INTERNATIONAL STANDARD

ISO 10899

First edition
1996-12-15

High-speed steel two-flute twist drills — Technical specifications

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Forets hélicoïdaux à deux lèvres en acier rapide — Spécifications techniques

ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/05cd6441-2b3d-4a01-b393-f7f4ad78aa49/iso-10899-1996

Reference number
ISO 10899:1996(E)

Contents

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/05cd6441-2b3d-4a01-b393-f7f4ad78aa49/iso-10899-1996

© ISO 1996

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

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.

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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

International Standard ISO 10899 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 2, *Drills, reamers, milling cutters and milling machine accessories.*

ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/...

Annex A forms an integral part of this International Standard. Annexes B and C are for information only.

This page intentionally left blank

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/05cd6441-2b3d-4a01-b393-f7f4ad78aa49/iso-10899-1996

High-speed steel two-flute twist drills — Technical specifications

1 Scope

This International Standard specifies the technical requirements for two-flute twist drills made of high speed steel with either cylindrical or Morse taper shanks. It is applicable to drills irrespective of the manufacturing process, except the roll-forged drills. These requirements may also form the basis for the specification of special purpose twist drills as agreed between the buyer and supplier. This International Standard is not applicable to woodworking or do-it-yourself drills.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/44...
iTeh STANDARD PREVIEW ISO 10899:1996

ISO 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts.*

ISO 296:1991, *Machine tools — Self-holding tapers for tool shanks.*

ISO 1101:—[1], *Technical drawings — Geometrical tolerancing — Tolerances of form, orientation, location and run-out — Generalities, definitions, symbols, indications on drawings.*

ISO 2768-1:1989, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications.*

ISO 5419:1982, *Twist drills — Terms, definitions and types.*

ISO 6507-1:—[2], *Metallic materials — Vickers hardness test — Part 1: Test method.*

ISO 11054:1993, *Cutting tools — Designation of high-speed steel groups.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 5419 apply.

---

1) To be published. (Revision of ISO 1101:1983)

2) To be published. (Revision of ISO 6507-1:1982, ISO 6507-2:1983, ISO 6507-3:1989, ISO 409-1:1982, ISO 409-2:1983 and ISO/DIS 409-3)

4 General features of design

Both right-hand and left-hand cutting drills are in conformity with this International Standard, but unless otherwise ordered, a right hand cutting drill shall be supplied.

5 Dimensions

5.1 Drill diameter [3.30][3)]

5.1.1 General

The drill diameter is measured across the lands at the outer corners of the drill. The diameter and tolerance on this diameter shall be as specified in the relevant dimensional standard (see annex C).

5.1.2 Back taper [3.32]

The drill diameter d usually decreases from the outer corner [3.25] towards the shank. The difference in diameter, Δd is measured across the lands [3.14] between the flute ends [3.9] over the flute length, l_1 [3.8]. A back taper, $(\Delta d)/l_1$ of 0,02 % to 0,08 % is permitted, except for drills with a diameter $d < 6$ mm which may be parallel.

The total back taper ΔD shall not exceed 0,25 mm.

5.2 Cylindrical shank [3.2.2]

iTeh STANDARD PREVIEW

The tolerance on shank diameter shall be h11 (see ISO 286-2); tolerance f11 is allowed for drills with back taper.

(standards.iteh.ai)

The tolerance on cylindricity shall be 0,02 mm on the shank length corresponding to the holding surface of the collet.

ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/05cd6441-2b3d-4a01-b393-f7f4ad78aa49/iso-10899-1996

5.3 Taper shank [3.2.1]

Taper shank drills shall be provided with Morse taper shanks with tang in accordance with ISO 296, but with a cone tolerance of AT 7, see annex A.

5.4 Radial runout

The maximum radial runout, measured on the land at the outer corner [3.25] of the drill, shall be limited to the tolerance calculated by the formulae given in 5.4.1.

