

ICS 13.220.40, 29.020
CCS K 04



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

GB/T 5169.23-2024

Replacing GB/T 5169.23-2008

**Fire hazard testing for electric and electronic products - Part 23:
Test flames - 500W vertical flame test method for tubular
polymeric materials
(English Translation)**

Issued on: June 29, 2024

Implemented on: January 1, 2025

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Terms and Definitions
4 Principle
5 Significance and Use
6 Test equipment
7 Sample
8 State adjustment and test conditions
9 Test Procedure
10 Evaluation of test results
11 Test Report
Appendix A (Informative) The published part of "Fire Hazard Test for Electrical and Electronic Products"
Reference

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 for standardization documents" Drafting.

This document is Part 23 of "Fire Hazard Tests for Electrical and Electronic Products".

See Appendix A for details.

This document replaces GB/T 5169.23-2008 "Fire hazard tests for electric and electronic products - Part 23: Test flame tube polymer Compared with GB/T 5169.23-2008, in addition to structural adjustments and editorial changes, the main technical the changes are as follows.

a) Changed the scope and deleted "This test method is not suitable for comparing the burning characteristics of wire and cable products and cable management systems." (See Chapter 1, Chapter 1 of the 2008 edition);

b) Added the term and definition of "polymer tubing" (see 3.3);

c) The weight range of kraft paper has been changed to "80g/m²~100g/m²", and the option of single-sided self-adhesive kraft paper has been added (see 6.6, 2008 version 6.6);

d) The sample condition adjustment conditions were changed. The relative humidity was changed from "50% ± 5%" to "50% ± 10%". The test environment humidity was changed from "45%~75%" was changed to "not exceeding 75%" (see 6.8, Chapter 8, 6.8, Chapter 8 of the 2008 edition);

e) Added instructions to clarify the measurement of the "20 mm protruding part" of the damaged area of the indicator mark (see 9.8, 9.8 of the 2008 edition);

f) "Apply the test flame for 15 seconds for 5 times, and the cumulative burning time of the test sample shall not exceed 60 seconds" is changed to "Apply the test flame for 5 times for 15 seconds, and the cumulative burning time of the test sample shall not exceed 60 seconds" 15s, 5 times in total, after any test flame, the burning time of the sample shall not exceed 60s" (see Chapter 10, 2008 Edition

This document refers to IEC/T S60695-11-21.2005 "Fire hazard tests - Part 11-21. Test flame polymer tubing the 500W vertical flame test method for materials was drafted, and the degree of consistency is non-equivalent.

Introduction

The design of all electrical and electronic products needs to consider the risk of fire and potential fire hazards. The design of components, circuits and parts the purpose of material selection is to reduce the potential fire risk to an acceptable level even if foreseeable misuse, malfunction or failure occurs.

The purpose of the Fire Hazard Test for Electrical and Electronic Products is to save lives by reducing the number of fires or reducing the severity of fires.

It can do so by.

---Prevent ignition of live parts as much as possible. If ignition occurs, limit the scope of the fire to the casing of the electrical and electronic products;

--- Minimize the spread of flames outside the product enclosure and the generation of combustion products including heat, smoke, toxic or corrosive gases.

Minimize harmful impact.

The Fire Hazard Test for Electrical and Electronic Products now consists of 40 parts, divided into three major areas.

--- Fire hazard test assessment guidelines and terminology standards, including 1 terminology and 8 assessment guidelines, the purpose is to provide a professional field Provide guidance and reference procedures for fire hazard assessment;

---Fire test standards, including 5 basic glow wire/hot wire test methods, 9 flame test methods, and 2 abnormal heat resistance Test methods, 1 arc ignition test method, the purpose is to introduce suitable for electrical and electronic equipment manufacturers and testing institutions to use A small-scale test method using a specific heat source to simulate the heat source that causes a fire;

---Hazard assessment criteria for combustion flow, including 2 items of corrosiveness, 2 items of smoke blurring, 5 items of toxicity, 3 items of heat release, and 2 items of flame surface the purpose is to provide measurement of combustion toxicity, corrosiveness, smoke haze and heat release of electrical and electronic products and their materials.

Guidelines and current technical status of test methods.

The purpose of this document is to give a small-scale laboratory procedure for determining the comparative combustion characteristics of polymer tubing materials.

This document is intended to detect and describe the response of materials, products or assemblies to heat and flame under controlled test conditions and is not intended to describe the test results are intended to describe or evaluate the fire hazard or fire risk of materials, products or components under actual fire conditions. However, the test results may be used as a fire hazard indicator.

Elements of a risk assessment when the assessment takes into account all factors relevant to assessing the fire hazard of a specific end use.

This document may contain hazardous materials, operations, and equipment. This document does not cover all safety issues related to the use of the product. The user it is your responsibility to establish appropriate safety and health protection practices and determine their suitability prior to use.

Fire hazard test for electrical and electronic products Part 23: Test flame polymer tubing Material 500W vertical flame test method

1 Scope

This document specifies a small-scale laboratory procedure for determining the comparative burning characteristics of polymer tubing materials. A flame is applied to a tube covered with a wire or the mandrel is supported and held on the specimen in a vertical position. After the test flame is removed, the flame extinguishing time and combustion characteristics are measured.

This document is intended for use in comparing the combustion characteristics of polymer tubing materials. This document is intended for use in comparing the relative performance of materials and assists in quality assurance.

Material selection in terms of control and quality assurance.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 2918-2018 Standard environment for conditioning and testing of plastic specimens
GB/T 5169.1-2015 Fire hazard testing for electric and electronic products Part 1: Fire test terminology
GB/T 5169.15-2015 Fire hazard tests for electric and electronic products Part 15: Test flame 500W flame device and confirmatory test methods
ISO 4046-4:2016 Paper, paperboard, pulp and related terms Vocabulary - Part 4: Paper and paperboard grades and conversion products
ISO 13943 Fire safety vocabulary

3 Terms and definitions

The terms and definitions defined in GB/T 5169.1-2015 and ISO 13943 and the following apply to this document.

burning time flaming time the time interval from the time the burner flame is removed until the flaming combustion of the specimen ends.

Kraft paper

Paper made almost entirely from kraft pulp.

Note: In some areas, the term "kraft paper" also refers to paper made from unbleached softwood pulp produced specifically by the kraft process. This paper is usually thicker than paper made from the same wood.

Paper made from other pulping processes has higher mechanical strength.

[Source. ISO 4046-4:2016, 4.94]