

BUREAU OF INDIAN STANDARDS

Program of Work

PGD 39 : Optics and Photonics

Scope: Standardization of terminology, requirements, interfaces and test methods in the field of optics and photonics. This includes complete systems, devices, instruments (excluding medico – optical instruments like ophthalmological and endoscope related), optical and photonic components, auxiliary devices and accessories, as well as materials.

Liaison: **ISO TC-172 (P): Optics and photonics ISO TC-172 SC-1 (P): Fundamental standards ISO TC-172 SC-3 (P): Optical materials and components ISO TC-172 SC-5 (P): Microscopes and endoscopes ISO TC-172 SC-6 (P): Geodetic and surveying instruments ISO TC-172 SC-7 (P): Ophthalmic optics and instruments ISO TC-172 SC-9 (P): Laser and electro-optical systems**

Published Standards

S.No	IS No.	TITLE	Reaffirm M-Y	No. of Amds	Eqv.
1	IS 10236 (Part 1) : 1989 Reviewed In : 2022	Procedure for basic climatic and durability tests for optical instruments: Part 1 general	March, 2022	-	Indigenous
2	IS 10236 (Part 2) : 1982 Reviewed In : 2022	Procedure for climatic and durability tests for optical instruments: Part 2 dry heat test	March, 2022	-	Indigenous
3	IS 10236 (Part 3) : 1982 Reviewed In : 2022	Procedure for basic climatic and durability tests for optical instruments: Part 3 cold test	March, 2022	-	Indigenous
4	IS 10236 (Part 4) : 1982 Reviewed In : 2022	Procedure for basic climatic and durability for optical instruments: Part 4 damp heat test	March, 2022	-	Indigenous
5	IS 10236 (Part 5) : 1982 Reviewed In : 2022	Procedure for basic climatic and durability tests for optical instruments: Part 5 damp heat (Cyclic) test	March, 2022	-	Indigenous
6	IS 10236 (Part 6) : 1982 Reviewed In : 2022 ISO 9022-4	Procedure for basic climatic and durability tests for optical instruments: Part 6 salt mist test	March, 2022	-	Not Equivalent
7	IS 10236 (Part 7) : 1983 Reviewed In : 2022 ISO 9022-11	Procedure for basic climatic and durability tests for optical instruments : Part 7 mould growth test	March, 2022	-	Not Equivalent
8	IS 10236 (Part 8) : 1983 Reviewed In : 2022	Procedure for basic climatic and durability tests for optical instruments: Part 8 thermal shock (Rapid Change Of Temperature) test	March, 2022	-	Indigenous
9	IS 10236 (Part 9) : 1983	Procedure for basic climatic and durability tests for. optical	March, 2022	-	Indigenous