5.4.1 Radial runout tolerance formula

Radial runout tolerances are calculated using the following formula:

$$\text{Runout} = 0{,}03 + 0{,}01\ l/d \text{ for } d \geqslant 2$$

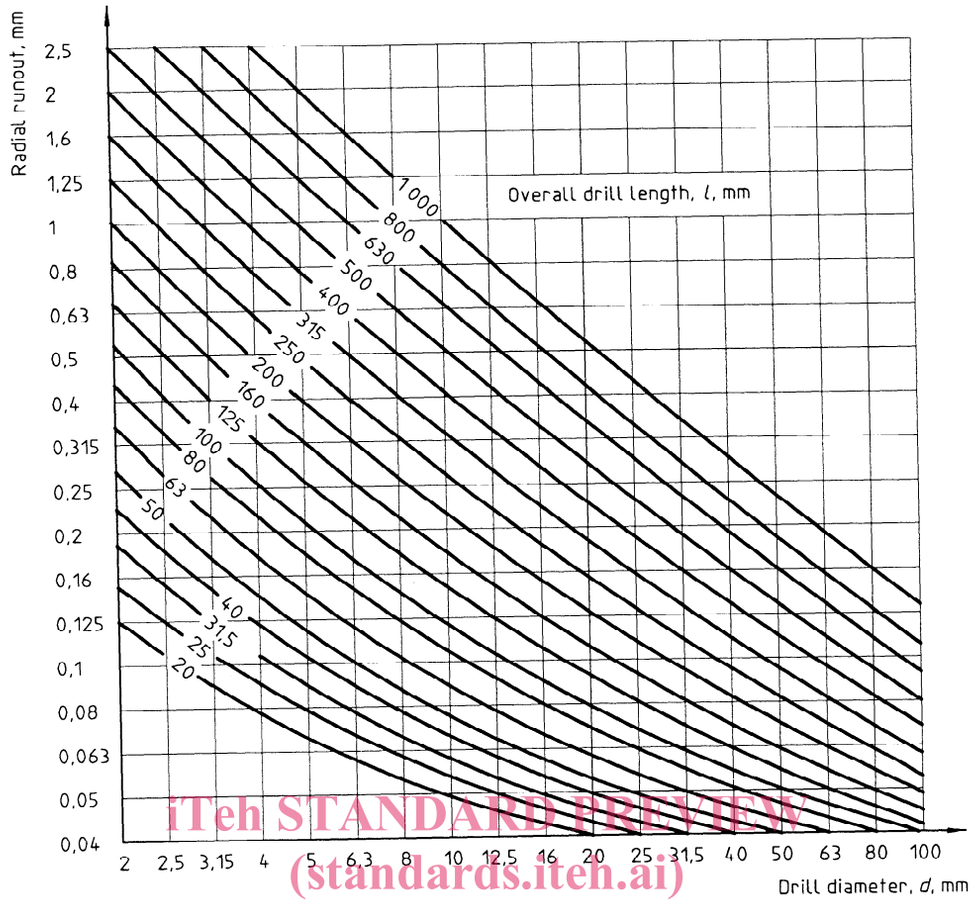
where

d is the drill diameter, in millimetres;

l is the overall drill length, in millimetres.

NOTE — This International Standard does not state runout tolerance for drills $d < 2$ mm, as such a tolerance would be impracticable.

3) Numbers in square brackets after a term is the defining clause in ISO 5419.



iTeh STANDARD PREVIEW
(standards.iteh.ai)

Figure 1 — Radial runout tolerance — Information example

ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/05cd6441-2b3d-4a01-b393-f7f4ad78aa49/iso-10899-1996

5.4.2 Test measuring method

Testing shall take place at the land level by rotating the drill through 180°, and taking the reading on the dial gauge. The deviation shall be expressed as the difference in measurements.

The point of measurement at the drill end shall be as close as possible to the outer corner.

