

HCr1 (C18200)

Material Designation*

UNS	C18200
EN	CuCr1 (CW 105 C)
JIS	/
GB	TCr1

Chemical Composition

Cu	Balance	%
Cr	0.6-1.2	%
Fe	≤0.1	%
Si	≤0.1	%
Pb	≤0.05	%



Characteristics

It has good weldability, good wear resistance and wear reduction and is widely used in motor commutator, spot welder, seam welder, electrode for butt welder, and other high temperature requirements of strength, hardness and electrical conductivity.

Typical Applications

It is widely applied in motor commutator, collector ring, high temperature switch, welding electrode, roller, gripper, brake disc and other parts requiring high thermal conductivity, electrical conductivity and high thermal strength in the form of bi-metal.

Physical Properties

Density ^①	8.9	g/cm ³
Melting point	1075	°C
Electrical conductivity ^①	75	%IACS
Thermal conductivity ^①	324	W/(m·K)
Coefficient of thermal expansion ^②	17.0	10 ⁻⁶ /K
Modulus of elasticity	117	GPa

Note①: Temperature for testing is 20°C.

Note②: Temperature range for testing is 20-100°C.

Fabrication Properties

Cold workability	Excellent
Hot workability	Good
Brazing	Good
Resistance welding	Not recommended
Hot forging compared with C37700	80%
Machinability compared with C36000	20%

Mechanical Properties

Diameter	Temper	Tensile Strength	Yield Strength	Elongation	Hardness
mm		MPa min.	MPa min.	% min.	HRB min.
5 ≤ Φ ≤ 25	TH04	450	380	13	75
25 < Φ ≤ 50	TH04	405	380	13	70
50 ≤ Φ ≤ 75	TH04	380	310	13	65

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Tolerance and Delivery Form

Straight Bar

Diameter	Tolerance ^③	Ovality	Length	Straightness
mm	mm	mm	mm max.	mm/m max.
5 ≤ Φ ≤ 10	0.06	0.03	4000	1.0
10 < Φ ≤ 20	0.10	0.05	4000	1.0
20 < Φ ≤ 25	0.16	0.08	4000	1.0
25 < Φ ≤ 30	0.18	0.09	4000	1.0
30 < Φ ≤ 40	0.20	0.10	4000	1.0
40 < Φ ≤ 45	0.24	0.12	4000	1.0
45 < Φ ≤ 50	0.30	0.15	4000	1.0
50 < Φ ≤ 60	0.34	0.17	4000	1.0
60 < Φ ≤ 80	0.44	0.22	2500	3.0

Diameter	Tolerance ^③	Standard coil weights	Coil ID
mm	mm	kg	mm
1.0 < Φ ≤ 1.6	0.03	18-30	260-300
1.6 < Φ ≤ 2.5	0.03	25-40	320-350
2.5 < Φ ≤ 4.0	0.04	30-45	370-400
2.8 < Φ ≤ 6.5	0.04	100-250	400-650
4.0 < Φ ≤ 6.5	0.05	45-60	370-400
6.5 < Φ ≤ 10.0	0.05	200-400	1000-1200
8.0 < Φ ≤ 12.0	0.06	200-400	1200-1400

Note③: The tolerances listed in the table are specified as all plus or all minus. When tolerances are specified as plus and minus (±), half the values given.

*Composition CDA
 Conductivity RWMA 18-2003 ClassI
 Mechanical Properties RWMA 18-2003 ClassI, Yield Strength for reference only.
 Fabrication Properties For reference only
 Other Physical Properties For reference only

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