MATERIAL SAFETY DATA SHEET

I. Material Identification

Manufacturer's name: I. Schumann & Co.
Address: 22500 Alexander Road
Bedford, OH 44146
Telephone Number: 440-439-2300
Material Name: Nickel Silver C97300, C97400, C97600, C97800, MIBA F-26

Nominal Composition (%)

	Cu	Sn	Pb	Zn	Ni	Fe	Sb	Mn
C97300	55.5	2.2	9.5	21.0	12.5	1.5 max	.35 max	.50 max
C97400	59.5	3.0	5.0	16.0	16.3	1.5 max		.50 max
C97600	65.0	4.0	4.0	6.0	20.3	1.5 max	.25 max	1.0 max
C97800	65.5	4.8	1.8	2.5	25.5	1.5 max	.20 max	1.0 max
MIBA F-26	67.0	2.2	5.7	12.0 min	12.5	.75 max	.35 max	-

I. Schumann & Co. requests the users of these products to study this MSDS and to become aware of the product hazards and safety information. To promote the safe use of these products, the user should (1) notify its employees, agents, and contractors of the information on this MSDS, (2) furnish this same information to its customers for these products, and (3) request each customer to notify their employees and customers of the product hazards and safety information.

II. Hazardous Ingredients

NOTE: Refer to the above chart to determine which of the following elements are contained in the products purchased from I. Schumann & Co. Elements not listed for the specific products are reasonably believed by the manufacturer to be absent or present in amounts less than 1% by weight of the product (if not a carcinogen) or less that 0.1% (if a known or suspected carcinogen). This section covers the materials from which this product is manufactured. The fumes and gases produced during subsequent manufacturing processes that utilize these products are covered in Section V.

Element	CAS #	SARA	ACGIH TLV TWA (mg/m^3)	OSHA – PEL	
				TWA (mg/m^3)	STEL (mg/m^3)
Cu	7440-50-8	*	1.0 – Dust / 0.2 - Fume	2.0 – Dust / 0.1 - Fume	
Sn	7440-31-5		2.0	2.0	
Pb	7439-92-1	*	0.15	0.05	
Zn	1314-13-2	*	5.0 Oxide fume	5.0 Oxide fume	10.0 Oxide fume
Ni	7440-02-0	*	1.0	1.0	
Fe	7439-89-6		5.0 Oxide fume	10.0 (total particulate)	
Sb	7440-36-0	*	0.5	0.5	
Mn	7439-96-5	*	5.0 – Dust / 1.0 - Fume	5.0 – Dust / 1.0 - Fume	3.0 as fume

* Indicates toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.

III. Physical Data

As shipped, these products are nonflammable, nonexplosive, nonreactive, and nonhazardous.

Physical State:	Solid
Appearance and Odor:	Dark gray ingots with no odor.
Specific Gravity (Range):	8.86 – 8.90
Melting Range:	
Liquidus ºF (ºC):	1904 - 2156 (1040 – 1180)
Solidus ºF (ºC):	1850 - 2084 (1010 – 1140)

IV. Fire and Explosion Hazard

Flash Point:	NA	Method used:	NA
Flammable Limits:	LEL: NA	UEL: NA	
Extinguishing Media:		Mixture of dry chemical and sand.	

Special Firefighting Procedures:

Product in its solid form is noncombustible. Fire and explosion hazards are moderate when the material is in the form of dust and exposed to heat, flames, chemical reaction, or powerful oxidizers. Use special mixtures of dry chemical and sand. Fire fighters should wear self-contained breathing apparatus and protective clothing.

V. Reactivity Data

Products are stable. Hazardous polymerization will not occur.

Incompatibility (Material to avoid):

Strong oxidizers, alkalis, sodium azide, acetylene. Exposure to nitric acid will produce noxious fumes.

Hazardous decomposition products:

Melting of the product produces fumes, composed mainly of oxides of the elements present in the product. The only way to determine the true composition of the fumes, is by sampling and analyses. The nature and quantity of the fumes and gases to which a worker may be exposed, can be determined from a sample collected over time from the worker's breathing zone.

VI. Health Hazard Data

In their solid form, the products do not present an inhalation, ingestion, or contact hazard. Melting and grinding, however, may result in the following effects if exposures exceed permissible limits, as listed in Section II.

Routes of Exposure:

The primary route of entry of decomposition products is by inhalation. Skin contact, eye contact, and ingestion are possible. Absorption by skin contact is unlikely.

