

**Table 16 Wire and Cable Screening Requirements (Note 1) (Page 1 of 3)**

Inspection/ Test	Test Methods Conditions and Requirements	Wire or Cable Type/Grade Level							
		Insulated		Magnet		Coaxial		Multiconductor	
		1	2	1	2	1	2	1	2
Visual	Inspect for proper marking, insulation, and color. Check workmanship for insulation cracks, splits. For magnet wire only, check for blisters or runs. Use 3x magnification and high intensity lighting.	X	X	X	X	X	X	X	X
Mechanical (Note 2)	Verify finished wire or cable diameter per reference specification. Verify proper number of wire strands and AWG of strands in conductor(s) and shield (if applicable). Verify weight as necessary. Inspect for discoloration or corrosion of the strands. Wire plating finish or coating shall not flake off from normal flexing.	X	X	X	X	X	X	X	X
Impulse Dielectric Test (Insulation/Jacket flaws Test) Not Applicable to copper-clad Semi-Rigid Cable (Note 3)	FED-STD-228 Method 6211.1 or MIL-STD-2223 method 3002. Finished wire or cable shall be passed through a bead chain electrode head which will give intimate metallic contact with the wire insulation surface or cable jacket. Voltage potential as specified in detail specification shall be applied between the electrode and wire conductor or cable shield. Wire lengths with failed insulation shall be removed.	X	X			X	X	X	X
Wrap Test (Extruded Insulations) (Note 4)	MIL-W-22759, paragraph 4.6.3.3. Sample shall be baked for 2 hours at the temperature specified in the detail specification. After cooling, the sample shall be examined for cracked insulation.	X	X						
Lamination Sealing Test (Tape Sintered Insulations)	MIL-W-81381, paragraph 4.7.4.10. Sample shall be baked at the temperature specified in the detail specification for 48 hours. After cooling, visually examine for delamination of the insulation.	X	X						

See notes on page C-44.

**Table 16 Wire and Cable Screening Requirements (Note 1) (Page 2 of 3)**

Inspection/ Test	Test Methods Conditions and Requirements	Wire or Cable Type/Grade Level							
		Insulated		Magnet		Coaxial		Multiconductor	
		1	2	1	2	1	2	1	2
DC Resistance	FED-STD-228, Method 6021. Measurements shall conform to MIL-W-22759, Table II. Wire shall be tested dry without immersion.	X	X						
Adherence and Flexibility (Note 5)	a. Clamp 10 inches apart, elongate as specified and examine for insulation separation from the wire as specified. (Note 6) b. Wind around mandrel and examine for cracks or separation as specified. (Note 6)			X	X				
Heat Shock (Note 5)	Bake at maximum rated temperature for 30 minutes. Examine for cracks at specified magnification. (Note 6)			X	X				
Dielectric Withstanding Voltage (Note 7)	FED-STD-228, Method 6111, except cable shall be tested dry without immersion. For coaxial cable, apply voltage (potential as specified) between inner conductor and shield with the shield grounded. For multiconductor cable, each conductor shall be tested against all others tied to the shield.			X (Note 8)	X (Note 8)	X	X	X	X
Continuity (Note 7)	Apply 25 V DC max to both ends of conductor(s), followed by both ends of shield through an indicator (meter, light, or buzzer).					X	X	X	X

See notes on page C-44.

**Table 16 Wire and Cable Screening Requirements (Page 3 of 3)**

**Notes:**

1. Visual and mechanical inspection, wrap test, lamination sealing test, adherence and flexibility, and heat shock shall be performed on a 1 foot sample per spool. Impulse dielectric test shall be performed on entire length of wire or cable. DC resistance, dielectric withstanding voltage and continuity test shall be performed on each spool. For commercial multiconductor cable, individual wires shall have been tested in accordance with insulated wire requirements specified herein prior to application of shield or jacket.
2. A certificate of compliance from the manufacturer shall be required to certify that the proper conductor material and finish were used in the manufacture of the wire.
3. Test is used as a 100% screening test of finished wire during final winding of the wire on spools or reels by the manufacturer. Military QPL wire and cable already meet this requirement. For non-QPL wire, a certificate of compliance from the manufacturer, stating that all wire delivered to the user passed the impulse dielectric test, is sufficient to meet this requirement. Otherwise, wire shall be screened by the user. The MIL-STD-2223 high frequency spark test (Method 3008) is an acceptable alternative to the impulse dielectric test.
4. Test is used to determine if wire insulation is over sintered resulting in degraded properties. For Teflon insulated wire, Differential Scanning Calorimetry (DSC) per ASTM-E794 may also be performed to determine if wire is undersintered from incomplete processing. Either condition can lead to cracked insulation during use.
5. Required for non-military, non-NEMA magnet wire only. A certificate of compliance shall be required for military, NEMA wire. Heat shock test must follow adherence and flexibility test.

6. **Examination and Elongation Requirements for Copper Magnet Wire**

AWG Size	Elongation Rate	Minimum Elongation	Mandrel Diameter	Examined With
4-9	12 ± 1 in/min (300 ± 25 mm/min)	30%	none	3X - 10X magnification
10-13	12 ± 1 in/min (300 ± 25 mm/min)	25%	5X	6X - 20X magnification
14-30	12 ± 1 in/min (300 ± 25 mm/min)	20%	3X	10X - 30X magnification
31-44	12 ± 1 in/min (300 ± 25 mm/min)	20% or breakage	3X or 0.0156 (1/64 inch drill bit), whichever is greater	30X - 70X magnification

7. Test is used as a 100% screening test of finished cable on spools or reels by the manufacturer. MIL-C-17 QPL coaxial cable and MIL-C-27500 multiconductor cable already meet this requirement. For non-QPL cable, a certificate of compliance from the manufacturer, stating that all cable delivered to the user passed the dielectric withstanding voltage and continuity tests, is sufficient to meet requirements. Otherwise, cable shall be screened by the user.
8. For non-military, non-NEMA specified magnet wire the Dielectric Strength test of NEMA specification, MW 1000, Part 3, paragraph 3.8, or the Dielectric Breakdown Voltage test of ASTM Standard D1676, paragraphs 69 and 74, shall be performed.