1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

<table>
<thead>
<tr>
<th>Material no.</th>
<th>Version</th>
<th>1.3 / GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification</td>
<td>Revision date</td>
<td>01.12.2014</td>
</tr>
<tr>
<td>VA-Nr</td>
<td>Print Date</td>
<td>01.12.2014</td>
</tr>
<tr>
<td>172871</td>
<td>Page</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company</th>
<th>DeguDent GmbH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postfach 1364</td>
<td>D-63403 Hanau</td>
</tr>
</tbody>
</table>

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

Relevant applications identified: For dental use only.

1.3. Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Company</th>
<th>DeguDent GmbH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postfach 1364</td>
<td>D-63403 Hanau</td>
</tr>
<tr>
<td>Telephone</td>
<td>+49 (0)6181/59-5767</td>
</tr>
<tr>
<td>Telefax</td>
<td>+49 (0)6181/59-5879</td>
</tr>
<tr>
<td>Email address</td>
<td><a href="mailto:SDB.Degudent-DE@dentsply.com">SDB.Degudent-DE@dentsply.com</a></td>
</tr>
</tbody>
</table>

1.4. Emergency telephone number

Emergency information: +49 (0)180 / 23 24-555 (international)

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory sensitization</td>
<td>Category 1</td>
<td>H334</td>
</tr>
<tr>
<td>Skin Sensitisation</td>
<td>Category 1</td>
<td>H317</td>
</tr>
<tr>
<td>Hazardous to the aquatic environment - Chronic Hazard</td>
<td>Category 4</td>
<td>H413</td>
</tr>
</tbody>
</table>

Classification as per Directive 67/548/EC or Directive 1999/45/EC

R42/43: May cause sensitization by inhalation and skin contact.
R53: May cause long-term adverse effects in the aquatic environment.

2.2. Label elements

Labelling as per (EU) 1272/2008

<table>
<thead>
<tr>
<th>Statutory basis</th>
<th>EU-CLP as per Regulation (EU) No. 1272/2008, Annex VI</th>
</tr>
</thead>
</table>

hazard-defining component(s) (GHS)

- cobalt
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Vitallium Laserschweißdraht
Vitallium Special Alloy
CoCr Laserdrahtstäbe

Signal word: Danger

Hazard statement:
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 - May cause an allergic skin reaction.
H413 - May cause long lasting harmful effects to aquatic life.

Precautionary statement:
P280 - Wear protective gloves/protective clothing/eye protection.

Precautionary statement:
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P273 - Avoid release to the environment.
P285 - In case of inadequate ventilation wear respiratory protection.

Precautionary statement:
P302 + P352 - IF ON SKIN: Wash with plenty of water/ soap.
P304 + P341 - IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention.
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P363 - Wash contaminated clothing before reuse.

2.3. Other hazards
May react forming chromium(VI) compounds when processing thermally.
Possible release of metallic vapors when melted.
Cobalt vapor will be released while processing.
Limited evidence of a carcinogenic effect.
A PBT/vPvB evaluation is not available, since a chemical safety evaluation is not required / has not been carried out.

3. Composition/information on ingredients

Information on ingredients / Hazardous components as per EU-CLP Regulation (EC) No. 1272/2008

- **cobalt** 60% - 66%
  - CAS-No. 7440-48-4
  - EC-No. 231-158-0
  - Respiratory sensitization Category 1 H334
  - Skin Sensitisation Category 1 H317
  - Hazardous to the aquatic environment - Chronic Hazard Category 4 H413

- **chromium** 27% - 32%
  - CAS-No. 7440-47-3
  - EC-No. 231-157-5

- **molybdenum** 5% - 7%
  - CAS-No. 7439-98-7
  - EC-No. 231-107-2

- **Silicium** < 1%
  - CAS-No. 7440-21-3
  - EC-No. 215-609-9

- **manganese** < 1%
  - CAS-No. 7439-96-5
  - EC-No. 231-105-1

- **Carbon** < 1%
  - CAS-No. 1333-86-4
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Information on ingredients / Hazardous components as per Directive 67/548/EC or Directive 1999/45/EC

- **cobalt** 60% - 66%
  CAS-No. 7440-48-4
  EC-No. 231-158-0
  R42/43
  R53

- **chromium** 27% - 32%
  CAS-No. 7440-47-3
  EC-No. 231-157-5

- **molybdenum** 5% - 7%
  CAS-No. 7439-98-7
  EC-No. 231-107-2

- **silicium** < 1%
  CAS-No. 7440-21-3
  EC-No. 215-609-9

- **manganese** < 1%
  CAS-No. 7439-96-5
  EC-No. 231-105-1

- **carbon** < 1%
  CAS-No. 1333-86-4

Texts of H phrases, see in Chapter 16
See chapter 16 for text of risk phrases

4. First aid measures

4.1. Description of first aid measures

**Inhalation**
Remove to fresh air.
If symptoms persist, call a physician.

**Skin contact**
Wash off with soap and water.
In the case of skin irritation or allergic reactions see a physician.

**Eye contact**
Rinse with plenty of water.
If eye irritation persists, consult a specialist.

**Ingestion**
Clean mouth with water and drink afterwards plenty of water.
Consult a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

