



BSI Standards Publication

Cutting tool data representation and exchange

Part 2: Reference dictionary for the cutting items

National foreword

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Cutting tool data representation and exchange —

Part 2: Reference dictionary for the cutting items

*Représentation et échange des données relatives aux
outils coupants —*

Partie 2: Dictionnaire de référence pour les éléments coupants



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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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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 29, *Small tools*.

This third edition cancels and replaces the second edition ([ISO/TS 13399-2:2014](http://www.iso.org/iso/13399-2:2014)), which has been technically revised.

The main change is as follows:

- update of the classes and properties in line with the modifications in the cutting tool dictionary.

A list of all parts in the [ISO 13399](http://www.iso.org/iso/13399) 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

This document defines the terms, properties, and definitions for portions of a cutting tool that remove material from a workpiece. Cutting items include replaceable inserts, brazed tips, and the cutting portions of solid cutting tools. The purpose of this document is to provide a reference dictionary to support the use of the general information model defined in [ISO 13399-1](#).

A cutting tool with defined cutting edges is used on a machine to remove material from a workpiece by a shearing action at the cutting edges of the tool. Cutting tool data that can be described by the [ISO 13399](#) series include, but are not limited to, everything between the workpiece and the machine tool. Information about inserts (e.g. regular and irregular shaped replaceable cutting items), solid tools (e.g. solid drill and solid end mill), assembled tools (e.g. boring bars, indexable drills and indexable milling cutters), adaptors (e.g. milling arbor and drilling chuck), components (e.g. shims, screws and clamps) and their relationships can be represented by the [ISO 13399](#) series. The principles of the [ISO 13399](#) series are given in [Annex A](#); and possible assemblies of the components of a cutting tool are illustrated in [Figure A.1](#).

The objective of the [ISO 13399](#) series is to provide the means to represent the information that describes cutting tools in a computer-sensible form that is independent from any particular computer system. The representation facilitates the processing and exchange of cutting tool data within and between different software systems and computer platforms and supports the application of this data in manufacturing planning, cutting operations, and the supply of tools. The nature of this description makes it suitable not only for neutral file exchange but also as a basis for implementing and sharing product databases and for archiving. The methods used for these representations are those developed by ISO/TC 184/SC 4 for the representation of product data by using standardized information models and reference dictionaries.

An information model is a formal specification of types of ideas, facts, and processes which together describes a portion of interest of the real world and which provides an explicit set of interpretation rules. Information is knowledge of ideas, facts, and/or processes. Data are symbols or functions that represent information for processing purposes. Data are interpreted to extract information by using rules for how that should be done and a dictionary to define the terms that identify the data. Everyone in a communication process is expected to use the same information model, the same set of explicit rules and the same dictionary in order to avoid misunderstanding. If an information model and its dictionary are written in a computer-sensible language, then there is the additional benefit that they can be computer processable.

An engineering information model is therefore a specification for data that establishes the meaning of that data in a particular engineering context. A model has to be developed by formal methods to ensure that it meets the needs of the situation that it represents. An engineering information model defines the information objects that represent the concepts in an engineering application, the attributes of the objects, their relationships, and the constraints that add further meaning. An information model is an abstract concept that can be used repeatedly for any example of the real-world situation that it represents. An instance of the model is produced when it is populated with the data items and their values that are applicable to a particular example of that situation.

This document uses the following International Standards developed by ISO/TC 184/SC 4:

- the EXPRESS language defined in [ISO 10303-11](#) for defining the information model in [ISO 13399-1](#);
- the file format for data exchange derived from the model and defined in [ISO 10303-21](#);
- the data dictionary defined in the [ISO 13584](#) series.

Each class, property, or domain of values of this application domain constitutes an entry of the reference dictionary defined in this document. It is associated with a computer-sensible and human-readable definition and with a computer-sensible identification. Identification of a dictionary entry allows unambiguous reference to it from any application that implements the information model defined in [ISO 13399-1](#).

Definitions and identifications of dictionary entries are defined by means of standard data that consist of instances of the EXPRESS entity data types defined in the common dictionary schema, resulting from a joint effort between ISO/TC 184/SC 4 and IEC SC 3D, and in its extensions defined in ISO 13584-24 and ISO 13584-25.

Cutting tool data representation and exchange —

Part 2: Reference dictionary for the cutting items

1 Scope

This document specifies a reference dictionary for cutting items, together with their descriptive properties and domains of values.

This document specifies a reference dictionary containing:

- definitions and identifications of the classes of cutting items and their features, with an associated classification scheme;
- definitions and identifications of the data element types that represent the properties of cutting items and their features;
- definitions and identifications of domains of values for describing the above-mentioned data element types.

The following are within the scope of this document:

- standard data that represent the various classes of cutting items and cutting item features;
- standard data that represent the various properties of cutting items and cutting item features;
- standard data that represent domains of values used for properties of cutting items and cutting item features;
- definitions of reference systems for cutting items and their properties;
- one implementation method by which the standard data defined in this document can be exchanged.

NOTE 1 The implementation method by which the standard data defined in this document can be exchanged is specified in [ISO 10303-21](#).

The following are outside the scope of this document:

- applications where these standard data can be stored or referenced;
- implementation methods other than the one defined in this document by which the standard data can be exchanged and referenced;
- information model for cutting tools;
- definitions of classes and properties for tool items;
- definitions of classes and properties for adaptive items;
- definitions of classes and properties for assembly items and auxiliary items.

NOTE 2 The information model for cutting tools is defined in [ISO 13399-1](#).

NOTE 3 The definitions of classes and properties for tool items, adaptive items, assembly items, and auxiliary items are provided in [ISO/TS 13399-3](#), [ISO/TS 13399-4](#), and [ISO/TS 13399-5](#), respectively.

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/TS 13399-100](#), *Cutting tool data representation and exchange — Part 100: Definitions, principles and methods for reference dictionaries*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in [ISO/TS 13399-100](#) and the following apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 applicable property

property ([3.17](#)) that is defined for some family of items and that applies to any member of this family

[SOURCE: ISO 13584-24:2003, 3.3, modified — "family of parts" has been replaced by "family of items"; "shall apply" has been replaced by "applies"; "any part" has been replaced by "any member"; the EXAMPLE has been removed.]

3.2 basic semantic unit

entity ([3.10](#)) that provides an absolute and universally unique identification of a certain object of the application domain that is represented as a *dictionary* ([3.9](#)) element

[SOURCE: ISO 13584-42:2010, 3.4, modified — The 3 EXAMPLES and note 1 to entry have been removed.]

3.3 chip

material removed from a *workpiece* ([3.21](#)) by a cutting process

3.4 cutting tool

device or assembly of items for removing material from a *workpiece* ([3.21](#)) through a shearing action at the defined cutting edge or edges of the device

Note 1 to entry: A cutting tool can be the assembly of one or more adaptive items, a tool item, and several cutting items on a tool item. See [Figure A.1](#).

[SOURCE: ISO 13399-1:2006, 3.1]

3.5 data

representation of *information* ([3.13](#)) in a formal manner suitable for communication, interpretation, or processing by human beings or computers

[SOURCE: ISO 10303-1:2021, 3.1.29]

3.6 data element type

unit of *data* ([3.5](#)) for which the identification, description, and value representation have been specified

[SOURCE: ISO 13584-42:2010, 3.13, modified — Note 1 to entry has been removed.]

3.7

data exchange

storing, accessing, transferring, and archiving of *data* ([3.5](#))

[SOURCE: ISO 10303-1:2021, 3.1.31]

3.8

data type

domain of values

[SOURCE: ISO 10303-11:2004, 3.3.5]

3.9

dictionary

table consisting of a series of entries with one meaning corresponding to each entry in the dictionary and one dictionary entry identifying a single meaning

Note 1 to entry: In the [ISO 13399](#) series, a dictionary is a formal and computer-sensible representation of an *ontology* ([3.16](#)).

[SOURCE: ISO 13584-511:2006, 3.1.9, modified — The original notes 1 to 3 to entry have been replaced by a new note 1 to entry.]

3.10

entity

class of *information* ([3.13](#)) defined by its attributes which establishes a domain of values defined by common attributes and constraints

3.11

entity data type

representation of an *entity* ([3.10](#))

3.12

implementation method

means for computers to exchange *data* ([3.5](#))

3.13

information

facts, concepts, or instructions

[SOURCE: ISO 10303-1:2021, 3.1.41]

3.14

information model

formal model of a bounded set of facts, concepts, or instructions to meet a specific requirement

3.15

irregular insert

replaceable cutting item that cannot be described by a regular geometric shape

3.16

ontology

explicit and consensual specification of concepts of an application domain independent of any use of these concepts

Note 1 to entry: In the [ISO 13399](#) series, a *dictionary* ([3.9](#)) is the formal and computer-sensible representation of ontology.

