IS 10810-33 (1984): Methods of test for cables, Part 33: Water absorption test (Gravimetric) [ETD 9: Power Cables]

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REAFFIRMED 2001

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IS : 10810 (Part 33) - 1984
(Second Reprint SEPTEMBER 2000) (Reaffirmed 1996)

Indian Standard

METHODS OF TEST FOR CABLES

PART 33 WATER ABSORPTION TEST (GRAVIMETRIC)

[Ref : Doc : ETDC 59 (2240)] P1 / ETDC 59; Panel for Methods of Tests for Cables, Power Cables Sectional Committee, ETDC 59

1. Scope — Covers the test procedure for determination of water absorbed by insulation or sheath of electric cables.

2. Significance — This test is done to ascertain the quantity of water absorbed when the insulation or sheath of cable laid underground comes into contact with water or moisture.

3. Terminology — The water absorption is expressed in terms of milligrams of water absorbed.

4. Apparatus

4.1 *Thermostatically Controlled Oven*

4.2 *Balance* — Accuracy 01 mg.

4.3 *Desiccator*

5. Material

5.1 *Distilled Water*

5.2 *Calcium Chloride*

5.3 *Clean Dry Cloth or Filter Paper*

6. Test Specimen

6.1 The specimen shall have a surface area of 50 ± 1 mm^2 nd shall be machined from the insulation or sheath under test. The thickness of the specimen shall be the thickness of the insulation or sheath under test. Cut surface shall be smooth and care shall be taken not to overheat or otherwise to damage the specimen during the machining operation.

6.2 *Number of Specimens* — Three.

7. Conditioning — The specimens shall be dried in an oven for 24 ± 1 hour at 70 ± 2°C, under vacuum (residual pressure close to 1 mbar). After this treatment the specimen shall be cooled in a desiccator.

8. Procedure — Dried specimens after conditioning shall be weighed to the nearest 0.1 milligram (W_1). They shall then be placed in a container of distilled water maintained at specified temperature. Precaution shall be taken to prevent specimens from making contact over any substantial area with one another or with the container. After specified period they shall be taken from the water and all surface water removed with a clean dry cloth or with filter paper. The specimens shall be reweighed within one minute of taking them from the water (W_2).

Note – if required in individual standard, the values may be calculated and reported in terms of water absorbed per unit surface area, which is obtained by dividing water absorbed by total surface area of the specimen and finding out average value for the specimens tested.

9. Tabulation of Observations

Specimen No.	*Initial Weight of the Specimen* (W_1) mg	*Weight of the Specimen After Immersion in Water* (W_2) mg
1.		
2.		
3.		

Adopted 14 March 1984

Gr 1

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10. Calculation

Water absorbed, mg — $W_2 - W_1$

where,

W_1 = initial weight of the specimen, and

W_2 = weight of the specimen after immersion in water.

$$\text{Average water absorbed} = \frac{\Sigma (W_2 - W_1)}{3}$$

11. Report

11.1 *Water Absorption Test* (*Gravimetric*)

Cable Type

Batch No./Lot No.

Cable No./Drum No.

Date of Testing

11.2 ***Results***

Reference specification _____

Specimen No.	*Weight of Water Absorbed,* mg	
	Observed	Specified

11.3 *Conclusion* — The specimen meets/does not meet the requirements of specification.

AMENDMENT NO. 1 JULY 2002
TO
IS 10810 (PART 33) : 1984 METHODS OF TEST FOR CABLES
PART 33 WATER ABSORPTION TEST (GRAVIMETRIC)

(*Page* 1, *clause* **6.1) —** Substitute the following for the existing clause:

'**6.1** Slices of 0.6 to 0.9 mm thickness shall be ground or cut from the insulation or sheath with surfaces approximately parallel and free from roughness. Test pieces 80 to 100 mm long and 4 to 5 mm wide shall be punched out of the slices. Cut surfaces shall be smooth and care shall be taken not to overheat or otherwise to damage the specimen during the grounding/machining operation.'

(ET 09)

Reprography Unit. BIS, New Delhi, India

AMENDMENT NO. 2 SEPTEMBER 2007
TO
IS 10810 (PART 33) : 1984 METHODS OF TEST FOR CABLES

PART 33 WATER ABSORPTION TEST (GRAVIMETRIC)

(*Page* 1, *clause* 6.1) — Substitute the following by the existing clause:

'**6.1**(a) For cables with conductor of nominal cross sectional area equal to or less than 25 mm^2 and rated voltage up to and including 0.6/1 kV: Each test piece shall be a piece of core approximately 300 mm in length.

(b) *For all other cables*: Slices of 0.6 to 0.9 mm thickness shall be ground or cut from the insulation or sheath with surfaces approximately parallel and free from roughness. Test pieces 80 to 100 mm long and 4 to 5 mm wide shall be punched out of the slices. Cut surfaces shall be smooth and care shall be taken not to overheat or otherwise to damage the specimen during the grounding/machining operation.

(ET 09)

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