# Material data sheet HOVADUR® CCB



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|---|---|
| Material designation SCHMELZMETALL | **HOVADUR® CCB** |
| Material designation, EN standard | CuCo2Be |
| Material No., EN standard | CW104C |
| Material No., former DIN standard | 2.1285 (CuCo2Be) |
| Material No., UNS system (ASTM) | C17500 (CuCo2Be) |
| Classification RWMA (USA) | Class 3 |

**Information about standards**

| | |
|---|---|
| EN | **EN12420** (Forged products) |
| DIN (former) | (DIN17666/DIN17672) |
| ASTM | (B441. B534) |

**Description of material**

HOVADUR® CCB is a thermally precipitation hardenable copper alloy. In heat treated condition, the alloy combines good hardness and high resistance to heat with good electrical and thermal conductivity.

**Safety data sheet** SCHMELZMETALL No. 07.02E (Issue 30.07.2002)

**Material properties**

Chemical composition in % of weight (guaranteed ranges)

| Co | Be | Ni + Fe | others total | Cu |
|---|---|---|---|---|
| 2.0–2.8 | 0.4–0.7 | max. 0.5 | max 0.5 | Remainder |

**Agreed properties** at 20 °C (Condition: hardened)

| | | |
|---|---|---|
| **Condition** | | **hardened** |
| **Hardness Brinell HB** | | **min. 210 *)** |
| **Electrical conductivity** | **MS/m** | **min. 25** |
| **Electrical conductivity** | **% IACS** | **min. 43.0** |

***) In case of different opinions, hardness is calculated as the average of 3 randomly located measurings.**

**Associated properties** at 20 °C (Condition: hardened)

| | | | |
|---|---|---|---|
| Condition | | | hardened |
| Tensile strength | 1) | $N/mm^2$ (MPa) | min. 650 |
| 0.2% yield strength | 1) | $N/mm^2$ (MPa) | min. 500 |
| Elongation (A5) | 1) | % | min. 8 |

**1) Strength values will only be proved if ordered by the customer.**

**Material information (nominal values)**

| | | | |
|---|---|---|---|
| Elastic modulus | $N/mm^2$ (MPa) | 130,000 | |
| Softening temperature | °C | 480 | |
| Specific weight | $g/cm^3$ | 8.85 | |
| Thermal conductivity | W/mK | 220–250 | **(Average 20 °C–300 °C)** |
| Thermal expansion coefficient | x $10^{-6}$/°K | 17.2 | **(Average 20 °C–300 °C)** |
| Melting interval | °C | 1000–1030 | |

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## Processing instructions

**Hot forming**
HOVADUR® CCB is suitable for hot forming at temperatures of about 900–700 °C. After forming, quick cooling in water is recommended.
**Advice: After a hot forming executed by the customer, the properties of HOVADUR® CCB will normally no longer be achieved.**

**Cold forming**
HOVADUR® CCB in hardened condition is not intended for cold forming. In case, a cold forming has to be executed, HOVADUR® CCB in solution heat treated condition has to be used. After forming, as a rule, the part has to be heat treated.

**Heat treatment**
A heat treatment changes the agreed properties. If a heat treatment is executed after supply of the material, we cannot guarantee any properties.
**Advice for heat treatments (they always depend to a large degree on the kind and the function of the furnace)**
Solution heat treatment: 920–970 °C, about 30 minutes followed by quenching in water
Hardening: 460–520 °C, 2–5 h followed by cooling at the air

**Machining**
HOVADUR® CCB is very suitable for machining. We recommend hard metal cutting tools with positive cutting geometry. For drilling, attention must be paid to good removal of chips. Cooling with emulsion is recommended **In case of dry machining, this has to be done with strong suction. Outgoing air has to be cleaned by a particle filter.**
Thread moulding is possible to a limited degree. Bigger inside threads should be executed by circular thread milling.

**Joining**
HOVADUR® CCB is suitable for soft as well as hard soldering. Concerning hard soldering (even at limited time of effect of the temperature), a loss in hardness in the area of heating is to be expected. A very low melting silver brazing should be used. HOVADUR® CCB is suited for welding. **Attention must be paid to sufficient extraction and filtering of welding fume.**

## Application examples

Forged rings and discs as well as hammer forged parts (arbors) for resistance welding.
**Advice: In case of higher requirements, this alloy is often replaced by HOVADUR® CCNB and HOVADUR® CCNB eh.**