1 Identification

· 1.1 Product identifier
  · Trade name: Wieland SD4

· 1.2 Relevant identified uses of the substance or mixture and uses advised against
  · No further relevant information available.
  · Application of the substance / the preparation: Semi-finished product

· 1.3 Details of the supplier of the safety data sheet
  · Manufacturer/Supplier: Wieland-Werke AG
    Graf-Arco-Straße 36
    89079 Ulm (Germany)
    Tel.: +49 (0)731/944-0
    Fax: +49 (0)731/944-2799
  · Information department: Department testing laboratories
    michael.ebner@wieland.de
  · 1.4 Emergency telephone number: Factory security offices
    Phone: +49 (0) 731-944-3706

2 Hazard(s) identification

· 2.1 Classification of the substance or mixture
  · Classification according to Regulation (EC) No 1272/2008 (CLP-Regulation):
    For products there is no obligation to classify acc. to CLP -Regulation.
    The product is not classified according to the CLP regulation.

· 2.2 Label elements
  · Labelling according to Regulation (EC) No 1272/2008: Void
  · Hazard pictograms: Void
  · Signal word: Void
  · Hazard-determining components of labeling: Void
  · Hazard statements: Void

· 2.3 Other hazards
  Semi-finished products from copper or copper-alloys, as offered for sale as manufactured present
  no health hazard to man or for the aquatic enviroment.
  · Results of PBT and vPvB assessment
  · PBT: Not applicable to metals
  · vPvB: Not applicable to metals.

3 Composition/information on ingredients

· 3.2 Chemical characterization: Mixtures
  · Description: Metal in compact form.
  · UNS-number: -
  · Information:
    The classifications mentioned below reflect the respective pure substance and are for information
    only.
    Copper alloys are special preparations according to Regulation (EC) 1907/2006 (REACH
    Regulation).
    The classification of a pure substance is not applicable to its use as element of a copper alloy.
  · Components:
    Mentioned percentages are references values.

(Contd. on page 2)
<table>
<thead>
<tr>
<th>CAS:</th>
<th>EINECS:</th>
<th>RTECS:</th>
<th>Commodity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-50-8</td>
<td>231-159-6</td>
<td>GL 5325000</td>
<td>copper</td>
<td>57%</td>
</tr>
<tr>
<td>7429-90-5</td>
<td>231-072-3</td>
<td>BD 0330000</td>
<td>aluminium</td>
<td>2%</td>
</tr>
<tr>
<td>7439-96-5</td>
<td>231-105-1</td>
<td>OO 9275000</td>
<td>manganese</td>
<td>2%</td>
</tr>
<tr>
<td>7440-21-3</td>
<td>231-130-8</td>
<td>VW 0400000</td>
<td>silicon</td>
<td>1%</td>
</tr>
<tr>
<td>7440-66-6</td>
<td>231-175-3</td>
<td>ZG 8600000</td>
<td>zinc</td>
<td>balance%</td>
</tr>
</tbody>
</table>

### 4 First-aid measures

- **4.1 Description of first aid measures**
  - General information:
    - No special measures required.
    - First Aid information refer to any dust which is generated.
  - After inhalation:
    - Supply fresh air and to be sure call for a doctor.
    - In case of unconsciousness place patient stably in side position for transportation.
  - After skin contact:
    - Immediately wash with water and soap and rinse thoroughly.
  - After eye contact:
    - Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - After swallowing:
    - Rinse out mouth and then drink plenty of water.

- **4.2 Most important symptoms and effects, both acute and delayed:**
  - No further relevant information available.

- **4.3 Indication of any immediate medical attention and special treatment needed:**
  - No further relevant information available.

### 5 Fire-fighting measures

- **5.1 Extinguishing media**
  - Suitable extinguishing agents:
    - Non-flammable. Use fire fighting measures that suit the environment.

- **5.2 Special hazards arising from the substance or mixture**
  - No further relevant information available.

- **5.3 Advice for firefighters**
  - Protective equipment: No special measures required.

### 6 Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures:**
  - Not required.

- **6.2 Environmental precautions:**
  - Not required

- **6.3 Methods and material for containment and cleaning up:**
  - Dispose of the collected material according to regulations.

