

Material data sheet

Issue No. 03EN

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HOVADUR® K 220

Page 1/2

Material designation SCHMELZMETALL **HOVADUR® K 220**

Description of material

HOVADUR® K 220 is a thermally precipitation hardenable copper-nickel-silicium alloy with addition of chromium. The material shows high electrical and thermal conductivity as well as great hardness and strength. These properties are combined with good resistance to corrosion and abrasion.

HOVADUR® K 220 is applied in many cases which require a Be-free alloy.

Material properties

Chemical composition in % of weight (nominal values)

Ni	Cr	Si	Cu
2.4	0.4	0.7	Remainder

Agreed properties at 20 °C (Condition: hardened)

Hardness Brinell HB		190–240 *)	
Electrical conductivity	MS/m	min. 22	(min. 38% IACS)

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

Associated properties at 20 °C (Condition: hardened)

Tensile strength	1)	N/mm ² (MPa)	650–800
0.2% yield strength	1)	N/mm ² (MPa)	500–650
Elongation (A5)	1)	%	10– 15

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

Material information (nominal values)

Elastic modulus	N/mm ² (MPa)	140,000	
Softening temperature	°C	480	
Specific weight	g/cm ³	8.84	
Thermal conductivity	W/mK	220 (190–240)	(Average 20 °C–300 °C)
Thermal expansion coefficient	x 10 ⁻⁶ /°K	16.2	(Average 20 °C–300 °C)
Melting interval	°C	1060–1085	

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Page 2/2

Processing instructions

Hot forming

HOVADUR® K 220 is not intended for hot forming.

Advice: After a hot forming executed by the customer, the properties of HOVADUR® K 220 will normally no longer be achieved.

Cold forming

In hardened condition, HOVADUR® K 220 is not intended for cold forming.

Heat treatment

A heat treatment of HOVADUR® K 220 is not recommended. In general, it changes the agreed properties which will no longer be achieved afterwards.

Machining

HOVADUR® K 220 is well suited for machining. We recommend standard hard metal tools and cooling with emulsion. HOVADUR® K 220 is suited for eroding. But due to its relatively high electrical conductivity, conditions are more difficult. No special measures are necessary for grinding and polishing.

Joining

HOVADUR® K 220 is suited for soldering. Concerning hard soldering, a loss in hardness is to be expected. A very low melting silver brazing should be used.

HOVADUR® K 220 is very well suited for joining by welding. Build-up welding by MIG/MAG arc welding as well as TIG welding is very suitable, too. Surfaces may be coated according to all usual procedures.

Application examples

Moulds for metal casting as well as plastic injection.

Cooling inserts, mould inserts and mould cores for overcoming thermal problems in plastic injection moulds.

Cooling inserts in die casting moulds.

Approvals

Our alloy HOVADUR® K 220 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.