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**Test methods of color photoresist for flat panel display-Part 1:
Physical and chemical properties**

平板显示用彩色光刻胶测试方法 第1部分：理化性能

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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 1 of GB/T 43793 "Test methods for color photoresists for flat panel displays". GB/T 43793 has been published The following parts.

- Part 1: Physical and chemical properties;
- Part 2: Optical properties;
- Part 3: Reliability.

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 was proposed and coordinated by the National Technical Committee for Semiconductor Equipment and Materials Standardization (SAC/TC203).

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Introduction

Color filters are one of the most important components in flat panel displays (FPD), especially liquid crystal displays (LCD).

The color noise backlight is separated and purified into three pure primary colors of red, green and blue that meet the chromaticity requirements. The color gamut, brightness, contrast and saturation of the LCD are all The color filter is usually prepared by coating a colored photoresist on a glass substrate to form a film, and then photolithography is performed by ultraviolet light. To form a pattern.

Solid content, viscosity, film retention, chromaticity, brightness and contrast, chemical resistance, solvent impact resistance and solubility in developer are the key factors affecting color quality.

Important indicators of color photoresist materials, these indicators will affect the fluidity, film forming properties, quality, life, color filter preparation process, and even transportation and manufacturing costs. Therefore, it is necessary to establish a color photoresist performance test method.

GB/T 43793 aims to provide test methods for various properties of color photoresists and is intended to consist of three parts.

- Part 1: Physical and chemical properties. The purpose is to give and provide test methods for the physical and chemical properties of color photoresists.
- Part 2: Optical properties. The purpose is to give and provide test methods for the optical properties of color photoresists.
- Part 3: Reliability. The purpose is to give and provide a test method for the reliability of color photoresists.

Color photoresist test method for flat panel display Part 1: Physical and chemical properties

1 Scope

This document describes the test methods for the three physical and chemical properties of color photoresists for flat panel displays. solid content, viscosity and post-bake residual film rate.

This document applies to the manufacture, quality control, and research and development of color photoresists for flat panel displays.

2 Normative references

GB/T 13173-2021

GB/T 15357-2014

GB/T 32647

JJG1002

JJG1036

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Solid content

After drying under specified conditions, the remaining part of the test sample is the mass percentage of the total amount before drying.

3.2

The ratio of the film thickness change after post-bake to before post-bake caused by the high-temperature post-bake process of color photoresist.

3.3 Pre-baking softbake

During the color filter production process, after the glue coating process is completed, a short-term (about 100s) low-temperature heating method (about 100°C) is used to Right) The process of removing most of the solvent from the color photoresist so that the color film can enter the exposure process.

3.4 postbake

After the exposure process, the unfinished parts in the color photoresist are heated at high temperature (about 230°C) for a long time (about 20 minutes).

The unsaturated bonds that fully participate in photopolymerization are fully polymerized at high temperature to form a color filter with a certain hardness.

Note. Also known as high temperature film hardening process.