

ISO Optical Test Standards List

This list represents all tests in Optics and Photonics (Technical Committee 172), with the exception of Ophthalmology tests, and select tests from Photography (TC 42) and Geometric Product Specifications (TC 213).

Dates and edition numbers are up to date as of September 2025. To check for updates, and for more information, type the document number into the search field at [iso.org](https://www.iso.org). Further questions may be submitted to the OEOSC through Contact Us at [oeiosc.org](https://www.oeiosc.org).

1. Optical Materials and Coatings

Properties of optical glass (transmits in the visible)

ISO 21395-1	Refractive index: Minimum deviation method (Ed. 1, 2020)
ISO 21395-2	Refractive index: V-block refractometer method (Ed. 1, 2022)
ISO 17411	Test method for homogeneity of optical glasses by laser interferometry (Ed. 2, 2022)
ISO 11455	Raw optical glass — Determination of birefringence (Ed. 1, 1995)
ISO 6760-1	Temperature coefficient of refractive index of optical glasses — Minimum deviation method (Ed. 1, 2024)
ISO 6760-2	Temperature coefficient of refractive index of optical glasses — Interferometric method (Ed. 1, 2024)

Properties of infrared materials

ISO 17328	Test method for refractive index of infrared materials (Ed 2., 2021)
ISO 19740	Test method for homogeneity of infrared optical materials (Ed 1., 2018)
ISO 19741	Test method for striae in infrared optical materials (Ed 1., 2018)
ISO 19742	Test method for bubbles and inclusions in infrared optical materials (Ed 1., 2018)

Material durability

ISO 9385	Glass and glass-ceramics — Knoop hardness test (Ed. 1, 1990)
ISO 12844	Raw optical glass — Grindability with diamond pellets (Ed. 1, 1999)
ISO 21575	The powder test method for the water resistance of optical glass (Ed. 2, 2018)
ISO 22531	Test method for climate resistance of optical glass (Ed. 1, 2020)
ISO 8424	Resistance to attack by aqueous acidic solutions — Test method and classification (Ed. 3, 2023)
ISO 10629	Resistance to attack by aqueous alkaline solutions — Test method and classification (Ed. 1, 1996)
ISO 9689	Resistance to attack by aqueous alkaline phosphate-containing detergent solutions (Ed.1, 1990)

Coatings

ISO 9211-3	Environmental durability (Ed. 3, 2024)
ISO 9211-4	Specific test methods — Abrasion, adhesion and resistance to water (Ed. 4, 2022)

2. First Order Optical Properties

ISO 517	Apertures and related properties pertaining to photographic lenses – Designations and measurements (Ed. 3, 2008)
ISO 14490-1	Test methods for telescopic systems – Test methods for basic characteristics (Ed. 1, 2005)
ISO 14490-2	Test methods for telescopic systems – Test methods for binocular systems (Ed. 1, 2005)
ISO 14490-3	Test methods for telescopic systems – Test methods for telescopic sights (Ed. 3, 2021)
ISO 14490-4	Test methods for telescopic systems – Test methods for astronomical telescopes (Ed. 1, 2005)
ISO 14490-8	Test methods for telescopic systems – Test methods for night-vision devices (Ed. 1, 2011) [Select sections: 4, 6-10]
ISO 15227	Microscopes – Testing of stereomicroscopes (Ed. 1, 2000)
ISO 8600-3	Medical endoscopes and endotherapy devices – Determination of field of view and direction of view of endoscopes with optics (Ed. 2, 2019)
ISO 14880-3	Microlens arrays – Test methods for optical properties other than wavefront aberrations (Ed. 2, 2024) [Select sections 6.2 and 6.4]
ISO 14880-4	Microlens arrays – Test methods for geometrical properties (Ed. 2, 2024)

