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Graphic technology — File format for quality control and metadata —

Part 1:
Print requirements eXchange (PRX)

Technologie graphique — Format de fichier pour le contrôle qualité et les métadonnées —

Partie 1: Print requirements eXchange (PRX)

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

A list of all parts in the ISO 20616 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The ISO 20616 series defines standard XML schemas designed to enable the digital exchange of print quality data and metadata between trading partners within the graphic arts supply chain. In the past, a number of different non-standard data formats have been used to communicate print quality metrics. It is a general observation that many of these existing non-standard data formats describe similar types of information. Existing standard data formats cover either too much or too little scope to address industry requirements. Hence, there is an industry need for a single, standard, concise set of data formats for the communication of print quality.

Each part of the ISO 20616 series is intended to stand alone, but may be used together, if that option is chosen. The goal of ISO 20616 is to maintain the degree of flexibility required by print buyers for all kinds of print generated for all purposes from any print device while minimizing the uncertainty of the data exchanged.

ISO 20616-1, PRX, is intended to facilitate the one-way digital transmission of customer expectations (i.e. print quality requirements) for a print job or class of print jobs, from a print buyer to print service providers and other relevant stakeholders. PRX is not designed for ordering print jobs, but rather to establish a buyer's policy for expected quality. PRX is designed to enable the print buyer to specify references, tolerances, scoring/grading scales and the mathematical formula to be employed by the print buyer to assess the quality of their printed materials. PRX may also be used communicate a print buyer's compliance requirements.

Some portions of ISO 20616-1 are available as electronic files found at https://standards.iso.org/iso/20616/-1/ed-1/en/:

— ISO-TC130_N4211_CD__20616-1_3_Electronic_Files.zip (all 20616-1 support documents);

— ISO20616-1prx.xsd;

— ISO20616-1prx_lines.pdf (printable PRX schema with reference lines numbered);

— ISO20616-1SchemaDoc.pdf (detailed schema documentation with graphics);

— PRX_MasterSampleA.pdf (printable sample with reference lines numbered);

— PRX_MasterSampleA.prx (parsable sample);

— PRX_MasterSampleB.pdf (printable sample with reference lines numbered);

— PRX_MasterSampleB.prx (parsable sample);

— PRX_MasterSampleC.pdf (printable sample with reference lines numbered);

— PRX_MasterSampleC.prx (parsable sample).

Graphic technology — File format for quality control and metadata —

Part 1:
Print requirements eXchange (PRX)

1 Scope

This document specifies an extensible file format in conformity with W3C Extensible Markup Language (XML) 1.0, for the exchange of print quality requirements data and metadata between print quality control applications including, but not limited to, print quality management systems.

This document is not intended for automating the loading of print requirement goals into the quality control systems employed by print quality service providers.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 17972-3, *Graphic technology — Colour data exchange format (CxF/X) — Part 3: Output target data (CxF/X-3)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
basis of calculation
formula by which print quality is calculated by the *print buyer* (3.3)

3.2
grade
print buyer's (3.3) evaluation of the overall level of print quality for a printed item

3.3
print buyer
name of the customer or entity purchasing printing services and products

3.4
rank
integer value assigned to a print quality *grade* (3.2) or *score* (3.5) based on a scale of zero or more, where the higher the integer, the better the print quality

3.5
score
print buyer's (3.3) evaluation of the quality for a single quality parameter such as colour – or defects

3.6
XML
Extensible Markup Language
set of rules recommended by the World Wide Web Consortium (W3C) for encoding documents in a digital format which is both human-readable and machine-readable

3.7
XML attribute
attribute
XML construct included within the start tag of an XML element that modifies, or provides descriptive metadata about, that element's content

3.8
XML element
element
data structure including a start tag, an end tag, data between these tags, and, possibly, a set of XML attributes

[SOURCE: ISO 13584-32:2010, 3.22, modified — Added admitted term.]

3.9
XML root element
root element
single XML element that encloses all the other elements and is therefore the sole parent element to all the other elements

3.10
XML schema
language for describing the structure and constraining the contents of XML documents

[SOURCE: ISO 25720:2009, 4.32]

3.11
XML schema parser
application that is capable of validating document schemes (content and structure) and descriptor data types against their schema definition

4   Documentation conventions

The following documentation conventions are used.

— Names of XML elements are shown in bold type; for example, **BuyerInfo**.

— Names of XML attributes are shown in italics; for example, *@DisplayName*.

— Names of XML datatypes are shown in italics; for example, *originType*.

XML XPaths are used to identify XML elements. For example, **BuyerInfo/ParentCompany** refers to an element (**ParentCompany**) that is a child of another element (**BuyerInfo**).

Similarly, XML XPaths are used to refer to XML attributes. For example, **CustomerItem**/*@Id* refers to an attribute (*Id*) of an element (**CustomerItem**).

5 Requirements

5.1 General

The following general requirements shall be met when using PRX XML to exchange print quality data and metadata:

— PRX print quality requirements data should be validated using an XML schema parser employing the ISO 20616-1 XML schema, ISO20616-1PRX.xsd.

— If PRX quality requirements data is exchanged as a standalone file, the file extension shall be ".prx".

— The root element of ISO 20616-1 print quality requirements data shall be a single **PRX** element.

— A valid **PRX** element shall contain the required namespace information in the root element: (<PRX xmlns:prx="https://idealliance.org/prx">) followed by the XML elements and XML attributes specified by the ISO 20616-1 XML schema, ISO20616-1PRX.xsd.

— If colour quality reference data is being exchanged, the PRX root element shall contain the required namespace information for CxF, "xmlns:cc=http://colorexchangeformat.com/CxF3-core".

5.2 Extensibility

5.2.1 General

To provide for extensibility in the PRX model, the specification includes two blocks modelled directly from the extensibility provided by CxF; **TagCollection** and **CustomResources**.

5.2.2 TagCollection

TagCollection may only be used to insert additional application-specific XML print quality requirements child elements into a PRX data structure at the agreement of all trading partners. Use of **TagCollection** is highly discouraged.

5.2.3 CustomResources

CustomResources may only be used to insert additional application-specific XML print quality requirements data models into a PRX data structure at the agreement of all trading partners. Use of **CustomResources** is highly discouraged.

