

ELECTRICAL POWER SYSTEMS ENGINEERING

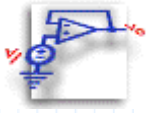


Table 1.6.2 Characteristics of Aluminum Cable, Small Gauge Conductor

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Circular Mils*	Aluminum			Steel		Outside D.	Cooper Equiv.**	Ult. Strength	Weight
	Strands	Layers	Strand D.	Strands	Strand D.				
266800	6	1	0.2109	7	0.0703	0.633	3/0	9645	1802
4/0	6	1	0.1878	1	0.1878	0.563	2/0	8420	1542
3/0	6	1	0.1147	1	0.1672	0.502	1/0	6675	1223
2/0	6	1	0.149	1	0.149	0.447	1	5345	970
1/0	6	1	0.1327	1	0.1327	0.398	2	4280	769

*Circular Mils or A.W.G. Aluminium

** Cooper Equiv. Circular Mils or A.W.G: Based on Copper 97%, Aluminum 61% conductivity.

Mean Radius+	Approx. Current++	ra Resistance per Conductor (ohm/mile)							
		25°C Small Currents				50°C Current Approx. 75% Capacity +++			
		d-c	25 cycles	50 cycles	60 cycles	d-c	25 cycles	50 cycles	60 cycles
0.00684	460	0.351	0.351	0.351	0.352	0.386	0.43	0.51	0.552
0.00814	340	0.441	0.442	0.444	0.445	0.485	0.514	0.567	0.592
0.006	300	0.556	0.557	0.559	0.56	0.612	0.642	0.697	0.723
0.0051	270	0.702	0.702	0.704	0.706	0.773	0.806	0.866	0.895
0.00446	230	0.885	0.885	0.887	0.888	0.974	1.01	1.08	1.12

+ Geometric Mean Radius at 60 Cycles (ft) for 75% capacity +++

++Approx. Current Carrying Capac. (amp): For conductor at 75°C, air at 25°C, wind 1.4 mph (2ft/sec), freq=60 cycles.

+++Current approx. 75% capacity is 75% of the approx. current carrying capacity in amps, and is approximately the current which will produce 50C conductor temperature (25C rise) with 25C air temperature, wind 1.4 mph.

xa
Inductive Reactance
per Conductor
at 1 ft Spacing (ohm/mile)
Small Currents

xa
Inductive Reactance
per Conductor
at 1 ft Spacing (ohm/mile)
Current Approx 75% Capacity++

xa`
Shunt Capacitive
Reactance
per Conductor
at 1 ft Spacing (106 ohm*mile)

Small Currents			IR Current Approx.			Shunt Capacitive		
25 cycles	50 cycles	60 cycles	25 cycles	50 cycles	60 cycles	25 cycles	50 cycles	60 cycles
0.194	0.388	0.466	0.252	0.504	0.605	0.259	0.1294	0.1079
0.218	0.437	0.524	0.242	0.484	0.581	0.267	0.1336	0.1113
0.225	0.45	0.54	0.259	0.517	0.621	0.275	0.1377	0.1147
0.231	0.462	0.554	0.267	0.534	0.641	0.284	0.1418	0.1182
0.237	0.473	0.568	0.273	0.547	0.656	0.292	0.146	0.1216