



MATERIAL SAFETY DATA SHEET

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IMPORTANT: Read this MSDS before handling and disposing of this product. Pass this information on to employees, customers and eventual end users.

EMERGENCY ASSISTANCE
 Call SuperPower, Inc. at: 1-800-459-2519

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SECTION I – PRODUCT IDENTIFICATION

Identity: SCS4050, SF12050, SF12100; High Temperature Superconductor Tape

Chemical Family: Metal Alloy

Formula: Each alloy contains nearly identical elements formulated in different concentrations.

SECTION II – HAZARDOUS INGREDIENTS

CONSTITUENT	CAS Number	SCS4050 SCS12050 With Copper Stabilizer (Est. %)	SF12050 SF4050 Without Copper Stabilizer (Est. %)	SF12100 SF4100 Without Copper Stabilizer (Est. %)	OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Cobalt* (Co)	7440-48-4	1.3	2.3	2.4	0.1	0.02
Chromium* (Cr)	7440-47-3	8.2	15	15	Metal 1 Cr II & III, as Cr 0.5 Cr VI 0.05	Metal and Cr III 0.5 Soluble Cr VI 0.05 Insoluble Cr VI 0.01
Copper* (Cu)	7440-50-8	44	0.5	0.5	Dust 1 Fume 0.1	Dust 1 Fume 0.2
Iron (Fe)	7439-89-6	3	5	5	Fume 10	Fume 5
Manganese (Mn)	7439-96-5	0.5	1	1	5 Ceiling	0.2
Molybdenum (Mo)	7439-98-7	8.2	15	15	5	Insoluble 10 Soluble 5
Nickel* (Ni)	7440-02-0	29	52	55	1	Metal 1.5 Insoluble Compounds 0.2



SECTION II – HAZARDOUS INGREDIENTS (Continued)

CONSTITUENT	CAS Number	SCS4050 SCS12050 With Copper Stabilizer (Est. %)	SF12050 SF4050 Without Copper Stabilizer (Est. %)	SF12100 SF4100 Without Copper Stabilizer (Est. %)	OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Silicon (Si)	7440-21-3	0.1	0.1	0.1	Total 15 Respirable 5	Total 10 Respirable 3
Silver* (Ag)	7440-22-4	4.3	6.3	3.3	0.02	0.1
Tungsten (W)	7440-33-7	2	4	4	Total 15 Respirable 5	5 10 STEL
Vanadium (V)	7440-62-2	0.2	0.3	0.3	Respirable 0.5 Ceiling Fume 0.1 Ceiling	0.01
REBCO ⁽¹⁾	None See Note Below	1	2	1	None Determined	None Determined

*Identifies substances that are subject to the requirements of Section 313 of Title III of Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

(1) REBCO, "Rare Earth" elements with Barium Copper Oxide. RE elements include the following metals: Europium (CAS 15522-71-1), Dysprosium (CAS 15522-69-7), and Gadolinium (CAS 14768-15-1), Yttrium (7440-65-5), Samarium (7440-19-9)

SECTION III – PHYSICAL DATA

	SCS4050 SCS12050	SF4050 SF12050	SF4100 SF12100
Color:	Copper Color	Silver Color	Silver Color
Physical State:	Solid	Solid	Solid
Melting point (°F):	Not Applicable	Not Applicable	Not Applicable
Specific Gravity (H₂O=1):	Not Applicable	Not Applicable	Not Applicable
Solubility in Water:	Not Applicable	Not Applicable	Not Applicable
Evaporation Rate:	Not Applicable	Not Applicable	Not Applicable
% Volatiles by Volume	Not Applicable	Not Applicable	Not Applicable
pH	Not Applicable	Not Applicable	Not Applicable



SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used):	Not Applicable
Extinguishing Media:	Dry Sand, Metal Extinguishing Powders or other class “D” extinguishing media.
Special Fire Fighting Procedures:	Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if involved in fire.
Hazardous Bi-products	Various metal oxides if metal reaches melting point.
Unusual Fire and Explosion Hazards:	None Anticipated

SECTION V – HEALTH HAZARD DATA

Metallic product poses little or no immediate hazard in solid form. Potential exposure to elements listed in Section II is increased if material is melted, cast, pickled, chemically cleaned, heat treated, cut, welded, ground, sanded, polished, milled, crushed, or otherwise heated or abraded in a manner that liberates particulate. Exposure may also occur during repair or maintenance activities on contaminated equipment used during secondary manufacturing. Hands, gloves, and clothing contaminated by particulate can be transferred to the breathing zone and inhaled if proper hygiene practices are not followed.

Route(s) of Entry (Solid Form):

Inhalation:	Not Likely In Solid Form
Ingestion:	Not Likely In Solid Form
Skin:	Some metals can cause irritation or allergic dermatitis to sensitive individuals when exposed to chromium, nickel, tungsten, or vanadium.

