

MINIMUM NUMBER OF TURNS PER 100mm USING ENAMELLED COPPER WIRE IN CLOSELY SPACED LAYER WOUND COILS (A.S. SIZES)

Conductor Diameter mm	Enamel Grade			Conductor Diameter mm	Enamel Grade			Conductor Diameter mm	Enamel Grade		
	Grade 1	Grade 2	Grade 3		Grade 1	Grade 2	Grade 3		Grade 1	Grade 2	Grade 3
4.500	21.8	21.6	21.4	1.120	84.5	82.2	80.1	0.280	320.5	304.0	289.9
4.250	23.0	22.8	22.6	1.060	89.0	86.4	84.2	0.265	33607.0	318.5	303.0
4.000	24.5	24.2	24.0	1.000	94.2	91.4	89.0	0.250	355.9	336.7	320.5
3.750	26.1	25.6	25.5	0.950	98.8	95.8	93.1	0.236	374.5	353.4	335.6
3.550	27.5	27.2	26.9	0.900	104.3	101.1	98.2	0.224	396.8	375.9	357.1
3.350	29.1	28.7	28.4	0.850	110.0	106.5	103.3	0.212	416.7	373.7	373.1
3.150	30.9	30.5	30.2	0.800	117.0	113.1	109.8	0.200	442.5	418.4	396.8
3.000	32.4	32.0	31.6	0.750	124.2	119.9	116.1	0.190	463.0	438.6	416.7
2.800	34.7	34.2	33.8	0.710	161.2	126.7	122.9	0.180	490.2	460.8	436.7
2.650	36.6	36.1	35.6	0.670	138.5	133.5	129.2	0.170	515.5	487.8	460.8
2.500	38.8	38.2	37.7	0.630	147.3	142.0	137.4	0.160	549.5	515.5	487.8
2.360	41.0	40.4	39.7	0.600	154.1	148.4	143.3	0.150	584.8	549.5	518.1
2.240	43.2	42.5	41.8	0.560	165.0	158.7	153.1	0.140	625.0	584.8	552.5
2.120	45.5	44.7	44.0	0.530	173.6	166.7	160.5	0.132	657.9	617.3	584.8
2.000	48.2	47.3	46.6	0.500	183.8	176.7	170.4	0.125	694.4	649.4	613.5
1.900	56.7	49.7	48.8	0.475	192.7	184.8	177.9	0.112	769.2	719.4	680.3
1.800	53.4	52.4	51.4	0.450	203.7	194.9	187.6	0.100	854.7	800.0	757.6
1.700	56.4	55.3	54.2	0.425	214.6	204.9	196.9	0.090	952.4	885.0	833.3
1.600	59.9	58.6	57.5	0.400	227.8	217.9	209.2	0.080	1063.8	990.1	925.9
1.500	63.7	62.3	61.0	0.375	241.5	230.4	220.8	0.071	1190.5	1098.9	1030.9
1.400	68.1	66.6	65.1	0.355	255.1	243.3	233.6	0.063	1315.8		
1.320	72.0	70.3	68.7	0.335	268.8	255.8	245.1	0.060	1388.9		
1.250	76.0	74.1	72.4	0.315	286.5	272.5	260.4	0.056	1492.5		
1.180	80.3	78.2	76.3	0.300	299.4	284.1	271.0	0.050	1666.7		

COPPER AND ALUMINIUM WIRE COMPARISON

Copper Wire		Nearest Size Aluminium Wire With Comparable Resistance		Copper Wire		Nearest Size Aluminium Wire With Comparable Resistance		Copper Wire		Nearest Size Aluminium Wire With Comparable Resistance	
Bare Wire Diameter Nominal mm	Nominal Resistance at 20deg C Ohms/Km	Bare Wire Diameter Nominal mm	Nominal Resistance at 20deg C Ohms/Km	Bare Wire Diameter Nominal mm	Nominal Resistance at 20deg C Ohms/Km	Bare Wire Diameter Nominal mm	Nominal Resistance at 20deg C Ohms/Km	Bare Wire Diameter Nominal mm	Nominal Resistance at 20deg C Ohms/Km	Bare Wire Diameter Nominal mm	Nominal Resistance at 20deg C Ohms/Km
4.250	1.2045			1.500	9.673	1.900	9.876	0.530	77.48	0.670	79.41
4.000	1.3602	5.000	1.426	1.400	11.10	1.800	11.00	0.500	87.06	0.630	89.82
3.750	1.5476	4.750	1.580	1.320	12.49	1.700	12.34	0.475	96.46	0.600	99.03
3.550	1.7269	4.500	1.760	1.250	13.93	1.600	13.93	0.450	107.50	0.560	113.70
3.350	1.9393	4.250	1.973	1.180	15.63	1.500	15.85	0.425	120.50	0.530	126.90
3.150	2.193	4.000	2.228	1.120	17.35	1.400	18.19	0.400	136.00	0.500	142.60
3.000	2.418	3.750	2.535	1.060	19.37	1.320	20.46	0.375	154.8	0.475	158.00
2.800	2.776	3.550	2.829	1.000	21.76	1.250	22.82	0.355	172.7	0.450	176.00
2.650	3.099	3.350	3.177	0.950	24.12	1.180	25.61	0.335	193.9	0.425	197.30
2.500	3.482	3.150	3.593	0.900	26.87	1.120	28.42	0.315	219.3	0.400	222.80
2.360	3.908	3.000	3.961	0.850	30.12	1.060	31.73	0.300	241.8	0.375	253.50
2.240	4.338	2.800	4.547	0.800	34.01	1.000	35.65	0.280	277.6	0.355	282.90
2.120	4.843	2.650	5.077	0.750	38.69	0.950	39.50	0.265	309.9	0.335	317.70
2.000	5.441	2.500	5.704	0.710	43.18	0.900	44.01	0.250	348.2	0.315	359.30
1.900	6.029	2.360	6.400	0.670	48.48	0.850	49.34	0.236	390.8	0.300	396.10
1.800	6.718	2.240	7.105	0.630	54.84	0.800	55.70	0.224	433.8	0.280	454.70
1.700	7.531	2.120	7.932	0.600	60.46	0.750	63.38	0.212	484.3	0.265	507.60
1.600	8.502	2.000	8.913	0.560	69.40	0.710	70.72	0.200	544.1	0.250	570.40

PROPERTIES OF ALUMINIUM COMPARED WITH COPPER

Property	Aluminium	Copper
Specific Gravity.....	2.70	8.89
Conductivity	61.00	100.00
Weight Ratio (equal volume)	0.30	1.00
For Equal Conductance:		
Area Ratio.....	1.64	1.00
Diameter Ratio	1.27	1.00
Weight Ratio	0.49	1.00