

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**
**Chromium Copper  
C18400**
**Copper  
Alloys**
**Chemical Composition**

(%maximum, unless shown as range or minimum)

	Copper <sup>(1)</sup>	Arsenic	Calcium	Chromium	Iron	Lithium	Phosphorus	Silicon	Zinc
Maximum or range	Rem.	0.005	0.005	0.40 - 1.2	0.15	0.05	0.05	0.10	0.7
Nominal	99.2	-	-	.8	-	-	-	-	-

(1) Copper value includes silver.

Note: Copper + Sum of Named Elements, 99.5% minimum.

**Applicable Specifications**

Product	Specification
Bar	MILITARY MIL-C-19311 SAE J461, J463
Forgings	MILITARY MIL-C-19311 SAE J461, J463
Rod	MILITARY MIL-C-19311 SAE J461, J463
Strip	MILITARY MIL-C-19311

**Common Fabrication Processes**

Bending, Cold working, Drawing, Forging, Heading, Hot working, Impacting, Rolling, Swaging

**Fabrication Properties**

Joining / Working Technique	Suitability
Soldering	Good
Brazing	Good
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Good
Coated Metal Arc Welding	Not Recommended
Spot Weld	Not Recommended
Seam Weld	Not Recommended
Butt Weld	Fair
Capacity for Being Cold Worked	Excellent
Capacity for Being Hot Formed	Good
Forgeability Rating	80
Machinability Rating	20

Mechanical Properties at 20 C

Temper	Section Size	Cold Work	Tensile Strength	Yield Strength (0.5% ext. under load)	Elongation	Rockwell Hardness	
						B	C
	mm.	%	MPa	MPa	%		
<b>Flat products</b>							
TB00	1	0	234	131	40	16	
TD00	1	50	365	352	6	66	
TF00	1	0	352	248	22	59	
TH01	1	50	462	407	14	79	
<b>Plate</b>							
TF00	51	0	400	290	25	70	
TF00	76	0	386	276	30	68	
<b>Rod</b>							
TB00	12.7	0	310	97	40	-	
TD00	3.96	91	593	531	14	-	
TD00	12.7	60	393	386	11	65	
TF00	12.7	0	483	379	21	70	
TF00	25.4	0	496	448	18	80	
TF00	51	0	483	448	18	75	
TF00	76	0	448	379	18	70	
TF00	102	0	379	296	25	68	
TH01	3.96	90	510	503	5	-	
TH01	12.7	50	531	462	19	83	
TH01	12.7	60	531	448	16	82	
<b>Tube</b>							
O61	0.0	0	276	103	50	-	59
TD00	0.0	76	407	393	21	67	
TH	0.0	76	476	434	26	84	

Physical Properties

	US Customary	Metric
Melting Point - Liquidus	1967 F	1075 C
Melting Point – Solidus	1958 F	1070 C
Density	0.321 lb/in <sup>3</sup> at 68 F	8.89 gm/cm <sup>3</sup> @ 20 C
Specific Gravity	8.89	8.89
Electrical Resistivity*	13.0 ohms-cmil/ft @ 68 F	2.16 microhm-cm @ 20 C
Electrical Conductivity**	80 %IACS @ 68 F	0.468 MegaSiemens/cm @ 20 C
Thermal Conductivity***	187.0 Btu · ft/(hr · ft <sup>2</sup> · °F) at 68F	323.6 W/m · °K at 20 C
Coefficient of Thermal Expansion	9.8 · 10 <sup>-6</sup> per °F (68-212 F)	17.6 · 10 <sup>-6</sup> per °C (20-100 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	17,000 ksi	117,000 MPa
Modulus of Rigidity	7,200 ksi	49,640 MPa

\*Solution heat treated, cold worked (50% minimum) and aged.

\*\*Solution heat treated, cold worked (50% minimum) and aged.

\*\*\*Solution heat treated, cold worked (50% minimum) and aged.

Tempers Most Commonly Used

Flat Products	
BAR, DRAWN	M20
PLATE	TB00, TD01, TH01
SHEET	O61, TH01
STRIP, ROLLED	O61, TB00, TD01, TH01

Other	
ROD	H01, M20, O61, OTHER, TB00, TD01, TH01
SHAPES	M20
TUBE	O61, OTHER, TH01
WIRE	H01, M20, O61, OTHER, TB00, TD01, TH01

Typical Uses**Electrical**

Contacts, Semi Conductor Bases, Wire, High Temperature, Switch Gears, Cable Connectors, Electric Motor Parts, Generator Components, Current Carrying Arms and Shafts, Arcing and Bridging Parts, Switch Contacts, Thermal Conductors Requiring Greater Strength than Copper, Electrical Conductors Requiring Greater Strength than Copper, Grid Side rods in Electron Tubes, Circuit Breaker Parts

**Industrial**

Resistance Welding Electrodes, Resistance Welding Equipment, Seam Welding Wheels, Electrode Holder Jaws, Molds, Spot Welding Tips, Flash Welding Electrodes

**Other**

Stressed Parts