

## Copper Metal Specifications

Some modern copper alloys have properties equal to or better than the more commonly specified steels. In respect of corrosion resistance, copper, gun metal, or aluminium bronze is often superior to stainless steel particularly in low oxygen environments. Certain high specification aluminium bronzes have extremely high wear resistance and hood anti-galling properties.

### Mechanical Properties

Metal	UTS		0.2% Proof		Elong %	BH	Density
	N/mm <sup>2</sup>	TPSI	N/mm <sup>2</sup>	TPSI			
Silicon Brass MB1	479	31	200	13	25	70 100	8.5
Aluminium Bronze AB2	640	41	250	16	13	140 190	8.3
Manganese Bronze HTB1	470	30	170	11	18	150	8.4
Manganese Bronze HTB3	740	48	400	26	11	190	8.4
Die Casting Brass DCB3	290	19	90	6	15	60 70	8.4
Silver Bronze SB1	450	30	180	1	5	100 130	8.7

### Comparison with International Specifications

Sylatech Spec.	BS1400	France	Germany	USA
MB1	-	-	-	ASTM B584 & C87500
AB2	AB2	-	DIN1714	ASTM B148
HTB1	HTB1	-	DIN1709	ASTM B147
HTB3	HTB3	-	DIN1709	ASTM B147
DCB3	DCB3	NF A 53-703		

### Comparisons to Mechanical Properties of Stainless Steel

Metal	UTS		0.2% Proof		Elong %	BH	Density
	MPa	KSI	MPa	KSI			
304	515	-	205	-	40	201	8.0
304L	485	-	170	-	40	201	8.0
316L	485	-	170	-	40	217	8.0
EN8	61	-	42	-	18	-	-

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### Silicon Brass MB1

The most commonly cast copper alloy. It offers high wear resistance particularly in well-lubricated conditions. Silicon aids fluidity during the casting process, increases the tensile strength by approximately 50% compared with normal copper-zinc alloys, and promotes resistance to dezincification. MB1 is a viable alternative to mild steel for many applications.

### Aluminium Bronze AB2

This alloy is noted for its corrosion resistance, good tensile strength, and retention of its properties at higher temperatures. The oxide film which forms on the liquid material requires the use of relatively high cost pouring systems.

### Manganese Bronze HTB3

A highly alloyed brass which offers higher tensile strength and loadings than MB1, but lower elongation. The tendency to produce zinc dross, when in the liquid state, leads to a lower surface finish than MB1.

### Die Casting Brass DCB3

A low strength material also suitable for soldering. It offers good machineability.

### Silver Bronze SB1

This unusual silver coloured material is an alloy of copper/nickel/manganese, with high resistance to salt water corrosion and erosion. The alloy is difficult to handle and should only be specified in premium applications and after consultation.