ELECTRONIC SPACE PRODUCTS INTERNATIONAL

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MATERIAL SAFETY DATA SHEET

I PRODUCT IDENTIFICATION

Trade Name: Chromium Sulfide
Formula: Cr_2S_3
CAS #: 12018-22-3
Chemical Nature: Metal Sulfide
Molecular Weight: 200.18

II HAZARDOUS INGREDIENTS

Hazardous Components	%	OSHA/PEL	ACGIH/TLV	Sec. 302	Sec. 304	Sec. 313
Chromium Sulfide	0-100	0.5 mg(Cr)/m^3	0.5 mg(Cr)/m^3	No	Yes 1 lb	Yes

III PHYSICAL DATA

Boiling Point 760 mm Hg: NE or NA
Specific Gravity (H_2O=1): 3.77 g/cc
Vapor Pressure: N/A
Appearance and Odor: Brown to black powder, no odor.
Melting Point: 1350 ^oC
Vapor Density (Air=1): N/A
% Volatiles: N/A
Solubility in H_2O: Insoluble

IV FIRE AND EXPLOSION HAZARDS DATA

Flash Point (Method Used): N/A
Autoignition Temperature: N/A
Flammable Limits: **Upper**: N/A **Lower**: N/A

Extinguishing Media: Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Special Fire Fighting Procedures: Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

Unusual Fire & Explosion Hazard: In case of fire, toxic metal oxide fume and hydrogen sulfide can be released.

V HEALTH HAZARD INFORMATION

Effects of Exposure:

To the best of our knowledge the chemical, physical and toxicological properties of chromium sulfide have not been thoroughly investigated and recorded.

Chromium is a confirmed human carcinogen with experimental tumorigenic data. Human poison by ingestion with gastrointestinal effects. (Sax, Dangerous Properties of Industrial Materials, eighth edition).

Sulfides of the heavy metals are generally insoluble and hence have little toxic action except through the liberation of hydrogen sulfide (Sax, Dangerous Properties of Industrial Materials, eighth edition).

Hydrogen sulfide is a human poison by inhalation. A severe irritant to the eyes and mucous membranes. An asphyxiant.

The irritant action has been explained on the basis that hydrogen sulfide combines with the alkali present in moist surface tissues to form sodium sulfide, a caustic material. Hydrogen sulfide does not combine with the hemoglobin of the blood; its asphyxiation is due to paralysis of the respiratory center. It is an insidious poison since sense of smell may be fatigued. The odor and irritating effects do not offer a dependable warning to workers who may be exposed to gradually increasing amounts and therefore become used to it (Sax, Dangerous Properties of Industrial Materials, eighth edition).

Acute Effects:

Inhalation: May cause severe irritation and damage to the respiratory system.
Ingestion: May cause severe gastrointestinal irritation.
Skin: May cause severe irritation to moist skin due to the liberation of hydrogen sulfide.
Eye: May cause severe irritation.

Chronic Effects:

Inhalation: May cause pneumonitis, pneumoconiosis, coma and pulmonary edema.
Ingestion: No chronic health effects recorded.
Skin: No chronic health effects recorded.
Eye: No chronic health effects recorded.

Routes of Entry: Inhalation, Ingestion, eye and skin contact.
Target Organs: May affect the lungs, heart, eyes, skin and respiratory system.

Carcinogenicity: **NTP**? No **IARC Monographs**? No **OSHA Regulated**? No
Medical Conditions Generally Aggravated by Exposure: Pre-existing respiratory disorders.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: Remove victim to fresh air. Keep warm and quiet. Give oxygen if breathing is difficult and seek medical attention.
INGESTION: Give 1-2 glasses of milk or water and DO NOT induce vomiting. Seek immediate medical attention.
SKIN: Remove contaminated clothing. Brush material off skin and wash affected area with mild soap and water. Seek medical attention.
EYES: Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes. Seek medical attention.

VI REACTIVITY DATA

Stability: Stable
Conditions to Avoid: None known
Incompatibility (Material to Avoid): Acids

Hazardous Decomposition Products: Toxic metal oxide fume, oxides of sulfur and hydrogen sulfide.
Hazardous Polymerization: Will not occur.

VII SPILL OR LEAK PROCEDURES

Steps to Be Taken in Case Material Is Released or Spilled: Wear appropriate respiratory and protective equipment specified in Section VIII- Special Protection Information. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

Waste Disposal Method: In accordance with Local, State and Federal regulations.

VIII SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): NIOSH approved dust, mist, vapor cartridge respirator.
Ventilation: Use local exhaust to maintain concentrations below the TLV. General exhaust is recommended.

Protective Gloves: Rubber gloves.
Eye Protection: Safety Goggles

Other Protective Equipment: Protective clothing to prevent skin contact.

IX SPECIAL PRECAUTIONS

Precautions to Be Taken in Handling and Storing: Store in tightly sealed container in dry, cool place. Wash thoroughly after handling. Avoid making dust.

Work Practices: Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.

Some of the chemicals listed herein are research or experimental substances which may be toxic, as defined by various governmental regulations. In accordance with Environmental Protection Agency regulations and the Toxic Substance Control Act (TSCA), these materials should only be handled by, or under the direct supervision of a "technically qualified individual" as defined in 40 CFR 710.2(aa).

The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change, and the conditions of handling and use or misuse are beyond our control, ESPI makes no warranty, either expressed or implied with respect to the completeness or continuing accuracy of the information contained herein, and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

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