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GB/T 45505.4-2025

**Test methods of flat panel display glass substrate - Part 4:
Mechanical properties**

平板显示器基板玻璃测试方法 第4部分：力学性能

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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 4 of GB/T 45505 "Test methods for glass substrates for flat panel displays". GB/T 45505 has been published in Lower part.

- Part 4: Mechanical 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 for 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 global modern glass scale manufacturing.

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, cutting angle deviation, positioning angle deviation, squareness, surface roughness, waviness, deterioration Fire point, strain point, softening point, average linear thermal expansion coefficient, thermal conductivity, reheat linear shrinkage, specific heat capacity, density, stress, Young's modulus, shear Modulus, Poisson's ratio, Vickers hardness, transmittance, refractive index, volume resistivity, dielectric constant and dielectric loss factor are the properties of flat panel display substrate glass.

These indicators will affect the product quality of flat panel display substrate glass, so it is necessary to establish the flat panel display substrate glass testing Try method.

GB/T 45505 aims to provide test methods for various properties of flat panel display substrate glass and is intended to consist of 5 parts.

- Part 1: Appearance and geometric dimensions. The purpose is to provide a test method 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 a test method for the mechanical properties of flat panel display substrate glass.
- Part 5: Photoelectric properties. The purpose is to provide a test method for the

photoelectric properties of flat panel display substrate glass.

Flat panel display substrate glass test methods Part 4: Mechanical properties

1 Scope

This document describes the testing of density, stress, Young's modulus, shear modulus, Poisson's ratio, and Vickers hardness for flat panel display substrate glass. method.

This document applies to the design, manufacture, and testing of flat panel display substrate glass.

2 Normative references

GB/T 1216

GB/T 4340.1

GB/T 4340.2

GB/T 7962.20

GB/T 37780

GB/T 43774

3 Terms and definitions

The terms and definitions defined in GB/T 4340.1, GB/T 4340.2, GB/T 7962.20, GB/T 37780 and GB/T 43774 apply to This document.

4.1.1 Test principle

The density of a solid substance refers to its mass per unit volume at a specified temperature.

According to Archimedes' principle, the buoyancy of an object immersed in a medium is equal to the weight of the medium displaced by the object.

The buoyancy of the sample in a medium of known density can be used to calculate the density of the sample.

4.1.2 Test equipment

The test equipment includes.

- Analytical balance. 0g~200g, accuracy is 0.1mg;
- Suspension components. The suspension wire should be a metal wire with a diameter less than 0.2 mm and should be degreased or vacuum heated and cleaned;

The hanging wire, hanging basket or wire loop specimen support used in each test should be made of the same material;

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