3. Radiometric Properties

General

- ISO 15368 Measurement of reflectance of plane surfaces and transmittance of plane parallel elements (Ed. 2, 2021)
- ISO 15368-2 Measurement of reflectance of plane surfaces and transmittance of PPEs – Internal transmittance (Under development)
- ISO 13653 General optical test methods – Measurement of relative irradiance in the image field (Ed. 2, 2019)

Digital still cameras (DSC)

- ISO 8478 Camera Lenses – Measurement of ISO spectral transmittance (Ed. 2, 2017)
- ISO 12232 Photography – Determination of exposure index, ISO speed ratings, standard output sensitivity, and recommended exposure index (Ed. 3, 2019)
- ISO 2827 Photography – Electronic flash equipment — Determination of light output and performance (Ed. 2, 1988)
- ISO 14524 Photography – Electronic still picture imaging – Methods for measuring opto-electronic conversion functions (OECFs) (Ed. 2, 2009)

Other optical systems

- ISO 14990-8 Test methods for telescopic systems – Test methods for night-vision devices (Ed. 1, 2011)
Select sections: 5, 14-15
- ISO 14490-5 Test methods for telescopic systems — Test methods for transmittance (Ed. 3, 2021)
- ISO 11315-1 Photography – Projection in indoor rooms — Screen illumination test for still projectors (Ed. 1, 1997)
- ISO 19056-1 Image brightness and uniformity in bright field microscopy (Ed. 1, 2015)
- ISO 19056-2 Illumination properties related to the colour in bright field microscopy (Ed. 1, 2019)
- ISO 19056-3 Incident light fluorescence microscopy with incoherent light sources (Ed. 1, 2022)

4. Lasers and Laser-Related Equipment

Spectral T/R/A

- ISO 13142 Cavity ring-down method for high-reflectance and high-transmittance measurements (Ed. 2, 2021)
- ISO 13695 Test methods for the spectral characteristics of lasers (Ed. 2, 2024)
- ISO 13697 Test methods for specular reflectance and regular transmittance of optical laser components (Ed. 1, 2006)
- ISO 11551 Test method for absorptance of optical laser components (Ed. 3, 2019)
- ISO/TR 22588 Measurement and evaluation of absorption-induced effects in laser optical components (Ed. 1, 2005)
- ISO 23701 Photothermal technique for absorption measurement and mapping of optical laser components (Ed. 1, 2023)

Laser beam properties

- ISO 11146-1 Test methods for laser beam widths, divergence angles and beam propagation ratios – Stigmatic and simple astigmatic beams (Ed. 2, 2021)
- ISO 11146-2 Test methods for laser beam widths, divergence angles and beam propagation ratios – General astigmatic beams (Ed. 2, 2021)
- ISO 22247 Effective numerical aperture of laser lenses – Definition and verification procedure (Ed. 1, 2022)
- ISO 11554 Test methods for laser beam power, energy and temporal characteristics (Ed. 4, 2017)
- ISO 11670 Test methods for laser beam parameters — Beam spatial stability (Ed. 2, 2003)
- ISO 13694 Test methods for laser beam power (energy) density distribution (Ed. 3, 2018)
- ISO 15367-1 Test methods for determination of the shape of a laser beam wavefront – Terminology and fundamental aspects (Ed. 1, 2003)
- ISO 15367-2 Test methods for determination of the shape of a laser beam wavefront — Shack-Hartmann sensors (Ed. 1, 2005)

Laser damage

- ISO 21254-2 Test methods for laser-induced damage threshold – Threshold determination (Ed. 1, 2011)

ISO 21254-3	Test methods for laser-induced damage threshold – Assurance of laser power (energy) handling capabilities (Ed. 1, 2011)
ISO/TR 21254-4	Test methods for laser-induced damage threshold – Inspection, detection and measurement (Ed. 1, 2011)
ISO 22248	Test methods for laser-induced damage threshold – Classification of medical beam delivery systems (Ed. 1, 2020)
ISO 20811	Laser-induced molecular contamination testing (Ed. 1, 2017)
ISO 11810	Test method and classification for the laser resistance of surgical drapes (Ed. 2, 2015)
ISO 11990	Lasers and laser-related equipment — Determination of laser resistance of tracheal tube shaft and tracheal tube cuffs (Ed. 3, 2018)

