BRONMETAL

Technical characteristics

COPPER-ZINC

Designations			Nominal Diameter			Tensile Strength R_m N/mm²		Proof stress of 0,2% $R_{p0,2}$ N/mm² approx.	Elongation			Hardness HV		Previous Designation of Metallurgical State (only for informative purposes)
Material			from	greather than	up to and including	min.	max.		A_{100mm} % min.	$A_{11,3}$ % min.	A % min.	min.	max.	
Symbolic	Numerical	Metallurgical State												
		M	All Measurements			Rough Manufacture								
CuZn10	CW501L	R290	0,1	–	0,5	290	390	(140)	(25)	–	–	–	–	annealed
		R280	–	0,5	1,5	280	380	(130)	30	–	–	–	–	
		R270	–	1,5	4	270	370	(130)	35	–	–	–	–	
		H070	1,5	–	4	–	–	–	–	–	–	70	120	
		R240	–	4	20	240	340	(120)	–	35	40	–	–	
		R380	0,5	–	1,5	380	480	(260)	(8)	–	–	–	–	1/4 hard
		R350	–	1,5	4	350	450	(240)	(12)	–	–	–	–	
		H115	1,5	–	4	–	–	–	–	–	–	115	145	
		R330	–	4	20	330	430	(230)	–	(15)	(20)	–	–	
		H105	–	4	20	–	–	–	–	–	–	105	135	
		R470	0,5	–	1,5	470	570	(390)	–	–	–	–	–	1/2 hard
		R440	–	1,5	4	440	540	(370)	–	–	–	–	–	
		H135	1,5	–	4	–	–	–	–	–	–	135	165	
		R410	–	4	20	410	510	(350)	–	–	–	–	–	
		H125	–	4	20	–	–	–	–	–	–	125	155	
		R570	0,5	–	1,5	570	–	(560)	–	–	–	–	–	hard
		R530	–	1,5	4	530	–	(520)	–	–	–	–	–	
		H155	1,5	–	4	–	–	–	–	–	–	155	–	

BRONMETAL

Designations			Nominal Diameter			Tensile Strength R_m N/mm²		Proof stress of0,2% $R_{p0,2}$ N/mm² approx.	Elongation			Hardness HV		Previous Designation of Metallurgical State (only for informative purposes)
Material			from	greather than	up to and including	min.	max.		A_{100mm} % min.	$A_{11,3}$ % min.	A % min.	min.	max.	
Symbolic	Numerical	Metallurgical State												
		M	All Measurements											Rough Manufacture
		R310	0,1	–	0,5	310	410	(140)	(25)	–	–	–	–	annealed
		R300	–	0,5	1,5	300	400	(140)	25	–	–	–	–	
		R290	–	1,5	4	290	390	(140)	30	–	–	–	–	
		H070	1,5	–	4	–	–	–	–	–	–	70	125	
		R260	–	4	20	260	360	(120)	–	40	45	–	–	
		H065	–	4	20	–	–	–	–	–	–	65	120	
		R400	0,5	–	1,5	400	500	(270)	(10)	–	–	–	–	1/4 hard
		R370	–	1,5	4	370	470	(250)	(14)	–	–	–	–	
		H120	1,5	–	4	–	–	–	–	–	–	120	150	
CuZn15 CuZn20	CW502L CW503L	R360	–	4	20	360	460	(250)	–	-18	-20	–	–	
		H115	–	4	20	–	–	–	–	–	–	115	145	
		R480	0,5	–	1,5	480	580	(400)	–	–	–	–	–	1/2 hard
		R450	–	1,5	4	450	550	(380)	(3)	–	–	–	–	
		H140	1,5	–	4	–	–	–	–	–	–	140	170	
		R430	–	4	20	430	530	(360)	(6)	–	–	–	–	
		H135	–	4	20	–	–	–	–	–	–	135	165	
		R600	0,1	–	0,5	600	–	(590)	–	–	–	–	–	hard
		R580	–	0,5	1,5	580	–	(570)	–	–	–	–	–	
		R540	–	1,5	4	540	–	(530)	–	–	–	–	–	
		H165	1,5		4	–	–	–	–	–	–	165	–	

