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

GB/T 5169.31-2022

Replacing GB/T 5169.31-2008

**Fire hazard testing for electric and electronic products - Part 31:
Surface spread of flame - General guidance**

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents" drafted.

This document is part 31 of Fire Hazard Testing of Electrical and Electronic Products. "Fire Hazard Test of Electrical and Electronic Products" has been published

See in part in Appendix NA.

This document replaces GB/T 5169.31-2008 "Fire Hazard Tests for Electrical and Electronic Products - Part 31. General Surface Spread of Flames"

Compared with GB/T 5169.31-2008, in addition to structural adjustment and editorial changes, the main technical changes are as follows.

a) In the Scope chapter, a description of the content of this document has been added (see Chapter 1, Chapter 1 of the.2008 edition);

b) Changed "Terms and Definitions" (see Chapter 3, Chapter 3 of the.2008 edition).

This document is equivalent to IEC 60695-9-1.2013 "Fire Hazard Test Part 9-1. General Rules for Surface Spread of Flame".

The following minimal editorial changes have been made to this document.

--- In order to be consistent with the existing standard series, the name is changed to "Fire Hazard Test for Electrical and Electronic Products Part 31. Surface Spread of Flame General Rules";

--- Moved IEC Guide104 and ISO /IEC Guide51 in Chapter 2 to References;

--- Add informative appendix NA to list the published parts of "Fire Hazard Test for Electrical and Electronic Products".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

Fire risk is considered in all circuits. Component, circuit and device design and material screening are designed to reduce the likelihood of fire

, even in the event of foreseeable abnormal use, malfunctions and failures. The purpose of "Fire Hazard Test for Electrical and Electronic Products" is to

Save lives and protect property by reducing the number or severity of fires. It can be done by.

--- Prevent ignition caused by live parts as much as possible, and if ignition occurs, limit the scope of ignition to the enclosure of electrical and electronic products;

--- Minimize the spread of the flame to the product shell as much as possible, and will include heat, smoke, toxic or corrosive gases, etc.

The harmful effects of the product are minimized.

"Fire Hazard Test of Electrical and Electronic Products" now consists of 38 parts, which are divided into three sub-fields.

--- Fire hazard test evaluation guidelines and terminology standards, including 1 term and 8 evaluation guidelines, the purpose is for the professional field

provide guidelines and reference procedures for fire hazard assessment;

--- Small-scale fire test standards, including 4 basic test methods for glow wire/hot wire, 9 flame test methods, and 2 abnormal resistance

The purpose of this paper is to introduce the method of thermal capability test, which is suitable for the use of electrical and electronic equipment manufacturers and testing institutions, with a specific heat source model.

Small-scale test methods for heat sources intended to cause fires;

--- Risk assessment criteria for combustion flow, including 2 corrosiveness, 2 smoke haze, 5 toxicity, 3 heat release, 2 flame surface

Spread, the purpose is to provide measurement of combustion flow toxicity, corrosiveness, smoke haze and heat release of electrical and electronic products and their materials

Guidelines and the state of the art in current test methods.

Heat (thermal hazard) and toxic combustion streams, corrosive combustion streams and fumes (non-thermal hazard) resulting from fire are hazardous to life and property

important cause of harm. The fire hazard increases with the size of the burning area, leading to flashover and complete fire in some cases.

This is a typical fire situation for a building to catch fire. It is therefore useful to measure the speed and extent of the spread of the flame surface. The flame spread test aims to

Provides guidance for product committees wishing to incorporate test methods for surface spread of flame into product standards. Consists of two parts.

--- Part 31. General rules for the spread of flame surface. The purpose is to evaluate the flame spread on the surface of electrical and electronic products and materials used.

general guide.

--- Part 20. Summary and relevance of test methods for surface spread of flames. The purpose is to provide evaluation of electrical and electronic products or their

General test method for surface spread of flame from materials.

The rate at which a flame surface spreads is the distance traveled by the flame front divided by the time it takes to travel that distance. The rate at which the flame spreads over the surface of the

Depends on the heat provided by the flame of the burning material outside and/or in front of the combustion zone, and the ease of ignition. The ease of ignition is material

A function of minimum light-off temperature, thickness, density, specific heat capacity and thermal conductivity. The heat provided by the flame depends on the rate of heat release, the orientation of the specimen,

Air velocity and direction of air flow relative to the flame direction surface spread. In general, materials exhibit one of the following flame surface spread characteristics.

- a) No spread. no flame spread beyond the ignition area;
- b) slow spread. flame spread stops before reaching the end of the material surface; and
- c) Spread. The flame spreads beyond the ignition area, eventually affecting the entire surface of the material.

Properties of materials used to describe the surface spread of flame and surface preheating and pyrolysis, steam generation, mixing of steam with air, ignition, mixing

Combustion of compounds and the generation of heat and combustion products. Flame retardants and surface treatments are used to reduce the surface spread of flames.

Evaluation material

The factors that need to be considered for the spread of flame surface are.

- 1) Fire situation (including parameters such as surface orientation, ventilation and nature of

ignition source);

2) method of measurement (see 5.5); and

3) Use and interpretation of the results obtained (see Chapter 6).

Fire hazard test for electrical and electronic products

Part 31. General rules for surface spread of flames

1 Scope

This document gives guidelines for assessing the spread of flame on surfaces of electrical and electronic products and materials used. include.

- Explanation of the principle of flame spread on liquid and solid surfaces;
- Guidelines for the selection of test methods;
- Guidelines for the application and interpretation of test results;
- references.

This document is intended for use by technical committees in the preparation of standards based on the principles set out in IEC Guide 104 and ISO /IEC Guide 51.

One of the tasks of technical committees is to use this series of standards wherever applicable when preparing standards in the field. unless relevant

Standard specifically mentioned or listed, the requirements of this document, test methods or test conditions will not apply.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

ISO 2592 Petroleum and related products - Method for determination of flash point and fire point - Cleveland open cup method (Petroleum and related

Note. GB/T 3536-2008 Determination of flash point and fire point of petroleum products Cleveland open cup method (ISO 2592.2000, MOD)

ISO 13943.20081) Fire Safety Vocabulary (Firesafety-Vocabulary)

1) There is a new version of ISO 13943.2017.