- **6.4 Reference to other sections:**
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
7 Handling and storage

7.1 Precautions for safe handling: No special measures required.

7.2 Conditions for safe storage, including any incompatibilities

· Storage:
  · Requirements to be met by storerooms and receptacles: No special requirements.
  · Further information about storage conditions: None.

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

8 Exposure controls/personal protection

8.1 Control parameters

· Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Substance</th>
<th>PEL Long-term value</th>
<th>REL Long-term value</th>
<th>TLV Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-50-8 copper</td>
<td>1* 0.1** mg/m³</td>
<td>1* 0.1** mg/m³</td>
<td>1* 0.2** mg/m³</td>
</tr>
<tr>
<td></td>
<td>as Cu dusts and mists</td>
<td>as Cu dusts and mists</td>
<td>as Cu dusts and mists</td>
</tr>
<tr>
<td>7440-21-3 silicon</td>
<td>15* 5** mg/m³</td>
<td>10* 5** mg/m³</td>
<td>10* 5** mg/m³</td>
</tr>
<tr>
<td></td>
<td>as Al; *as respirable fraction</td>
<td>as Al; **as respirable fraction</td>
<td>as Al; as respirable fraction</td>
</tr>
<tr>
<td>7429-90-5 aluminium</td>
<td>15* 5** mg/m³</td>
<td>10* 5** mg/m³</td>
<td>10* 5** mg/m³</td>
</tr>
<tr>
<td></td>
<td>as Al; Total dust; **Respirable fraction</td>
<td>as Al; Total dust; **Respirable/ pyro powd./welding f.</td>
<td>as Al; as respirable fraction</td>
</tr>
<tr>
<td>7439-96-5 manganese</td>
<td>Ceiling limit value: 5 mg/m³ as Mn</td>
<td>Short-term value: 3 mg/m³</td>
<td>Long-term value: 1 mg/m³ fume, as Mn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-term value: 0.02* 0.1* mg/m³ as Mn; *respirable **inhalable fraction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7440-21-3 silicon</td>
<td>15* 5** mg/m³</td>
<td>10* 5** mg/m³</td>
<td>TLV withdrawn</td>
</tr>
<tr>
<td></td>
<td>*total dust **respirable fraction</td>
<td>*total dust **respirable fraction</td>
<td></td>
</tr>
</tbody>
</table>

See Section 13 for disposal information.
Safety Data Sheet

Trade name: Wieland SD4

· Additional Occupational Exposure Limit Values for possible hazards during processing:

<table>
<thead>
<tr>
<th>1314-13-2 zinc oxide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEL</strong> Long-term value: 15* 5** mg/m³</td>
</tr>
<tr>
<td>*total dust **respirable fraction and fume</td>
</tr>
<tr>
<td><strong>REL</strong> Short-term value: 10** mg/m³</td>
</tr>
<tr>
<td>Long-term value: 5 mg/m³</td>
</tr>
<tr>
<td>Ceiling limit value: 15* mg/m³</td>
</tr>
<tr>
<td>*dust only **fume</td>
</tr>
<tr>
<td><strong>TLV</strong> Short-term value: 10* mg/m³</td>
</tr>
<tr>
<td>Long-term value: 2* mg/m³</td>
</tr>
<tr>
<td>*as respirable fraction</td>
</tr>
</tbody>
</table>

· Additional information: The lists that were valid during the creation were used as basis.

· 8.2 Exposure controls

· Personal protective equipment:
  · General protective and hygienic measures:
    Wash hands before breaks and at the end of work.
    Do not inhale dust / smoke / mist.
  · Breathing equipment: Use a suitable industrial gas mask when work-place-limits are exceeded.
  · Protection of hands:
    Protective gloves are recommended, depending upon how the semis are further processed.
  · Eye protection:
    Protective goggles are recommended, depending upon how the semis are further processed.
  · Body protection:
    Wear suitable protective clothing, depending upon how the semis are further processed.

9 Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· General Information
  · Appearance:
    Form: Solid
    Color: metallic-yellow
  · Odor: Odorless
  · Odor threshold: Not determined.

· Change in condition
  Melting point/Melting range: 830-890 °C (1526-1634 °F) (Lit.)
  Boiling point/Boiling range: Undetermined.

· Flash point: Not applicable.

· Danger of explosion: Product does not present an explosion hazard.

· Density at 20 °C (68 °F): 8.1 g/cm³ (67.595 lbs/gal) (Lit.)