Other

ISO 1368-2	Determination of the properties of ultrashort laser pulses – Autocorrelation measurement method
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5. Location/Line of Sight

Field procedures for testing geodetic and surveying instruments

ISO 17123-2	Levels (Ed. 1, 2001)
ISO 17123-3	Theodolites (Ed. 1, 2001)
ISO 17123-4	Electro-optical distance meters (EDM measurements to reflectors) (Ed. 2, 2012)
ISO 17123-5	Total stations (Ed. 3, 2018)
ISO 17123-6	Rotating lasers (Ed. 3, 2022)
ISO 17123-7	Optical plumbing instruments (Ed. 1, 2005)
ISO 17123-8	GNSS field measurement systems in real-time kinematic (RTK) (Ed. 2, 2015)
ISO 17123-9	Terrestrial laser scanners (Ed. 1, 2018)
ISO 17123-10	UAV photogrammetry (under development)
ISO 17123-11	Global navigation satellite systems (GNSS)(under development)

Other Location

ISO 16331-1	Performance of handheld laser distance meters (Ed. 2, 2017)
ISO 8600-3	Determination of field of view and direction of view of endoscopes with optics (Ed. 2, 2019)
NOTE	Remote sensing tests can be found in ISO 19124, 19130, and 19159

6. Scattered and Stray Light

Surfaces

ISO 25178	Geometrical product specifications (GPS) — Surface texture: Areal – Design and characteristics of (various) instruments (various)
ISO 29021	Geometrical product specifications (GPS) — Surface texture: Profile (3 parts, 2021)
ISO 14997	Test methods for surface imperfections of optical elements (Ed. 3, 2017)
ISO 21477	Preparation of drawings for optical elements and systems – TR: Surface imperfection specification and measurement systems (Ed. 1, 2017)

Components

ISO 13696	Test method for total scattering by optical components (Ed. 2, 2022)
ISO 19962	Spectroscopic measurement methods for integrated scattering by plane parallel optical elements (Ed. 1, 2019)
ISO 19986	Lasers and laser-related equipment — Test method for angle resolved scattering (Ed. 1, 2020)

Systems

ISO 9358	Veiling glare of image forming systems – Definitions and methods of measurement (Ed. 1, 1994)
ISO 14490-6	Test methods for telescopic systems – Test methods for veiling glare index (Ed. 2, 2014)
ISO 18844	Photography – Digital cameras – Image flare measurement (Ed. 1, 2017)

7. Aberrations and Wavefront Error

ISO 14490-9	Test methods for telescopic systems – Test methods for field curvature (Ed. 1, 2019)
ISO 9039	Quality evaluation of optical systems – Determination of distortion (Ed. 2, 2008)
ISO 17850	Photography – Geometric distortion (GD) measurements (Ed. 1, 2015)
ISO 14490-10	Test methods for telescopic systems – Test methods for axial color performance (Ed. 1, 2021)
ISO 19084	Photography – Digital cameras – Chromatic displacement measurements (Ed. 1, 2015)
ISO 14880-2	Microlens arrays – Test methods for wavefront aberrations (Ed. 2, 2024)
ISO 14880-3	Microlens arrays – Test methods for optical properties other than wavefront aberrations (Ed. 2, 2024) [Select sections 6.3 and 6.4]
ISO/TR 14999-2	Interferometric measurement of elements and optical systems (Ed. 2, 2019)
ISO/TR 16743	Wavefront sensors for characterising optical systems and optical components (Ed. 1, 2013)

8. Image Quality and Resolution

Optical transfer function (OTF)