5.3 Employing CxF

ISO 17972-1 shall be used to exchange print quality colour data and metadata. The following requirements shall be met when using CxF to exchange print quality colour requirements data and metadata.

— Only Core CxF data shall be employed as the data store for colour requirements data.

— CxF shall be employed as a complete CxF hierarchy.

  NOTE   Retaining **<cc:CxF>** as the root element ensures direct importability from colour measurement devices.

— CxF **<cc:Tags>** should only be used to customize CxF if specified by a business agreement among trading partners.

— CxF **<cc:CustomResources>** should only be used to customize CxF if specified by a business agreement among trading partners.

— CxF **<PhysicalAttributes>** **<CustomAttributeString>** and **<CustomAttributeValue>** should only be used to customize CxF if specified by a business agreement among trading partners.

— Non-appropriate CxF elements (listed above) may be written into a PRX data, but should only be processed by receiving systems if specified by a business agreement among trading partners.

5.4 PRX quality specification

5.4.1 Overview

The ISO20616-1PRX schema provides the rules for the order, occurrence and datatypes for the fields that make up a print-quality requirements exchange. The PRX schema is the immutable specification. Annex A, a PDF version of the schema printed with reference line numbers, shall be used to provide a line number reference for each element documented in this subclause. Additional requirements that cannot be specified by an XML schema are found in the following subclauses.

NOTE   The spelling of fields in PRX were designed to match the spelling of fields taken from ISO 17972-3. A specific example is the use of the word "color" instead of "colour".

See Annex B for documentation about the principles and concepts underlying the design and usage of this document. See Annex C for usage samples to help guide implementing this document.

5.4.2 PRX element

The **PRX** element is the root element of a print quality requirements data exchange. The **PRX** element shall be used to specify a print buyer's print quality requirements. The **PRX** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 12 to 30). See Table 1.

Table 1 — PRX fields

Field name	Normative description
PRXInfo	See 5.4.3 PRXInfo element.
BuyerInfo	See 5.4.4 BuyerInfo element.
EvaluationInfo	See 5.4.5 EvaluationInfo element.
QualitySpecification	See 5.4.15 QualitySpecification element.
CxFReferenceData	See 5.4.34 CxFReferenceData element.
SamplingPositionImageData	See 5.4.35 SamplingPositionImageData element.

5.4.3 PRXInfo element

5.4.3.1 General

The **PRXInfo** element shall be used to identify the instance of print quality requirements being exchanged. The **PRXInfo** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 35 to 47). The **PRXInfo** element is made up of elements described in 5.4.3.2 to 5.4.3.4.

5.4.3.2 PRXDate element

The **PRXDate** element shall be used to identify date or date/time this PRX data was generated. The **PRXDate** element element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 51 to 55).

5.4.3.3 PRXId element

The **PRXId** element shall be used to provide an identifier (unique in the context of system generated identifiers assigned on the specified PRXDate) for this print quality requirements specification. The **PRXId** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 59 to 63).

5.4.3.4   PRXSoftware-Version

PRXSoftware-Version shall be used to identify the software and version that generated this PRX file. **PRXId** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 67 to 71)

NOTE   Concatenation of the **PRXDate**, **PRXId** and **PRXSoftware-Version** make up a unique identifier for this print quality data report.

5.4.4   BuyerInfo element

5.4.4.1   General

The **BuyerInfo** element shall be used to identify the business entity buying print and specifying print quality requirements. The **BuyerInfo** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 76 to 89). The **BuyerInfo** element is made up of elements described in 5.4.4.2 to 5.4.4.5.

5.4.4.2   ParentCompany element

The **ParentCompany** element shall be used to identify the company that controls an entity such as a print buyer. The **ParentCompany** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 93 to 97).

5.4.4.3   CompanyName element

The **CompanyName** element shall be used to identify the print buyer's business entity. The **CompanyName** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 101 to 105).

5.4.4.4   LocationDesignator

The **LocationDesignator** element shall be used to provide a designation for the location of a company or party as a second level of identification for that company or party. The **LocationDesignator** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 109 to 113).

NOTE   **LocationDesignator** can be a unique identifier, city/state/country designation, postal code, geographic coordinates or simply be a designator code employed by the print buyer. This element is purposefully flexible to facilitate broad print buyer adoption.

5.4.4.5   ContactDesignator

The **ContactDesignator** element shall be used to provide a designation for information required to communicate with a business entity. The **ContactDesignator** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 117 to 121).

NOTE   **ContactDesignator** can be email, street address, phone, fax, etc. or simply be a designator code employed by the print buyer. This element is purposefully flexible to facilitate broad print buyer adoption.

5.4.5   EvaluationInfo element

The **EvaluationInfo** element shall be used to provide information about the evaluation method that the print buyer intends to use. The **EvaluationInfo** element shall conform to the rules specified by the ISO20616-1PRX.xsd (lines 227 to 238). The **EvaluationInfo** element is made up of elements described in 5.4.6 to 5.4.7.

5.4.6   PercentAcceptableScores element

The **PercentAcceptableScores** element shall be used to provide the calculated percent of all scored parameters that shall be within the print buyers acceptable scoring range. The **PercentAcceptableScores** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 389 to 393).

5.4.7 GradingInfo element

The **GradingInfo** element shall be used to provide grading criteria that the print buyer intends to use to evaluate overall print quality as a formal grade. The **GradingInfo** element shall be as specified by the ISO20616-1PRX.xsd (lines 242 to 255). The **GradingInfo** element is made up of elements described in 5.4.8 to 5.4.14.

5.4.8 GradingScale element

The **GradingScale** element shall be used to provide the print buyer's method to assign grades for overall print quality. The **GradingScale** element shall be as specified by the ISO20616-1PRX.xsd (lines 446 to 457). The **GradingScale** element is made up of elements described in 5.4.9 to 5.4.11.

5.4.9 Grade element

The **Grade** element shall be used to provide the print buyer's indicator for the overall print quality of a printed item. The **Grade** element shall be as specified by the ISO20616-1PRX.xsd (lines 461 to 473).

The **Grade** element is made up of elements described in 5.4.10.

The @**DisplayLabel** attribute shall be used to provide the print buyer's name for a grade and the @**Rank** attribute shall be used to standardize the meaning of a grade based on a positive integer value.