	Reviewed In : 2022	instruments: Part 9 low air pressure (Altitude) test			
10	IS 10236 (Part 10) : 1985 Reviewed In : 2022	Procedure for basic climatic and durability tests for optical instruments: Part 10 bump test	March, 2022	-	Indigenous
11	IS 10236 (Part 11) : 1985 Reviewed In : 2022	Procedure for basic climatic and durability tests for optical instruments: Part 11 vibration test	March, 2022	-	Indigenous
12	IS 10236 (Part 12) : 1985 Reviewed In : 2022	Procedure for basic climatic and durability tests for optical instruments: Part 12 shock test	March, 2022	-	Indigenous
13	IS 10236 (Part 13) : 1986 Reviewed In : 2022 ISO 9022-6	Procedure for basic climatic and durability tests for optical instruments: Part 13 dust test	March, 2022	-	Not Equivalent
14	IS 10236 (Part 14) : 1986 Reviewed In : 2022	Procedure for basic climatic and durability tests for optical instruments: Part 14 driving rain test	March, 2022	-	Indigenous
15	IS 10236 (Part 15) : 1986 Reviewed In : 2019	Procedure for basic climatic and durability tests for optical instruments: Part 15 drop test	March, 2019	-	Indigenous
16	IS 10236 (Part 16) : 1988 Reviewed In : 2019 ISO 9022-9	Procedure for basic climatic and durability tests for optical instruments part 16 solar radiation test	March, 2019	-	Not Equivalent
17	IS 10236 (Part 17) : 1988 Reviewed In : 2019 ISO 9022-22	Procedure for basic climatic and durability tests for optical instruments: Part 17 acceleration (Steady - State) test	March, 2019	-	Not Equivalent
18	IS 10236 (Part 18) : 1988 Reviewed In : 2019	Procedure for basic climatic and durability tests for optical instruments: Part 18 sealing test	March, 2019	-	Indigenous
19	IS 10679 : 1983 Reviewed In : 2019	Specificati - On for photoelectric spectrophotometer (Single Beam Type)	March, 2019	-	Indigenous
20	IS/ISO 11145 : 2018 IS/ISO 11145 IS/ISO 11145	Optics and Photonics Lasers and Lasers-related equipment Vocabulary and Symbols		-	Identical under single numbering
21	IS 11444 : 1985 Reviewed In : 2022	Specification for grinding and polishing materials for optical components	March, 2022	-	Indigenous
22	IS 12713 : 1989 Reviewed In : 2019	Optical instruments - Permissible cosmetic defects and inspection of optical components	March, 2019	-	Indigenous
23	IS 12874 : 1989 Reviewed In : 2019	Optical and mathematical instruments - Telescopic alidade - specification	March, 2019	-	Indigenous
24	IS 12888 : 1989 Reviewed In : 2019	Optical and mathematical instruments - Short range infrared distance measuring instruments specification	March, 2019	-	Indigenous
25	IS 13108 : 2019 ISO 8036 : 2015 ISO 8036 : 2015	Optics and photonics - Microscopes - Immersion liquids for light microscopy (Second Revision)		-	Identical under dual numbering
26	IS 1399 : 1959 Reviewed In : 2022	Glossary of terms used in optical technology	March, 2022	2	Indigenous
27	IS 1400 : 1960	Specification for optical glass	March, 2022	1	Indigenous

	Reviewed In : 2022				
28	IS 14146 : 1994 ISO 9689 Reviewed In : 2019 ISO 9689	Raw optical glass - Resistance to attack by aqueous alkaline phosphate - Containing detergent solutions at 50°C - Testing and classification	March, 2019	-	Identical under dual numbering
29	IS 14258 : 2018 ISO 8424 : 1996 Reviewed In : 2022 ISO 8424:1996	Raw optical glass - Testing of the resistance to attack by aqueous acidic solutions at 25oC and classification (First Revision)	March, 2022	-	Identical under dual numbering
30	IS 14819 : 2018 ISO 11670 : 2003 Reviewed In : 2022 ISO 11670	Lasers and laser - Related equipment - Test methods for laser beam parameters - Beam positional stability (First Revision)	March, 2022	-	Identical under dual numbering
31	IS 14820 : 2000 ISO 11146 Reviewed In : 2022 ISO 11146-2	Lasers and laser - Related equipment - Test methods for laser beam parameters - beam widths, divergence angles and beam propagation factor	March, 2022	-	Identical under dual numbering
32	IS 14820 (Part 1) : 2024 ISO 11146-1 : 2021 ISO 11146-1 : 2021	Lasers and Laser -- Related Equipment -- Test Methods for Laser Beam Widths, Divergence Angles and Beam Propagation Ratios: Part 1 -- Stigmatic and Simple Astigmatic Beams (Second Revision)		-	Identical under dual numbering
33	IS 14820 (Part 1) : 2016 ISO 11146-1 : 2005 Reviewed In : 2022 ISO 11146-1 : 2021	Lasers and laser - Related equipment - Test methods for laser beam widths, divergence angles and beam propagation ratios: Part 1 stigmatic and simple astigmatic beams (First Revision)	March, 2022	-	Identical under dual numbering
34	IS 14820 (Part 3) : 2016 ISO/TR 11146-3 : 2004 Reviewed In : 2022 ISO/TR 11146-3 : 2004	Lasers and laser - Related equipment - Test methods for laser beam widths, divergence angles and beam propagation ratios: Part 3 intrinsic and geometrical laser beam classification, propagation and details of test methods (First Revision)	March, 2022	-	Identical under dual numbering
35	IS 14963 : 2023 ISO 11554 : 2017 ISO 11554 : 2017	OPTICS AND PHOTONICS LASERS AND LASER-RELATED EQUIPMENT TEST METHODS FOR LASER BEAM POWER ENERGY AND TEMPORAL CHARACTERISTICS		-	Identical under dual numbering
36	IS 14964 : 2001 ISO 12844 Reviewed In : 2022 ISO 12844	Raw optical glass - Grindability with diamond pellets - Test method and classification	March, 2022	-	Identical under dual numbering
37	IS 14965 : 2017 ISO 12005 : 2003 Reviewed In : 2022 ISO 12005:2003	Lasers and laser - Related equipment - Test methods for laser beam parameters - Polarization (First Revision)	March, 2022	-	Identical under dual numbering
38	IS 15269 : 2018 Reviewed In : 2024 Decision taken to	Optics and optical instruments - Microscopes - Values, tolerances and symbols for magnification (First Revision)	September, 2024	-	Identical under dual numbering

