SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: High Temperature Steel Alloys

Note: High Temperature Steel alloys in their usual solid form and under normal conditions do not present an inhalation, ingestion, or contact health hazard or fire or explosion hazard. Operations such as welding, sawing, brazing, burning, grinding, cutting, abrasive blasting, heat treating, pickling, machining, or similar operations may generate dust, fumes, chips, or machine turnings that may create a health or fire or explosion hazard. This MSDS does not apply to High Temperature Steel alloys in powdered forms.

Manufacturer’s Name: Wyman-Gordon Company
244 Worcester Street
North Grafton, MA 01536-8001

Emergency Phone Number: (508) 839-4441
Telephone Number for Information (508) 839-4441

SECTION 2: COMPOSITION AND INFORMATION ON INGREDIENTS: The chemical composition of High Temperature Steel alloys will vary by the alloy grade. Approximate weight percent (WT. %) ranges are shown below. Refer to product specification for exact composition.

Contains the following alloys:

| 13-8 | 188 | 450 | 693 |
| 25-35 | 200 | 475 | 700 |
| 25-6HN | 201 | 500 | 702 |
| 27-7MO | 205 | 520 | 706 |
| 28 | 212 | 600 | 713 |
| 36 | 213 | 600SP | 718 |
| 42 | 222 | 600T | 718-DA |
| 45 | 229 | 601 | 718-HS |
| 48 | 230 | 603XL | 718-OP |
| 51 | 230 B | 604 | 718Plus |
| 55 | 240 | 606 | 718SPF |
| 70 | 243 | 613 | 720 |
| 75 | 250 | 617 | 721 |
| 77 | 263 | 618 | 722 |
| 80 A | 270 | 622 | 725 |
| 81 | 300 | 625 | 725HS |
| 86 | 365 | 625LCF | 740 |
| 90 | 400 | 671 | 751 |
| 101 | 401 | 672 | 783 |
| 102 | 404 | 686 | 800 |
| 105 | 413 | 690 | 800H |
| 108 | 416 | 690T | 800M |
| 115 | 418 | 691 | 801 |
MATERIAL SAFETY DATA SHEET – HIGH TEMPERATURE STEEL ALLOYS

802  C-276  Inco 330  PWA 1056
803  CH 98  Inco 330HC  PWA 1467
805  Cupro 107  Inco 625  PWA 1471
825  D301  Inco 690  PWA 1475
832  D979  Inco 738  PWA SP 1104
840  DS  Inco 800HT  R195
864  Duplicast 6 EX  JBK  R-405
865  Duraloy Mo-Re 40 Ma  K  R41
890  Elgiloy  K-500  Rene 104
901  EP 741 NP  LSHR Alloy  Rene 220
902  Ferry Alloy  M-252  Rene 41
903  FH 001-008  MA 6000  Rene 77
904  G  MA 754  Rene 80
907  G-3  MA 758  Rene 88
908  GTD 222  MA 956  Rene 8847
909  Hast. B  MA 957  Rene 8855
925  Hast. C  Mar 247  Rene 95
945  Hast. X  MARLOCK C1650  RR 1000
1075  HB-2  ME3  RR 1001
1112/1113  HER 1  Merl 76  RR Q1
1176  HER 2  Modified Waspaloy  RR Q2
9114  HER 3  Mondaloy 100  RR T1
9119  HER 4  Monel 400  RR T2
A286  HER 5  N-90  RR T3
AF 10 F  H-N  NI 2  RR T4
AF 115  H-W  NI 3  T + Alloy
AF 21 DA  HX  NI 4  TD
All corr  Hymu 80  Nickel Based Alloy  TSK7
Alloy 10  In 100  Ni-Fe 258  U 500
Alloy 10 EM  IN 671  NiMo  U 700
Alloy 35  In 713  Nimonic 61  U 718
Alloy B  In 713 LC  Nitinol  U 720
Alloy C  In 792  NO 6230  W-722
Alloy F  IN 903  P 635  Waspaloy
Alloy S  Inca 600  PE11  WPCO1
Astroloy  Inco 020  PE16  WPCO2
BR 412  Inco 050  PK31  X40
C22  Inco 22  PK33  X-750
C-263  Inco 25-6Mo  PK37

