SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
- Trade name: SG 650 / SG 660 / SG 670 / SG 680 / SG 683
- Other means of identification: Nickel Aluminum wire family

1.2 Relevant identified uses of the substance or mixture and uses advised against
- Application of the substance / the mixture:
  - Thermal spray wire
  - Dimensional restoration
  - Bond coat
- Uses advised against: No further relevant information available.

1.3 Details of the supplier of the Safety Data Sheet
- Manufacturer/Supplier:
  - Saint-Gobain
  - One New Bond Street
  - Worcester, MA 01615-0137
  - USA
  - 508-795-5000
  - Ceramicmaterials@saint-gobain.com

1.4 Emergency telephone number:
- ChemTel Inc.
  - (800)255-3924 (North America)
  - +1 (813)248-0585 (International)
  - 1-300-954-583 (Australia)
  - 0-800-591-6042 (Brazil)
  - 400-120-0751 (China)
  - 000-800-100-4086 (India)
  - 01-800-099-0731 (Mexico)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
- Classification according to Regulation (EC) No 1272/2008
  - Classifications listed are applicable to the OSHA GHS Hazard Communication Standard (29CFR1910.1200).
  - Skin Sens. 1 H317 May cause an allergic skin reaction.

2.2 Label elements
- Labelling according to Regulation (EC) No 1272/2008
  - The product is classified and labelled according to the Globally Harmonized System within the United States.
  - The product is classified and labelled according to the CLP regulation.
- Hazard pictograms

(Cont'd. on page 2)
Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS

Revision: 28 June 2019

Trade name: SG 650 / SG 660 / SG 670 / SG 680 / SG 683

(Conf'd. from page 1)

GHS07

- **Signal word** Warning
- **Hazard-determining components of labelling:**
  - Nickel
- **Hazard statements**
  - H317 May cause an allergic skin reaction.
- **Precautionary statements**
  - P261 Avoid breathing fume.
  - P272 Contaminated work clothing should not be allowed out of the workplace.
  - P280 Wear protective gloves.
  - P302+P352 IF ON SKIN: Wash with plenty of soap and water.
  - P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
  - P362+P364 Take off contaminated clothing and wash it before reuse.
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

### 2.3 Other hazards

Heat rays (infrared radiation) from flame or hot metal can injure eyes. Overexposure to metal fumes and gases can be hazardous. Read and understand the manufacturer’s instructions, Safety Data Sheet and the precautionary labels before using this product.

- **Results of PBT and vPvB assessment**
  - PBT: Not applicable.
  - vPvB: Not applicable.

---

**SECTION 3: Composition/information on ingredients**

### 3.2 Mixtures

- **Components:**

<table>
<thead>
<tr>
<th>CAS:</th>
<th>EINECS:</th>
<th>Index number:</th>
<th>Reg.nr.:</th>
<th>Substance</th>
<th>Exposure limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-02-0</td>
<td>231-111-4</td>
<td>028-002-00-7</td>
<td>01-2119438727-29-XXXX</td>
<td>Nickel</td>
<td>47-95%</td>
</tr>
<tr>
<td>7440-47-3</td>
<td>231-157-5</td>
<td>01-2119485652-31-XXXX</td>
<td>Chromium substance with a Community workplace exposure limit</td>
<td>0-43%</td>
<td></td>
</tr>
<tr>
<td>7429-90-5</td>
<td>231-072-3</td>
<td>01-2119529243-45-XXXX</td>
<td>Aluminum substance with a Community workplace exposure limit</td>
<td>0-20%</td>
<td></td>
</tr>
<tr>
<td>7439-98-7</td>
<td>231-107-2</td>
<td>01-2119472304-43-XXXX</td>
<td>Molybdenum substance with a Community workplace exposure limit</td>
<td>0-6%</td>
<td></td>
</tr>
<tr>
<td>7440-32-6</td>
<td>231-142-3</td>
<td>01-2119484878-14-XXXX</td>
<td>Titanium</td>
<td>0-1%</td>
<td></td>
</tr>
</tbody>
</table>

(Cont'd. on page 3)
SECTION 4: First aid measures

4.1 Description of first aid measures

After inhalation:
Supply fresh air; consult doctor in case of complaints.
Provide oxygen treatment if affected person has difficulty breathing.

