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MATERIAL SAFETY DATA SHEET MSDS 2.112



SECTION I

CHEMICAL FAMILY: Metal - Metal Compound Composite
 CHEMICAL NAME: Tungsten - Silver
 TRADE NAME: ELKONITE® 30S Process B, 35S ELKONITE® Process B, ELKONITE® 40S Process B

SECTION II - INGREDIENTS AND HAZARDS

INGREDIENT		CAS REGISTRY #	%	ACGIH TLV/TWA mg/m ³	OSHA PEL/TWA mg/m ³
Tungsten	(W)	7440-33-7	159-68.7	5	5
Silver	(Ag)	7440-22-4	30-39.8	.1	.01
Nickel	(Ni)	7440-02-0	0.7-0.8	.05	1
Copper	(Cu)	7440-40-8	0.50	1	1

Silver, nickel and copper are subject to reporting requirements of Section 313 of SARA Title III.

SECTION III - PHYSICAL DATA

MELTING POINT °C: W 3380, Ag 962, Ni 1453, Cu 1085
 VAPOR PRESSURE AT ROOM TEMPERATURE: N/A
 VAPOR DENSITY: N/A
 SOLUBILITY IN WATER: Insoluble
 PERCENT VOLATILE (BY VOLUME %): N/A
 SPECIFIC GRAVITY (g/cc): 14.04-14.48
 APPEARANCE: Silver gray metal

SECTION IV - FIRE AND EXPLOSIVE DATA

FLASH POINT AND METHOD: N/A
 AUTOIGNITION TEMPERATURE °C: N/A
 FLAMMABILITY LIMITS IN AIR: UPPER: N/A LOWER: N/A
 EXTINGUISHING MEDIA: Type C or type ABC extinguisher
 FIRE FIGHTING PROCEDURES: Use self contained breathing apparatus with a full face piece operated in a pressure demand or positive pressure mode.
 UNUSUAL FIRE AND EXPLOSION HAZARDS: If this material is reduced to powder form, caution must be used to prevent fire or explosion. To extinguish a metal powder fire use dry sand, dry graphite or other class "D" fire extinguishing powder.

References: *Threshold Limit Values and Biological Exposure Indices*, ACGIH, 1991-1992
Code of Federal Regulations - Labor #29, Rev. July 1, 1990
Pocket Guide to Chemical Hazards, NIOSH, 1990
Chemical Regulatory Cross Reference, 3rd Edition, J. J. Keller, 1990
 "NFPA Hazard Rating Index Chart", Labor Safety Supply Co., 1987
Fire Protection Guide on Hazardous Materials, 9th Edition, Quincy, MA, 1986
Registry of Toxic Effects of Chemical Substances, NIOSH, 1985-1986
Occupational Health Guidelines for Chemical Hazards, NIOSH/OSHA, 1981
Dangerous Properties of Industrial Materials, 5th Edition, Van Nostrand Reinhold Co., 1979

SECTION V - REACTIVITY DATA

STABILITY: Stable HAZARDOUS POLYMERIZATION: Will not occur
 HAZARDOUS DECOMPOSITION PRODUCTS: Melting may generate harmful fumes.
 INCOMPATIBILITY AND CONDITIONS TO AVOID:
 Stable in normal environments. Reacts with acetylene, ammonia, hydrogen peroxide, bromoazide, chlorine, trifluoride, ethyleneimine, oxalic acid, tartaric acid.

SECTION VI - HEALTH HAZARD INFORMATION

EFFECTS OF OVEREXPOSURE:

Tungsten: Low toxicity - nuisance dust. Inhalation - cough. Ingestion - none reported. Skin - none reported. Health hazards - acute bronchitis.

Silver: Inhalation - argyria, a blue-gray discoloration of the skin, mucous membrane and eyes may result. Ingestion - generalized argyria may result. Skin - localized argyria from silver particles imbedded during handling. Eyes - severe irritation or conjunctivitis may occur. Health hazards - discoloration may become permanent.

Nickel: Inhalation - lung irritant, coughing, shortness of breath, chest pain. Skin - rash and itching - "Nickel itch". Health hazards: Allergic dermatitis, pneumonitis.

Copper: Inhalation - cough, chills, general malaise, kidney disfunction. Ingestion - liver disfunction. Eyes and skin - irritant and/or discoloring.
 Health hazards: Chronic lung, liver or kidney damage. May aggravate or intensify symptoms or pre-existing anemia or pulmonary disease.

CARCINOGENICITY:	NTP	IARC	OSHA
Tungsten	No	No	No
Silver	No	No	No
Nickel	Yes	Yes	Yes
Copper	No	No	No

EMERGENCY AND FIRST AID PROCEDURES:

Remove victim to fresh air. Flush skin and eyes with water. For inhalation or ingestion, seek immediate medical assistance.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Scoop up large quantities. Use sweeping compound to remove the rest. Avoid creating airborne particles.

WASTE DISPOSAL METHOD: Tungsten - silver can be recycled.

STORING AND HANDLING: N/A

OTHER PRECAUTIONS: Avoid generating dust or fumes.

SECTION VIII - SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION: NIOSH approved cartridge respirator.

VENTILATION: Ventilate operations when producing dust or fumes.

PROTECTIVE GLOVES: Recommend hand protection when handling metals for prevention of cuts from slivers and edges.

EYE PROTECTION: Wear safety glasses or goggles, if fumes, chips or dust are generated.

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