<table>
<thead>
<tr>
<th>Nickel (Ni)</th>
<th>Chromium (Cr)</th>
<th>Cobalt (Co)</th>
<th>Iron (Fe)</th>
<th>Molybdenum (Mo)</th>
<th>Tantalum (Ta)</th>
<th>Copper (Cu)</th>
<th>Titanium (Ti)</th>
<th>Tungsten (W)</th>
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<td>14-100</td>
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<th>Manganese (Mn)</th>
<th>Tin (Sn)</th>
<th>Zirconium (Zr)</th>
<th>Columbiun/ Niobium (Nb)</th>
<th>Silicon (Si)</th>
<th>Phosphorus (P)</th>
<th>Carbon (C)</th>
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## OCCUPATIONAL EXPOSURE LIMITS

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<td>Nickel (as Ni)</td>
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<td>IARC Group 2</td>
<td>1.0 mg/m³</td>
<td>1.5 mg/m³</td>
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<tr>
<td>Chromium (as Cr metal) (as Cr III) (as Cr VI)</td>
<td>7440-47-3</td>
<td>IARC Class 3, IARC Class 3, IARC Class 1, Yes NTP</td>
<td>1.0 mg/m³, 0.5 mg/m³, 5.0 µg/m³ Action Level = 2.5 µg/m³</td>
<td>0.5 mg/m³, 0.5 mg/m³, 0.01 mg/m³ (Insoluble), 0.05 mg/m³ Water Soluble</td>
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<tr>
<td>Cobalt (as Co)</td>
<td>7440-48-4</td>
<td>IARC Group 2</td>
<td>0.1 mg/m³ (Metal, dust &amp; fume)</td>
<td>0.02 mg/m³ Cobalt and inorganic compounds as Co</td>
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<td>Iron (as Fe) (as Fe₂O₃)</td>
<td>7439-89-6, 1309-37-1</td>
<td>None Found</td>
<td>PEL Vacated 1989 Oxide Fume 10 mg/m³</td>
<td>Dust &amp; Fume 5 mg/m³</td>
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<tr>
<td>Molybdenum (as Mo)</td>
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<td>None Found</td>
<td>Total Dust 15 mg/m³ (Insoluble)</td>
<td>Insoluble 10 mg/m³</td>
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<td>Tantalum (as Ta)</td>
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<td>5 mg/m³</td>
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<td>Copper (as Cu)</td>
<td>7440-50-8</td>
<td>None Found</td>
<td>Dust &amp; Mist 1.0 mg/m³, Fume 0.1 mg/m³</td>
<td>Dust &amp; Mist 1.0 mg/m³, Fume 0.2 mg/m³</td>
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<td>Titanium (as Ti) (as TiO₂)</td>
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<td>None Listed Total Dust 15 mg/m³</td>
<td>None Listed 10 mg/m³</td>
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<td>Tungsten (as W)</td>
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<td>None Found</td>
<td>None Listed Respirable Dust 5 mg/m³</td>
<td>Metal Dust 10 mg/m³, Welding Fume 5 mg/m³</td>
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<tr>
<td>Aluminum (as Al)</td>
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<td>None Found</td>
<td>Total Dust 15 mg/m³ Respirable Dust 5 mg/m³</td>
<td>Metal Dust 10 mg/m³</td>
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<tr>
<td>Vanadium (as V) (as V₂O₅)</td>
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<td>None Found</td>
<td>None Listed Respirable Dust 0.5 mg/m³ (Ceiling) Fume 0.1 mg/m³ (Ceiling)</td>
<td>None Listed Fume &amp; Dust 0.05 mg/m³</td>
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<tr>
<td>Manganese (as Mn)</td>
<td>7439-96-5</td>
<td>RTECS Contains Tumorigenic and/or carcinogenic and/or neoplastic data for components in this product</td>
<td>Fume 5.0 mg/m³ (Ceiling)</td>
<td>0.2 mg/m³ Manganese and inorganic compounds as Mn</td>
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<td>Tin</td>
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<td>2 mg/m³ (Inorganic except oxides)</td>
<td>2 mg/m³ Metal oxide &amp; inorganic compounds except tin hydride</td>
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<tr>
<td>Zirconium</td>
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<td>5 mg/m³, 10 mg/m³ STEL</td>
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<td>Niobium (Columbium)</td>
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<td>None Listed</td>
<td>None</td>
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<tr>
<td>Silicon</td>
<td>7440-21-03</td>
<td>None Found</td>
<td>15 mg/m³ Total Dust, 5 mg/m³ Respirable</td>
<td>Dust 10 mg/m³, Respirable 5 mg/m³</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>7723-14-0</td>
<td>None Found</td>
<td>0.1 mg/m³</td>
<td>0.1 mg/m³</td>
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<tr>
<td>Carbon</td>
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<td>3.5 mg/m³</td>
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<td>Rhenium</td>
<td>7440-15-5</td>
<td>None Found</td>
<td>None Listed</td>
<td>None Listed</td>
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<td>Yttrium Oxide (as Y₂O₃)</td>
<td>1314-36-9</td>
<td>None Found</td>
<td>1 mg/m³ (2006)</td>
<td>1 mg/m³ (2006)</td>
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<tr>
<td>Hafnium</td>
<td>7440-58-6</td>
<td>None Found</td>
<td>0.5 mg/m³</td>
<td>0.5 mg/m³ Hafnium and compounds, as Hf</td>
</tr>
</tbody>
</table>
SECTION 3: HAZARDS IDENTIFICATION (See Note in Section 1)

