

Copper and low alloyed copper																	
Alloy name	OFE-OK* CW009A	OF-OK* CW008A	Cu-ETP CW004A	Cu-XLP/PHC CW020A	Cu-PHC CW020A SM0011	Cu-HCP CW021A SM0013	CuAg0,04 (OF) CW017A	CuAg0,045 (OF) CW017A	CuAg0,05 (OF)	CuAg0,10(OF) CW019A	CuAg0,10P CW016A	Cu-DLP CW023A	Cu-DHP CW024A	CuTeSn0.2 SM0300 C14530	CuSn0.05 SM0700	CuSn0.08 SM0701	CuSn0.15 SM0702 C14415
European standard number																	
Alloy number	C10100	C10200	C11000	C10300	C10300	C10300	C10400	C10500		C10700		C12000	C12200				
UNS code																	
Manufacturing location	Pori	Pori	Pori	Pori, Finspång	Finspång	Finspång	Pori, Finspång	Pori		Pori	Pori		Pori	Finspång	Finspång	Finspång	Finspång

Chemical properties	O max 5 ppm	O max 10 ppm	O max 400 ppm	P 0.001-0.005 %	P 0.001-0.006 %	P 0.002-0.007 %	O max 10 ppm Ag 0.03-0.05 %	O max 10 ppm Ag 0.035-0.05 %	O max 10 ppm Ag 0.04-0.06 %	O max 10 ppm Ag 0.085-0.12 %	P 0.002-0.003 % Ag 0.08-0.12 %	P 0.005-0.013 %	P 0.015-0.040 %	Te 0.02 % Sn 0.02 %	Sn 0.05%	Sn 0.08 %	Sn 0.12 %

Physical Properties																		
Density																		
	g/cm <sup>3</sup> lb/in <sup>3</sup>	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	8,9 0,323	
Electrical Conductivity**** (Nominal value in black) %IACS	min min	101 101	100 100	100 100	100 100	100 100	98,3 98,3	100 100	100 100	100 100	100 100	98,3 92/97	92/97 85	85 92	91 91	85 85	83 83	
Thermal Conductivity	min min	391 226	391 226	386 223	386 223	386 223	386 223	388 224	388 224	388 224	388 224	386 223	386 223	339 196	365 211	360 208	335 194	328 189
Modulus of Elasticity																		
	GPa X1000 ksi	117 17	117 17	117 17	117 17	117 17	117 17	117 17	117 17	117 17	117 17	117 17	117 17	120 17.4	120 17.4	125 18.1	130 18.9	
Coef. of Thermal Exp. at 20 °C (68 °F)																		
	10 <sup>-6</sup> /°C 10 <sup>-6</sup> /°F	17.6 9.8	17.6 9.8	17.6 9.8	17.6 9.8	17.6 9.8	17.6 9.8	17.6 9.8	17.6 9.8	17.6 9.8	17.6 9.8	17.6 9.8	17.6 9.8	17.7 9.8	17.7 9.8	17.7 9.8	17.7 9.8	

Tempers																	
Mechanical Properties																	
EN H040 / R200																	
Tensile Strength Rm N/mm <sup>2</sup>	max	200 - 250	200 - 250	200 - 250	200 - 250	(200 - 250)	200 - 250	200 - 250	200 - 250	200 - 250	200 - 250	200 - 250	200 - 250	200 - 250	200 - 250	200 - 250	200 - 250
Yield Strength (0.2 %) N/mm <sup>2</sup>	min	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Elongation % A50 / A		- / 42	- / 42	- / 42	- / 42	32 / 42	- / 42	- / 42	- / 42	- / 42	- / 42	- / 42	- / 42	- / 42	- / 42	15 / -	15 - ** / 33 -
Hardness (HV)		40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	53 - 65	53 - 65
Thickness mm (Pori)		0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20
EN H040 / R220																	
Tensile Strength Rm N/mm <sup>2</sup>	max	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260	220 - 260
Yield Strength (0.2 %) N/mm <sup>2</sup>	min	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
Elongation % A50 / A		33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42	33 / 42
Hardness (HV)		40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65	40 - 65
Thickness mm (Pori)		0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20
EN H065 / R240																	
Tensile Strength Rm N/mm <sup>2</sup>	min	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300	240 - 300
Yield Strength (0.2 %) N/mm <sup>2</sup>	min	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180
Elongation % A50 / A		8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15	8 / 15
Hardness (HV)		65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95	65 - 95
Thickness mm (Pori)		0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25	0.2 - 6, 12 - 25
EN H090 / R290																	
Tensile Strength Rm N/mm <sup>2</sup>	min	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360	290 - 360
Yield Strength (0.2 %) N/mm <sup>2</sup>	min	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
Elongation % A50 / A		4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6	4 / 6
Hardness (HV)		90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110
Thickness mm (Pori)		0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25	0.2 - 25
EN H110 / R360																	
Tensile Strength Rm N/mm <sup>2</sup>	min	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360
Yield Strength (0.2 %) N/mm <sup>2</sup>	min	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
Elongation % A50 / A	min	2 /	2 /	2 /	2 /	2 /	2 /	2 /	2 /	2 /	2 /	2 /	2 /	2 /	2 /	2 /	2 /
Hardness (HV)	min	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
Thickness mm (Pori)		0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20	0.2 - 20
EN R																	
Tensile Strength Rm N/mm <sup>2</sup>	min																
Yield Strength (0.2 %) N/mm <sup>2</sup>	min																
Elongation % A50 / A	min																
Hardness (HV)	min																

