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GB/T 5169.12-2013 / IEC 60695-2-12:2010

Replacing GB/T 5169.12-2006

Fire Hazard Testing for Electric and Electronic Products - Part 12: Glowing/Hot-Wire Based Test Methods - Glow-Wire Flammability Index (GWFI) Test Method for Materials

电工电子产品着火危险试验 第 12 部分：灼热丝/热丝基本试验方法

材料的灼热丝可燃性指数（GWFI）试验方法

(IEC 60695-2-12:2010, Fire Hazard Testing – Part 2-12: Glowing/Hot-Wire Based Test Methods – Glow-Wire Flammability Index (GWFI) Test Method for Materials, IDT)

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Issued by: General Administration of Quality Supervision, Inspection and Quarantine;

Standardization Administration of PRC.

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Foreword

GB/T 5169 *Fire Hazard Testing for Electric and Electronic Products* has published or plans to publish the following parts:

--- Part 1: Terminology Concerning Fire Tests;

--- Part 2: Guidance for Assessing the Fire Hazard – General Guidelines;

--- Part 3: Guidance for the Preparation of Requirements and Test Specifications for Assessing Fire Hazard of Electronic Components;

--- Part 5: Test Flame Needle Flame Test Method Apparatus – Confirmation Test Method and Guidance;

--- Part 9: Guidance for Assessing the Fire Hazard – Pre-Selection Testing Procedures – General Guidelines;

--- Part 10: Glow/Hot-Wire Based Test Methods – Glow-Wire Apparatus and Common Test Procedure;

--- Part 11: Glowing/Hot-Wire Based Test Methods – Glow-Wire Flammability Test Method for End-Products;

--- Part 12: Glowing/Hot-Wire Based Test Methods – Glow-Wire Flammability Index (GWFI) Test Method for Materials;

--- Part 13: Basic Test Methods for Glowing Filament/Hot-Wire – Test Methods for Glow Wire Ignition Temperature (GWIT);

--- Part 14: Test Flames – 1kW Nominal Pre-Mixed Flame – Apparatus, Confirmatory Test Arrangement and Guidance;

--- Part 15: Test Flames – 500W Flames – Apparatus and Confirmation Test Methods;

--- Part 16: Test Flames – 50W Horizontal and Vertical Flame Test Methods;

--- Part 17: Test Flames – 500W Flame Test Method;

--- Part 18: Toxicity of Fire Effluent – General Guidance;

--- Part 19: Abnormal Heat – Mould Stress Relief Distortion Test;

--- Part 20: Surface Spread of Flame – Summary and Relevance of Test Methods;

--- Part 21: Abnormal Heat -Ball Pressure Test;

--- Part 22: Test Flames – 50W Flame – Apparatus and Confirmational Test Method;

--- Part 23: Test Flames – 500W Vertical Flame Test Method for Tubular Polymeric Materials;

--- Part 24: Guidance for Assessing the Fire Hazard – Insulating Liquids;

--- Part 25: Smoke Obscuration – General Guidance;

--- Part 26: Smoke Obscuration – Summary and Relevance of Test Methods;

--- Part 27: Smoke Obscuration – Small-Scale Static Test – Description of the Apparatus;

--- Part 28: Smoke Obscuration – Small-Scale Static Test – Materials;

--- Part 29: Heat Release – General Guidance;

--- Part 30: Heat Release – Summary and Relevance of Test Methods;

--- Part 31: Surface Spread of Flame – General Guidance;

--- Part 32: Heat Release – Heat Release of Insulating Liquid;

--- Part 42: Test Flames – Confirmatory Tests – Guidance;

--- Part 44: Guidance for Assessing the Fire Hazard – Fire Hazard Assessment.

This Part is Part 12 of GB/T 5169.

This Part was drafted as per the rules specified in GB/T 1.1-2009.

This Part replaced GB/T 5169.12-2006 *Fire Hazard Testing for Electric and Electronic Products - Part 12: Glowing/Hot-Wire Based Test Methods - Glow-Wire Flammability Test Method for Materials*. Compared with GB/T 5169.12-2006, the major technical changes of this Standard are as follows:

--- Modify the purpose of the test and the summary of how to use the test results (see Clause 1 of this Edition, Clause 1 of 2006 Edition);

--- Add some terms and definitions (see Clause 3 of this Edition);

--- Add the provisions for the density, melt fluidity, filler/reinforcing agent, and colour of the specimen (see 4.3 of this Edition);

--- Modify the provisions on specimen conditioning and test conditions (see Clause 7 of this Edition; Clause 8 of 2006 Edition);

---Modify the scope of the test procedure; change the test severity level to the

starting temperature of the test; transfer the test into the Clause of the test procedures; and add the method for determining the test temperature (see Clause 8 of this Edition; Clauses 6 and 10 of 2006 Edition);

--- Modify the content of experimental observation and measurement; and transfer the initial measurement requirements into the Clause of observation and measurement (see Clause 9 of this Edition; Clauses 9 and 11 of 2006 Edition);

--- Modify the evaluation method of test results (see Clause 10 of this Edition; Clause 12 of 2006 Edition);

--- Modify the requirements for test report (see Clause 11 of this Edition; Clause 13 of 2006 Edition).

