



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

GB/T 17650.1-2021

**Test on gases evolved during combustion of materials from
cables or optical fiber cables - Part 1: Determination of the
halogen acid gas content**

Issued on: April 30, 2021

Implemented on: November 1, 2021

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

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Foreword

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

To be drafted.

This document is the first part of GB/T 17650 "Test methods for gas released when materials taken from cables or optical cables burn."

GB/T 17650 has released the following parts.

---Part 1. Determination of the total amount of halogen acid gas;

---Part 2. Determination of acidity (measured by pH) and conductivity.

This document replaces GB/T 17650.1-1998 "Test methods for gas released when materials taken from cables or optical cables burn, Part 1

Sub. Determination of the total amount of halogen acid gas, compared with GB/T 17650.1-1998, except for structural adjustments and editorial changes, the main technical changes

as follows.

---Added terms and definitions about the content of halogen acid gas (see Chapter 3);

- Added the safety requirements during gas absorption (see 5.1 Note 2 and 7.3);
 - Modified the size requirements (see 5.2, 5.3, 5.4, 5.1, 5.2, 5.3 of the.1998 edition);
 - Modified the formula expression method of air flow in the tube and the units of air flow and air velocity, and added different tube inner diameters
- The air flow range (see 5.6, 5.5 in.1998 edition);
- Increased accuracy requirements (see 5.7);
 - Added the requirements for laboratory glassware (see 5.8);
 - The solvent nitrobenzene was deleted and replaced by the solvent toluene or isoamyl alcohol (see Chapter 9 of the.1998 edition in 5.9);
 - Modified the requirements for sample preparation (see 6.1, Chapter 6 of the.1998 edition);
 - The calculation formula for the mass of the sample has been added (see 6.3);
 - Modified the heating program (see 7.3, Chapter 8 of the.1998 edition);
 - Added a blank test procedure (see 7.5.1);
 - Added test result evaluation (see Chapter 8);
 - Modified Figure 1, Figure 2, Figure 3, Figure 4, Figure 5 (see Figure 1, Figure 2, Figure 3, Figure 4, Figure 5,.1998 edition of Figure 1, Figure 2, Figure 3, Figure 4, Figure 5);
 - The test method for determining the halogen acid gas content of the whole non-metallic mixed materials of cables or optical cables has been added (see Appendix A).

The translation method used in this document is equivalent to the use of IEC 60754-1.2019
`Test method for gas released when materials taken from cables burn

Part 1.Determination of the total amount of halogen acid gas.

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

- GB/T 6682-2008 Analytical laboratory water specifications and test methods (ISO 3696.1987, MOD);
- GB/T 12805-2011 Laboratory glass burette (ISO 385.2005, NEQ);
- GB/T 12806-2011 Laboratory glassware single mark volumetric flask (ISO 1042.1998, NEQ).

This document has made the following editorial changes.

---In order to be consistent with the existing standard series, the name of the standard is changed to "Test for the release of gas when the material taken from the cable or optical cable burns."

Method Part 1.Determination of the total amount of halogen acid gas.

Introduction

Cable or optical cable users are very concerned about the amount of acid gas released when the insulation, sheath and other materials of the cable or optical cable burn, because this

Acidic gases can cause extensive damage to electrical and electronic equipment that are not involved in a fire. Therefore, it is necessary to develop a measuring cable or

The approved method for the amount of acid gas released when the material of the optical cable is burned.

GB/T 17650 provides a method to determine the amount of acid gas

Or reach an agreement on the limit value of the optical cable specification. Since this test is not carried out on the entire cable or optical cable sample, the evaluation of the degree of harmfulness

It is also necessary to consider the actual volume of the material that constitutes the cable or fiber optic cable.

The recommended values of pH and conductivity given in this document can only be regarded as an indication, because the relationship between corrosion and these two parameters is not

Must be able to include all materials.

The purpose of GB/T 17650 is to establish a test method standard for gas released when materials taken from different cables or optical cables burn.

It consists of the following 3 parts.

---Part 1.Determination of the total amount of halogen acid gas. The purpose is to establish a combustion release suitable for materials taken from different cables or optical cables.

Test method for the total amount of halogen acid gas in the exhaust gas;

---Part 2.Determination of acidity (measured by pH) and conductivity. The purpose is to establish

Test methods for acidity (measured by pH) and electrical conductivity of gases released when materials are burned;

---Part 3.Determination of low-level halogen by ion chromatography (planned). The purpose

is to establish suitable for different cables or optical cables

The test method for the release of low-content halogen in the gas when the material burns.

The test equipment in Part 1 and Part 2 of this document is basically the same, but it should be noted that the test procedures are quite different.

When the material taken from the cable or optical cable burns

Test method for released gas

Part 1.Determination of the total amount of halogen acid gas

1 Scope

This document specifies the measurement of halogenated polymer-based mixtures and halogen-containing additive mixtures taken from the structure of cables or optical cables.

Equipment and procedures for the total amount of halogen acid gas released during combustion except for hydrofluoric acid.

Note 1.This test method cannot be used to determine the fluorine content, see IEC 60684-2 for the test method for fluorine content.

Note 2.This test method can be used to test the materials used in the production of cables or optical cables, but it is not appropriate to declare the performance of cables or optical cables based on such a test.

Note 3.The relevant cable or optical cable standard should specify which components in the cable or optical cable should be tested.

Note 4.For this document, "cable" refers to all insulated metal conductor cables that transmit energy or signals.

The method specified in this document is applicable to the determination of individual components in a cable or optical cable, and can determine the individual components of the cable or optical cable.

Whether the components meet the requirements.

Note 5.Under the premise of agreement between the supplier and the buyer, the method given in this document can be used to determine the halogen acid gas content of the cable or the overall mixed material of the optical cable. but

The use of this method is not suitable to determine the eligibility of the cable or optical cable performance. Appendix A gives relevant information about this test method.

Due to the measurement accuracy, it is not advisable to give the test value in the report for materials with a halogen acid gas content of less than 5mg/g.