER:
The Prince & Izant Companies
12999 Plaza Drive
Cleveland, Ohio 44130

T: 216-362-7000
F: 216-362-7456
www.princeizant.com

EMERGENCY PHONE #: **1-800-424-9300 (CHEMTREC)** **Revision 6/3/2015**

H.M.I.S. Information: **HEALTH = 2** **FLAMMABILITY = 1** **REACTIVITY = 1**

SECTION I - IDENTIFICATION

Common Name:	NA	**Chemical Family:**	Mixture
CAS Number:	See Below	**Chemical Name:**	Mixture (Refer to Section III)
Formula:	Refer to Section III	**TSCA Compliant:**	Yes

SECTION II - HAZARDS IDENTIFICATION

Skin Sensitization ---------- Hazard Category 1B

Carcinogenicity ---------- Hazard Category 2

Single Exposure ---------- Hazard Category 3

Label Symbols ----------

Hazard Statements	**WARNING!** -May cause respiratory irritation -May cause an allergic skin reaction -Harmful if swallowed -Suspected of causing cancer by inhalation (Nickel)
Symptoms of Overexposure	Copper and Zinc fume may cause 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, gasses, 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 direct association between nickel in welding fume and cancer has not been demonstrated. Code: AG, NI, SN, CU, ZN, MN
Medical Conditions Aggravated by Exposure	Individuals with impaired pulmonary functions or illness may have symptoms exacerbated by fume irritants.
Precautionary Statements	Read all safety precautions prior to handling. Avoid breathing dust or fumes. Use only outdoors and or in a well-ventilated area. Wear protective gloves and eye/face protection. Store in well-sealed container under room temperature conditions. IF SWALLOWED: Seek medical attention if you feel unwell IF ON SKIN: Wash with plenty of soap and water IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse continuously with water for 15 minutes <u>These products contain chemicals known to the State of California to cause cancer (nickel).</u>
Primary Routes of Entry into Body	Fume inhalation

EMERGENCY AND FIRST AID PROCEDURES

Inhalation	Remove from dust or fume exposure. If breathing has stopped, perform artificial respiration. Summon medical aid immediately.
Eyes	Flush eyes with plenty of water. If irritation develops, call a physician.
Skin	Flush with plenty of water. If irritation persists, call a physician.
Ingestion	Procedures normally not needed. If large quantities are ingested, seek medical advice

SECTION III - COMPOSITION INFORMATION

Hazardous Components	CAS NO.	%
SILVER	7440-22-4	5-85%
COPPER	7440-50-8	0-93%
ZINC	1314-13-2	0-38%
TIN	7440-31-5	0-10%
NICKEL	7440-02-0	0-4.5%
MANGANESE	7439-96-5	0-15%

SARA SECTIONS 313 SUPPLIER NOTIFICATION: Individual filler metals covered by this SDS may contain the following toxic chemicals subject to the reporting requirements of Section 3134 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40CFR 372: Copper, Manganese, Nickel, Silver and Zinc.

PRODUCT NAME	AWS A5.8	AMS	AG	CU	ZN	NI	SN	Other
SILVERBRAZ 5			5	58	37			
SILVERBRAZ 7			7	93				
SILVERBRAZ 9			9	53	38			
SILVERBRAZ 20			20	45	35			
SILVERBRAZ 25			25	52.5	22.5			
SILVERBRAZ 25SN2			25	40	33		2	
SILVERBRAZ 30	BAg-20		30	38	32			
SILVERBRAZ 35			35	32	33			
SILVERBRAZ 38	BAg-34		38	32	28		2	
SILVERBRAZ 40L			40	30	30			
SILVERBRAZ 40			40	36	24			
SILVERBRAZ 40SN2	BAg-28		40	30	28		2	
SILVERBRAZ 40NI2	BAg-4		40	30	28	2		
SILVERBRAZ 40NI5			40	30	25	5		
SILVERBRAZ 45T			45	27	25		3	
SILVERBRAZ 45	BAg-5		45	30	25			
SILVERBRAZ 49NI4	BAg-22		49	16	23	4.5		7.5 Mn
SILVERBRAZ 50	BAg-6		50	34	16			
SILVERBRAZ 50NI2	BAg-24		50	20	28	2		
SILVERBRAZ 54	BAg-13	4772	54	40	5	1		
SILVERBRAZ 56NI2	BAg-13a	4765	56	42		2		
SILVERBRAZ 56	BAg-7	4763	56	22	17		5	
SILVERBRAZ 60			60	25	15			
SILVERBRAZ 60SN10	BAg-18	4773	60	30			10	
SILVERBRAZ 63	BAg-21	4774C	63	28.5		2.5	6	
SILVERBRAZ 65Ni2	Bag-9		65	20		2		5 Mn
SILVERBRAZ 72	BAg-8		72	28				
SILVERBRAZ 75			75	22	3			
SILVERBRAZ 85	Bag-23	4766	85					15 Mn
TRIMETAL 40NI2	BAg-4		40	30	28	2		
TRIMETAL 40NI5			40	30	25	5		
TRIMETAL 50NI2	BAg-24		50	20	28	2		

