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

GB/T 17651.1-2021

**Measurement of smoke density of cables or optical fiber cables
burning under defined conditions - Part 1: Test apparatus**

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Test box	1
5 Optical measuring device	2
6 Standard fire source	4
7 Mixing of smoke	4
8 Blank test	5
9 Approval of test equipment	5
10 Qualified and approved combustion test	5
Appendix A (Informative) Guidance Note	7
Reference	9

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"

Drafting.

This document is the first part of GB/T 17651 "Determination of Smoke Density of Cables or Optical Cables Burning under Specific Conditions". GB/T 17651

The following parts have been released.

---Part 1. Test device;

---Part 2. Test procedures and requirements.

This document replaces GB/T 17651.1-1998 "Determination of smoke density of cables or optical cables burning under specific conditions-Part 1. Tests

Compared with GB/T 17651.1-1998, except for structural adjustments and editorial changes, the main technical changes are as follows.

---Added the applicable documents of normative reference documents (see Chapter 2);

--- Added applicable documents of terms and definitions (see Chapter 3);

---Modified the technical requirements for vents (see Chapter 4, Chapter 4 of the.1998

edition);

---Added the description of the position of the windscreen (see Chapter 4);

---Modified the absorption coefficient calculation formula and description (see 10.5, 10.5 in the.1998 edition).

The translation method used in this document is equivalent to IEC 61034-1.2019

“Determination of Smoke Density of Cables Burning under Specific Conditions Part 1.

Test device”.

The Chinese documents that have consistent correspondence with the normatively cited international documents in this document are as follows.

---GB/T 5169.1-2015 Fire hazard test of electric and electronic products Part 1.Fire test terminology (IEC 60695-4.

2012, IDT).

This document has made the following editorial changes.

---In order to be consistent with the existing standard series, the name of this document is changed to "Determination of Smoke Density of Cable or Optical Cable Burning under Specific Conditions"

Part 1.Test Equipment;

---Added the introduction;

---Adjust the IEC Guide104 not cited in the main text of IEC 61034-1.2019 to the reference.

Introduction

The smoke density of a cable or optical cable is an important indicator for evaluating the burning performance of a cable or optical cable. In the event of a fire, the cable or optical cable

The low-smoke characteristics of the company ensure the safe evacuation of all types of personnel and the normal development of fire and rescue work, and it is important for social public safety and reducing fire losses.

Has an important role. GB/T 17651 is a basic test method for determining the smoke emission of cables or optical cables in the event of a fire. GB/T 17651

It aims to establish a test method standard for the smoke density of different wire and cable or optical cable products burning under specific conditions. It is proposed to be composed of the following two parts.

Sub-composition.

---Part 1. Test device. The purpose is to establish a test suitable for the determination of the smoke density of cables or optical cables burning under specific conditions.

Requirements for testing devices and qualification approval procedures for testing devices.

---Part 2. Test procedures and requirements. The purpose is to establish a test for the determination of the smoke density of a cable or optical cable burning under specific conditions.

Inspection procedures and recommended compliance requirements.

GB/T 17651 is issued in two parts, which together specify a method for determining the smoke density of a cable or optical cable burning under specific conditions.

law. Users of this test method should note that the number of samples and bundles of cables or optical cables in the test may not represent the actual installation.

Happening.

Part 1 introduces in detail the test equipment and the combination of the test equipment used to determine the smoke density of cables or optical cables burning under specific conditions.

Lattice recognition. It includes a test chamber with a volume of 27m², a light measuring device for light measurement, standard fire source, smoke mixing, blank test and test equipment

Detailed information about the conformity accreditation procedures set up. Appendix A provides guidance on various aspects of the test device.

It may be useful in case inspection.

Part 2 gives the test procedures, and when specific requirements are not given in a specific cable standard or specification, the informative appendix gives a recommendation.

Recommended compliance requirements.

Cable or fiber optic cable burns under certain conditions

Smoke density determination Part 1. Test device

1 Scope

This document describes the determination of the smoke emitted by cables or optical cables burning under certain conditions (for example, when some cables or optical cables are burned horizontally).

Details of the test equipment used. Under the conditions of flame combustion or flameless combustion, the light transmittance (It) can be used to compare different cables or judge

Whether it meets the specific requirements of the means.

Note. "Cable" in this document refers to all insulated metal conductor cables used to transmit electrical energy or signals.

2 Normative references

The contents of the following documents constitute the indispensable clauses of this document through normative references in the text. Among them, dated quotations

Only the version corresponding to that date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

This document.

IEC 60695-4 Fire hazard testing for electrical and electronic products Part 4. Fire hazard testing-Part 4.

Terminology concerning fire tests for electrotechnical products)

ISO /IEC 13943.2000 Fire safety-Vocabulary

3 Terms and definitions

The terms and definitions defined by IEC 60695-4 and ISO /IEC 13943.2000 apply to this document.

4 Test box

The test box shall include a cube formed by fixing the angle steel bracket with suitable materials, and its internal dimension shall be 3000mm $\pm$ 30mm.

One side of the cube should have a door with a glass observation window. A transparent sealed window (minimum

The size is 100mm $\times$ 100mm) to allow the light beam of the horizontal light measuring device to pass through. The height of the center of these sealed windows from the ground should be

2150mm $\pm$ 100mm (see Figure 1).

In order to wear cables or optical cables, and to make the inside of the test box under atmospheric pressure, the walls of the test box should be opened on the ground plane.

Air hole (the distance from the air hole to the floor of the test chamber is not more than 100mm).

Any vents should not be directly behind the fire source or on the same wall. During the test, at least two vents should be opened and open