**Carcinogenicity:** IARC, NTP, and OSHA do not list High Temperature Steel alloys as a carcinogen. Nickel, hexavalent chromium, and cobalt metal contained in the High Temperature Steel alloys is classified as possibly carcinogenic by IARC. Chromium metal contained in the High Temperature Steel alloys is classified as carcinogenic by NTP.

**Routes of Entry/Exposure:** High Temperature Steel alloys in their usual solid form and under normal conditions do not present an inhalation, ingestion, or contact health hazard. Inhalation may occur if dust or fumes are generated. Skin absorption is not likely to occur, but irritation may occur when in contact with the skin. Ingestion in not likely to occur.

**Target Organs:** Lungs, nasal cavity, kidney, liver, blood, central nervous system, eyes and skin.

**Short-Term (Acute) Effects of Overexposure:**

- **Eyes:** Dusts or fumes can cause irritation with burning and tearing.

- **Inhalation:** Dusts or fumes can cause irritation and dryness of the nose and throat, coughing, bronchitis, pneumonia, chest pain, and pulmonary edema. Flu-like symptoms such as fever and chills may occur a few hours after excessive exposure.

- **Skin:** Dusts or fumes can cause irritation with itching. Dermatitis may occur.

- **Ingestion:** Metallic taste, weight loss, and abdominal pain may occur.

**Long-Term (Chronic) Effects of Overexposure:** No significant adverse health effects found in literature search specific to High Temperature Steel alloys. Chronic exposure to certain metals in High Temperature Steel alloys may cause non-progressive pulmonary fibrosis or chronic bronchitis when overexposed to elevated dust or fume concentrations. Other respiratory symptoms include shortness of breath, cough, chest tightness, and wheezing without impairment. Central nervous system effects, kidney, and liver damage may occur from excessive exposure. Dermatitis and allergic sensitization have been reported. Respiratory sensitization including asthma have been caused by overexposure to cobalt.

**Conditions Aggravated By Exposure:** Persons with sensitive skin or allergies to metals may be aggravated by exposure. Persons with asthma or other respiratory problems may also be aggravated by exposure to dusts or fumes.

Also See TOXICOLOGICAL INFORMATION (Section 11)

SECTION 4: FIRST AID MEASURES

- **Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids apart to ensure flushing of entire eye surface. Seek medical attention after flushing eyes with water.
**Inhalation:** Get person out of contaminated area to fresh air. If breathing has stopped, give artificial respiration and seek medical attention immediately.

**Skin:** Wash contaminated areas with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and wash before reuse. Seek medical attention if any irritation or redness occurs.

**Ingestion:** Seek medical attention immediately. Never give anything by mouth to an unconscious person.

Get appropriate in-plant, paramedic, or community medical support after first aid is given.

