



SLOVENSKI STANDARD
SIST IEC 60076-3:1997/AMD1:1997
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Power transformers - Part 3: Insulation levels and dielectric tests

Power transformers - Part 3: Insulation levels, dielectric tests and external clearances in air

Transformateurs de puissance - Partie 3: Niveaux d'isolement, essais diélectriques et distances d'isolement dans l'air (standards.iteh.ai)

Ta slovenski standard je istoveten z: **IEC 60076-3**
SIST IEC 60076-3:1997/AMD1:1997
<https://standards.iteh.ai/catalog/standards/sist/c201ec0f-db68-4aac-9427-a082e9171cf8/sist-iec-60076-3-1997-amd1-1997>

ICS:

29.180 Transformatorji. Dušilke Transformers. Reactors

SIST IEC 60076-3:1997/AMD1:1997 en

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IEC STANDARD

Modification N° 1

Novembre 1981
à la

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November 1981
to

Publication 76-3
1980

Transformateurs de puissance
Troisième partie: Niveaux d'isolement et essais diélectriques

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Power transformers

Part 3: Insulation levels and dielectric tests

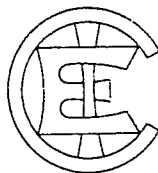
Les modifications contenues dans le présent document ont été approuvées suivant la Règle des Six Mois.

Les projets de modifications, discutés par le Comité d'Etudes N° 14, furent diffusés en mai 1980 pour approbation suivant la Règle des Six Mois, sous forme de document 14(Bureau Central)S1.

The amendments contained in this document have been approved under the Six Months' Rule.

The draft amendments, discussed by Technical Committee No. 14, were circulated for approval under the Six Months' Rule in May 1980, as Document 14(Central Office)S1.

Ces modifications sont destinées à être découpées et collées sur le texte original de la publication



These amendments are intended to be cut out and pasted in the original text of the publication

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4. Rules for some special classes of transformers

Insert the following new paragraph after the first paragraph:

For transformers with a high-voltage winding having $U_m \geq 300$ kV, lightning impulse tests are routine tests for all windings.

Publication 76-3 Amend. 1 (November 1981)

Pages 19, 21 and 23

Replace the existing Sub-clauses 5.2 and 5.3 by the following new Sub-clauses 5.2 and 5.3:

5.2 *Insulation requirements and dielectric tests for windings with $U_m < 300$ kV, uniform insulation*

The rated withstand voltages of the winding are:

- A rated short-duration power-frequency withstand voltage according to Table II or III.
- A rated lightning impulse withstand voltage for the line terminals according to Table II or III.
- If specified, a rated impulse withstand voltage for the neutral terminal, with the same peak value as for the line terminals.

For values of U_m lower than 52 kV there are two lists of alternative impulse withstand voltages in Table II.

For $U_m = 123, 145, 170$ and 245 kV there are different alternatives of power frequency and impulse withstand voltages in Tables II and III.

The choice between list 1 and list 2 for $U_m < 52$ kV and the choice between alternative rated withstand voltages for $U_m \geq 123$ kV depends on the severity of overvoltage conditions to be expected in the system and on the importance of the particular installation. Guidance may be obtained from IEC Publication 71-1, Insulation Co-ordination: Part 1: Terms, Definitions, Principles and Rules. The values chosen should be clearly stated in the enquiry.

The rated withstand voltages are verified by the following dielectric tests.

- A separate-source power-frequency voltage withstand test, Clause 10 (routine test).
This test is intended to verify the power-frequency withstand strength of the winding under test to earth and other windings.
- An induced overvoltage withstand test, Sub-clause 11.2 (routine test).
This test is intended to verify the power-frequency withstand strength along the winding under test and between its phases.
- A full-wave lightning impulse test for the line terminals, Clause 12 (type test).
This test is intended to verify the impulse withstand strength of each line terminal to earth and other windings, and along the winding under test.
This test becomes a routine test when the winding considered forms part of a transformer of which at least one winding has a highest voltage for equipment $U_m \geq 300$ kV.

Sub-clause 5.2 (continued)

- An impulse test for the neutral terminal, Sub-clause 12.3.2 (special test), if a rated impulse withstand voltage for the neutral terminal has been specified.
This test is intended to verify the impulse withstand strength of the neutral terminal to earth and other windings.

Note. — Distribution transformers for suburban or rural installations are in some countries severely exposed to overvoltages. In such cases, higher test voltages or additional tests, which are not mentioned here, may be agreed between manufacturer and purchaser.

5.3 Insulation requirements and dielectric tests for windings with $U_m < 300$ kV, non-uniform insulation

The rated withstand voltages of the winding are:

- A rated short-duration power-frequency withstand voltage for the line terminals according to Table II or III.
- A rated lightning impulse withstand voltage for the line terminals according to Table II or III.
- A rated short-duration power-frequency withstand voltage for the neutral terminal (Sub-clause 5.5).
- If specified, a rated impulse withstand voltage for the neutral terminal (Sub-clause 5.5.3).

Concerning list 1 and list 2 in Table II, and alternative values for $U_m > 123$ kV in Tables II and III, see Sub-clause 5.2.

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TABLE II

*Rated withstand voltages for transformer windings with highest voltage for equipment $U_m < 300$ kV
Series I (based on current practice other than in the United States of America and some other countries)*

Highest voltage for equipment U_m (r.m.s.) (kV)	Rated short duration power frequency withstand voltage (r.m.s.) (kV)	Rated lightning impulse withstand voltage (peak)	
		List 1 (kV)	List 2 (kV)
≤1.1	3	—	—
3.6	10	20	40
7.2	20	40	60
12	28	60	75
17.5	38	75	95
24	50	95	125
36	70	145	170
52	95		250
72.5	140		325
123	185		450
	230		550
145	275		650
	325		750
170	360		850
	395		950

Sub-clause 5.3 (continued)

TABLE III

Rated withstand voltages for transformer windings with highest voltage for equipment $U_m < 300$ kV

Series II (based on current practice in the United States of America and some other countries)

Highest voltage for equipment U_m (r.m.s.) (kV)	Rated short duration power frequency withstand voltage (r.m.s.) (kV)	Rated lightning impulse withstand voltage (peak)	
		Distribution transformers (kV)	Other transformers (kV)
4.40	19	60	75
13.20 13.97 14.52	34	95	110
26.4	50		150
36.5	70		200
72.5	140		350
	185		450
123	230		550
145	275		650
	325		750
170	360		825
	395		900
245			

The rated withstand voltages are verified by the following dielectric tests:

- An induced overvoltage withstand test, Clause 11 (routine test).
This test is intended to verify the power-frequency voltage withstand strength of the line terminals to earth and other windings, the withstand strength between the phases and along the winding under test. The test is carried out according to Sub-clause 11.3.
- A full-wave lightning impulse test for the line terminals, Clause 12 (type test).
The purpose of the test is as indicated in Sub-clause 5.2.
This test becomes a routine test when the winding considered forms part of a transformer of which at least one winding has a highest voltage for equipment $U_m \geq 300$ kV.
- A separate-source power-frequency voltage withstand test for the neutral terminal, Clause 10 (routine test).
This test is intended to verify the power-frequency voltage withstand strength of the neutral terminal to earth.
- An impulse test for the neutral terminal, Sub-clause 12.3.2 (special test), if a rated impulse withstand voltage for the neutral terminal has been specified.
The purpose of the test is as indicated in Sub-clause 5.2.