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## MATERIAL SAFETY DATA SHEET DIRECTIVE 91/155/EEC

### 1. SUBSTANCE/PREPARATION AND COMPANY IDENTIFICATION

- 1.1 Chemical Nature, Sales Name, Use: Metal, 316L stainless steel attachments including crimpable and slide on hooks(surgical and arch hooks) and rectangular crimpable stops, , Straight-Line buccal tubes, lingual sheaths and Begg Brackets
- 1.2 Company Identification:
- G&H Wire Company  
 P.O. Box 248  
 Greenwood, Indiana 46142  
 Telephone: 317-346-6655  
 Facsimile: 317-346-6663
- 1.3 Emergency Contact: Exposure to specialty steel alloys 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

Ingredients	%	PEL/TUV 8 HOUR TWA UNLESS OTHERWISE NOTED
IRON*	Bal	PEL 10.0 MG/M3 TLV 5.0 MG/M3
CHROMIUM	16.00/18.00 %	PEL 1.0 MG/M3 TLV 0.5 MG/M3
NICKEL	10.00/14.00 %	PEL 1.0 MG/M3 TLV 1.0 MG/M3
MANGANESE	2.00 % max	PEL 5.0 MG/M3 TLV 5.0 MG/M3
MOLYBDENUM	2.00/3.00 %	PEL 0.1 MG/M3 TLV 0.1 MG/M3

\* THESE SUBSTANCES ARE REGULATED IN THEIR OXIDE FORM

\* Other trace elements can be present when their percentage is under 1.0 %

### 3. HAZARDS IDENTIFICATION

- 3.1 Specialty steel alloys are 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

Iron oxide: Has caused irritation of the eyes, nose, and skin of excremental animals, It may have the same effect on humans.

Chromium: Ferrochrome alloys have been associated with lung changes in workers exposed to these alloys.

Cobalt: Fume or dust causes irritation of the nose and throat and may cause an allergic skin rash. Also has been reported to cause respiratory disease with symptoms ranging from cough and shortness of breath to permanent disability and death. The symptoms frequently go away when exposure has stopped, but sometimes the symptoms progress after exposure has ceased.

Manganese: Inhalation of manganese fume may cause “metal fume fever” with symptoms of chills, fever, nausea, cough, dry throat, weakness, muscle aches, and a sweet or metallic taste in the mouth. Prolonged or repeated exposure may affect the nervous system, with difficulty in walking and balancing, weakness or cramps in the legs. Hoarseness of the voice, trouble with memory or judgment, unstable emotions or unusual irritability. The respiratory system may also be affected by a pneumonia like illness with symptoms of coughing, fever, chills, body ache, chest pain and other common signs of pneumonia.

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.

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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: N/A
- 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: Solid  
Odor: Odorless

9.2 Change of State: liquid  
Melting Point/Range: 2100 F to 2300° F  
Boiling Point: HIGH

9.3 Flash Point: N/A

9.4 Ignition Point: N/A

- 9.5 Vapor Pressure (20°C): NIL
- 9.6 Density (0.287): 7.95 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: None
- 10.3 Materials to Avoid: None
- 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.