NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB/T 5169.21-2017

Fire hazard testing for electric and electronic products -- Part 21: Abnormal heat -- Ball pressure test method

Issued on: December 29, 2017 **Implemented on: July 1, 2018**

Issued by: AQSIQ; SAC

Table of Contents

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 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 33: Guidance for Assessing the Fire Hazard - Ignitability - General Guidance;

--- Part 34: Guidance for Assessing the Fire Hazard - Ignitability - Summary and

Relevance of Test Methods;

--- Part 35: Corrosion Damage Effects of Fire Effluent - General Guidance;

--- Part 36: Corrosion Damage Effects of Fire Effluent - Summary and Relevance of Test Methods;

--- Part 38: Toxicity of Fire Effluent - Summary and Relevance of Test Methods;

--- Part 39: Toxicity of Fire Effluent - Use and Interpretation of Test Results;

--- Part 40: Toxicity of Fire Effluent - Estimation of Toxic Potency - Apparatus and Test Method;

--- Part 41: Toxicity of Fire Effluent - Estimation of Toxic Potency - Calculation and Interpretation of Test Results;

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

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

This Part is Part 21 of GB/T 5169.

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

This Part replaced GB/T 5169.21-2006 Fire Hazard Testing for Electric and Electronic Products - Part 21: Abnormal Heat - Ball Pressure Test. Compared with GB/T 5169.21-2006, the major technical changes of this Standard are as follows:

--- Add the purpose of the test method (see Clause 1 of this Edition; Clause 1 of 2006 Edition);

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

--- Increase the accuracy requirements of the temperature measuring device (see 5.5 of this Edition);

--- Increase the type of test method, from the original only confirmatory test, add a type of material pre-selection test (see Clauses 6 and 8 of this Edition; Clauses 5 and 7 of 2006 Edition);

--- Modify the observation method of test results (indentation) (see 8.4, 8.5 and Figure 2 of this Edition; 7.2 and Figure 2 of 2006 Edition);

--- Add the provisions on the test report format (see Clause 11 of this Edition);

--- Add Annex A "Correlation between Ball Pressure Test and Vicat Softening Temperature Test of ISO 306" (see Annex A of this Edition);

--- Add Annex B " Indentation Depth Method" (see Annex B of this Edition).

This Part uses the translation method to equivalently adopt IEC 60695-10-2:2014 Fire Hazard Testing - Part 10-2: Abnormal Heat- Ball Pressure Test Method.

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

--- GB/T 308.1-2013 Rolling Bearings - Balls - Part 1: Steel Balls (ISO 3290-1:2008, NEQ);

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

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

--- GB/T 11026.4-2012 Electrical Insulating Materials - Thermal Endurance Properties - Part 4: Ageing Ovens - Single-Chamber Ovens (IEC 60216-4-1:2006, IDT);

--- GB/T 16499-2008 The Preparation of Safety Publication and the Use of Basic Safety Publications and Group Safety Publications (neq IEC Guide 104:1997);

Fire Hazard Testing for Electric and Electronic

Products - Part 21: Abnormal Heat - Ball Pressure Test

Method

1 Scope

This Part of GB/T 5169 specifies the ball pressure test as a method for evaluating the softening temperature and accelerated material flow under load of polymeric materials and parts of end products in their ability to resist abnormal heat. It is applicable to the materials used in electrotechnical equipment, subassemblies and components, and to solid electrical insulating materials except ceramics.