

Material data sheet

Issue No. 02EN

2006-04-01

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 measurements.

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.