After skin contact:
In case of minor burns, flush with cool water.
Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.

After eye contact:
Remove contact lenses if worn, if possible.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

After swallowing:
Unlikely route of exposure.
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; call for medical help immediately.

4.2 Most important symptoms and effects, both acute and delayed

Thermal burns.
Allergic reactions
Short-term (acute) overexposure to metal fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Long-term (chronic) overexposure to metal fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

4.3 Indication of any immediate medical attention and special treatment needed

Contains Nickel. May produce an allergic reaction.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents: For metal fires: Use specific agents only.

For safety reasons unsuitable extinguishing agents: For metal fires: Use specific agents only.

5.2 Special hazards arising from the substance or mixture

Formation of toxic gases is possible during heating or in case of fire.
Welding arc and sparks can ignite combustibles and flammable products.

5.3 Advice for firefighters

Protective equipment:
Wear self-contained respiratory protective device.
Wear fully protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

(Cont'd. on page 4)
SECTION 7: Handling and storage

· 7.1 Precautions for safe handling
   Use only in well ventilated areas.
   Prevent formation of dust.

· 7.2 Conditions for safe storage, including any incompatibilities
   · Requirements to be met by storerooms and receptacles:
     Storage area should be dry and well-ventilated.
   · Information about storage in one common storage facility: Store away from foodstuffs.

· 7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

· 8.1 Control parameters

| Ingredients with limit values that require monitoring at the workplace: |
|-------------------------|------------------|
|                        |                  |
| 7440-02-0 Nickel       |                  |
| EL (Canada)            | Long-term value: 0,05 mg/m³ |
|                        | ACGIH A1, IARC 2B |
| EV (Canada)            | Long-term value: 1 mg/m³ |
|                        | Inhalable fraction |
| WEL (Great Britain)    | Long-term value: 0,5 mg/m³ |
|                        | as Ni; Sk; Carc |
| OEL (Ireland)          | Long-term value: 0,5 mg/m³ |
|                        | Sens |
| PEL (USA)              | Long-term value: 1 mg/m³ |
| REL (USA)              | Long-term value: 0,015 mg/m³ |
|                        | as Ni; See Pocket Guide App. A |
| TLV (USA)              | Long-term value: 1,5* mg/m³ |
|                        | elemental, *inhalable fraction |
| 7440-47-3 Chromium     |                  |
| IOELV (EU)             | Long-term value: 2 mg/m³ |
|                        | as Cr |

(Cont’d. on page 5)
### Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS

Revision: 28 June 2019

<table>
<thead>
<tr>
<th>Trade name: SG 650 / SG 660 / SG 670 / SG 680 / SG 683</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EL (Canada)</strong></td>
</tr>
<tr>
<td><strong>EV (Canada)</strong></td>
</tr>
<tr>
<td><strong>WEL (Great Britain)</strong></td>
</tr>
<tr>
<td><strong>OEL (Ireland)</strong></td>
</tr>
<tr>
<td><strong>PEL (USA)</strong></td>
</tr>
<tr>
<td><strong>REL (USA)</strong></td>
</tr>
<tr>
<td><strong>TLV (USA)</strong></td>
</tr>
</tbody>
</table>

