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**PRODUCT DATA
SHEET**

Beryllium Copper Alloy 25
UNS C17200

**Copper
Alloys**

Chemical Composition

(% maximum, unless shown as range or minimum)

	Cu ⁽¹⁾	Al	Be	Co ⁽²⁾	Si
Min./Max.	Rem.	0.20	1.80 - 2.00	0.20 min	0.20
Nominal	98.1	-	1.90	-	-

(1) Cu value includes Ag.

(2) Ni + Co, .20% min.: Ni + Fe + Co, .6% max. Ni +
Note: Cu + Sum of Named Elements, 99.5% min.

Applicable Specifications

Product	Specification
Bar	AMS 4533, 4650, 4651 ASTM B194, B196 MILITARY MIL-C-21657 SAE J461, J463
Extrusions	ASTM B570
Forgings	AMS 4650 ASTM B570
Plate	ASTM B194
Rod	AMS 4533, 4651, 4534, 4650 ASTM B196 MILITARY MIL-C-21657 SAE J461, J463
Rod, Forging	AMS 4650
Sheet	ASTM B194
Strip	ASTM B194 SAE J461, J463
Tube, Seamless	AMS 4535 ASTM B643
Wire	AMS 4725 ASTM B197 SAE J461, J463

Common Fabrication Processes

Blanking, Drawing, Drilling, Forming and Bending, Tapping, Turning

Fabrication Properties

Joining Technique	Suitability	Joining Technique	Suitability
Soldering	Good	Coated Metal Arc Welding	Good
Brazing	Good	Spot Weld	Good
Oxyacetylene Welding	Not Recommended	Seam Weld	Fair
Gas Shielded Arc Welding	Good	Butt Weld	Fair
Capacity for Being Cold Worked	Good	Capacity for Being Hot Formed	Excellent
Forgeability Rating	40	Machinability Rating	20

Mechanical Properties (typical, room temperature, 20 C)

Temper	Former temper	Section Size	Yield Strength (0.2% offset)	Tensile Strength	Elongation	Rockwell Hardness				Vickers Hardness (approx)	Fatigue Strength @ 10 ⁸ cycles
						B	C	F	30T		
		mm	MPa	MPa	%						MPa
TB00	SHT [¶]	All	221	483	45	60	-	-	58	108	-
TD01	¼ hard	4.78	483	552	25	80	-	-	70	151	-
TD02	½ hard	4.78	565	634	15	92	-	-	77	198	-
TD04	Hard	4.78	717	758	5	99	-	-	81	240	-
TF00	Precipitation hardened	4.78	1,069	1,207	6	-	38	-	-	362	248
TH01	¼ hard + PHT*	4.78	1,138	1,276	4	-	40	-	-	382	276
TH02	½ hard + PHT*	4.78	1,207	1,344	3	-	41	-	-	393	303
TH04	Hard + PHT*	4.78	1,241	1,379	2	-	42	-	-	404	307
TM00	Mill hardened	4.78	565	724	20	-	27	-	-	275	-
TM01	¼ hard (mill)	4.78	634	793	17	-	23	-	-	250	-
TM02	½ hard (mill)	4.78	724	883	15	-	27	-	-	275	-
TM04	Hard (mill)	4.78	841	979	12	-	32	-	-	309	-
TM06	Extra hard (mill)	4.78	1,020	1,158	7	-	37	-	-	353	-
TM08	Spring hard (mill)	4.78	1,103	1,255	6	-	-	-	-	-	-
TB00	Annealed		138	496	20	65	-	-	-	117	-
TD04	SHT and cold worked: hard (H)	9.53	517	758	8	95	-	-	-	214	-
TD04		25.4	517	745	8	95	-	-	-	214	-
TD04		76.2	517	710	8	94	-	-	-	209	-
TF00	SHT and precipitation hardened	76.2	896	1,255	3	-	-	-	-	-	-
TF00		All	1000	1,255	4	-	-	-	-	-	-
TH04	SHT, cold worked, PHT: hard (HT)	9.53	2,172	2,792	4	-	-	-	-	-	-
TH04		76.2	1,000	1,344	4	-	-	-	-	-	-
TB00	SHT [¶]		193	469	35	-	-	-	-	-	-
TD01	SHT and cold worked: ¼ hard		565	703	10	-	-	-	-	-	-
TD02	SHT and cold worked: ½ hard		689	841	5	-	-	-	-	-	-
TD03	SHT and cold worked: ¾ hard		827	979	2	-	-	-	-	-	-
TD04	SHT and cold worked: Hard		862	1,048	1	-	-	-	-	-	-
TF00	Precipitation hardened		1,103	1,227	3	-	-	-	-	-	-
TH01	¼ hard and PHT (¼ HT)		1,207	1,310	2	-	-	-	-	-	-
TH02	½ hard and PHT (½ HT)		1,276	1,379	1	-	-	-	-	-	-
TH03	¾ hard and PHT (¾ HT)		1,310	1,448	1	-	-	-	-	-	-
TH04	Hard and PHT (HT)		1,344	1,462	1	-	-	-	-	-	-

