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

GB/T 24451-2020

Replacing GB/T 24451-2009

Low resilience flexible polyurethane cellular plastics

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1 Scope

This standard specifies the classification, requirements, test methods, inspection rules and marking, packaging, transportation, storage.

This standard applies to block, sheet and strip or cut-and-formed slow-resilient flexible polyurethane foams obtained by free foaming.

A slow-rebound flexible polyurethane foam made by molding.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 531.1-2008 Test method for indentation hardness of vulcanized or thermoplastic rubber - Part 1.Shore durometer method (Shore hardness)

GB/T 2918-2018 Standard Environment for Conditioning and Testing of Plastic Samples

GB/T 6342-1996 Determination of Linear Dimensions of Foamed Plastics and Rubber

GB/T 6343-2009 Determination of Apparent Density of Foamed Plastics and Rubber

GB/T 6344-2008 Determination of tensile strength and elongation at break of flexible foamed polymeric materials

GB/T 6669-2008 Determination of compression set of flexible foamed polymeric materials

GB/T 6670-2008 Determination of resilience performance of flexible foamed polymeric materials by falling ball method

GB/T 9345.1-2008 Determination of ash content of plastics - Part 1.General method

GB/T 9640-2008 Test method for accelerated aging of flexible and rigid foamed polymeric materials

GB/T 10807-2006 Determination of hardness of flexible foamed polymeric materials (indentation method)

GB/T 10808-2006 Determination of tear strength of polymeric porous elastic materials

GB/T 26392-2011 Determination of recovery time of slow rebound foam

QB/T 2819-2006 Determination of long-term fatigue properties of soft polymeric materials

QC/T 850-2011 Polyurethane foam for passenger car seats

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 A polyurethane foam with slow recovery, low rebound and high hysteresis loss characteristics.

4.1 Classification

4.1.1 According to the production process, it is divided into block slow-rebound flexible polyurethane foam (Type B) and molded slow-rebound flexible polyurethane foam (M

6 Test methods

6.1 Sampling requirements and state adjustment The test was carried out after being placed under natural conditions for 72 hours from the date of product production. Slab foam specimens to be skin removed; molded foam When the physical properties of plastics are tested in 5.4, 5.5 and 5.6, the skin of the sample shall be removed.

The test is carried out according to the 23/50 secondary environmental conditions in GB/T 2918-2018.

Under the condition of 10)%, the state adjustment shall be carried out for no less than 16h.

6.2 Limit deviation of length, width and thickness 6.2.1 The limit deviation of length and width shall be carried out according to the provisions of GB/T 6342-1996. Use a tape measure with a minimum division of 1mm to measure the length, There are 3 values for each width, the length and width dimensional deviations are calculated, and the number of samples is 3.

6.2.2 The thickness limit deviation shall be carried out according to the provisions of GB/T 6342-1996. Measure the thickness with a measuring tool with an accuracy of 0.1mm, in the distance from the width Start measuring 30mm away from the edge and 80mm away from the edge in the length direction, with no less than 5 measurement points, measure the thickness value, and calculate the thickness.

Degree deviation, the number of samples is 3.

6.3 Appearance

6.3.1 Visual inspection of color and stains under normal light.

6.3.2 The pores are measured with a measuring tool with an accuracy of 0.5mm, and the crack length is measured with a tape measure with a minimum graduation value of 1mm.

6.4 Apparent Density Deviation The apparent core density is tested according to the provisions of GB/T 6343-2009, the apparent density deviation is calculated, the number of samples is 3, and the sample size is $(50 \pm 1) \text{mm} \times (50 \pm 1) \text{mm} \times (50 \pm 1) \text{mm}$.

6.5 Indentation hardness Carry out according to the provisions of GB/T 10807-2006 Method B. Test the 40% indentation hardness and the ratio of 65% to 25% indentation hardness.

6.6 Recovery time According to the provisions of GB/T 26392-2011, the number of samples is 1.

6.7 75% compression set According to the provisions of GB/T 6669-2008 Method A, the number of samples is 5, and the sample size is $(50 \pm 1) \text{mm} \times (50 \pm 1) \text{mm} \times (25 \pm 1) \text{mm}$. The test temperature is $(70 \pm 2)^\circ \text{C}$, the test time is 22h, and the compression sample is 75% of the thickness (compressed to 25% of the original thickness of the sample).

6.8 Rebound rate According to the provisions of GB/T 6670-2008 Method B, the number of samples is 3, and the sample size is $(100 \pm 3) \text{mm} \times (100 \pm 3) \text{mm} \times (50 \pm 2) \text{mm}$.

6.9 Tensile strength and elongation According to the provisions of GB/T 6344-2008, the number of samples is 5, the thickness of the sample is 10mm~15mm, and the test speed is (500 ± 50)

mm/min, effective gauge length 50mm.

6.10 Tear strength According to the provisions of GB/T 10808-2006, the number of samples is 5, and the test speed is 200mm/min.

6.11 Odour class The odor level is carried out according to the provisions of Appendix B in QC/T 850-2011.

6.12 Tensile strength change rate after dry heat aging Carry out according to the provisions of GB/T 9640-2008.

The test temperature is 140 degrees C, and after standing for 16 hours, the tensile strength is measured according to 6.9, and the change rate of the tensile strength after dry heat aging is calculated.

6.13 Change rate of tensile strength after damp heat aging Carry out according to the

provisions of GB/T 9640-2008.

The test temperature is 105°C and 100% relative humidity or supersaturated steam for 3 hours, and then the tensile strength is tested according to 6.9, and the humidity is calculated.

Tensile strength change rate after heat aging.

6.14 Determination of 40% indentation hardness loss rate after repeated indentation fatigue under constant load Carry out according to the regulations of QB/T 2819-2006.

6.15 Ash Carry out according to the provisions of GB T9345.1-2008 Method A.

The test temperature is 725 degrees C, and the residue is until constant weight, but the calcination time at the specified temperature should not exceed 3h.

6.16 Formaldehyde emission According to the test method of A.3 formaldehyde emission in QC/T 850-2011.

6.17 Temperature and Humidity Sensitivity Index Carry out the test method in Appendix B.

7 Inspection rules

7.1 Inspection classification

7.1.1 Factory inspection The factory inspection items are 5.1, 5.2, 5.3, 5.4, 5.5 and recovery time, rebound rate, tensile strength, and elongation in Table 8.

7.1.2 Type inspection Type inspection is all items in Chapter 5. Type inspection should be carried out in one of the following situations.

- a) Type identification for trial production of new products;
- b) After the formal production, if there are major changes in the structure, raw materials and processes, which may affect the performance of the product;
- c) An inspection is carried out every six months during normal production;
- d) When the product resumes production after a long-term shutdown for half a year;
- e) When there is a big difference between the factory inspection results and the last type inspection results.

7.2 Batching and Sampling

7.2.1 Batch The same raw material, the same formula, the same process conditions, the continuous production quantity does not exceed 50t as a batch, and the box-type production quantity does not exceed 10t for a batch.

7.2.2 Sampling Dimensional deviation and appearance 3 pieces of products are randomly selected from each batch for inspection, and physical properties are randomly sampled