



Designation: D4363 – 22

# Standard Specification for Thermoplastic Chlorinated Polyethylene (CPE) Jacket for Wire and Cable<sup>1</sup>

This standard is issued under the fixed designation D4363; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope\*

1.1 This specification covers thermoplastic chlorinated polyethylene (CPE) 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  $-35^{\circ}\text{C}$ .

1.3 The values stated in inch-pound units are 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.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

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

**D1711** Terminology Relating to Electrical Insulation

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

**G153** Practice for Operating Enclosed Carbon Arc Light

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.07 on Electrical Insulating Materials.

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

## Apparatus for Exposure of Nonmetallic Materials

## 3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms used in this specification refer to Terminology **D1711**.

3.1.2 *aging, (act of), n*—exposure of material to air or oil at a temperature and time as specified in the relevant material specification for that material. **D1711**

## 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 the jackets, the jackets shall conform to the requirements specified in **Table 3**.

## 6. Sampling

6.1 Sample the jacket in accordance with Test Methods **D2633**.

## 7. Test Methods

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

## 8. Keywords

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

\*A Summary of Changes section appears at the end of this standard

**TABLE 1 Physical Properties for CPE Jacket**

<i>Physical Requirement (Original):</i>	
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, <sup>A</sup> -35 ± 1 °C	No Cracks
<i>Physical Requirements:</i>	
(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
<i>Physical Requirements:</i>	
(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

<sup>A</sup> Refer to Test 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 <sup>A</sup>	200 000
U-bend discharge at the required cable insulation ac test voltage	No cable failures or cracks in the jacket

<sup>A</sup> Reported as megohms since the value is for specified length as required in Test 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

**SUMMARY OF CHANGES**

Committee D09 has identified the location of selected changes to this standard since the last issue (D4363 – 21) that may impact the use of this standard. (Approved May 1, 2022.)

(1) Added 3.1.1 and 3.1.2.

(2) Deleted 3.2.

Committee D09 has identified the location of selected changes to this standard since the last issue (D4363 – 17) that may impact the use of this standard. (Approved July 1, 2021.)

(1) Changed abbreviation of chlorinated polyethylene “CM” to “CPE” in title and throughout the body of this specification.

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