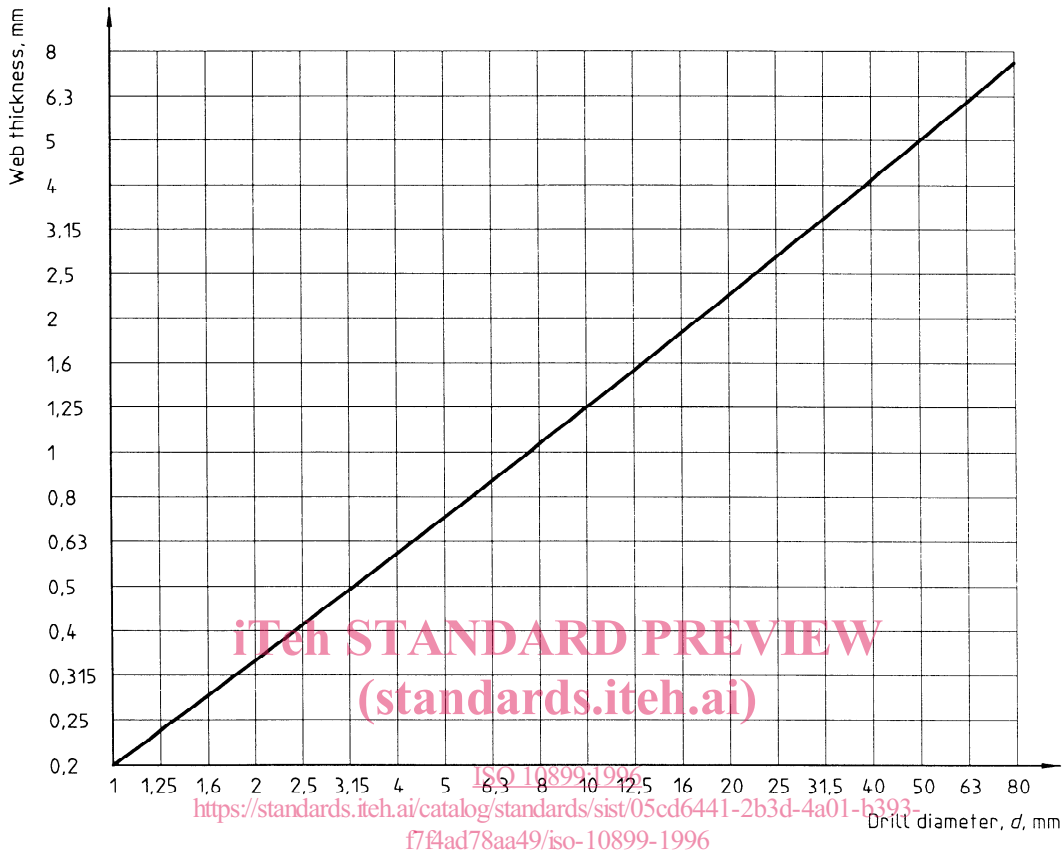
5.5 Lengths

Drill overall and flute lengths shall be as specified in the relevant dimensional standard (see annex C). The tolerance on overall length and flute length shall be the "very coarse" class as given in ISO 2768-1.

In special cases, e.g. if rapid delivery of twist drills with intermediate diameters is required, the total length, the flute length and other dimensions can, by agreement, be made to correspond to the next larger or next smaller twist drill diameter range.

5.6 Web thickness [3.13]

The web thickness measured at the point of the drill shall not be so small that it lie below the line shown in figure 2. The web may increase in thickness towards the shank. The minimum web thickness based on general purpose design may not be applicable for special purpose drills.



iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/05cd6441-2b3d-4a01-b393-f7f4ad78aa49/iso-10899-1996

Figure 2 — Minimum web thickness

5.7 Web symmetry

The tolerance on the web symmetry, t, about the drill axis in a plane perpendicular to that axis, as shown in figure 3 and according to ISO 1101, shall not be greater than that given in figure 4. The measurement shall be taken at the point or behind any thinning of the web (see annex B).

