INTERNATIONAL STANDARD

ISO 25297-2

First edition
2011-12-15

Optics and photonics — Electronic exchange of optical data —

Part 2: Mapping to the classes and properties defined in ISO 23584

Optique et photonique — Transfert électronique des données optiques —
Partie 2: Mappage des classes et propriétés definies dans l'ISO 23584

Reference number
ISO 25297-2:2011(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 25297-2 was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 1, *Fundamental standards*.

ISO 25297 consists of the following parts, under the general title *Optics and photonics — Electronic exchange of optical data*:

— *Part 1: NODIF information model*

— *Part 2: Mapping to the classes and properties defined in ISO 23584*

Optics and photonics — Electronic exchange of optical data —

Part 2:
Mapping to the classes and properties defined in ISO 23584

1 Scope

This International Standard specifies the relationship between the terms used in ISO 25297-1 and the properties defined in ISO 23584-2, and provides the means to facilitate the use of both standards.

NOTE This International Standard does not define all attributes of properties in ISO 23584-2.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 25297-1:2010, *Optics and photonics — Electronic exchange of optical data — Part 1: NODIF information model*

ISO 23584-1, *Optics and photonics — Specification of reference dictionary — Part 1: General overview on organization and structure*

ISO 13584-42, *Industrial automation systems and integration — Parts library — Part 42: Description methodology: Methodology for structuring parts families*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 25297-1, ISO 23584-1 and ISO 13584-42 apply.

4 Mapping

4.1 General

The terms of the application objects and their attributes in NODIF are used as the preferred names in the reference dictionary.

Underscores used in the terms in NODIF are omitted in the reference dictionary.

NOTE The reference dictionary ID numbers given for the keywords will be filled once they are registered in the ISO/TC 172 reference dictionary database, which is under construction.

4.2 Mapping table

Table 1 and Table 2 show the relationship between keywords in NODIF and the classes and properties in the ISO/TC 172 reference dictionary. Class hierarchy is depicted in Annex A for reference.

Table 1 — Mapping of the terms of classes in NODIF to the reference dictionary

NODIF keyword	Hierarchy	Super class	Preferred name	Definition	Note	Reference dictionary ID number
aperture	Application class	ISO TC172SC1/NODIF	aperture	application object to describe aperture of optical system	4.3.25.6, 4.3.26.8 aperture in NODIF	—
Assembly_tolerance	Application class	ISO TC172SC1/NODIF	assembly tolerance	application object to specify assembly tolerance	4.3.18 Assembly_tolerance in NODIF	—
Diffractive_surface_description	Application class	ISO TC172SC1/NODIF	diffractive surface description	application object to describe diffractive optical surface	4.3.12 Diffractive_surface_description in NODIF	AAA017-001
Dimensional_tolerance	Application class	ISO TC172SC1/NODIF	dimensional tolerance	application object to specify tolerance for dimensions of optical part	4.3.17 Dimensional_tolerance in NODIF	—
Material_property	Application class	ISO TC172SC1/NODIF	material property	application object to specify material	4.3.36 Material_property in NODIF	—
Optical_design_formulation	Application class	ISO TC172SC1/NODIF	optical design formulation	application object to collect information relevant to optical design	4.3.5 Optical_design_formulation in NODIF	—
Optical_evaluation	Application class	ISO TC172SC1/NODIF	optical evaluation	application object to describe conditions and results of optical evaluations	4.3.23 Optical_evaluation in NODIF	—
Optical_part_view_designator	Application class	ISO TC172SC1/NODIF	optical part view designator	application object to link information on optical systems/parts and the object “design discipline product definition” in ISO 10303-203	4.3.2 Optical_part_view_designator in NODIF	—
Optical_process_specification	Application class	ISO TC172SC1/NODIF	optical process specification	application object to describe machining process	4.3.15 Optical_process_specification in NODIF	—
Optical_specification	Application class	ISO TC172SC1/NODIF	optical specification	application object to contain various specifications	4.3.13 Optical_specification in NODIF	—
Optical_system_specification	Application class	ISO TC172SC1/NODIF	optical system specification	application object to contain specifications of optical system	4.3.4 Optical_system_specification in NODIF	—
Optical_tolerance	Application class	ISO TC172SC1/NODIF	optical tolerance	application object to describe optical tolerance	4.3.16 Optical_tolerance in NODIF	—
Other_optical_evaluation	Application class	ISO TC172SC1/NODIF	other optical evaluation	application object to describe optical evaluation based on external definition	4.3.31 Other_optical_evaluation in NODIF	—
paraxial_ray_tracing	Application class	ISO TC172SC1/NODIF	paraxial ray tracing	application object to describe paraxial ray tracing results	4.3.24.6 paraxial_ray_tracing in NODIF	—

Table 1 (*continued*)

