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

1.1 Product identifier

Trade name

Cobalt chromium alloys for partial dentures

Wironit (REF: 50020, 50030)
Wironit extra hard (REF: 50050, 50060)
Wironit LA (REF: 50100, 50103)
Wironium (REF: 50065)
Wironium extra hard (REF: 50175)
Wironium Plus (REF: 50190)

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses of the substance or mixture
Manufacturing of dental prosthesis in a dental laboratory

1.3 Details of the supplier of the safety data sheet

Address
BEGO Bremer Goldschlägerei
Wilh. Herbst GmbH & Co. KG
Wilhelm-Herbst-Str. 1
28359 Bremen

Telephone no. +49/ 421/ 2028 – 0
Fax no. +49/ 421/ 2028 – 115

Information provided by / telephone
Research & Development Department - Materials, alloys and ceramics; +49/ 421/ 2028 – 130 (Chief Development Officer alloys)

Advice on Safety Data Sheet
msds@bego.com

1.4 Emergency telephone number

For medical advice (in German and English):
+49/ 551/ 192 40 (Giftinformationszentrum Nord)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification in accordance with Directive 67/548/EEC or 1999/45/EC
R53
R42/43

2.2 Label elements

Labelling according to Directive 1999/45/EC

Hazard symbols

Harmful

Hazardous component(s) to be indicated on label, contains:
cobalt
Trade name: Cobalt chromium alloys for partial dentures

Current version: 1.0.0, issued: 10.05.2012  Replaced version: -, issued: -  Region: GB

R phrases
42/43  May cause sensitisation by inhalation and skin contact.
53  May cause long-term adverse effects in the aquatic environment.

S phrases
22  Do not breathe dust.
24  Avoid contact with skin.
37  Wear suitable gloves.

Labelling information
In the form in which it is marketed, the product causes no danger to health for humans through inhalation, swallowing or contact with the skin. There is therefore no obligation to label the product in accordance with:
- regulation 1272/2008 (CLP: annex I; 1.3.4.: "Metals in massive form, alloys, mixtures containing polymers, mixtures containing elastomers);

2.3 Other hazards
If the product form in the as-supplied state is changed through further processing (e.g. through grinding, polishing, electrical discharge machining, welding or melting) and dust or vapours are produced, there may be danger from hazardous components in the product (see information in chapter 3).

PBT assessment
No data available.

vPvB assessment
No data available.

SECTION 3: Composition/information on ingredients

3.1 Substances
Not applicable. The product is not a substance.

3.2 Mixtures

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>Classification 67/548/EEC</th>
<th>Concentration</th>
<th>%-b.w.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>cobalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7440-48-4</td>
<td>R42/43</td>
<td>&gt; 50.00 - &lt; 70.00</td>
<td>%-b.w.</td>
</tr>
<tr>
<td></td>
<td>231-158-0</td>
<td>R53</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>027-001-00-9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>chromium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7440-47-3</td>
<td></td>
<td>&gt; 30.00 - &lt; 50.00</td>
<td>%-b.w.</td>
</tr>
<tr>
<td></td>
<td>231-157-5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Full Text for all R-phrases: pls. see section 16

SECTION 4: First aid measures

4.1 Description of first aid measures

General information
In case of allergic symptoms, especially respiratory tract related, seek medical help immediately.

After inhalation
Ensure supply of fresh air. Remove affected person from the immediate area. When vapours are intensively inhaled, seek medical help immediately.

After skin contact
Wash off immediately with soap and water.

After eye contact
Remove contact lenses, irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart and seek medical advice.
After ingestion
Summon a doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed
No data available.

4.3 Indication of any immediate medical attention and special treatment needed
No data available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media
Metal fire powders; Sand

Unsuitable extinguishing media
Water; Foam; Carbon dioxide; Dry chemicals

5.2 Special hazards arising from the substance or mixture
No data available.

5.3 Advice for firefighters
Use self-contained breathing apparatus. Adapt extinguisher and fire-fighting measures to fire in the environment. Wear protective clothing.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
For non-emergency personnel
Ensure adequate ventilation. Do not inhale vapours. Avoid dust formation. Refer to protective measures listed in sections 7 and 8.

For emergency responders
No data available. Personal protective equipment (PPE) - see Section 8.

6.2 Environmental precautions
Collect contaminated water / firefighting water separately. Do not discharge into the drains/surface waters/groundwater. Do not discharge into the subsoil/soil.

6.3 Methods and material for containment and cleaning up
Take up mechanically. Avoid raising dust. When picked up, treat material as prescribed under heading "Disposal considerations".

6.4 Reference to other sections
No data available.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Advice on safe handling
Provide good ventilation of working area (local exhaust ventilation, if necessary).

General protective and hygiene measures
Wash hands before breaks and after work. Do not eat, drink or smoke during work time. Remove soiled or soaked clothing immediately. Keep away from foodstuffs and beverages. Do not inhale vapours or dust.

Advice on protection against fire and explosion
Dust can form an explosive mixture with air. Take precautionary measures against static charges. Keep away from sources of ignition.

7.2 Conditions for safe storage, including any incompatibilities
Technical measures and storage conditions
Keep container tightly closed in a well-ventilated place.
Requirements for storage rooms and vessels
No special measures required.

Advice on storage assembly
Do not store together with: explosive substances

7.3 Specific end use(s)
No data available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS no.</th>
<th>EC no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>cobalt</td>
<td>7440-48-4</td>
<td>231-158-0</td>
</tr>
<tr>
<td></td>
<td>List of approved workplace exposure limits (WELs) / EH40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cobalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>0,1 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>List of approved workplace exposure limits (WELs) / EH40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chromium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>0,5 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
No data available.

