Designation: D3005 – 17

An American National Standard

Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape[1]

This standard is issued under the fixed designation D3005; 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 an electrical insulating tape for use at low temperature down to approximately -18°C (0°F). The tape consists of a backing of vinyl chloride plastic, coated on one side with a pressure-sensitive adhesive. Four types are included providing two thicknesses at two operating temperatures.

1.2 The values stated in SI units are the standard. The values given in parentheses are provided for information purposes only.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1000 Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications

D1711 Terminology Relating to Electrical Insulation

3. Terminology

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

4. Classification

4.1 This specification covers two types of vinyl chloride plastic tape of different thicknesses, as follows:

4.1.1 *Type I*—0.0178-mm (0.007-in.) standard backing for use at low temperature down to -7°C (19.4°F).

4.1.2 *Type II*—0.216-mm (0.0085-in.) standard backing for use at low temperature down to -7°C (19.4°F).

4.1.3 *Type III*—0.0178-mm (0.007-in.) standard backing for use at low temperature down to -18°C (0°F).

4.1.4 *Type IV*—0.216-mm (0.0085-in.) standard backing for use at low temperature down to -18°C (0°F).

5. Materials

5.1 The backing shall be vinyl chloride plastic, suitably compounded to meet the requirements of this specification. The backing shall be smooth and uniform. The tape edges shall be straight and unbroken.

5.2 The pressure-sensitive adhesive coating shall be smooth and uniform, and essentially free of lumps and bare spots. There shall be no adhesive transfer when the tape is unwound from the roll.

6. Physical Properties

6.1 The tape shall meet the requirements given in Table 1.

6.2 Black plastic backing shall be considered standard. Backing of a different color than black shall be specified on the purchase order.

7. Standard Rolls

7.1 The standard widths and lengths shall be selected from the following:

7.1.1 *Widths:*

mm	in.	mm	in.
6	¼	22	⅞
9	⅜	25	1
12	½	30	1¼
15	⅝	38	1½
19	¾	50	2

7.1.1.1 Widths greater than 2 in. (50 mm) shall be agreed upon between the purchaser and the seller.

7.1.2 *Lengths:*

m	ft
6	22
20	66
33	108

7.1.2.1 Lengths greater than 33 m (108 ft) shall be in multiples of 108 ft. Additional lengths shall be agreed upon between the purchaser and seller.

8. Test Methods

8.1 The selection of rolls, conditioning, and testing shall be in accordance with Test Methods D1000.

[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.

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

TABLE 1 Requirements for Low-Temperature Vinyl Chloride Plastic Electrical Tape

Properties	Type I	Type II	Type III	Type IV
Thickness, mm (in.) avg	0.178 ± 0.025 (0.007 ± 0.001)	0.216 ± 0.025 (0.0085 ± 0.001)	0.178 ± 0.025 (0.007 ± 0.001)	0.216 ± 0.025 (0.0085 ± 0.001)
Width, tolerance, mm (in.)	0.8 (±1/32)	0.8 (±1/32)	0.8 (±1/32)	0.8 (±1/32)
Length, tolerance, min, %	-1.0	-1.0	-1.0	-1.0
Break strength, min, kN/m (lbf/in.) avg	2.6 (15)	2.9 (17)	2.6 (15)	2.9 (17)
Break elongation, min, % avg:	150	150	200	200
at -7°C avg	100[A]	100[A]		
at -18°C avg			100[A]	100[A]
Dielectric breakdown, min V avg:				
Standard condition	7000	8500	7000	8500
Wet condition (96/23/96)	90 % of dry	90 % of dry	90 % of dry	90 % of dry
Adhesion, min, N/m (ozf/in.) avg				
Steel at 23°C avg	175 (16)	175 (16)	175 (16)	175 (16)
at -7°C avg	175 (16)	175 (16)		
at -18°C avg			328 (30)	328 (30)
Backing at 23°C avg	175 (16)	175 (16)	175 (16)	175 (16)
at -7°C avg	175 (16)	175 (16)		
at -18°C avg			175 (16)	328 (30)
Roll Unwind, N/m (ozf/in.) avg				
at 23°C, min	197 (18)	197 (18)	197 (18)	197 (18)
max	328 (30)	328 (30)	328 (30)	328 (30)
at -7°C min	350 (32)	350 (32)		
max	1400 (128)	1400 (128)		
at -18°C, min			350 (32)	350 (32)
High-humidity insulation resistance, min, MΩ median	1×10^6	1×10^6	1×10^6	1×10^6
Flagging, max, mm (in.) avg	6.5 (0.3)	6.5 (0.3)	6.5 (0.3)	6.5 (0.3)
Flammability, max, s	4	4	4	4

[A] Razor slit.

9. Rejection

9.1 If the test results of any roll do not conform to the requirements prescribed in the specification, two additional rolls shall be selected and tested. If one of the two additional sample rolls also does not conform to the requirements, it is acceptable for the lot to be rejected at the option of the purchaser.

10. Packaging and Package Marking

10.1 *Packaging*—The package shall withstand shipment and shall give the product ample protection against damage. The individual rolls shall not adhere to each other or to the container.

10.2 *Package Marking*—Each package shall be marked with the name of the manufacturer, the manufacturer's product number, and the width and length of the roll.

11. Keywords

11.1 electrical insulating tape; low-temperature vinyl chloride plastic tape; plastic electrical tape; pressure-sensitive adhesive tape; vinyl chloride plastic tape

SUMMARY OF CHANGES

Committee D09 has identified the location of selected changes to this standard since the last issue (D3005 – 10) that may impact the use of this standard. (Approved Feb. 15, 2017.)

(1) Revised 5.2 and Table 1.