Table 17: Brass Tubes - 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.

Old BS Near Equivalent	EN		Description	Composition, %, Range (Excluding Impurities)						Typical Mechanical Properties (1)								Remarks
				Cu	Al	Pb	Si	Others	Zinc	0.2% Proof Strength (N/mm²)		Tensile Strength (N/mm²)		Elongation %		Hardness (HV)		
	Symbol	Number								(a)	(h)	(a)	(h)	(a)	(h)	(a)	(h)	
CZ101	CuZn10	CW501L	90/10 brass	89.0-91.0					Rem.	90	340	260	420	60	20	60	125	Used for driving bands for projectiles. Architectural - hand rails. Communication systems - wave guides. Bellows for fluid and steam systems.
CZ102	CuZn15	CW502L	85/15 brass	84.0-86.0					Rem.	85	360	280	430	50	20	65	140	Used for condenser and cooling units, gauges and instrument tubes. Decorative uses. Musical instruments.
CZ103	CuZn20	CW503L	80/20 brass	79.0-81.0					Rem.	115	450	315	380	55	15	75	135	Architectural applications.
CZ108	CuZn37	CW508L	Common brass	62.0-64.0					Rem.	120	480	360	540	60	10	75	170	Sanitary and decorative applications. Aerials.
CZ109	CuZn40	CW509L	60/40 brass	59.5-61.5					Rem.	110		370		40		75		
CZ126	CuZn30As	CW707R	70/30 arsenical brass	69.0-71.0				0.02-0.06 As	Rem.	110	420	310	465	60	20	70	165	Standard compositions for condenser tubes. The arsenic is added to inhibit dezincification.
CZ111	CuZn28Sn1As	CW706R	Admiralty brass	70.0-72.5				0.02-0.06 As 0.9-1.3 Sn	Rem.	110	410	320	460	60	20	75	165	Good corrosion resistance in brackish water.
CZ110	CuZn20Al2As	CW702R	Aluminium brass	76.0-79.0	1.8-2.3			0.02-0.06 As	Rem.	115	460	360	560	60	20	75	165	Possesses excellent corrosion resistance in clean seawater and is a favoured alloy for condenser tubes.
CZ131 (superseded CZ119)	CuZn35Pb2	CW601N	Free cutting brass	62.0-63.5		1.6-2.5			Rem.	90	350	340	465	40	10	80	150	The lead content gives good machinability but ductility is reduced.
CZ127	CuZn13Al1Ni1Si1	CW700R	Aluminium-nickel-silicon brass	81.0-86.0	0.7-1.2		0.8-1.3	0.8-1.4 Ni	Rem.	n/a	360	n/a	495	n/a	44	n/a	n/a	Trade name 'Tungum'. Used for hydraulic and pneumatic control and instrumentation circuits in aviation, offshore and marine applications. Used to transmit high pressure oxygen (non-sparking).

Notes:
(1) Ranges of tempers are available between annealed and hard.
(a) - annealed (h) - hard.

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 2871 'Specification for copper and copper alloys. Tubes':
Part 1 'Copper tubes for water, gas and sanitation'
Part 2 'Tubes for general purposes'
Part 3 'Tubes for heat exchangers'
These materials are now included in the following EN standards for individual product forms:
EN 12449 'Copper and copper alloys - Seamless, round tubes for general purposes'
EN 12451 'Copper and copper alloys - Seamless, round tubes for heat exchangers'
EN 12452 'Copper and copper alloys - Rolled, finned seamless tubes for heat exchangers'.