

**NiTiNOL Solid MSDS**

## Section 1 – Chemical Product and Company Information

Product Name: NiTiNOL Solid  
 Document Number: BSDSU080421 Rev. 0

Preparation Date: 9/12/2008

Product Use: Various

SAES Smart Materials

Revision Date: 9/26/2008

Address: 4355 Middle Settlement Road  
 New Hartford, NY 13413-5317  
 USA

Telephone: 315-266-2026 x202

Emergency Telephone Number: CHEMTREC – 1-800-424-9300

## Section 2 – Composition Information

| Component | CAS #     | %      |
|-----------|-----------|--------|
| Nickel    | 7440-02-0 | 50-70% |
| Titanium  | 7440-32-6 | 30-50% |
| Niobium   | 7440-03-1 | 10-20% |
| Copper    | 7440-50-8 | 5-10%  |
| Iron      | 7439-89-6 | 1-5%   |
| Cobalt    | 7440-48-4 | 1-5%   |
| Chromium  | 7440-47-3 | < 3.0% |

Nickel (Dust): OSHA/PEL: 1.0 mg/m<sup>3</sup>; ACGIH/TLV: 1.5 mg/m<sup>3</sup>Titanium (Dust): OSHA/PEL: 15 mg/m<sup>3</sup> (total dust), 5 mg/m<sup>3</sup> (respiratory dust); ACGIH: 10 mg/m<sup>3</sup> (total dust)Niobium (Dust): 15 mg/m<sup>3</sup> for inert or nuisance dustCopper: OSHA/PEL: 1 mg/m<sup>3</sup> (dust), 0.1 mg/m<sup>3</sup> (fume); ACGIH: 1 mg/m<sup>3</sup> (dust), 0.2 mg/m<sup>3</sup> (fume)Iron: OSHA/PEL: 10 mg/m<sup>3</sup> (fume); ACGIH/TLV: 5 mg/m<sup>3</sup> (oxide and dust)Cobalt (Dust): OSHA/PEL: 0.1 mg/m<sup>3</sup>; ACGIH/TLV: 0.02 mg/m<sup>3</sup>Chromium (Dust): OSHA/PEL: 1 mg/m<sup>3</sup>; ACGIH/TLV: 0.5 mg/m<sup>3</sup>

### Section 3 – Hazards Identification

#### Potential Health Effects:

Inhalation: May cause irritation, coughing or shortness of breath. No chronic effects known.

Ingestion: May cause gastrointestinal disorders. No chronic effects known.

Skin Contact: May cause irritation with redness and pain. No chronic effects known.

Eye Contact: May cause irritation. No chronic effects known.

### Section 4 – First Aid Measures

Eyes: Flush with large amounts of cold water for at least 15 minutes. Do not let victim rub eyes. If irritation develops, contact a physician immediately.

Skin: Wash affected area with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

Inhalation: If inhaled, move to fresh air. If breathing is difficult, administer artificial respiration (mouth to mouth) or oxygen as indicated. Contact a physician immediately.

Ingestion: If swallowed, give 1 to 2 glasses of water or milk and induce vomiting, seek medical attention immediately. Never induce vomiting or give anything by mouth to an unconscious person.

Note to Physician: Although this product may cause irritation, it does not present a danger to human health by inhalation, ingestion, skin contact or eye contact in the form it is used.

### Section 5 – Fire Fighting Measures

Flash Point: N/A

Extinguisher Media: For the product as constituted in a solid form use carbon dioxide, dry chemical, foam or water spray. If the product is present in a powder or granule form, then use special powder for metal fires.

Special Firefighting Procedures: Isolate fire area and deny unnecessary entry.

Firefighters should wear self contained breathing apparatus in the positive pressure mode with a full face piece where there is a possibility of exposure

to smoke, fumes or hazardous decomposition products.

Unusual Fire and Explosion Hazards: Solid form can burn at a minimum rate without flame (solder). Grinding or abrasive treatment can produce fine particulate dust that may explode in the presence of a strong ignition source.

HMIS Ratings (Solid Forms): Health 0 Flammability 0 Reactivity 0  
(Powder): Health 3 Flammability 4 Reactivity 1

#### Section 6 – Accidental Release Measures

Spill & Leak Response: Do not allow spilled material to enter sewers or streams. Spills of the solid form of this product should be cleaned up either wet or dry. Small pieces should be cleaned up with a vacuum equipped with a high efficiency particulate air-purifying (HEPA) filter. Prolonged or repeated skin contact should be avoided if sensitive to nickel. Place collected material into non-sparking or anti-static containers (use of plastic bags is not recommended). Use non-sparking tools.