* PHT = precipitation heat treated

¶ SHT = solution heat treated

Austral Wright Metals supplies a comprehensive range of stainless steels, copper alloys, nickel alloys and other high performance metals for challenging service conditions. Our engineers and metallurgists will be pleased to provide further data and applications advice.

Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1800 F	982 C
Melting Point – Solidus	1590 F	866 C
Density	0.298 lb/in ³ at 68 F	8.25 gm/cm ³ @ 20 C
Specific Gravity	8.26	8.26
Electrical Resistivity	46.2 ohms-cmil/ft @ 68 F	7.68 microhm-cm @ 20 C
Electrical Conductivity*	22 %IACS @ 68 F	0.129 MegaSiemens/cm @ 20 C
Thermal Conductivity**	62.0 Btu · ft/(hr · ft ² · °F) at 68F	107.3 W/m · °K at 20 C
Coefficient of Thermal Expansion	9.9 · 10 ⁻⁶ per °F (68-572 F)	17.8 · 10 ⁻⁶ per °C (20-300 C)
Specific Heat Capacity	0.1 Btu/lb/°F at 68 F	418.64 J/kg · °K at 293 K
Modulus of Elasticity in Tension	18,500 ksi	128,000 MPa
Modulus of Rigidity	7,300 ksi	50,330 MPa

*In the precipitation hardened condition.

**Actual value is 62-75.

Tempers Most Commonly Used**Flat Products**

BAR, DRAWN	H02, O60
BAR, ROLLED	H02, O60
PLATE	O60
STRIP, ROLLED	H01, H02, H03, H04, H10, O60

Other

ROD	H04, O60
SHAPES	O60
TUBE	H58, O60
WIRE	H01, H02, H03, H04, O60

Typical Uses

Electrical - Electrical Switch and Relay Blades, Contact Bridges, Clips, Spring Connectors, Current Carrying, Relay Parts, Switch Parts, Fuse Clips, Navigational Instruments, Connectors, Belleville Washers

Fasteners - Bolts, Screws, Fasteners, Washers, Lock Washers, Roll Pins, Retaining Rings

Industrial - Diaphragms, Valve Stems, Flexible Metal Hose, Shafts, Springs, Electrochemical, Bourdon Tubes, Bellows, Wear Plates on Heavy Equipment, Springs, Welding Equipment, Rolling Mill Parts, Spline Shafts, Pump Parts, Valves, Pumps, Non Sparking Safety Tools, Valve Seats, Housings for Instruments, Bushings, Bearings

Ordnance - Firing Pins

Other – Tools (non sparking)

Austral Wright Metals supply this material in the Mill Hardened (TM00) or Annealed (TB00) condition, for easy forming and machining. It can be hardened by heat treatment after fabrication. Typical precipitation heat treatment is 260 to 400°C for 0.5 to 8 hours.