	Reaffirm and Archive ISO 8039				
39	IS 15483 (Part 1) : 2019 ISO 12858-1 ISO 12858-1	Optics and optical instruments - Ancillary devices for geodetic instruments: Part 1 inver levelling staffs (First Revision)	-	-	Identical under dual numbering
40	IS 15483 (Part 2) : 2004 ISO 12858-2 Reviewed In : 2019 ISO 12858-2 : 2020	Optics and optical instruments - Ancillary devices for geodetic instruments: Part 2 tripods	March, 2019	1	Identical under dual numbering
41	IS 15483 (Part 2) : 2024 ISO 12858-2 : 2020 ISO 12858-2 : 2020	Optics and optical instruments Ancillary devices for geodetic Instruments Part 2 : Tripods		-	Identical under dual numbering
42	IS/ISO 15529 : 2010 ISO 15529 : 2010 Reviewed In : 2022 ISO 15529 : 2010	Optics and photonics - Optical transfer function - Principles of measurement of modulation transfer function (MTF) of sampled imaging systems	March, 2022	-	Identical under single numbering
43	IS 1632 : 1993 Reviewed In : 2019	Optical instruments - Bubbles - Specification (First Revision)	March, 2019	-	Indigenous
44	IS 16506 (Part 1) : 2016 ISO 9211-1 : 2010 Reviewed In : 2022 ISO 9211-1 : 2018	Optics and photonics - Optical coatings: Part 1 definitions	March, 2022	-	Identical under dual numbering
45	IS 16506 (Part 1) : 2024 ISO 9211-1 : 2018 ISO 9211-1 : 2018	Optics and Photonics Optical Coatings Part 1 Vocabulary (First Revision)		-	Identical under dual numbering
46	IS 17172 (Part 22) : 2020 37.020.00 ISO 9022-22:2012	Optics and Photonics “Environmental Test Methods Part 22 Combined Cold, Dry Heat or Temperature Change with Bump or Random Vibration		-	Identical under dual numbering
47	IS 17172 (Part 23) : 2019 ISO 9022-23 : 2016 ISO 9022-23:2016	Optics and Photonics “Environmental Test Methods Part 23 Low Pressure Combined with Cold, Ambient Temperature and Dry or Damp Heat		-	Identical under dual numbering
48	IS 18442 : 2024 12123 12123	Optics and photonics -- Raw optical glass -- Specification		-	Identical under dual numbering
49	IS 18726 (Part 4) : 2024 14880-4:2006 14880-4:2006	Optics and photonics -- Microlens arrays : Part 4 Test methods for geometrical properties		-	Identical under dual numbering
50	IS 2754 : 1964 Reviewed In : 2022	Genral requirements for optical instruments	March, 2022	2	Indigenous
51	IS 2976 : 1964 Reviewed In : 2022	Specification for optical theodolite	March, 2022	-	Indigenous
52	IS 3113 : 1965 Reviewed In : 2021	Specification for prismatic binoculars for common use	March, 2021	1	Indigenous
53	IS 3135 : 1965 Reviewed In : 2021	Specieication for cathetometer	March, 2021	-	Indigenous
54	IS 5415 : 1969 Reviewed In : 2019	Code of practice for packing and packaging of optical and mathematical instruments and	March, 2019	-	Indigenous

