TurboFlex® Aluminum and Copper comparison tables

COMPARISON OF ALUMINUM AND COPPER WIRE MATERIALS IN TURBOFLEX® CABLES

The tables below provide a comparison of Glenair TurboFlex® wires with copper and aluminum conductors. Reference Glenair Test Reports GT-15-189 and RdP 010-15.

Wire Weight by Size			
AWG	Aluminum, lbs/1000 ft	Copper, lbs/1000 ft	Aluminum Weight Savings
16	8	14	45%
12	15	29	49%
10	22	44	50%
8	33	67	51%
6	37	101	63%
4	57	162	65%
2	85	252	66%
1/0	129	393	67%

Wire Electrical Properties				
	TurboFlex® Aluminum		TurboFlex® Copper	
AWG	DC Resistance, Ohm/1000 ft	Max Current, Amps*	DC Resistance, Ohm/1000 ft	Max Current, Amps
16	6.85	27	4.55	36
14	4.26	36	2.85	54
12	2.80	47	1.85	68
10	1.69	63	1.16	90
8	1.07	83	0.72	124
6	0.67	112	0.46	165
4	0.42	148	0.30	220
2	0.26	197	0.19	293
1/0	0.16	262	0.12	399
Maximum ampacities are based on temperature rise to limits of the materials used in cable construction, based on single cable bundle in free air and at sea level pressure. Consult Glenair for more information.				

Conductor Temperature Increase Above Ambient		
Applied Current, Amps DC	TurboFlex™ Aluminum, 8 AWG	TurboFlex™ Copper, 8 AWG
50	31°C	21°C
100	124°C	75°C
125	198°C	113°C
Maximum ampacities are based on temperature rise to limits of the materials used in cable construction, based on single cable bundle in free air and at sea level pressure. Consult Glenair for more information.		

Durability Testing of Crimped Contacts on 8 AWG Wire			
Crimp Resistance, Un-aged	TurboFlex™ Aluminum	TurboFlex™ Copper	Requirement
Initial Crimp Resistance at 40 Amps, mΩ	0.047	0.022	3.0 max
After Thermal Cycling, -65°C to 175°C, 500 cycles			
Crimp Tensile Strength after cycling, lbf	261	402	232 min
Crimp Resistance at 40 Amps, mΩ	0.153	0.029	3.0 max
After 1000 hours at 175°C			
Crimp Tensile Strength, lbf	253	388	232 min
Crimp Resistance at 40 Amps, mΩ	0.090	0.033	3.0 max
After 1500 thermal cycles, Ambient to 175°C while energized with 40 Amps DC			
Crimp Tensile Strength, lbf	260	387	232 min
Crimp Resistance at 40 Amps, mΩ	0.164	0.030	3.0 max
After 500 Hours Dynamic Salt Fog in a PowerTrip™ Connector			
Crimp Tensile Strength, lbf	240	410	232 min
Crimp Resistance at 40 Amps, mΩ	0.074	0.030	3.0 max
After Vibration & Shock* in a PowerTrip™ Connector			
Crimp Tensile Strength, lbf	244	421	232 min
Crimp Resistance at 40 Amps, mΩ	0.065	0.025	3.0 max
Test performed using standard PowerTrip gold plated copper contacts (P/N 850-026-8-8-2), crimped without special bushings or processes. *16 Hours random vibration per EIA-364-28F, Condition VI, Letter J (43.92 Grms) and 6 shocks of 300G			