IS 10810-29 (1984): Methods of test for cables, Part 29: Environmental stress cracking test [ETD 9: Power Cables]

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Indian Standard

METHODS OF TEST FOR CABLES

PART 29 ENVIRONMENTAL STRESS CRACKING TEST

1. Scope — Covers the procedure of test for cracking due to environmental stresses on electric polyethylene insulation or sheath of cables.

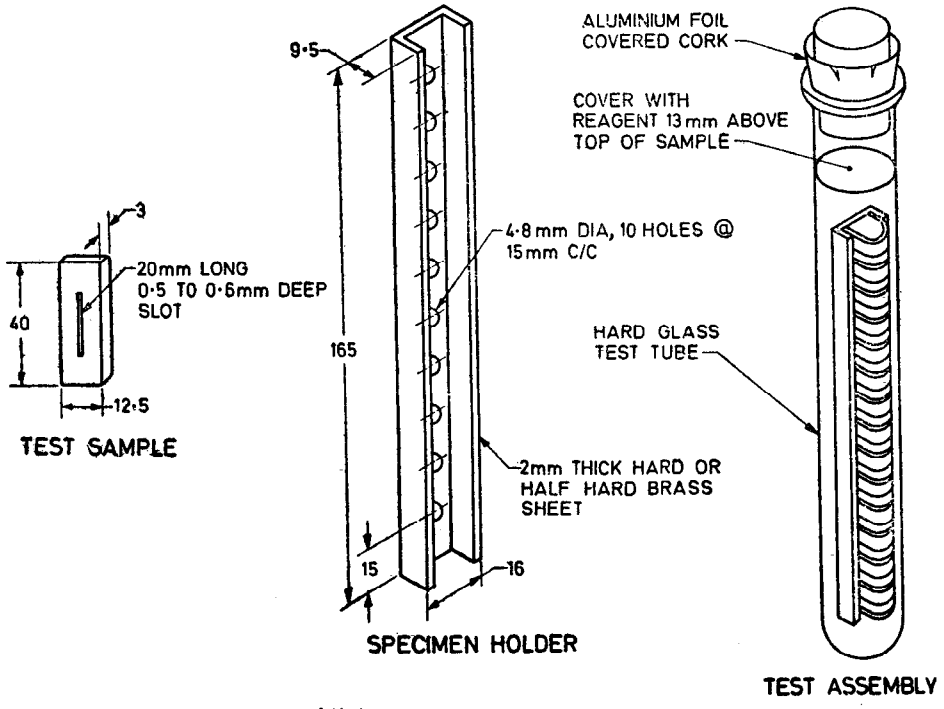
2. Significance — Certain polar liquids, such as greases and lubricants, when come in contact with either polyethylene sheath or insulation cause cracks. This phenomenon is termed as environmental stress cracking and the degree of cracking is dependent on melt flow index of the polyethylene compound used. This test indicates whether correct grade of polyethylene compound has been used or not.

3. Terminology — *See* IS : 1885 (Part 32)-1971 'Electrotechnical vocabulary : Part 32 Cables, conductors and accessories for electricity supply'.

4. Apparatus

4.1 *Hard Glass, Test Tube* — 200 mm long and 32 mm in diameter closed by suitable means, such as cork covered with aluminium foil.

4.2 *Specimen Holder* — In accordance with Fig. 1.



All dimensions in millimetres.

FIG. 1 EQUIPMENT FOR ENVIRONMENTAL CRACKING TEST,

5. Material

5.1 *The Cracking Agent* — Nonyl phenoxy poly-oxyethylene ethanol.

6. Test Specimen — Samples, 1·0 m long, shall be taken from the completed cable. Three test specimens, approximately 40 mm long, 12·5 mm wide and 3 mm thick, shall be moulded from each sample. A slit, approximately 20 mm long and 0·5 to 0·6 mm deep, shall be made in the centre of one of the 40 mm × 12·5 mm surface of each specimen.

7. Conditioning — No conditioning of the specimen is required for this test.

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8. Procedure

8.1 The specimens shall be bent with the slit on the outside and placed in a test tube. The cracking agent shall be added to completely cover the specimen.

8.2 The test tube shall be closed by suitable means, such as cork covered with aluminium foil, and placed in an oven at a temperature of 50 ± 2°C for 48 hours. At the end of this period, the specimens shall be removed, allowed to cool to room temperature and then observed for any cracks.

9. Tabulation of Observation

Sample No.	*Observation* Cracks/No Cracks
1.	
2.	
3.	

10. Calculation — No calculation is involved.

11. Report

11.1 *Environmental stress cracking for polyethylene*

Reference specification _____

Sample No.	*Observation* Cracks/No Cracks
1.	
2.	
3.	

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

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