

# TUBES STANDARDS

## Copper & Copper alloy plain Seamless tubes

### Chemical Composition

Classification	class	Chemical Composition (%)											Related Standards		
		Cu	Zn	Pb	Fe	P	Sn	Ni	Mn	Al	As	Other	JIS	ASTM	DIN
Tough Pitch Copper	1	99.9 min.											H3300 C1100	B 88 C 1100	1787 ECu58 ECu57
		99.9 min.				0.004-0.015							H 3300 C 1201	B75 C 12000	1787 SW-Cu
Phosphorus Deoxidized Copper	1A	99.9 min.				0.015-0.040							C 1220	C 12200	SF-Cu
Brass	1	68.5-71.5	Rem.	0.05 max.	0.05 max.								H 3300 C 2600	B 135 C 26000	17660 CuZn30
	2	63.0-67.0	Rem.	0.05 max.	0.05 max.								C 2700	C 27000	CuZn36
	3	59.0-63.0	Rem.	0.10 max.	0.07 max.								C 2800	C 28000	CuZn40
Al-Brass	1	70.0-73.0	Rem.	0.05 max.	0.05 max.		0.9-1.2					0.02-0.06	H 3300 C 4430	B 111 C 44300	1785 CuZn28Sn
	2	76.0-79.0	Rem.	0.05 max.	0.05 max.					1.8-2.5		Si 0.02-0.50	C 6871	C 68700	CuZn20Al
	3	76.0-79.0	Rem.	0.05 max.	0.05 max.			0.20-1.0	0.20-max.	1.8-2.5		Cr0.10 max.	C 6872	C 68700	CuZn20Al
	4	76.0-79.0	Rem.	0.05 max.	0.05 max.					1.8-2.5			C6870	C 68700	CuZn20Al
Cu-Ni Tube	1	Rem.	0.05 max.	0.05 max.	1.0-1.8							Cu+Ni+Fe+Mn 99.5min.	H 3300 C 7060	B 111 C 70600	17664 CuNi10Fe
	2	Rem.	0.05 max.	0.05 max.	0.5-1.0							Cu+Ni+Fe+Mn 99.5min.	C 7100	C 71000	CuNi20Fe
	3	Rem.	0.05 max.	0.05 max.	0.40-1.0							Cu+Ni+Fe+Mn 99.5min.	C 7150	C 71500	CuNi30Fe
Copper Capillary		99.9				0.015-0.040							H 3300 C12200	B 68 B 75 B 360 C 12200	1787 SF-Cu

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## Mechanical Properties & Applications

Classification	Class	Alloy No.	Temper	Tensile Test				Hardness Test		Application
				Outside diameter (mm)	Thickness (mm)	Tensile Strength	Elongation (%)	Rockwell		
								HR30T	HR15T	
Tough-pitch Copper	I	C1100T	O	5-250	0.5-30	21Min.	40Min.	-		Electric parts, Chemical Industry, etc.
			I/2H	5-250	0.5-25	25-33	-	30-60		
			H	5-100	0.5-6	28Min.	-	-		
6-10	27Min.	-			-					
Phosphorus Deoxidized Copper	IA	C1201T	O	4-250	0.3-30	21Min.	40Min.	-	60Max.	Heat Exchanger, water/oil/gas line Air conditioning M/c, etc.
			OL	4-250	0.3-30	21Min.	40Min.	-	65Max.	
			I/2H	4-250	0.3-25	25-33	-	30-60		
	IB	C1220T	H	25Max	0.3-3	32Min.	-	55Min.		
				25-50	0.9-4			-		
50-100	1.5-6									
Gilding Metal	2	C2200T	O	10-150	0.5-15	23Min.	35Min.	30Max.		Machinery Parts, Heat Exchanger, etc.
			OL	10-150	0.5-15	23Min.	35Min.	37Max.		
			I/2H	10-150	0.5-6	28Min.	15Min.	38Min.		
			H	10-100	0.5-6	37Min.	-	55Min.		
	3	C2300T	O	10-150	0.5-15	28Min.	35Min.	36Max.		
			OL	10-150	0.5-15	28Min.	35Min.	39Max.		
			I/2H	10-150	0.5-6	31Min.	20Min.	43Min.		
H	10-150	0.5-6	40Min.	-	65Min.					
Brass	1	C2600T	O	4-250	0.3-15	28Min.	45Min.	40Max.		Antenna, Machinery Parts, decoration parts, hygiene line farm implements, etc.
			OL	4-250	0.3-15	28Min.	45Min.	60Max.		
			I/2H	4-100	0.3-6	38Min.	20Min.	53Min.		
				100-250	2.0-10	36Min.	20Min.	53Min.		
			H	4-100	0.3-6	46Min.	-	70Min.		
				100-250	2.0-10	40Min.	-	70Min.		
	2	C2700T	O	4-250	0.3-15	30Min.	40Min.	40Max.		
			OL	4-250	0.3-15	30Min.	40Min.	60Max.		
			I/2H	4-100	0.3-6	38Min.	20Min.	53Min.		
				100-250	2.0-10	36Min.	20Min.	53Min.		
			H	4-100	0.3-6	46Min.	-	70Min.		
				100-250	2.0-10	40Min.	-	70Min.		
	3	C2800T	O	10-250	1-15	32Min.	35Min.	-		
			OL	10-250	1-15	32Min.	35Min.	60Max.		
I/2H			10-250	1-6	38Min.	15Min.	55Min.			
H			10-100	1-6	46Min.	-	-			
Aluminium Brass	1	C4430T	O6I	5-250	0.8-10	32Min.	30Min.	-		Steam Power generation and Atomic Power generation condenser, etc.
	2	C6871T	O6I	5-250	0.8-10	36Min.	40Min.	-		
	3	C6872T	O6I	5-250	0.8-10	36Min.	40Min.	-		
	4	C6870T	O6I	5-250	0.8-10	38Min.	40Min.	-		
Copper Nickel	1	C7060T	O6I	5-250	0.8-5	38Min.	30Min.	-		Chemical Industry,
	2	C7100T	O6I	5-50	0.8-5	32Min.	30Min.	-		Hot water heater,
	3	C7150T	O6I	5-50	0.8-5	37Min.	30Min.	-		Fresh water generator Condenser for marine, etc.

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## Material Standard Specifications

Comparable foreign standards

PRODUCTION	ALLOY NO.		
	ASTM B111	JIS H3300	DIN Mat. No.
Copper Nickel 90/10 tube/pipe	C70600	C7060T	DIN17664 CuNi10FeMn 2.0872
Copper Nickel 70/30 tube/pipe	C71500	C7150T	DIN17664 CuNi30MnFe 2.0882
Copper tube/pipe	C12200	C1220T	DIN1787 SFCu 2.0090
Al-Brass tube/pipe	C68700	C6870T	DIN17660 CuZn20Al2 2.0460
Brass tube/pipe	C27000	C2700T	DIN17660 CuZn36 2.0335
Admiralty Brass tube/pipe	C44300	C4430T	DIN17660 CuZn28Sn1 2.0470

Certificates to be supplied to DIN 50049 / EN 10204 3.1B