

METAL SPECIFICATIONS COPPER

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 good anti-galling properties.

Mechanical Properties

Metal	UTS		0.2% Proof		Elong %	BHN	Density
	N/mm2	TPSI	N/mm2	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	11	5	100 130	8.7

Comparison with International Specifications

MM 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		

Comparison to Mechanical properties of Stainless Steel

Metal	UTS		0.2% Proof		Elong %	BHN	Density
	N/mm2	TPSI	N/mm2	TPSI			
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.

Manganese Bronze-HTB1 - A medium strength alloy suitable for soldering. It offers good machineability.

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.