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MATERIAL SAFETY DATA SHEET

ISSUED DATE 11-19-85 REVISED DATE 9-30-09

I. IDENTIFICATION

MANUFACTURER'S NAME		Mi-Tech Metals, Inc.		EMERGENCY TELEPHONE NO.		(317) 549-4290	
ADDRESS		4701 Massachusetts Avenue - Indianapolis, IN 46218					
CHEMICAL NAME AND SYNONYMS		Tungsten, Copper, Nickel Iron, Molybdenum, Cobalt		TRADE NAME AND SYNONYMS		HD 17BB	
C.A.S. NO.	NIF	T.S.C.A. NO.	NIF	FORMULA	W-Cu-Ni-Fe-Mo-Co		
DEPARTMENT OF TRANSPORTATION	HAZARD CLASSIFICATION	NIF		U.N. NO.	NIF		
	SHIPPING NAME	HD17BB Tungsten Alloy					

II. INGREDIENTS

MATERIAL	%	TLV (Units)	C.A.S. NO.	NFPA RATING 4 = EXTREME 3 = HIGH 2 = MODERATE 1 = SLIGHT 0 = INSIGNIFICANT
Tungsten	90	5 MG/M ³	7440-33-7	
Nickel	6	1.0 MG/M ³	7440-02-0	
Copper	0-2	1.0 MG/M ³	7440-50-8	
Iron	0-2	1.0 MG/M ³	7439-89-6	
Molybdenum	0 - 0.5	1.0 MG/M ³	7439-98-7	
Cobalt	0- 1.0	0.02 MG/M ³	7440-48-4	

REPORT ALL INGREDIENTS ≥3%; IF HAZARDOUS, REPORT ≥1%; SPECIAL HAZARDOUS SUBSTANCES ≥0.01%

III. PHYSICAL DATA

BOILING POINT, 760mm Hg 101.325 kPa	W-5660°C, Ni - 2732°C Cu-2567°C, Fe-3000°C Mo - 4825°C, Co - 1495°C	FREEZING POINT	N/A
SPECIFIC GRAVITY (H ₂ O=1)	17.0 g/cc	VAPOR PRESSURE AT 20°C	N/A
VAPOR DENSITY (AIR=1)	N/A	SOLUBILITY IN WATER, % BY WT.	Insoluble
APPEARANCE AND ODOR	Gray Metallic - No odor		

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	NIF	FLAMMABLE LIMITS LEL	NIF	UEL	NIF
EXTINGUISHING MEDIA	Class D Dry type				
SPECIAL FIRE FIGHTING PROCEDURES					
UNUSUAL FIRE AND EXPLOSION HAZARDS	Will oxidize at/or 1300°F.				

V. REACTIVITY DATA

STABILITY		CONDITIONS	There is some evidence that Nickel and Cobalt and certain Nickel and Cobalt Compounds are carcinogenic to humans . Metallic Nickel seems to be less likely than Nickel Sulfide or Nickel Oxides.
UNSTABLE	STABLE		

	X	TO AVOID	
INCOMPATIBILITY (Materials to Avoid)			
HAZARDOUS DECOMPOSITION PRODUCTS		Keep away from strong acids.	

VI. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	OSHA	Tungsten 5 MG/M ³ Copper 1.0 MG/M ³ Nickel 1.0 MG/M ³ Iron 1.0 MG/M ³ Molybdenum 1.0 MG/M ³ Cobalt 0.02 MG/M ³	ACGIH	Tungsten 5 MG/M ³ Copper 1.0 MG/M ³ Nickel 1.0 MG/M ³ Iron 1.0 MG/M ³ Molybdenum 1.0 MG/M ³ Cobalt 0.02 MG/M ³
ROUTES OF EXPOSURE (Check Those Which Apply)	EYE CONTACT	No	INHALATION	Yes
	SKIN CONTACT	No	INGESTION	No
SIGN AND SYMPTOMS OF OVEREXPOSURE NIF (No information found)				
EFFECTS OF OVEREXPOSURE Prolonged inhalation of cobalt dust, or metal dust, fume or mist containing cobalt may cause serious respiratory illness. There are references in the literature associating cobalt with interstitial fibrosis a disease which can be fatal. Inhalation may cause an irritation of respiratory organs of sensitive persons resulting in obstruction of airways with shortness of breathe.				
ACUTE NIF				
CHRONIC NIF				
HAS IOSHA FOUND THIS MATERIAL TO BE A POTENTIAL CARCINOGEN? YES NO X				
EMERGENCY FIRST AID PROCEDURES				

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELATED OR SPILLED	
WASTE DISPOSAL METHOD	Re-cycle scrap and machine turnings.
DISPOSER MUCH COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS.	

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type)	Use NIOSHA/MSHA approved type repirator for dusting conditions		
VENTILATION	LOCAL EXHAUST	Recommended	SPECIAL NIF
	MECHANICAL (General)	NIF	OTHER NIF
PROTECTIVE GLOVES	NIF	EYE PROTECTION	Use safety eyewear.
OTHER PROTECTIVE EQUIPMENT	NIF		

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Store in dry, well ventilated area. Separate from acids and alkalis.
OTHER PRECAUTIONS	

DISCLAIMER OF LIABILITY

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