

Aluminum 1350, also referred to as EC (electrical conductor) aluminum, is the primary alloy utilized in aluminum magnet wire. Its combination of light weight, high thermal conductivity, and high mass electrical conductivity (more than twice that of copper, per pound), make it an ideal alternative to copper for certain winding applications. Most film insulations are available on round aluminum wire. For insulation data, see pages 2 and 3. For square aluminum wire data, see page 7.

SIZE (AWG)	DIAMETER (INCHES)			RESISTANCE (OHMS PER 1000 FT. AT 20°C)			FEET PER POUND	POUNDS PER 1000 FT.	CIRCULAR MILS NOMINAL	SIZE (AWG)
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.				
10	.1009	.1019	.1029	1.58	1.611	1.643	104	9.56	10380	10
11	.0898	.0907	.0916	1.99	2.03	2.07	132	7.57	8230	11
12	.0800	.0808	.0816	2.51	2.56	2.61	166	6.01	6530	12
13	.0713	.0720	.0727	3.17	3.23	3.29	210	4.77	5190	13
14	.0635	.0641	.0647	4.00	4.07	4.15	264	3.78	4110	14
15	.0565	.0571	.0577	5.02	5.13	5.24	333	3.00	3260	15
16	.0503	.0508	.0513	6.36	6.48	6.61	421	2.38	2580	16
17	.0448	.0453	.0458	7.97	8.15	8.33	529	1.89	2050	17
18	.0399	.0403	.0407	10.1	10.3	10.5	669	1.49	1620	18
19	.0355	.0359	.0363	12.7	13.0	13.3	843	1.19	1290	19
20	.0317	.0320	.0323	16.0	16.3	16.6	1060	.942	1020	20
21	.0282	.0285	.0288	20.2	20.6	21.0	1340	.748	812	21
22	.0250	.0253	.0256	25.5	26.1	26.8	1700	.589	640	22
23	.0224	.0226	.0228	32.2	32.8	33.3	2130	.470	510	23
24	.0199	.0201	.0203	40.6	41.4	42.2	2690	.372	404	24
25	.0177	.0179	.0181	51.1	52.2	53.4	3390	.295	320	25
26	.0157	.0159	.0161	64.5	66.2	67.9	4300	.233	253	26
27	.0141	.0142	.0143	81.8	83.0	84.1	5390	.186	202	27
28	.0125	.0126	.0127	103.7	105.3	107.0	6845	.1461	158.8	28
29	.0112	.0113	.0114	128.7	131.0	133.4	8503	.1176	127.7	29
30	.0099	.0100	.0101	164.0	167.3	170.7	10870	.0920	100.0	30
31	.0088	.0089	.0090	206.5	211.2	216.0	13717	.0729	79.21	31
32	.0079	.0080	.0081	255.0	261.4	268.0	16978	.0589	64.00	32
33	.0070	.0071	.0072	322.7	331.8	341.4	21552	.0464	50.41	33
34	.0062	.0063	.0064	408.4	421.5	435.2	27397	.0365	39.69	34
35	.0055	.0056	.0057	514.9	533.4	553.0	34602	.0289	31.36	35
36	.0049	.0050	.0051	643.1	669.1	696.7	43478	.0230	25.00	36

Properties of Aluminum Alloys

Aluminum's unique combination of properties make it a highly versatile material when alloyed with various metals. Besides light weight, characteristics of aluminum alloys include excellent workability and inherent corrosion resistance due to the inert oxide coat that forms directly after exposure to air. Many alloys in the 1000 through 5000 series are non-heat-treatable, their strength depending on the amount of cold working done. In the case of 5056 alloy, the addition of magnesium as the principal alloying agent increases its initial tensile strength. Alloy 6061 is a heat-treatable alloy supplied in annealed or strain hardened tempers. The end user may achieve maximum tensile strength through a multi-step thermal treatment.

ALLOY	CHEMICAL COMPOSITION (%)	ULTIMATE TENSILE STRENGTH (PSI)	ELECTRICAL CONDUCTIVITY IACS (68°F)	ELECTRICAL RESISTIVITY (OHMS-CIRC. MIL/FT)	DENSITY (LB/CU IN)	SPECIFIC GRAVITY	COEFFICIENT OF THERMAL EXPANSION X 10 ⁻⁶ (68 - 212°F)	APPROX. MELTING POINT (°F)
1350(EC)	99.5 Al min.	13,000	61.8	17	.098	2.7	23.8	1200
1100	.12 Cu, 99 Al min.	13,000	59	18	.098	2.71	23.6	1195
1199	99.996 Al min.	6,800	64.9	15	.0975	2.7	23.6	1220
5056	.12 Mn, 5 Mg, .12 Cr, Al bal.	42,000	29	36	.095	2.64	24.1	1060
6061	.6 Si, .28 Cu, 1 Mg, .2 Cr, Al bal.	17,000	47	22	.098	2.7	23.6	1080

Mechanical and electrical values based on annealed temper.