

TECHNICAL DATA SHEET

GLIDCOP® DISPERSION STRENGTHENED COPPER GLIDCOP® AL-15 (C15715)

APPLICATIONS

The AL-15 grade 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.

GlidCop® AL-15 is recommended for hybrid circuit package components; vacuum tube, microwave tube, and X-ray tube components such as anodes, grids, cathodes, helices, and heat sinks; electrical components such as circuit breakers, relay blades, and switches; rotating equipment components such as commutators, electric generator and motor components, and brush springs; and high power magnet windings.

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°	1981°
Density	8.90 g/cm ³ at 20°C	0.321 lbs./in ³ at 68°F
Electrical Conductivity	0.533 micro mho-cm at 20°C	92% IACS at 68°F
Thermal Conductivity	365 W/m/°K at 20°C	211 Btu/ft ² /ft/hr/°F at 68°F
Electrical Resistivity	1.86 micro ohm-cm at 20°C	11.19 Ohm circular-mil/ft. at 68°F
Coefficient of Thermal Expansion	16.6 μm/m/°C (20-150°C)	9.2 μin/in/°F (68-300°F)
Modulus of Elasticity (Tension)	130 Gpa	19 x 10 ⁶ psi

MECHANICAL PROPERTIES

TYPICAL ROOM TEMPERATURE PROPERTIES OF GLIDCOP® AL-15

Shapes	Thickness or Dia.		Temper or Condition	Tensile Strength		Yield Strength		Elongation %	Hardness HRB
	mm	in		MPa	ksi	MPa	ksi		
Flat Products	10	.400	As Cons. #	413	60	331	48	20	62
	1.3	.050	CW*88%	579	84	537	78	7	-
	.6	.025	CW 94%	620	90	579	84	7	-
	.15	.006	CW 98%	661	96	613	89	6	-
	.15	.006	Temper 70	517	75	483	70	10	-
	.15	.006	Temper 80	586	85	551	80	8	-
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	.625	CW 75%	483	70	455	66	10	-
Rod	29	1.125	As Cons.	393	57	324	47	27	62
	19	.75	CW 55%	427	62	407	59	18	68
	7	.275	CW 94%	496	72	469	68	9	72
Wire	1.3	.050	CW 99%	524	76	496	72	2	-
	1.3	.050	HT [†] 650°C	400	58	351	51	10	-
	.4	.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				†Heat Treatment for 1 hour			

MATERIAL SAFETY DATA

See MSDS before using this product.

SAMPLES AND SERVICES

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

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Spotwelding Consultants, Inc.

(888) 255-6780 toll free order line
 (972) 475-0874 phone
 (972) 475-5024 fax
 4209 Industrial
 Rowlett, Texas 75088