[SOURCE: ISO 13584-511:2006, 3.1.20, modified — In note 1 to entry, the reference to "ISO 13584" has been replaced by "the ISO 13399 series".]

3.17

property

defined parameter suitable for the description and differentiation of products

[SOURCE: ISO 13584-42:2010, 3.37, modified — Notes 1 to 5 to entry have been removed.]

3.18

regular insert

replaceable cutting item that can be described by a regular geometric shape

3.19

transient surface

part of the surface which is formed on the *workpiece* (3.21) by the cutting edge and removed during the following cutting stroke, during the following revolution of the tool or workpiece, or by the following cutting edge

[SOURCE: ISO 3002-1:1982, 3.1.3]

3.20

visible property

property (3.17) that has a definition meaningful in the scope of a given characterization class, but that does not necessarily apply to the various products belonging to this class

[SOURCE: ISO 13584-42:2010, 3.46]

3.21

workpiece

object on which a cutting action is performed

3.22

work surface

surface on the *workpiece* (3.21) to be removed by machining

[SOURCE: ISO 3002-1:1982, 3.1.1]

4 Abbreviated terms

BSU basic semantic unit

DET data element type

5 Representation of the ontological concepts as dictionary entries

5.1 General

A concept in the ontology is identified by a name in lower-case characters. The name of a class that represents the concept in the dictionary is identified by lower-case letters with multiple words joined by an underscore character.

EXAMPLE "cutting item type" is the name of a concept in the ontology. "cutting_item_type" is the identifier of the class in the dictionary that represents the concept.

Cutting items are represented by two main classes: cutting_item_feature and cutting_item_type.

The [ISO 13399](#) series shall follow the principles in [Annex A](#). The structure of the classification is provided in [Annex B](#). The definitions of the cutting item classes are provided in [Annex C](#).

5.2 cutting_item_feature

5.2.1 General

Characteristic of a cutting item that cannot exist independently of the cutting item.

cutting_item_feature has the following subclasses:

- chip_breaker;
- cutting_corner;
- cutting_edge;
- cutting_item_coating;
- cutting_item_material;
- cutting_item_profile;
- fixing_hole;
- flank;
- gauge_circle;
- inscribed_circle;
- regrinding;
- top_face.

5.2.2 chip_breaker

Modification of the face of a cutting item to control or break the chip.

NOTE A chip breaker is either an integral groove or an obstruction attached to the face.

5.2.3 cutting_corner

Transition between two cutting edges.

cutting_corner has the following subclasses:

- chamfered_corner;
- rounded_corner.

5.2.4 cutting_edge

Junction between two surfaces that performs the cutting operation.

cutting_edge has the following subclasses:

- cutting_edge_conditioned;
- cutting_edge_interrupted;
- cutting_edge_major;
- cutting_edge_minior;
- wiper_edge.

5.2.5 cutting_item_coating

Additional material deposited on the surface of a cutting item.

NOTE A cutting item coating can consist of layers of several materials.

5.2.6 cutting_item_material

Substance from which a cutting item is made.

5.2.7 cutting_item_profile

Shape traced out by the cutting edges of a cutting item.

cutting_item_profile has the following subclasses:

- ball_nosed_profile;
- drilling_profile;
- grooving_parting_profile;
- threading_profile.

5.2.8 fixing_hole

Hole through the body of a replaceable cutting item that is used for attaching the cutting item to a tool item.

5.2.9 flank

Surface or surfaces of a cutting item that pass over the transient surface of the workpiece.

flank has the following subclasses:

- flank_major;
- flank_minor;
- flank_wiper_edge.

5.2.10 gauge_circle

Circle established by a measurement device on a cutting item that does not have an inscribed circle.

5.2.11 inscribed_circle

Circle to which all edges of an equilateral and round regular insert are tangential.

5.3 cutting_item_type

5.3.1 General

Family of items that can be held by a tool item or be part of a solid tool.

NOTE 1 The cutting item is the part of the cutting tool that is in contact with the workpiece during the cutting operation.

NOTE 2 The names of items in this class are not intended to refer to the use of the item in a particular cutting operation.

cutting_item_type has the following simple families of items as subclasses:

- drilling_insert;
- equilateral_equiangular;
- equilateral_nonequiangular;
- non_replaceable_cutting_item;
- nonequilateral_equiangular;
- nonequilateral_nonequiangular;
- reaming_insert;
- round_insert;
- specific_profile_insert.

5.3.2 equilateral_equiangular

Type of cutting item of regular geometric shape with sides of equal length and equal included angles.

NOTE The class contains inserts with the ISO shape codes H, O, P, S, and T.

equilateral_equiangular has the following items as subclasses:

- hexagonal_insert;
- octagonal_insert;
- pentagonal_insert;
- square_insert;
- triangular_insert.

5.3.3 equilateral_nonequiangular

Type of cutting item of regular geometric shape with sides of equal length and non-equal included angles.

NOTE The class contains inserts with the ISO shape codes C, D, E, M, and V for rhombic inserts and W for trigon inserts.

equilateral_nonequiangular has the following items as subclasses:

- rhombic_insert;
- trigon_insert.

5.3.4 non_replaceable_cutting_item

Cutting item that is permanently fixed to, or part of, a tool item.

5.3.5 nonequilateral_equiangular

Type of cutting item of regular geometric shape with sides of non-equal length and equal included angles.

NOTE The class contains inserts with the ISO shape code L.

nonequilateral_equiangular has the following item as a subclass: rectangular_insert.

5.3.6 nonequilateral_nonequiangular

Type of cutting item of regular geometric shape with sides of non-equal length and non-equal included angles.

NOTE The class contains inserts with the ISO shape codes A, B, and K.

nonequilateral_nonequiangular has the following item as a subclass: parallelogram_insert.

5.3.7 round_insert

Type of cutting item with circular cutting edges.

NOTE This class contains inserts with the ISO shape code R.

5.3.8 specific_profile_insert

Type of cutting item that possesses a defined profile shape.

NOTE A synonymous name is irregular_insert.

5.4 Reference systems for cutting items

5.4.1 General

Reference systems are geometrical coordinate axes with planes and locations on these axes that allow the definition of properties of cutting items and other components of a cutting tool. Reference systems are illustrated in [Annex G](#).

NOTE The convention for all the reference systems is the tool-in-hand system ([ISO 3002-1](#)).

The classes of reference systems for cutting items are as follows:

- primary_coordinate_system;
- irregular_insert_position;
- mirror_plane;
- regular_insert_position;
- xy_plane;
- xz_plane;
- yz_plane.

5.4.2 primary_coordinate_system

The primary_coordinate_system is a right-handed, rectangular Cartesian system in three-dimensional space with three principal axes labelled X, Y, and Z.

5.4.3 irregular_insert_position

An irregular insert is located on the primary coordinate system in the XY quadrant with the cutting edges in the xy-plane, the cutting profile pointing in the negative Y direction, the forward extremity of the cutting profile on the positive x-axis, and the side extremity of the insert on the y-axis.

NOTE The definition applies to right-hand inserts. The position of left-hand inserts is as mirrored through the yz-plane.

5.4.4 mirror_plane

The mirror_plane is the yz-plane in the primary coordinate system.

5.4.5 regular_insert_position

A regular insert is located on the primary coordinate system in the XY quadrant with the cutting edges on the xy-plane, the major cutting edge on the positive x-axis, and the theoretical sharp point of the insert on the y-axis.

NOTE 1 The definition applies to right-hand inserts. The position of left-hand inserts is as mirrored through the yz-plane.

NOTE 2 The positions of right-hand and left-hand regular inserts are illustrated in [Figure G.12](#).

5.4.6 xy_plane

The xy_plane is the plane in the primary coordinate system that contains the X and Y axes with the normal of the plane in the positive Z direction.

5.4.7 xz_plane

The xz_plane is the plane in the primary coordinate system that contains the X and Z axes with the normal of the plane in the positive Y direction.

5.4.8 yz_plane

The yz_plane is the plane in the primary coordinate system that contains the Y and Z axes with the normal of the plane in the positive X direction.

6 Properties for cutting item features and cutting item types

The properties of cutting item types and cutting item features are defined in [Annex D](#), where the association of a property with a class is specified. In the compilation of the dictionary, all properties are visible properties at the root class of the dictionary and are made applicable properties at the class level where they apply. The names of properties that can be applicable for cutting item features and cutting item types, with their identification codes (BSU), are shown in [Table 1](#). The order of names in the table should be read in rows from left to right.

