

ICS 83.080.01
G 31



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

中华人民共和国国家标准

GB/T 2406.2-2009/ISO 4589-2 : 1996

**Plastics—Determination of burning behaviour by oxygen
index—Part 2: Ambient-temperature test**

塑料 用氧指数法测定燃烧行为

第2部分：室温试验

(ISO 4589-2:1996, IDT)

Issued on Jun 15, 2009

Implemented on Feb 01, 2010

Joint issued by the General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China & Standardization Administration of
China

Contents

Foreword	1
1 Scope	3
2 Normative References	3
3 Terms and Definitions	4
4 Principle	4
5 Apparatus	5
6 Calibration of equipment	9
7 Preparation of test specimens	10
8 Procedure for determination of oxygen index	12
9 Calculations and expression of results	16
10 Procedure C - Comparison with a specified minimum value of the oxygen index (short procedure)	18
11 Test report	18
Annex A (Normative) Calibration of equipment	19
Annex B (Normative) Calculation of oxygen concentration	21
Annex C (Informative) Typical test results sheet	22
Annex D (Informative) Results obtained by interlaboratory trials on type VI specimens	25
Annex E (Informative) Precision data obtained from an interlaboratory trial carried out in 1978-80	26
Annex NA (Informative) Precision of results on an interlaboratory study was conducted in 1999 between ISO and ASTM	27
Bibliography	28

Foreword

GB/T 2406 Plastics - *Determination of burning behaviour by oxygen index* divided into three parts:

- *Part 1: Guidance;*
- *Part 2: Ambient-temperature test;*
- *Part 3: High-temperature test.*

This is part 2 of GB/T 2406. It is equivalent to ISO 4589-2: 1996 Plastics - Determination of burning behaviour by oxygen index - Part 2: Ambient-temperature test (English version) and A1, identical to technical requirements. For ease of use, following changes have changed for ISO 4589-2: 1996:

- To change “This Part of ISO 4589” as “This Part of GB/T 2406” or “This Part”;
- To delete the foreword and contents of ISO 4589-2: 1996;
- To add the foreword and contents of national standard;
- To change the normative references in ISO 4589-2: 1996
- To delete the serial number in ISO 4589, changed into national standard;
- To change the Clause 9 Precision in ISO as Annex NA in this Part.

Annex A and B of this Part is normative annex, Annex C, D, E and NA is informative annex.

This Part is proposed by China Petroleum and Chemical Industry Federation, CPCIF

This Standard is under jurisdiction of Sub-committee of General Methods and Products of Resin, National Technical Committee 15 on Plastic of Standardization Administration of China (SAC/TC 15/SC 4).

Chief draft unit of this Part: National Information Center of Synthetic Resin and Plastic Industry.

Participating unit of this Part: Beijing Yanshan Petrochemical Corporation Resin Application Research Institute (Fuzhou), National Research and Analysis Center of Chemical Building Materials (Material Testing Dept), Jiangning District Analysis Instrument Company, Nanjing, Shanghai Fire Research Institute of Ministry of Public Security, Guangzhou Kingfa Sci. and Tech. Co., Ltd, Longkou Dawn Engineering Plastic Co., Ltd, Dawn Group.

Chief Drafters of this Part: Song Guirong, Wang Jiandong, Chen Hongyuan, Li Jianjun, Zhang Zhengmin, He Fan, Yang Zonglin, Wang Fuhai, Zhang Chengjie.

Plastics—Determination of burning behaviour by oxygen index—Part 2: Ambient-temperature test

1 Scope

This part of GB/T 2406 specifies methods for determining the minimum concentration of oxygen, in admixture with nitrogen, that will support combustion of small vertical test specimens under specified test conditions. The results are defined as oxygen index values.

Methods are provided for testing materials that are self-supporting in the form of vertical bars or sheet up to 10,5 mm thick. These methods are suitable for solid, laminated or cellular materials characterized by an apparent density greater than 100 kg/m³. The methods may also be applicable to some cellular materials having an apparent density of less than 100 kg/m³. A method is provided for testing flexible sheet or film materials while supported vertically.

For comparative purposes, a procedure is provided for determining whether or not the oxygen index of a material lies above some specified minimum value.

