IS 10810-31 (1984): Methods of test for cables, Part 31: Oil resistance test [ETD 9: Power Cables]

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UDC 621·315·221·8 : 621·315·616·9 : 620·193·471·2

Indian Standard

(Reaffirmed 2001)

METHODS OF TEST FOR CABLES

PART 31 OIL RESISTANCE TEST

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

1. Scope — This method covers the procedure of oil resistance test applicable to insulation/non-metallic sheathing materials of electric cable.

2. Significance — This test is done to ascertain the resistance to oil of insulation/non-metallic sheath. This property is checked by measurements of tensile strength and elongation of break of materials after ageing in specified oils and comparing these with the values obtained for unaged materials.

3. Terminology — *See* **3.1** to **3.4** of IS : 10810 (Part 7)-1984 'Methods of test for cables : Part 7 Tensile strength and elongation at break of thermoplastic and elastomeric insulation and sheath'.

4. Apparatus — As given below in **4.1** and **4.2**, in addition to those required for tensile strength and elongation at break of insulation and sheath in accordance with IS : 10810 (Part 7)-1984.

4.1 *Ventilated Air Oven*

4.2 *Thermometer* — 200°C, least count 1°C.

5. Material — Petroleum based oil, SAE 30 viscosity grade as specified in IS : 496-1982 'Automotive internal combustion engine lubricating oils (*fourth revision*)'.

6. Test Specimen

6.1 Test specimen details given in **6** of IS : 10810 (Part 7)-1984 shall be applicable.

6.2 *Number of Specimens* — Four in each case of insulation or sheath, in addition to those required for testing without ageing.

7. Conditioning — All specimens shall be kept at a temperature of 27 ± 2°C for a period of not less than 3 h prior to testing.

8. Procedure

8.1 Test for tensile strength and elongation at break shall be carried out on four specimens (without ageing in oil) of insulation or sheath in accordance with IS : 10810 (Part 7)-1984 if the results are not available otherwise.

8.2 Other four similar specimens shall be immersed in oil (*see* **5**) at a temperature of 100 ± 2°C for a period of 24 hours. After this ageing, the specimens shall be taken out of oil. The excess oil shall be removed with blotting paper and the specimens shall be submitted to tensile strength and elongation at break in accordance with IS : 10810 (Part 7) - 1984.

9. Tabulation of Observations

Specimen No.	*Cross-Sectional Area* mm² *A*	*Tensile Strength*, N/mm²		*Elongation, percent*	
		Before Ageing T_1	After Ageing T_2	Before Ageing E_1	After Ageing E_2
1.					
2.					
3.					
4.					

Adopted 14 March 1984

Gr 1

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10. Calculation

10.1 Tensile strength and elongation at break, before and after ageing shall be calculated as given in IS : 10810 (Part 7)-1984.

10.2 *Tensile Strength Variation, percent* $= \frac{T_1 - T_2}{T_1} \times 100$
(difference between median value after ageing and median value before ageing expressed as a percentage of the latter)

10.3 *Elongation Variation,*

$$\text{percent} = \frac{E_1 - E_2}{E_1} \times 100$$

11. Report

11.1 Reference specification _____

Specimen No.	*Tensile Strength Variation, percent*		*Elongation Variation, percent*	
	Observed	Specified	Observed	Specified

11.2 *Conclusion* — The specimen meets/does not meet the requirement of the specification.

Printed at New India Printing Press, Khurja, India