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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 45505.2-2025

Replacing GB/T 32642-2016

Test method of flat panel display glass substrate - Part 2: Surface properties

平板显示器基板玻璃测试方法 第2部分：表面性能

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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 2 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.

This document replaces GB/T 32642-2016 "Measurement method of surface roughness of flat panel display substrate glass", GB/T 32643- 2016 "Measurement method for surface waviness of flat panel display substrate glass" is compared with GB/T 32642-2016 and GB/T 32643-2016.

In addition to structural adjustments and editorial changes, the main technical changes are as follows.

a) The terms "true profile", "pre-travel (and post-travel)", "measured length", and "phase correction filter" have been deleted (see 2.3 of GB/T 32642-2016, 3.3, 3.4, 3.6 of GB/T 32643-2016);

b) Added the terms "cut-off ratio", "lambdaS filter" and "Gaussian filter" (see 3.4, 3.5 and 3.8);

c) The definitions of the terms "2RC filter" and "Gaussian distribution characteristic phase compensation filter" have been changed (see 3.6, 3.7, GB/T 32643- 2016 3.1, 3.2);

d) Added test environment requirements (see Chapter 4);

e) Added the test principles for surface roughness and waviness (see 5.1.1 and 5.2.1);

f) Changed the sample requirements for surface roughness and waviness measurement (see 5.1.3, 5.2.3, Chapter 5, GB/T 32642-2016).

Chapter 6 of GB/T 32643-2016);

g) Changed the test conditions for surface roughness and waviness (see 5.1.4, 5.2.4, Chapter 4 of GB/T 32642-2016, Chapter 4 of GB/T 32643-2016);

h) Added data processing for surface roughness and waviness measurements (see 5.1.6 and 5.2.6).

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.

This document is under the jurisdiction of the National Technical Committee for Standardization of Semiconductor Equipment and Materials (SAC/TC203).

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The previous versions of this document and the documents it replaces are as follows.

- First published in 2016 as GB/T 32642-2016, GB/T 32643-2016;

- This is the first revision.

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 flat panel display 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 Test methods for device substrate glass.

GB/T 45505 "Test methods for flat panel display substrate glass" aims to provide test methods for various properties of flat panel display substrate glass. It consists 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 2: Surface properties

1 Scope

This document describes a method for testing the surface roughness and waviness of glass substrates for flat panel displays using a stylus surface roughness tester.

This document applies to substrate glass for flat panel displays.

2 Normative references

GB/T 10610-2009

GB/T 32639

3 Terms and Definitions

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

3.1 An instrument that measures the numerical range of surface roughness

The probe slides along the contour of a part of the measured surface, magnifies the surface unevenness and indicates the amplitude of the magnified curve.

3.2 longwavelengthcut-off

lambdaC Excluding natural factors, when the tracer profile curve passes through a high-pass wavelength filter that eliminates the influence of ripple factors, the amplitude attenuation rate becomes 75% wavelength.

3.3 shortwavelengthcut-off

lambdaS After the tracer profile passes through a low-pass wavelength filter that removes the influence of roughness factors, the amplitude attenuation rate becomes 75% of the standard value. wavelength.

3.4 cut-offratio

The ratio (lambdaC/lambdaS) of the cutoff long wavelength (lambdaC) to the cutoff short wavelength (lambdaS) of a given transmission region.

Note. 30, 100, and 300 are used as standard values for the cutoff ratio.