NOTE 1   Grade labels include A, B, C, D, F; Platinum, Gold, Silver, Bronze; Superior, Excellent, Good, Poor; Pass and Fail or a print buyer's custom labels.

NOTE 2   The greater the value of the **Rank** attribute, the higher the print quality.

5.4.10 ValueRange element

5.4.10.1 General

The **ValueRange** element shall be used to provide a mechanism to construct a logical expression that the print buyer intends to use to assign a numeric rank to a print quality grade or score. The **ValueRange** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 477 to 493). The **ValueRange** element is made up of elements described in 5.4.10.2 to 5.4.10.4.

When using the ValueRange element to assign a rank for a grade or score, a result fulfilling 2 or more evaluation definitions shall be assigned the grade/score with the higher rank.

NOTE   The **ValueRange** element uses a series of logical operators and logical connectors to construct value statements that are assigned to rankings.

5.4.10.2 LogicalOperator element

The **LogicalOperator** element shall be used to specify the mathematical operation to be used by the print buyer for calculation. The **LogicalOperator** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 497 to 502).

5.4.10.3 LogicalConnector element

The **LogicalConnector** element shall be used to specify a mathematical connector to be used by the print buyer to combine complex functions used for calculations of print quality grades or scores. The **LogicalConnector** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 515 to 520).

5.4.10.4 CalculatedValue element

The **CalculatedValue** element shall be used to specify the result of a print quality calculation. The **CalculatedValue** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 506 to 511).

5.4.11 ZeroBaseline element

The **ZeroBaseline** element shall be used to provide a mathematical point beyond the lowest defined ranking for a print quality grade or score. The **ZeroBaseline** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1543to 1550).

5.4.12 BasisOfCalculation element

5.4.12.1 General

The **BasisOfCalculation** element shall be used to provide the print buyer's method to calculate grades for overall print quality. The **BasisOfCalculation** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 371to 381). The **BasisOfCalculation** element is made up of elements described in 5.4.12.2 to 5.4.12.6.

5.4.12.2 WeightedPercentage element

The **WeightedPercentage** element shall be used to indicate the calculation is a weighted percentage formula. The **WeightedPercentage** element shall conform to the rules specified by ISO20616-1PRX.xsd (line 385).

5.4.12.3 Formula element

The **Formula** element shall be used to express the mathematical formula used to calculate a grade or score. The **Formula** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 398 to 411). The **Formula** element is made up of elements described in 5.4.12.4 to 5.4.12.6.

5.4.12.4 FormulaDescription element

The **FormulaDescription** element shall be used to a narrative account of the formula used to calculate a grade or score. The **FormulaDescription** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 415 to 419).

5.4.12.5 FormulaName element

The **FormulaName** element shall be used to specify the word or set of words by which a mathematical formula is known. The **FormulaName** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 423 to 427).

5.4.12.6 MathOrMethod element

The **MathOrMethod** element shall be used to specify the mathematical expression of a formula in any expression language or written method. The **MathOrMethod** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 431 to 442).

NOTE   Compliant PRX XML parsers are not required to process this data as it can be an XML-encoded formula (such as MathML or OpenMath) or it can be a formula expressed in a non-XML format such as LaTex or ASCIImath or even a method described in written language.

5.4.13 MinimumAcceptableRank element

The **MinimumAcceptableRank** element shall be used to provide the print buyer's minimum quality ranking on an integer scale greater than zero. The **MinimumAcceptableRank** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 550 to 555).

5.4.14 DesiredRank element

The **DesiredRank** element shall be used to provide the print buyer's target quality ranking on an integer scale greater than zero. The **DesiredRank** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 541 to 546).

5.4.15 QualitySpecification element

5.4.15.1 General

The **QualitySpecification** element shall be used to provide the print buyer's target quality ranking on an integer scale greater than zero. The **QualitySpecification** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 159 to 177). The **QualitySpecification** element is made up of elements described in 5.4.15.2 to 5.4.15.5 and 5.4.16.4 to 5.4.16.5.

5.4.15.2 QualitySpecName element

The **QualitySpecName** element shall be used to provide the shall be used to provide a word or set of words used by a print buyer to identify a quality specification that has been updated or changed over time. The **QualitySpecName** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 181 to 186).

5.4.15.3 QualitySpecVersion element

The **QualitySpecVersion** element shall be used to provide a version identifier for a quality specification that has been updated or changed overtime. The **QualitySpecVersion** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 190 to 195).

5.4.15.4 PrintMethod element

The **PrintMethod** element shall be used to provide the print method for which a print quality specification is being exchanged. The **PrintMethod** shall conform to the rules specified by ISO20616-1PRX.xsd (lines 125 to 129).

5.4.15.5 Specifier element

The **Specifier** element shall be used to provide the party responsible for specifying print quality requirements. The **Specifier** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 142 to 154).

5.4.16 CustomerJob element

5.4.16.1 General

The **CustomerJob** element shall be used to provide a designation for the category of customer job for which a print quality specification is being defined. The **CustomerJob** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 199 to 223). The **CustomerJob** element is made up of elements described in 5.4.16.2 to 5.4.16.8.

5.4.16.2 JobTypeName element

The **JobTypeName** element shall be used to provide the print buyer's designation for the type of print job for which a print quality specification is being defined. The **JobTypeName** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 355 to 359).

5.4.16.3 JobDescription element

The **JobDescription** element shall be used to provide an account of the type of print job for which a print quality specification is being defined. The **JobDescription** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 363 to 367).

5.4.16.4 Brand element

The **Brand** element shall be used to provide a manufacturer's high-level designation for a product or set of products. The **Brand** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 323 to 327).

5.4.16.5 Product element

The **Product** element shall be used to provide a word or words by which an item offered for sale is known. The **Product** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 331 to 335),

5.4.16.6 Brand-Product element

The **Brand-Product** element shall be used to provide the owner's brand and product designation (expressed as a concatenated string with a vertical bar separator) for an item offered for sale. The **Brand-Product** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 339 to 343).

5.4.16.7 PrintSide element

The **PrintSide** element shall be used to provide information about the side of substrate to which ink is applied for a print job or general type of print job. The **PrintSide** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 133 to 138).