One way to determine the composition and quantity of fumes and gasses to which workers are exposed is to take an air sample in the workers breathing zone. See ANSI/AWS F1.1 available from the American Welding Society, 8669 NW 36

Street, #130, Miami FL, 33116.

SECTION IV - FIRST AID MEASURES

Inhalation	Remove from dust or fume exposure. If breathing has stopped, perform artificial respiration. Summon medical aid immediately.
Eyes	Flush eyes with plenty of water. If irritation develops, call a physician.
Skin	Flush with plenty of water. If irritation persists, call a physician.
Ingestion	Procedures normally not needed. If large quantities are ingested, seek medical advice
Note to Physician	None of the listed components are acutely toxic by ingestion or are absorbed through skin contact. Contact dermatitis may result from direct exposure to the skin.
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 V - FIRE-FIGHTING MEASURES

Flash Point	NA
Flammable Limits	Lower: NA Upper: NA
Extinguishing Media	Dry chemical. Do not use water.
Auto Ignition Temperature	NA
Special Fire Fighting Procedures	Wear self-contained breathing apparatus with full face shield operated under positive pressure.
Unusual Fire and Explosion Hazards	May emit metallic fumes of byproducts or oxides when exposed to open flame.

SECTION VI - ACCIDENTAL RELEASE MEASURES

Steps to be Taken in Case Material is Spilled	Solid Metal Wire / Strip does not spill or leak

SECTION VII - HANDLING AND STORAGE

Handling & Storage Precautions	Store in a cool, dry location away from incompatible materials.

Work/Hygienic Practices	Wash thoroughly after handling. Avoid contact with and dusts, mists or fumes resulting from the use of this product. Do not eat, drink, or smoke in work area. Use only with adequate ventilation.
Other Precautions	NA

SECTION VIII - EXPOSURE CONTROLS AND PERSONAL PROTECTION

Hazardous Components	CAS NO.	OSHA PEL	ACGIH TLV
COPPER	7440-22-4	0.1 mg/m³ TWA (fume) 1 mg/m³ TWA (dusts and mists)	0.2 mg/m³ TWA (fume) 1 mg/m³ TWA (dusts and mists)
SILVER	7440-22-4	0.01 mg/m³ TWA	0.1 mg/m³ TWA (metal)
NICKEL	7440-02-0	1 mg/m³ TWA	1 mg/m³ TWA
ZINC (As ZnO)	1314-13-2	5 mg/m³ TWA (respirable fractions)	2 mg/m³ TWA 10 mg/m³ STEL (respirable fractions)
TIN	7440-31-5	2 mg/m³ TWA	2 mg/m³ TWA
MANGANESE (fume)	7439-96-5	5 mg/m³ Ceiling	0.2 mg/m³ TWA (respirable fraction) 0.1 mg/m³ TWA (inhalable fraction)

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.
Local Exhaust	Yes
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.
Respiratory Protection (Type)	NA
Other Protective Clothing or Equipment	Wear head and body protection, which helps to prevent injury from heat 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.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point	Not determined
Vapor Pressure (mm Hg)	Not applicable
Vapor Density (Air = 1)	Not applicable

Melting Point	Alloy Dependent. Visit princeizant.com for information on specific products listed in Section III
Reactivity in Water	None
Specific Gravity (Water = 1)	Not applicable
Percent Volatile by Volume	NA
Evaporation Rate (Butyl Acetate = 1)	NA
Solubility in Water	Insoluble
Appearance and Odor	White or light yellow. Metallic wire, rod or strip. Odorless

SECTION X - STABILITY AND REACTIVITY

Stability: Generally considered stable.

(Conditions to Avoid): None expected.

Incompatibility Not available

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 form 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.

