



## GLIDCOP® Dispersion Strengthened Copper

### GLIDCOP AL-15 applications

GLIDCOP AL-15 (C15715) is primarily designed for applications requiring the highest electrical and thermal conductivities along with good elevated temperature strength. GLIDCOP AL-15 has excellent cold working characteristics, and can be drawn into fine wire or rolled into thin sheets.

#### Recommended for:

- Hybrid circuit package components; such as vacuum tube and microwave tube
- X-ray tube components; such as anodes, grids, cathodes, helixes and heat sinks
- Electrical components; such as circuit breakers, relay blades and switches
- Rotating equipment components; such as commutators, electric generator, motor components and brush springs
- High power magnet winding

For applications requiring brazed joints and/or extended high temperature exposure in hydrogen containing atmospheres or vacuum, Low Oxygen\* (LOX) GLIDCOP is available and recommended.

### Description

GLIDCOP AL-15 is a low alumina content grade of dispersion strengthened copper. It consists of a pure copper matrix containing finely dispersed sub-microscopic particles of  $Al_2O_3$  which act as a barrier to dislocation movement. The dispersed  $Al_2O_3$  is thermally stable so that it acts to retard recrystallization of the copper. Consequently, significant softening does not occur as the result of high temperature exposure. Along with superior strength retention, thermal and electrical conductivities are higher than conventional copper alloys.

GLIDCOP AL-15 is designated in UNS as C15715. This grade is available as rod and bar stock, strip and strip reroll, wire redraw, plates and large rounds. Most forms are available with or without an oxygen free copper cladding. Unless specified as "declad", GLIDCOP is supplied with cladding.

### Composition GLIDCOP AL-15

Aluminum: 0.15% by wt. as  $Al_2O_3$   
Copper: Balance

\*Note: Low Oxygen GLIDCOP contains nominally 250 ppm boron.

## Physical properties

Melting Point	1083°C	1981°F
Density	8.90 g/cm <sup>3</sup> at 20°C	0.321 lbs./in <sup>3</sup> at 68°F
Electrical Conductivity ( $\sigma$ )	0.533 $\mu\Omega$ -cm at 20°C	92% IACS at 68°F
Thermal Conductivity (K)	365 W/m/K at 20°C	211 Btu/ft <sup>2</sup> /ft/hr/°F at 68°F
Electrical Resistivity ( $\rho$ )	1.86 $\mu\Omega$ -cm at 20°C	11.19 $\Omega$ circular-mil/ft. at 68°F
Coefficient of Thermal Expansion	16.6 $\mu\text{m}/\text{m}/^\circ\text{C}$ (20-150°C)	9.2 $\mu\text{in}/\text{in}/^\circ\text{F}$ (68-300°F)
Modulus of Elasticity (Tension) ( $\lambda$ )	130 Gpa	19 x 10 <sup>6</sup> psi

## Mechanical properties

Typical room temperature properties of GLIDCOP® AL-15

Shapes	Temper		Tensile Strength				Elongation	Hardness	
	mm	in	or Condition	MPa	ksi	MPa	ksi	%	HRB
Flat products	10	0.400	As Cons. *	413	60	331	48	20	62
	1.3	0.050	CW **88%	579	84	537	78	7	-
	0.6	0.025	CW 94%	620	90	579	84	7	-
	0.15	0.006	CW 98%	661	96	613	89	6	-
Plate	Up to 130	5.0	As Cons.	365	53	255	37	26	62
	25	1.0	CW 60%	476	69	427	62	10	-
	16	0.625	CW 75%	483	70	455	66	10	-
Rod	29	1.125	As Cons.	393	57	324	47	27	62
	19	0.75	CW 55%	427	62	407	59	18	68
	7	0.275	CW 94%	496	72	469	68	9	72
Wire	1.3	0.050	CW 99%	524	76	496	72	2	-
	0.4	0.015	CW 99.9%	606	88	579	84	1	-
Rounds	Up to 760	30	As Cons.	365	53	255	37	26	-

\* As Consolidated \*\* Cold Work: % reduction in area

## Samples and services

For further information or sample quantities for test, contact our Customer Service Department.

## Material Safety Data

See MSDS before using this product.

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