INTERNATIONAL STANDARD

IEC 60454-3-8

Third edition
2006-02

Pressure-sensitive adhesive tapes for electrical purposes –

Part 3: Specifications for individual materials – Sheet 8 – Woven fabric tapes with pressure-sensitive adhesive based on glass, cellulose acetate alone or combined with viscose fibre



Reference number
IEC 60454-3-8:2006(E)

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PRICE CODE J

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRESSURE-SENSITIVE ADHESIVE TAPES FOR ELECTRICAL PURPOSES –

Part 3: Specifications for individual materials – Sheet 8 – Woven fabric tapes with pressure-sensitive adhesive based on glass, cellulose acetate alone or combined with viscose fibre

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International Standard IEC 60454-3-8 has been prepared by IEC technical committee 15: Insulating materials.

This third edition of IEC 60454-3-8 replaces the second edition, published in 1998, IEC 60454-3-9, published in 1998 and IEC 60454-3-13, published in 1995.

It represents a consolidation of the three, above-mentioned publications in which all requirements have now been been confirmed.

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The text of this standard is based on the following documents:

FDIS	Report on voting
15/264/FDIS	15/294/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
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INTRODUCTION

This International Standard is one of a series which deals with pressure-sensitive adhesive tapes, intended primarily for electrical purposes.

The series consists of three parts:

Part 1: General requirements (IEC 60454-1)

Part 2: Methods of test (IEC 60454-2)

Part 3: Specifications for individual materials (IEC 60454-3)

This standard contains one of the sheets comprising part 3 as follows:

Sheet 8:

– Woven fabric tapes with pressure-sensitive adhesive based on glass; cellulose acetate alone or combined with viscose fibre

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PRESSURE-SENSITIVE ADHESIVE TAPES FOR ELECTRICAL PURPOSES –

Part 3: Specifications for individual materials – Sheet 8 – Woven fabric tapes with pressure-sensitive adhesive based on glass, cellulose acetate alone or combined with viscose fibre

1 Scope

This sheet of IEC 60454-3 contains the requirements for

– glass fabric tapes with pressure-sensitive adhesive,

– cellulose acetate woven fabric tapes with rubber thermosetting adhesive,

– combined cellulose-viscose woven fabric tapes, one side covered with a thermoplastic material, the other side with thermosetting adhesive.

Materials which conform to this specification meet established levels of performance. However, the selection of a material by a user for a specific application should be based on the actual requirements necessary for adequate performance in that application, and not based on this specification alone.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60426:1973, *Test methods for determining electrolytic corrosion with insulating materials*

IEC 60454-1:1992, *Specifications for pressure-sensitive adhesive tapes for electrical purposes – Part 1: General requirements*

IEC 60454-2:1994, *Specifications for pressure-sensitive adhesive tapes for electrical purposes – Part 2: Methods of test*

3 Terms and definitions

For the purposes of this document, the definitions of IEC 60454-1 apply.

4 Classification and designation

4.1 Glass fabric tapes with pressure-sensitive adhesive

The products supplied according to this specification shall be classified as follows:

Type 1: Products having a thermal index of 130 with a rubber thermosetting adhesive.

Type 2: Products having a thermal index of 155 with an acrylic crosslinked adhesive.

Type 3: Products having a thermal index of 180 with a high temperature silicone adhesive.

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The products shall be designated for ordering purposes as follows:

Type 1: IEC 60454-3-8-1/C-G/130/R-Tc

Type 2: IEC 60454-3-8-2/C-G/155/A-Tx

Type 3: IEC 60454-3-8-3/C-G/180/S-Tc

4.2 Cellulose acetate woven fabric tapes with rubber thermosetting adhesive

The product shall be designated for ordering purposes as IEC 60454-3-8/C-CA/105/R-Tc.

4.3 Combined cellulose-viscose woven fabric tapes

The product shall be designated for ordering purposes as IEC 60454-3-8/C-Cs/105/R-Tc.

5 Requirements

5.1 All applicable requirements of IEC 60454-1 shall apply to material furnished under this specification.

5.2 The electrical and other physical properties of products supplied according to this specification shall be within the limits listed in Table 1 when tested in accordance with the test methods listed therein.

5.3 Thermal endurance

5.3.1 Glass fabric tapes with pressure sensitive adhesive

When required by the purchaser, the manufacturer shall provide evidence that when tested in accordance with Clause 21 of IEC 60454-2:1994, the product has a temperature index of not less than 130 for Type 1, 155 for Type 2 and 180 for Type 3. The exposure temperatures shall be 150 °C, 160 °C, and 180 °C for Type 1; 170 °C, 190 °C, and 210 °C for Type 2, and 200 °C, 225 °C, and 250 °C for Type 3.

The end-point criterion used shall be:

– for breakdown voltage: 1,0 kV (metal foil electrode).

5.3.2 Cellulose acetate woven fabric tapes with rubber thermosetting adhesive

When required by the purchaser, the manufacturer shall provide evidence that when tested in accordance with Clause 21 of IEC 60454-2:1994, the product has a temperature index of not less than 105. The exposure temperatures shall be 120 °C, 130 °C and 155 °C.

The end-point criterion used shall be:

– for breakdown voltage: 1,5 kV (metal foil electrode).

