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**PRODUCT DATA
SHEET**

**90/10 Gilding Metal
Copper Alloy 220**
UNS C22000

**Copper
Alloys**

Also known as Red Brass, Commercial Bronze, Gilding Metal

Composition, AS2738.2-1984

Copper 89.0 – 91.0 %, Iron 0.05% max, Lead 0.02% max, Zinc balance (~10%)

**Equivalent Alloy
Specifications**

Specification	Designation
UNS	C22000
BSI	CZ101
ISO	Cu Zn 10
JIS	C 2200
SAE	CA220

**Australian Product
Specifications**

Specification	Product Form
AS1566	Rolled flat products
AS1567	Wrought bars & sections

Specification	Title
B36	Brass Plate, Sheet, Strip, And Rolled Bar
B130	Commercial Bronze Strip for Bullet Jackets
B131	Copper Alloy Bullet Jacket Cups
B134	Brass Wire
B135	Seamless Brass Tube
B372	Seamless Copper and Copper-Alloy Rectangular Waveguide Tube
B587	Welded Brass Tube
B694	Copper, Copper-Alloy, and Copper-Clad Stainless Steel (CCS), and Copper-Clad Alloy Steel (CAS) Sheet and Strip for Electrical Cable Shielding

**ASTM Product
Specifications**

(Other product specifications available on enquiry)

Mechanical Properties (AS1566, Rolled flat products, and AS1567, Wrought rods, bars and sections)

Product	Temper	Tensile Strength MPa, minimum	Elongation %, minimum	Hardness HV
Sheet & Flats	Annealed			80 maximum
Sheet & Flats, <= 2.0 mm	½ hard	310	7	95 - 115
Sheet & Flats, 2.1 – 3.2 mm	½ hard	280	7	85 - 110
Rod & square bar >6mm	M	280	24	
Sheet & Flats, <= 2.0 mm	Hard	360	3	110 – 135
Sheet & Flats, 2.1 – 3.2 mm	Hard	320	3	100 – 125

Available Forms Austral Wright Metals can supply this alloy as sheet, strip and round bar.

General Description C22000 combines a rich golden colour with the best combination of strength, ductility and corrosion resistance of the plain copper-zinc alloys. It weathers to a rich bronze colour, and can be supplied in pre-patinated colours ranging from deep brown to green.

It has a lower rate of work hardening than the copper-zinc alloys with higher zinc content, such as 260 and 272. This is an advantage in multistage pressing applications without interstage annealing. It has excellent deep drawing characteristics and resistance to pitting corrosion when exposed to severe weather and water environments.

Typical Applications Architectural fascias, grillwork, jewellery, ornamental trim, vitreous enamel base, badges, door handles, escutcheons, marine hardware, munitions, primer caps, rotating bands, metallic bellows, pen, pencil and lipstick tubes etc.

PHYSICAL PROPERTIES

Property	Metric Units	Imperial Units
Melting Point (Liquidus)	1045°C	1910°F
Melting Point (Solidus)	1020°C	1870°F
Density	8.80 gm/cm ³ @ 20°C	0.318 lb/in ³ @ 68°F
Specific Gravity	8.80	8.80
Coefficient of Thermal Expansion	18.4 x 10 ⁻⁶ /°K (20 - 300°C)	10.2 x 10 ⁻⁵ /°F (68 - 572°F)
Thermal Conductivity	189 W/m.°K @ 20°C	109 BTU/ft ³ /ft/hr/°F @ 68°F
Thermal Capacity (Specific Heat)	376 J/kg.°K @ 20°C	0.09 BTU/lb/°F @ 68°F
Electrical Resistivity (Annealed)	3.92 microhm.cm @ 20°C	10.3 ohms (circ mil/ft) @ 68°F
Electrical Conductivity (Annealed)	0.255 microhm ⁻¹ .cm ⁻¹ @ 20°C	44 % IACS @ 68°F
Modulus of Elasticity (tension)	115 GPa	17 x 10 ⁶ psi
Modulus of Rigidity (shear)	44 GPa	6.4 x 10 ⁶ psi
Poisson's Ratio	0.33	0.33

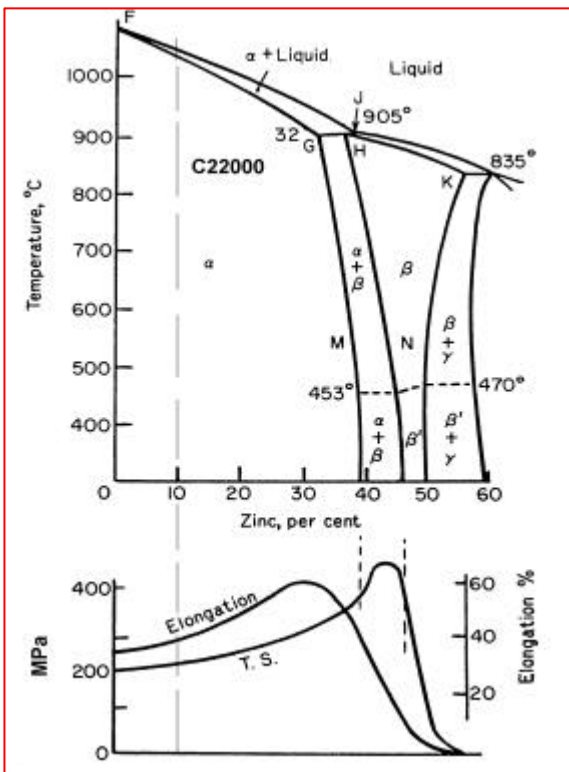
FABRICATING PROPERTIES

Cold Working Capacity	Excellent
Hot Working Capacity	Excellent
Hot Working Temperature	750-875°C
Annealing Temperature	425-800°C
Stress Relieving Temperature	250 – 300°C
Machinability Rating	20% of free cutting brass
Polishing/electroplating finishing	Excellent

JOINING PROPERTIES

Soldering	Excellent
Brazing	Excellent
Oxy-Acetylene Welding	Good
Gas Shielded Arc Welding (GTAW/TIG, GMAW/MIG)	Good
Coated Metal Arc Welding (Manual electrodes)	Not recommended
Resistance Welding	- Spot Good - Seam Good

Phase Diagram & Mechanical Properties of the Brasses



Corrosion Resistance

As an alpha brass with low zinc content, C22000 has excellent corrosion in most media. It is less susceptible to stress corrosion cracking than the higher zinc brasses such as 70/30 brass C26000, and is not considered susceptible in marine atmospheres. However, it should not be used in contact with aqueous ammonia and amines.

C22000 should not be used with acetic acid, acetylene, brines, calcium chloride, moist chlorine, chromic acid, hydrochloric acid, mercury or its compounds, nitric acid and sodium hypochlorite.

Please consult Austral Wright Metals for advice on your specific application.