NODIF keyword	Hierarchy	Super class	Preferred name	Definition	Note	Reference dictionary ID number
ray_tracing	Application class	ISO TC172SC1/NODIF	ray tracing	application object to describe real ray tracing results	4.3.25.10 ray_tracing in NODIF	—
Specification_distinction	Application class	ISO TC172SC1/NODIF	specification distinction	application object to indicate type of optical design specification; official specification requirements of optical system or design requirements for optical system	4.3.3 Specification_distinction in NODIF	—
wavelength	Application class	ISO TC172SC1/NODIF	wavelength	application object to specify wavelength value or spectral line	4.3.14.5.2, 4.3.24.2, 4.3.25.5, 4.3.14.5.2, 4.3.28.2 wavelength in NODIF	—
Zone	Application class	ISO TC172SC1/NODIF	zone	application object to specify optically effective area	4.3.19 Zone in NODIF	—
zone_form	Application class	ISO TC172SC1/NODIF	zone form	application object to describe optically effective elementary area	4.3.19.2 zone_form in NODIF	—
three-dimensional_real_vector	Application class	ISO TC172SC1/NODIF	three-dimensional real vector	data type of component consisting of three elements; vector component or direction cosine	Figure A.6, Figure A.20 three-dimensional_real_vector in NODIF	—
other_tolerance	Application class	dimensional tolerance	other tolerance	application object to describe tolerance for optical part based on external definition	4.3.17.5 other_tolerance in NODIF	—
change_position	Application class	multi-configuration	change position	application object to specify arrangement of dynamic blocks in optical system	4.3.8.13 change_position in NODIF	—
Block_description	Application class	optical design formulation	block description	application object to describe moving range of optical block	4.3.6 Block_description in NODIF	—
Cemented_part	Application class	optical design formulation	cemented part	application object to indicate cemented optical part	4.3.7 Cemented_part in NODIF	—
Optical_path_definition	Application class	optical design formulation	optical path definition	application object to specify data necessary to trace rays through optical system	4.3.8 Optical_path_definition in NODIF	—
Ghost_image_evaluation	Application class	optical evaluation	ghost image evaluation	application object to describe ghost image evaluation	4.3.29 Ghost_image_evaluation in NODIF	—
Illuminance_distribution _evaluation	Application class	optical evaluation	illuminance distribution evaluation	application object to describe illuminance distribution evaluation	4.3.27 Illuminance_distribution_evaluation in NODIF	—

Table 1 (*continued*)

NODIF keyword	Hierarchy	Super class	Preferred name	Definition	Note	Reference dictionary ID number
Optical_sensitivity_evaluation	Application class	optical evaluation	optical sensitivity evaluation	application object to describe optical sensitivity evaluation	4.3.30 Optical_sensitivity_evaluation in NODIF	—
OTF_evaluation	Application class	optical evaluation	OTF evaluation	application object to specify optical evaluation based on OTF	4.3.26 OTF_evaluation in NODIF	—
Paraxial_evaluation	Application class	optical evaluation	paraxial evaluation	application object to describe optical evaluation by paraxial ray tracing	4.3.24 Paraxial_evaluation in NODIF	—
Ray_tracing_evaluation	Application class	optical evaluation	ray tracing evaluation	application object to describe optical evaluation by real ray tracing	4.3.25 Ray_tracing_evaluation in NODIF	—
Spectral_characteristics	Application class	optical evaluation	spectral characteristics	application object to describe spectral characteristics	4.3.28 Spectral_characteristics in NODIF	—
surface_imperfection_evaluation	Application class	optical evaluation	surface imperfection evaluation	application object to describe surface imperfection evaluation	4.3.31 surface_imperfection_evaluation in NODIF	—
veiling_glare_index_evaluation	Application class	optical evaluation	veiling glare index evaluation	application object to describe veiling glare index evaluation	4.3.32 veiling_glare_index_evaluation in NODIF	—
internal_transmittance	Application class	optical material specification	internal transmittance	application object to indicate internal transmittance of optical material	4.3.14.8 internal_transmittance in NODIF	—
refractive_index_information	Application class	optical material specification	refractive index information	application object to describe refractive index values and relevant wavelength values of material	4.3.14.5 refractive_index_information in NODIF	—
multi-configuration	Application class	optical path definition	multi-configuration	application object to specify information on multiple configurations in optical system	4.3.8.11 multi-configuration in NODIF	—
non-sequential_path_range	Application class	optical path definition	non-sequential path range	application object to specify range of non-sequential path	4.3.8.6 non-sequential_path_range in NODIF	—
Surface_interface	Application class	optical path definition	surface interface	application object to specify data for ray tracing at each interface	4.3.9 Surface_interface in NODIF	—
Coating_specification	Application class	optical specification	coating specification	application object to describe optical coating	4.3.20 Coating_specification in NODIF	—
Optical_material_specification	Application class	optical specification	optical material specification	application object to contain specification of optical material	4.3.14 Optical_material_specification in NODIF	—