The ISYC pictures showing the properties for cutting item features and cutting item types are illustrated in [Annex H](#).

NOTE The BSU can be made unique by the addition of the supplier of the dictionary as a prefix to the identification code.

EXAMPLE The unique BSU for chip_breaker_face_count would be: 0112/1///13399_2-71CE7A85CC4F9 for version two of the dictionary.

Table 1 — Names of properties for cutting items

Property name	Symbol	Identification code (BSU)
body angle workpiece side	BAWS	72C4A71D1B94B
brand	BRAND	728ECFD658014
chamfer corner property	CCP	72550DF97C965
chip breaker face count	CB	71CE7A85CC4F9
chip breaker manufacturers designation	CBMD	71CE7A86A4264
chip breaker property	CBP	71CED0217FA18

Property name	Symbol	Identification code (BSU)
chip breaker width	LBB	71CE7A870948A
clearance angle major	AN	71DD70308D3E3
clearance angle minor	ANN	71DD7030E0A00
clearance angle wiper edge	AS	71DD7031A98E9
coating name	COATN	72719B186A232
coating process	COATP	72719B18D1F27
coating property	CTP	71DD703B84298
corner chamfer angle	KCH	71DD6C88F9210
corner chamfer angle minor	KCHN	726E3AADC0ABE
corner chamfer length	BCH	71DD6C895C25B
corner chamfer length minor	BCHN	726E3AACF1BB4
corner chamfer width	CHW	71DD6C89A120F
corner count	CNC	71CEAE9B67E4C
corner identity	CNID	71DD6C8802580
corner radius	RE	71DD6C8ACA503
corner radius left hand	REL	726E3E65CBE4E
corner radius lower tolerance	RETOLL	72C4A7228B53D
corner radius minor	REN	727C2F69C65AE
corner radius right hand	RER	726E3E66CF011
corner radius upper tolerance	RETOLU	72C4A722B2E35
cutting data association code	CDAC	72719B2427AED
cutting data association property	CDAP	72719B23A5008
cutting diameter	DC	71D084653E57F
cutting diameter insert	DCINS	71CF30F02C968
cutting edge angle major	KRINS	71CE7AA02C1CC
cutting edge angle major left hand	PSIRL	71CE7AA3440B4
cutting edge angle major right hand	PSIRR	71CE7AA78C2F0
cutting edge condition code	CECC	71DD6C90953D8
cutting edge count	CEDC	71CEAE9B489F4
cutting edge curvature	CECV	71DD6C950E7CC
cutting edge effective length	LE	71DD6C958C615
cutting edge identity	CEID	71DD6C8B86265
cutting edge length	L	71DD6C95DA49B
cutting edge major radius	CEMR	726E3E6E8B8EB
cutting point translation X-direction	CTX	71FD1E2EDD973
cutting point translation Y-direction	CTY	71FD1E2F66B38
cutting width	CW	71CEAE9B2B825
cutting width lower tolerance	CWTOLL	72C4A721F1835
cutting width upper tolerance	CWTOLU	72C4A72270CF9
depth of cut maximum	APMX	71D07576C0558
designation	DES	728ECFD4A0629
face land angle	GB	71DD6C9332D2C
face land size code	FLSC	71DD6C9371B86
face land width	BN	71DD6C9394F40
fixing hole chamfer angle	FHCA	726E3AAFF0C9

Property name	Symbol	Identification code (BSU)
fixing hole chamfer width	FHCW	726E3AB7AACED
fixing hole countersunk angle	FHCSA	726E3AB5E90FD
fixing hole countersunk depth	FHCSDP	726E3AB6E5726
fixing hole countersunk diameter	FHCSD	726E3AB654EA6
fixing hole countersunk radius	FHCSR	726E3AB757259
fixing hole diameter	D1	71CE7A968C8FE
fixing hole property	FXHLP	71D1C829BC044
flank identity	FLID	71DD70158265C
functional length	LF	71DCD39338974
gauge circle property	GACIRP	72550A75A58F9
gauge diameter	DG	71EBC1E1074AB
grade application main	GRDAPPM	729A91AB4451E
grade application range max	GRDAPRX	729A91AAEB181
grade application range min	GRDAPRN	729A91A635147
grade identification	GRDID	729A919BF211A
grade main application group identification letter	GRDAPID	729A919C3D239
grade manufacturers designation	GRDMFG	726E3EA930D39
grade standard designation main application	GRDPRIO	726E3EA8A9ED6
grind style code	GRDSYC	72550E3BD998C
hand	HAND	71CF29872F0AB
hole type	HTY	72719B167AE15
inscribed circle diameter	IC	71CE7A96D9F7D
inscribed circle property	INCLP	71D1C82A5036D
insert body diameter	INSBD	728F4E7B06CA7
insert hand	IH	71CE7A979F41C
insert included angle	EPSR	71CE7A96BC122
insert included angle minor (deprecated)	EPSRN	727C7D93D0F08
insert index count	NOI	71CE7AA1998FF
insert interface code	IIC	71CE7A9936610
insert lead angle	PSIRINS	71CF30F9DFE37
insert length	INSL	71CE7A9DFA23A
insert mounting style code	IFS	71CE7A97711B8
insert rake angle	GAN	71CE7A9EDACA1
insert shape code	SC	71CE7A9F0C79F
insert side count	NIS	72719B203D712
insert thickness	S	71CE7A9F5308C
insert thickness total	S1	72550E143C993
insert width	W1	71CE7A9FB11C3
interrupted edge property	IEP	71DD701175021
item style code	ISYC	726E424FE9EC2
m2-dimension	M2	71CE7AA05C819
m-dimension	M	71CE7AA0972DB
profile angle left hand	PAL	71CEAEBEAB020
profile angle right hand	PAR	71CEAEBED837E
profile distance ex	PDX	71CEAEBFEF1B4

Property name	Symbol	Identification code (BSU)
profile distance ey	PDY	71CEAEC0139BB
profile included angle	PNA	71CEAEBF0C234
profile radius	PRFRAD	71E019EBAE1B1
profile style code	PFS	71CEAEBDE5798
relief angle	RA	71DD9D00193A7
relief angle left hand	RAL	71CE7E6520B87
relief angle right hand	RAR	71CE7E6569AB5
rounded corner property	RCP	71DD7011A3D86
seal	SALP	72719B2B51519
standard letter	STDLET	72807E1CC4B50
taper gradient	TG	71CEAEC02FEBD
taper thread count	ZTT	71DF154901E44
thread cutting part length	THL	72550E426D771
thread designation inside	THID	726E3E7863BBC
thread designation outside	THOD	726E3E73D1CF2
thread form type	THFT	71D1A69F60053
thread hand	THDH	71E033FCBB61C
thread height actual	HC	71DF5BE65F86F
thread height difference	HB	71DF5BE617131
thread height theoretical	HA	71DF5BE5BCEBE
thread pitch	TP	71CEAEC08D4B0
thread pitch maximum	TPX	71D1A6A283836
thread pitch minimum	TPN	71D1A6A247E1F
thread profile type	TPT	71CEAEC114603
thread type	TTP	71D1A6A16E6ED
threads per inch	TPI	71D1A6AAC8707
threads per inch maximum	TPIX	71D1A6AB8F739
threads per inch minimum	TPIN	71D1A6AB6FB19
tipped cutting edge code	TCE	71CE7AA1E3D75
tolerance class insert	TCINS	71CE7AA215888
tooth count	NT	71CEAEBF8A68E
weight of item	WT	71CED03C97AAB
wiper edge length	BS	71CE7AA249F88
wiper edge property	BSR	71CED022114EC
wiper edge radius	WEP	71CE7AA2E50BE

Annex A (normative)

Principles of the ISO 13399 series

A.1 General

The ISO 13399 series is intended for use by, among others, tool producers and vendors, manufacturers, and developers of manufacturing software. The ISO 13399 series provides a common structure for exchanging data about cutting tools with defined cutting edges. The ISO 13399 series is intended to provide for, or improve, several manufacturing activities, including:

- the integration and sharing of data for cutting tools and assemblies between different stages for the manufacturing cycle and between different software applications;
- the direct import of data from cutting tool suppliers into a customer's database;
- the management of cutting tool information from multiple sources and for multiple applications.

Different companies use different business models that determine their need for the communication of information about their products. For example, one cutting tool manufacturer can regrind its customers' tools while another can allow its customers to do the regrinding and provide the information to enable them to do so. Therefore, the two cutting tool manufacturers can have a different set of cutting tool properties to communicate using the information model and dictionaries provided in the ISO 13399 series.

