BRONMETAL

Technical characteristics

COPPER-ZINC BINARY ALLOYS

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn5	**CW500L**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R220[a]	20	220	–	130	40	–	–	–	–
		H050[a]	20	–	–	–	–	50	75	45	70
		R260	10	260	190	–	18	–	–	–	–
		H075	10	–	–	–	–	75	105	70	100
		R320	5	320	260	–	8	–	–	–	–
		H095	5	–	–	–	–	95	125	90	120
		R440	3	440	410	–	–	–	–	–	–
		H120	3	–	–	–	–	120	–	115	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn10	**CW501L**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R240[a]	20	240	–	140	40	–	–	–	–
		H050[a]	20	–	–	–	–	50	80	45	75
		R300	10	300	180	–	20	–	–	–	–
		H075	10	–	–	–	–	75	105	70	100
		R360	5	360	280	–	8	–	–	–	–
		H100	5	–	–	–	–	100	–	95	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn15	**CW502L**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R260[a]	20	260	–	150	42	–	–	–	–
		H050[a]	20	–	–	–	–	50	80	45	75
		R310	10	310	200	–	20	–	–	–	–
		H080	10	–	–	–	–	80	110	75	105
		R370	5	370	290	–	10	–	–	–	–
		H105	5	–	–	–	–	105	–	100	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn20	**CW503L**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R260[a]	20	260	–	160	45	–	–	–	–
		H055[a]	20	–	–	–	–	55	85	50	80
		R320	10	320	200	–	25	–	–	–	–
		H085	10	–	–	–	–	85	120	80	115
		R390	5	390	300	–	10	–	–	–	–
		H115	5	–	–	–	–	115	–	110	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn30	**CW505L**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R280[a]	20	280	–	180	50	–	–	–	–
		H055[a]	20	–	–	–	–	55	85	50	80
		R350	10	350	200	–	25	–	–	–	–
		H085	10	–	–	–	–	85	120	80	115
		R420	5	420	320	–	10	–	–	–	–
		H115	5	–	–	–	–	115	–	110	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn36	CW507L	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R290[a]	20	290	–	180	50	–	–	–	–
		H055[a]	20	–	–	–	–	55	85	50	80
		R360	10	360	180	–	25	–	–	–	–
		H080	10	–	–	–	–	80	115	75	110
		R430	5	430	300	–	12	–	–	–	–
		H110	5	–	–	–	–	110	–	105	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn37	**CW508L**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R300[a]	20	300	–	220	45	–	–	–	–
		H060[a]	20	–	–	–	–	60	90	55	85
		R370	10	370	200	–	25	–	–	–	–
		H085	10	–	–	–	–	85	120	80	115
		R440	5	440	320	–	10	–	–	–	–
		H115	5	–	–	–	–	115	–	110	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn40	CW509L	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R340[a]	20	340	–	250	35	–	–	–	–
		H075[a]	20	–	–	–	–	75	105	70	100
		R410	10	410	250	–	18	–	–	–	–
		H100	10	–	–	–	–	100	130	95	125
		R470	5	470	400	–	5	–	–	–	–
		H125	5	–	–	–	–	125	–	120	–
[a] In annealed state.											
NOTA 1 – 1 N/mm^2 equivalent to 1 Mpa.											

COPPER-ZINC-LEAD ALLOYS

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
		M	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R290[a]	10	290	–	180	45	–	–	–	–
		H060[a]	10	–	–	–	–	60	90	55	85
CuZn35Pb1	**CW600N**	R370	10	370	200	–	20	–	–	–	–
CuZn35Pb2	**CW601N**	H085	10	–	–	–	–	85	120	80	115
		R440	5	440	340	–	10	–	–	–	–
		H115	5	–	–	–	–	115	–	110	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn36Pb2As	**CW602N**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R290[a]	10	290	–	250	40	–	–	–	–
		H080[a]	10	–	–	–	–	80	110	75	105
		R370	10	370	250	–	20	–	–	–	–
		H105	10	–	–	–	–	105	140	100	135
		R440	5	440	340	–	10	–	–	–	–
		H135	5	–	–	–	–	135	–	130	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn36Pb3	CW603N	M	20	–	–	–	–	–	–	–	–
		R300[a]	10	300	–	250	35	–	–	–	–
		H080[a]	10	–	–	–	–	80	110	75	105
		R400	10	400	250	–	15	–	–	–	–
		H105	10	–	–	–	–	105	140	100	135
		R460	5	460	350	–	10	–	–	–	–
		H135	5	–	–	–	–	135	–	130	–