#### 7429-90-5 Aluminum

| **EL (Canada)** | Long-term value: 1,0 mg/m³ respirable, as Al |
| **EV (Canada)** | Long-term value: 5 mg/m³ aluminium-containing (as aluminium) |
| **WEL (Great Britain)** | Long-term value: 10* 4** mg/m³ *
| **OEL (Ireland)** | Long-term value: 1* mg/m³ *
| **PEL (USA)** | Long-term value: 15*; 5** mg/m³ *
| **REL (USA)** | Long-term value: 10* 5** mg/m³ as Al
| **TLV (USA)** | Long-term value: 1* mg/m³ as Al; as respirable fraction |

#### 7439-98-7 Molybdenum

| **EL (Canada)** | Long-term value: 3* 10** mg/m³ as Mo; *respirable **inhalable |
| **EV (Canada)** | Long-term value: 10* 3** 0,5*** mg/m³ metal,insol.compd.;*inh;**resp;sol.compd.;***resp |
| **OEL (Ireland)** | Long-term value: 3* mg/m³ as Mo, * respirable |
| **PEL (USA)** | Long-term value: 15* mg/m³ |
| **TLV (USA)** | Long-term value: 10* 3** mg/m³ as Mo; *inhalable fraction ** respirable fraction |

- **DNELs**: No further relevant information available.
- **PNECs**: No further relevant information available.

### 8.2 Exposure controls

- **Engineering measures** Provide adequate ventilation.
- **General protective and hygienic measures**: The usual precautionary measures are to be adhered to when handling chemicals. Keep away from foodstuffs, beverages and feed. Avoid breathing dust.

(Cont'd. on page 6)
Avoid breathing vapours.

- **Respiratory protection:**
  Use respiratory protection when grinding or cutting material.
  Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

- **Protection of hands:**
  Thermally-protective gloves.

- **Eye protection:**
  Follow relevant national guidelines concerning the use of protective eyewear.

  Wear glasses or face shield with appropriate shading.

- **Body protection:** Protective work clothing

- **Limitation and supervision of exposure into the environment:**
  No further relevant information available.

- **Risk management measures:** No further relevant information available.

---

### SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**

  - **Appearance**
    - Form: Solid
    - Colour: Grey
    - Odour: Odourless
    - Odour threshold: Not determined.

  - **pH-value:** Not applicable.
  - **Melting point/freezing point:** >1300 °C (>2372 °F)
  - **Initial boiling point and boiling range:** Not determined.

  - **Flash point:** Not applicable.
  - **Flammability (solid, gas):** Not determined.
  - **Auto/Self-ignition temperature:** Not determined.
  - **Decomposition temperature:** Not determined.

  - **Explosive properties:** Product does not present an explosion hazard.

  - **Explosion limits**
    - Lower: Not determined.
    - Upper: Not determined.
  - **Oxidising properties**
    - Non-oxidising.

  - **Vapour pressure:** Not determined.

  - **Density:**
SECTION 10: Stability and reactivity

- 10.1 Reactivity Reacts with strong acids.
- 10.2 Chemical stability
  - Thermal decomposition / conditions to be avoided:
    No decomposition if used and stored according to specifications.
- 10.3 Possibility of hazardous reactions Reacts with strong acids.
- 10.4 Conditions to avoid Prevent formation of dust.
- 10.5 Incompatible materials Strong acids.
- 10.6 Hazardous decomposition products Metal oxide smoke.

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
  - Acute toxicity: Based on available data, the classification criteria are not met.
  - LD/LC50 values relevant for classification: None.
  - Primary irritant effect
  - Skin corrosion/irritation:
    Based on available data, the classification criteria are not met.
    Heat rays can burn skin.
  - Serious eye damage/irritation:
    Based on available data, the classification criteria are not met.
    Heat rays (infrared radiation) from flame or hot metal can injure eyes.
  - Respiratory or skin sensitisation:
    May cause an allergic skin reaction.
  - Subacute to chronic toxicity:
    Short-term (acute) overexposure to metal fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).
    Long-term (chronic) overexposure to metal fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.
- Carcinogenic categories
Trade name: SG 650 / SG 660 / SG 670 / SG 680 / SG 683

SECTION 12: Ecological information

- 12.1 Toxicity
  - Aquatic toxicity: No further relevant information available.
- 12.2 Persistence and degradability
  - Inorganic product, is not eliminable from water by means of biological cleaning processes.
- 12.3 Bioaccumulative potential: No further relevant information available.
- 12.4 Mobility in soil: No further relevant information available.
- 12.5 Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- 12.6 Other adverse effects: No further relevant information available.