BRONMETAL

Designations			Nominal Diameter			Tensile Strength R_m N/mm²		Proof stress of0,2% $R_{p0,2}$ N/mm² approx.	Elongation			Hardness HV		Previous Designation of Metallurgical State (only for informative purposes)
Material			from	greather than	up to and including	min.	max.		A_{100mm} % min.	$A_{11,3}$ % min.	A % min.	min.	max.	
Symbolic	Numerical	Metallurgical State												
		M	All Measurements											Rough Manufacture
CuZn30	CW505L	R350	0,1	–	0,5	350	450	(160)	(30)	–	–	–	–	annealed
		R340	–	0,5	1,5	340	440	(150)	35	–	–	–	–	
		R310	–	1,5	4	310	410	(140)	40	–	–	–	–	
		R300	–	4	20	300	400	(130)	–	45	50	–	–	
		H065	1,5	–	20	–	–	–	–	–	–	65	115	
		R430	0,1	–	0,5	430	530	(240)	(10)	–	–	–	–	1/8 hard
		R410	–	0,5	1,5	410	510	(230)	(14)	–	–	–	–	
		R380	–	1,5	4	380	480	(220)	(12)	–	–	–	–	
		H095	1,5	–	4	–	–	–	–	–	–	95	135	
		R360	–	4	20	360	460	(210)	–	(22)	-25	–	–	
		H085	–	4	20	–	–	–	–	–	–	85	130	
		R520	0,1	–	0,5	520	620	(340)	–	–	–	–	–	1/4 hard
		R500	–	0,5	1,5	500	600	(330)	–	–	–	–	–	
		R460	–	1,5	4	460	560	(310)	(7)	–	–	–	–	
		H125	1,5	–	4	–	–	–	–	–	–	125	160	
		R440	–	4	8	440	540	(290)	–	(10)	–	–	–	
		H120	–	4	8	–	–	–	–	–	–	120	155	
		R610	0,1	–	0,5	610	710	(500)	–	–	–	–	–	1/2 hard
		R590	–	0,5	1,5	590	690	(480)	–	–	–	–	–	
		R540	–	1,5	4	540	640	(440)	–	–	–	–	–	
		H150	1,5	–	4	–	–	–	–	–	–	150	180	
		R530	–	4	8	530	630	(440)	–	–	–	–	–	
		H145	–	4	8	–	–	–	–	–	–	145	175	
		R700	0,1	–	0,5	700	800	(680)	–	–	–	–	–	hard
		R670	–	0,5	1,5	670	770	(650)	–	–	–	–	–	
		R620	–	1,5	4	620	720	(600)	–	–	–	–	–	
		H170	1,5	–	4	–	–	–	–	–	–	170	200	
		R800	0,1	–	0,5	800	–	(810)	–	–	–	–	–	spring quality
		R750	–	0,5	1,5	750	–	(760)	–	–	–	–	–	
		R700	–	1,5	4	700	–	(710)	–	–	–	–	–	
		H195	1,5	–	4	–	–	–	–	–	–	195	–	