Hazardous Polymerization Will not occur

Incompatible Materials

Acetylene, ammonia, ammonium nitrate, azides, nitric acid, halogens, ethylene imine, ethylene oxide, chloride trifluoride, sulfuric acid, peroxides, peroxyformic acid, oxalic acid, tartaric acid, 1-bromo-2-propyne, hydrazine mononitrate, hydrazine, hydrazoic acid, permonsulfuric acid, hydroxylamine, hydrogen sulfide, bromates, chlorates, and iodates of alkali and alkali earth metals, selenium, tellurium, carbon disulfide, performic acid, phosphorus, sulfur, dioxane, titanium and potassium chlorate.

SECTION XI - TOXICOLOGICAL INFORMATION

Hazardous Components	CAS NO.	LD50	LC50
COPPER	7440-22-4	No data available	No data available
SILVER	7440-22-4	>2000 mg/kg (oral/rat)	No data available
NICKEL	7440-02-0	5000 mg/kg (oral/rat)	No data available
ZINC	1314-13-2	No data available	No data available
TIN	7440-31-5	2 mg/m^3 TWA	No data available
MANGANESE (fume)	7439-96-5	3478 mg/kg (oral/rat)	No data available

Inhalation — Primary mode of exposure which can have adverse side effects. Extra precautions should be taken when handling products in powder form. Refer to recommended personal protection steps in Section VIII.

Eyes — Immediate eye contact is not considered a mode of exposure.

Skin — Skin contact does not pose any serious hazard. Prolonged exposure may cause mild irritation.

Ingestion — Ingestion is not expected to be a standard mode of exposure.

Carcinogenicity

NICKEL

IARC: 2b - Possibly carcinogenic to humans (Ni compounds)

NTP: K - Known to be a human carcinogen (Ni compounds)

ACGIH: A5 – Not suspected as a human carcinogen (Ni metal)

Additional toxicological information is available through the U.S. National Institute for Occupational Safety and Health (NIOSH) and the Registry of Toxic Effects of Chemical Substances (RTECS) – website: http://www.cdc.gov/niosh/ipcsneng/nengrtec.html. Applicable product components and their respective RTECS numbers are as follows:

Copper	GL5325000
Manganese	OO9275000
Nickel	QR5950000
Silver	VW3500000
Tin	XP7320000

SECTION XII - ECOLOGICAL INFORMATION

Copper	No data available for aquatic toxicity to fish, invertebrates, plants, microorganisms or other biological components.
Nickel	**Aquatic Toxicity to Fish** LC50>100 mg/l for 4 days (Freshwater fish) **Aquatic Toxicity to Invertebrates** EC50>100 mg/l for 48 hours (Daphnia) **Aquatic Toxicity to Plants** EC50 = 0.18 mg/l for 3 days (Algae)
Silver	No data available for aquatic toxicity to fish, invertebrates, plants, microorganisms or other biological components.
Zinc	No data available for aquatic toxicity to fish, invertebrates, plants, microorganisms or other biological components.
Tin	No data available for aquatic toxicity to fish, invertebrates, plants, microorganisms or other biological components.
Manganese	No data available for aquatic toxicity to fish, invertebrates, plants, microorganisms or other biological components.

SECTION XIII - DISPOSAL CONSIDERATIONS

Manage & dispose of waste in accordance with EPA or applicable international regulations. Regulations may vary so check Federal, National, State and Local regulations. Whenever possible, try to recycle & reclaim metals. Process, use or contamination may change the characteristics of the waste, and consequently, how the waste is managed.

SECTION XIV - TRANSPORT INFORMATION

D.O.T. Proper Shipping Name	Non-hazardous
Identification Number	Not available
Hazard Class	Not available
Packing Group	Not available
Waste Disposal Method	Dispose of in accordance with EPA regulations.

SECTION XV - REGULATORY INFORMATION

TSCA	All components are listed on the TSCA inventory
SARA 313	The products listed in this SDS contain the following components in concentrations that are considered to be carcinogenic by section 313 of the Emergency Preparedness and Community Right-to-Know Act (EPCRA) of 1986 and of 40CFR, Part 372: 1) **Silver** 2) **Copper** 3) **Nickel**

Proposition 65	**Nickel:** Known to the State of California to cause cancer
WHMIS	The following are considered **D2A** and **D2B** components: 1) Copper 2) Nickel 3) Silver
Waste Disposal Method	Dispose of in accordance with EPA regulations

SECTION XVI - OTHER INFORMATION

Date Created:	12/16/13
Last Updated:	6/23/15

Individuals requiring further information and Engineering Specification Documents may wish to contact the Engineering Society for Advanced Mobility, Land Sea Air and Space, The Society of Automotive Engineers http://www.sae.org/ (SAE AMS) or The American Welding Society (AWS) http://aws.org/

NOTE:

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