Table 1 (*concluded*)

NODIF keyword	Hierarchy	Super class	Preferred name	Definition	Note	Reference dictionary ID number
Protective_surface_treatment	Application class	optical specification	protective surface treatment	application object to describe treatment process onto optical surface; black painting to prevent stray light or protect optical part	4.3.21 Protective_surface_treatment in NODIF	—
User-defined_specification	Application class	optical specification	user-defined specification	application object to specify item based on external definition	4.3.22 User-defined_specification in NODIF	—
aspheric_coefficient	Application class	optical surface description	aspheric coefficient	application object to describe coefficient of power series in polynomial terms of generalized aspheric surface when surface is rotationally symmetric about z-axis	4.3.11.3.11 aspheric_coefficient in NODIF	—
user-defined_surface_coefficient	Application class	optical surface description	user-defined surface coefficient	application object to specify name and value of coefficient for “user-defined surface”	4.3.11.3.18 user-defined_surface_coefficient in NODIF	—
user-defined_surface_reference	Application class	optical surface description	user-defined surface reference	application object to specify external file reference to contain expression based on external definition	4.3.11.3.17 user-defined_surface_reference in NODIF	—
surface_form_tolerance	Application class	optical tolerance	surface form tolerance	application object to describe tolerance for optical surface form	4.3.16.5 surface_form_tolerance in NODIF	—
aberration	Application class	ray tracing evaluation	aberration	application object to specify ray aberration collection based on real ray tracing	4.3.25.11 aberration in NODIF	—
Optical_surface_description	Application class	surface interface	optical surface description	application object to indicate mathematical expression of optical surface form	4.3.11 Optical_surface_description in NODIF	—
Surface_position	Application class	surface interface	surface position	application object to indicate position of optical surface defined by surface distance or local coordinate	4.3.10 Surface_position in NODIF	—
local_coordinate_transformation	Application class	surface position	local coordinate transformation	data type to specify the origin of local coordinate system and coordinate transformation to locate optical surface	4.3.10.3 local_coordinate_transformation in NODIF	—

Table 2 — Mapping of the terms of properties in NODIF to the reference dictionary

NODIF Keyword	Hierarchy	Class	Preferred name	Definition	Note	Unit	Property data type	Reference dictionary ID number
wavelength	Properties	ISO TC172 SC1/NODIF	wavelength	data type to describe a set of wavelengths	4.3.14.8.2, 4.3.14.5.2, 4.3.24.2, 4.3.25.5, 4.3.26.3, 4.3.28.2, wavelength in NODIF; visible property	—	wavelength	—
coma	Properties	aberration	coma	coma in aberration	4.3.25.11.3 coma in NODIF	mm	REAL	—
distortion	Properties	aberration	distortion	distortion of image	4.3.25.11.6 distortion in NODIF	%	REAL	—
radial_image_position	Properties	aberration	radial image position	radial image position when astigmatism exists	4.3.25.11.4 radial_image_position in NODIF	mm	REAL	—
spherical_aberration	Properties	aberration	spherical aberration	longitudinal spherical aberration	4.3.25.11.2 spherical_aberration in NODIF	mm	REAL	—
tangential_image_position	Properties	aberration	tangential image position	tangential image position when astigmatism exists	4.3.25.11.5 tangential_image_position in NODIF	mm	REAL	—
wavefront_aberration	Properties	aberration	wavefront aberration	aberration based on optical path difference	4.3.25.11.7 wavefront_aberration in NODIF	1 (wave-length)	REAL	—
aperture_type	Properties	aperture	aperture type	code to specify aperture; F-number, NA, entrance pupil diameter or aperture angle	4.3.25.6.2 aperture_type in NODIF		STRING	—
aperture_value	Properties	aperture	aperture value	value of aperture according to “aperture type”	4.3.25.6.3 aperture_value in NODIF		REAL	—
aspheric_coefficient_order	Properties	aspheric coefficient	aspheric coefficient order	order of power series in polynomial terms of generalized aspheric surface	Figure A.8 aspheric_coefficient_order in NODIF		INTEGER	—
aspheric_coefficient_value	Properties	aspheric coefficient	aspheric coefficient value	value of aspheric coefficient	Figure A.8 aspheric_coefficient_value in NODIF		REAL	—
centring_tolerance	Properties	assembly tolerance	assembling centring tolerance	tolerance for centring of optical part or block in assembling optical system	4.3.18.3 centring_tolerance in NODIF		STRING	—
separation_tolerance	Properties	assembly tolerance	separation tolerance	tolerance for axial separation between optical parts or blocks in assembling optical system	4.3.18.2 separation_tolerance in NODIF	mm	REAL	—