SECTION 13: Disposal considerations

- 13.1 Waste treatment methods
  - Recommendation
    Contact waste processors for recycling information.
    The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.
  - Uncleaned packaging:
    - Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

- 14.1 UN-Number
  - DOT, ADR/RID/ADN, IMDG, IATA: Not Regulated
- 14.2 UN proper shipping name
  - DOT, ADR/RID/ADN, IMDG, IATA: Not Regulated
**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS

Revision: 28 June 2019

Trade name: SG 650 / SG 660 / SG 670 / SG 680 / SG 683

<table>
<thead>
<tr>
<th>14.3 Transport hazard class(es)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR/RID/ADN, IMDG, IATA</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>Class</td>
<td></td>
</tr>
<tr>
<td>Label</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.4 Packing group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR/RID/ADN, IMDG, IATA</td>
<td>Not Regulated</td>
</tr>
</tbody>
</table>

| 14.5 Environmental hazards:    |  |
| Marine pollutant:              | No |

<table>
<thead>
<tr>
<th>14.6 Special precautions for user</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

### SECTION 15: Regulatory information

<table>
<thead>
<tr>
<th>15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>United States (USA)</td>
<td></td>
</tr>
<tr>
<td>SARA</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 302 (extremely hazardous substances):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 355 (extremely hazardous substances):</th>
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</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 313 (Specific toxic chemical listings):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-02-0 Nickel</td>
<td></td>
</tr>
<tr>
<td>7440-47-3 Chromium</td>
<td></td>
</tr>
<tr>
<td>7429-90-5 Aluminum</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TSCA (Toxic Substances Control Act):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>All ingredients are listed or exempt.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proposition 65 (California):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals known to cause cancer:</td>
<td></td>
</tr>
<tr>
<td>7440-02-0 Nickel</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause developmental toxicity for females:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause developmental toxicity for males:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause developmental toxicity:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EPA (Environmental Protection Agency)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-47-3 Chromium</td>
<td></td>
</tr>
</tbody>
</table>
Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS

Trade name: SG 650 / SG 660 / SG 670 / SG 680 / SG 683

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**SECTION 16: Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**
  
  H317 May cause an allergic skin reaction.

- **Abbreviations and acronyms:**
  
  ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
  
  IMDG: International Maritime Code for Dangerous Goods
  
  DOT: US Department of Transportation
  
  IATA: International Air Transport Association
  
  GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  
  EINECS: European Inventory of Existing Commercial Chemical Substances
  
  ELINCS: European List of Notified Chemical Substances
  
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  
  DNEL: Derived No-Effect Level (REACH)
  
  LC50: Lethal concentration, 50 percent
  
  LD50: Lethal dose, 50 percent
  
  PBT: Persistent, Bio-accumulable, Toxic
  
  SVHC: Substances of Very High Concern
  
  vPvB: very Persistent and very Bioaccumulative
  
  Skin Sens. 1: Skin sensitisation – Category 1

- **Sources**
  
  Website, European Chemicals Agency (echa.europa.eu)
  
  Website, US EPA Substance Registry Services (ofmpub.epa.gov/sor internet/registry/substreg/home/ overview/home.do)
  
  Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)
  
  
  
  Safety Data Sheets, Individual Manufacturers
  
  SDS Prepared by:
  
  ChemTel Inc.
  
  1305 North Florida Avenue
  
  Tampa, Florida USA 33602-2902
  
  Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
  
  Website: www.chemtelinc.com