BRONMETAL

Designations			Nominal Diameter			Tensile Strength R_m N/mm²		Proof stress of0,2% $R_{p0,2}$ N/mm² approx.	Elongation			Hardness HV		Previous Designation of Metallurgical State (only for informative purposes)
Material			from	greather than	up to and including	min.	max.		A_{100mm} % min.	$A_{11,3}$ % min.	A % min.	min.	max.	
Symbolic	Numerical	Metallurgical State												
		M	All Measurements											Rough Manufacture
		R360	0,1	–	0,5	360	450	(160)	(30)	–	–	–	–	annealed
		R330	–	0,5	1,5	330	420	(150)	33	–	–	–	–	
		R300	–	1,5	4	300	380	(140)	35	–	–	–	–	
		H070	1,5	–	4	–	–	–	–	–	–	70	105	
		R280	–	4	20	280	370	(130)	–	40	45	–	–	
		H065	–	4	20	–	–	–	–	–	–	60	100	
		R420	0,5	–	1,5	420	510	(280)	(12)	–	–	–	–	1/8 hard
		R380	–	1,5	4	380	480	(260)	(16)	–	–	–	–	
		H105	1,5	–	4	–	–	–	–	–	–	105	140	
		R370	–	4	20	370	470	(250)	–	(20)	(25)	–	–	
		H095	–	4	20	–	–	–	–	–	–	95	135	
CuZn36 CuZn37	CW507L CW508L	R510	0,5	–	1,5	510	610	(420)	–	–	–	–	–	1/4 hard
		R470	–	1,5	4	470	570	(390)	(5)	–	–	–	–	
		H130	1,5	–	4	–	–	–	–	–	–	130	160	
		R460	–	4	8	460	560	(380)	–	(8)	–	–	–	
		H135	–	4	8	–	–	–	–	–	–	135	165	
		R610	0,5	–	1,5	610	750	(610)	–	–	–	–	–	1/2 hard / hard
		R560	–	1,5	4	560	700	(570)	–	–	–	–	–	
		H160	1,5	–	4	–	–	–	–	–	–	160	190	
		R550	–	4	8	550	680	(550)	–	–	–	–	–	
		H155	–	4	8	–	–	–	–	–	–	155	185	
		R800	0,1	–	0,5	800	–	(810)	–	–	–	–	–	spring quality
		R750	–	0,5	1,5	750	–	(760)	–	–	–	–	–	
		R700	–	1,5	4	700	–	(710)	–	–	–	–	–	
		H190	1,5	–	4	–	–	–	–	–	–	190	–	

BRONMETAL

Designations			Nominal Diameter			Tensile Strength R_m N/mm²		Proof stress of0,2% $R_{p0,2}$ N/mm² approx.	Elongation			Hardness HV		Previous Designation of Metallurgical State (only for informative purposes)
Material			from	greather than	up to and including	min.	max.		A_{100mm} % min.	$A_{11,3}$ % min.	A % min.	min.	max.	
Symbolic	Numerical	Metallurgical State												
		M	All Measurements			Rough Manufacture								
		R380	0,5	–	1,5	380	–	(200)	–	–	–	–	–	
		R380	–	1,5	8,0	380	–	(200)	18	20	–	–	–	
		H120	1,5	–	8,0	–	–	–	–	–	–	120	150	1/2 hard
		R370	–	8,0	20,0	370	–	(200)	–	–	25	–	–	
		H110	–	8,0	20,0	–	–	–	–	–	–	110	140	
CuZn35Pb1 CuZn35Pb2	CW600N CW601N	R450	0,5	–	1,5	450	–	(320)	–	–	–	–	–	
		R450	–	1,5	4,0	450	–	(320)	6	–	–	–	–	
		H155	1,5	–	4,0	–	–	–	–	–	–	155	185	
		R450	–	4,0	8,0	450	–	(320)	–	10	–	–	–	hard
		H145	–	4,0	8,0	–	–	–	–	–	–	145	175	
		R440	–	8,0	14,0	440	–	(320)	–	–	15	–	–	
		H140	–	8,0	14,0	–	–	–	–	–	–	140	170	
		R540	0,5	–	4,0	540	–	(480)	–	–	–	–	–	
		H165	1,5	–	4,0	–	–	–	–	–	–	165	–	spring quality
		M	All Measurements			Rough Manufacture								
		R380	0,5	–	1,5	380	–	(180)	–	–	–	–	–	
		R370	–	1,5	4,0	370	–	(180)	15	–	–	–	–	
		H100	1,5	–	4,0	–	–	–	–	–	–	100	130	1/4 hard
		R360	–	4,0	20,0	360	–	(180)	–	15	20	–	–	
		H090	–	4,0	20,0	–	–	–	–	–	–	90	125	
		R440	0,5	–	1,5	440	–	(300)	–	–	–	–	–	
		R420	–	1,5	4,0	420	–	(280)	6	–	–	–	–	
		H120	1,5	–	4,0	–	–	–	–	–	–	120	150	
CuZn36Pb3 CuZn37Pb2	CW603N CW606N	R410	–	4,0	8,0	410	–	(280)	–	10	–	–	–	1/2 hard
		H115	–	4,0	8,0	–	–	–	–	–	–	115	145	
		R400	–	8,0	20,0	400	–	(280)	–	–	15	–	–	
		H110	–	8,0	20,0	–	–	–	–	–	–	110	140	
		R500	1,5	–	4,0	500	–	(380)	(3)	–	–	–	–	
		H140	1,5	–	4,0	–	–	–	–	–	–	140	170	
		R490	–	4,0	8,0	490	–	(360)	–	6	–	–	–	hard
		R480	–	8,0	14,0	480	–	(360)	–	–	8	–	–	
		H130	–	4,0	14,0	–	–	–	–	–	–	130	160	
		R580	1,5	–	4,0	580	–	(520)	–	–	–	–	–	
		H155	1,5	–	4,0	–	–	–	–	–	–	155	–	spring quality