		components			
55	IS 5706 : 1993 Reviewed In : 2022	Optical instruments - Spirit levels for use in precision engineering - Specification (First Revision)	March, 2022	-	Indigenous
56	IS 5920 : 1970 Reviewed In : 2019	Recommendation for preparation of drawings for optical elements and systems	March, 2019	1	Indigenous
57	IS 5920 (Part 2) : 2024 ISO 10110-5:2015 ISO 10110-5:2015	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 2 Surface form tolerances		-	Identical under dual numbering
58	IS 5920 (Part 3) : 2024 ISO 10110-6:2015 ISO 10110-6:2015	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 3 Centring tolerances		-	Identical under dual numbering
59	IS 5920 (Part 4) : 2024 ISO 10110-7:2017 ISO 10110-7:2017	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 4 Surface imperfections		-	Identical under dual numbering
60	IS 5920 (Part 5) : 2024 ISO 10110-8:2019 ISO 10110-8:2019	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 5 Surface texture		-	Identical under dual numbering
61	IS 5920 (Part 6) : 2024 ISO 10110-9:2016 ISO 10110-9:2016	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 6 Surface treatment and coating		-	Identical under dual numbering
62	IS 5920 (Part 7) : 2024 ISO 10110-11:2016 ISO 10110-11:2016	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 7 Non-toleranced data		-	Identical under dual numbering
63	IS 5920 (Part 8) : 2024 ISO 10110-12:2019 ISO 10110-12:2019	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 8 Aspheric Surfaces		-	Identical under dual numbering
64	IS 5920 (Part 9) : 2024 ISO 10110-14:2018 ISO 10110-14:2018	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 9 Wavefront deformation tolerance		-	Identical under dual numbering
65	IS 5920 (Part 11) : 2024 ISO 10110-17:2004 ISO 10110-17:2004	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 11 Laser irradiation damage threshold		-	Identical under dual numbering
66	IS 5920 (Part 13) : 2024 ISO 10110-19:2015 ISO 10110-19:2015	Optics and photonics -- Preparation of drawings for optical elements and systems : Part 13 General description of surfaces and components		-	Identical under dual numbering
67	IS 6471 : 1971 Reviewed In : 2019	Specification for spectrometer (Student Type)	March, 2019	1	Indigenous
68	IS 7009 : 1973 Reviewed In : 2019	Specification for optical square (For Surveying)	March, 2019	-	Indigenous
69	IS 7011 : 1973 Reviewed In : 2021	Specification for back - Silvered mirrors used in instrument industry	March, 2021	2	Indigenous
70	IS 7265 : 1973 ISO 7946-1985 Reviewed In : 2022	Coating materials (Metals, Alloys And Dielectrics) used in optical instrument industry	March, 2022	-	Indigenous
71	IS 7545 : 1975 Reviewed In : 2019	Specification for optical bench (Advanced Type)	March, 2019	-	Indigenous

