



# SLOVENSKI STANDARD SIST EN ISO 9013:2003

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## Toplotno rezanje - Razvrstitev toplotnih rezov - Geometrijska specifikacija izdelkov in tolerance kakovosti (ISO 9013:2002)

Thermal cutting - Classification of thermal cuts - Geometrical product specification and quality tolerances (ISO 9013:2002)

Thermisches Schneiden - Einteilung thermischer Schnitte - Geometrische Produktspezifikation und Qualität

Coupage thermique - Classification des coupes thermiques - Spécification géométrique des produits et tolérances relatives à la qualité (ISO 9013:2002)

Ta slovenski standard je istoveten z: EN ISO 9013:2002

### ICS:

17.040.20	Lastnosti površin	Properties of surfaces
25.160.10	Varilni postopki in varjenje	Welding processes

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English version

## Thermal cutting - Classification of thermal cuts - Geometrical product specification and quality tolerances (ISO 9013:2002)

Coupage thermique - Classification des coupes thermiques  
- Spécification géométrique des produits et tolérances  
relatives à la qualité (ISO 9013:2002)

Thermisches Schneiden - Einteilung thermischer Schnitte -  
Geometrische Produktspezifikation und Qualität (ISO  
9013:2002)

This European Standard was approved by CEN on 19 August 2002.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
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## Foreword

This document (EN ISO 9013:2002) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2003, and conflicting national standards shall be withdrawn at the latest by March 2003.

This document supersedes EN ISO 9013:1995.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZB, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

### Endorsement notice

The text of ISO 9013:2002 has been approved by CEN as EN ISO 9013:2002 without any modifications.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

## Annex ZA (normative)

### Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
ISO 1302	2002	Geometrical Product Specifications (GPS) - Indication of surface texture in technical product documentation	EN ISO 1302	2002
ISO 2553	1992	Welded, brazed and soldered joints - Symbolic representation on drawing	EN 22553	1994
ISO 3274	1996	Geometrical product specifications (GPS) - Surface texture: Profile method - Nominal characteristics of contact (stylus) instruments	EN ISO 3274	1997
ISO 4287	1997	Geometrical product specifications (GPS) - Surface texture: Profile method - Terms, definitions and surface texture parameters	EN ISO 4287	1998
ISO 4288	1996	Geometrical product specifications (GPS) - Surface texture: Profile method - Rules and procedures for the assessment of surface texture	EN ISO 4288	1997

## Annex ZB (informative)

### Clauses of this European Standard addressing essential requirements or other provisions of EU directives.

This European standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of Directive 97/23/EC.

**WARNING** Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

The following clauses of this standard as detailed in Tables ZB.1, are likely to support requirements of the Directives 97/23/EC.

Compliance with these clauses of this standard provides one with means of conforming with the specific essential requirements of the Directives concerned and associated EFTA regulations.

**Table ZB.1 - Correspondence between this European Standard and Directive 97/23/EC**

Clauses/sub-clauses of this European Standard	Essential requirements of Directive 97/23/EC	Qualifying remarks/notes
All clauses	Annex 1, 3.1.1	

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**Thermal cutting — Classification of thermal  
cuts — Geometrical product specification  
and quality tolerances**

*Coupage thermique — Classification des coupes thermiques —  
Spécification géométrique des produits et tolérances relatives à la qualité*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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

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

ISO 9013 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 8, *Equipment for gas welding, cutting and allied processes*.

This second edition cancels and replaces the first edition (ISO 9013:1992), which has been technically revised.

Annexes A and B of this International Standard are for information only.

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# Thermal cutting — Classification of thermal cuts — Geometrical product specification and quality tolerances

## 1 Scope

This International Standard applies to materials suitable for oxyfuel flame cutting, plasma cutting and laser cutting. It is applicable to flame cuts from 3 mm to 300 mm, plasma cuts from 1 mm to 150 mm and to laser cuts from 0,5 mm to 40 mm. This International Standard includes geometrical product specifications and quality tolerances.

The geometrical product specifications are applicable if reference to this International Standard is made in drawings or pertinent documents, e.g. delivery conditions.

If this International Standard is also to apply, by way of exception, to parts which are produced by different cutting processes (e.g. high-pressure water jet cutting), this has to be agreed upon separately.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1101:1983, *Technical drawings — Geometrical tolerancing — Tolerancing of form, orientation, location and run-out — Generalities, definitions, symbols, indications on drawings*

ISO 1302:2002, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation*

ISO 2553, *Welded, brazed and soldered joints — Symbolic representation on drawings*

ISO 3274, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Nominal characteristics of contact (stylus) instruments*

ISO 4287:1997, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters*

ISO 4288:1996, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture*

ISO 8015, *Technical drawings — Fundamental tolerancing principle*

### 3 Terms and definitions

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

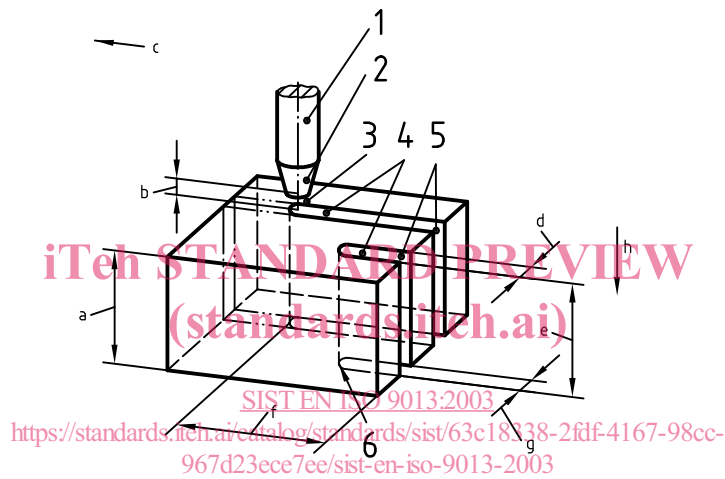
#### 3.1 General

Nouns referring to the cutting operation will be formed by using the key word “cutting” (e.g. advance cutting direction); nouns referring to the cut carried out will be formed by using the key word “cut” (e.g. cut surface).

#### 3.2 Terms and definitions explained by figures

NOTE Figure 1 indicates the terms related to the cutting process of the work piece after the cutting process has started, Figure 2 indicates the terms for the finished work piece. Figure 3 shows a straight cut and Figure 4 a contour cut.

##### 3.2.1 Terms on the started work piece



#### Key

- 1 Torch
- 2 Nozzle
- 3 Beam/flame/arc
- 4 Kerf
- 5 Start of cut
- 6 End of cut
- a Work piece thickness
- b Nozzle distance
- c Advance direction
- d Top kerf width
- e Cut thickness
- f Length of cut
- g Bottom kerf width
- h Cutting direction

Figure 1 — Terms related to the cutting process of the work piece