



bedra ROD & BAR

BearMet® Wear Resistant and Corrosion Resistant Copper Alloy

BearMet®
SERIES ALLOY

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BearMet® 220

Product Characteristics

- The alloy is a copper-aluminum-iron-nickel quaternary alloy, obtaining high strength and wear resistance from solid solution strengthening of aluminum.
- Meanwhile, with a dense aluminum oxide protective layer formed by aluminum element on the surface of the product, the alloy has good high-temperature corrosion resistance and oxidation resistance, and has good corrosion resistance in the atmosphere, fresh water and seawater.
- Weldable, not easy to braze, good pressure processing in hot state.

Typical Application

BearMet® 220 is mainly applied in pump bodies, valves, valve seats, guide rods, valve rods, bolts, nuts and pipes for Christmas tree of drilling platform.



Stop valve of Christmas tree



Submerged pump



Decompression valve

Chemical Composition

Cu	Rem.	%
Al	9.0-11.0	%
Fe	2.0-4.0	%
Ni	4.0-5.5	%
Mn	≤1.5	%

*Similar to standard designation C63000 (CuAl10Ni5Fe3)

Physical Properties

Density	7.6	g/cm ³
Melting point	1054	°C
Electric conductivity	7	%IACS
Coefficient of thermal conductivity	39.1	W/(m·K)
Coefficient of thermal expansion	15.6	10 ⁻⁶ /K
Elastic modulus	121	GPa

Mechanical Properties

Temper	Diameter (mm)	Tensile strength MPa (min.)	Yield strength MPa (min.)	Elongation A% (min.)
HR50	8.0≤Φ<25	690	345	5
	25≤Φ<50	620	310	6
	50≤Φ≤80	585	295	10
M30	80≤Φ≤120	550	275	12

*The above table shows performance standards for typical states and sizes

BearMet® 230

Product Characteristics

- Outstanding mechanical strength
- Excellent wear & galling resistance
- Relatively low magnetic permeability
- Excellent seawater corrosion resistance
- Hydrogen embrittlement resistance and stress corrosion cracking resistance in seawater
- Good resistance to stress corrosion cracking in hydrogen sulphide conditions
- Anti-bio-fouling (lack of marine growth)

Typical Application

BearMet® 230 is mainly applied in underwater sealing connectors, bulkhead connectors, submarine fasteners, pump shafts and valve shafts, valve rods, hydraulic pistons, drill pipes and clamps used for ROV, AUV and wellhead.



Deep water connector



Bulkhead connector



Deep water coaxial connector

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Chemical Composition

Cu	Rem.	%
Ni	13-16	%
Al	2.0-4.0	%
Mn	≤1.0	%
Fe	≤2.5	%
Others	≤1.0	%

*Similar to standard designation C72400 (CuNi14Al3)

Physical Properties

Density (g/cm³)	8.5
Specific heat capacity (J/(g·K))	0.416
Thermal conductivity (W/(m·K))	45.0
Electrical conductivity (%IACS)	11
Coefficient of thermal expansion (10⁻⁶/K)	16.0
Poisson's ratio	0.33

Mechanical Properties

Diameter (mm)	Tensile strength MPa (min.)	Yield strength MPa (min.)	Elongation A% (min.)	Hardness HV (min.)
Φ≤65	850	630	10	240
Φ>65	770	550	10	230

*The above table shows performance standards for typical states and sizes

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BearMet® 350

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Product Characteristics

- Ultra-high strength: up to 1400MPa
- Resist galling, corrosion and wear: suitable to extremely harsh servicing conditions
- High fatigue strength: higher servicing life and reliability even under heavy load
- Outstanding processability
- Non-magnetic, Be-free & Pb-free

Application Characteristics

- Provide sufficient strength, durability and stability in extreme load and wide temperature range.
- Extremely low friction coefficient and minimum abrasion, endowing better reliability and longer service life

Typical Application

BearMet® 350 is mainly applied in all kinds of high-temperature resistant, wear-resistant, nonmagnetic and high-strength copper alloy components for the petroleum industry such as MWD and LWD drilling tools for oil drilling, guide rod for test well, sucker rod coupling, electric pump assembly, test well probe, deep-sea explosion-proof and separable connecting valve.



High speed drill bit



Sucker rod coupling



MWD connector

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Chemical Composition

Cu	Rem.	%
Ni	14.5-15.5	%
Sn	7.5-8.5	%
Others	≤0.5	%

*Similar to standard designation C72900 (CuNi15Sn8)

Physical Properties

Density (g/cm³)	8.94
Electrical conductivity (%IACS)	9
Elastic modulus (GPa)	128
Coefficient of thermal expansion (10⁻⁶/K)	16.0
Poisson's ratio	0.3

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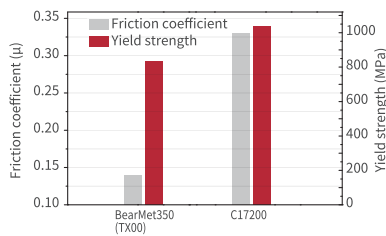
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Mechanical Properties

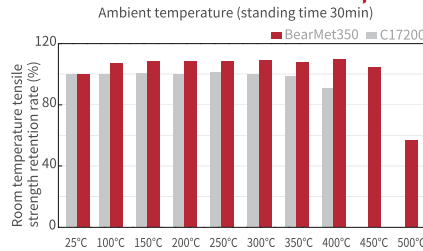
Temper	Diameter (mm)	Tensile strength MPa (min.)	Yield strength MPa (min.)	Elongation A% (min.)	Hardness HRC (min.)
TX00	$16 \leq \Phi \leq 92$	910	738	5	30
TS02	$20 < \Phi \leq 40$	965	895	5	24
TS04	$20 < \Phi \leq 80$	1105	1035	3	34

*The above table shows performance standards for typical states and sizes

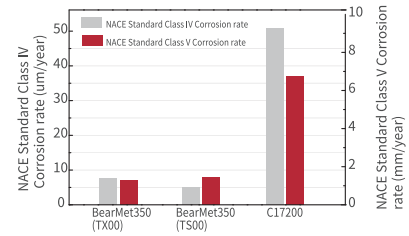
Friction Properties



Thermal Endurance Properties



Corrosion Property



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