

HSM Wire International, Inc.

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Ultra Fine Copper Wire Sizes AWG 42.5 - 58 Chart (Metric)

Technical Details = mm for Copper Magnet Wire. All tolerances based on NEMA MW 1000. Based upon copper conductivity of 100% I.A.C.S. Actual values may be up to 102% I.A.C.S. The following information is intended for a guideline only, actual result may vary; please consider all data before implementing into any project.

AWG	Bare Copper					
	Diameter (Millimeters)			Resistance* (ohms/meter)		
	MIN	NOM	MAX	MIN	NOM	MAX
42.5	.058	.061	.064	5.444	5.907	6.432
43	.053	.056	.058	6.432	7.030	7.716
43.5	.051	.053	.056	7.030	7.716	8.507
44	.048	.051	.053	7.716	8.507	9.426
44.5	.046	.048	.051	8.507	9.426	10.502
45	.0429	.0447	.0446	10.105	10.984	11.864
46	.0384	.0399	.0417	12.697	13.802	14.908
47	.0343	.0356	.0371	15.971	17.359	18.747
48	.0302	.0315	.0328	20.358	22.129	23.901
49	.0272	.0282	.0295	25.407	27.615	29.823
50	.0241	.0251	.0262	31.936	34.711	37.500
51	.0216	.0224	.0234	40.420	43.930	47.441
52	.0191	.0198	.0206	51.476	55.938	60.400
53	.0170	.0178	.0185	63.911	69.455	75.000
54	.0152	.0157	.0165	81.430	88.517	95.604
55	.0135	.0140	.0145	112.467	112.467	121.457
56	.0119	.0124	.0130	153.018	141.699	153.018
57	.0107	.0111	.0116	163.170	177.360	191.549
58	.0095	.0099	.0103	205.280	223.130	240.981

AWG	Single Build				Heavy Build			
	Min. Increase (mm)	Overall Diameter (millimeters)			Min. Increase (mm)	Overall Diameter (millimeters)		
		MIN	NOM	MAX		MIN	NOM	MAX
42.5	.005	.064	.067	.071	.010	.069	.074	.079
43	.005	.058	.062	.066	.010	.064	.069	.074
43.5	.0025	.053	.058	.064	.010	.061	.066	.071
44	.0025	.051	.056	.061	.010	.058	.064	.069
44.5	.0025	.048	.053	.058	.010	.056	.061	.066
45	.0025	.0455	.0488	.0521	.0076	.0505	.0546	.0584
46	.0025	.0409	.0439	.0470	.0076	.0460	.0498	.0533
47	.0025	.0369	.0401	.0432	.0076	.0419	.0452	.0483
48	.0025	.0328	.0356	.0381	.0051	.0353	.0394	.0432
49	.0025	.0297	.0315	.0330	.0051	.0323	.0353	.0381
50	.0025	.0267	.0287	.0305	.0051	.0292	.0325	.0356
51	.0025	.0241	.0262	.0279	.0051	.0267	.0297	.0328
52	.0025	.0216	.0236	.0254	.0051	.0241	.0267	.0292
53	.0013	.0183	.0201	.0216	.0025	.0203	.0234	.0262
54	.0013	.0165	.0178	.0190	.0025	.0185	.0213	.0241
55	.0013	.0147	.0163	.0178	.0025	.0167	.0196	.0221
56	.0013	.0132	.0150	.0165	.0025	.0152	.0180	.0206
57	.0010	.0117	.0129	.0141	-	-	-	-
58	.0010	.0105	.0117	.0129	-	-	-	-

AWG	Area Sq. mm NOM	Single Build					Recommended Winding Tensions (grams)	Typical Elongation %
		Kg/1000m	m/kg	ohms/kg (g)	wires/sq.cm	ohms/cu.cm		
		NOM	NOM	NOM	NOM	NOM		
42.5	.002918	.0267	37,384	220,839	22,277	1,316	30	23
43	.002452	.0225	44,410	312,213	26,014	1,829	26	22
43.5	.002234	.0205	48,690	375,681	29,726	2,294	24	21
44	.002026	.0186	53,620	456,125	31,888	2,712	22	21
44.5	.001829	.0169	59,338	559,298	35,600	3,356	19	20
45	.00154	.01436	69,616	764	42,073	-	17	20
46	.00125	.01134	87,490	1,210	51,783	-	14	20
47	.00099	.00899	111,278	1,930	62,106	-	11	19
48	.00078	.00725	137,955	3,050	79,018	-	9	18
49	.00062	.00573	174,510	4,810	100,693	-	7	17
50	.00049	.00458	218,190	7,500	121,400	-	5	16
51	.00039	.00366	273,155	11,960	146,140	-	4	16
52	.00031	.00292	342,840	19,180	179,122	-	3	14
23	.00025	.00228	439,200	30,510	248,427	-	2.5	12
54	.00019	.00180	555,300	49,130	316,516	-	2	11
55	.00015	.00144	693,500	77,920	378,175	-	1.5	10
56	.00012	.00116	862,600	122,360	445,318	-	1	9
57	.00010	.00041	1,099,755	195,160	620,000	-	0.8	8
58	.00008	.00033	1,371,300	306,390	732,372	-	0.6	7