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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 21224-2007

**Methods of test for the evaluation of water treeing in insulating
materials**

评定绝缘材料水树枝化的试验方法

(English Translation)

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Foreword

This standard is equivalent to using IEC/T S61956.1999 "Test methods of insulating material water branches of assessment" (in English).

For ease of use, this standard made the following editorial changes.

- a) Delete the international standard "foreword";
- b) use the decimal symbol '. 'Decimal symbol instead of' ';
- c) To delete references to normative documents "IEC and ISO members are now consistent with the effective international standards";
- d) The standard reg number and IEC/T S61956.1999 reg control number Appendix B.

The Standard Appendix A, Appendix B is an informative annex.

The standard proposed by China Electrical Equipment Industrial Association.

This standard by the National Assessment of electrical insulating materials and systems Standardization Technical Committee (SAC/TC112) centralized.

This standard was drafted. Xi'an Jiaotong University, Guilin Institute of Electrical Science.

1 Scope

This standard specifies the assessment of polyethylene (PE) and cross-linked polyethylene (XLPE) compound in water treeing test methods that assess these Composite AC (AC) electrical performance-related stress and the presence of water. The standard describes two test methods, for the assessment of individual I Insulating materials, interlayer insulation method for assessing II covered with an insulating layer of semi-conductive shielding composite.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

Electric strength test methods - Part 1 GB/T 1408.1-2006 Insulating Materials. Tests at power frequencies (IEC 60243-1.

1998, IDT)

IEC 61072:1991 Standard Test Method for Evaluation of resistance to electrical insulating materials branch formed

3 Definitions

Water treeing is a low density polyethylene (LDPE) and cross-linked polyethylene (XLPE) in alternating stress and wet conditions, the observed shape A so-called water trees weakened dielectric degradation process (Ref. [11]) area.

Water dendritic branches are hydrophilic characteristics (particularly, at the beginning of a number of water trees is linear water-filled hole, after the formation of a hydrophilic the surface of the dendritic microchannels) in wet and electrical stresses, in the years water trees can grow to about 1mm long. Water tree it can be divided into two types.

- a) water tree bow strip, shaped like a bow strip, containing in the opposite direction from the center point of the straight radiation diffusion branch. Internal insulator containing bow Strip of water branches, usually in line with the direction of the electric field;
- b) opening of branches with water, shaped like tree branches, trunk leading to an insulating surface or insulated/shielded interface. Usually with a branch direction of the field Caused, away from the insulating surface or interface.

4.1 Principle

Sheet-like test (Method A and B) are used to assess the low density polyethylene (LDPE) and cross-linked polyethylene (XLPE) for insulating material Development of feed water trees.

Two ways to use a disc-shaped test specimens and the same groove. Is a screening test, according to water trees and the development of pre-insulated distinguish Complex.

Electrical stress concentration test (Method A) is a water-filled hole acicular simulation. The main assessment insulator in insulation/screen interface Development occurs from the

shield or insert projecting end opening like water trees. Some of the same wafer with the projection of the place as 4.3.1 Referred to in the test tank, while the role of water and by a uniform electric field. In the points raised electrical stress concentration.

With this test, the sample can be attached to an internal assessment, away from the field concentrated water trees bow bar area.

Uniform field strength test (Method B) is used to assess the development of the bow stripe water trees, such as the wafer into the test tank 4.3.1 above, at the same time the role of water and by a uniform electric field.

4.2 Sample

Out mm in diameter on the plate from a thickness of (4.0 ± 0.1) mm, or (3.0 ± 0.1) mm, or (2.0 ± 0.1) GB/T 21224-2007/IEC/TS61956:1999