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Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm² min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm²		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn37Pb0,5 CuZn37Pb1	**CW604N CW605N**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R300[a]	20	300	–	220	45	–	–	–	–
		H060[a]	20	–	–	–	–	60	90	55	85
		R370	10	370	200	–	25	–	–	–	–
		H085	10	–	–	–	–	85	120	80	115
		R440	5	440	320	–	10	–	–	–	–
		H115	5	–	–	–	–	115	–	110	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn38Pb1 CuZn38Pb2	CW607N CW608N	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R340[a]	10	340	–	250	35	–	–	–	–
		H080[a]	10	–	–	–	–	80	110	75	105
		R410	10	410	250	–	15	–	–	–	–
		H105	10	–	–	–	–	105	140	100	135
		R470	5	470	350	–	10	–	–	–	–
		H135	5	–	–	–	–	135	–	130	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2		Elongation A % min.	Hardness			
Material		Metallurgical State						HV		HB	
Symbolic	Numerical				min.	max		min.	max.	min.	max.
CuZn39Pb3 CuZn40Pb2	CW614N CW617N	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R360[a]	10	360	–	250	25	–	–	–	–
		H085[a]	10	–	–	–	–	85	120	80	115
		R430	10	430	250	–	12	–	–	–	–
		H115	10	–	–	–	–	115	150	110	145
		R500	5	500	370	–	8	–	–	–	–
		H140	5	–	–	–	–	140	–	135	–
[a] In annealed state.											
NOTA 1 – 1 N/mm^2 equivalent to 1 Mpa.											

COMPLEX COPPER-ZINC ALLOYS

BRONMETAL

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2 min.	Elongation A % min.	Hardness			
Material		Metallurgical State					HV		HB	
Symbolic	Numerical						min.	max.	min.	max.
CuZn13Al1Ni1Si1	CW700R	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R380[a]	10	380	115	50	–	–	–	–
		H065[a]	10	–	–	–	65	85	60	80
		R430	10	430	220	40	–	–	–	–
		H120	10	–	–	–	120	140	115	135
		R550	5	550	330	10	–	–	–	–
		H170	5	–	–	–	170	–	165	–
CuZn20Al2As	CW702R	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R340[a]	10	340	120	45	–	–	–	–
		H070a	10	–	–	–	70	100	65	95
		R390[a]	5	390	150	40	–	–	–	–
		H085[a]	5	–	–	–	85	–	80	–

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Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2 min.	Elongation A % min.	Hardness			
Material		Metallurgical State					HV		HB	
Symbolic	Numerical						min.	max.	min.	max.
CuZn31Si1	**CW708R**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R440	8	440	200	20	–	–	–	–
		H115	8	–	–	–	115	155	110	150
		R490	8	490	250	15	–	–	–	–
		H145	8	–	–	–	145	–	140	–
CuZn35Ni3Mn2AlPb	**CW710R**	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R490	8	490	290	15	–	–	–	–
		H125	8	–	–	–	125	165	120	160
		R540	8	540	390	10	–	–	–	–
		H145	8	–	–	–	145	–	140	–

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Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm^2 min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm^2 min.	Elongation A % min.	Hardness			
Material		Metallurgical State					HV		HB	
Symbolic	Numerical						min.	max.	min.	max.
CuZn37Mn3Al2PbSi	CW713R	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R540	8	540	250	10	–	–	–	–
		H145	8	–	–	–	145	185	140	180
		R590	5	590	320	8	–	–	–	–
		H155	5	–	–	–	155	195	150	190
		R640	3	640	350	5	–	–	–	–
		H165	3	–	–	–	165	–	160	–
CuZn38Mn1Al	CW716R	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		H115	8	–	–	–	115	155	110	150
		R510	8	510	270	10	–	–	–	–
		H140	8	–	–	–	140	–	135	–

Designations			Wall Thickness t mm max.	Tensile Strength R_m N/mm² min.	Yield Limit at 0,2% $R_{p0.2}$ N/mm² min.	Elongation A % min.	Hardness			
Material		Metallurgical State					HV		HB	
Symbolic	Numerical						min.	max.	min.	max.
CuZn39Mn1AlPbSi	CW718R	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R440	8	440	200	15	–	–	–	–
		H120	8	–	–	–	120	160	115	155
		R510	8	510	270	10	–	–	–	–
		H145	8	–	–	–	145	–	140	–
CuZn40Mn2Fe1	CW723R	**M**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
		R440	8	440	170	15	–	–	–	–
		H115	8	–	–	–	115	155	110	150
		R490	8	490	270	10	–	–	–	–
		H135	8	–	–	–	135	–	130	–
[a] In annealed state										
NOTE 1 – 1 N/mm² equivalent to 1 Mpa.										