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

· 1.1 Product identifier
  · Trade name: SG 505
  · Other means of identification: Iron 5 Aluminum cored wire

· 1.2 Relevant identified uses of the substance or mixture and uses advised against
  · Application of the substance / the mixture:
    - Thermal spray wire
    - Bond coat
    - Anti-skid
    - Traction rolls
  · 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
    The product is not classified as hazardous according to OSHA GHS regulations within the United States.
    The product is not classified as hazardous according to the CLP regulation.

· 2.2 Label elements
  · Labelling according to Regulation (EC) No 1272/2008
    The product is not classified as hazardous according to the CLP regulation.
    The product is not classified as hazardous according to OSHA GHS regulations within the United States.
  · Hazard pictograms Not Regulated
  · Signal word Not Regulated
  · Hazard statements Not Regulated.
  · Additional information:

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

Revision: 27 June 2019

Trade name: SG 505

Safety data sheet available on request.

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

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS: 7439-89-6</th>
<th>EINECS: 231-096-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>EINECS: 231-096-4</td>
<td>Iron substance with a Community workplace exposure limit</td>
</tr>
<tr>
<td></td>
<td>Reg.nr.: 01-2119462838-24-XXXX</td>
<td>&gt;75%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS: 7429-90-5</th>
<th>EINECS: 231-072-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>EINECS: 231-072-3</td>
<td>Aluminum substance with a Community workplace exposure limit</td>
</tr>
<tr>
<td></td>
<td>Reg.nr.: 01-2119529243-45-XXXX</td>
<td>2,5-7,5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS: 7440-44-0</th>
<th>EINECS: 231-153-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>EINECS: 231-153-3</td>
<td>Carbon substance with a Community workplace exposure limit</td>
</tr>
<tr>
<td></td>
<td>Reg.nr.: 01-2119966900-32-XXXX</td>
<td>0,1-5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS: 7439-96-5</th>
<th>EINECS: 231-105-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese</td>
<td>EINECS: 231-105-1</td>
<td>Manganese substance with a Community workplace exposure limit</td>
</tr>
<tr>
<td></td>
<td>Reg.nr.: 01-2119449803-34-XXXX</td>
<td>0,1-5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS: 7440-21-3</th>
<th>EINECS: 231-130-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>EINECS: 231-130-8</td>
<td>Silicon substance with a Community workplace exposure limit</td>
</tr>
<tr>
<td></td>
<td>Reg.nr.: 01-2119480401-47-XXXX</td>
<td>0,1-5%</td>
</tr>
</tbody>
</table>

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

(Cont'd. on page 3)
Trade name: SG 505

Thermal burns. 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
No further relevant information available.

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
- Ensure adequate ventilation
- Avoid formation of dust.
- Do not breathe the dust.

6.2 Environmental precautions
- Avoid release to the environment.

6.3 Methods and material for containment and cleaning up
- Sweep up and place into an appropriate container.
- Dispose of the material collected according to regulations.
- Send for recovery or disposal in suitable receptacles.

6.4 Reference to other sections
- See Section 7 for information on safe handling.
- See Section 8 for information on personal protection equipment.
- See Section 13 for disposal information.

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:
### Section 8: Exposure controls/personal protection

**8.1 Control parameters**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>7439-89-6 Iron</strong></td>
<td>Long-term value: 1* 5** mg/m³ as iron; *salts, water-soluble; **welding fume</td>
</tr>
<tr>
<td><strong>7429-90-5 Aluminum</strong></td>
<td>Long-term value: 1,0 mg/m³ respirable, as Al</td>
</tr>
<tr>
<td>EV (Canada)</td>
<td>Long-term value: 5 mg/m³ aluminium-containing (as aluminium)</td>
</tr>
<tr>
<td>WEL (Great Britain)</td>
<td>Long-term value: 10* 4** mg/m³ *inhalable dust; **respirable dust</td>
</tr>
<tr>
<td>OEL (Ireland)</td>
<td>Long-term value: 1* mg/m³ *metal, respirable fraction</td>
</tr>
<tr>
<td>PEL (USA)</td>
<td>Long-term value: 15*; 5** mg/m³ *Total dust; ** Respirable fraction</td>
</tr>
<tr>
<td>REL (USA)</td>
<td>Long-term value: 10* 5** mg/m³ as Al *Total dust; ** Respirable fraction/pyro powd./welding f.</td>
</tr>
<tr>
<td>TLV (USA)</td>
<td>Long-term value: 1* mg/m³ as Al; *as respirable fraction</td>
</tr>
<tr>
<td><strong>7440-44-0 Carbon</strong></td>
<td>Long-term value: 10* 4** mg/m³ *inhalable dust; **respirable</td>
</tr>
<tr>
<td>WEL (Great Britain)</td>
<td>Long-term value: 10* 4** mg/m³ *inhalable dust; **respirable</td>
</tr>
<tr>
<td>OEL (Ireland)</td>
<td>Long-term value: 10* 4** mg/m³ *total inhalable; **respirable dust</td>
</tr>
<tr>
<td><strong>7439-96-5 Manganese</strong></td>
<td>Long-term value: 0,2* 0,05** mg/m³ as Mn; *inhalable, **respirable fraction</td>
</tr>
<tr>
<td>IOELV (EU)</td>
<td>Long-term value: 0,2* 0,05** mg/m³ as Mn; *inhalable, **respirable fraction</td>
</tr>
<tr>
<td>EL (Canada)</td>
<td>Long-term value: 0,2; 0,02* mg/m³ as Mn; R, *respirable</td>
</tr>
<tr>
<td>EV (Canada)</td>
<td>Long-term value: 0,2 mg/m³ as manganese</td>
</tr>
<tr>
<td>WEL (Great Britain)</td>
<td>Long-term value: 0,2* 0,05** mg/m³ as Mn *inhalable fraction; **respirable fraction</td>
</tr>
<tr>
<td>OEL (Ireland)</td>
<td>Long-term value: 0,2* 0,05** mg/m³ as Mn; IOELV; *inhalable; **respirable</td>
</tr>
<tr>
<td>PEL (USA)</td>
<td>Ceiling limit: 5 mg/m³ as Mn</td>
</tr>
</tbody>
</table>

