



Material Specification

➤ for strips of BRONZE und BRONZE WITH ZINC CONTENT



Bronzes - mechanical properties

Alloy	Temper	Tensile strength R _m [MPa]*	Yield strength R _{p0,2} [MPa]*	Elongation A ₅₀ [%]	Vickers hardness	Spring bending limit [MPa]*
Cu Sn4	R290/H70	290-390	≤ 190	≥ 40	70-100	≥ 340 **
	R390/H115	390-490	≥ 210	≥ 11	115-155	
	R480/H150	480-570	≥ 420	≥ 4	150-180	
	R540/H170	540-630	≥ 490	≥ 3	170-200	
	R610/H190	≥ 610	≥ 540	---	≥ 190	
Cu Sn5	R310/H75	310-390	≤ 250	≥ 45	75-105	
	R400/H120	400-500	≥ 240	≥ 14	120-160	
	R490/H160	490-580	≥ 430	≥ 8	160-190	
	R550/H180	550-640	≥ 510	≥ 4	180-210	
	R630/H200	630-720	≥ 600	≥ 2	200-230	
	R690/H220	≥ 690	≥ 670	---	≥ 220	
Cu Sn6	R350/H80	350-420	≤ 300	≥ 45	80-110	≥ 350 ** ≥ 370 **
	R420/H125	420-520	≥ 260	≥ 17	125-165	
	R500/H160	500-590	≥ 450	≥ 8	160-190	
	R560/H180	560-650	≥ 500	≥ 5	180-210	
	R640/H200	640-730	≥ 600	≥ 3	200-230	
	R720/H220	≥ 720	≥ 690	---	≥ 220	
Cu Sn8	R370/H90	370-450	≤ 300	≥ 50	90-120	≥ 410 **
	R450/H135	450-550	≥ 280	≥ 20	135-175	
	R540/H170	540-630	≥ 460	≥ 13	170-200	
	R600/H190	600-690	≥ 530	≥ 5	190-220	
	R660/H210	660-750	≥ 620	≥ 3	210-240	
	R740/H230	≥ 740	≥ 700	≥ 2	≥ 230	

Bronzes with zinc content - mechanical properties

Alloy	Temper	Tensile strength R _m [MPa]*	Yield strength R _{p0,2} [MPa]*	Elongation A ₅₀ [%]	Vickers hardness	Spring bending limit [MPa]*
Cu Sn3 Zn9	R320/H80	320-380	≤ 230	≥ 25	80-110	
	R380/H110	380-430	≥ 200	≥ 16	110-140	
	R430/H140	430-520	≥ 330	≥ 6	140-170	
	R510/H160	510-600	≥ 430	≥ 3	160-190	
	R580/H180	580-690	≥ 520	---	180-210	
	R660/H200	≥ 660	≥ 610	---	≥ 200	
Cu Sn6 Zn6	R610/H190	610-690	≥ 570	≥ 12	190-220	
	R760/H230	≥ 760	≥ 690	---	≥ 230	

 * 1 MPa = 1 N/mm²

** Vickers hardness – values are not binding for official acceptance

Bronzes - physical properties

Density [g/cm ³]	Coefficient of thermal expansion [10 ⁻⁶ /K]	Electrical conductivity [MS/m]***	Electrical conductivity [% IACS]	Thermal conductivity [W/m K]	Modulus of elasticity [GPa]****	Weldability	Solderability	Season cracking
8,85	18,2	11,5	20	84	118	good	very good	no
8,85	18,2	10	16,5	82	118	good	very good	no
8,80	18,5	9	15	75	115	good	very good	no
8,80	18,5	7,5	13	62	115	good	very good	no

Bronzes with zinc content - physical properties

Density [g/cm ³]	Coefficient of thermal expansion [10 ⁻⁶ /K]	Electrical conductivity [MS/m]***	Electrical conductivity [% IACS]	Thermal conductivity [W/m K]	Modulus of elasticity [GPa]****	Weldability	Solderability	Season cracking
8,70	18,4	12	20	120	120	good	good	light
8,80	18,4	9	15	75	114	good	good	light

*** MS/m = m/Ωmm²

**** 1 GPa = 1 kN/mm²

Bronzes - chemical composition

Chemical composition [%]	EN	USA UNS Alloy-No.	Earlier standards	Applications
Sn 3,5-4,5/ P max. 0,01 - 0,4/ Cu rest	CW450K	C51100	DIN 17670 BS Alloy PB 101	connectors, contact springs, multiple plugs, relay springs, switch elements, all kinds of stamped parts, blade springs, membranes, metallic hoses, corrugated tubes, gear wheels, bushes, pump parts, clock parts, parts in the machine and apparatus manufacturing
Sn 4,5-5,5/ P max. 0,01 - 0,4/ Cu rest	CW451K	C51000	BS Alloy PB 102	
Sn 5,5-7/ P max. 0,01 - 0,4/ Cu rest	CW452K	C51900	DIN 17670 BS Alloy PB 103	
Sn 7,5-8,5/ P max. 0,35/ Cu rest	CW453K	C52100	DIN 17670 BS Alloy PB 104	

Bronzes with zinc content - chemical composition

Chemical composition [%]	EN	USA UNS Alloy-No.	Earlier standards	Applications
Sn 1,5-3,5/ Zn 7,5-10/ P 0,2/ Cu rest	CW454K	C42500	---	stamped parts, connectors
Sn 5-7/ Zn 5-7/ P 0,01-0,1/ Cu rest	---	---	DIN 17670	stamped parts, connectors



Forms of supply

You may choose between the following types und forms:

Dimensions

Strips

Thickness: 0,1 - 3 mm

Width: Thickness \leq 0,3 mm: 3 - 310 mm
Thickness $>$ 0,3 mm: 3 - 330 mm

Coils

Thickness: 0,1 - 0,8 mm

up to 12 kg / mm width

Thickness: over 0,8 mm

up to 6 kg / mm width

Traverse wound strips

on cores

on drums

(depending on strip cross section
and type, up to 1,800 kg drum weight)

POLYCOIL

up to 3 t

Order quantities

bare strip min. 500 kg, tinned strip min. 800 kg,
other quantities upon request

Surface

with oil film

oil-free

passivated

Surface plating

hot dip tinning

galvanic tinning

selective plating

gold, silver, nickel plating

Profiled

according to your drawings

Our products are tested, evaluated and subjected to stringent tests in every stage of our production process. KEMPER strips meet the highest technical requirements of the automotive, communications and electrical engineering industries worldwide. We ensure these requirements by our quality management system which is certified per ISO/TS 16949:2002 and DIN EN ISO 9001:2000. At KEMPER quality is an obligation for all our employees, resulting in products which you can lastingly rely on.



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