**Symptoms**
None known

**Hazards**
None known

4.3. Indication of any immediate medical attention and special treatment needed

None known

5. Fire-fighting measures

5.1. Extinguishing media
Suitable extinguishing media:
- special powder against metal fire
- quenching powder
- dry sand
- common salt

Unsuitable extinguishing media:
- Water
- carbon dioxide (CO2)

5.2. Special hazards arising from the substance or mixture
Can be released in case of fire: cobalt oxide.

5.3. Advice for firefighters
The product itself does not burn.
Prevent fire extinguishing water from contaminating surface water or the ground water system.
In the event of fire, wear self-contained breathing apparatus.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Avoid dust formation.
Avoid breathing dust.
In case of dust being formed, provide for adequate extraction.
Ensure suitable suction/aeration at the work place and with operational machinery.

6.2. Environmental precautions
Do not flush into surface water or sanitary sewer system.

6.3. Methods and material for containment and cleaning up
Use mechanical handling equipment.
Avoid dust formation.
Fill into marked, sealable containers.

6.4. Reference to other sections
Wear personal protective equipment; see section 8.
Disposal considerations; see section 13.

7. Handling and storage

7.1. Precautions for safe handling
In case of melting, soldering or grinding:
Local ventilation.
Avoid dust formation.
In case of dust or vapor: Wear personal safety equipment
Dusts and vapors: Do not inhale.

7.2. Conditions for safe storage, including any incompatibilities
Storage
No special storage conditions required.

German storage class
13 - Non Combustible Solids

7.3. Specific end use(s)
We are unaware of any specific end uses which go beyond the data reported in Section 1.

8. Exposure controls/personal protection

8.1. Control parameters
- cobalt
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Vitallium Laserschweissdraht
Vitallium Special Alloy
CoCr Laserdrahtstäbe

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Control parameters</th>
<th>Exposure parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-48-4</td>
<td>231-158-0</td>
<td>0.1 mg/m³</td>
<td>Time Weighted Average (TWA):(EH40 WEL)</td>
</tr>
<tr>
<td>7440-47-3</td>
<td>231-157-5</td>
<td>0.5 mg/m³</td>
<td>Time Weighted Average (TWA):(EH40 OES)</td>
</tr>
<tr>
<td>7440-98-7</td>
<td>231-107-2</td>
<td>10 mg/m³</td>
<td>Short Term Exposure Limit (STEL):(EH40 WEL)</td>
</tr>
<tr>
<td>7440-21-3</td>
<td>215-609-9</td>
<td>4 mg/m³</td>
<td>Time Weighted Average (TWA):(EH40 (UK))</td>
</tr>
<tr>
<td>7439-96-5</td>
<td>231-105-1</td>
<td>0.5 mg/m³</td>
<td>Time Weighted Average (TWA):(EH40 WEL)</td>
</tr>
<tr>
<td>1333-86-4</td>
<td></td>
<td>3.5 mg/m³</td>
<td>Time Weighted Average (TWA):(EH40 WEL)</td>
</tr>
</tbody>
</table>

### 8.2. Exposure controls

**Engineering measures**
Cobalt vapor will be released while processing. Adequate exhaustion / ventilation of the work site or machinery must be assured. Vacuuming of objects.

**Personal protective equipment**

**Respiratory protection**
In case of working with / without sufficient object exhaustion: Respirator with P3 particle filter

**Hand protection**
Protective gloves
Glove material: butyl-rubber, nitrile rubber, Natural Rubber/Natural latex (NR)
Eye protection
Safety glasses with side-shields
In case of smoke or dust development: goggles

Skin and body protection
If cobalt - vapour occurs: Change contaminated clothing.
Apply adequate skin protection agents before handling the product. Assure skin cleaning and skin care after work. Preventive skin protection is recommended.

Hygiene measures
If there is the possibility of skin/eye contact, the indicated hand/eye/body protection should be used.
Do not eat, drink, smoke, or sniff while at work. Wash your hands and/or face before breaks and before termination of work.
Do not inhale smoke, dust, vapor.
If workplace exposure limits are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>solid</td>
</tr>
<tr>
<td>Form</td>
<td>solid</td>
</tr>
<tr>
<td>Colour</td>
<td>white</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>1300 - 1370 °C</td>
</tr>
<tr>
<td>Density</td>
<td>ca. 8.3 g/cm³</td>
</tr>
<tr>
<td>Autoinflammability</td>
<td>Not capable of spontaneous combustion or heating.</td>
</tr>
</tbody>
</table>

9.2. Other information

Other information: No further physicochemical data were determined.

