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

GB/T 7134-2008

**Poly (methyl methacrylate) cast sheets
(English Translation)**

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1 Scope

This standard specifies the terms and definitions, components, technical requirements, test methods, inspection rules, marking, packaging, transportation, storage of poly (methyl methacrylate) cast sheets.

This standard applies to colorless and colored transparent, translucent or opaque plexiglass sheets (hereinafter referred to as sheets), which has a thickness of 1.5 mm ~

50 mm, AND are made of methyl methacrylate as raw materials, by bulk polymerization in a specific mold.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 1033.1-2008 Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method liquid pycnometer method and titration method (ISO 1183-1:2004, IDT)

GB/T 1034-2008 Plastics - Determination of water absorption (ISO 62:2008, IDT)

GB/T 1036-2008 Test method for coefficient of linear thermal expansion of plastics between -30°C and 30°C with a vitreous silica dilatometer (ASTM D696:2003,

MOD)

GB/T 1040.1-2006 Plastics - Determination of tensile properties - Part 1: General principles (ISO 527-1:1993, IDT)

GB/T 1040.2-2006 Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2:1993, IDT)

GB/T 1041-2008 Plastics - Determination of compressive properties (ISO 604:2002, IDT)

GB/T 1043.1-2008 Plastics - Determination of Charpy impact properties - Part 1:

Non - instrumented impact test (ISO 179-1:2000, IDT)

3.1

Non-modified cast PMMA sheet

It refers to the methyl methacrylate homopolymer sheet, or the copolymer sheet of methyl methacrylate and acrylate or methacrylate monomer, which is produced by bulk polymerization, through appropriate initiators.

3.2

Flat PMMA sheets

A sheet, which has substantially parallel surfaces on both sides.

4 Ingredients

Methyl methacrylate, diisobutyronitrile, dioctyl phthalate, etc. are the main raw and auxiliary materials; the content of other monomers, plasticizers (become part of the polymer without chemical reaction) and crosslinking agents (material whose polymer chains are linked) shall not make the performance value of the sheet lower than the standard requirements.

Other additives, such as colorants, UV absorbers, mold release agents, can be added, to obtain the specified properties.

Relevant additives shall comply with national environmental and regulatory requirements.

5.1.1 Surface defects

The surface of the sheet shall be smooth. There shall be no scratches, spots or other surface defects, which are greater than 3 mm² in the sheet.

5.1.2 Internal defects

There shall be no air bubbles, impurities, cracks or other defects, which are greater than 3 mm² in the sheet, which may adversely affect the intended application properties of the sheet.

5.1.3 Classification of defects

The area of sheet defects shall be classified, according to the provisions of Table 1.

Each defect shall be considered separately.

The inspection of defects and their distribution shall be carried out indoor, with sufficient natural light OR by a daylight fluorescent lamp which has a rated power of not less than 40 W and a color temperature of 6500 K $\pm$ 650 K.

6.3 Color

The method of measuring the color difference between the standard color sheet and the test sheet shall be agreed by the relevant parties.

6.4 Dimensions

6.4.1

The length and width shall be measured, by a measuring tool which has an accuracy of 1 mm, according to 5.3.4.

6.4.2

The thickness of the sheet shall be measured, according to 5.3.4, using a measuring tool which has an accuracy of 0.1 mm. The measurement shall be made, at not less than 100 mm from the edge of the sheet.

6.5.1 Bending properties

Make measurement according to the provisions of GB/T 9341-2008. Use specimens, which have a thickness of 4 mm, as far as possible.

6.5.2 Tensile properties

Make measurement according to the provisions of GB/T 1040.1-2006 and GB/T

1040.2-2006, using 1B specimen. The tensile speed is 5 mm/min $\pm$ 1 mm/min; the tensile modulus of elasticity is measured according to the provisions of GB/T 1041-

2008; the test speed is 1 mm/min $\pm$ 0.2 mm/min.

6.5.3 Unnotched impact strength of simply supported beams

Make measurement according to the provisions of GB/T 1043.1-2008.

6.5.4 Rockwell hardness

Make measurement according to the provisions of GB/T 3398.2-2008.

6.6.1 Vicat softening temperature

Make measurement according to the B50 method, which is specified in GB/T 1633-2000.

The samples shall be placed at a temperature of $80\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for conditioning for 16 h; then placed in a desiccator to cool to room temperature, before testing.

6.6.2 Heat distortion temperature

Make measurement according to method A, which is specified in GB/T 1634.2-2004.

The samples shall be placed at a temperature of $80\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for conditioning for 16 h; then placed in a desiccator to cool to room temperature, before testing. The thickness of the specimen shall not be less than 3 mm.

6.6.3 Dimensional change (shrinkage) after heating

Make measurement according to the provisions of Appendix A of this standard.

6.6.4 Linear expansion coefficient

Make measurement according to the provisions of GB/T 1036-2008.

6.7 Flammability

Flammability and combustion performance shall be in accordance with relevant national requirements.

6.8.1 Total light transmittance

Make measurement according to the provisions of GB/T 2410-2008.

6.8.2 Haze

Make measurement according to the provisions of GB/T 2410-2008.

6.8.3 420 nm light transmittance

According to the methods of ISO 13468-1 and ISO 13468-2, measure the 420 nm light