Material data sheet HOVADUR® CB1.5

Material designation SCHMELZMETALL	**HOVADUR® CB1.5**
Material designation, EN standard	not standardized
Material No., EN standard	not standardized
Material No., former DIN standard	not standardized
Material No., UNS system (ASTM)	not standardized
Classification RWMA (U.S.A.)	Class 4

Information about standards

EN	The material is not standardized.
DIN (former)	The material was not included in former DIN standards.
ASTM	The material is not standardized.

Description of material

HOVADUR® CB1.5 is a thermally precipitation hardenable copper alloy. In heat treated condition, the alloy shows a very high hardness and strength combined with good values concerning electrical and thermal conductivity. This specific combination of properties leads to excellent results if you need high wear resistance and good carrying-off of heat.

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

Material properties

Chemical composition in % of weight [guaranteed ranges]

Be	Co	Ni	Co + Ni	Fe	Si	others total	Cu
1,4-1,6	0-0,3	0-0,3	0,2-0,5	max. 0,1	max. 0,5	max. 0,5	Remainder

Agreed properties at 20°C [Condition: hardened]

Hardness Brinell HB		**min. 280 *)**	
Electrical conductivity	**MS/m**	**min. 15**	**(min. 25,8 % IACS)**

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

Associated properties at 20°C [Condition: hardened]

Tensile strength	1)	N/mm² (MPa)	min. 950
0,2% yield strength	1)	N/mm² (MPa)	min. 800
Elongation (A5)	1)	%	min. 4

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

Material information (nominal values)

Elastic-modulus	N/mm² (MPa)	135 000	
Softening temperature	C	320	
Specific weight	g/cm³	8,4	
Thermal expansion coefficient	x 10-6 / °K	17,0	**Average 20°C – 300 °C)**
Melting interval	°C	885 – 1000	**Average 20°C – 300 °C)**

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Processing instructions

Hot forming:
HOVADUR® CB1.5 is suitable for hot forming at temperatures of about 800-650°C. After forming, quick cooling in water is recommended.

Advice: After a hot forming executed by the customer, the properties of HOVADUR® CB1.5 will normally no longer be achieved.

Cold forming:
HOVADUR® CB1.5 in hardened condition is not intended for cold forming. In case, a cold forming has to be executed, HOVADUR® CB1.5 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: 760-800°C, about 30 minutes followed by quenching in water
Hardening: 310-340 °C, 2 – 5h followed by cooling at the air

Machining:
HOVADUR® CB1.5 is 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® CB1.5 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 and the brazing process itself should be as short as possible. HOVADUR® CB1.5 is suited for welding.
Attention must be paid to sufficient extraction and filtering of welding fume.

Application examples

Mechanically highly strained jaws, holders and guide rails for flash butt welding and projection welding.
Die casting pistons for horizontal cold chamber casting machines for light metal casting.
Mechanically moderately strained parts of moulds for plastic injection moulds.