Pre-existing Medical Conditions Aggravated by Overexposure:

Individuals with allergies or impaired respiratory function may have symptoms worsened by overexposure to foundry fumes.

Acute and Chronic Health Effects:

Health Hazards	Acute	Chronic
Copper	Irritation of eyes, nose, throat. Metallic taste in mouth or "metal fume fever"	Pulmonary effects and Wilson's disease, characterized by hepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea.
Tin	The inhalation of inorganic tin fumes or dust may cause an apparent benign pneumoconiosis called stannosis, which is reported not to be disabling.	None reported.
Lead	Ingestion or inhalation of large amounts of lead can cause severe headaches, convulsions, delirium, coma, and possibly death.	Long term overexposure to lead fumes may result in buildup of lead in the body and more severe symptoms, including anemia, pale skin, a blue line at the gum margin, decreased hand-grip strength, abdominal pain, severe constipation, nausea, vomiting, and paralysis of the wrist joint. Prolonged exposure may also result in kidney damage. If the nervous system is affected, usually due to very high exposures, the resulting effects include severe headache, convulsions, coma, delirium, and/or death. Alcohol ingestion and physical exertion may bring on symptoms. Continued exposure can result in decreased fertility and/or increased chances of miscarriage or birth defects. Lead is known to cause reproductive toxicity.
Zinc (as Oxide)	Short-term flue-like symptoms ("metal fume fever"), bronchitis, and pneumonia. Reaction, delayed by 4-12 hrs, may include irritation of the nose, mouth, and throat, cough, stomach pain, headache, nausea, vomiting, metallic taste, chills, fever, muscle and joint pain, thirst. These symptoms go away in 24 hrs and leave no apparent effect.	None reported.
Nickel	Skin sensitization, chronic eczema, or "nickel itch".	Excess inhalation of nickel fumes has been associated with respiratory cancer. IARC and NTP have determined that there is at least limited evidence that nickel and certain nickel compounds may be human carcinogens. Several nickel compounds are carcinogenic to laboratory animals by various routes of entry.
Iron (As oxide)	Irritation of eyes, nose, throat, metallic taste in mouth or metal fume fever.	Pulmonary effects or siderosis, which is not disabling but makes taking lung X-Rays difficult or impossible
Antimony	Breathing high levels for a long time can irritate your eyes and lungs and can cause heart and lung problems, stomach pain, diarrhea, vomiting, and stomach ulcers.	Eye irritation, hair loss, lung damage, and heart problems.
Manganese	Exposure to fumes may cause fever and chills similar to metal fume fever. Some individuals may be hypersensitive to manganese.	Chronic mangenese poisoning may result from extended overexposure to dust and fumes affecting mainly the CNS with pathology resembling Parkinson's disease. It is not fatal but extremely disabling. May also cause respiratory disease.

Emergency and First Aid Procedures:

Eye Contact:

Flush eyes with running water to remove particulates. Get medical attention.

Skin Contact:

Vacuum off excess dust. Wash well with soap and water. Remove contaminated clothing and launder before reuse. Avoid blowing particulate into the atmosphere.

Inhalation:

Remove to fresh air. Get medical attention.

Ingestion:

Give 1-2 glasses of water or milk. Induce vomiting only if victim fully conscious and has not convulsed. Seek medical attention if large quantities of material have been ingested.

VII. Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled:

No special precautions are needed for spills of bulk material. If large quantities of dust are spilled, remove by vacuuming or wet sweeping to prevent heavy concentrations of airborne dust.

Waste disposal method:

Follow federal, state, and local regulations.

Handling and Storage:

Store product away from incompatible materials and keep dust from sources of ignition.

VIII. Control Measures

Respiratory Protection:

NIOSH approved dust/mist/fume respirator if PEL or TLV are exceeded.

Ventilation:

Consult local, state, and federal codes for appropriate selection.

Protective gloves:

Required for melt, grind, cut, and weld operations. Select gloves approved for specific operation.

Eye protection:

Required for melt, grind, cut, and weld operations. Select safety glasses or goggles approved for specific operation.

Other protective clothing or equipment:

Depending on use, consult local, state, and federal codes for appropriate selection.

IX. Special Precautions

Use precautions in lifting and prevent dropping of ingots.
Employees should shower at the end of each work shift. Refer to OSHA Standard 29 CFR 1910.1025 for lead exposure control requirements. Check airborne levels of lead and employee blood lead levels in accordance with OSHA standards.
It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists when handling or processing these products.
Products in storage may become wet from condensation. They must be thoroughly dried before adding to molten metal.
