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Standard Specification for Thermoplastic Chlorinated Polyethylene (CM) Jacket for Wire and Cable[1]

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1. Scope

1.1 This specification covers thermoplastic chlorinated polyethylene (CM) compounds suitable for use as an outer covering or jacket on electrical cables.

1.2 These jacket materials are suitable for use on cables which will be installed at temperatures above −35°C.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D2633 Test Methods for Thermoplastic Insulations and Jackets for Wire and Cable

D1499 Practice for Filtered Open-Flame Carbon-Arc Exposures of Plastics

D1711 Terminology Relating to Electrical Insulation

G153 Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

3. Terminology

3.1 *Definitions:* For definitions of terms used in this specification refer to Terminology D1711.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *aging, (act of), n*—exposure of materials to air at a temperature of 121°C for 168 h and oil at 100°C for 18 h.

4. Physical Properties

4.1 Thermoplastic jackets shall conform to the requirements for physical properties specified in Table 1.

4.2 When used on single-conductor non-shielded cable rated 2001 to 5000 V phase to phase, the jacket shall also conform to the requirements for surface resistivity and U-bend discharge prescribed in Table 2.

5. Sunlight and Weather Resistance Requirements

5.1 If sunlight and weather resistance are required of thejackets, the jackets shall conform to the requirements specified in Table 3.

6. Sampling

6.1 Sample the jacket in accordance with Methods D2633.

7. Test Methods

7.1 Test the jacket in accordance with Methods D2633. If the sunlight and weather resistance test is required, perform it in accordance with Practice D1499 and Practice G153.

8. Keywords

8.1 chlorinated polyethylene; heat distortion; oil immersion; sunlight resistance; tensile strength; tensile stress; thermoplastic; weather resistance

[1] This specification is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.18 on Solid Insulations, Non-Metallic Shieldings and Coverings for Electrical and Telecommunication Wires and Cables.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

TABLE 1 Physical Properties for CM Jacket

Physical Requirement (Original):	
Tensile strength, min, psi (MPa)	1400 (9.6)
Tensile stress at 100 % elongation, min, psi (MPa)	1000 (6.9)
Elongation at rupture, min, %	150
Cold bend,[A] –35± 1°C	No Cracks
Physical Requirements [after aging in an air-oven at 121 ± 1°C for 168 h]:	
Tensile strength, min, % of original	85
Elongation at rupture, min, % of original	50
Physical Requirements [after oil immersion for 18 h at 100 ± 1°C]:	
Tensile strength, min, % of original	60
Elongation at rupture, min, % of original	60
Heat distortion, 121 ± 1°C, max, %	25

[A]Refer to Methods D2633, Table 8, Mandrel Requirements for Poly (Vinyl Chloride) Jacket.

TABLE 2 Requirements for Surface Resistivity and U-Bend Discharge

Surface resistivity, min, MΩ[A]	200 000
U-bend discharge at the required cable insulation ac test voltage	No cable failures or cracks in the jacket

[A] Reported as megohms since the value is for specified length as required in Methods D2633.

TABLE 3 Sunlight and Weather Resistance Requirements

After 720 h in a dual carbon-arc apparatus	*min, % Unaged Value*
Tensile strength,	80
Elongation at rupture	80