ISO 9335	Optical Transfer Function – Principles and procedures of measurement (Ed. 3, 2025)
ISO 9336-1	Optical transfer function — Interchangeable lenses for 35 mm still cameras (Ed. 2, 2010)
ISO 9336-3	Optical transfer function — Telescopes (Ed. 2, 2020)
ISO 11421	Accuracy of optical transfer function (OTF) measurement (Ed. 1, 1997)

Modulation transfer function (MTF)

ISO 15529	Optical transfer function – Principles of measurement of modulation transfer function (MTF) of sampled imaging systems (Ed. 3, 2010)
ISO 12233	Photography – Digital Cameras – Resolution and spatial frequency responses (Ed. 5, 2024)
ISO 8600-5	Medical endoscopes and endotherapy devices – Determination of optical resolution of rigid endoscopes with optics (Ed. 2, 2020)

Other

ISO 15795	Quality evaluation of optical systems – Assessing the image quality degradation due to chromatic aberrations (Ed. 1, 2002)
ISO 14490-4	Test methods for telescopic systems – Test methods for astronomical telescopes (Ed. 1, 2005) [Select section: 4.3]
ISO 14490-7	Test methods for telescopic systems – Test methods for limit of resolution (Ed. 2, 2016)
ISO 14490-8	Test methods for telescopic systems – Test methods for night-vision devices (Ed. 1, 2011) Select sections: 11, 12, 13
ISO 20490	Measuring autofocus repeatability of sharpness and latency (Ed. 1, 2024)
ISO 19093	Photography – Digital Cameras – Measuring low-light performance (Ed. 1, 2018)
ISO TS 19567-2	Photography — Digital cameras — Texture analysis using stochastic pattern (Ed. 1, 2019)

9. Environmental Testing

General

ISO 9022-1	Environmental test methods – Definitions, extent of testing (Ed. 3, 2016)
ISO 10109	Guidance for selection of environmental tests (Ed. 3, 2024)
ISO 20711	Environmental requirements – Test requirements for telescopic systems (Ed. 1, 2017)

Specific

ISO 9022-2	[Environmental test methods –] Cold, heat and humidity (Ed. 3, 2015 w/ 2023 Amendment)
ISO 9022-3	Mechanical stress (Ed. 4, 2022)
ISO 9022-4	Salt mist (Ed. 3, 2014)
ISO 9022-6	Dust (Ed. 2, 2015)
ISO 9022-7	Resistance to drip or rain (Ed. 2, 2015)
ISO 9022-8	High internal pressure, low internal pressure, immersion (Ed. 2, 2015)

ISO 9022-9	Solar radiation and weathering (Ed. 2, 2016)
ISO 9022-11	Mould growth (Ed. 2, 2015)
ISO 9022-12	Contamination (Ed. 2, 2015)
ISO 9022-14	Dew, hoarfrost, ice (Ed. 2, 2015)
ISO 9022-17	Combined contamination, solar radiation (Ed. 2, 2015)
ISO 9022-20	Humid atmosphere containing sulfur dioxide or hydrogen sulfide (Ed. 2, 2015)
ISO 9022-22	Combined cold, dry heat or temp change with bump or random vibration (Ed. 1, 2012)
ISO 9022-23	Low pressure combined with cold, ambient temperature and dry or damp heat (Ed. 3, 2023)

10. Miscellaneous Tests

ISO 12005	Test methods for laser beam parameters — Polarization (Ed. 3, 2022)
ISO 24013	Measurement of phase retardation of optical components for polarized laser radiation (Ed. 2, 2023)
ISO 17901-1	Holography – Methods of measuring diffraction efficiency and associated optical characteristics of holograms (Ed. 1, 2015)
ISO 17901-2	Holography – Methods of measurement of hologram recording characteristics (Ed. 1, 2015)
ISO 516	Photography – General definition and mechanical shutter measurements (Ed. 4, 2019)
ISO 14781	Photography – Digital still cameras – Measuring shooting time lag, shutter release time lag, shooting rate, and start-up time lag (Ed. 3 2019)
ISO 21550	Photography – Electronic scanners for photographic images – dynamic range measurements (2004)