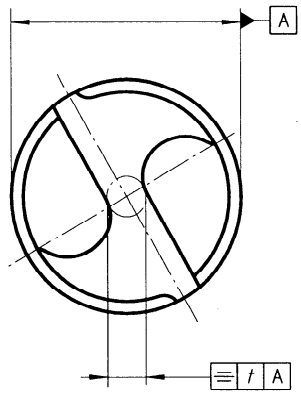
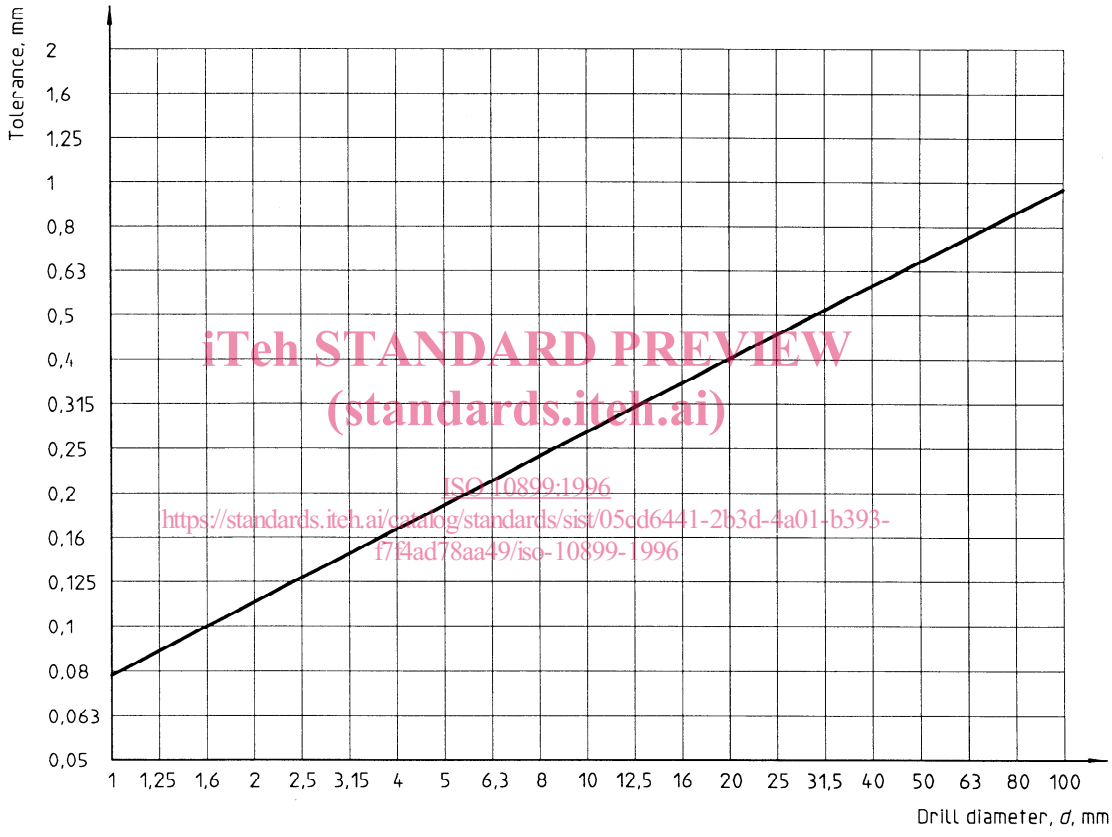