Other tempers - as ASTM - are available upon request.

Yield strength, Elongation and Hardness are typical values for each temper.

Elongation: The first value is for thickness up to and incl. 0.25 mm / next is > 0.25 mm

\*\*\*) Elongation alloy SM0702: The first value is for thickness 0.040 mm / next is 0.10 - mm

Pori: Thicknesses up to 100 mm available in hot roller temper. For strips in coils max. thickness 4 mm. Material thicknesses for building purposes typically 0.5 - 2 mm.

\*\*\*\*) Pori: Electrical conductivity according to EN 13599

Data for information only and not for use as purchase specification.

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Alloy name	Brass					Inhibited brass		CuproBrazo alloys			Al Bronze
	CuZn37	CuZn35	CuZn33	CuZn30	CuZn15	CuZn30As	CuZn35P	CuCr0.2	CuZn14Fe0.9	Cu64ZnNi3	CuAl5Zn5Sn1
European standard number	CW508L	(CW507L)	CW506L	CW505L	CW502L	CW707R					
Alloy number	SM1063	SM1065	SM1067	SM1070	SM1085	SM2870	SM2965	SM0502	SM2385	SM2464	
UNS code	C27200	C27000	C26800	C26000	C23000	C26130			C66420	C74400	
Manufacturing location	Zupthen	Zupthen	Zupthen	Zupthen	Pori, Zupthen	Zutphen	Zutphen	Finspång	Zupthen	Zupthen	Pori

Chemical properties

					Zn 14-17 (Pori)			Cr 0.2 %			Al 4-6 Zn 4-6 Sn 0.3-1.5
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Physical Properties

		Nordic Brass (Pori)								Nordic Royal		
Density		8.44	8.45	8.50	8.53	8.75	8.55	8.45	8.9	8.75	8.50	8.1
						0.316	0.310	0.303	0.323			
Electrical Conductivity (Nominal value in black)	min	26	26	27	28	37	28	26	60/90**	35/30**	17	16
	min	26	26	27	28	37	28	26	60/90**	35/30**	17	16
Thermal Conductivity												
W/(m °K)	min	121	118	116	121	159	121	79	240/355**	160/137**	73	
Btu/ft h °F	min	70	66	67	70	92	72	46	139/206**	92/79**	42	
Modulus of Elasticity												
GPa		103	103	103	110	117	114	109	118	128	104	
X1000 ksi		15	15	15	16	17	16	16	17	18	15	
Coef. of Thermal Exp. at 20 °C (68 °F)												
10 <sup>-6</sup> /°C		20.3	20.3	20.3	20.0	18.7	19.7	20.0	17.7	19.0	19.0	
10 <sup>-5</sup> /°F		11.3	11.3	11.3	11.1	10.4	10.9	11.1	9.8	10.5	10.5	

