



Brush Performance Alloys - Strip Materials Properties (SI Units)

Alloy (UNS Number)	Temper	Heat Treatment	Density	Modulus of Elasticity	0.2% Offset Yield Strength	Tensile Strength	Elongation in 50 mm	Electrical Conductivity	Thermal Conductivity	1000 Hour Stress Relaxation Resistance			10 ⁵ Cycle Fatigue Strength (R=-1)		90° Bend Formability (min R/t) ⁽¹⁾		Thermal Expansion Coefficient	Hardness		Composition							
										100 C	150 C	200 C	MPa	MPa	Long.	Trans.		HV/DPH	Rockwell		Weight %						
Copper Beryllium	25 (C17200)	A	TB00	As Rolled	8.30	131	190 - 380	410 - 540	35 - 65	15 - 19	105				207 - 241	0.0	0.0	17.5	90-144	B45-78	98% Cu, 1.9% Be, 0.2% Co+Ni						
		1/4 H	TD01		8.30	131	410 - 560	510 - 610	20 - 45	15 - 19	105					214 - 248	0.0	0.0	17.5	121-185		B88-90					
		1/2 H	TD02		8.30	131	510 - 660	580 - 690	12 - 30	15 - 19	105					221 - 262	0.5	1.0	17.5	176-216		B88-96					
		H	TD04		8.30	131	620 - 800	680 - 830	2 - 18	15 - 19	105					241 - 269	1.0	2.9	17.5	216-287		B96-102					
		AT	TF00		3 hours @ 315°C	8.36	131	960 - 1210	1130 - 1350	3 - 15	22 - 28	105	95	88	61	276 - 310			17.5	353-413		C36-42					
	1/4 HT	TH01	2 hours @ 315°C	8.36	131	1030 - 1300	1190 - 1420	3 - 10	22 - 28	105	96	90	62	276 - 310			17.5	353-424	C36-43								
	1/2 HT	TH02		8.36	131	1100 - 1350	1270 - 1490	1 - 8	22 - 28	105	97	88	59	290 - 324			17.5	373-435	C38-44								
	HT	TH04		8.36	131	1130 - 1420	1310 - 1520	1 - 6	22 - 28	105	98	87	55	310 - 345			17.5	373-446	C38-45								
	190 (C17200)	AM	TM00	Mill Hardened	8.36	131	480 - 660	690 - 760	16 - 30	17 - 28	105	97	61	5	276 - 310	0.0	0.0	17.5	210-251	B95-C23		98% Cu, 1.9% Be, 0.2% Co+Ni					
		1/4 HM	TM01		8.36	131	550 - 760	750 - 830	15 - 25	17 - 28	105	97	69	20	283 - 324	0.5	0.5	17.5	230-271	C20-26							
		1/2 HM	TM02		8.36	131	650 - 870	820 - 940	12 - 22	17 - 28	105	97	66	26	290 - 331	0.5	1.0	17.5	250-301	C23-30							
		HM	TM04		8.36	131	750 - 950	930 - 1040	9 - 20	17 - 28	105	98	74	28	310 - 359	2.0	2.0	17.5	285-343	C28-35							
		SHM	TM05		8.36	131	860 - 970	1030 - 1110	9 - 18	17 - 28	105	98			324 - 379	2.8	3.2	17.5	309-363	C31-37							
		XHM	TM06		8.36	131	930 - 1180	1060 - 1250	4 - 15	17 - 28	105	98	86	52	345 - 393	4.0	5.0	17.5	317-378	C32-38							
		XHMS	TM08		8.36	131	1030 - 1250	1200 - 1320	3 - 12	17 - 28	105	98	84	47	345 - 414	5.0	10.0	17.5	325-413	C33-42							
		290 (C17200)	TM02		TM02	Mill Hardened	8.36	131	650 - 800	820 min	14 - 30	17 - 26	105	97	90	59	290 - 331	0.0	0.0	17.5	255-339		C25-34				
	TM03		TM03	8.36	131		760 - 860	930 min	12 min	17 - 26	105					0.5	0.5	17.5									
	TM04		TM04	8.36	131		790 - 940	960 min	9 - 25	17 - 26	105	98	86	33	304 - 345	0.7	0.7	17.5	285-369	C28-38							
	TM06		TM06	8.36	131		930 - 1070	1060 min	6 - 13	17 - 26	105	99	93	68	324 - 393	1.5	1.5	17.5	317-393	C32-40							
	TM08		TM08	8.36	131		1060 - 1210	1200 min	3 - 15	17 - 26	105	99			345 - 414	3.5	3.0	17.5	345-429	C35-43							
