



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

GB/T 10801.1-2021

Moulded polystyrene foam for thermal insulation(EPS)

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents.

This Document is Part 1 of GB/T 10801; GB/T 10801 consists of the following parts:

- GB/T 10801.1 Molded Polystyrene foam for thermal insulation;
- GB/T 10801.2 Rigid extruded polystyrene foam board for thermal insulation (XPS).

This Document replaced GB/T 10801.1-2002 Molded polystyrene foam for thermal insulation.

Compared with GB/T 10801.1-2002, the major technical changes of this Part are as follows besides the structural adjustments and editorial modifications:

- a) Add this Document is also applicable to the molded polystyrene foam for thermal insulation made by adding graphite and other additives to the raw materials and their cut products in the scope (see Clause 1 of this Edition);
- b) Add terms and definitions (see Clause 3 of this Edition);
- c) Delete the classification by density; and add grading by compressive strength, by thermal insulation performance, and by combustion performance (see 4.1 of this Edition; 3.1 of the 2002 Edition);
- d) Increase product marking (see 4.2 of this Edition);

e) When the thickness is greater than 100, the allowable deviation is ± 5 (see 5.2 of this Edition);

f) Change the "apparent density" in the requirements to "apparent density deviation" (see

5.3 of this Edition; 4.3 of the 2002 Edition);

g) Delete the compressive strength $\geq 400\text{kPa}$ in the requirements; and add the compressive

strength $\geq 500\text{kPa}$ and $\geq 800\text{kPa}$ in the requirements; (see 5.3 of this Edition; 4.3 of the

2002 Edition);

h) Change the thermal conductivity in the requirements from $\leq 0.041\text{W}/(\text{m}\cdot\text{K})$ and $\leq 0.039\text{W}/(\text{m}\cdot\text{K})$ into $\leq 0.033\text{W}/(\text{m}\cdot\text{K})$ and $\leq 0.037\text{W}/(\text{m}\cdot\text{K})$ (see 5.4 of this Edition; 4.3 of the 2002 Edition);

i) Delete the combustion performance oxygen index in the requirements; and add the combustion performance grade in the requirements: Grade-B1 or Grade-B2 or Grade-B3 (see 5.5 of this Edition; 4.3 of the 2002 Edition);

j) Change the relative humidity of state adjustment and test from 45%~55% to $(50\pm 10)\%$
Molded Polystyrene Foam for Thermal Insulation (EPS)

1 Scope

This Document specifies the classification, requirements, test methods, inspection rules and

marking, packaging, transportation and storage of molded polystyrene foam for thermal insulation (EPS).

This Document is applicable to molded polystyrene foam for thermal insulation and products

cut from it, which is obtained by heating and pre-expanding expandable polystyrene beads in a

mold with closed-cell structure and a service temperature not exceeding 75°C . This Document

is also applicable to the molded polystyrene foam for thermal insulation made by adding graphite and other additives to the raw materials and products cut from it.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates

indicated are applicable to this Document; for the undated documents, only the latest version

(including all the amendments) is applicable to this Document.

GB/T 2035-2008 Terms and definitions for plastics

GB/T 2918-2018 Plastics - Standard atmospheres for conditioning and testing

GB/T 6342-1996 Cellular plastics and rubbers - Determination of linear dimensions

GB/T 6343-2009 Cellular plastics and rubbers - Determination of apparent density

GB/T 8170-2008 Rules of rounding off for numerical values & expression and judgement of limiting values

GB 8624 Classification for burning behavior of building materials and products

GB/T 8810-2005 Determination of water absorption of rigid cellular plastics

GB/T 8811-2008 Test method for dimensional stability of rigid cellular plastics

GB/T 8812.1-2007 Rigid cellular plastics - Determination of flexural properties - Part 1: Basic bending test

6.2 Numerical rounding off

When judging whether the measured value or its calculated value meets the requirements of the

standard, the measured value or its calculated value obtained from the test shall be compared

with the limit value specified in the standard; and the comparison method shall be conducted

according to rounding off comparison method specified in GB/T 8170-2008

6.3 Appearance

Visual inspection under natural light.

6.4 Dimensions and tolerances

Dimensions are measured in accordance with GB/T 6342-1996. The number of samples is 3

boards; measure the length, width, and thickness of each sample at 6 points, take the arithmetic

mean value; and calculate the deviation from the nominal length, nominal width, and nominal

thickness. Measure the difference between the two sets of diagonals on the two large surfaces

of the board, and take the arithmetic mean.

6.5 Compressive strength

Conduct according to the provisions of GB/T 8813-2020; the compressive stress at the relative

deformation of 10%. The specimen dimension is $(100\pm 1)\text{mm}\times(100\pm 1)\text{mm}\times(50\pm 1)\text{mm}$; the

number of specimens is 5; the test speed is 5mm/min; and take the arithmetic mean of the test

results of 5 specimens.

6.6 Dimensional stability

Conduct according to the provisions of GB/T 8811-2008 at the temperature of (70 ± 2) degrees C, and

the time for $(48\pm 2)\text{h}$. The specimen dimension is $(100\pm 1)\text{mm}\times(100\pm 1)\text{mm}\times(25\pm 1)\text{mm}$; the

number of specimens is 3; and take the average of the absolute values of the test results of the

6.7 Water vapor transmission coefficient

Conduct according to the provisions of QB/T 2411-1998. The thickness of the specimen is $(25\pm 1)\text{mm}$. When the thickness is less than 25mm, the original thickness is used for the test.

The test temperature shall be (23 ± 1) degrees C, and the relative humidity gradient be $0\%\sim(50\pm 2)\%$; the