5.3.3 Combined cellulose-viscose woven fabric tapes

When required by the purchaser, the manufacturer shall provide evidence that when tested in accordance with Clause 21 of IEC 60454-2:1994, the product has a temperature index of not less than 105. The exposure temperatures shall be 120 °C, 130 °C and 140 °C.

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The end-point criteria used shall be:

– for breakdown voltage: 1,0 kV (metal foil electrode); and
– for loss of mass: 20 %.

6 Test methods

All tests shall be conducted in accordance with the appropriate clauses and sub clauses of IEC 60454-2.

7 Marking, labelling and packaging

Unless otherwise specified, all marking, labelling and packaging shall be in accordance with the requirements of IEC 60454-1.

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Table 1 – Requirements for all types

Properties	Clause or subclause of IEC 60454-2	Units	Requirements				
			Glass fabric tapes with pressure-sensitive adhesive		Cellulose acetate woven fabric tapes with rubber thermosetting adhesive		Combined cellulose-viscose woven fabric tapes
Thickness	4	mm	Nominal value per manufacturer ±0,025 mm or ± 15 % whichever is greater		Nominal value per manufacturer ±0,025 mm or ±15 % whichever is greater		Nominal value 0,25-0,35 mm ±0,03 mm or ±15 % whichever is greater
Width	5	mm	7.2.1 of IEC 60454-1		7.2.1 of IEC 60454-1		7.2.1 of IEC 60454-1
Length	6	m	7.3 of IEC 60454-1		7.3 of IEC 60454-1		7.3 of IEC 60454-1
Electrolytic corrosion: - Insulation resistance after 24 h at (23 ± 2) °C and (93 ± 2) % relative humidity	7.5	Ω/25 mm width	1×10^8 minimum		1×10^9 minimum		1×10^5 minimum
or. Visual method	7.6	None	Grade shall be at least as good as A/B 1.6 (see Table 1 of IEC 60426:1973)		Grade shall be at least as good as A/B 1.4 (see Table 1 of IEC 60426:1973)		Grade shall be at least as good as B 4 (see Table 1 of IEC 60426:1973)
Tensile strength	8	N/10 mm width	Nominal tape Thickness ≥0,12 mm < 0,16mm ≥0,16 mm < 0,19mm ≥ 0,19 mm	Value 80 minimum 100 minimum 120 minimum	Nominal tape Thickness >0,15 mm ≤ 0,19 mm >0,19 mm ≤ 0,22 mm >0,22 mm	Value 45 minimum 55 minimum 65 minimum	80 minimum per tape thickness
Elongation at break	8	%			8 minimum		
Adhesion to steel	11	N/10 mm width	2,0 minimum		2,0 minimum		2,6 minimum
Adhesion to backing	11	N/10 mm width			1,5 minimum		2,5 minimum

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Table 1 (*continued*)

Properties	Clause or subclause of IEC 60454-2	Units	Requirements					
			Glass fabric tapes with pressure-sensitive adhesive			Cellulose acetate woven fabric tapes with rubber thermosetting adhesive		Combined cellulose-viscose woven fabric tapes
Shear adhesion to backing after liquid immersion 25 % xylene 75 % heptane	13	N				3,0 minimum		3,0 minimum
Bond separation during thermal treatment Bond separation after thermal treatment	14.1 Except use (200±5) g mass and test at 130 °C 14.2		Type 1 3 passes	Type 2 3 passes	Type 3 3 passes	3 passes		3 passes
Flagging test	15	mm	2 maximum Condition per 15.5.2 - 12 mm rod			2 maximum Condition per 15.5.2 - 12 mm rod		1 maximum Condition per 15.5.1 - 12 mm rod
Breakdown voltage: - at room temperature - after humid conditioning	17 18	kV (if not other) kV (if not other)	Nominal tape thickness ≥0,12 mm < 0,16 mm ≥0,16 mm < 0,19 mm ≥0,19 mm Nominal tape thickness ≥0,12 mm < 0,16 mm ≥0,16 mm < 0,19 mm ≥0,19 mm	Value 1,0 minimum 1,5 minimum 2,0 minimum Value 0,5 minimum 0,75 minimum 1,0 minimum		Nominal tape thickness >0,15 mm ≤ 0,19 mm >0,19 mm ≤ 0,22 mm >0,22 mm Nominal tape thickness: >0,15 mm ≤ 0,19 mm >0,19 mm ≤ 0,22 mm >0,22 mm	Value 1,6 minimum 2,0 minimum 2,4 minimum Value 0,9 minimum 1,1 minimum 1,3 minimum	10 minimum kV/mm 3 minimum kV/mm
Thermal endurance	21		See 5.3			See 5.3		See 5.3

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researcher ❑
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safety engineer ❑
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other.....

Q3 I work for/in/as a: *(tick all that apply)*

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general reference ❑
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product design/development ❑
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thesis ❑
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other.....

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not at all ❑
nearly ❑
fairly well ❑
exactly ❑

Q6 If you ticked NOT AT ALL in Question 5 the reason is: *(tick all that apply)*

standard is out of date ❑
standard is incomplete ❑
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ISBN 2-8318-8503-5



ICS 29.035.20

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