72	IS 7919 : 1975 Reviewed In : 2019	Specification for refractometer - abbe type	March, 2019	-	Indigenous
73	IS 8248 : 1976 Reviewed In : 2022	Specification for antireflection coating on glass optical components	March, 2022	-	Indigenous
74	IS 8651 : 1977 Reviewed In : 2019	Specification for flame photometer	March, 2019	-	Indigenous
75	IS 8661 : 1977 Reviewed In : 2019	Specification for polarimeter and saccharimeter (Optical)	March, 2019	-	Indigenous
76	IS 8691 : 1986 Reviewed In : 2021 Reaffirmed but not taken up for revision	Specification for mirror stereoscope (First Revision)	March, 2021	-	Indigenous
77	IS 9107 : 1979 Reviewed In : 2019	Specification for autocollimator	March, 2019	2	Indigenous
78	IS 9514 : 1980 Reviewed In : 2021	Specification for front surface aluminized mirrors	March, 2021	-	Indigenous
79	IS 9571 : 1980 Reviewed In : 2021	Specification for photoelectric colorimeter (Single Beam)	March, 2021	-	Indigenous
80	IS/ISO 9849 : 1991 Reviewed In : 2022 ISO 984	Optics and optical instruments - Geodetic instruments - Vocabulary	March, 2022	-	Identical under dual numbering
81	IS 988 : 1959 Reviewed In : 2022	General requirements for optical components	March, 2022	-	Indigenous

Standards under Development

Projects Approved

SI. No.	Doc No.	Title
1	PGD 39 (24227) Revision of: IS 12874:1989	Optics and photonics - Optical and mathematical instruments - Telescopic alidade Specification
2	PGD 39 (24228) Revision of: IS 12888:1989	Optics and photonics - Optical and mathematical instruments - Short range infrared distance measuring instruments specification

Preliminary Draft Standards

SI. No.	Doc No.	Title
<i>No Records Found</i>		

Drafts Standards in WC Stage

SI. No.	Doc No.	Title
<i>No Records Found</i>		

Draft Standards Completed WC Stage

SI. No.	Doc No.	Title
<i>No Records Found</i>		

Finalized Draft Indian Standard

SI. No.	Doc No.	Title
1	PGD 39 (22109) Revision of: IS/ISO 9849:1991	Optics and optical instruments -- Geodetic instruments -- Vocabulary
2	PGD 39 (22120) Revision	Lasers and laser-related equipment Test methods for laser beam widths divergence angles and

	of: IS 14820:2000	beam propagation ratios Part 2 General astigmatic beams
3	PGD 39 (24213) Revision of: IS 1399:1959	Glossary of terms used in optical technology

Finalized Draft Indian Standards under Print

Sl. No.	Doc No.	Title
1	PGD 39 (22132) Revision of: IS 14965:2017	Lasers and Laser-Related Equipment -- Test Methods for Laser Beam Parameters -- Polarization Second Revision
2	PGD 39 (23360) Revision of: IS 5920:1970	Optics and Photonics -- Preparation of Drawings for Optical Elements and Systems Part 1 General First Revision
3	PGD 39 (23514)	Optics and photonics -- Preparation of drawings for optical elements and systems Part 12 Stress birefringence bubbles and inclusions homogeneity and striae
4	PGD 39 (24215)	Raw optical glass -- Determination of birefringence
5	PGD 39 (24216)	Raw Optical Glass -- Vocabulary
6	PGD 39 (24217)	Optics and photonics - Microlens arrays Part 1 Vocabulary
7	PGD 39 (24219)	Optics and photonics -- Microlens arrays Part 2 Test methods for wavefront aberrations
8	PGD 39 (24220)	Optics and photonics -- Microlens arrays Part 3 Test methods for optical properties other than wavefront aberrations
9	PGD 39 (24225)	Optics and photonics -- Microlens arrays Part 5 Guidance on testing

Total Published Standards:66 Total Standards Under development:14

Aspect Wise Report

Product : 28
 Code of Practices : 12
 Methods of Test : 29
 Terminology : 4
 Dimensions : 0
 System Standard : 0
 Safety Standard : 0
 Others : 5
 Service Specification : 0
 Process Specification : 0
 Unclassified : 0

