Austral Wright Metals
at the cutting edge

Austral Bronze Crane Copper Limited
ACN 008 466 840

Sales Offices	Phone	Fax
Adelaide	08 8345 1033	08 8345 1044
Brisbane	07 3722 0800	07 3277 6799
Melbourne	03 9409 8500	03 9408 3946
Sydney	02 9827 0790	02 9757 4486
Perth	08 9258 2600	08 9358 6206

PRODUCT DATA SHEET

Copper – iron alloy

(High strength modified copper, HSM Copper)

UNS C19400

Copper Alloys

Chemical Composition

(%max., unless shown as range or minimum)

	Copper	Iron	Lead	Phosphorus	Zinc
Minimum/Maximum	97.0 min	2.1 – 2.6	0.03	0.015 – 0.15	0.05 9 – 0.20
Nominal	97.4	2.4	-	0.04	0.13

Applicable Specifications

Product	Specification
Bar, Rolled	ASTM B465
Plate	ASTM B465
Sheet	ASTM B465, B694
Strip	ASTM B465, B888, B694
Tube, Welded	ASME SB543 ASTM B543

Common Fabrication Processes

Blanking, Coining, Coppersmithing, Drawing, Etching, Forming and Bending, Heading and Upsetting, Hot Forging and Pressing, Piercing and Punching, Roll Threading and Knurling, Shearing, Spinning, Squeezing and Swaging, Stamping

Fabrication Properties

Joining Technique	Suitability
Soldering	Excellent
Brazing	Excellent
Oxyacetylene Welding	Good
Gas Shielded Arc Welding	Excellent
Coated Metal Arc Welding	Not Recommended
Spot Weld	Not Recommended
Seam Weld	Not Recommended
Butt Weld	Good
Capacity for Being Cold Worked	Excellent
Capacity for Being Hot Formed	Excellent
Forgeability Rating	65
Machinability Rating	20

Mechanical Properties at 20°C

Temper	Section Size	Tensile Strength	Yield Strength (0.5% ext. under load)	Yield Strength (0.2% offset)	Elongation	Rockwell Hardness				Fatigue Strength*
	mm.	MPa	MPa	MPa	%	B	C	F	30T	MPa
Flat Products										
H02	1	414	345	365	9	68	-	-	66	-
H04	1	462	-	434	4	73	-	-	69	145
H06	1	483	-	465	3	74	-	-	71	-
H08	1	503	-	486	2	75	-	-	72	148
H10	1	524	-	503	2	77	-	-	74	141
H14	1	-	-	503	-	-	-	-	73	-
H14	1	552	-	-	1	-	-	-	-	-
O50	0.64	345	-	207	29	45	-	-	-	-
O60	0.64	310	-	165	32	38	-	-	-	110
Tube										
H55	0.89	400	-	379	9	61	-	-	60	-
H80	0.89	469	-	455	2	73	-	-	66	-
O50	0.89	345	-	207	16	45	-	-	-	-
O60	0.89	310	-	165	28	38	-	-	-	-
WM02	0.89	400	-	365	9	61	-	-	60	-
WM04	0.89	448	-	434	4	73	-	-	66	-
WM06	0.89	483	-	465	3	74	-	-	68	-
WM08	0.89	503	-	486	2	75	-	-	69	-
WM10	0.89	524	-	503	1	76	-	-	69	-

*Fatigue Strength = 100 x 10^6 cycles, unless indicated as [N]X 10^6.

Physical Properties

	US Customary	Metric
Melting Point - Liquidus	1990 F	1088 C
Melting Point - Solidus	1980 F	1082 C
Density	0.322 lb/in^3 at 68 F	8.91 gm/cm^3 @ 20 C
Specific Gravity	8.91	8.91
Electrical Resistivity	15.0 ohms-cmil/ft @ 68 F	2.49 microhm-cm @ 20 C
Electrical Conductivity	65 %IACS @ 68 F	0.38 MegaSiemens/cm @ 20 C
Thermal Conductivity	150.0 Btu · ft/(hr · ft2 · °F) at 68F	259.6 W/m · °K at 20 C
Coefficient of Thermal Expansion	9.8 ·10^{-6} per °F (68-572 F)	17.6 ·10^{-6} per °C (20-300 C)
Specific Heat Capacity	0.092 Btu/lb/°F at 68 F	385.5 J/kg · °K at 293 K
Modulus of Elasticity in Tension	17,500 ksi	121,000 MPa
Modulus of Rigidity	6,600 ksi	45,510 MPa

Tempers Most Commonly Used

Flat Products	
STRIP, ROLLED	H02, H04, H06, H08, H10, O50, O60, OTHER

Other	
TUBE	H02, H04, H06, H08, H10, H55, H80, O50, O60

Typical Uses

Automotive
Electrical Connectors - Automotive, Fuel Injectors

Consumer
Gift Hollow Ware

Electrical
Circuit Breaker Components, Contact Springs, Electrical Springs, Terminals, Fuse Clips, Electrical Connectors, Lead Frames, Cable Wrap, Plug Contacts, Clamps

Fasteners
Rivets

Industrial
Eyelets, Welded Condenser Tubes, Flexible Metal Hose, Gaskets