\*\*\*)After brazing process

Standard Tempers

Mechanical Properties		EN R300	Soft annealed	EN R280	EN R270	EN R260	Soft annealed	Soft annealed	-79B	Brazing - 79B	Brazing HPO	
Tensile Strength Rm N/mm <sup>2</sup>	max	300 - 370	300 - 370	280 - 380	270 - 350	260 - 310	300 - 370	300 - 370	255 - 315	420	330-390	
Yield Strength (Rp0.2 %) N/mm <sup>2</sup>	min	180	180	170	160	170	170	100	100	340	110	
Elongation A50 (%) *	min	38 / 48	38 / 48	/ 40	/ 40	/ 36	20/20	10/20**	25	25	60	
Hardness (HV)		55 - 95	55 - 95	55 - 90	55 - 90	55 - 85	65 - 85	65 - 85	65 - 85	125	60-80	
Grain-size							½-hard	½-hard		< 5 micrometer		
EN H070												380 - 500 100 - 200 50 - 80 70 - 100
Tensile Strength Rm N/mm <sup>2</sup>												
Yield Strength (0.2 %) N/mm <sup>2</sup>												
Elongation % A50												
Hardness (HV)												
EN H085 / R						EN R300	O82 ½-hard	O82 ½-hard			Brazing	
Tensile Strength Rm N/mm <sup>2</sup>	min					300 - 390	380 - 460	380 - 460				
Yield Strength (Rp0.2 %) N/mm <sup>2</sup>	min					150	260	260				
Elongation % A50 / A	min					16 / 25	21 / 21	21 / 21				
Hardness (HV)	min					85 - 115	95 - 125	95 - 125			80-110	
EN H095 / R		EN R350		EN R350	EN R350	EN R350	H02 ½-hard	H02 ½-hard				
Tensile Strength Rm N/mm <sup>2</sup>	min	350 - 430	350 - 430	350 - 430	350 - 430	350 - 420	390 - 480	390 - 480				
Yield Strength (Rp0.2 %) N/mm <sup>2</sup>	min	170	170	170	170	250	250	250				
Elongation % A50 / A	min	19 / 28	19 / 28	23 / 31	21 / 25	8 / 12	20 / 20	20 / 20				
Hardness (HV)	min	95 - 125	95 - 125	95 - 125	95 - 125	105 - 135	120 - 150	120 - 150				
EN H120/125 / R		EN R410		EN R420	EN R410	EN R410			- 47B			
Tensile Strength Rm N/mm <sup>2</sup>	min	410 - 490	410 - 490	420 - 500	410 - 490	410 - 490			330 - 410			
Yield Strength (Rp0.2 %) N/mm <sup>2</sup>	min	300	300	300	350	380			300			
Elongation % A50 / A	min	8 / 12	8 / 12	6 / 13	9 / 12	3 / 4			1 - / -			
Hardness (HV)	min	120 - 155	120 - 155	125 - 155	120 - 155	125 - 155			110 - 130			
EN H150/155 / R		EN R480		EN R500	EN R480	EN R480						
Tensile Strength Rm N/mm <sup>2</sup>	min	480 - 560	480 - 560	500 -	480 - 560	480 - 560						
Yield Strength (Rp0.2 %) N/mm <sup>2</sup>	min	430	430	450	460	450						
Elongation % A50 / A min	min	3 / 3	3 / 3	4 / 6	4 / 6	- / 2						
Hardness (HV)	min	150 - 180	150 - 180	155 -	150 - 180	150 - 180						
EN H170 / R		EN R550			EN R550	EN R550						
Tensile Strength Rm N/mm <sup>2</sup>	min	550	550		550 - 640	550						
Yield Strength (Rp0.2 %) N/mm <sup>2</sup>	min	500	500		530	530						
Elongation % A50 / A min	min	- / -	- / -		- / 2	- / -						
Hardness (HV) min	min	170	170		170 - 200	170						
EN H190 / R					EN R630							
Tensile Strength Rm N/mm <sup>2</sup>	min				630							
Yield Strength (Rp0.2 %) N/mm <sup>2</sup>	min				610							
Elongation % A50 / A min	min				- / -							
Hardness (HV) min	min				190							

Other tempers - as ASTM - are available upon request.

Yield strength, Elongation and Hardness are typical values for each temper.

Elongation: The first value is for thickness up to and incl. 0.25 mm / next is > 0.25 mm

\*\*) Elongation alloy SM0502: The first value is for thickness up to and incl. 0.060mm / next is 0.061 - 0.28 mm

Pori: Material thicknesses for building purposes typically 0.5 - 2 mm.

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