10. Stability and reactivity

10.1. Reactivity
no data available

10.2. Chemical stability
The product is chemically stable.

10.3. Possibility of hazardous reactions
Possibility of hazardous reactions: No dangerous reactions known.

10.4. Conditions to avoid
No limitations

10.5. Incompatible materials
None known

10.6. Hazardous decomposition products
Decomposition products occurring when heated above melting temperature metallic vapors

11. Toxicological information
11.1. Information on toxicological effects

Acute oral toxicity  no data available
Acute inhalation toxicity  no data available
Acute dermal toxicity  no data available
Skin irritation  no data available
Eye irritation  no data available
Sensitization  no data available
Repeated dose toxicity  no data available
Mutagenicity assessment  no data available
Carcinogenicity  No data available
Toxicity to reproduction  No data available

Human experience  Toxic effects from handling this product are unknown as yet. The solubility of the alloy is extremely low. It must therefore be assumed that the daily uptake of these elements is considerably exceeds that from the alloy. As a constituent of vitamin B12 cobalt is an essential element of the human body. Molybdenum is an essential element of the human body. The daily dietary uptake of chromium amounts to several milligrams. The data are derived from reference books and literature.

Further information  No hazardous reactions are known if properly handled and stored. Cobalt (dusts and vapours): Clues to possible carcinogenic effects in animal experiments. Literature

12. Ecological information

12.1. Toxicity

*No ecotoxicological data is available for this product.*

12.2. Persistence and degradability

Biodegradability  no data available

12.3. Bioaccumulative potential

Bioaccumulation  no data available

12.4. Mobility in soil

Mobility  The product is insoluble in water. No further information available
12.5. Results of PBT and vPvB assessment

A PBT/vPvB evaluation is not available, since a chemical safety evaluation is not required / has not been carried out.

12.6. Other adverse effects

Further Information

Dusts and water-soluble forms of the alloy:
Introduction into soil, natural water bodies or sewerage must be prevented.

13. Disposal considerations

13.1. Waste treatment methods

Product
Disposal according to local authority regulations.

Uncleaned packaging
Disposal according to local authority regulations.

14. Transport information

Not dangerous according to transport regulations.

14.1. UN number: --
14.2. UN proper shipping name: --
14.3. Transport hazard class(es): --
14.4. Packing group: --
14.5. Environmental hazards: --
14.6 Special precautions for user: No

15. Regulatory information

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

National legislation

15.2. Chemical safety assessment

Chemical safety assessment
No Chemical Safety Report as per Articles 2(8), 2(9) or 14 of the REACH Regulation is required for this product.

16. Other information

Risk phrase (R phrase) texts

- cobalt
  R42/43 May cause sensitization by inhalation and skin contact.
  R53 May cause long-term adverse effects in the aquatic environment.

Texts of the H-phrases

- cobalt
  H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  H317 May cause an allergic skin reaction.
Further information

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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Legend
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ASTM: American Society for Testing and Materials
ATP: Adaptation to Technical Progress
BCF: Bioconcentration factor
BetrSichV: German Ordinance on Industrial Safety and Health
c.c.: closed cup
CAS: Chemical Abstract Services
CESIO: European Committee of Organic Surfactants and their Intermediates
ChemG: German Chemicals Act
CMR: carcinogenic-mutagenic-toxic for reproduction
DIN: German Institute for Standardization
DMEL: Derived minimum effect level
DNEL: Derived no effect level
EINECS: European Inventory of Existing Commercial Chemical Substances
EC50: half maximal effective concentration
GefStoffV: German Ordinance on Hazardous Substances
GGVSEB: German ordinance for road, rail and inland waterway transportation of dangerous goods
GGVSee: German ordinance for sea transportation of dangerous goods
GLP: Good Laboratory Practice
GMO: Genetic Modified Organism
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
ISO: International Organization For Standardization
LOAEL: Lowest observed adverse effect level
LOEL: Lowest observed effect level
NOAEL: No observed adverse effect level
NOEC: no observed effect concentration
NOEL: no observed effect level
o. c.: open cup
OECD: Organisation for Economic Cooperation and Development
OEL: Occupational Exposure Limit
PBT: Persistent, bioaccumulative, toxic
PEC: Predicted effect concentration
PNEC: Predicted no effect concentration
REACH: REACH registration
RID: Convention concerning International Carriage by Rail
STOT: Specific Target Organ Toxicity
SVHC: Substances of Very High Concern
TA: Technical Instructions
TPR: Third Party Representative (Art. 4)
TRGS: Technical Rules for Hazardous Substances
VCI: German chemical industry association
vPvB: very persistent, very bioaccumulative
VOC: volatile organic compounds
VwVwS: German Administrative Regulation on the Classification of Substances Hazardous to Waters into Water Hazard Classes
WGK: Water Hazard Class
WHO: World Health Organization