The ISO 13399 series defines only the information that can be communicated, but does not specify what information shall be communicated.

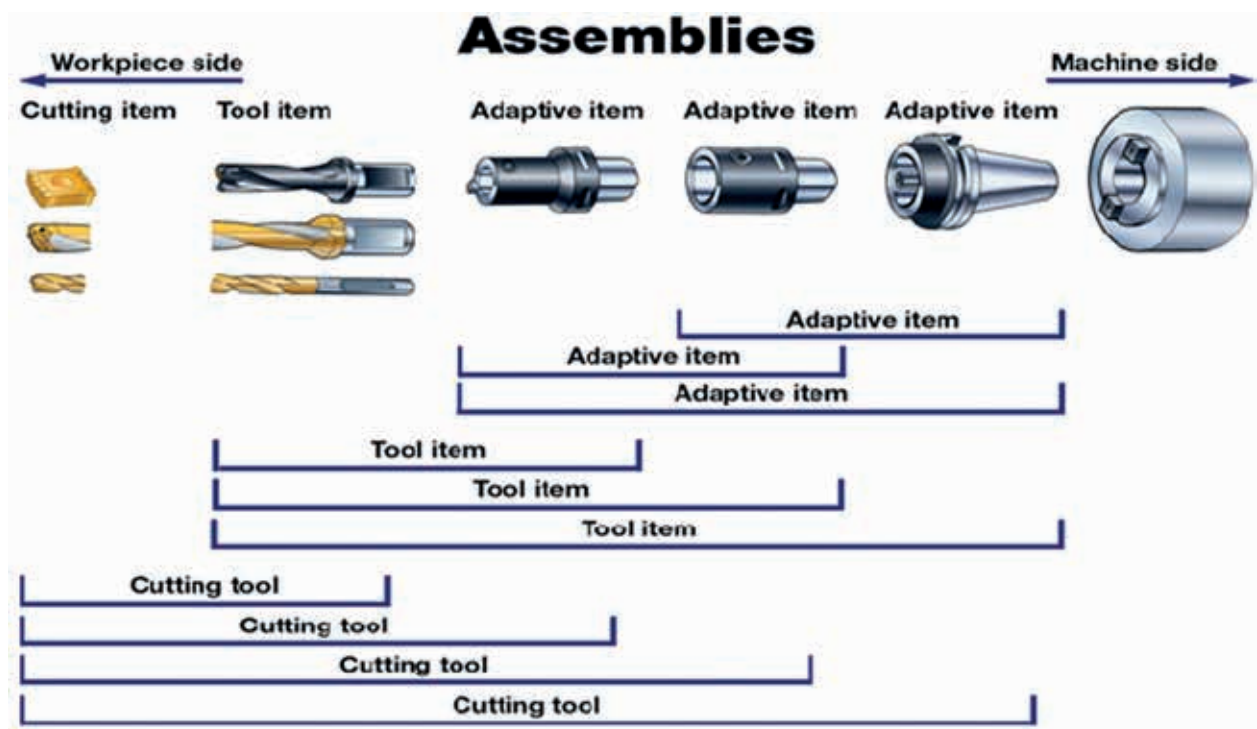


Figure A.1 — Possible assemblies of components of a cutting tool

Since the content of those dictionaries evolves according to industrial innovations and constant improvement of technology in cutting tools, a Maintenance Agency has been established for the purposes of:

- correcting errors in the entries of existing classes and properties;
- adding new properties to existing classes;
- adding new classes and their properties;
- managing the status of those properties and classes;
- migrating the dictionary to subsequent editions of the ISO 13399 series .

The name, address and contact information of the Maintenance Agency is available at: https://www.iso.org/maintenance_agencies.html.

The reference dictionaries are available in the form of EXPRESS files on the website of the Maintenance Agency. These files are considered complementary to this document; they can be freely downloaded and used for cutting tool data representation and exchange.

The following permission notice and disclaimer shall be included in all copies of this EXPRESS schema ("the Schema"), and derivations of the Schema:

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THIS SCHEMA HAS BEEN MODIFIED FROM THE SCHEMA DEFINED IN THE ISO 13399 SERIES, AND SHOULD NOT BE INTERPRETED AS COMPLYING WITH THAT INTERNATIONAL STANDARD.

A.2 Information object registration

A.2.1 Document identification

In order to provide for unambiguous identification of an information object in an open system, the object identifier:

{iso technical specification 13399 part (2) version (3)}

is assigned to this document. The meaning of this value is defined in [ISO/IEC 8824-1](#) and is described in ISO 13584-1.

A.2.2 Dictionary identification

The dictionary defined in this document is assigned the object identifier:

{iso technical specification 13399 part (2) version (3) object (2) cutting items (2)}

Annex B (informative)

Classification table

[Table B.1](#) shows the classification structure of the generic families in the dictionary with an expanded structure for the classes of cutting items feature and cutting item type. The purpose of Table B.1 is to show the relationships between the classes of cutting items and the other classes in the ISO 13399 series.

NOTE [Annex C](#) contains the definition of all the classes that are relevant to cutting items and definitions of those classes of reference systems that are used in the definition of the properties of cutting item types and cutting item features.

Table B.1 — Classification table

Classification structure			Parent	BSU
cutting tool library				71CE7A72B6DA7
	adaptive item type		71CE7A72B6DA7	71EAD37F18F34
	adjustment		71CE7A72B6DA7	71ED884159C90
	assembly item type		71CE7A72B6DA7	71CE7A795C05C
	bolt hole circle		71CE7A72B6DA7	71E02520881F1
	connection interface feature		71CE7A72B6DA7	72719B234F9E0
	coolant supply		71CE7A72B6DA7	71DF8C3C065EB
	cutting data association		71CE7A72B6DA7	71DF8C37D9115
	cutting item feature		71CE7A72B6DA7	71DD6C82F72DA
		chip breaker	71DD6C82F72DA	71DD6C870BCCA
		cutting corner	71DD6C82F72DA	71DD6C87BB5E1
		chamfered corner	71DD6C87BB5E1	71DD6C884C4BD
		rounded corner	71DD6C87BB5E1	71DD6C8A9985E
		cutting edge	71DD6C82F72DA	71DD6C8B42A9E
		cutting edge condition	71DD6C8B42A9E	71DD6C8C4F46C
		cutting edge interrupted	71DD6C8B42A9E	71DD6C93E8F02
		cutting edge major	71DD6C8B42A9E	71DD6C9466F30
		cutting edge minor	71DD6C8B42A9E	71DD6C961D7FE
		wiper edge	71DD6C8B42A9E	71DD6C9A21689
		cutting item coating	71DD6C82F72DA	71DD9D01038CF
		cutting item material	71DD6C82F72DA	71DD703BE6B82
		cutting item profile	71DD6C82F72DA	71DD70030304C
		ball nosed profile	71DD70030304C	71DD700BC8BE2
		drilling profile	71DD70030304C	71DD700BE1D04
		grooving parting profile	71DD70030304C	71DD700BFD9B9
		threading profile	71DD70030304C	71DD700C151B5
		fixing hole	71DD6C82F72DA	71DD7014BF2A1
		flank	71DD6C82F72DA	71DD70155A4B1
		flank major	71DD70155A4B1	71DD7015F073B
		flank minor	71DD70155A4B1	71DD701618C71