	390 (C17460)	HT	TH04	Mill Hardened	8.80	138	930 - 1055	950 - 1090	1 min	44 min.	235	95	85	69	207 - 275	2.0 ⁽²⁾	2.0 ⁽²⁾	17.6	280-340	C27-35	98% Cu, 0.4% Be, 1.2% Ni, 0.3% Zr, 0.2% Sn						
	390E (C17500)	EHT	TH04	Mill Hardened	8.83	138	951 min	986 min	2 min	42 min.	208	95	85	69		0.5 ⁽⁴⁾	0.5 ⁽⁴⁾	17.6	300 min	C29 min	97% Cu, 0.6% Be, 2.6% Co						
																2.0 ⁽⁵⁾	2.5 ⁽⁵⁾										
	3 (C17510)	AT	TF00	Mill Hardened	8.83	138	550 - 690	690 - 900	10 - 25	45 - 60	240	94	83	63	262 - 304	1.0	1.0	17.6	195-275	B92-100	98% Cu, 0.4% Be, 1.8% Ni						
		HT	TH04	8.83	138	650 - 870	750 - 940	8 - 20	48 - 60	240	95	85	66	290 - 324	2.0	2.0	17.6	216-287	B95-102								
10 (C17500)	AT	TF00	Mill Hardened	8.83	138	550 - 690	690 - 900	10 - 25	45 - 60	200	94	83	63	262 - 304	1.0	1.0	17.6	195-275	B92-100	97% Cu, 0.6% Be, 2.6% Co							
	HT	TH04	8.83	138	650 - 870	750 - 940	8 - 20	48 - 60	200	95	85	66	290 - 324	2.0	2.0	17.6	216-287	B95-102									
174 (C17410)	1/2 HT	TH02	Mill Hardened	8.80	138	550 - 690	650 - 800	10 - 20	50 min.	230	94	82	64	310 - 345	0.5	0.5	17.6	180-230	B89-98	99% Cu, 0.4% Be, 0.5% Co							
	HT	TH04	8.80	138	690 - 830	750 - 900	7 - 17	45 - 60	230	95	85	77	310 - 345	1.2	5.0	17.6	210-278	B95-102									
Brush 60® (C17460)	3/4 HT	TH03	Mill Hardened	8.80	138	650 - 800	790 - 940	11 min	50 min.	235	96	85	65	275 - 310	0.7	0.7	17.6	220-280	B96-C30	98% Cu, 0.4% Be, 1.2% Ni, 0.3% Zr, 0.2% Sn							
	HT	TH04	8.80	138	720 - 870	820 - 970	10 min	50 min.	235	96	89	75	275 - 310	1.5	1.5	17.6	230-290	B98-C31									
Nickel Beryllium	360 (N03360)	A	As Rolled	8.28	193-207	270 - 490	650 - 900	30 min	4 min.	48	greater than 95% stress remaining after 10,000 hours at 200 C					0.0	0.0	14.4	106-200	A39-57	97% Ni, 2.0% Be, 0.5% Ti						
		1/4 H		8.28	193-207	440 - 870	750 - 1040	15 min	4 min.	48						0.0	0.0	14.4	153-293	A50-65							
		1/2 H		8.28	193-207	790 - 1180	890 - 1210	4 min	4 min.	48						0.7	1.2	14.4	160-383	A51-70							
		H		8.28	193-207	1030 - 1320	1060 - 1340	1 min	4 min.	48						1.2	2.0	14.4	180-491	A55-75							
		AT		2.5 hours @ 510°C	8.28	193-207	1000 - 1200	1480 min	12 min	6 min.						48	483 - 552		14.4	343-528		15N 78-86					
		1/4 HT		8.28	193-207	1050 - 1300	1580 min	10 min	6 min.	48						455 - 524		14.4	383-598	15N 80-88							
		1/2 HT		1.5 hours @ 510°C	8.28	193-207	1100 - 1350	1680 min	9 min	6 min.						48	427 - 496		14.4	395-695		15N 81-90					
		HT		8.28	193-207	1150 - 1400	1860 min	8 min	6 min.	48						434 - 503		14.4	446-695	15N 83-90							
		MH2		Mill Hardened	8.28	193-207	690 - 870	1060 - 1250	14 min	5 min.						48		0.0	0.0	14.4							
		MH4			8.28	193-207	820 - 1070	1240 - 1420	12 min	5 min.						48				14.4							
		MH6			8.28	193-207	1030 - 1210	1370 - 1560	10 min	5 min.						48				1.0		1.2	14.4				
		MH8			8.28	193-207	1170 - 1420	1510 - 1690	9 min	5 min.						48				1.2		1.6	14.4				
		MH10			8.28	193-207	1380 - 1560	1650 - 1870	8 min	5 min.						48				1.5		2.2	14.4				
		MH12			8.28	193-207	1510 - 1860	1790 - 2000	8 min	5 min.						48				2.0		3.0	14.4				

