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Material Safety Data Sheet

SECTION 1 – PRODUCT IDENTIFICATION
Product Type: TUNGSTEN CARBIDE COBALT CHROME POWDER
Name: HA 8120

Date Prepared: March 31, 2008

SECTION 2 – HAZARDOUS INGREDIENTS
IMPORTANT! This section covers the material from which these products are manufactured. Dust and gases produced when spraying with normal use of these products are covered in Section 5.

Components	CAS No.	Wt. %	OSHA/PEL	ACGIH TLV
Tungsten Carbide	12070-12-1	86	5.10mg/3***	5.10mg/m3
Cobalt	7440-48-4	10	0.05 (dust & fume)	0.05mg/m3(dust & fume)
#Chromium	7440-47-3	4	1mg/m3	0.5mg/m3

- Reportable material under Section 313 of SARA
*** - Short Term Exposure Limit
-1992-1993 ACGIH listed under Notice of Intended Changes as: A3-Animal Carcinogen. Limits of 0.02 mg/m3 are proposed and should be considered as trial limits.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS
Appearance and Odor: Bright metallic powder, odorless.
Melting Point: >1,300˚C.
Percent Volatile: Not applicable.
Solubility in Water: Insoluble.

SECTION 4 – FIRE AND EXPLOSION HAZARD DATA
Flash Point: Not applicable.

Unusual Fire or Explosion Hazards:
Dust may present fire or explosion hazard in confined areas. This is not expected under normal handling procedures.

Special Fire Fighting Procedures:
Full protective clothing including self-contained breathing apparatus.

Extinguishing Media:
Cover burning powder with dry sand or limestone to smother flames. If fire occurs in open drums, seal drum with lid to smother flames.

SECTION 5 – REACTIVITY DATA
Stability: Product is stable, however fine powder (below 1 micron in size) may ignite during mechanical treatment.

Incompatibility: Avoid contact with acids. Contact with acids will produce flammable hydrogen gas.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Thermal spray dust and gases cannot be classified simply. The composition and quantity of both are dependent upon the material being sprayed. When the powder is sprayed, the dust and gas decomposition products generated are different in percent and form from the ingredients listed in Section 1. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 1. It is understood that the elements or oxides to be mentioned are virtually always present as complex oxides and not as metals. The elements or oxides listed below correspond to the ACGIH categories located in the TLV [Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment]. Gaseous reaction products may include carbon monoxide and carbon dioxide.

SECTION 6 – HEALTH HAZARD DATA (Acute and Chronic)

Combustion flames can severely burn skin.
THE PRIMARY ROUTES OF ENTRY are the respiratory system, eyes, and/or skin.
SHORT TERM (ACUTE) OVEREXPOSURE to powder and dust may result in irritation of the nose, throat, eyes, and skin.
TUNGSTEN CARBIDE-Dust may cause irritation of the skin and eyes. Inhalation of dust may cause acute airways obstructive asthma, which is reversible following overexposure. Symptoms are tightening of chest and productive cough.
COBALT-Pulmonary irritation, cough, dermatitis, weight loss.
CHROMIUM-Inhalation of dust with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people.

LONG TERM (CHRONIC) OVEREXPOSURE to powder and dust may result in bronchial asthma, lung fibrosis or pneumoconiosis.
TUNGSTEN CARBIDE-Long term overexposure may cause pulmonary fibrosis characterized by a rapid onset of cough, sputum and dyspnea on exertion.
COBALT-Repeated overexposure to cobalt compounds can produce reduced pulmonary function; diffuse nodular fibrosis of lungs and respiratory hypersensitivity. IARC considers cobalt compounds as possibly carcinogenic to humans (Group 2B).
CHROMIUM-Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more readily absorbed through the skin than chromium (III) compounds. Good practice requires the reduction of employee exposure to chromium (III) and (VI) compounds.

Carcinogenicity:
Chromium (with the exception of metallic chromium and chromium (III)), and Cobalt Compounds must be considered as carcinogens under OSHA (29 CFR 1910.1200).

Medical Conditions Aggravated by Exposure: Persons with impaired lung function (asthma-like conditions).

Emergency First Aid Procedures: Avoid inhalation of dust and gases. Remove from exposure and treat symptomatically.

Inhalation: If pulmonary symptoms develop (coughing, wheezing, shortness of breath) remove from exposure and seek medical attention.

Skin Contact: If contact occurs, wash thoroughly with soap and water. If irritation develops, seek medical attention.

Eye Contact: Flush with large amounts of water for at least ten (10) minutes. If irritation develops, seek medical attention.

Ingestion: Drink large amounts of water and induce vomiting and seek medical attention.

California Proposition 65: This product contains chemicals, which are known to the State of California to cause cancer. Cobalt compounds and hexavalent chromium (VI) are listed under Proposition 65. Hexavalent chromium (Cr VI) may be generated during arc spraying.

SECTION 7 – PRECAUTIONS FOR SAFE HANDLING & USE/APPLICABLE CONTROL MEASURES

Ventilation: Use enough ventilation to keep the dusts and gases below the PELs and TLVs in the worker's breathing zone and the general area. Follow instructions when spraying as outlined in HAI's Instruction Manual and recommendations in the American Welding Society Bulletin No. AWSC 21-71.

Respiratory Protection: If personal exposure cannot be controlled below the applicable limits, wear a properly fitted fume/dust respirator approved by NIOSH/MSHA for protection against the materials in Section 5. Refer to the OSHA Standard, 1910.134, on Respiratory Protection.

Precautions to be Taken During Handling and Storage: Keep container closed when not in use. Store in dry, cool place. Maintain good housekeeping procedures to prevent accumulation of dust. Use cleanup methods, which minimize dust generation, such vacuuming or wet mopping. Wash thoroughly after handling and before eating, smoking or at end of work shift. Do not shake clothing to remove dust. Avoid inhalation and skin contact.

SECTION 8 – Environmental and Disposal Considerations

Procedure for Cleanup of Spills or Leaks: Remove all sources of ignition. Ventilate area of spill. Use cleanup methods, which avoid dust generation such as vacuuming (with appropriate filter to prevent airborne dust levels which exceed appropriate PEL or TLV). If airborne dust is generated, use an appropriate NIOSH approved respirator.

Waste Disposal: Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State, and Local regulations. Product may be recycled or reclaimed through metal recycler.

SECTION 9 – Hazardous Transportation Regulations

DOT Hazard Class: Not hazardous by DOT Regulations.

SECTION 12 - OTHER

HAI Advanced Material Specialists, Inc. requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazard and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within HAI Advanced Material Specialists, Inc. We believe that the information contained herein is current as of the date of this MSDS. Since the use of the product is not within control of HAI Advanced Material Specialists, Inc. , it is the user's obligation to determine the conditions of safe use of the product.