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

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

Revision: 27 June 2019

**Trade name: SG 505**

| REL (USA) | Short-term value: 3 mg/m³  
|           | Long-term value: 1 mg/m³  
|           | fume, as Mn                  |
| TLV (USA) | Long-term value: 0,02* 0,1** mg/m³  
|           | as Mn; *respirable **inhalable fraction |

**7440-21-3 Silicon**

| EL (Canada) | Long-term value: 10* 3** mg/m³  
| EV (Canada) | Long-term value: 10 mg/m³  
|            | total dust;**respirable fraction |
| WEL (Great Britain) | Long-term value: 10* 4** mg/m³  
|            | *inhalable dust **respirable dust |
| OEL (Ireland) | Long-term value: 10* 4** mg/m³  
|            | *total inhalable **respirable dust |
| PEL (USA) | Long-term value: 15* 5** mg/m³  
|            | *total dust **respirable fraction |
| REL (USA) | Long-term value: 10* 5** mg/m³  
|            | *total dust **respirable fraction |
| TLV (USA) | TLV withdrawn                  |

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

### 8.2 Exposure controls

<table>
<thead>
<tr>
<th>Engineering measures</th>
<th>Provide adequate ventilation.</th>
</tr>
</thead>
</table>

**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.
- 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.

(Cont'd. on page 6)
Trade name: SG 505

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**
  - **Appearance**
    - Form: Solid
    - Colour: Silver-grey.
    - Odour: Odourless
    - Odour threshold: Not determined.
  - **pH-value:** Not applicable.
  - **Melting point/freezing point:** ~1538 °C (~2800,4 °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:**
    - Relative density: ~2
    - Vapour density: Not applicable.
    - Evaporation rate: Not applicable.
  - **Solubility in / Miscibility with water:** Insoluble.
  - **Partition coefficient: n-octanol/water:** Not determined.
  - **Viscosity**
    - Dynamic: Not applicable.
    - Kinematic: Not applicable.

- **9.2 Other information**
  - No further relevant information available.

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** No further relevant information available.
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:
  - Heat rays can burn skin.
- Serious eye damage/irritation:
  - Heat rays (infrared radiation) from flame or hot metal can injure eyes.
- Respiratory or skin sensitisation:
  - Based on available data, the classification criteria are not met.
- 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
  - IARC (International Agency for Research on Cancer):
    - None of the ingredients are listed.
  - Probable routes of exposure:
    - Inhalation.
    - Eye contact.
    - Skin contact.
  - Germ cell mutagenicity: Based on available data, the classification criteria are not met.
  - Carcinogenicity: Based on available data, the classification criteria are not met.
  - Reproductive toxicity: Based on available data, the classification criteria are not met.
  - STOT-single exposure: Based on available data, the classification criteria are not met.
  - STOT-repeated exposure: Based on available data, the classification criteria are not met.
  - Aspiration hazard: Based on available data, the classification criteria are not met.

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.
Trade name: SG 505

- 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
- **14.3 Transport hazard class(es)**
  - DOT, ADR/RID/ADN, IMDG, IATA: Not Regulated
    - **Class**
    - **Label**
- **14.4 Packing group**
  - DOT, ADR/RID/ADN, IMDG, IATA: Not Regulated
- **14.5 Environmental hazards:**
  - Marine pollutant:
    - No
- **14.6 Special precautions for user**
  - Not applicable.
- **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**
  - Not applicable.

### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - United States (USA)
  - SARA
- **Section 302 (extremely hazardous substances):**
  - None of the ingredients are listed.
Trade name: SG 505

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

<table>
<thead>
<tr>
<th>Section 313 (Specific toxic chemical listings):</th>
</tr>
</thead>
<tbody>
<tr>
<td>7429-90-5 Aluminum</td>
</tr>
<tr>
<td>7439-96-5 Manganese</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Proposition 65 (California):</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemicals known to cause cancer:</strong></td>
</tr>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Canadian Domestic Substances List (DSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ingredients are listed or exempt.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other regulations, limitations and prohibitive regulations</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Substances of very high concern (SVHC) according to REACH, Article 57</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

**15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 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.

**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)
- PNEC: Predicted No-Effect Concentration (REACH)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
Trade name: SG 505

PBT: Persistant, Bio-accumulable, Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative

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

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Website: www.chemtelinc.com