

Copper-nickel casting alloy **GN 10** alloy 2410

GN 10 has very good corrosion resistance to all types of water, such as drinking water, river water, brackish water, mine water, seawater as well as brine solutions and acidic and ammoniacal condensates. There is no sensitivity to stress corrosion cracking. Fouling with organisms from marine and brackish water is very low. The surface of the components thus remains smooth and free from fouling.

ZOLLERN brand	GN 10
EN designation	CuNi10Fe1Mn1-C
EN material no:	CC380H

EN 1982, ASTM B369

// national designations

DIN	G-CuNi10
DIN	2.0815
USA	C96200
F	≈ U – N10Fe1M

≈ (substantial coherence)

// Composition (mass fraction in %) EN 1982

Cu	Fe	Mn	Ni	Si
min. 84.5	1.0 – 1.8	1.0 – 1.5	9.0 – 11.0	max. 0.10
Al	C	Nb	Pb*	Zn
max. 0.01	max. 0.10	max. 1.0	max. 0.03	max. 0.5

* ASTM Pb max. 0.01%

// Strength properties at room temperature

(minimum values)

[1] EN 1982 [2] ASTM B369	R _m N/mm ²	R _{p0.2} N/mm ²	A ₅ %	HB
[1] Sand casting	280	120	20	70
[1] Mask mould casting	280	120	20	70
[1] Centrifugal casting	280	100	25	70
[2] Sand casting	310	170	20	-

// Physical properties (reference values)

Density at 20°C	8.9 kg/dm ³
Melting temperature/range	1105 – 1140°C
Thermal conductivity	0.59 W/cm °C
Electrical conductivity at 20°C	4 – 6 MS/m 7 – 10 % IACS
Electrical resistance at 20°C	0.17 - 0.25 Ω mm ² /m
Coefficient of linear expansion in the range from 20°C to 200°C	16 x 10 ⁻⁶ °C ⁻¹
Shrinkage	approx. 1.5 % – 2 %
Young's modulus	123 KN/mm ²
Permeability	< 2

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Areas of application

GN 10 is used when a high degree of corrosion resistance is required.

For example for

- Valve parts, valves, oil and water cooler boxes in power plants, diesel engines, refineries, seawater desalination plants, chemical and petrochemical industry
- Other applications in shipbuilding, oil rigs, oil production and processing

Machinability

GN 10 is relatively difficult to machine due to its low strength and high toughness. Long, tough chips are formed. The machinability index is approx. 20 where $CuZn39Pb3 = 100$.

Relaxation annealing	300 – 450 °C
Soft soldering	very well suited
Brazing	well suited
Welding	well suited, possible filler material S-CuNi10Fe or S-CuNi30Fe for gas-shielded welding. For manual electrode welding EI-CuNi10Mn or EI-CuNi30Mn
Galvanisability	good