Figure 3 — Tolerance on web symmetry — Specification

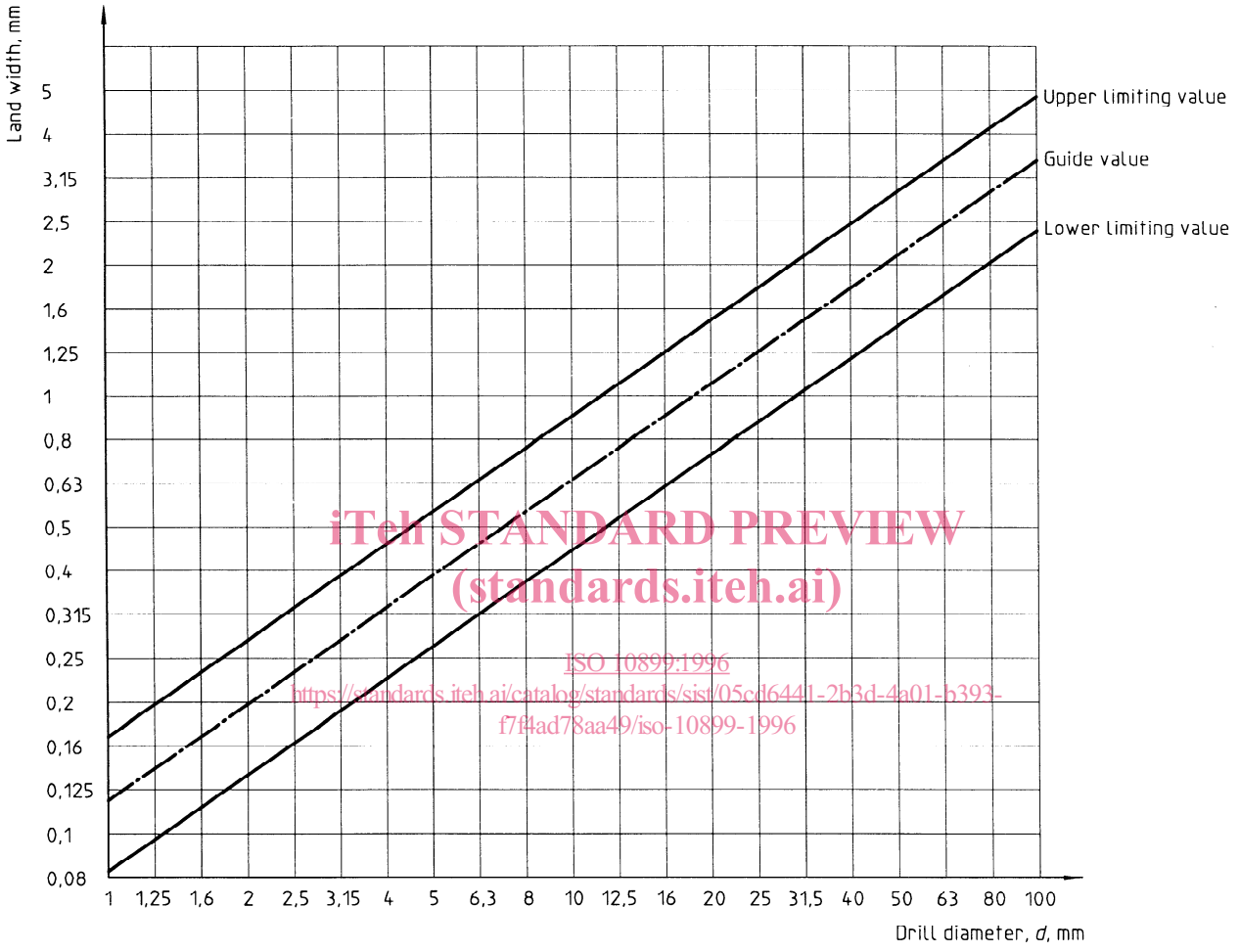


iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/05cd6441-2b3d-4a01-b393-f74ad78aa49/iso-10899-1996

Figure 4 — Tolerance on web symmetry — Limits of the tolerance

5.8 Land width [3.15]

The land width as measured at right angles to the drill helix near the outer corner should have a value such as those given in figure 5. The difference in land widths of a single drill should not exceed a third of the tolerance given in figure 5.