This Part uses translation method to equivalently adopt IEC 60695-2-12:2010 *Fire Hazard Testing – Part 2-12: Glowing/Hot-Wire Based Test Methods – Glow-Wire Flammability Index (GWFI) Test Method for Materials*.

The Chinese documents that have a consistent correspondence with the international documents cited in this Part are as follows:

--- GB/T 17037 (all parts) Plastics - Injection Moulding of Test Specimens of Thermoplastic Materials [ISO 294 (all parts)];

--- GB/T 5169.13-2013 Fire Hazard Testing for Electric and Electronic Products – Part 13: Basic Test Methods for Glowing Filament/Hot-Wire – Test Methods for Glow Wire Ignition Temperature (GWIT) (IEC 60695-2-13:2010, IDT).

This Part made the editorial modifications as follows:

--- In order to be consistent with the existing standard series, the standard name is changed into *Fire Hazard Testing for Electrical and Electronic Products - Part 12: Glowing/Hot-Wire Based Test Methods – Glow-Wire Flammability Index (GWFI) Test Method for Materials*;

--- Transfer the definition of "Glow Wire Flammability Index (GWFI)" in Clause 1 into Clause 3, and change into the definition 3.10;

--- Delete the last two paragraphs of informative content in Clause 1.

This Part was proposed by China Electrical Equipment Industry Association.

This Part shall be under the jurisdiction of National Technical Committee for Standardization of Fire Hazard Testing for Electric and Electronic Products (SAC/TC 300).

Drafting organization of this Part: China National Electric Apparatus Research Institute

Fire Hazard Testing for Electric and Electronic Products - Part 12: Glowing/Hot-Wire Based Test Methods - Glow-Wire Flammability Index (GWFI) Test Method for Materials

1 Scope

This Part of GB/T 5169 specifies the details of the glow-wire test to be applied to test specimens of solid electrical insulating materials or other solid materials for flammability testing to determine the glow-wire flammability index (GWFI).

This test method is a materials test carried out on a series of standard test specimens. The data obtained, along with data from the glow-wire ignition temperature (GWIT) test method for materials, IEC 60695-2-13, can then be used in a preselection process in accordance with GB/T 5169.9-2013 to judge the ability of materials to meet the requirements of GB/T 5169.11-2006.

NOTE: As an outcome of conducting a fire hazard assessment, an appropriate series of preselection flammability and ignition tests may allow a reduction of end product testing.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this document.

GB/T 5169.9-2013 Fire Hazard Testing for Electric and Electronic Products - Part 9: Guidance for Assessing the Fire Hazard - Pre-selection Testing Procedures - General Guidelines (IEC 60695-1-30:2008, IDT)

GB/T 5169.10-2006 Fire Hazard Testing for Electric and Electronic Products - Part 10: Glow/Hot-Wire Based Test Methods - Glow-Wire Apparatus and Common Test Procedure (IEC 60695-2-10:2000, IDT)

GB/T 5169.11-2006 Fire Hazard Testing for Electric and Electronic Products - Part 11: Glowing/Hot-Wire Based Test Methods - Glow-Wire Flammability Test Method

for End-Products (IEC 60695-2-11:2000, IDT)

GB/T 5471-2008 Plastics - Compression Moulding of Test Specimens of Thermosetting Materials (ISO 295:2004, IDT)

GB/T 9352-2008 Plastic - Compression Moulding of Test Specimens of Thermoplastic Materials (ISO 293:2004, IDT)

ISO 291:2008 Plastics – Standard Atmospheres for Conditioning and Testing

ISO 294 (all Parts) Plastics – Injection Moulding of Test Specimens of Thermoplastic Materials

ISO/IEC 13943:2008 Fire Safety – Vocabulary

IEC 60695-2-13 Fire Hazard Testing – Part 2-13: Glowing/Hot-Wire Based Test Methods – Glow-Wire Ignition Temperature (GWIT) Test Method for Materials

3 Terms and Definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 13943:2008, some of which are reproduced below for the user's convenience, as well as the following apply.

3.1 Combustion

Exothermic reaction of a substance with an oxidizing agent.

NOTE: Combustion generally emits fire effluent accompanied by flames and/or glowing.

[ISO/IEC 13943:2008, definition 4.46]

3.2 Flame (noun)

Rapid, self-sustaining, sub-sonic propagation of combustion in a gaseous medium, usually with emission of light.

[ISO/IEC 13943:2008, definition 4.133]

3.3 Flammability

Ability of a material or product to burn with a flame under specific conditions.

[ISO/IEC 13943:2008, definition 4.151]

3.4 Glowing (noun)

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