5.4.16.8 DesignersGoal element

The **DesignersGoal** element shall be used to provide a narrative of the print designer's quality intents to be used by a print buyer to evaluate overall print quality. The **DesignersGoal** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 277 to 282).

5.4.17 CustomerItem element

The **CustomerItem** element shall be used to provide identification of a printed customer item for which a print quality specification is being defined. The **CustomerItem** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 286 to 319).

5.4.18 ItemDescription element

The **ItemDescription** element shall be used to provide a descriptive account of a printed customer item for which a print quality specification is being defined. The **ItemDescription** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 347 to 351).

5.4.19 InkGuidelines element

5.4.19.1 General

The **InkGuidelines** element shall be used to provide guidelines for selection of inks/coatings for a print job or general type of print job. The **InkGuidelines** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2051 to 2067). The **InkGuidelines** element is made up of elements described in 5.4.19.2 to 5.4.19.7.

5.4.19.2 Ink element

The **Ink** element shall be used to provide the print buyer's intent for the inks to be used by the printer. The **Ink** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2071 to 2083).

5.4.19.3 Coating element

The **Coating** element shall be used to provide the print buyer's intent for the coating(s) to be used by the printer. The **Coating** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2137 to 2149).

5.4.19.4 Resistance element

The **Resistance** element shall be used to provide a description of the conditions that the print buyer expects ink quality to withstand. The **Resistance** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2169 to 2184).

5.4.19.5 LightFastness element

The **LightFastness** element shall be used to indicate whether the print buyer expects ink quality to withstand light. The **LightFastness** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2208 to 2212).

5.4.19.6 PPMSolventRetention element

The **PPMSolventRetention** element shall be used to provide the maximum parts per million that the print buyer allows for solvent retention of the inks used. The **PPMSolventRetention** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2216 to 2220).

5.4.19.7 MaterialProhibited element

The **MaterialProhibited** element shall be used to provide the materials that a print buyer prohibits for use within an ink or coating chemical compound. The **MaterialProhibited** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2224 to 2228).

5.4.20 QualityGoals element

The **QualityGoals** element shall be used to communicate the print buyer's goals for specific parameters of print quality. The **QualityGoals** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 259 to 273).

Up to four quality parameters (**Color**, **Registration**, **Defects**, **Barcode**) may be specified per **QualityGoals** element. Duplicate quality goal parameters shall not be allowed.

5.4.21 ComplianceGoal element

The **ComplianceGoal** element shall be used to designate a print buyer's compliance goal. The **ComplianceGoal** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1628 to 1634).

The **ComplianceGoal** may be a named specification or it may be a link to a specification. Only a single goal specification shall be listed per **ComplianceGoal** element. If the print buyer has multiple compliance goals, multiple **ComplianceGoal** elements shall be transmitted.

5.4.22 CalculationVariable element

The **CalculationVariable** element shall be used to specify the variable to be used in a grade calculation formula. The **CalculationVariable** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 611 to 616).

5.4.23 GradeWeightingFactor element

The **GradeWeightingFactor** element shall be used to specify a positive integer mathematical weighting factor for this quality goal in a grade calculation formula. The **GradeWeightingFactor** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 620 to 625).

5.4.24 ScoringInfo element

The **ScoringInfo** element shall be used to provide information required to indicate how that print parameter is scored by the print buyer. The **ScoringInfo** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 594 to 607).

5.4.25 ScoreWeightingFactor element

The **ScoreWeightingFactor** element shall be used to specify a positive integer mathematical weighting factor for this quality goal in a score calculation formula. The **ScoreWeightingFactor** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 684 to 689).

5.4.26 ParameterName element

The **ParameterName** element shall be used to provide a label for the print quality parameter being specified. The **ParameterName** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 847 to 851).

5.4.27 CustomerItemIdLink element

The **CustomerItemIdLink** element shall be used to provide a connection from a customer item to print buyer quality requirements. The **CustomerItemIdLink** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 703 to 707).

5.4.28 SamplingPosition element

The **SamplingPosition** element shall be used to provide the positions on a sample that the buyer requires quality measurement or observation and reporting. The **SamplingPosition** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1575 to 1590). The element is made up of elements described in 5.4.29 to 5.4.30.

5.4.29 SamplingPositionImageIdLink element

The **SamplingPositionImageIdLink** element shall be used to provide a link to a sampling position image stored within the SamplingPositionImageData block. The **SamplingPositionImageIdLink** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1594 to 1599).

5.4.30 SamplingPositionMatrix element

5.4.30.1 General

The **SamplingPositionMatrix** element shall be used to provide a set of fields that provide the geometric coordinates for sampling on a printed customer items. The **SamplingPositionMatrix** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1604 to 1616). The **SamplingPositionMatrix** element is made up of elements described in 5.4.30.2 to 5.4.30.3.

5.4.30.2 Origin element

The **Origin** element shall be used to specify the starting point for a sampling position matrix. The **Origin** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1620 to 1624).

5.4.30.3 PositionDefinition element

The **PositionDefinition** element shall be used to define a single position on a printed sample location using a matrix. The **XPosition** shall be used to define the horizontal sampling position relative to the origin in the specified unit of measure (**UOM**). The **YPosition** shall be used to define the vertical sampling position relative to the origin in the specified unit of measure (**UOM**). The **PositionDefinition** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1296 to 1313).

5.4.31 Color element

5.4.31.1 General

The **Color** element shall be used to provide quality requirements for the print colour and indicate how that parameter is evaluated by the print buyer. The **Color** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 560 to 575). The **Color** element is made up of elements described in 5.4.31.2 to 5.4.31.8.

5.4.31.2 ColorScore element

The **ColorScore** element shall be used to specify how the print colour is scored by the print buyer. The **ColorScore** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 579 to 590).

5.4.31.3 ColorScoringScale element

The **ColorScoringScale** element shall be used to specify how the print colour is scored by the print buyer. The **ColorScoringScale** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 629 to 647).

5.4.31.4 ColorParameter element

The **ColorParameter** element shall be used to specify quality requirements for a parameter of colour quality. The **ColorParameter** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 652 to 680).

5.4.31.5 ColorReportType element

The **ColorReportType** element shall be used to specify whether a direct or tone-calculation report is required for a parameter of colour quality. The **ColorReportType** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 693 to 698).