Route(s) of Entry (Dust and Fume):

Inhalation:	Likely If Airborne
Ingestion:	Possible Due to Cross Contamination
Skin:	Some metals can cause irritation or allergic dermatitis to sensitive individuals if exposed to chromium, copper, cobalt, nickel, vanadium, or their oxide forms.

Exposure Hazards:

Exposure to metal dusts and/or fumes may cause irritation to the eyes, skin or respiratory tract. Some metals may also act as an allergen causing dermatitis to exposed skin.

Emergency and First Aid Procedures:

Skin:	Flush thoroughly with water.
Eyes:	Flush with water, call physician.
Ingestion:	Induce vomiting in a conscious person, call physician.
Inhalation:	Remove victim to fresh air, call physician.
Carcinogenicity:	NTP ¹ has classified Hexavalent Chromium and Nickel Compounds as Known Carcinogens. NTP has classified Nickel Metal as a Reasonably Anticipated Carcinogen. IARC ² has listed Hexavalent Chromium as a Group I carcinogen. IARC has also listed Cobalt and Nickel as a Group 2B compound, possibly carcinogenic to humans. The State of California ³ lists Hexavalent Chromium, Cobalt (metal powder and [II] oxide) and Nickel as carcinogenic.



- ¹ National Toxicology Program
- ² International Agency for Research on Cancer
- ³ California Proposition 65 List of Chemicals Known to Cause Cancer or Reproductive Toxicity

Note: Alloy tape products sold by SuperPower, Inc. are in solid form and as such present no significant health hazard in their original form. Secondary processing activities performed on the materials could potentially liberate dust and/or fumes that may result in increased risk of exposure.

SECTION VI – REACTIVITY DATA

Stability:	Stable
Incompatibility (Materials to Avoid):	May react with some acids and caustic solutions to produce hydrogen gas. Avoid liberation of airborne dust that can be explosive.
Hazardous Decomposition Products:	None under normal conditions of use. At temperatures above the melting point metallic oxide fumes may be evolved.
Hazardous Polymerization:	Will not occur.

SECTION VII – SPILL OR LEAK PROCEDURES

No special clean-up procedures necessary if material remains in solid form. Dusts generated from secondary processing of alloy tapes may present an exposure hazard. Clean-up procedures that minimize exposure to airborne particulate are recommended. Vacuuming of dust with a high efficiency particulate air (HEPA) filtered system is preferred. Do not use compressed air for cleaning. Place waste material in properly labelled closed waste container for appropriate disposal. Use appropriate approved respiratory protection if possible dust and/or fume exposure exists.

Steps to be Taken in Event Material is Released or Spilled:

No special cleanup precautions necessary if material is released in original form.

Waste Disposal Method:	Copper and other precious metals are normally collected to recover value. Should waste disposal be deemed necessary, follow Federal, State and Local regulations as necessary.
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SECTION VIII – SPECIAL PERSONAL PROTECTION INFORMATION

Respiratory Protection:	Grinding, cutting or welding operations performed on base alloy tapes could generate airborne dust and fume. If local exhaust ventilation is proven ineffective, use NIOSH approved respirator appropriate for condition of use.
Ventilation:	Use local exhaust ventilation to control airborne dust/fume emissions below recommended limits shown in Section II.
Engineering Controls:	Use adequate ventilation to keep dust and/or fume concentrations below the occupational exposure limits shown in Section II.
Eye Protection:	Safety glasses when risk of eye injury exists.
Skin Protection:	Gloves to protect against possible cuts and abrasions during handling. Coveralls when dusts/fumes from secondary processing or cleaning activities is expected.



SECTION IX – SPECIAL PRECAUTIONS**Precautions to be Taken in Handling and Storing:**

Good housekeeping must be practiced during storage, transfer, handling and use to avoid excess dust release. Good personal hygiene procedures should be observed at all times.

SECTION X – TOXICOLOGICAL INFORMATION

These products have not been evaluated in whole for potential toxicity.

SECTION XI – ECOLOGICAL INFORMATION

This product can be recycled.

SECTION XII – DISPOSAL CONSIDERATIONS

When recycled, this material is not classified as hazardous waste under federal law. Unused material and/or particulate should be sealed inside two plastic bags, placed in a DOT approved container, and labeled appropriately.

When product is declared a solid waste (i.e., can not be recycled), materials must be properly labeled, managed and disposed of in accordance with federal, state and local requirements. These products contain metals regulated under RCRA (See Section II).

SECTION XIII – TRANSPORT INFORMATION

There are no U.S. Department of Transportation hazardous material regulations that apply to packaging or labeling of these materials as shipped by SuperPower, Inc.

SECTION XIV – REGULATORY INFORMATION**SARA TITLE III REPORTING REQUIREMENTS:**

These products are reportable under the Section 313 category of Compounds and/or Mixtures for SARA TITLE III. These mixtures contain one or more of the following reportable constituents: Cobalt, Copper, Chromium, Manganese, Nickel, and Silver. Additional information regarding SARA reportable requirements by calling the EPA SARA Title III Hotline at 1-800-535-0202.

DISCLAIMER OF LIABILITY

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