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

GB/T 5454-1997

**Textiles. Burning behaviour. Oxygen index method
(English Translation)**

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Foreword

This standard non-equivalently adopted the international standard ISO 4589.

1984 "Plastics - Burning behavior - Oxygen index method". It combined the

characteristics of the textiles to make modification of the national standard GB 5454-85. Its main technical contents and test methods and procedures are consistent with international standard.

This standard inherits the main technical content of the previous version, makes supplementary and editorial changes of the name of the standard, the arrangement of the clauses, and the technical content. It adds the "foreword", deletes the additional instructions, and incorporates the content into the

foreword

The name of this standard has been changed to "Textiles - Burning behavior - Oxygen index method".

In clause 1 "Scope", ADD the test methods contents under which conditions as specified by this standard, in the scope of determination, ADD "including single-component and multi-component".

In this standard, ADD clause 2 "Normative references", ADD foreign terms corresponding to 3 nouns and 4 nouns, ADD clause 5 "Testing personnel health and safety".

In clause 6, MODIFY the "instrument" into "equipment and material", MAKE editorial changes of the contents, ADD one clause "Gas decompressor".

In clause 7, MODIFY the "specimen" into "specimen and temperature conditioning". MODIFY the number of specimen cutting into "take at least 15 pieces along warp and weft for general textiles", DELETE the specimen preparation test method that "It shall sew three 8 ~ 11 Nm glass fiber when testing the textiles made by fused fiber". MODIFY "The specimen shall be balanced for over 24 h" into "The specimen is subject to humidity conditioning for 8 ~ 24 h depending on its thickness to make it reach temperature equilibrium".

In clause 8, ADD "determination of initial oxygen concentration", "increase - decrease method", and "determination of limiting oxygen index" to replace clause 6.7 of the original standard.

In clause 9 of this standard, for the oxygen index calculation, ADD three clauses "k-value coefficient determination table", "verification of oxygen concentration interval", and "precision".

In this standard, ADD "Appendix A Calculation of oxygen concentration", CHANGE the name of "Appendix A References" into "Appendix B", ADD "Appendix C Calibration of equipment" and "Appendix D Example of typical test results".

This standard was first published in 1985 and revised in 1995.

Appendix A of this standard is normative.

Appendix B, Appendix C, and Appendix D of this standard are informative.

This standard replaced GB 5454-85 from the effective date.

This standard was proposed by the China Textile Federation.

This standard shall be under the jurisdiction of the China Textile Federation Standardization Institute.

Drafting organizations of this standard. China Textile Association Standardization Institute.

1 Scope

This standard specifies the test methods for determining the minimum oxygen concentration (also known as limiting oxygen index) required to maintain the burning of the specimen in the mixed flow of oxygen and nitrogen when the specimen is vertical.

This standard applies to the determination of burning behavior of various types of textiles (including single-component or multi-component), such as woven fabrics, knitted fabrics, non-woven fabrics, coated fabrics, laminated fabrics, composite fabrics, carpets (including flame retardant treated and untreated).

This standard is only used to determine the burning behavior of textiles under laboratory conditions and to control the quality of the products. It cannot be used as a basis for assessing the risk of fire under actual conditions of use, or it can only be used to analyze one of the factors when a special purpose material catches fire.

2 Normative references

The provisions contained in the following standards constitute the provisions of this standard through reference in this standard. At the time of publication, the editions indicated were valid. All standards will be revised and all parties using this standard shall explore the possibility of using the latest version of the following standards.

GB 6529-86 Standard atmospheres for textiles conditioning and testing

3 Definitions

This standard uses the following definitions.

3.1

Afterflame time

Under the specified test conditions, the duration during which the material continues flame burning after moving the fire source away.

3.2

Afterglow time

Under the specified test conditions, the duration during which the material continues to flameless burning after the flame burning is terminated or after the (point) source of ignition is removed.

4 Principles

The specimen is vertically clamped on the specimen holder and placed in the combustion cylinder. In the upflowing oxygen-nitrogen gas stream, the upper end of the specimen is ignited, to observe the combustion characteristics, and to compare the afterflame time or the damaged length with the specified limiting value.

5 Health and safety of testing personnel

Smoke and gases from the burning of textile materials are toxic and can affect the health of workers. The test equipment can be installed in a fume hood.

6.1 Oxygen index instrument (see Figure 1). Equally effective instruments can also be used.

6.1.1 Combustion cylinder. It consists of a heat-resistant glass tube with an inner diameter of at least 75 mm and a height of at least 450 mm. The bottom of the cylinder is connected to the inlet pipe and filled with glass beads with a diameter of 3 ~ 5 mm, the height is 80 ~ 100 mm. A metal mesh is placed above