Material data sheet HOVADUR® K 230

Material designation SCHMELZMETALL **HOVADUR® K 230**

Description of material

HOVADUR® K 230 is a precipitation hardenable copper alloy. In heat treated condition, the material is characterized by high electrical and thermal conductivity combined with very good hardness and resistance to heat. The alloy is especially applied where high thermal conductivity combined with great hardness is indispensable. Its very good resistance to fire cracks offers great advantages for the manufacturing of die casting moulds.

Safety data sheet

SCHMELZMETALL No. 07.02E (Issue 30.07.2002)

Advice

SCHMELZMETALL alloy HOVADUR® K 230 is a modification of the alloy HOVADUR® CNB spez which is produced according to special processes and heat treatments. Concerning safety aspects, the same information as for HOVADUR® CNB spez is valid.

Material properties

Chemical composition in % of weight (nominal values)

Ni	Be	Co	Fe	Si	Cu
1.8	0.4	< 0.3	< 0.2	< 0.2	Remainder

Agreed properties at 20 °C (Condition: hardened)

Hardness Brinell HB		**220–270 *)**
Electrical conductivity	**MS/m**	**min. 38**

***) 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)	680–800
0.2% yield strength	1)	N/mm^2 (MPa)	540–750
Elongation (A5)	1)	%	8– 15

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

Material information (nominal values)

Elastic modulus	N/mm^2 (MPa)	135,000	
Softening temperature	°C	480	
Specific weight	g/cm^3	8.85	
Thermal conductivity	W/mK	270–320	**(Average 20 °C–300 °C)**
Thermal expansion coefficient	x 10^{-6}/°K	17.2	**(Average 20 °C–300 °C)**
Melting interval	°C	1000–1030	

Processing instructions

Hot forming
HOVADUR® K 230 is not intended for hot forming.
Advice: After a hot forming executed by the customer, the properties of HOVADUR® K 230 will normally no longer be achieved.

Cold forming
In hardened condition, HOVADUR® K 230 is not intended for cold forming.

Heat treatment
A heat treatment of HOVADUR® K 230 is not recommended. In general, it changes the agreed properties which will no longer be achieved afterwards.

Machining
HOVADUR® K 230 is well suitable for machining. We recommend standard hard metal 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.
Eroding of HOVADUR® K 230 is difficult due to its high electrical conductivity.
Thread moulding is possible to a limited extent Bigger inside threads should be executed by circular thread milling.
HOVADUR® K 230 is well suited for polishing.

Joining
HOVADUR® K 230 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® K 230 is suited for welding.
Attention must be paid to sufficient extraction and filtering of welding fume.
Surfaces may be coated according to all usual procedures without problems.

Application examples

Inserts in moulds for plastic injection. Heat conducting parts for tempering systems.
Thermally high strained parts which are susceptible to fire cracks.
Moulds for non-ferrous metal casting, inserts in steel moulds at spots requiring a faster cooling speed.

Approvals
Our alloy HOVADUR® K 230 is tested and certified as being safe concerning contact with food.