Oxygen index results obtained using the methods described in this part can provide a sensitive measure of the burning characteristics of materials under certain controlled laboratory conditions, and hence may be useful for quality control purposes. The results obtained are dependent upon the shape, orientation and isolation of the test specimen and the conditions of ignition. For particular materials or applications, it may be necessary or appropriate to specify different test conditions. Results obtained from test specimens of differing thickness or by using different ignition procedures may not be comparable and no correlation with flammability behaviour under other fire conditions is implied.

Results obtained in accordance with this part must not be used to describe or appraise the fire hazard presented by a particular material or shape under actual fire conditions, unless used as one element of a fire risk assessment that takes into account all of the factors pertinent to the assessment of the fire hazard of a particular application for the material.

NOTE 1 It may not be possible to apply these methods satisfactorily to materials that exhibit high levels of shrinkage when heated, e.g. highly oriented thin film.

NOTE 2 For assessing the flame propagation properties of cellular materials of density < 100 kg/m³, attention is drawn to the method of GB/T 8332.

2 Normative References

The articles contained in the following documents have become this standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB/T 5471-2008 Plastics - Compression moulding of test specimens of thermosetting materials (ISO 295: 2004, IDT)

GB/T 9352-2008 Plastic - Compression moulding of test specimens of thermoplastic materials (ISO

293: 2004, IDT)

GB/T 2828.1-2003 Sampling procedures for inspection by attributea-Part1: Sampling schemes indexed by acceptance quality limit(AQL) for lot-by-lot inspection (ISO 2859-1: 1989, IDT)

GB/T 11997-2008 Plastic - Multipurpose test specimens (ISO 3167: 2002, IDT)

GB/T 17037.1-1997 Injection moulding of test specimens of thermoplastic materials—Part 1: General principles and moulding of multipurpose and bar test specimens (ISO 294: 1996, IDT)

GB/T 17037.3-2003 Plastics—Injection moulding of test specimens of thermoplastic materials—Part3: Small plates (ISO 294-3: 2002, IDT)

GB/T 17037.4-2003 Plastic--Injection moulding of test specimens of thermoplastic materials--Part 4: Determination of moulding shrinkage (ISO 294-4: 2001, IDT)

ISO 294-2: 1996 Plastics -- Injection moulding of test specimens of thermoplastic materials -- Part 2: Small tensile bars

ISO 294-5: 2001 Plastics -- Injection moulding of test specimens of thermoplastic materials -- Part 5: Preparation of standard specimens for investigating anisotropy

ISO 2818: 1994 Plastics - Preparation of test specimens by machining

ISO 2859-2:1985 Sampling procedures for inspection by attributes — Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection

3 Terms and Definitions

For the purpose of part of GB/T 2406, the following definition applies.

3.1

oxygen index

The minimum concentration of oxygen, by volume percentage, in a mixture of oxygen and nitrogen introduced at (23 ± 2) °C that will just support combustion of a material under specified test conditions.

4 Principle

A small test specimen is supported vertically in a mixture of oxygen and nitrogen flowing upwards through a transparent chimney. The upper end of the specimen is ignited and the subsequent burning behaviour of the specimen is observed to compare the period for which burning continues, or the length of specimen burnt, with specified limits for such burning. By testing a series of specimens in different oxygen concentrations, the minimum oxygen concentration is estimated (see 8.6).

Alternatively, for comparison with a specified minimum oxygen index value, three test specimens are tested using the relevant oxygen concentration, at least two of which are required to extinguish before any relevant burning criterion is exceeded.

完整版本请在线下单

或咨询：

TEL: 400-678-1309

QQ: 19315219

Email: info@lancarver.com

<http://www.lancarver.com>

线下付款方式：

1. 对公账户：

单位名称：北京文心雕语翻译有限公司

开户行：中国工商银行北京清河镇支行

账 号：0200 1486 0900 0006 131

2. 支付宝账户：info@lancarver.com

注：付款成功后，请预留电邮，完整版本将在一个工作日内通过电子 PDF 或 Word 形式发送至您的预留邮箱，如需索取发票，下单成功后的三个工作日内安排开具并寄出，预祝合作愉快！



银联特约商户