

Table 15: Brass Forgings, Stampings and Hot Pressings - Compositions, Uses and Typical Properties

This table shows only the old BS alloys with their equivalent EN specifications. For alloys not included, see earlier tables.

Designation			Description	Composition, %, Range (Excluding Impurities)						Typical Mechanical Properties (Except where Minimum Quoted)				Remarks	
Old BS Near Equivalent	EN			Cu	Al	Fe	Mn	Pb	Others	Zn	0.2% Proof Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation %		Hardness (HV)
	Symbol	Number													
CZ122	CuZn40Pb2	CW617N	Leaded brasses	57.0-59.0				1.6-2.5		Rem.	170	400	35	100	The most popular alloy for hot stamping. The lead content ensures free-machining characteristics. Commonly used hot stamping brasses with a useful range of ductility and machinability.
CZ121-Pb3	CuZn39Pb3	CW614N		57.0-59.0				2.5-3.5		Rem	200	420	32	100	
CZ121-Pb4	CuZn38Pb4	CW609N		57.0-59.0				3.5-4.2		Rem.	180	380	40	100	
CZ128	CuZn38Pb2 and CuZn39Pb2	CW608N and		60.0-61.0				1.6-2.5		Rem.	180	380	40	100	
		CW612N		59.0-60.0				1.6-2.5		Rem.	180	380	40	100	
CZ129	CuZn39Pb1	CW611N	59.0-60.0				0.8-1.6		Rem.	180	380	40	100		
CZ137 (superseded CZ123)	CuZn39Pb0.5	CW610N	60/40 brasses	59.0-60.5				0.2-0.8		Rem.	140	370	40	100	These alloys are very plastic at the hot working temperature, therefore very intricate shapes, showing fine surface detail, can be produced. Components made from these alloys have limited cold working ability.
CZ109	CuZn40	CW509L	Lead free 60/40 brass	59.5-61.5						Rem.	140	370	40	100	
CZ114	CuZn40Mn1Pb1AlFeSn	CW721R	High tensile brasses	57.0-59.0	0.3-1.3	0.2-1.2	0.8-1.8	0.8-1.6	0.2-1.0 Sn	Rem.	195 min	460 min	15 min	110	Used in applications where high strength is required, such as high pressure gas valves etc. The lead addition in CW721R improves machinability.
CZ116	CuZn25Al5Fe2Mn2Pb	CW705R		65.0-68.0	4.0-5.0	0.5-3.0	0.5-3.0	0.2-0.8		Rem.	295 min	540 min	12 min	160	
CZ115	CuZn40Mn1Pb1FeSn	CW722R	High tensile brass (soldering quality)	56.5-58.5		0.2-1.2	0.8-1.8	0.8-1.6	0.2-1.0 Sn	Rem.	195 min	460 min	15 min	110	Similar to CW721R, but the restriction in aluminium content avoids non-wetting problems during soft soldering operations.
CZ135	CuZn37Mn3Al2PbSi	CW713R	High tensile brass with silicon	57.0-59.0	1.3-2.3		1.5-3.0	0.2-0.8	0.3-1.3 Si	Rem.	230 min	500 min	12 min	150	Readily hot stamped. Possesses excellent wear resistance.
CZ132	CuZn36Pb2As	CW602N	Dezincification-resistant brass	61.0-63.0				1.7-2.8	0.02-0.15 As	Rem.	130	350	40	75	Brass with good hot ductility which is then heat treated to give excellent resistance to dezincification.
CZ136	CuZn40Mn1Pb1	CW720R	Manganese brass	57.0-59.0			0.5-1.5	1.0-2.0		Rem.	125	340	40	90	Used for architectural purposes. Generally it is chemically toned to a decorative chocolate colour. Also used for valve spindles and nuts in contact with cast iron, having an excellent resistance to seizure.
CZ112	CuZn36Sn1Pb	CW712R	Naval brass	61.0-63.0				0.2-0.6	1.0-1.5 Sn	Rem.	150	390	35	110	The tin addition improves corrosion resistance, especially in sea water. The higher melting temperature facilitates brazing with standard filler materials.
CZ104	(CuZn20Pb)	None													

Notes:

Compositions:

Compositions given are the EN materials appropriate to designation number. Composition ranges may be outside those of previous BS specifications, therefore compliance should be checked before assuming suitability for applications.

Standards:

This table includes materials previously included in BS 2872 'Specification for copper and copper alloy forging stock and forgings'. These materials are now included in the following EN standards for individual product forms:
 EN 12420 'Copper and copper alloys - Forgings'
 EN 12165 'Copper and copper alloys - Wrought and unwrought forging stock'