PD ISO/TS 13399-72:2016

BSI Standards Publication

Cutting tool data representation and exchange

Part 72: Creation of documents for the standardized data exchange — Definition of properties for drawing header and their XML-data exchange

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National foreword

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This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Cutting tool data representation and exchange —

Part 72: Creation of documents for the standardized data exchange — Definition of properties for drawing header and their XML-data exchange

Représentation et échange des données relatives aux outils coupants —

Partie 72: Création de la documentation pour l'échange de données normalisées — Définition des propriétés des cartouches de plans et leur échange de données en XML

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 29, *Small tools.*

ISO/TS 13399 consists of the following parts, under the general title *Cutting tool data representation and exchange*:

— *Part 1: Overview, fundamental principles and general information model*

— *Part 2: Reference dictionary for the cutting items* [Technical Specification]

— *Part 3: Reference dictionary for tool items* [Technical Specification]

— *Part 4: Reference dictionary for adaptive items* [Technical Specification]

— *Part 5: Reference dictionary for assembly items* [Technical Specification]

— *Part 50: Reference dictionary for reference systems and common concepts* [Technical Specification]

— *Part 60: Reference dictionary for connection systems* [Technical Specification]

— *Part 70: Graphical data layout — Layer settings for tool layout* [Technical Specification]

— *Part 71: Graphical data layout — Creation of documents for the standardized data exchange — Graphical product information* [Technical Specification]

— *Part 72: Creation of documents for the standardized data exchange — Definition of properties for drawing header and their XML-data exchange* [Technical Specification]

— *Part 150: Usage guidelines* [Technical Specification]

— *Part 201: Creation and exchange of 3D models — Regular inserts* [Technical Specification]

— *Part 202: Creation and exchange of 3D models — Irregular inserts* [Technical Specification]

— *Part 203: Creation and exchange of 3D models — Replaceable inserts for drilling* [Technical Specification]

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— *Part 204: Creation and exchange of 3D models — Inserts for reaming* [Technical Specification]

— *Part 301: Concept for the design of 3D models based on properties according to ISO/TS 13399-3: Modelling of thread-cutting taps, thread-forming taps and thread-cutting dies* [Technical Specification]

— *Part 302: Concept for the design of 3D models based on properties according to ISO/TS 13399-3: Modelling of solid drills and countersinking tools* [Technical Specification]

— *Part 303: Creation and exchange of 3D models — Solid end mills* [Technical Specification]

— *Part 304: Creation and exchange of 3D models — Solid milling cutters with arbor hole* [Technical Specification]

— *Part 307: Creation and exchange of 3D models — End mills for indexable inserts* [Technical Specification]

— *Part 308: Creation and exchange of 3D models — Milling cutters with arbor hole for indexable inserts* [Technical Specification]

— *Part 309: Creation and exchange of 3D models — Tool holders for indexable inserts* [Technical Specification]

— *Part 311: Creation and exchange of 3D models — Solid reamers* [Technical Specification]

— *Part 312: Creation and exchange of 3D models — Reamers for indexable inserts* [Technical Specification]

— *Part 401: Creation and exchange of 3D models — Converting, extending and reducing adaptive items* [Technical Specification]

— *Part 403: Creation and exchange of 3D models — Modelling of driven tool units* [Technical Specification]

— *Part 405: Creation and exchange of 3D models — Collets* [Technical Specification]

— *Part 406: Creation and exchange of 3D models — Modelling of connection interface* [Technical Specification]

The following parts are under preparation:

— *Part 80: Creation and exchange of 3D models — Overview and principles* [Technical Specification]

— *Part 100: Definitions, principles and methods for reference dictionaries* [Technical Specification]

— *Part 305: Creation and exchange of 3D models — Modular tooling systems with adjustable cartridges for boring* [Technical Specification]

— *Part 310: Creation and exchange of 3D models — Turning tools with carbide tips* [Technical Specification]

— *Part 313: Creation and exchange of 3D models — Creation and exchange of 3D models — Burrs* [Technical Specification]

— *Part 314: Creation and exchange of 3D models — Creation and exchange of 3D models — Cartridges for indexable inserts* [Technical Specification]

— *Part 315: Creation and exchange of 3D models — Modelling of machine operated feed out tools* [Technical Specification]

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Introduction

This part of ISO/TS 13399 defines the terms, properties and definitions of the drawing frame and drawing content of a computer-aided design. The purpose of this part of ISO/TS 13399 is to provide a common way of an electronic data exchange of graphical product information. However, the aim is the simplified communication during the phase of documentation — namely on the basis of 2D drawings.