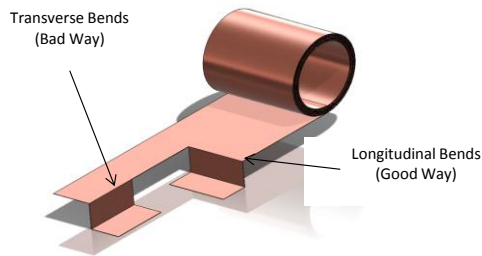
Notes: (1) Typical formability values for strip 0.25 mm thick. Formability improves as thickness decreases.
 (2) For strip 0.10 mm and thinner.
 (3) For strip greater than 0.10 mm thick.
 (4) For strip 0.05 mm and thinner

(5) For strip thicker than 0.05 mm up to 0.10 mm
 (6) For strip thicker than 0.10 mm up to 0.15 mm
 (7) For strip thicker than 0.15 mm up to 0.20 mm
 (8) For strip 0.127 mm and thinner

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	Alloy (UNS Number)	Temper	Heat Treatment	Density	Modulus of Elasticity	0.2% Offset Yield Strength	Tensile Strength	Elongation in 2"	Electrical Conductivity	Thermal Conductivity	1000 Hour Stress Relaxation Resistance			10 ⁸ Cycle Fatigue Strength (R=-1)	90° Bend Formability (min R/t) (°)		Thermal Expansion Coefficient	Hardness		Composition			
				g/cm ³	GPa	MPa	MPa	%	% IACS	W/m K	100 C	150 C	200 C	MPa	Long.	Trans.	mm/mm °C	HV/DPH	Rockwell	Weight %			
Copper Nickel Tin	BrushForm® 158 (C72900)	A	TB00	As Rolled	9.00	144	170 - 310	440 - 590	32 min	7	38					0.0	0.0	16.4	100-150	B55-80	77% Cu, 15% Ni, 8% Sn		
		1/4 H	TD01		9.00	144	360 - 520	520 - 690	18 min	7	38						0.0	0.0	16.4	150-235		B80-99	
		1/2 H	TD02		9.00	144	520 - 690	590 - 760	8 min	7	38						0.0	0.5	16.4	190-275		B91-C27	
		H	TD04		9.00	144	660 - 860	690 - 900	1 min	7	38						0.5	3.0	16.4	220-300		B96-C30	
		EH	TD08		9.00	144	790 - 930	840 - 1000	1 min	7	38						-	-	16.4	265-325		C27-33	
		AT	TX00		9.00	144	690 - 900	830 - 1030	6 min	7	38								16.4	275-350		C26-36	
		1/4 HT	TS01		3 hours @ 700°F	9.00	144	790 - 1000	900 - 1100	4 min	7	38								16.4		290-365	C28-37
		1/2 HT	TS02			9.00	144	930 - 1140	1000 - 1210	3 min	7	38								16.4		315-390	C31-40
		HT	TS04			9.00	144	1070 - 1280	1140 - 1340	2 min	7	38								16.4		335-410	C34-42
		EHT	TS08			9.00	144	1170 - 1380	1205 - 1415	1 min	7	38								16.4		370-450	C37-45
		TM00	TM00			Mill Hardened	9.00	144	520 - 660	660 - 790	22 min	7	38					0.0	0.0	16.4		190-290	B91-C29