Personal protective equipment

Respiratory protection
If workplace exposure limits are exceeded, a respiration protection approved for this particular job must be worn. In case of dust formation, take appropriate measures for breathing protection in the event workplace threshold values are not specified.

Eye / face protection
Safety glasses with side protection shield (EN 166)

Hand protection
In case of thermal processing, thermally insulating protective gloves are to be used. Before use, the protective gloves should be tested in any case for its specific work-station suitability (i.e. mechanical resistance, product compatibility and antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations thus to avoid permanent use of protective gloves.

Other
Normal chemical work clothing.

Environmental exposure controls
No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Form/Colour</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>solid</td>
<td></td>
</tr>
<tr>
<td>white</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Odour</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>odourless</td>
<td></td>
</tr>
</tbody>
</table>
### Odour threshold
- No data available

### pH value
- No data available

### Boiling point / boiling range
- No data available

### Melting point / melting range

<table>
<thead>
<tr>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1260 - 1350 °C</td>
<td>The various products have different melting intervals within the indicated melting range.</td>
</tr>
</tbody>
</table>

### Decomposition point / decomposition range
- No data available

### Flash point
- No data available

### Auto-ignition temperature
- No data available

### Oxidising properties
- No data available

### Explosive properties
- No data available

### Flammability (solid, gas)
- No data available

### Lower flammability or explosive limits
- No data available

### Upper flammability or explosive limits
- No data available

### Vapour pressure
- No data available

### Vapour density
- No data available

### Evaporation rate
- No data available

### Relative density
- No data available

### Density

<table>
<thead>
<tr>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.2 g/cm³</td>
<td></td>
</tr>
</tbody>
</table>

### Solubility in water

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>insoluble</td>
</tr>
</tbody>
</table>

### Solubility(ies)
- No data available

### Partition coefficient: n-octanol/water
- No data available

### Viscosity
- No data available

### Other information
- No data available.

---

Page 5 of 8
SECTION 10: Stability and reactivity

10.1 Reactivity
No data available.

10.2 Chemical stability
No data available.

10.3 Possibility of hazardous reactions
Possible hydrogen formation upon contact with acids.

10.4 Conditions to avoid
None, if handled according to order.

10.5 Incompatible materials
Acids

10.6 Hazardous decomposition products
No hazardous decomposition products known.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

<table>
<thead>
<tr>
<th>Effect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Acute inhalational toxicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>No data available</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>No data available</td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</td>
<td>No data available</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Reproduction toxicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>No data available</td>
</tr>
<tr>
<td>STOT-single exposure</td>
<td>No data available</td>
</tr>
<tr>
<td>STOT-repeated exposure</td>
<td>No data available</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Delayed and immediate effects as well as chronic effects from short and long-term exposure
Inhalation of vapours in high concentration may cause metal fume fever and may cause damage of the central nervous system in case of repeated and prolonged exposure. Repeated and prolonged exposure to high dust concentrations may lead to irritation of the respiratory tract. Inhalation of metal-containing dusts may cause acute poisoning, leading to nausea, vomiting and abdominal pain.
SECTION 12: Ecological information

12.1 Toxicity

Fish toxicity
No data available

Daphnia toxicity
No data available

Algae toxicity
No data available

Bacteria toxicity
No data available

12.2 Persistence and degradability
No data available.

12.3 Bioaccumulative potential
No data available.

12.4 Mobility in soil
No data available.

12.5 Results of PBT and vPvB assessment

<table>
<thead>
<tr>
<th>Results of PBT and vPvB assessment</th>
<th>PBT assessment</th>
<th>vPvB assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBT assessment</td>
<td>No data available.</td>
<td></td>
</tr>
<tr>
<td>vPvB assessment</td>
<td>No data available.</td>
<td></td>
</tr>
</tbody>
</table>

12.6 Other adverse effects
No data available.

12.7 Other information

<table>
<thead>
<tr>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not discharge product unmonitored into the environment.</td>
</tr>
</tbody>
</table>

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement
with the regional waste disposal company.

Packaging
Residuals must be removed from packaging and when emptied completely disposed of in accordance with the
regulations for waste removal. Incompletely emptied packaging must be disposed of in the form of disposal specified
by the regional disposer.
SECTION 14: Transport information

14.1 Transport ADR/RID/ADN
The product is not subject to ADR/RID/ADN regulations.

14.2 Transport IMDG
The product is not subject to IMDG regulations.

14.3 Transport ICAO-TI / IATA
The product is not subject to ICAO-TI / IATA regulations.

14.4 Other information
No data available.

14.6 Special precautions for user
No data available.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not relevant

SECTION 15: Regulatory information

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

EU regulations
Restriction of occupation
Adhere to the national sanitary and occupational safety regulations when using this product.

Remarks
Annex I, part 1 + 2: not mentioned. With regard to possibly appropriate decomposition products see Chapter 10.

15.2 Chemical safety assessment
No data available.

SECTION 16: Other information

Sources of key data used to compile the data sheet:
National Threshold Limit Values of the corresponding countries as amended in each case.
Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.
The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding chapter.

Department issuing safety data sheet
UMCO Umwelt Consult GmbH - D-21107 Hamburg, Georg-Wilhelm-Strasse 183, Tel.: +49(40)79 02 36 300, Fax: +49(40)79 02 36 357, e-mail: umco@umco.de

This information is based on our present state of knowledge. However, it should not constitute a guarantee for any specific product properties and shall not establish a legally valid relationship.