· Solubility in / Miscibility with Water: Not soluble.

· 9.2 Other information No further relevant information available.

10 Stability and reactivity

· 10.1 Reactivity: Not applicable.
· 10.2 Chemical stability: Not applicable.
  · Thermal decomposition / conditions to be avoided:
    No decomposition if used according to specifications.
Trade name: Wieland SD4

10.3 Possibility of hazardous reactions: No dangerous reactions known.
10.4 Conditions to avoid: No further relevant information available.
10.5 Incompatible materials: No further relevant information available.
10.6 Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

11.1 Information on toxicological effects
- Acute toxicity: Based on available data, the classification criteria are not met.
- Primary irritant effect:
  - on the skin: Based on available data, the classification criteria are not met.
  - on the eye: Based on available data, the classification criteria are not met.
- Sensitization: Based on available data, the classification criteria are not met.
- Additional toxicological information:
  When used and handled according to specifications, the article does not have any harmful effects to our experience and the information provided to us.

Carcinogenic categories
- IARC (International Agency for Research on Cancer)
  None of the ingredients is listed.
- NTP (National Toxicology Program)
  None of the ingredients is listed.
- OSHA-Ca (Occupational Safety & Health Administration)
  None of the ingredients is listed.

12 Ecological information

12.1 Toxicity
- Aquatic toxicity: No further relevant information available.
12.2 Persistence and degradability: No further relevant information available.
12.3 Bioaccumulative potential: No further relevant information available.
12.4 Mobility in soil: No further relevant information available.
- Ecotoxic effects:
  - Remark: Very toxic for fish
- Additional ecological information
- General notes:
  For semi-finished products in copper or copper-alloys no information regarding ecology is suitable, as it is not soluble in water.
  Very toxic for aquatic organisms
- 12.5 Results of PBT and vPvB assessment
  - PBT: Not applicable to metals.
  - vPvB: Not applicable to metals.
- 12.6 Other adverse effects: No further relevant information available.

13 Disposal considerations

13.1 Waste treatment methods
- Recommendation: Contact manufacturer for recycling information.
14 Transport information

- **14.1 UN-Number**
  - DOT, ADR, ADN, IMDG, IATA
  - Void

- **14.2 UN proper shipping name**
  - DOT, ADR, ADN, IMDG, IATA
  - Void

- **14.3 Transport hazard class(es)**
  - DOT, ADR, ADN, IMDG, IATA
  - Class
  - Void

- **14.4 Packing group**
  - DOT, ADR, IMDG, IATA
  - Void

- **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 MARPOL73/78 and the IBC Code:**
  - Not applicable.

15 Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - Sara

  - **Section 355 (extremely hazardous substances):**
    - None of the ingredients is listed.

  - **Section 313 (Specific toxic chemical listings):**
    - 7440-50-8 copper
    - 7440-66-6 zinc
    - 7429-90-5 aluminium
    - 7439-96-5 manganese

  - **TSCA (Toxic Substances Control Act):**
    - All ingredients are listed.

  - **Proposition 65**
    - None of the ingredients is listed.

  - **Chemicals known to cause cancer:**
    - None of the ingredients is listed.

  - **Chemicals known to cause reproductive toxicity for females:**
    - None of the ingredients is listed.

  - **Chemicals known to cause reproductive toxicity for males:**
    - None of the ingredients is listed.

  - **Chemicals known to cause developmental toxicity:**
    - None of the ingredients is listed.

  - **Cancerogenity categories**
    - **EPA (Environmental Protection Agency)**
      - 7440-50-8 copper
        - D
      - 7440-66-6 zinc
        - D, I, II
      - 7439-96-5 manganese
        - D
Trade name: Wieland SD4

<table>
<thead>
<tr>
<th>TLV (Threshold Limit Value established by ACGIH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7429-90-5 aluminium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NIOSH-Ca (National Institute for Occupational Safety and Health)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
<tr>
<td>Chemical safety assessment void.</td>
</tr>
</tbody>
</table>

16 Other information

- This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific article features and shall not establish a legally valid contractual relationship.
- Department issuing SDS: Department testing laboratories
- Contact:
  - Dr. Michael Ebner
  - Phone (+)49 (0)731/944-3706
- Date of preparation / last revision 08/24/2017 / 7
- * Data compared to the previous version altered.