Classification structure			Parent	BSU
		flank wiper edge	71DD70155A4B1	71DD70163AA42
		gauge circle	71DD6C82F72DA	72550A77D9DB9
		inscribed circle	71DD6C82F72DA	71DD7032B51CD
		regrinding	71DD6C82F72DA	71EAC81A64368
		top face	71DD6C82F72DA	726E3AB882A33
		cutting item type	71CE7A72B6DA7	71D1AA6C8FC75
		drilling insert	71D1AA6C8FC75	72550E1361C6C
		equilateral equiangular	71D1AA6C8FC75	71D1AA486FF89
		hexagonal insert	71D1AA486FF89	71DD68D7A8E5F
		octagonal insert	71D1AA486FF89	71DD68D7CB4FA
		pentagonal insert	71D1AA486FF89	71DD68D80B094
		square insert	71D1AA486FF89	71DD68D829217
		triangular insert	71D1AA486FF89	71DD68D8446CE
		equilateral nonequiangular	71D1AA6C8FC75	71D1AE11B8B77
		rhombic insert	71D1AE11B8B77	71DD68D301C30
		trigon insert	71D1AE11B8B77	71DD68D73218C
		non replaceable cutting item	71D1AA6C8FC75	7224CCDD587CF
		nonequilateral equiangular	71D1AA6C8FC75	71D1AE120D96E
		rectangular insert	71D1AE120D96E	71DD68D91938A
		nonequilateral nonequiangular	71D1AA6C8FC75	71D1AA489FD6E
		parallelogram insert	71D1AA489FD6E	71DD68D966F52
		reaming insert	71D1AA6C8FC75	726E3AAC68D91
		round insert	71D1AA6C8FC75	71D1AA6635E76
		specific profile insert	71D1AA6C8FC75	71DDA089C8D1E
		cutting operation	71CE7A72B6DA7	71DFF83D21D50
		cutting tool	71CE7A72B6DA7	71CE7A7A5038B
		dependency	71CE7A72B6DA7	727CE22063F8E
		flange	71CE7A72B6DA7	71EC5A767182E
		keyway	71CE7A72B6DA7	71DF5C026BCE7
		locking mechanism	71CE7A72B6DA7	71EBAB85BB5FA
		reference system	71CE7A72B6DA7	71CF2968F7A9E
		runout axial	71CE7A72B6DA7	71EDD2B84143C
		runout radial	71CE7A72B6DA7	71EDD2B858274
		tool item feature	71CE7A72B6DA7	71DD70376771D
		tool item type	71CE7A72B6DA7	71E01A004C775
		tool thread external	71CE7A72B6DA7	71FC1D22BF4CD
		tool thread internal	71CE7A72B6DA7	71FC1D25097D7

Annex C (informative)

Class definitions

C.1 Content and presentation

The content of this annex is limited to the classes of cutting item features, cutting item types, and the reference systems required to define the properties of these classes.

The layout of the information for each class in this annex is:

BSU code–version number Revision number

Preferred name Short name

Definition

NOTE

REMARKS

Subclasses:

Properties:

C.2 Classes

71DD6C82F72DA-001 001

cutting item feature cif

Characteristic of a cutting item that cannot exist independently of the cutting item

Subclasses:

71DD70155A4B1 flank

726E3AB882A33 top face

72550A77D9DB9 gauge circle

71DD6C87BB5E1 cutting corner

71DD6C870BCCA chip breaker

71DD6C8B42A9E cutting edge

71DD70030304C cutting item profile

71DD7032B51CD inscribed circle

71DD703BE6B82 cutting item material

71DD7014BF2A1 fixing hole

71DD9D01038CF cutting item coating

71DD6C870BCCA-001 001

chip breaker cbkr

Modification of the face of a cutting item to control or break the chip

NOTE A chip breaker is either an integral groove or an obstruction attached to the face.

Properties:

71CE7A86A4264 chip breaker manufacturers designation

71CE7A870948A chip breaker width

71CE7A9EDACA1 insert rake angle

71DD6C87BB5E1-001 001

cutting corner corner

Transition between two cutting edges

Subclasses:

71DD6C884C4BD chamfered corner

71DD6C8A9985E rounded corner

Properties:

71DD6C8802580 corner identity

71DD6C884C4BD-001 001

chamfered corner chcc

Linear transition between two cutting edges

Properties:

71DD6C8802580 corner identity

71DD6C88F9210 corner chamfer angle

71DD6C895C25B corner chamfer length

71DD6C89A120F corner chamfer width

71DD6C8A9985E-001 001

rounded corner rndc

Curved transition between two cutting edges

Properties:

71DD6C8802580 corner identity

71DD6C8ACA503 corner radius

72C4A7228B53D corner radius lower tolerance

72C4A722B2E35 corner radius upper tolerance

71DD6C8B42A9E-001 001

cutting edge ctedg

Junction between two surfaces that performs the cutting operation

Subclasses:

71DD6C9A21689 wiper edge

71DD6C961D7FE cutting edge minor

71DD6C9466F30 cutting edge major

71DD6C8C4F46C cutting edge condition

71DD6C93E8F02 cutting edge interrupted

Properties:

71DD6C8B86265 cutting edge identity

71DD6C9332D2C face land angle

71DD6C9371B86 face land size code

71DD6C9394F40 face land width

71DD6C8C4F46C-001 001

cutting edge condition ctec

The possession by the cutting edge of specific characteristics

Properties:

71DD6C8B86265 cutting edge identity

71DD6C90953D8 cutting edge condition code

71DD6C9332D2C face land angle

71DD6C9371B86 face land size code

71DD6C9394F40 face land width

71DD6C93E8F02-001 001

cutting edge interrupted ceint

Cutting edge with discontinuities of sufficient magnitude to prevent chip formation at the point where they occur

REMARKS The purpose of the discontinuities is to reduce the size of individual chips from certain types of tools.

Properties:

71DD6C8B86265 cutting edge identity

71DD6C9332D2C face land angle

71DD6C9371B86 face land size code

71DD6C9394F40 face land width

71DD6C9466F30-001 001

cutting edge major cemj

Junction between the face and the main flank that performs the cutting action to create the transient surface on a workpiece

Properties:

71CE7AA3440B4 cutting edge angle major left hand

71CE7AA78C2F0 cutting edge angle major right hand

71DD6C8B86265 cutting edge identity

71DD6C9332D2C face land angle

71DD6C9371B86 face land size code

71DD6C9394F40 face land width

71DD6C950E7CC cutting edge curvature

71DD6C958C615 cutting edge effective length

71DD6C95DA49B cutting edge length

71DD6C961D7FE-001 001

cutting edge minor cemn

Junction between the face and the minor flank that does not contribute to the creation of the transient surface on the workpiece

Properties:

71DD6C8B86265 cutting edge identity

71DD6C9332D2C face land angle

71DD6C9371B86 face land size code

71DD6C9394F40 face land width

71DD6C9A21689-001 002

wiper edge wpe

Cutting edge with a wiper configuration

Properties:

71CE7AA02C1CC cutting edge angle major

71CE7AA249F88 wiper edge length

71CE7AA2E50BE wiper edge radius

71CF30F9DFE37 insert lead angle

71DD6C8B86265 cutting edge identity

71DD6C9332D2C face land angle

71DD6C9371B86 face land size code

71DD6C9394F40 face land width

71DD7031A98E9 clearance angle wiper edge

71DD70030304C-001 001

cutting item profile ciprf

Shape traced out by the cutting edges of a cutting item

Subclasses:

71DD700BC8BE2 ball nosed profile

71DD700BFD9B9 grooving parting profile

71DD700BE1D04 drilling profile

71DD700C151B5 threading profile

71DD700BC8BE2-002 001

ball nosed profile bnprf

Shape of the perimeter of a cutting item that creates a semi-spherical profile

Properties:

71CE7A9DFA23A insert length

71CE7A9F5308C insert thickness

71CE7A9FB11C3 insert width

71DD6C8802580 corner identity

71DD6C8ACA503 corner radius

71DD9D00193A7 relief angle

71DD700BE1D04-003 002

drilling profile drprf

Shape of the perimeter of a cutting item that creates a drilled hole

Properties:

71CE7AA1E3D75 tipped cutting edge code

71CEAE9B67E4C corner count

71CF30F02C968 cutting diameter insert

71DD701175021 interrupted edge property

71DD7011A3D86 rounded corner property

72550E3BD998C grind style code

71DD700BFD9B9-003 005

grooving parting profile gpprf

Shape of the perimeter of a cutting item that creates the profile of a groove

Properties:

71CE7A85CC4F9 chip breaker face count

71CE7AA1E3D75 tipped cutting edge code

71CE7E6520B87 relief angle left hand

71CE7E6569AB5 relief angle right hand

71CEAE9B67E4C corner count

71CEAEBDE5798 profile style code

71CEAEBE2B825 cutting width

71CEAEBEAB020 profile angle left hand

71CEAEBED837E profile angle right hand

71CEAEBF0C234 profile included angle

71D07576C0558 depth of cut maximum

71DD6C8802580 corner identity

71DD7011A3D86 rounded corner property

71E019EBAE1B1 profile radius

72550DF97C965 chamfer corner property

726E3E65CBE4E corner radius left hand

726E3E66CF011 corner radius right hand

72C4A721F1835 cutting width lower tolerance

72C4A72270CF9 cutting width upper tolerance

71DD700C151B5-003 004

threading profile thprf

Shape of the perimeter of a cutting item that creates a screw thread

Properties:

71CE7A85CC4F9 chip breaker face count

71CE7AA1E3D75 tipped cutting edge code

71CEAE9B67E4C corner count

71CEAEBDE5798 profile style code

71CEAEBEAB020 profile angle left hand

71CEAEBED837E profile angle right hand

71CEAEBF0C234 profile included angle

71CEAEBF8A68E tooth count

71CEAEBFEF1B4 profile distance ex

71CEAEC0139BB profile distance ey

71CEAEC02FEBD taper gradient

71CEAEC08D4B0 thread pitch

71CEAEC114603 thread profile type

71D1A69F60053 thread form type

71D1A6A16E6ED thread type

71D1A6A247E1F thread pitch minimum

71D1A6A283836 thread pitch maximum

71D1A6AAC8707 threads per inch

71D1A6AB6FB19 threads per inch minimum

71D1A6AB8F739 threads per inch maximum

71DD6C8802580 corner identity

71DD7011A3D86 rounded corner property

71DF154901E44 taper thread count

71DF5BE5BCEBE thread height theoretical

71DF5BE617131 thread height difference

71DF5BE65F86F thread height actual

71E033FCBB61C thread hand

72550E426D771 thread cutting part length

726E3E65CBE4E corner radius left hand

726E3E66CF011 corner radius right hand

726E3E73D1CF2 thread designation outside

726E3E7863BBC thread designation inside

71DD7014BF2A1-003 002

fixing hole fxhl

Hole through the body of a replaceable cutting item that is used for attaching the cutting item to a tool item

Properties:

71CE7A968C8FE fixing hole diameter

71CE7A97711B8 insert mounting style code

726E3AAFF0C9 fixing hole chamfer angle

726E3AB5E90FD fixing hole countersunk angle

726E3AB654EA6 fixing hole countersunk diameter

726E3AB6E5726 fixing hole countersunk depth

726E3AB757259 fixing hole countersunk radius

726E3AB7AACED fixing hole chamfer width

71DD70155A4B1-002 001

flank flnk

Surface or surfaces of a cutting item that pass over the transient surface of the workpiece

Subclasses:

71DD70163AA42 flank wiper edge

71DD7015F073B flank major

71DD701618C71 flank minor

Properties:

71DD70158265C flank identity

71DD7015F073B-001 001

flank major flmj

Surface of a cutting item that moves over the transient surface of the workpiece

Properties:

71DD70158265C flank identity

71DD70308D3E3 clearance angle major

71DD701618C71-001 001

flank minor flmn

Surface of a cutting item that does not move over the transient surface of the workpiece

Properties:

71DD70158265C flank identity

71DD7030E0A00 clearance angle minor

71DD70163AA42-001 001

flank wiper edge flwe

Flank of a cutting item that has a wiper edge

Properties:

71DD70158265C flank identity

71DD7031A98E9 clearance angle wiper edge

71DD7032B51CD-001 001

inscribed circle insc

Circle to which all edges of an equilateral and round regular insert are tangential

Properties:

71CE7A96D9F7D inscribed circle diameter

71EAC81A64368-002 002

regrinding rgnd

Modifying the shape of a component of a cutting tool to restore the original shape or to create a new shape

Properties:

71EAC81F88336-003 body clearance depth

71EAC82B2A50E-003 chisel edge angle

71EAC82ADE5EA-003 chisel edge length

71EAC83CD450B-003 clearance angle axial

71EAC83B73825-003 clearance angle radial

71EAC81AD9AE1-003 drill back taper

71EAC8210DF36-003 fluted land width

71EAC828C8308-003 margin width

727BE4E2C07C2-003 residual grinding length (missing for class rgnd)

71EBC1E8857BE-003 overall length minimum (deprecated substituted by LRGRD - residual grinding length)

71EAC823D95A7-003 web taper

71EAC82313165-003 web thickness

726E3AB882A33-003 001

top face tfac

Definition of a cutting item that is above the cutting edge, but is not applicable for the cutting process

Properties:

726E3AB9B8041-003 top face angle

726E3AB8CCB85-003 top face distance

726E3AB92F70D-003 top face radius

71D1AA6C8FC75-003 003

cutting item type cins

Family of items that can be held by a tool item or be part of a solid tool

NOTE The cutting item is the part of the cutting tool that is in contact with the workpiece during the cutting operation.

REMARKS The names of items in this class are not intended to refer to the use of the item in a particular cutting operation.

Subclasses:

71D1AE120D96E nonequilateral equiangular

71D1AA489FD6E nonequilateral nonequiangular

71D1AA486FF89 equilateral equiangular

72550E1361C6C drilling insert

7224CCDD587CF non replaceable cutting item

71D1AE11B8B77 equilateral nonequiangular

71D1AA6635E76 round insert

726E3AAC68D91 reaming insert

71DDA089C8D1E specific profile insert

Properties:

71CED0217FA18 chip breaker property

71DD6C90953D8 cutting edge condition code
71DD703B84298 coating property
726E3EA8A9ED6 grade standard designation main application
726E3EA930D39 grade manufacturers designation
726E424FE9EC2 item style code
72719B167AE15 hole type
72719B203D712 insert side count
72719B23A5008 cutting data association property
72719B2427AED cutting data association code
72719B2B51519 seal
72807E1CC4B50 standard letter
728ECFD4A0629 designation
728ECFD658014 brand
728F4E7B06CA7 insert body diameter
729A919BF211A grade identification
729A919C3D239 grade main application group identification letter
729A91A635147 grade application range min
729A91AAEB181 grade application range max
729A91AB4451E grade application main
72C4A71D1B94B body angle workpiece side

72550E1361C6C-003 002

drilling insert drlins

Type of cutting item that is used for drilling operations

Properties:

71CE7A9751A90 insert body width
71CE7A9936610 insert interface code
71CE7AA1998FF insert index count
71CEAE9B489F4 cutting edge count
71CEAEBF2A69F insert seat size code
71CED0217FA18 chip breaker property
71CF2985DCED3 coolant entry style code
71CF2985FC5FC coolant exit style code

71CF30F02C968 cutting diameter insert
71D084653E57F cutting diameter
71D1C829BC044 fixing hole property
71D1C82A5036D inscribed circle property
71DCCC4FEF366 point angle
71DCCFD064042 point length
71DCD39338974 functional length
71DCD394BB20E protruding length
71DD6C90953D8 cutting edge condition code
71DD7011A3D86 rounded corner property
71DD703B84298 coating property
71EAC8210DF36 fluted land width
71EAC828C8308 margin width
71EAC82B2A50E chisel edge angle
71EBC1E8857BE overall length minimum (deprecated substituted by residual grinding length)
72550DF97C965 chamfer corner property
72550E143C993 insert thickness total
726E3EA8A9ED6 grade standard designation main application
726E3EA930D39 grade manufacturers designation
726E424FE9EC2 item style code
72719B167AE15 hole type
72719B197DA99 tolerance class machined hole diameter
72719B203D712 insert side count
72719B23A5008 cutting data association property
72719B2427AED cutting data association code
72719B2B51519 seal
727BE4E2C07C2 residual grinding length
72807E1CC4B50 standard letter
728B074A39EBC tool assembly length
728ECFD4A0629 designation
728ECFD658014 brand
728F4E7B06CA7 insert body diameter
729A919BF211A grade identification

729A919C3D239 grade main application group identification letter

729A91A635147 grade application range min

729A91AAEB181 grade application range max

729A91AB4451E grade application main

72C4A71D1B94B body angle workpiece side

71D1AE11B8B77-003 003

equilateral nonequiangular eqlnqa

Type of cutting item of regular geometric shape with sides of equal length and non-equal included angles

NOTE The class contains inserts with the ISO shape codes C, D, and V for rhombic inserts and W for trigon inserts.

Subclasses:

71DD68D73218C trigon insert

71DD68D301C30 rhombic insert

Properties:

71CE7A85CC4F9 chip breaker face count

71CE7A96BC122 insert included angle

71CE7A979F41C insert hand

71CE7A9936610 insert interface code

71CE7A9DFA23A insert length

71CE7A9F0C79F insert shape code

71CE7A9F5308C insert thickness

71CE7A9FB11C3 insert width

71CE7AA05C819 m2-dimension

71CE7AA0972DB m-dimension

71CE7AA1998FF insert index count

71CE7AA1E3D75 tipped cutting edge code

71CE7AA215888 tolerance class insert

71CEAE9B489F4 cutting edge count

71CEAE9B67E4C corner count

71CED0217FA18 chip breaker property

71CED022114EC wiper edge property

71CF29872F0AB hand

71D1C829BC044 fixing hole property

71D1C82A5036D inscribed circle property
71DD6C90953D8 cutting edge condition code
71DD6C958C615 cutting edge effective length
71DD6C95DA49B cutting edge length
71DD7011A3D86 rounded corner property
71DD703B84298 coating property
71FD1E2EDD973 cutting point translation X-direction
71FD1E2F66B38 cutting point translation Y-direction
72550DF97C965 chamfer corner property
72550E143C993 insert thickness total
726E3AACF1BB4 corner chamfer length minor
726E3AADC0ABE corner chamfer angle minor
726E3EA8A9ED6 grade standard designation main application
726E3EA930D39 grade manufacturers designation
726E424FE9EC2 item style code
72719B167AE15 hole type
72719B203D712 insert side count
72719B23A5008 cutting data association property
72719B2427AED cutting data association code
72719B2B51519 seal
727C2F69C65AE corner radius minor
72807E1CC4B50 standard letter
728ECFD4A0629 designation
728ECFD658014 brand
728F4E7B06CA7 insert body diameter
729A919BF211A grade identification
729A919C3D239 grade main application group identification letter
729A91A635147 grade application range min
729A91AAEB181 grade application range max
729A91AB4451E grade application main
72C4A71D1B94B body angle workpiece side

71D1AE120D96E-003 003

nonequilateral equiangular nqleqa

Type of cutting item of regular geometric shape with sides of non-equal length and equal included angles

NOTE The class contains inserts with the ISO shape code L.