BRONMETAL

Designations			Nominal Diameter			Tensile Strength R_m N/mm²		Proof stress of0,2% $R_{p0,2}$ N/mm² approx.	Elongation			Hardness HV		Previous Designation of Metallurgical State (only for informative purposes)
Material			from	greather than	up to and including	min.	max.		A_{100mm} % min.	$A_{11,3}$ % min.	A % min.	min.	max.	
Symbolic	Numerical	Metallurgical State												
		M	All Measurements											Rough Manufacture
CuZn38Pb2 CuZn39Pb0,5 CuZn39Pb2	CW608N CW610N CW612N	R400	0,5	–	1,5	400	–	(200)	–	–	–	–	–	1/4 hard
		R400	–	1,5	4	400	–	(200)	10	–	–	–	–	
		H110	1,5	–	4	–	–	–	–	–	–	110	140	
		R390	–	4	8	390	–	(180)	–	15	–	–	–	
		R380	–	8	20	380	–	(180)	–	–	20	–	–	
		H100	–	4	20	–	–	–	–	–	–	100	130	
		R450	0,5	–	1,5	450	–	(300)	–	–	–	–	–	1/2 hard
		R440	–	1,5	4	440	–	(300)	8	–	–	–	–	
		H130	1,5	–	4	–	–	–	–	–	–	130	160	
		R430	–	4	8	430	–	(300)	–	10	–	–	–	
		R420	–	8	20	420	–	(300)	–	–	15	–	–	
		H120	–	4	20	–	–		–	–	–	120	155	
		R500	0,5	–	1,5	500	–	(400)	–	–	–	–	–	hard
		R500	–	1,5	4	500	–	(400)	4	–	–	–	–	
		H150	1,5	–	4	–	–	–	–	–	–	150	180	
		R490	–	4	8	490	–	(400)	–	5	–	–	–	
		R480	–	8	14	480	–	(400)	–	–	8	–	–	
		H140	–	4	14	–	–	–	–	–	–	140	170	
		R570	1,5	–	4	570	–	(520)	–	–	–	–	–	spring quality
		H165	1,5	–	4	–	–	–	–	–	–	165	–	
		R450	0,5	–	1,5	450	–	(200)	–	–	–	–	–	1/2 hard
		R430	–	1,5	4	430	–	(200)	6	–	–	–	–	
		H130	1,5	–	4	–	–	–	–	–	–	130	165	
		R420	–	4	8	420	–	(200)	–	8	–	–	–	
		H120	–	4	8	–	–	–	–	–	–	120	155	
		R410	–	8	14	410	–	(200)	–	–	10	–	–	
		R400	–	14	20	400	–	(200)	–	–	10	–	–	
		H110	–	8	20	–	–	–	–	–	–	110	145	
		R520	0,5	–	1,5	520	–	(400)	–	–	–	–	–	hard
		R510	–	1,5	4	510	–	(400)	(4)	–	–	–	–	
		H155	1,5	–	4	–	–	–	–	–	–	155	185	
		R500	–	4	8	500	–	(390)	–	6	–	–	–	
		R490	–	8	14	490	–	(390)	–	–	8	–	–	
		H145	–	4	14	–	–	–	–	–	–	145	175	
		R570	1,5	–	4	570	–	(520)	–	–	–	–	–	spring quality
		H170	1,5	–	4	–	–	–	–	–	–	170	–	

NOTE 1 – 1 N/mm^2 equivalent to 1 Mpa.
NOTE 2 – The numbers in brackets are not requirements for this regulation, they are given for informative purposes.