

ICS 13.220.50

CCS Q 10



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

GB/T 8627-2007

**Test method for density of smoke from the burning or
decomposition of building materials**

(English Translation)

Issued on: December 21, 2007

Implemented on: June 1, 2008

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China**

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Foreword

This Standard modifies and adopts ASTM D2843-1999, Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics (English edition).

This Standard was redrafted in accordance with ASTM D2843-1999. The cross reference of the article numbers of this Standard and the article numbers of ASTM D2843-1999 is listed in Appendix A.

In consideration of the national conditions of China, some modifications are made in this Standard when it adopts ASTM D2843-1999; the list of these technical differences and their reasons are given in Appendix B.

This Standard replaces GB/T 8627-1999, Test Method for Density of Smoke from the Burning or Decomposition of Building Materials.

Compared with GB/T 8627-1999, the main technical changes of this Standard are as follows.

-- it specifies the steel wire mesh opening size in specimen holder is 6 mm while GB/T 8627-1999 only specifies the side length is 5 mm (see 2.1.5 of edition 1999);

- it deletes the note "During a non-arbitration test, liquified petroleum gas can be used as the fuel gas for test" (2.2.1 of edition 1999);
- it specifies the working pressure of propane is changed from 210 kPa to 276 kPa (see 4.3.1 of this edition); and
- it adds special procedure for materials that drip and adds auxiliary burner and collector tray and so on. Meanwhile, it adds optional procedure (see Article 8 and Article 9).

Appendix A and Appendix B of this Standard are informative.

This Standard was proposed by the Ministry of Public Security of the People's Republic of China.

This Standard shall be under the jurisdiction of Subcommittee 7 of the National Technical Committee on Fire Protection (SAC/TC 113/SC 7).

The responsible drafting organization of this Standard. Sichuan Fire Research Institute of Ministry of Public Security.

1 Application Scope

This Standard specifies the specific requirements for the test apparatus, test procedure, calculation of test results and test report for density of smoke from the density or decomposition of building materials.

This Standard specifies the test method for the measurement of volume of smoke produced under controlled conditions of combustion or decomposition. The measurements with this test method are made in terms of the loss of light transmission through a collected volume of smoke produced under controlled, standardized conditions. The apparatus is constructed so that the flame and smoke is observable during the test.

This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire hazard or fire risk assessment of the materials, products, or assemblies under actual fire conditions.

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 2918-1998, Plastics - Standard Atmospheres for Conditioning and Testing
(idt. ISO 291.1997)

3.1 It is intended to determine the possible smoke release of building materials under

controlled conditions of combustion and decomposition. The principle is to evaluate the smoke density by measuring the loss of light transmission through a solid dust of smoke produced under conditions of combustion and decomposition of materials.

3.2 The test specimen is exposed to flame for the duration of the test, and the smoke

shall focus a spot of light on the photocell in the right instrument panel.

4.4.3 Another box containing the photometer shall be attached to the right side of the

chamber. The barrier-layer photoelectric cell shall have standard observer spectral response. An egg-crate grid in front of the photocell shall be used to protect the cell from stray light. The grid shall be finished in dull black and have openings at least twice as deep as they are wide. The current produced by the photocell is indicated in terms of percent light absorption on a meter. The photocell linearity decreases as the temperature increases; compensations shall therefore be made. The photocell shall not be operated at temperatures exceeding 50°C.

4.4.4 The meter shall have two ranges. The range change shall be accomplished by

shunting the meter to one tenth of its sensitivity. When smoke accumulates to absorb

90 percent of the light beam, the meter shall be set to its basic sensitivity, by any

appropriate manner. By doing this, the scale in the meter will then read from 90 to 100 % absorption instead of reading from 0 to 100 % absorption.

4.5 Timing Device

A timing device shall be used to indicate 15-s intervals. The timing device shall start measuring when the burner is swung into test position.

4.6 Planimeter

A planimeter or other suitable means shall be used for measuring the area under the light-absorption curve.

5.1 The standard specimen shall be 25.4 ± 0.3 by 25.4 ± 0.3 by 6.2 ± 0.3 mm. Other

thicknesses can also be used; however, their thickness shall be stated in the report together with smoke density. Material thinner than 6.2 mm shall be tested by stacking and forming a composite specimen 6.2 mm thick. Material thicker than 6.2 mm shall be tested by machining the material down to a thickness of 6.2 mm. The maximum thickness of specimen is 25mm; when the thickness of material is greater than 25 mm, decide the fire exposure face in accordance with actual application conditions and reserve the fire exposure face during cutting.

5.2 The test sample shall consist of three specimens. The specimens shall be sanded,

machined, or die cut in a manner that produces a cut surface that is free from projecting fibers, chips, and ridges.