Within the 2D drawing, the aim is to separate the proper product description (2D graphic) from the users specific presentation (drawing header). Most of the design orders are forced to use the individual drawing frames of the users. Therefore, a big portion of the design expenditure is used for the creation of the documentation and not for the proper problem solution.

Drawings are one of the most important communicative devices of a producing company. Besides the description of complex workpiece geometries, most cases are request for correspondent documentation, e.g. to support NC-programming or production facilities.

This part of ISO/TS 13399 defines a standardized data exchange format for documentations. Therefore, the effort for maintenance of the documentation is reduced because the product drawing of the supplier or manufacturer is merged automatically into the individual drawing frames of the end users. This concept provides advantage for both supplier/manufacturer and end user, since the particular template is centrally maintained once only.

To support a standardized electronic product data exchange, the content of drawing headers have been examined by means of their common basic elements and the applicability. The identified data fields have been consolidated and may be used for a universal application because of a unified definition of their attributes. Thus, in a defined use case, the graphical product description (2D graphic) and the descriptive data of the product (content of the drawing header) can be merged and be filed as a complete drawing documentation.

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1 Scope

This part of ISO/TS 13399 defines the necessary text elements of a drawing frame and determines a standardized data exchange format. Therefore, the effort is reduced for the maintenance of documentation because the content of a drawing header is mated into a specific drawing frame by means of using XML technology and an individual mapping table. The benefit of this concept for manufacturer/supplier and end user is the advantage of a central maintenance of the appropriate templates.

This part of ISO/TS 13399 covers the following:

— identification and definition of the data fields;

— identification and definition of the structure of the data fields;

— structure of the data exchange file.

The standardization of drawing formats, e.g. drawing frame, structure of the bill of material, are outside the scope of this part of ISO/TS 13399 which is rather more intended to standardize the data exchange of the product documentations.

The following are outside the scope of this part of ISO/TS 13399:

— layer settings as defined in ISO/TS 13399-70;

— structure of the tool documentation as defined in ISO/TS 13399-71;

— applications where these standard data may be stored or referenced;

— concept of the classification of cutting tool data and their properties;

— concept of the design of 2D drawings for cutting tools;

— concept of the design of 3D models for cutting tools;

— application data for the use of those cutting tools;

— information about the reconditioning of cutting tools;

— information about additional application and usage data (e.g. coolant supply).

2 Normative references

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

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ISO 10303-28, *Industrial automation systems and integration — Product data representation and exchange — Part 28: Implementation methods: XML representations of EXPRESS schemas and data, using XML schemas*

3 Terms and definitions

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

NOTE The names and the definitions of the data fields are determined. The data fields and their attributes are listed in Tables 1 and 2. Also, the data fields are put together in groups that are identical to the tags of the XML file. Fields are optional by default. In other cases, mandatory (M) or conditional (C) are set (see column "type of field" in Tables 1 and 2).

3.1 Main data

3.1.1
supplier
official name of the organization that deals with the sales and/or distribution of products and services

3.1.2
manufacturer
official name of the organization that deals with the production of products and services

Note 1 to entry: See ISO 13399-1:2006, schema: organization.organization_name.

3.1.3
drawing file
unique name of the file that files electronically the drawing content in two-dimensional directions

Note 1 to entry: This field can be specified as a file name or URL.

Note 2 to entry: See ISO 13399-1:2006, schema: external_file_id_and_location.external_id in case of file name and document_location_property.location_name + external_file_id_and_location.external_id in case of URL.

3.1.4
3D model file
unique name of either the basic 3D model or detailed 3D model file that files electronically a solid or wire frame model in three-dimensional directions

Note 1 to entry: Each of 3D model can be represented in Table 1.

Note 2 to entry: This field can be specified as a file name or URL.

Note 3 to entry: See ISO 13399-1:2006, schema: external_file_id_and_location.external_id in case of file name and document_location_property.location_name + external_file_id_and_location.external_id in case of URL.

3.1.5
geometrical data file
unique name of the file that files electronically the properties according to the specifications of ISO/TS 13399-2, ISO/TS 13399-3 and ISO/TS 13399-4

Note 1 to entry: This field can be specified as a file name or URL.

3.1.6
application data file
unique name of a file that files electronically data of cutting parameters for defined machining operations in a defined structure

Note 1 to entry: This file is outside the scope of a standardized data exchange format.

Note 2 to entry: This field can be specified as a file name or URL.

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