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GB/T 2951.21-2008 / IEC 60811-2-1:2001

Replacing GB/T 2951.5-1997

Common Test Methods for Insulating and Sheathing Materials of Electric and Optical Cables - Part 21: Methods Specific to Elastomeric Compounds - Ozone Resistance, Hot Set and Mineral Oil Immersion Tests

电缆和光缆绝缘和护套材料通用试验方法 第 21 部分：弹性体混合料专用试验方法－耐臭气试验－热延伸试验－浸矿物油试验

(IEC 60811-2-1:2001, IDT)

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Foreword

GB/T 2951 *Common Test Methods for Insulating and Sheathing Materials of Electric and Optical Cables* can be divided into the following 10 Parts:

--- Part 11: Methods for General Application – Measurement of Thickness and Overall Dimensions – Tests for Determining the Mechanical Properties;

--- Part 12: Methods for General Application - Thermal Ageing Methods;

--- Part 13: Methods for General Application – Measurement for Determining the Density – Water Absorption Tests – Shrinkage Test;

--- Part 14: Methods for General Application - Test at Low Temperature;

--- Part 21: Methods Specific to Elastomeric Compounds – Ozone Resistance, Hot Set and Mineral Oil Immersion Tests;

--- Part 31: Methods Specific to PVC Compounds – Pressure Test at High Temperature – Test for Resistance to Cracking;

--- Part 32: Methods Specific to PVC Compounds - Loss of Mass Test - Thermal Stability Test;

--- Part 41: Methods Specific to Polyethylene and Polypropylene Compounds - Resistance to Environmental Stress Cracking - Measurement of the Melt Flow Index - Carbon Black and/or Mineral Filler Content Measurement in Polyethylene by Direct Combustion – Measurement of Carbon Black Content by Thermo Gravimetric Analysis (TGA) - Assessment of Carbon Black Dispersion in Polyethylene Using a Microscope;

--- Part 42: Methods Specific to Polyethylene and Polypropylene Compounds – Tensile Strength and Elongation at Break after Conditioning at Elevated Temperature – Wrapping Test after conditioning at Elevated Temperature – Wrapping Test after Thermal Aging in Air – Measurement of Mass Increase – Long-term Stability Test – Test Method for Copper-Catalysed Oxidative Degradation;

--- Part 51: Methods Specific to Filling Compounds – Drop Point – Separation of Oil – Lower Temperature Brittleness – Total Acid Number – Absence of Corrosive Components – Permittivity at 23°C – DC Resistivity at 23°C and 100°C.

This Part is Part 21 of GB/T 2951.

This Part equivalently adopts IEC 60811-2-1:2001 *Common Test Methods for insulating and Sheathing Materials of Electric and Optical Cables – Part 2-1: Methods*

Specific to Elastomeric Compounds – Ozone Resistance, Hot Set and Mineral Oil Immersion Tests (English Version).

For the benefit of use, this Part made the following editorial modifications:

--- Use “Part 21” to replace “Part 2-1”;

--- Use the decimal point “.” to replace the comma “,” that is used as decimal point;

--- Delete the Foreword of the international standard;

--- Article 1.1 of this Part refers to Chinese standards that adopt international standards instead of international standards;

--- This Part adds "optical cable" in the place where Clause 3 of the original text of IEC 60811-2-1 is not compatible with the addition of "and optical cable" in the standard name of IEC 60811-2-1.

In view of the actual situation in China, compared with the original text of IEC 60811-2-1, this Part also makes a technical supplement: add the NOTE “Universal axle oils complying with the provisions of SH/T 0139-1995 are allowed to be used in non-arbitration tests” under the 10.3 “Test oil” in Clause 10 "The sheathing immersion mineral oil test".

This Part replaces GB/T 2951.5-1997 *Common Test Methods for Insulating and Sheathing Materials of Electric Cables - Part 2: Methods Specific to Elastomeric Compounds - Section One: Ozone Resistance Test - Hot Set Test - Mineral Oil Immersion Test*.

Compared with GB/T 2951.5-1997, the main changes of this Part are as follows:

--- Change the standard name into *Common Test Methods for Insulating and Sheathing Materials of Electric and Optical Cables – Part 21: Methods Specific to Elastomeric Compounds – Ozone Resistance, Hot Set and Mineral Oil Immersion Tests*.

--- Change the English Name of the Standard correspondingly into *Common Test Methods for Insulating and Sheathing Materials of Electric and Optical Cables – Part 21: Methods Specific to Elastomeric Compounds – Ozone Resistance, Hot Set and Mineral Oil Immersion Tests*.

