Manganese Bronze Alloys: High Strength Yellow Brass

C86200, C86300, C86500

The term “manganese bronze” which is used commercially to describe the high strength yellow brasses is somewhat misleading. Actually, they are not bronzes, nor does the amount of manganese they contain have any significant effect upon the structure of the alloys. The high-strength yellow brasses are basically alloys of copper and zinc to which varying amounts of other elements are added. These additions produce high strength combined with excellent corrosion resistance properties. The alloys are relatively easy to cast, but due to their solidification characteristics which lead to the formation of gross shrinkage concentration instead of dispersed shrinkage porosity, care must be exercised in gating and rising practice.

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Manganese Bronze

Typical Bronze & Brass Alloys									…	Suitability for being joined by:		…	…	…	Typical Mechanical Properties							
CA#	Ingot #	Previous Trade Name	Alloy Name	Nominal Composition	ASTM	Federal	Former Federal	Military	Approx. Weight, lb./in.3	Soldering	Brazing	Castability (Ranked 1-8, 1 is the best or highest)	Fluidity (Ranked 1-8, 1 is the best or highest)	Machinability Rating (Free Cutting Brass = 100)	Tensile Strength, ksi	Yield Strength, ksi	Elongation, Percentage in 2 in.	Shear Strength, ksi	Fatigue Strength (100 million cycles), ksi	Brinell Hardness (500-kg Load) *(3000-kg Load)	Shrinkage Allowance	Pattern Maker's Shrinkage
862	423	High Strength Yellow Brass	Manganese Bronze	90,000 Tensile	B30, B22, B271, B505, B584	QQ-C-523, QQ-C-390	QQ-B-726, QQ-C-390	MIL-C-11866, MIL-C-22229	0.288	Poor	Poor	6	2	30	95	48	20	…	…	180	2%	…
863	424	High Strength Yellow Brass	Manganese Bronze	110,000 Tensile	B30, B22, B271, B505, B584	QQ-C-523, QQ-C-390	QQ-B-726, QQ-C-390	MIL-C-11866, MIL-C-15345, MIL-C-22087, MIL-C-22229	0.283	Poor	Poor	6	2	8	119	83	18	…	25	225	2.30%	…

865	421	High Strength Yellow Brass	Manganese Bronze	65,000 Tensile	B30, B176, B271, B505, B584	QQ-C-523, QQ-C-390	QQ-B-726, QQ-C-390	MIL-C-15345, MIL-C-22087, MIL-C-22229	0.301	Fair	Fair	6	2	26	71	28	30	...	20	100	1.90%	1.65% to 2.15%

Typical Bronze & Brass Alloys

CA#	Ingot #	Previous Trade Name	Alloy Name	Nominal Composition	Applications
862	423	High Strength Yellow Brass	Manganese Bronze	90,000 Tensile	Marine castings, gears, gun mounts, bushings and bearings.
863	424	High Strength Yellow Brass	Manganese Bronze	110,000 Tensile	Extra-heavy duty, high strength alloy for gears, cams, bearings, screw-down nuts, bridge parts, hydraulic cylinder parts. (Not to be used in marine, ammonia or high corrosive atmospheres)
865	421	High Strength Yellow Brass	Manganese Bronze	65,000 Tensile	Propeller hubs, blades and other parts in contact with salt and fresh water, gears, liners.

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