



Designation: D4313 – 21

Standard Specification for General-Purpose, Heavy-Duty, and Extra-Heavy-Duty Crosslinked Chlorinated Polyethylene (CPE) Jackets For Wire and Cable¹

This standard is issued under the fixed designation D4313; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers crosslinked chlorinated polyethylene (CPE) compounds suitable for use as outer coverings or jackets on electrical cables for general-purpose, heavy-duty, and extra-heavy-duty service.

1.2 These jacket materials are not recommended for use on cables which are to be installed at a temperature less than $-25\text{ }^{\circ}\text{C}$.

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.

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:*²

[D470 Test Methods for Crosslinked 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](#)

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

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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.

3. Terminology

3.1 *Definitions:*

3.1.1 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 $121\text{ }^{\circ}\text{C}$ for 168 h and oil at $121\text{ }^{\circ}\text{C}$ for 18 h.

4. Physical Properties

4.1 Crosslinked jackets shall conform to the requirements for physical properties specified in [Table 1](#).

4.2 *Tensile Strength and Percent Elongation at Rupture:*

4.2.1 The test is conducted in accordance with Test Methods [D470](#). The requirements for tensile strength and elongation are given in [Table 1](#) of this Specification.

4.3 *Tensile Strength and Percent Elongation at Rupture After Oil Immersion:*

4.3.1 Fluid as specified in the product Standard shall be used.

4.3.2 The test is conducted in accordance with Test Methods [D470](#). The requirements for tensile strength and elongation are given in [Table 1](#) of this Specification.

5. Sunlight and Weather Resistance Requirements

5.1 Test the jacket in accordance with Test Methods [D470](#). If sunlight and weather resistance are required of the crosslinked jackets, the jackets shall conform to the requirements specified in [Table 2](#).

6. Sampling

6.1 Sample the jacket in accordance with Test Methods [D470](#).

7. Test Methods

7.1 Test the jacket in accordance with Test Methods [D470](#). If the sunlight and weather resistance test is required, perform it in accordance with Practices [D1499](#) and [G153](#).

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

TABLE 1 Physical Properties for CPE Jacket

	General-purpose	Heavy-duty	Extra-heavy-duty
<i>Physical Requirements (Original):</i>			
Tensile strength, min, psi (MPa)	1200 (8.3)	1800 (12.4)	2400 (16.5)
Tensile stress at 200 % elongation, min, psi (MPa)	...	500 (3.4)	700 (4.8)
Elongation at rupture, min, %	200	300	300
<i>Physical Requirements (After aging in an air oven at 121 ± 1 °C for 168 h):</i>			
Tensile strength, min, % of original	75	85	70
Elongation at rupture, min, % of original	50	55	55
<i>Physical Requirements (After oil immersion at 121 °C for 18 h):</i>			
Tensile strength, min, % of original	60	60	60
Elongation at rupture, min, % of original	60	60	60

TABLE 2 Sunlight and Weather Resistance Requirements

After 720 h in a dual carbon-arc apparatus:	min,% Original Value
Tensile Strength	80
Elongation	80

8. Keywords

8.1 chlorinated polyethylene (CPE); crosslinked; oil immersion; sunlight resistance; tear; tensile strength; tensile stress; tension test; weather resistance

SUMMARY OF CHANGES

Committee D09 has identified the location of selected changes to this standard since the last issue (D4313 – 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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