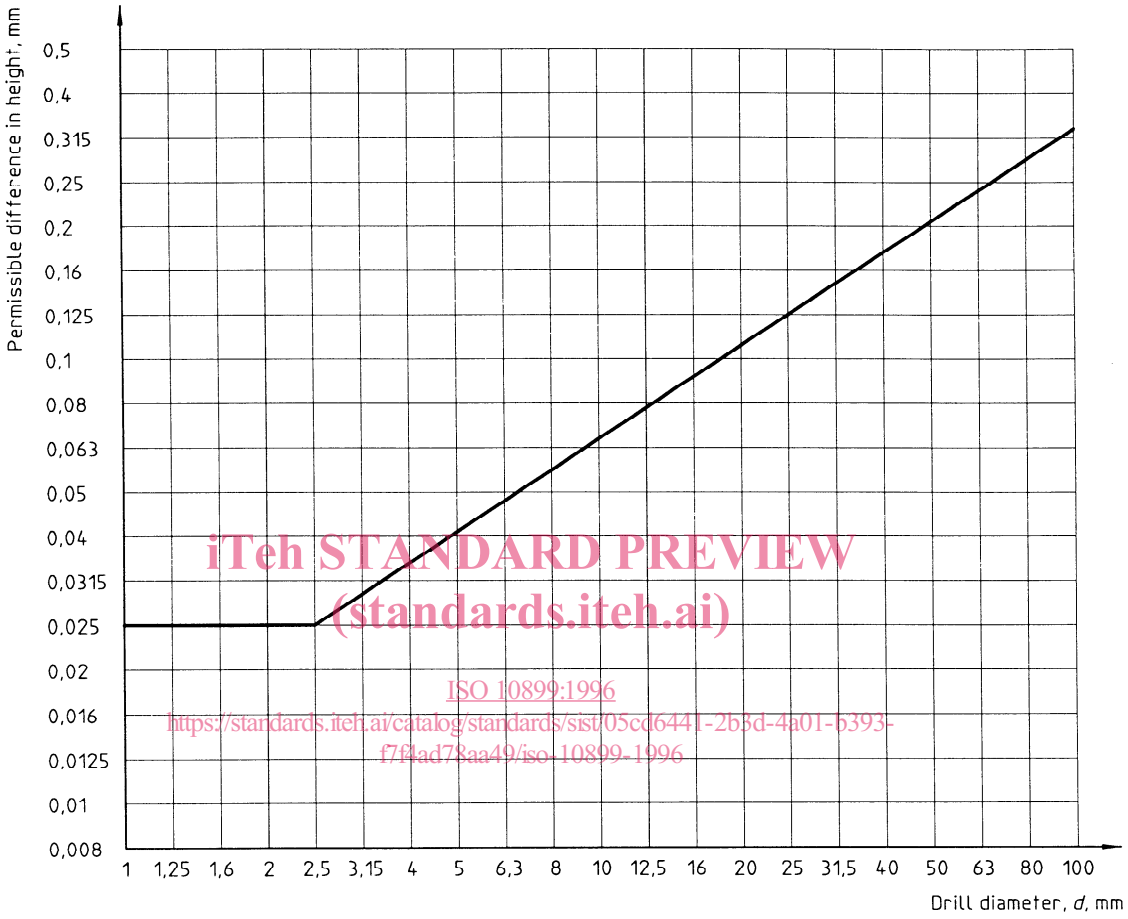


iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/05cd6441-2b3d-4a01-b393-f7f4ad78aa49/iso-10899-1996

Figure 5 — Land width

5.9 Relative lip heights

The maximum permissible difference in height of the two major cutting edges (lips) [3.23] of a drill measured at the outer corners shall be limited to a value below the line shown in figure 6.



iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10899:1996
https://standards.iteh.ai/catalog/standards/sist/05cd6441-2b3d-4a01-b393-f7f4ad78aa49/iso-10899-1996

Figure 6 — Permissible difference in height of major cutting edges