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

GB/T 46192.1-2025

**Test methods for liquid crystal alignment layers - Part 1:
Physical and chemical properties**

液晶配向膜测试方法 第1部分：理化性能

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. This document is Part 1 of GB/T 46192 "Test Methods for Liquid Crystal Alignment Films". GB/T 46192 has already published the following parts.

1.Physical and Chemical Properties;

2.Film-forming properties;

3.Photoelectric properties. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Semiconductor Equipment and Materials (SAC/TC203).

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Liquid crystal alignment film is an important component of liquid crystal display devices, which has the function of adjusting the alignment direction of liquid crystal molecules in the liquid crystal display device and The role of alignment strength. Its effect in liquid crystal displays needs to be characterized using specific testing methods. To meet the needs of my country's development, research, manufacturing, inspection, and import/export trade of liquid crystal alignment film products, this paper formulates liquid crystal alignment film... A series of standards for test methods. GB/T 46192 "Test Methods for Liquid Crystal Alignment Films" is proposed to consist of the following three parts.

1. Physicochemical Properties. This section describes the standard test conditions and methods for the physicochemical properties of liquid crystal alignment film solutions.
2. Film Formation Performance. This section describes the standard test conditions and methods for assessing the film formation performance of liquid crystal alignment films.
3. Photoelectric Properties. This section describes the standard test conditions and methods for the photoelectric properties of liquid crystal alignment films. Test methods for liquid crystal alignment films Part

1 Scope

GB/T 46192.1-2025 is the Chinese national standard covering the polyimide alignment layer of an LCD - its thermal and chemical stability, the surface energy and the adhesion, the ionic contamination that causes image sticking, and the resistivity, on a film only tens of nanometres thick. Part 1 of the series, first edition. In force from 1 May 2026. Issued on 5 October 2025, it has been in force since 1 May 2026.

This document describes the physicochemical properties of liquid crystal alignment film solutions for liquid crystal displays, including appearance, color, viscosity, solid content, moisture content, and solvent content. Methods for testing quantity, particle size, and metal element content. This document applies to the research, development, production, testing, and application verification of liquid crystal alignment film solutions for liquid crystal displays.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For

references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 602 Preparation of standard solutions for the determination of impurities in chemical reagents

GB/T 9722-2023 General Rules for Gas Chromatography of Chemical Reagents

GB/T 11446.1 Electronic Grade Water

GB/T 25915.1-2021 Cleanrooms and related controlled environments - Part

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Used for coating and drying to form a film to achieve the alignment function of liquid crystal materials in liquid crystal displays, it is composed of polyimide, solvent, and additives. The liquid.

3.2 liquid crystal alignment film liquidcrystalaligner A liquid crystal alignment film is a film layer formed by coating and drying a liquid crystal alignment film solution with volatile solvents and other components under specified conditions.

3.3 solid content After drying at the specified temperature and time, the percentage of the mass of the remaining portion of the test sample relative to the total mass before drying.

4.Environmental conditions Unless otherwise specified, the tests shall be conducted under the following environmental conditions.