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

GB/T 45505.1-2025

**Test method of flat panel display glass substrate - Part 1:
Appearance and geometric dimensions**

平板显示器基板玻璃测试方法 第1部分：外观与几何尺寸

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 1 of GB/T 45505 "Test methods for glass substrates for flat panel displays". Lower part.

- Part 1: Appearance and geometric dimensions;
- Part 2: Surface properties;
- Part 3: Thermal properties;
- Part 4: Mechanical properties;
- Part 5: Optoelectronic properties.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

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Introduction

Flat panel display substrate glass is a key strategic material in the electronic information display industry. The quality of substrate glass is closely related to the resolution and transparency of the finished panel.

Brightness, thickness, weight, viewing angle and other indicators are closely related, representing the highest level in the field of modern glass large-scale manufacturing in the world.

As substrate glass continues to become higher definition, larger size, and ultra-thin, the quality requirements for display substrate glass are increasing year by year.

Appearance, length and width dimensions and deviations, thickness deviation, thickness difference, edge shape, cutting angle deviation, positioning angle deviation, right angle, deflection, warping, Surface roughness, waviness, annealing point, strain point, softening point, average linear thermal expansion coefficient, thermal conductivity, reheat linear shrinkage, density, stress, Young's modulus, shear modulus, Poisson's ratio, Vickers hardness, transmittance, refractive index, volume resistivity, dielectric constant and dielectric loss factor are for flat plates.

These indicators will affect the product quality of flat panel display substrate glass, so it is necessary to establish the Test methods for display substrate glass.

GB/T 45505 aims to provide test methods for various properties of flat panel display substrate glass and is intended to consist of five parts.

- Part 1: Appearance and geometric dimensions. The purpose is to provide test methods for the appearance and geometric dimensions of flat panel display substrate glass.

- Part 2: Surface properties. The purpose is to provide a test method for the surface properties of flat panel display substrate glass.
- Part 3: Thermal properties. The purpose is to provide a test method for the thermal properties of flat panel display substrate glass.
- Part 4: Mechanical properties. The purpose is to provide test methods for the mechanical properties of flat panel display substrate glass.
- Part 5: Photoelectric properties. The purpose is to provide test methods for the photoelectric properties of flat panel display substrate glass.

Test methods for flat panel display substrate glass Part 1: Appearance and geometric dimensions

1 Scope

This document describes the test methods for the appearance and geometry of flat panel display glass substrates.

This document applies to substrate glass for flat panel displays.

2 Normative references

GB/T 1216

GB/T 5700-2023

GB/T 16857.2

GB/T 32639

3 Terms and Definitions

The terms and definitions defined in GB/T 32639 apply to this document.

4 Test Environment

Unless otherwise specified, the tests should be carried out under the following environmental conditions.

- a) Temperature. $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$.
- b) Relative humidity. 40%~80%.

5.1.1 Test apparatus

The schematic diagram of appearance inspection is shown in Figure 1, and the specific requirements are as follows.

- a) Reflected light source. The light intensity in the inspection area shall not be less than 8000 lx.
 - b) Transmitted light source. The light intensity in the inspection area shall not be less than 1500 lx.
 - c) Edge side light source. The light intensity in the inspection area shall not be less than 4000 lx.
 - d) Sample support frame. A hollow carbide frame not smaller than the sample size. The frame should not affect the observation of the effective surface of the sample and should be in contact with the water.
- The plane angle θ is $70^{\circ}\sim 85^{\circ}$, see Figure 1a).