--- Change the Clause 1 "Power Distribution Cables and Communication Cables, Including Ship Cables" into "Power Distribution, Communication Cables and Optical Cables, Including Ship and Offshore Cables and Optical Cables" (Clause 1 of 1997 Edition; Clause 1 of this Edition);

--- Add “optical cables” to the Clause 3 “Scope of Application” (Clause 3 of 1997

Edition; Clause 3 of this Edition);

--- Add “d), e), f)” to 8.1.1 (8.1.1 of 1997 Edition; 8.1.1 of this Edition);

--- Change 8.1.2 into “8.1.2.1 Sampling of insulation” and “8.1.2.2 sampling of sheath” (8.1.2 of 1997 Edition; 8.1.2 of this Edition);

--- Change 8.1.3 into “8.1.3.1 Specimen of insulation” and “8.1.3.2 Specimen of sheath” (8.1.3 of 1997 Edition; 8.1.3 of this Edition);

--- Incorporate 8.1.4 and 8.1.5 in the previous edition into 8.1.4 of this Edition as the next level clause of 8.1.4 of "8.1.4.1 Specimen of insulation " and "8.1.4.2 Test piece of sheath"; at the same time, the following 8.1.6 and 8.1.7 in the previous edition are changed into 8.1.5 and 8.1.6, respectively. (8.1.4, 8.1.5, 8.1.6 and 8.1.7 of 1997 Edition; 8.1.4, 8.1.5 and 8.1.6 of this Edition) ；

--- Add “and the filling hole” to the first sentence in 8.2.1.2 b); and CHANGE "the difference between 400mL and the amount of KI solution in the graduated cylinder" in the previous edition describing the amount of gas in the separatory funnel INTO " the amount of KI solution in the graduated cylinder" (8.2.1.2 of 1997 Edition; 8.2.1.2 of this Edition);

--- Add the provisions of marking the dumbbell test piece in the paragraph 2 of 9.1 (9.1 of 1997 Edition; 9.1 of this edition);

--- Add “at least” to the examples of methods to prevent the two ends of the tubular test piece from being tightly closed in the “NOTE” of 9.2 (9.2 of 1997 Edition; 9.2 of this Edition);

--- Add “the suspension process shall be as fast as possible to make the oven door open for the shortest time.” to item 9.3a). For item b), change “after 15min in the oven” into “when the oven temperature rises to the specified temperature (preferably within 5min), after the test piece is kept in the oven for another 10min. For item c), change “restore the test piece to the specified temperature for 5min" into "and leave the test piece in the oven for recovery, and keep the test piece in the oven for 5min; or wait until the temperature of the oven rises to the specified temperature, whichever takes a longer time". Add “NOTE” to item c) (9.3 of 1997 edition; 9.3 of this edition);

--- Change “15min” into “10min” in 9.4 (9.4 of 1997 Edition; 9.4 of this Edition);

--- Change “ASTM No.2 oil” into “IRM No.902 oil specified in ISO 1817” in 11.3 (10.3 of 1997 Edition; 10.3 of this Edition).

This Part was proposed by China Electrical Equipment Industry Association.

Common Test Methods for Insulating and Sheathing Materials of Electric and Optical Cables - Part 21: Methods Specific to Elastomeric Compounds - Ozone Resistance, Hot Set and Mineral Oil Immersion Tests

1 General

1.1 Scope

GB/T 2951 specifies the test methods to be used for testing polymeric insulating and sheathing materials of electric and optical cables for power distribution and telecommunications, including cables used on ships and in offshore applications.

This Part of GB/T 2951 specifies the methods for the ozone resistance test, hot set test and mineral oil immersion test, which apply to elastomeric compounds of wires, electric cables and optical cables.

1.2 Normative references

The provisions in following documents become the provisions of this Part through reference in this Part of GB/T 2951. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Part, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 2951.11-2008 Common Test Methods for Insulating and Sheathing Materials of Electric and Optical Cables - Part 11: Methods for General Application – Measurement of Thickness and Overall Dimensions – Tests for Determining the Mechanical Properties (IEC 60811-1-1:1993, IDT)

GB/T 2951.12-2008 Common Test Methods for Insulating and Sheathing Materials of Electric and Optical Cables - Part 12: Methods for General Application - Thermal Ageing Methods (IEC 60811-1-2:1985, IDT)

ISO 1817:1999 Rubber, Vulcanized – Determination of the Effect of Liquids

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