#### Section 7 – Handling and Storage

Handling: Metal should be stored in covered containers to avoid contamination because of dampness and dust. Partly used containers should be recovered. In welding, precautions should be taken for airborne contaminants which may originate from components of the welding rod.  
Practice reasonable care to avoid repeated, prolonged skin contact.

Work Practices: Read label for instructions in use of product. If dust is encountered, do not blow dust off clothing or skin with compressed air. Do not eat or drink in the work area.

Storage: Store in closed containers in a cool, dry well ventilated area. Do not reuse container. Avoid container damage while storing.

#### Section 8 – Exposure Controls/ Personal Protection

Exposure limits – None established

Respiratory Protection: If particulates containing metal are encountered, then approved NIOSH/MSHA respirators with a HEPA filter are recommended.

Protective Gloves: Wear neoprene rubber gloves.

**Eye Protection:** Safety glasses with side shields or chemical goggles are required. Contact lenses should also not be worn if the product could come in contact with the eyes.

**Other Protective Wear:** For prolonged or repeated exposures to the skin, wear impervious, protective clothing including rubber safety shoes to avoid skin contact.

**General Protection:** Do not inhale metal dust or powder. Avoid contact with eyes and skin.

### Section 9 - Physical/Chemical Characteristics

**Appearance and Odor:** Solid in various forms, silver-colored metallic gloss, odorless

**Boiling Point:** N/D

**Flash Point:** N/A

**Flammable Limits in air % by volume:** N/D

**Auto-Ignition Temp:** N/D

**UEL:** N/D

**LEL:** N/D

**Density:** 8-9 gm/cm<sup>3</sup>

**Vapor Pressure @ 20°C:** N/D

**Vapor Density:** N/D

**Solubility in Water:** Insoluble

**Melting Point:** >1400°C (>2552°F)

**pH:** N/A

### Section 10 – Stability and Reactivity

**Stability:** Stable X Unstable

**Conditions to Avoid:** Grinding, crushing and melting may produce dust and fumes which may require control

**Incompatibility:** Avoid strong acids and strong oxidizing agents

**Hazardous Decomposition Products:** Oxides of chromium, cobalt, copper, iron, nickel, niobium and titanium

**Hazardous Polymerization:** May occur Will not occur X

### Section 11 – Toxicological Data

**Eye Irritation:** N/D

**Skin Irritation:** N/D

**Dermal Toxicity:** N/D

Oral Toxicity: N/D  
Inhalation Toxicity: N/D

Carcinogenicity:

NTP: Yes – Nickel, Chromium  
IARC: Yes – Nickel, Chromium  
NIOSH: Yes – Nickel, Chromium

#### Section 12 – Ecological Information

Ecological data is not available.

Mobility: Not established

Persistence and Degradability: Not established.

#### Section 13 – Disposal Considerations

Waste Disposal: All recovered material should be packaged, labeled, transported and disposed or reclaimed in conformance with Good Engineering Practices. Comply with all applicable governmental regulations. Avoid land filling. Reclaim where possible.

Product can be disposed of in a licensed facility.

#### Section 14 – Transport Information

USA DOT: Not designated as a hazardous material by the USA DOT

RID/ADR: Not regulated by RID/ADR

IMO: Not regulated by IMO

IATA: Not regulated by IATA

#### Section 15 – Regulatory Information

OSHA (Occupational Safety, and Health Administration)  
29 CFR 1910.1200 Hazardous Chemical: yes

SARA (Superfund Amendment and Reauthorization Act)

Section 311: Hazardous Chemical - yes

Immediate - yes

Delayed - yes

Fire - no

Sudden Release - no

Reactive - no

Section 313: Toxic Chemical – yes

Nickel (CAS# 7440-02-0): 50-70%

Copper (CAS# 7440-50-8): 5-10%

Chromium (CAS# 7440-47-3): 0.2-0.3%

TSCA (Toxic Substance Control Act)

All of the ingredients in this product are listed on the TSCA Inventory.

California Proposition 65

This product contains the following substance known to the State of California to cause cancer, birth defects, or other reproductive harm, at levels which would require a warning under the statute.

Nickel (CAS# 7440-02-0)

Cobalt (CAS# 7440-48-4)

Welding, thermal cutting and melting this product may produce hexavalent chromium compounds which are known to the State of California to cause cancer

Section 16 – Other Information

None

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