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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

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GB/T 6669-2008 / ISO 1856:2000

Replacing GB/T 6669-2001

**Flexible cellular polymeric materials - Determination of
compression set**

软质泡沫聚合材料 压缩永久变形的测定

(ISO 1856: 2000, IDT)

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Quarantine;
Standardization Administration of the People's Republic of China.**

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Foreword

This standard is identical to the international standard ISO 1856: 2000 *Flexible cellular polymeric materials - Determination of compression set* and its Amendment 1 (2007) in terms of the technical contents and text structures, except for a few editorial changes.

This standard replaces GB/T 6669-2001 *Polymeric material cellular flexible - Determination of compression set*.

The following main changes have been made with respect to GB/T 6669-2001:

- The sentence “If samples show orientation of the cellular structure, the direction in which the compression is to be carried out shall be agreed between the supplier and the demander.” is deleted from 6.2;
- The conditioning atmosphere “(20±2)°C and (65±5)% relative humidity” is deleted from 6.4, while some contents are added to 6.4;
- The requirements for the deviation of the compression level, compression time and recovery time are added;
- The symbol “*P*” that represents the compression set in Formula (1) is replaced by “*CS*”;
- The contents of test report are added;

This standard was proposed by the China National Light Industry Council.

This standard shall be under the jurisdiction of the National Technical Committee on Plastics of Standardization Administration of China.

The main drafters of this standard: Ni Xiaodong, Sun Lin, Chen Qian, Zhou Xiaofang, Qian Hongxiang.

The previous editions of this standard are as follows:

- GB/T 6669-1986 and GB/T 6669-2001.

Flexible cellular polymeric materials - Determination of compression set

1 Scope

This standard specifies three methods for determining the compression set of flexible cellular polymeric materials.

This standard applies only to latex and polyurethane foams of thickness greater than 2mm.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this standard. For dated references, subsequent amendments (excluding corrections), or revisions, of any of these publications do not apply to this standard. However parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition applies.

GB/T 6342-1996 *Cellular plastics and rubbers - Determination of linear dimensions* (idt ISO 1923: 1981)

3 Term and definition

For the purpose of this standard, the following term and definition apply.

3.1

compression set

the difference between the initial thickness and the final thickness of a test piece of the flexible cellular polymeric material after compression for a given time at a given temperature and after a given recovery time, the difference being referred to the initial thickness

6.3 Number of test pieces

Five 25-mm-thick test pieces, or five assemblies in the case of thin materials, shall be tested.

6.4 Conditioning

Materials shall not be tested less than 72 h after manufacture unless it can be demonstrated that the results obtained at either 16 h or 48 h after manufacture do not differ by more than $\pm 10\%$ from those obtained after 72h, in which case testing is permitted at 16h or 48h, respectively.

Prior to the test, the test pieces shall be conditioned for at least 16h in one of the following atmospheres:

(23 ± 2)°C and $50\% \pm 5\%$ relative humidity;

(27 ± 2)°C and $65\% \pm 5\%$ relative humidity.

This conditioning period may cover the final part of or, in the case of testing 16h after manufacture, the whole of the period following manufacture.

In the case of quality-control tests, test pieces can be taken a shorter time (down to a minimum of 12 h) after manufacture and testing carried out after conditioning for a shorter period (down to a minimum of 6 h) in one of the atmospheres specified above.

7 Test procedure

7.1 General

The test may be carried out by method A, method B or method C, or by all three. The three methods may, however, give different results.

7.2 Method A (compression at 70 °C)

After the test piece has been conditioned as specified in 6.4, measure its initial thickness, d_0 , in accordance with GB/T 6342. In the case of thin materials, calculate the initial thickness d_0 of the test piece by deducting the thickness of the glass slides from the total thickness of the assembly of glass slides and test pieces measured with the assembly in the horizontal position.

Place the test piece or assembly between the plates of the compression device; compress it by either $50\% \pm 4\%$ or $75\% \pm 4\%$ of its thickness and maintain it under this condition. In special cases, a compression of 90% may be agreed upon.

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