**Note to Physicians:** Treat Symptomatically.

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**SECTION 5: FIRE FIGHTING MEASURES (See Note in Section 1)**

**Autoignition Temperature:** Autoignition will not occur for solid metal alloy.

**Flammable Limits:** Not tested

**Extinguishing Media:** Use appropriate extinguisher for surrounding materials when solid alloy is involved. Use Class D fire extinguishers for fires involving powders or dust.

**Special Fire Fighting Procedures:** Wear self-contained breathing apparatus with full facepiece operated in positive pressure mode and full turn-out gear.

**Unusual Fire and Explosion Hazards:** No fire or explosion hazard with solid metal alloys. A severe fire hazard may exist when fine turnings or chips are produced and during disposal of scrap containing chips or fines. Use of water on finely divided alloy may cause explosive hydrogen gas and heat to be evolved. Toxic metal fumes of nickel, chromium, cobalt, aluminum, vanadium, iron, copper, molybdenum, tantalum, manganese, titanium, and tungsten may be emitted.

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**SECTION 6: ACCIDENTAL RELEASE MEASURES (See Note in Section 1)**

Should spills of dust occur, use vacuum cleaner rated to clean up explosive dust and equipped with High Efficiency Particulate (HEPA) filters to clean minor spills. Do not sweep or sue compressed air to clean up spills. Dispose of spilled material in accordance with local, state, and federal regulations.
SECTION 7: HANDLING AND STORAGE

Handling Precautions: Avoid generation of dust. Use good housekeeping practices if dusts are formed to prevent accumulation. Use appropriate personal protection. Contact qualified safety and health specialists to review usage and possible exposures.

Storage Requirements: Store in cool, dry, and well ventilated area away from incompatibles. Protect from physical damage and contact with water.

Regulatory Requirements: Follow OSHA, EPA, and DOT requirements.

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION (See Note in Section 1)

Air Monitoring: Air Monitoring should be performed by a professional industrial hygienist to determine the level of exposure. Results from monitoring will help to determine the appropriate personal protective clothing and equipment required.

Respiratory Protection: Air monitoring will help determine if and what level of respiratory protection is required. A respiratory protection program must be implemented if respirators are required (29 CFR 1910.134). Half face air purifying with high efficiency particulate (HEPA) filters can be used when airborne concentration don not exceed ten (10) times the Equivalent Exposure for PELs or TLVs.

Protective Clothing: Normal work clothes may be worn when airborne exposures are within allowable limits and contact with dust is not likely to occur. Use a qualified safety and health specialists to perform a hazard assessment (29 CFR 1910.133).

Engineering Controls: Local exhaust ventilation should be used whenever feasible to capture dust or fumes before reaching workers’ breathing zone. Local exhaust design should follow ACGIH Ventilation Manual guidelines. Use vacuum cleaners rated to clean up explosive dust and equipped with High Efficiency Particulate (HEPA) filters to clean work surfaces and protective clothing before removal. Use non-sparking metal equipment.

Work Practices: Food and beverages should not be consumed, tobacco products should not be present or used, and cosmetics should not be applied in areas where dust is present. Workers should wash their hands and face prior to eating, drinking, smoking, or applying cosmetics and at the end of the work shift. Adequate washing facilities should be available and used by workers. Keep work areas free of waste.
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: High Temperature Steel alloys are solid at room temperatures with a metallic gray color. No odor.

Melting Point: NT for alloy (nickel – 2650°F)  
Specific Gravity (H2O = 1): 7-9  
Vapor Pressure: NA  
Vapor Density: NA  
Solubility in Water: Insoluble  
Percent Volatile: Nil  
pH: NA

SECTION 10: STABILITY AND REACTIVITY (See Note in Section 1)

Stability: High Temperature Steel alloys are stable at room temperature under normal storage and handling conditions.

Conditions Contributing to Instability: Avoid creating dusty airborne conditions. Violent explosion can occur when water comes in contact with powdered or molten metal.

Incompatibility: Avoid contact with acids or fluorine. Reacts with hydrazine, hydrazoic acid, performic acid, and potassium perchlorate (NFPA 491M). Powdered metal reacts violently with ammonium nitrate, fluorine, sulfur, and selenium when heated (NFPA 491M).

