

Material data sheet

Issue No. 03EN

2007-03-01

HOVADUR® B 20

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Material designation SCHMELZMETALL	HOVADUR® B 20
Material designation, EN standard	CuAl10Ni5Fe4
Material No., EN standard	CW307G
Material No., former DIN standard	2.0966
Material No., UNS system (ASTM)	C63000/C63020/C63200

Information about standards

EN	EN12163 (Round bars), EN12167 (Flat bars), EN12420 (Forged products)
DIN (former)	(DIN17665/DIN17672/DIN17678)
ASTM	(B124/B150)

Description of material

HOVADUR® B 20 is a multiphase copper aluminium alloy with addition of nickel and iron (aluminium bronze). The alloy combines high tensile strength, even at higher temperature and alternating stress, with high wear resistance as well as good resistance to corrosion and cavitation resistance. HOVADUR® B 20 is resistant against sea water and has a very good oxidation behaviour (no scale).

Due to the melting and casting procedure employed by SCHMELZMETALL, HOVADUR® B 20 shows remarkably less tool wear in case of machining compared to other aluminium bronzes.

Material properties

Chemical composition in % of weight (guaranteed ranges)

Al	Fe	Ni	Mn	others total	Cu
8.5–11.0	3.0–5.0	4.0–6.0	max. 1.0	0.5	Remainder

Agreed properties at 20 °C

Hardness Brinell HB		170–210 *)	
Electrical conductivity	MS/m	about 5	(standard value)

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

Associated properties at 20 °C

Tensile strength	1)	N/mm ² (MPa)	min. 680
0.2% yield strength	1)	N/mm ² (MPa)	min. 320
Elongation (A5)	1)	%	min. 10

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

Material information (typical values = nominal values)

Elastic modulus	N/mm ² (MPa)	118,000	
Softening temperature	°C	600	
Specific weight	g/cm ³	7.55	
Thermal conductivity	W/mK	50	(Average 20 °C–300 °C)
Thermal expansion coefficient	x 10 ⁻⁶ /°K	16	(Average 20 °C–300 °C)
Melting interval	°C	1035–1055	

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Processing instructions

Hot forming

HOVADUR® B 20 is very suitable for hot forming at temperatures of about 920 °C to 700 °C. According to the degree and the kind of forming, heating to 800 °C up to 850 °C is sufficient. After forming, cooling of the material is recommended at inactive air.

Cold forming

HOVADUR® B 20 is not suited for cold forming.

Heat treatment

After hot formings, a homogenizing and tension reducing annealing at a temperature between 600 °C and 650 °C during 2 to 5 hours is recommended.

Machining

In normal condition, HOVADUR® B 20 can be machined easily with standard hard metal tools. Material has a tenacious character.

Of all HOVADUR alloys, HOVADUR® B 20 is the material which is best suited for eroding. No special measures are necessary for grinding and polishing. Surface may be coated according to all usual procedures.

Joining

HOVADUR® B 20 is well suited for soldering, but concerning hard soldering, a (small) loss in hardness is to be expected. A very lowly melting silver brazing should be used.

HOVADUR® B 20 is very well suited for joining by welding. Build-up welding is suitable, too.

Attention must be paid to sufficient extraction and filtering of welding fume.

Application examples

Due to its attractive combination of properties, the alloy HOVADUR® B 20 is excellent for many applications. Typical examples are highly strained bearings, guide bushes, sliding elements and wearing plates. Concerning moulds for plastic injection, HOVADUR® B 20 is used in core slides, ejector pins and guiding elements.

Due to its combination of good resistance to corrosion, good strength, even at higher temperatures, and non-sparking property, it is excellent for many applications in plant construction, such as chemical industry, oil/gas industry as well as for offshore and marine uses.

Approvals

Our alloy HOVADUR® B 20 is tested and certified as being safe concerning contact with food.

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.