



**MATERIAL SAFETY DATA SHEET**

**1. SUBSTANCE/PREPARATION AND COMPANY IDENTIFICATION**

- 1.1 Chemical Nature, Sales Name, Use: Metal, Nitinol, Wire products including: Super Elastic, Thermal Activated, High Force, Open and Closed Coil Springs, including Molar Distalizing, and Separators.
- 1.2 Company Identification:  
 G&H Wire Company  
 2165 Earlywood Drive  
 Franklin, IN 46131  
 Telephone: 317-346-6655  
 Facsimile: 317-346-6663
- 1.3 Emergency Contact: Exposure to Nitinol occurs primarily from inhalation of dust or fumes. However, constituents of these alloys may cause effects directly upon the skin or eyes. Certain constituents may also be harmful if swallowed.

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Element	Weight %
Nickel . . . . .	54.5 to 57.0 (Reference)
Carbon . . . . .	< 0.050 (500 ppm maximum)
Cobalt . . . . .	< 0.050 (500 ppm maximum)
Copper . . . . .	< 0.010 (100 ppm maximum)
Chromium . . . . .	< 0.010 (100 ppm maximum)
Hydrogen . . . . .	< 0.005 (50 ppm maximum)
Iron . . . . .	< 0.050 (500 ppm maximum)
Niobium . . . . .	< 0.025 (250 ppm maximum)
Nitrogen plus Oxygen . . . . .	< 0.050 (500 ppm maximum)
Any Single Trace Element . . . . .	< 0.1
Total Trace Elements . . . . .	< 0.25
Titanium . . . . .	balance

**3. HAZARDS IDENTIFICATION**

- 3.1 Nitinol is generally not considered hazardous in the form shipped (solid bars, billets wire, etc.), however, if your process involves grinding, melting, welding, cutting, or any other process that causes a release of dust or fume, hazardous levels of dust or fume of the constituents of these alloys could be generated. The following is a list of potential health effects for all hazardous elements that are possibly contained in an of our alloys,

Please refer to section II titled "hazardous ingredients" for a list of those specific elements contained in this particular alloy.

#### Health Effects

Nickel: Fumes are respiratory irritants and may cause respiratory disease, skin contact can also cause an allergic skin rash, nickel and its compounds have been reported to cause cancer of the lungs and sinuses.

Exposure to Nickel occurs primarily from inhalation of dust or fumes. However, constituents of these alloys may cause effects directly upon the skin or eyes. Certain constituents may also be harmful if swallowed.

Titanium: No observed health hazards

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#### 4. FIRST-AID MEASURES

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- 4.1 Inhalation: Move person to fresh air until recovered. Consult a physician.
- 4.2 Skin Contact: Wash with water and mild detergent.
- 4.3 Eye Contact: Flush thoroughly with water, consult a physician.
- 4.4 Ingestion: While ingestion of large enough quantities to cause health effects is unlikely. Consult a physician if it occurs.

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#### 5. FIRE-FIGHTING MEASURES

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- 5.1 Suitable Extinguishing Media: sand
- 5.2 Unsuitable Extinguishing Media: N/A
- 5.3 Particular Hazards: See step 3
- 5.4 Protective Equipment for Fire-Fighters: N/A

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#### 6. ACCIDENTAL RELEASE MEASURES

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##### 6.1 Personal Precautions:

##### Ventilation:

If your process causes a release of dust or fume, use local and general exhaust ventilation to keep airborne concentrations of dust or fumes below the TLV.

##### Respiratory Protection:

If your process causes a release of dust or fume in excess of the permissible exposure limit, use approved respirators for protection against airborne dust or fumes should be worn. Respirators should be used in accordance with 29CFR 1910.134.

##### Protective Equipment:

Gloves and barrier creams may be necessary to prevent skin sensitization and dermatitis. If your process involves grinding or any other action that causes the release of dust or fumes, approved safety glasses or goggles should be worn.

##### 6.2 Environmental Precautions: No hazard

6.3 Cleaning Methods: N/A

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## 7. HANDLING AND STORAGE

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7.1 Handling: See step 6.1

7.2 Storage: N/A

7.3 Storage Conditions: N/A

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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Minimize contact as outlined in step 6.1

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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9.1 Form: Wire

Color: Metallic Grey

Odor: Odorless

9.2 Change of State: liquid

Melting Point/Range: 2500° F to 2700° F

Boiling Point: N/A

9.3 Flash Point: N/A

9.4 Ignition Point: N/A

9.5 Vapor Pressure (20°C): N/A

9.6 Density (20°C): 6.9 specific gravity

9.7 Solubility in: Water (20°C): insoluble  
Organic Solvent (20°C): insoluble

9.8 PH-Value (at 10g/1H<sub>2</sub>O): N/A

9.10 Viscosity (20°C): solid

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## 10. STABILITY AND REACTIVITY

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10.1 Thermal Decomposition: None

10.2 Conditions to Avoid: Avoid strong acids

10.3 Materials to Avoid: Avoid strong acids

10.4 Hazardous Decomposition Products: None

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## 11. TOXICOLOGICAL INFORMATION

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11.1 Oral Toxicity: Reference Step 3 and Step 6.1

11.2 Inhalation: Reference Step 3 and Step 6.1

11.3 Skin Irritation: Reference Step 3 and Step 6.1

11.4 Sensitization: Reference Step 3 and Step 6.1

11.5 Eye Irritation: Reference Step 3 and Step 6.1

11.6 Further Details: None

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## 12. ECOLOGICAL INFORMATION

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12.1 Acute Toxicity in Fish (LC-50/48h): not defined

12.2 Bacteria Toxicity (EC-0): not defined

- 12.3 Biodegradability: not defined
- 12.4 Further Details:

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### 13. DISPOSAL CONSIDERATIONS

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- 13.1 Product: N/A
- 13.2 Packaging: N/A
- 13.3 Waste Disposal Code: N/A

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### 14. TRANSPORT INFORMATION

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- 14.1 Overland Transport ADR/RID/GGVS/GGVE: N/A
- 14.2 Sea Transport GGVSEA/IMDG-Code: N/A
- 14.3 Air Transport ICAO/IATA-DGR: N/A
- 14.4 Inland Waterway Transport ADNR: N/A
- 14.5 Further Details: Product is not considered dangerous for transport

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### 15. REGULATORY INFORMATION

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Preparation as defined by the (German) Chemicals Act (dated 4/03/1990).

- 15.1 Labeling: N/A
  - Product Contains:
  - Danger Symbol:
  - R-Sentences R36/37/38:
  - S-Sentences S26:
  - S-Sentences S28:

- 15.2 National Regulation:
  - VbF:
  - TA-Air:
  - Water Pollution 1:

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### 16. OTHER INFORMATION

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- 16.1 The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. Therefore, it should not be construed as guaranteeing specific properties.
- 16.2 Revision Date: April 17, 2017