5.4.31.6 ChartType element

The **ChartType** element shall be used to specify a classification of a color chart to be employed for a direct colour report. The **ChartType** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 765 to 769).

5.4.31.7 PatchType element

The **PatchType** element shall be used to specify a classification for the patch to be measured for a tone-calculation colour report. The **PatchType** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 711 to 760).

5.4.31.8 CxFReferenceObjectIdLink element

The **CxFReferenceObjectIdLink** element shall be used to provide a link to the standard/aim CxF reference object identifier for this chart or patch. The **PatchType** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1554 to 1558).

5.4.32 Registration element

5.4.32.1 General

The **Registration** element shall be used to provide quality requirements for print registration and indicate how the print buyer evaluates that parameter. The **Registration** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 774 to 788). The element is made up of elements described in 5.4.32.2 to 5.4.32.6.

5.4.32.2 RegistrationScore element

The **RegistrationScore** shall be used to specify how the print buyer evaluates registration. The **RegistrationScore** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 792 to 803).

5.4.32.3 RegistrationScoringScale element

The **RegistrationScoringScale** shall be used to specify how print registration is scored by the print buyer. The **RegistrationScoringScale** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 855to 873).

5.4.32.4 RegistrationParameter element

The **RegistrationParameter** element shall be used to specify the registration reporting to be employed by the printer. The **RegistrationParameter** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 816 to 834).

5.4.32.5 RegistrationReportType element

The **RegistrationReportType** shall be used to specify the registration reporting to be employed by the printer. The **RegistrationReportType** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 838 to 842).

5.4.32.6 MarkType element

The **MarkType** shall be used to specify the registration mark to be employed by the printer. The **MarkType** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 808 to 812).

5.4.33 Defects element

5.4.33.1 General

The **Defects** element shall be used to provide quality requirements for print defects and indicate how the print buyer evaluates that parameter. The **Defects** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 878 to 893). The **Defects** element is made up of elements described in 5.4.33.2 to 5.4.33.6.

5.4.33.2 DefectTypeDefinition element

The **DefectTypeDefinition** element shall be used to provide nomenclature for defects to be evaluated by the print buyer. The **DefectTypeDefinition** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 942 to 953).

5.4.33.3 DefectName element

The **DefectName** element shall be used to provide a label for a defect to be evaluated by the print buyer. The **DefectName** element shall conform to the rules specified by ISO20616-1PRX.xsd (line 957).

5.4.33.4 DefectDefinition element

The **DefectDefinition** element shall be used to provide a description for a defect to be evaluated by the print buyer. The **DefectDefinition** element shall conform to the rules specified by ISO20616-1PRX.xsd (line 961).

5.4.33.5 DefectParameter element

The **DefectParameter** element shall be used to specify set of fields that provide quality requirements for each print buyer defect category and indicate how the print buyer evaluates that parameter. The **DefectParameter** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 897 to 915).

5.4.33.6 DefectParameterScale element

The **DefectParameterScale** element shall be used to specify how print defects is scored by the print buyer. The **DefectParameterScale** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 919 to 937).

5.4.34 Barcode element

5.4.34.1 General

The **Barcode** element shall be used to provide quality requirements for barcode readability and indicate how the print buyer evaluates that parameter. The **Barcode** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 974 to 989). The **Barcode** element is made up of elements described in 5.4.34.2 to 5.4.34.5.

5.4.34.2 BarcodeScore element

The **BarcodeScore** element shall be used to specify how the print buyer evaluates the barcode readability. The **BarcodeScore** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 993 to 1004).

5.4.34.3 BarcodeSymbology element

The **BarcodeSymbology** element shall be used to specify the type of barcode to be evaluated. The **BarcodeSymbology** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines1029 to 1270).

5.4.34.4 BarcodeScoringScale element

The **BarcodeScoringScale** element shall be used to specify how print barcode readability is scored by the print buyer. The **BarcodeScoringScale** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines1274 to 1291).

5.4.34.5 BarcodeParameter element

The **BarcodeParameter** shall be used to provide quality requirements for a barcode type and indicate how the print buyer evaluates that barcode. The **BarcodeParameter** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1008 to 1025).

5.4.35 CxFReferenceData element

The **CxFReferenceData** element shall be used to include colour reference data. The **CxFReferenceData** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1562 to 1571). **CxFReferenceData** file layout shall conform to ISO 17972-3.

5.4.36 SamplingPositionImageData element

The **SamplingPositionImageData** element shall be used to provide images that define sampling locations the print buyer requires for quality measurement or observation. The **SamplingPositionImageData** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1648 to 1657).

5.4.37 PositionLocationImage element

The **PositionLocationImage** element shall be used to provide a unique identifier and link to the location of each position location image. The **PositionLocationImage** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1661 to 1679).

5.4.38 TagCollection element

The **TagCollection** element shall be used to define a collection of custom PRX tags that can provide extensibility. The **TagCollection** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2002 to 2032).

5.4.39 CustomResources element

The **CustomResources** element shall be used to provide extensibility to the PRX by allowing the inclusion of any structured XML-encoded content from any namespace. The **CustomResources** element shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2036 to 2046).

NOTE   The **CustomResources** element has no predefined data structure. The purpose of this element is to provide extensibility of the PRX data structure by allowing the inclusion of XML data structures from outside user-designated XML schemas. This element can be used include print quality data that is considered application specific in nature and not generally of use to all other applications.

5.4.40 PRX simple types

5.4.40.1 General

The ISO20616-1PRX.xsd defines numerous simple types. See 5.4.40.2 to 5.4.40.16.

5.4.40.2 Simple type coatingListType

The simple type *coatingListType* shall be used to identify for the type of substance used to overlay ink being specified by the print buyer. The simple type *coatingListType* shall be used to define the **CoatingMaterial** element specified by ISO20616-1PRX.xsd (lines 2153-2157). The simple type *coatingListType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2359-2395). See Table 2.

Table 2 — coatingListType values

Simple type values	Normative usage rule
waterBase	shall be used when the **CoatingMaterial** is a water-based substance
UV	shall be used when the **CoatingMaterial** is a coating that is dried by exposure to UV light
filmLamination	shall be used when the **CoatingMaterial** is a film lamination
varnish	shall be used when the **CoatingMaterial** is a varnish
gel	shall be used when the **CoatingMaterial** is a gel
acrylic	shall be used when the **CoatingMaterial** is acrylic

NOTE   The value for the simple type can be selected from a list of possible values defined by the ISO20616-1PRX.xsd (lines 2359 to 2395) or can be selected from a set of custom values defined by the print buyer.