Hazardous Decomposition Products: Toxic metal oxide fumes.

Conditions Contributing to Hazard Polymerization: None Known

SECTION 11: TOXICOLOGICAL INFORMATION (See Note in Section 1)

Eye Effects: No known human testing.

Skin Effects: May cause contact dermatitis in sensitized individuals (Ni)

Acute Effects: Rat, oral, LDLo: 5 mg/kg (Ni); Rat, unreported, LD50: 27500 µg/kg (Cr); Rat, oral, LD50: 6171 mg/kg (Co)

Chronic Effects: Rat, inhalation, TCLo: 100 µg/m³ /24 hrs/ 17 weeks (Ni); Rat, inhalation, TCLo: 200 mg/m³ /24 hrs/ 17 weeks (Co)

Carcinogenicity: Human Limited Evidence, IARC Group 2B (Ni); Known to be carcinogenic by NTP (as Cr).

Teratogenicity: Rat, oral, TDLo: 158 mg/kg (Ni)

Mutagenicity: Hamster, morphological transformation: 400 mg/L (Ni)

Tumorigenic: Rat, subcutaneous, TDLo: 3000 mg/kg/6 weeks (Ni); Rat, intravenous, TDLo: 2160 µg/kg/6 weeks (Cr)

See NIOSH, RTECS QR5950000 (nickel), GB4200000 (chromium), GF8750000 (cobalt), NO7400000 (iron oxide), QA4680000 (molybdenum), WW5505000 (tantalum), GL5325000 (copper), XR2275000 (titanium dioxide), YO7175000 (tungsten), BD0330000 (aluminum), YW1355000 (vanadium), and O09275000 (manganese) for additional toxicity data.
SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: There is little tendency for bioaccumulation along food chain for alloy. Alloy may persist in the environment for long periods based upon the corrosive resistance, insolubility in salt water, and non-biodegradable properties.

Environmental Degradation: In fresh and salt water, High Temperature Steel alloys will eventually form metal oxides and precipitate in sediments.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of spilled material in accordance with local, state, and federal regulations. Solid waste generated from product processing should be classified by a competent environmental professional and disposed, processed, or recycled in accordance with federal, state, and local regulations.

SECTION 14: TRANSPORTATION INFORMATION

DOT Transportation Data: High Temperature Steel alloys are not listed in 49 CFR 172.101

SECTION 15: REGULATORY INFORMATION

The OSHA PELs are included in Section 2. The High Temperature Steel alloys contain toxic chemicals subject to the reporting requirements of SARA Title III Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). This law requires certain manufacturers to report annual emissions of specific toxic chemical and chemical categories. Aluminum as a fume or dust, vanadium, molybdenum trioxide, and chromium are listed as Section 313 toxic chemicals. The High Temperature Steel alloys may also require notification under SARA Title III Section 311/312 if inventories exceed the Threshold Planning Quantity. Your State Emergency Planning Committee should be contacted to determine if the Threshold Planning Quantity reporting requirements for your state are lower than EPA reporting requirements. The table below represents current EPA requirements.

<table>
<thead>
<tr>
<th>CAS Numbers</th>
<th>Aluminum (Al) (as Al)</th>
<th>Vanadium (V) (as V)</th>
<th>Nickel (Ni) (as Ni)</th>
<th>Copper (Cu) (as Cu)</th>
<th>Cobalt (Co) (as Co)</th>
<th>Manganese (Mn) (as Mn)</th>
<th>Molybdenum (Mo) (as Mo)</th>
<th>Chromium (Cr) (as Cr)</th>
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<tr>
<td>SARA 313 Y (only as fume or dust)</td>
<td>Y (as fume or dust)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y (only as MoO3)</td>
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<td>SARA 302 EHS TPO (lbs)</td>
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<td>100 *</td>
<td>5,000 *</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>5,000 * (as Cr)</td>
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## MATERIAL SAFETY DATA SHEET – HIGH TEMPERATURE STEEL ALLOYS

