C17510 (Alloy 3)

Smiths High Performance

High conductivity & strength

C17510 (also known as Alloy 3) is a high-conductivity beryllium copper alloy ideal for applications requiring a combination of strength and high thermal conductivity.

Offering corrosion-resistant characteristics similar to pure copper, C17510 is fully heat-treated, and therefore, no further treatments are required.

The resulting material is non-magnetic and thermal fatigue is excellent. The general machinability and brazing characteristics of the alloy are also good. The weldability of the alloy is only fair though C17510 is highly weldable to copper.

The material is stronger when compared to other copper alloys with superior structural strength.

Motorsport / Automotive Uses:

Traditional applications for Alloy 3 include oil and gas applications, particularly in long-reach power and signal solutions. Due to the material's high conductivity and strength, C17510 also offers a variety of motorsport and automotive applications, which include:

- Engine compartment connectors
- Switches
- Sensor terminals
- Coaxial connectors
- Signal connectors
- Any environment where a degree of thermal management is required

About Smiths High Performance

Smiths High Performance is a leading stockholder and supplier of high-performance engineering materials. We are material supply chain partners supporting **high-technology market sectors**.

Availability:

Bar, plate and wire

Weldability:

C17510 resists stress corrosion cracking in both sulphide and chloride solutions. It is corrosion-resistant to most organic solutions, saltwater atmosphere, non-oxidising acids and diluted alkalis and is not susceptible to hydrogen embrittlement. Use with strong, oxidising acids or ammonium hydroxide is not recommended.

SCAN ME

Further technical data available on the reverse of this Datasheet

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Chemical Composition (weight, %)

	Be	Ni	Copper + Additions
Min:	0.20	1.80	99.50
Max:	0.60	2.20	

Benefits:

- High electrical conductivity
- Superior strength compared to other copper alloys
- Good resistance to stress relaxation
- Very good machinability
- Non-magnetic

Mechanical Properties

Temper	A (TB00)	H (TD04)	AT (TF00)	HT (TH04)
Tensile Strength ksi	35 - 55	65 - 80	100 - 130	115 - 140
Tensile Strength MPa	240 - 380	450 - 550	690 - 895	793 - 960
0.2% Yield Strength ksi min.	25	55	80	110
0.2% Yield Strength MPa min.	170	380	550	760
Elongation in 4D% min.	30	10	10	10
Hardness Rockwell	B 50 max	B 60 - 80	B 92 - 100	B 95 - 102
Electrical Conductivity %IACS min.	20	20	45	48
Typical Age Hardening	—	—	3 hrs. @840-900°F	2 hrs. @840-900°F

Physical Properties (typical)

Density lbs./in3 @ 68°F	.317
Coefficient of Thermal expansion 68°F to 390°F	10.0 x 10-6
Thermal Conductivity BTU/(ft. x hr. x °F) @ 68°F	145
Electrical Conductivity %IACS @ 68°F	48
Thermal Capacity (specific heat) BTU/(lb. x °F) @ 68°F	0.1
Modulus of elasticity psi	19.2 x 106
Modulus of rigidity (Torsion Modulus) psi	7.5 x 106
Machinability	40

...where performance matters...

When you purchase high-performance materials from **Smiths High Performance**, you will join some of the biggest and best global engineering companies. We are a Tier 1 supply chain partner to the world's leading motorsport companies. Our unique business structure and ethos allow us to offer services otherwise unavailable in this market sector.

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