5.4.40.3 Simple type colorReportTypeType

The simple type *colorReportTypeType* shall be used to provide an identification for the type of **ColorReport** being specified by the print buyer. The simple type *colorReportTypeType* shall be used to define the **ColorReportType** element specified by ISO20616-1PRX.xsd (lines 693 to 698), see 5.4.31.5. The simple type *colorReportTypeType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines1959 to 1976). See Table 3.

Table 3 — colorReportTypeType values

Simple type values	Normative usage rule
toneCalculation	shall be used when the **ColorReport** tone values are to be calculated by the receiver
direct	shall be used when the **ColorReport** CxF values are directly utilized by the receiver

5.4.40.4 Simple type connectorType

The simple type *connectorType* shall be used to specify the type of **LogicalConnector** to be used in constructing a grading or scoring method. The simple type *connectorType* shall be used to define the **LogicalConnector** element specified by ISO20616-1PRX.xsd (lines 515 to 520), see 5.4.10.3. The simple type *connectorType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1862 to 1877). See Table 4.

Table 4 — connectorType values

Simple type values	Normative usage rule
AND	shall be used when all **LogicalConnector** element values are to be used
OR	shall be used when only one **LogicalConnector** element value is to be used

5.4.40.5 Simple type customerItemIdType

The simple type *customerItemIdType* shall be used to provide an identification for a **CustomerItem** being specified by the print buyer. The simple type *customerItemIdType* shall be used to define the **CustomerItem/@Id** specified by ISO20616-1PRX.xsd (lines 308 to 312), see 5.4.17. The simple type

customerItemIdType shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1697 to 1702). See Table 5.

Table 5 — customerItemIdType values

Simple type values	Normative usage rule
SKU	shall be used when the **CustomerItem**/@*Id* element value is a Stock Keeping Unit identifier
IPMS	shall be used when the **CustomerItem**/@*Id* element value is an Independent Pharmacy Matching System identifier
Artcode	shall be used when the **CustomerItem**/@*Id* element value is an identifier for the art being printed
GCAS	shall be used when the **CustomerItem**/@*Id* element value is a Global Code Allocation System identifier
any print buyer custom identifier	shall be used when the **CustomerItem**/@*Id* element value is another identifier type specified by the print buyer

NOTE   The value for **CustomerItem**/@*Id* element value is can be selected from a list of possible values defined by the ISO20616-1PRX.xsd (lines 1683 to 1693) or may be a custom value defined by the print buyer.

5.4.40.6 Simple type finishType

The simple type *finishType* shall be used to identify for the finish of the coating being specified by the print buyer. The simple type *finishType* shall be used to define the **Finish** element specified by ISO20616-1PRX.xsd (lines 2161 to 2165). The simple type *finishType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2399 to 2420). See Table 6.

Table 6 — finishType values

Simple type values	Normative usage rule
matte	shall be used when the **Finish** is dull
semimatte	shall be used when the **Finish** has a slight luster
gloss	shall be used when the **Finish** has a high luster

5.4.40.7 Simple type gradeLabelType

The simple type *gradeLabelType* shall be used in constructing a grading or scoring method. The simple type *gradeLabelType* shall be used to define the @*DisplayLabel* attribute specified by ISO20616-1PRX.xsd (line 470, line 1524, line 1536, line 1548) for the **Grade**, **ParameterScore**, **Score**, and **ZeroBaseline** elements. The simple type *gradeLabelType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1906 to 1911). See Table 7.

Table 7 — gradeLabelType values

Simple type values	Normative usage rule
A	shall be used when assigning the highest grade/score using an alpha scale
B	shall be used when assigning the second highest grade/score using an alpha scale
C	shall be used when assigning the third highest grade/score using an alpha scale
D	shall be used when assigning the lowest acceptable grade/score using an alpha scale
F	shall be used when assigning a failing grade/score using an alpha scale
Platinum	shall be used when assigning the highest grade/score using metal-based scale
Gold	shall be used when assigning the second highest grade/score using a metal-based scale

Table 7 *(continued)*

Simple type values	Normative usage rule
Silver	shall be used when assigning the third highest grade/score using a metal-based scale
Bronze	shall be used when assigning the fourth highest grade/score using a metal-based scale
Superior	shall be used when assigning the highest grade/score using superiority-based scale
Excellent	shall be used when assigning the second highest grade/score using a superiority -based scale
Good	shall be used when assigning the third highest grade/score using a superiority -based scale
Poor	shall be used when assigning the lowest grade/score using a superiority -based scale
Pass	shall be used when assigning an acceptable grade/score using a binary-acceptability scale
Fail	shall be used when assigning an unacceptable grade/score using a binary-acceptability scale

NOTE   The value for the simple type can be selected from a list of possible values defined by the ISO20616-1PRX.xsd (lines 1881 to 1902) or can be selected from a set of custom values defined by the print buyer.

5.4.40.8   Simple type inkTypeType

The simple type *inkTypeType* shall be used to define the **InkType** element specified by ISO20616-1PRX.xsd (lines 2103 to 2107). The simple type *inkTypeType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2111 to 2133). See Table 8.

Table 8 — inkTypeType values

Simple type values	Normative usage rule
process	shall be used when the **Ink** is part of a set of inks
spot	shall be used when the Ink is especially formulated for standalone use such as a brand colour
basecoat	shall be used when the **Ink** provides a neutral base upon which other inks (colours) can be printed

5.4.40.9   Simple type materialProhibitedListType

The simple type *materialProhibitedListType* shall be used to define the **MaterialProhibited** element specified by ISO20616-1PRX.xsd (lines 2224 to 2228). The simple type *materialProhibitedListType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2430 to 2571). See Table 9.