Subclasses:

71DD68D91938A rectangular insert

Properties:

71CE7A85CC4F9 chip breaker face count

71CE7A96BC122 insert included angle

71CE7A979F41C insert hand

71CE7A9936610 insert interface code

71CE7A9DFA23A insert length

71CE7A9F0C79F insert shape code

71CE7A9F5308C insert thickness

71CE7A9FB11C3 insert width

71CE7AA05C819 m2-dimension

71CE7AA0972DB m-dimension

71CE7AA1998FF insert index count

71CE7AA1E3D75 tipped cutting edge code

71CE7AA215888 tolerance class insert

71CEAE9B489F4 cutting edge count

71CEAE9B67E4C corner count

71CED0217FA18 chip breaker property

71CED022114EC wiper edge property

71CF29872F0AB hand

71D1C829BC044 fixing hole property

71DD6C90953D8 cutting edge condition code

71DD6C958C615 cutting edge effective length

71DD6C95DA49B cutting edge length

71DD7011A3D86 rounded corner property

71DD703B84298 coating property

71EBC1E1074AB gauge diameter

71FD1E2EDD973 cutting point translation X-direction

71FD1E2F66B38 cutting point translation Y-direction

72550A75A58F9 gauge circle property
72550E143C993 insert thickness total
726E3AACF1BB4 corner chamfer length minor
726E3AADC0ABE corner chamfer angle minor
726E3EA8A9ED6 grade standard designation main application
726E3EA930D39 grade manufacturers designation
726E424FE9EC2 item style code
72719B167AE15 hole type
72719B203D712 insert side count
72719B23A5008 cutting data association property
72719B2427AED cutting data association code
72719B2B51519 seal
727C2F69C65AE corner radius minor
72807E1CC4B50 standard letter
728ECFD4A0629 designation
728ECFD658014 brand
728F4E7B06CA7 insert body diameter
729A919BF211A grade identification
729A919C3D239 grade main application group identification letter
729A91A635147 grade application range min
729A91AAEB181 grade application range max
729A91AB4451E grade application main
72C4A71D1B94B body angle workpiece side

7224CCDD587CF-003 003

non replaceable cutting item nrci

Cutting item that is permanently fixed to, or part of, a tool item

Properties:

72550DF97C965-003 chamfer corner property
71CEAE9B67E4C-003 corner count
71CEAE9B489F4-003 cutting edge count
71DD6C958C615-003 cutting edge effective length
71DD6C95DA49B-003 cutting edge length

71FD1E2EDD973-003 cutting point translation X-direction

71FD1E2F66B38-003 cutting point translation Y-direction

71CF29872F0AB-003 hand

71CE7A96BC122-003 insert included angle

727BE4EA8C69D-003 mating radius

71DD7011A3D86-003 rounded corner property

726E3AAC68D91-003 001

reaming insert reains

Type of cutting item that shall be mainly used for reaming operations and is not a regular or irregular insert

NOTE The class contains manufacturer specific inserts.

Properties:

7272127D97F87-003 chip breaker length

7272128E2CCE4-003 cutting edge distance

728055355A516-003 face cutting edge

726F30BC507E3-003 plug angle

726E372E4FBE9-003 plug length

71DCCC3DFA23A-003 step diameter length

71DCCC47221E0-003 step distance

71DD68D301C30-001 001

rhombic insert rhmbins

Replaceable cutting item with two cutting corners, four sides of equal length and four internal angles none of which are equal to ninety degrees

REMARKS This class contains inserts with the ISO shape codes C, D, E, M and V.

Properties:

71CE7A85CC4F9 chip breaker face count

71CE7A96BC122 insert included angle

71CE7A979F41C insert hand

71CE7A9936610 insert interface code

71CE7A9DFA23A insert length

71CE7A9F0C79F insert shape code

71CE7A9F5308C insert thickness

71CE7A9FB11C3 insert width
71CE7AA05C819 m2-dimension
71CE7AA0972DB m-dimension
71CE7AA1998FF insert index count
71CE7AA1E3D75 tipped cutting edge code
71CE7AA215888 tolerance class insert
71CEAE9B489F4 cutting edge count
71CEAE9B67E4C corner count
71CED0217FA18 chip breaker property
71CED022114EC wiper edge property
71CF29872F0AB hand
71D1C829BC044 fixing hole property
71D1C82A5036D inscribed circle property
71DD6C90953D8 cutting edge condition code
71DD6C958C615 cutting edge effective length
71DD6C95DA49B cutting edge length
71DD7011A3D86 rounded corner property
71DD703B84298 coating property
71FD1E2EDD973 cutting point translation X-direction
71FD1E2F66B38 cutting point translation Y-direction
72550DF97C965 chamfer corner property
72550E143C993 insert thickness total
726E3AACF1BB4 corner chamfer length minor
726E3AADC0ABE corner chamfer angle minor
726E3EA8A9ED6 grade standard designation main application
726E3EA930D39 grade manufacturers designation
726E424FE9EC2 item style code
72719B167AE15 hole type
72719B203D712 insert side count
72719B23A5008 cutting data association property
72719B2427AED cutting data association code
72719B2B51519 seal
727C2F69C65AE corner radius minor

72807E1CC4B50 standard letter
728ECFD4A0629 designation
728ECFD658014 brand
728F4E7B06CA7 insert body diameter
729A919BF211A grade identification
729A919C3D239 grade main application group identification letter
729A91A635147 grade application range min
729A91AAEB181 grade application range max
729A91AB4451E grade application main
72C4A71D1B94B body angle workpiece side

71DDA089C8D1E-003 004

specific profile insert spins

Type of cutting item that possess a defined profile shape

Properties:

72719B181D75D-003 central flat
72550DF97C965-003 chamfer corner property
71CE7A85CC4F9-003 chip breaker face count
7272127EBE942-003 clearance angle flank left hand
7272127FC0C98-003 clearance angle flank right hand
72724DF0F6A58-003 corner chamfer angle left hand
72724DF15A080-003 corner chamfer angle right hand
727233F2FE845-003 corner chamfer width left hand
727233F34CCF7-003 corner chamfer width right hand
71CEAE9B67E4C-003 corner count
71DD6C8802580-002 corner identity
726E3E65CBE4E-003 corner radius left hand
72C4A7228B53D-001 corner radius lower tolerance
726E3E66CF011-003 corner radius right hand
72C4A722B2E35-001 corner radius upper tolerance
71CEAE9BD5A66A-003 cutting depth maximum
71D084653E57F-003 cutting diameter
71CF30F02C968-003 cutting diameter insert

71CE7AA3440B4-003 cutting edge angle major left hand
71CE7AA78C2F0-003 cutting edge angle major right hand
71CEAE9B489F4-003 cutting edge count
71DD6C950E7CC-003 cutting edge curvature
71DD6C8B86265-003 cutting edge identity
726E3E6E8B8EB-003 cutting edge major radius
71FD1E2EDD973-003 cutting point translation X-direction
71FD1E2F66B38-003 cutting point translation Y-direction
71CEAEBE2B825-003 cutting width
72C4A721F1835-001 cutting width lower tolerance
72C4A72270CF9-001 cutting width upper tolerance
71D1C829BC044-003 fixing hole property
72724DF1A9960-003 flank chamfer angle left hand
72724DF1F0064-003 flank chamfer angle right hand
727233F3ACD12-003 flank chamfer width left hand
727233F41008D-003 flank chamfer width right hand
72724DF27E860-003 flank radius left hand
72724DF2B776B-003 flank radius right hand
71DCD39338974-003 functional length
71CF29984CDA7-003 functional width
72550A75A58F9-003 gauge circle property
71CF29872F0AB-003 hand
71D1C82A5036D-003 inscribed circle property
71CE7A9751A90-003 insert body width
726E3E6875C52-003 insert gauge length
71CE7A979F41C-003 insert hand
71CE7A96BC122-003 insert included angle
71CE7AA1998FF-003 insert index count
71CE7A9936610-003 insert interface code
71CE7A9DFA23A-003 insert length
71CEAEBF2A69F-003 insert seat size code
71CE7A9F5308C-003 insert thickness
72550E143C993-003 insert thickness total

