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

GB/T 47524-2026

**Lasers and laser-related equipment - Test method for angle
resolved scattering**

激光器和激光相关设备 角分辨散射的测试方法

(English Translation)

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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 modified to adopt ISO.19986.2020 "Lasers and laser-related devices - Test methods for angle-resolved scattering".

This document has undergone the following structural adjustments compared to ISO.19986.2020.

---Section 6.2.2 in ISO.19986.2020 corresponds to section 7.1 of this document;

---Sections 6.2.1, 6.2.3, 6.2.4, 6.2.5, and 6.2.6 in ISO.19986.2020 correspond to section 7.2 of this document;

---Section 6.2.7 in ISO.19986.2020 corresponds to section 7.3 of this document;

---Section 7.2 in ISO.19986.2020 corresponds to section 8.2 in this document;

---Section 7.3 in ISO.19986.2020 corresponds to section 8.3 in this document;

---Section 7.4 in ISO.19986.2020 corresponds to section 8.4 in this document;

---Section 7.5 in ISO.19986.2020 corresponds to section 8.5 in this document;

Chapter 8 of ISO.19986.2020 corresponds to Chapter 9 of this document.

The technical differences between this document and ISO.19986.2020, and the reasons therefor, are as follows.

---ISO 11145 has been replaced with the normatively referenced GB/T 15313 to adapt to my country's technical conditions and increase operability (see section [number missing]).

Chapter 3);

---ISO 14644-1 has been replaced with the normatively referenced GB/T 25915.1 to adapt to my country's technical conditions and increase operability.

(See 7.3).

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 by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Optics and Photonics (SAC/TC103).

1 Scope

This document describes the scattering geometry, testing principles, testing environment and equipment, testing methods, and test reports for angular-resolved scattering of optical elements.

Announcements and other related content.

This document applies to optical components (such as coated or uncoated optical components and transparent, translucent, or opaque materials) at 5nm~ the testing of angular-resolved scattering within the 15μm spectral range includes scattering within a scattering sphere surrounding the test object, typically categorized into forward and backward scattering.

hemisphere.

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 15313 Laser Terminology (GB/T 15313-2008, ISO 11145:2006, MOD) GB/T 25915.1 Cleanrooms and related controlled environments - Part 1: Classification of air cleanliness levels by particle concentration (GB/T 25915.1-2021, ISO 14644-1:2015, MOD) ISO 13696 Optics and optical instruments - Methods for testing radiation scattered by optical elements

3 Terms and Definitions

The terms and definitions defined in GB/T 15313 and the following terms and definitions apply to this document.

Scattered radiation

A portion of the incident radiation that deviates from the optical path of the mirror.

[Source. ISO 13696:2022, 3.1.1] 3.2 detector solid angle $\Delta\Omega$ the solid angle of the detector aperture relative to the origin.

The ratio of the radiation power ΔP_s scattered into the direction (θ, ϕ) within the solid angle of a unit detector to the incident radiation power P_i is given by formula (1).

$\sim(\theta, \phi) =$

$\Delta P_s(\theta, \phi) / P_i \Delta\Omega$ (1)

Note 1: Dividing ARS by $\cos\theta$ can transform ARS into a bidirectional reflection, transmission, or scattering distribution function, BRDF, BTDF, or BSDF(fr), see formula (2).