Table 9 — materialProhibitedListType values

Simple type values	Normative usage rule
BPA	shall be used when BPA is prohibited in an ink/coating compound
methyl-glycol	shall be used when methyl-glycol is prohibited in an ink/coating compound
ethyl-glycol	shall be used when ethyl-glycol is prohibited in an ink/coating compound
mono-chloro-benzene	shall be used when mono-chloro-benzene is prohibited in an ink/coating compound
1-metho-2-pyrrodine	shall be used when 1-metho-2-pyrrodine is prohibited in an ink/coating compound
benzene	shall be used when benzene is prohibited in an ink/coating compound
toluene	shall be used when toluene is prohibited in an ink/coating compound

Table 9 *(continued)*

Simple type values	Normative usage rule
ethyl-benzene	shall be used when ethyl-benzene is prohibited in an ink/coating compound
xylene	shall be used when xylene is prohibited in an ink/coating compound
aromaticHydrocarbons	shall be used when aromatic hydrocarbons are prohibited in an ink/coating compound
pigmentRed81	shall be used when pigmentRed81is prohibited in an ink/coating compound
pigmentRed169	shall be used when pigmentRed169is prohibited in an ink/coating compound
pigmentGreen1	shall be used when pigmentGreen1 is prohibited in an ink/coating compound
pigmentBlue1	shall be used when pigmentBlue1 is prohibited in an ink/coating compound
pigmentBlue61	shall be used when pigmentBlue61 is prohibited in an ink/coating compound
pigmentViolet1	shall be used when pigmentViolet1is prohibited in an ink/coating compound
pigmentViolet1x	shall be used when pigmentViolet1x is prohibited in an ink/coating compound
pigmentViolet2	shall be used when pigmentViolet2 is prohibited in an ink/coating compound
pigmentViolet3	shall be used when pigmentViolet3 is prohibited in an ink/coating compound
pigemntViolet27	shall be used when pigemntViolet27 is prohibited in an ink/coating compound
pigmentViolet39	shall be used when pigmentViolet39 is prohibited in an ink/coating compound
TAA	shall be used when TAA is prohibited in an ink/coating compound
phthalatePlasticizers	shall be used when phthalate plasticizers are prohibited in an ink/coating compound
bisphenolA	shall be used when bisphenolA is prohibited in an ink/coating compound
colbaltDryers	shall be used when colbalt dryers are prohibited in an ink/coating compound
rhodamine	shall be used when rhodamine is prohibited in an ink/coating compound
triarylcarbonium	shall be used when triarylcarbonium is prohibited in an ink/coating compound

NOTE   The value for the simple type can be selected from a list of possible values defined by the ISO20616-1PRX.xsd (lines 2430 to 2571) or can be selected from a set of custom values defined by the print buyer.

5.4.40.10   Simple type operatorType

The simple type *operatorType* shall be used to provide an identification for the type of **LogicalOperator** to be used in constructing a grading or scoring method. The simple type *operatorType* shall be used to define the **LogicalOperator** element specified by ISO20616-1PRX.xsd (lines 497 to 502). The simple type *operatorType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1722 to 1767). See Table 10.

Table 10 — operatorType values

Simple type values	Normative usage rule
EQ	shall be used when the **LogicalOperator** element value is equal to
NEQ	shall be used when the **LogicalOperator** element value is not equal to
GT	shall be used when the **LogicalOperator** element value is greater than
GTE	shall be used when the **LogicalOperator** element value is greater than or equal to
LT	shall be used when the **LogicalOperator** element value is less than
LTE	shall be used when the **LogicalOperator** element value is less than or equal to
PM	shall be used when the **LogicalOperator** element value is plus or minus

5.4.40.11   Simple type originType

The simple type *originType* shall be used to define the point of origin for a **SamplingPositionMatrix** being specified by the print buyer. The simple type originType shall be used to define the

SamplingPositionMatrix element specified by ISO20616-1PRX.xsd (lines 1604 to 1616), see 5.4.29. The simple type *originType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1927 to 1955). See Table 11.

Table 11 — originType values

Simple type values	Normative usage rule
BL	shall be used when the **Origin** element value is equal to bottom left
TL	shall be used when the **Origin** element value is equal to top left
BR	shall be used when the **Origin** element value is equal to bottom right
TR	shall be used when the **Origin** element value is equal to top right

5.4.40.12   Simple type printMethodType

The simple type *printMethodType* shall be used to specify the type of **PrintMethod** being employed. The simple type *printMethodType* shall be used to define the element **PrintMethod** specified by ISO20616-1PRX.xsd (lines 125 to 129), see 5.4.15.3. The simple type *printMethodType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1771 to 1838). See Table 12.

Table 12 — printMethodType values

Simple type values	Normative usage rule
offsetLithography	shall be used when the **PrintMethod** uses a flat surface treated so as to repel the ink except where it is required for printing
dryOffset	shall be used when the **PrintMethod** uses an inked impression from letterpress or relief is etched on a thin metal surface, then printed on an intermediate rubber surface (as a blanket), and then offset onto the paper
flexography	shall be used when the **PrintMethod** uses rubber or plastic plates and fluid inks or dyes for printing on fabrics and impervious materials such as plastics, as well as on paper
gravure	shall be used when the **PrintMethod** uses a method of etching a plate through an intaglio process to produce an image.
inkjet	shall be used when the **PrintMethod** uses a computer peripheral that produces hard copy by spraying ink onto paper
screen	shall be used when the **PrintMethod** forces ink or metal onto (a surface) through a prepared screen of fine material so as to create a picture or pattern
electrophotography	shall be used when the **PrintMethod** uses photography employing electricity to transfer an image onto paper, as in laser printing and photocopying
dyeSublimination	shall be used when the **PrintMethod** uses heat to transfer dye onto materials such as a plastic, card, paper, or fabric. The sublimation name was first applied because the dye was considered to make the transition between the solid and gas states without going through a liquid stage
letterpress	shall be used when the **PrintMethod** uses inking a surface with raised letters pressed to the surface of the printing substrate to reproduce an image in reverse
hybrid	shall be used when the **PrintMethod** uses a combination of methods such as inkjet and digital printing methods
other	shall be used when the **PrintMethod** uses another method not enumerated
any	shall be used when the **PrintMethod** is not specified by the print buyer

5.4.40.13 Simple type printSideType

The simple type *printSideType* shall be used to specify the **PrintSide** being specified by the print buyer. The simple type *printSideType* shall be used to define the element specified **PrintSide** specified by ISO20616-1PRX.xsd (lines 133 to 138), see 5.4.16.7. The simple type *printSideType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1842 to 1858). See Table 13.