Annexure-I :List of Indian Standards Withdrawn/Superseded

Sl. No.	IS No. & Year	Title
1	IS 13117 : 1991 ISO 8040 : 1986 Reviewed In : 2022 ISO 804	Optics and optical instruments - Microscopes - Connecting dimensions of tube slides and tube slots

Annexure-II :List of Indian Product Standards

Sl. No.	IS No. & Year	Title
1	IS 10679 : 1983 Reviewed In : 2019	Specificati - On for photoelectric spectrophotometer Single Beam Type
2	IS 11444 : 1985 Reviewed In : 2022	Specification for grinding and polishing materials for optical components
3	IS 12874 : 1989 Reviewed In : 2019	Optical and mathematical instruments - Telescopic alidade - specification
4	IS 12888 : 1989 Reviewed In : 2019	Optical and mathematical instruments - Short range infrared distance measuring instruments specification
5	IS 13108 : 2019 ISO 8036 : 2015	Optics and photonics - Microscopes - Immersion liquids for light microscopy Second Revision

	ISO 8036 : 2015	
6	IS 1400 : 1960 Reviewed In : 2022	Specification for optical glass
7	IS 15269 : 2018 Reviewed In : 2024 Decision taken to Reaffirm and Archive ISO 8039	Optics and optical instruments - Microscopes - Values tolerances and symbols for magnification First Revision
8	IS 15483 (Part 1) : 2019 ISO 12858-1 ISO 12858-1	Optics and optical instruments - Ancillary devices for geodetic instruments Part 1 inver levelling staffs First Revision
9	IS 15483 (Part 2) : 2024 ISO 12858-2 : 2020	Optics and optical instruments Ancillary devices for geodetic Instruments Part 2 Tripods
10	IS 1632 : 1993 Reviewed In : 2019	Optical instruments - Bubbles - Specification First Revision
11	IS 18442 : 2024 12123	Optics and photonics -- Raw optical glass -- Specification
12	IS 2976 : 1964 Reviewed In : 2022	Specification for optical theodolite
13	IS 3113 : 1965 Reviewed In : 2021	Specification for prismatic binoculars for common use
14	IS 3135 : 1965 Reviewed In : 2021	Specieication for cathetometer
15	IS 5706 : 1993 Reviewed In : 2022	Optical instruments - Spirit levels for use in precision engineering - Specification First Revision
16	IS 6471 : 1971 Reviewed In : 2019	Specification for spectrometer Student Type
17	IS 7009 : 1973 Reviewed In : 2019	Specification for optical square For Surveying
18	IS 7011 : 1973 Reviewed In : 2021	Specification for back - Silvered mirrors used in insturment industry
19	IS 7265 : 1973 ISO 7946-1985 Reviewed In : 2022	Coating materials Metals Alloys And Dielectrics used in optical instrument industry
20	IS 7545 : 1975 Reviewed In : 2019	Specification for optical bench Advanced Type
21	IS 7919 : 1975 Reviewed In : 2019	Specification for refractometer - abbe type
22	IS 8248 : 1976 Reviewed In : 2022	Specification for antireflection coating on glass optical components
23	IS 8651 : 1977 Reviewed In : 2019	Specification for flame photometer
24	IS 8661 : 1977 Reviewed In : 2019	Specification for polarimeter and saccharimeter Optical
25	IS 8691 : 1986 Reviewed In : 2021 Reaffirmed but not taken up for revision	Specification for mirror stereoscope First Revision
26	IS 9107 : 1979 Reviewed In : 2019	Specification for autocollimator
27	IS 9514 : 1980 Reviewed In : 2021	Specification for front surface aluminized mirrors
28	IS 9571 : 1980 Reviewed In : 2021	Specification for photoelectric colorimeter Single Beam