

इंटरनेट

मानक

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IS 10810-14 (1984): Methods of test for cables, Part 14:
Heat shock test [ETD 9: Power Cables]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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*Indian Standard*

METHODS OF TEST FOR CABLES

PART 14 HEAT SHOCK TEST

1. Scope — Covers a method for finding out cracking of the thermoplastic insulation and sheath of electric cables taking place on overheating.

2. Significance — During service, a cable is likely to get overheated either due to overloading or due to short-circuit occurring in the system. This leads to degradation of the insulation and reduces the cable life. However, this is a long term effect. But if such overheating causes cracking of insulation, it may possibly lead to immediate failure of the cable. In order to prevent such immediate rupture, the test is devised to see that the insulation and sheath does not crack due to overheating.

3. Terminology — Heat shock is the heat treatment given to the thermoplastic insulation and sheath at specified accelerated temperature and duration to ascertain its withstandability at that condition and it involves only visual examination.

4. Apparatus

4.1 Oven — An electrically operated and thermostatically controlled heating cabinet (oven) with natural replacement of air (see IS : 6365-1971 'Specification for laboratory electric ovens').

4.2 Smooth Mandrels — Of circular cross-section as required.

5. Materials — No material other than the test specimen is required for performing this test.

6. Test Specimen

6.1 The core sample shall be taken from the cable after first removing at least 300 mm length of cable from the end.

Where the overall diameter of the circular core, complete cable or flexible cord, does not exceed 12.5 mm, pieces of sufficient length of the core, or complete cable or flexible cord shall be taken after stripping off all external coverings without damaging. In case of twin and three-core flat cords the cores are not separated. The length of each piece should be sufficient to make test specimen as described below:

The specimens are prepared by winding the test piece for three turns in a close helix round a circular mandrel whose diameter is between 2 and 2.5 times the average measured overall diameter of the test specimen. In the case of flat cables or flexible cords the smaller dimension is taken for determining the diameter of the mandrel and they are wound on the mandrel in such a way that their flat side touches the mandrel.

Where the overall diameter of the core, complete cable and flexible cord is greater than 12.5 mm (as well as for sector-shaped cores), the test is carried out on two strips of sufficient length taken from the insulation or coverings to be tested. The strips are cut out in the direction of the axis of the conductor, the cable or the flexible cord. In case of sector-shaped cores, the strips are cut from the circular section of the sector. The width of the strips shall be 1.5 times their thickness but not less than 4 mm. The test specimens are prepared by winding the test strip for three turns in a close helix round a mandrel whose diameter is between 3.5 and 4.5 times the average measured thickness of the strip. The ends of the specimen shall be appropriately secured to the mandrel.

6.2 Number of Specimens — Two. Additional specimens may be required, if necessary (see 8.2).

7. Conditioning — No pre-conditioning is required for this test.

8. Procedure

8.1 The test specimen assemblies prepared as described in 6.1 and 6.2 shall be placed in an oven at a temperature and for a duration specified in relevant specification. At the end of this period they shall be removed from the oven and allowed to cool in air for one hour. The test specimen still on the mandrel shall be examined for any crack visible to the normal unaided eye.

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IS : 10810 (Part 14) - 1984

8.2 If either or both of the test specimens fail, the test shall be repeated on four fresh specimens. The insulation and sheath shall be regarded as satisfactory if none of these fails.

9. Tabulation of Observations

<i>Test Specimen No.</i>	<i>Cracks Observed (Yes or No)</i>
1.	
2.	
<i>Additional specimens (if any)</i>	
3.	
4.	
5.	
6.	

10. Calculation — No calculation is involved.

11. Report

11.1 Heat Shock Test for Insulation and Sheath

Cable Type

Batch No./Lot No.

Cable No./Drum No.

11.2 Results

Reference to specification: _____

Failures, if any, in the first two specimens: _____

Failures, if any, in the additional specimens, if tested: _____

11.3 Conclusion — Specimen meets/does not meet the requirements of specification.