SCHMELZMETALL

Edition No. 06EN, 2018-05-28

Product overview HOVADUR®

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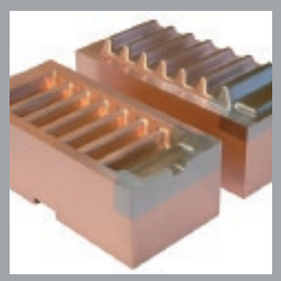


HOVADUR®

Special Alloys

Tradename	HOVADUR® CCZ	HOVADUR® CNP	HOVADUR® CNCS	HOVADUR® CNB spez	HOVADUR® CCNB	HOVADUR® CCNB eh	HOVADUR® CB2
Material designation, EN standard	CuCrZr	CuNi1P	~ CuNi2Si / CuNi3Si	CuNi2Be	CuCo1Ni1Be	CuCo1Ni1Be	CuBe2
Material No., EN standard	CW106C	CW108C	~ CW111C / CW112C	CW110C	CW103C	CW103C	CW101C
Material No., former DIN standard	2.1293	–	~ 2.0855 / 2.0857	2.0850	~ 2.1285	~ 2.1285	2.1247
Material No., UNS-System (ASTM)	C18400	C19000	C18000	C17510	~ C17500	~ C17500	similar C17200
Chemical composition (nominal values in % of weight)							
Cr	0.5–1.2	–	0.2–0.5	–	–	–	–
Zr	0.03–0.3	–	–	–	–	–	–
Co	–	–	–	max. 0.3	0.8–1.3	0.8–1.3	Co + Ni 0.2–0.5
Ni	–	0.8–1.2	2.0–3.0	1.4–2.4	0.8–1.3	0.8–1.3	
Mn	–	–	max. 0.1	–	–	–	–
Be	–	–	–	0.2–0.6	0.4–0.7	0.4–0.7	1.8–2.0
Al	–	–	–	–	–	–	–
Si	0.1	–	0.5–0.8	max. 0.2	max. 0.2	max. 0.2	max. 0.1
Pb	–	–	max. 0.02	–	–	–	–
P	–	0.15–0.25	–	–	–	–	–
Fe	max. 0.08	–	max. 0.15	max. 0.2	max. 0.2	max. 0.2	max. 0.1
Others	max. 0.2	max. 0.1	max. 0.15	0.5	0.5	0.5	max. 0.5
Cu	Remainder	Remainder	Remainder	Remainder	Remainder	Remainder	Remainder
Mechanical properties (nominal values at 20 °C)							
Hardness Brinell 1) HB	*) min. 115	min. 140	min. 190	min. 220	min. 220	min. 260	min. 350
Tensile strength 2) N/mm² (MPa)	*) min. 350	min. 400	min. 650	min. 680	min. 680	min. 750	min. 1150
0.2% yield strength 2) N/mm² (MPa)	*) min. 250	min. 360	min. 500	min. 540	min. 550	min. 650	min. 1000
Elongation (A5) 2) %	*) min. 8	min. 20	min. 10	min. 8	min. 8	min. 8	min. 3
Elastic modulus N/mm² (MPa)	125,000	140,000	140,000	135,000	135,000	135,000	135,000
Physical properties (nominal values at 20 °C)							
Specific weight g/cm³	8.90	8.90	8.84	8.85	8.85	8.85	8.30
Thermal conductivity W/mK	310–340	245	190–240	270–320	230–250	230–250	160
Electrical conductivity 1) MS/m	min. 44	min. 32	min. 22	min. 38	min. 25	min. 28	min. 16
Thermal expansion coefficient x 10⁻⁶/°K	17.0	17.0	16.2	17.2	17.2	17.2	17.0
Forms of delivery							
Round drawn	•	•	•		•	•	•
Round forged	•		•	•	•	•	•
Tube	•	•					
Flat, square, hexagonal drawn	•				•	•	
Flat, square forged	•		•	•	•	•	•
Plates rolled	•						
Plates forged	•		•	•	•	•	•
Pieces cut from round bar/plate, rough	•		•	•	•	•	•
Pieces cut from round bar/plate, premachined	•		•	•	•	•	•
Max. weight of a forged piece	1200 kg		1200 kg	1200 kg	1200 kg	1200 kg	1200 kg

*) These properties depend on the condition (hot or cold formed) and the dimension
1) Agreed properties (In case of different opinions, hardness is calculated as the average of 3 randomly located measurings)
2) Associated properties (Strength values will only be proved if ordered by the customer)

Details of the properties or application of materials are for descriptive purposes only.
Confirmation of suitability with regard to specific properties or application require written agreement.

Description of material/Application examples

HOVADUR® CCZ
shows particularly high electrical and thermal conductivity as well as good hardness and resistance to softening.

Application
Electrodes, holders, shafts for resistance spot and seam welding. Clamping jaws, inserts for butt welding as well as live parts for electrical engineering.

HOVADUR® CNP
shows good mechanical strength and excellent ductility combined with high electrical conductivity. Furthermore, the alloy is characterized by good fatigue and annealing properties.

Application
Holders, shafts for resistance spot and seam welding. Arms and bended arms for spot welding tongs with internal cooling.

HOVADUR® CNCS
shows high electrical and thermal conductivity as well as high hardness and strength combined with good resistance to corrosion and abrasion.

Application
Die casting pistons in cold chamber die casting machines, cooling inserts for moulds. Moulds for non-ferrous metal casting.
Hot-pressed parts for electrical engineering, fittings, braces and fixing elements for high strain.

HOVADUR® CNB spez
In heat treated condition, this alloy shows high electrical and thermal conductivity as well as very good hardness and thermal strength.

Application
Electrodes, holders, shafts for spot, seam, flash butt and projection welding, mesh welding.
Moulds for non-ferrous metal casting, inserts in steel moulds, die casting pistons and thermally high-strained parts susceptible to fire cracks.

HOVADUR® CCNB
In heat treated condition, this alloy shows high hardness and thermal strength combined with good electrical and thermal conductivity.

Application
Electrodes, holders, shafts for spot, seam, flash butt and projection welding, mesh welding.
Moulds for non-ferrous metal casting, inserts in steel moulds, die casting pistons and thermally high-strained parts susceptible to fire cracks.

HOVADUR® CCNB eh
In heat treated condition, this alloy shows high hardness and thermal strength combined with good electrical and thermal conductivity. Due to vacuum technology and special processes, clearly better properties compared to standard quality HOVADUR® CCNB can be agreed.

Application
Electrodes, holders, shafts for spot, seam, flash butt and projection welding, mesh welding.Moulds for non-ferrous metal casting, inserts in steel moulds, die casting pistons and thermally high-strained parts susceptible to fire cracks.

HOVADUR® CB2
In heat treated condition, this alloy shows extraordinaryly high hardness and strength combined with good values for electrical and thermal conductivity.

Application
Mechanically highly strained jaws, holders and guide rails for flash butt welding and projection welding. Safety parts for on-/offshore drilling, parts for precision measuring instruments.