Table 13 — printSideType values

Simple type values	Normative usage rule
surface	shall be used when the **PrintSide** element value indicates an image printed on the surface of the substrate
reverse	shall be used when the **PrintSide** element value indicates an image printed on the reverse side of the substrate

5.4.40.14 Simple type registrationReportTypeType

The simple type *registrationReportTypeType* shall be used to provide an identification for the type of **RegistrationParameter** being specified by the print buyer (lines 816 to 834). The simple type *registrationReportTypeType* shall be used to define the **RegistrationReportType** element specified by ISO20616-1PRX.xsd (lines 838 to 842), see 5.4.32.5. The simple type *registrationReportTypeType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1981 to 1998). See Table 14.

Table 14 — registrationReportTypeType values

Simple type values	Normative usage rule
variance	shall be used when the **RegistrationReportType** element value indicates that registration is reported by the maximum variance among all printed inks on a sample
channel	shall be used when the **PrintSide** element value indicates that registration is reported by the maximum variance among all printed inks to a reference ink channel on a sample

5.4.40.15   Simple type resistanceListType

The simple type *resistanceFactorType* shall be used to identify the condition, specified by the print buyer, which the ink quality shall withstand. The simple type *resistanceFactorType* shall be used to define the **ResistanceFactor** element specified by ISO20616-1PRX.xsd (lines 2188 to 2192). The simple type *resistanceFactorType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 2232 to 2234). See Table 15.

Table 15 — resistanceListType values

Simple type values	Normative usage rule
lacticAcid	shall be specified when printed ink quality shall withstand exposure to lactic acid
rub	shall be specified when printed ink quality shall withstand exposure to rubbing
scratch	shall be specified when printed ink quality shall withstand exposure to scratching
cold	shall be specified when printed ink quality shall withstand exposure to cold
dryHeat	shall be specified when printed ink quality shall withstand exposure to dry heat
steam	shall be specified when printed ink quality shall withstand exposure to steam heat
ozone	shall be specified when printed ink quality shall withstand exposure to ozone
humidity	shall be specified when printed ink quality shall withstand exposure to humidity
weather	shall be specified when printed ink quality shall withstand exposure to weather
vegetableOil	shall be specified when printed ink quality shall withstand exposure to vegetable oil
alkali	shall be specified when printed ink quality shall withstand exposure to alkali substances
ethanolSpirit	shall be specified when printed ink quality shall withstand exposure to ethanol spirits
lye	shall be specified when printed ink quality shall withstand exposure to lye
solvent	shall be specified when printed ink quality shall withstand exposure to solvents
detergent	shall be specified when printed ink quality shall withstand exposure to detergents
acid	shall be specified when printed ink quality shall withstand exposure to acidic substances
soap	shall be specified when printed ink quality shall withstand exposure to soap
oilOrFat	shall be specified when printed ink quality shall withstand exposure to oil or fat
butter	shall be specified when printed ink quality shall withstand exposure to butter
breadSterilization	shall be specified when printed ink quality shall withstand exposure to bread sterilization conditions
thermalSterilization	shall be specified when printed ink quality shall withstand exposure to thermal sterilization conditions

NOTE   The value for the simple type can be selected from a list of possible values defined by the ISO20616-1PRX.xsd (lines 2238 to 2349) or can be selected from a set of custom values defined by the print buyer.

5.4.40.16   Simple type uomType

The simple type *uomType* shall be used to provide the unit of measure for quality reports including **UoM** being specified by the print buyer. The simple type *uomType* shall be used to define the **UoM** element specified by ISO20616-1PRX.xsd (lines 965 to 969) contained within the elements ColorScoringScale, DefectParameterScale, RegistrationScoringScale and SamplingPositionMatrix. The simple type *uomType* shall conform to the rules specified by ISO20616-1PRX.xsd (lines 1335 to 1503). See Table 16.

Table 16 — uomType values

Simple type values	Normative usage rule
ft	shall be used when the measurement unit is a foot
in	shall be used when the measurement unit is an inch
yd	shall be used when the measurement unit is a yard
m	shall be used when the measurement unit is a metre
cm	shall be used when the measurement unit is a centimetre
mm	shall be used when the measurement unit is a millimetre
nm	shall be used when the measurement unit is a nanometre
um	shall be used when the measurement unit is a micron
pt	shall be used when the measurement unit is a point
pc	shall be used when the measurement unit is a pica
ln	shall be used when the measurement unit is a line
ft2	shall be used when the measurement unit is a square foot
in2	shall be used when the measurement unit is a square inch
yd2	shall be used when the measurement unit is a square yard
m2	shall be used when the measurement unit is a square metre
cm2	shall be used when the measurement unit is a square centimetre
mm2	shall be used when the measurement unit is a square millimetre
nm2	shall be used when the measurement unit is a square nanometre
um2	shall be used when the measurement unit is a square micron
dE	shall be used when the measurement unit is a deltaE
de2000	shall be used when the measurement unit is a deltaE 2000
de76	shall be used when the measurement unit is a deltaE76
items	shall be used when the measurement unit is an item count
percent	shall be used when the measurement unit is a percentage
count	shall be used when the measurement unit is a count
severity	shall be used when the measurement unit is a severity unit

Annex A
(normative)

ISO 20616-1 XML schema

A.1 General

To validate PRX data, the ISO 20616-1 XML schema, ISO20616-1PRX.xsd should be employed.

If colour reference data is being transmitted as part of the PRX data, the CxF3 XML schema"xmlns:cc= http://colorexchangeformat.com/CxF3-core") shall be also be employed for validation.

NOTE   The ISO 20616-1 XML schema is included in this document as the electronic insert file ISO20616-1PRX.xsd.

Files with .xml, .xsd, .pqx, .prx or .cxf all may be opened with a standard text editor, though use of a dedicated XML tool may help by providing formatting visual mapping tools.

The PRX XML schema is available at https://standards.iso.org/iso/20616/-1/ed-1/en/.

A.2 Modification of the PRX schema

The ISO 20616-1 XML schema itself shall not be modified except to point to an associated **CustomResources**.

NOTE   Arbitrary modification or additions to the ISO 20616-1 XML schema affects interoperability of the file. Modification or extension is the function of **CustomResources.**