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<th>Tungsten (W)</th>
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<td>7440-33-7 (as W)</td>
<td>7440-32-6 (as Ti)</td>
<td>7440-31-5 (as Sn)</td>
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<th>Phosphorus (P)</th>
<th>Carbon (C)</th>
<th>Rhenium (Rh)</th>
<th>Yttrium Oxide (Y₂O₃)</th>
<th>Hafnium (Hf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS Numbers</td>
<td>7723-14-0 (as P)</td>
<td>1333-86-4 (as C)</td>
<td>7440-03-1 (as Rh)</td>
<td>1314-36-9 (as Y₂O₃)</td>
<td>7440-58-6 (as Hf)</td>
</tr>
<tr>
<td>SARA 313</td>
<td>Y</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SARA 302</td>
<td>100</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>EHS TPQ (lbs)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>RCRA Hazardous Waste No.</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>RCRA Hazardous Waste Code</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>CERCLA RQ (lbs)</td>
<td>1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

* = CERCLA reporting required only if diameter of particles released is less than 100 micrometers.

**SARA Categories:** Immediate (acute) health hazard and Delayed (Chronic) health hazard. Reactive hazard if in molten state.

SECTION 16: OTHER INFORMATION

Abbreviations:

PEL = Permissible Exposure Limit
STEL = Short Term Exposure Limit
ft³ = cubic foot
m³ = cubic meter
NT = Not Tested
C = Ceiling
CAS = Chemical Abstract Service
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act (40 CFR 302)
TPQ = Threshold Planning Quantity
H = Acute Hazardous Waste
E = Toxicity Characteristic Waste
LD50 = Lethal Dose for 50% of species tested
LDLo = Lowest published lethal dose
IARC = International Agency for Research on Cancer
Group 1 - Human Sufficient Evidence
Group 2B - Human Limited Evidence
Group 3 - Human Inadequate Evidence
BEI = Biological Exposure Index
TLV = Threshold Limit Value
oz = ounce
mg = milligram (1/1,000 of a gram) (454 grams in one pound)
NA = Not Applicable
Nil = Negligible
TWA = Time Weighted Average
RCRA = Resource Conservation and Recovery Act (40 CFR 261)
SARA = Superfund Amendments and Reauthorization Act (40 CFR 372)
RQ = Reportable Quantities
Y = Yes
I = Ignitable Waste
R = High Risk Potential (HRP)
TD50 = Toxic Dose for 50% of species tested
TDLo = Lowest Published Toxic Dose
NTP = National Toxicology Program
NFPA = National Fire Protection Association
NIOSH = National Institute of Occupational Safety and Health
RTECS = Registry of Toxic Effects of Chemical Substances

References:

The information contained on this Material Safety Data Sheet (MSDS) is believed to be correct as it was obtained from sources which we believe are reliable, including:

OSHA Regulations, Title 29 Part 1910
BEI’s, 1991
ACGIH Documentation of TLV’s and BEI’s, 1991, 2007
NIOSH RTECS
NIOSH Criteria Documents Plus CD-ROM, 12/96
NIOSHHTIC
Patty’s Industrial Hygiene and Toxicology, CD-ROM
Handbook of Environmental Data on Organic Chemicals
Hazardous Materials Handbook
IARC 7th Annual Report on Carcinogens
Service
American Industrial Hygiene Association Journal
Toxicology, The Basic Science of Poisons, McGraw-Hill

American Conference of Government Industrial Hygienists TLV and
NIOSH Occupational Diseases—A Guide to Their Recognition
NIOSH Pocket Guide 4/99
NIOSH Health Hazard Evaluations, CD-ROM 7/97
SAX’s Dangerous Properties of Industrial Materials, CD-ROM
Hawley’s Condensed Chemical Dictionary, CD-ROM
EPA Regulations, Title 40, Parts 261, 304, 368, 372
Toxicology Profiles, Agency for Toxic Substances and Disease Registry, PHS
NTP Annual Report on Carcinogens, National Technical Information

Chemical Protective Clothing Performance Index Book, J. Wiley and Sons
Industrial Toxicology, Safety, & Health Applications in the Workplace, Van Nostrand
Occupational Health Guidelines for Chemical Hazards, NIOSH/OSHA

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