		TM02	TM02				9.00	144	620 - 760	720 - 860	15 min	7	38					0.0	0.0	16.4		215-315	B96-C32
		TM04	TM04	9.00	144		790 - 900	895 min.	10 min	7	38					1.0	1.0	16.4	245-345	C22-35			
		TM06	TM06	9.00	144		895 - 1035	965 min.	6 min	7	38					2.0	2.0	16.4	270-370	C26-38			
		TM08	TM08	9.00	144		970 - 1170	1030 - 1230	2 min	7	38	94	84	70		5.0	8.0	16.4	305-405	C30-41			
		TM10	TM10	9.00	144		1140 - 1345	1205 - 1450	1 min	7	38					-	-	16.4	370-450	C37-45			
		TM12	TM12	9.00	144	1205 min.	1240 min.	1 min	7	38					-	-	16.4	-	-	-			
		BrushForm® 96 (C72700)	A	TB00	As Rolled	8.91	124	255 nom	414 nom	30 min	10	52					0.0	0.0	16.2	100-150		B55-80	85% Cu, 9% Ni, 6% Sn
			1/4 H	TD01		8.91	124	365 nom	517 nom	16 min	10	52					1.1	1.7	16.2	125 min		B70 min	
			1/2 H	TD02		8.91	124	462 nom	586 nom	8 min	10	52					1.5	2.0	16.2	-		-	
			H	TD04		8.91	124	607 nom	689 nom	3 min	10	52					3.0	6.0	16.2	175-275		B95-C27	
			EH	TD08		8.91	124	634 nom	758 nom	-	10	52					-	-	16.2	-		-	
			AT	TX00		8.91	124	517 nom	689 nom	15 min	10	52							16.2	250-340		C23-35	
			1/4 HT	TS01		3 hours @ 700°F	8.91	124	620 nom	793 nom	10 min	10	52							16.2		230-330	
1/2 HT	TS02		8.91	124			689 nom	862 nom	6 min	10	52							16.2	280-330	C27-C34			
HT	TS04		8.91	124			827 nom	931 nom	4 min	10	52							16.2	300-370	C30-C38			
TM00	TM00		Mill Hardened	8.91			124	414 min	676 nom	16 min	10	52					0.2	0.2	16.2	180-280	B89-C27		
TM02	TM02			8.91			124	517 min	724 nom	12 min	10	52					5.0	0.5	16.2	200-300	B93-C30		
TM04	TM04			8.91			124	621 min	758 nom	8 min	10	52					1.0	1.0	16.2	230-300	B98-C30		
TM06	TM06			8.91	124	689 min	827 nom	4 min	10	52					2.5	3.0	16.2	240-360	C21-C37				
TM08	TM08			8.91	124	758 min	896 nom	-	10	52					5.0	7.0	16.2	260-380	C24-C39				

Notes: (1) Typical formability values for strip 0.25 mm thick. Formability improves as thickness decreases.



The formability ratio R/t is defined as the ratio of the minimum inside bend radius (R) to the strip thickness (t) that forms a 90 degree bend without fracture.