71CE7A9FB11C3-003 insert width
71CEAEBEAB020-003 profile angle left hand
71CEAEBED837E-003 profile angle right hand
727BE4E96AD88-003 profile depth insert
71CEAEBFEF1B4-003 profile distance ex
71CEAEC0139BB-003 profile distance ey
71CEAEBF0C234-003 profile included angle
71E019EBAE1B1-003 profile radius
71CEAEBDE5798-003 profile style code
71DCD394BB20E-003 protruding length
71CE7E6520B87-003 relief angle left hand
71CE7E6569AB5-003 relief angle right hand
71DD7011A3D86-003 rounded corner property
726E42319756D-003 spot chamfer distance
72550E426D771-003 thread cutting part length
71D1A69F60053-003 thread form type
71CEAEC08D4B0-003 thread pitch
71D1A6A283836-003 thread pitch maximum
71D1A6A247E1F-003 thread pitch minimum
71CEAEC114603-003 thread profile type
71DF153FA5F85-003 thread tolerance class
71D1A6A16E6ED-003 thread type
71D1A6AAC8707-003 threads per inch
71D1A6AB8F739-003 threads per inch maximum
71D1A6AB6FB19-003 threads per inch minimum
71CE7AA1E3D75-003 tipped cutting edge code
728B074A39EBC-001 tool assembly length
728B074B7B0B5-001 tool assembly width
71CEAEBF8A68E-003 tooth count
71CED022114EC-003 wiper edge property

71DD68D73218C-003 002

trigon insert trigins

Replaceable cutting item with a generally triangular shape with enlarged included angles

NOTE The edges between the corners can be curved or straight.

REMARKS The ISO shape code for this insert is W when the edges are straight.

Properties:

71CE7A85CC4F9 chip breaker face count
71CE7A96BC122 insert included angle
71CE7A979F41C insert hand
71CE7A9936610 insert interface code
71CE7A9DFA23A insert length
71CE7A9F0C79F insert shape code
71CE7A9F5308C insert thickness
71CE7A9FB11C3 insert width
71CE7AA05C819 m2-dimension
71CE7AA0972DB m-dimension
71CE7AA1998FF insert index count
71CE7AA1E3D75 tipped cutting edge code
71CE7AA215888 tolerance class insert
71CEAE9B489F4 cutting edge count
71CEAE9B67E4C corner count
71CED0217FA18 chip breaker property
71CED022114EC wiper edge property
71CF29872F0AB hand
71D1C829BC044 fixing hole property
71D1C82A5036D inscribed circle property
71DD6C90953D8 cutting edge condition code
71DD6C958C615 cutting edge effective length
71DD6C95DA49B cutting edge length
71DD7011A3D86 rounded corner property
71DD703B84298 coating property
71FD1E2EDD973 cutting point translation X-direction
71FD1E2F66B38 cutting point translation Y-direction
72550DF97C965 chamfer corner property
72550E143C993 insert thickness total

726E3AACF1BB4 corner chamfer length minor
726E3AADC0ABE corner chamfer angle minor
726E3E6E8B8EB cutting edge major radius
726E3EA8A9ED6 grade standard designation main application
726E3EA930D39 grade manufacturers designation
726E424FE9EC2 item style code
72719B167AE15 hole type
72719B203D712 insert side count
72719B23A5008 cutting data association property
72719B2427AED cutting data association code
72719B2B51519 seal
727C2F69C65AE corner radius minor
727C7D93D0F08 insert included angle minor (deprecated)
72807E1CC4B50 standard letter
728ECFD4A0629 designation
728ECFD658014 brand
728F4E7B06CA7 insert body diameter
729A919BF211A grade identification
729A919C3D239 grade main application group identification letter
729A91A635147 grade application range min
729A91AAEB181 grade application range max
729A91AB4451E grade application main
72C4A71D1B94B body angle workpiece side

71DD68D7A8E5F-001 001

hexagonal insert hexin

Replaceable cutting item with six equal sides and six equal internal angles

REMARKS This shape is identified with the ISO shape code H.

Properties:

71CE7A85CC4F9 chip breaker face count
71CE7A96BC122 insert included angle
71CE7A979F41C insert hand
71CE7A9936610 insert interface code

71CE7A9DFA23A insert length
71CE7A9F0C79F insert shape code
71CE7A9F5308C insert thickness
71CE7A9FB11C3 insert width
71CE7AA05C819 m2-dimension
71CE7AA0972DB m-dimension
71CE7AA1998FF insert index count
71CE7AA1E3D75 tipped cutting edge code
71CE7AA215888 tolerance class insert
71CEAE9B489F4 cutting edge count
71CEAE9B67E4C corner count
71CED0217FA18 chip breaker property
71CED022114EC wiper edge property
71CF29872F0AB hand
71D1C829BC044 fixing hole property
71D1C82A5036D inscribed circle property
71DD6C90953D8 cutting edge condition code
71DD6C958C615 cutting edge effective length
71DD6C95DA49B cutting edge length
71DD7011A3D86 rounded corner property
71DD703B84298 coating property
71FD1E2EDD973 cutting point translation X-direction
71FD1E2F66B38 cutting point translation Y-direction
72550DF97C965 chamfer corner property
72550E143C993 insert thickness total
726E3EA8A9ED6 grade standard designation main application
726E3EA930D39 grade manufacturers designation
726E424FE9EC2 item style code
72719B167AE15 hole type
72719B203D712 insert side count
72719B23A5008 cutting data association property
72719B2427AED cutting data association code
72719B2B51519 seal

72807E1CC4B50 standard letter

728ECFD4A0629 designation

728ECFD658014 brand

728F4E7B06CA7 insert body diameter

729A919BF211A grade identification

729A919C3D239 grade main application group identification letter

729A91A635147 grade application range min

729A91AAEB181 grade application range max

729A91AB4451E grade application main

72C4A71D1B94B body angle workpiece side

71DD68D7CB4FA-001 001

octagonal insert octins

Replaceable cutting item with eight equal sides and eight equal internal angles

REMARKS This shape is identified by the ISO shape code O.

Properties:

71CE7A85CC4F9 chip breaker face count

71CE7A96BC122 insert included angle

71CE7A979F41C insert hand

71CE7A9936610 insert interface code

71CE7A9DFA23A insert length

71CE7A9F0C79F insert shape code

71CE7A9F5308C insert thickness

71CE7A9FB11C3 insert width

71CE7AA05C819 m2-dimension

71CE7AA0972DB m-dimension

71CE7AA1998FF insert index count

71CE7AA1E3D75 tipped cutting edge code

71CE7AA215888 tolerance class insert

71CEAE9B489F4 cutting edge count

71CEAE9B67E4C corner count

71CED0217FA18 chip breaker property

71CED022114EC wiper edge property

71CF29872F0AB hand
71D1C829BC044 fixing hole property
71D1C82A5036D inscribed circle property
71DD6C90953D8 cutting edge condition code
71DD6C958C615 cutting edge effective length
71DD6C95DA49B cutting edge length
71DD7011A3D86 rounded corner property
71DD703B84298 coating property
71FD1E2EDD973 cutting point translation X-direction
71FD1E2F66B38 cutting point translation Y-direction
72550DF97C965 chamfer corner property
72550E143C993 insert thickness total
726E3EA8A9ED6 grade standard designation main application
726E3EA930D39 grade manufacturers designation
726E424FE9EC2 item style code
72719B167AE15 hole type
72719B203D712 insert side count
72719B23A5008 cutting data association property
72719B2427AED cutting data association code
72719B2B51519 seal
72807E1CC4B50 standard letter
728ECFD4A0629 designation
728ECFD658014 brand
728F4E7B06CA7 insert body diameter
729A919BF211A grade identification
729A919C3D239 grade main application group identification letter
729A91A635147 grade application range min
729A91AAEB181 grade application range max
729A91AB4451E grade application main
72C4A71D1B94B body angle workpiece side

71DD68D80B094-001 001

pentagonal insert pentins