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Superabrasives — Limit deviations and run-out tolerances for grinding wheels with diamond or cubic boron nitride

Superabrasifs — Écarts limites et tolérances de battement pour les meules à base de diamant et de nitrure de bore

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Contents

Page

Fore	word	iv
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Limit deviations and run-out tolerance abbreviations	3
5 5.1 5.2	Straight, recessed, tapered and hubbed grinding wheels Grinding wheels for peripheral grinding Grinding wheels for face grinding	4
6 6.1 6.2	Mounted points Designation Limit deviations and circular run-out tolerances	
7 7.1 7.2	Superabrasives with metal core for hand-held grinding Designation Limit deviations and run-out tolerances iTeh STANDARD PREVIEW	

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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 2.

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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 22917 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 5, *Grinding wheels and abrasives*.

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Superabrasives — Limit deviations and run-out tolerances for grinding wheels with diamond or cubic boron nitride

1 Scope

This International Standard applies to all rotating grinding tools with diamond or cubic boron nitride with metal, vitrified or resinoid bonded cores, and circular bores for mounting the grinding tool on a clamping flange as well as to grinding points with cylindrical spindle for mounting in collets. It contains the significant limit deviations and run-out tolerances of these grinding tools.

2 Normative references

The following referenced documents are indispensable for the application 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 286-1:1988, ISO system of limits and fits — Part 1: Bases of tolerances, deviations and fits

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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 22917:2004

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3 Terms and definitions

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

For further terms and definitions, see also ISO 286-1. It should be noted, however, that some of the terms are defined in a more restricted sense than in common usage.

3.1

size

number expressing, in a particular unit, the numerical value of a linear dimension

3.1.1

basic size nominal size

size from which the limits of size are derived by the application of the upper and lower deviations

3.1.2

actual size

size of a feature, obtained by measurements

3.1.3

limits of size

two extreme permissible sizes of a feature, between which the actual size should lie, the limits of size being included

3.1.3.1

maximum limit of size

greatest permissible size of a feature

3.1.3.2

minimum limit of size smallest permissible size of a feature

3.2

deviation

algebraic difference between a size (actual size, limit of size, etc.) and the corresponding basic size

3.2.1

limit deviations

upper deviation and lower deviation

3.2.1.1

upper deviation algebraic difference between the maximum limit of size and the corresponding basic size

3.2.1.2 Iower deviation algebraic difference between the minimum limit of size and the corresponding basic size

3.3

size tolerance iTeh STANDARD PREVIEW difference between the maximum limit of size and the minimum limit of size, i.e. the difference between the upper deviation and the lower deviation (standards.iteh.ai)

NOTE The tolerance is an absolute value without sign.

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4 Limit deviations and run-out tolerance abbreviations

See Table 1.

Symbol	Designation		
Symbol	Abrasive product	Mounted points	
T _D	Limit deviations of outside diameter	Limit deviations of outside diameter	
T _E	Limit deviations of thickness at bore		
T _H	Limit deviations of bore diameter		
T _J	Limit deviations of contact surface diameter		
T _K	Limit deviations of recess diameter		
TL		Limit deviations of overall length	
T _{L4}		Limit deviations of reduced length of spindle	
T _{PL}	Limit deviations of circular run-out tolerance, axial		
T _R	Limit deviations of the radii		
T _{RL}	Limit deviations of circular run-out tolerance, radial	Limit deviations of circular run-out tolerance, radial	
T_{Sd}	(standar us.iter	Limit deviations of spindle diameter	
T _{S1}	ISO 22917:2004	Limit deviations of reduced diameter of spindle	
Τ _T	Limit deviations of overall thickness-0-22917-2	Limit deviations of thickness	
T _U	Limit deviations of thickness of superabrasive section		
T _W	Limit deviations of rim width		
T _X	Limit deviations of depth of superabrasive section	Limit deviations of depth of superabrasive section	
T _α	Limit deviations of angles		

Table 1 — Limit deviations and run-out tolerance abbreviations

5 Straight, recessed, tapered and hubbed grinding wheels

5.1 Grinding wheels for peripheral grinding

5.1.1 Designations

See Table 2.

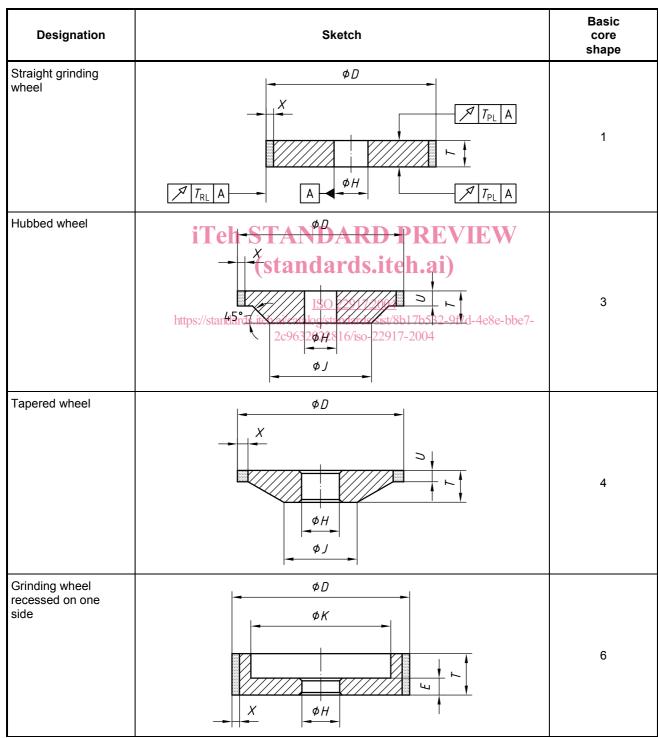
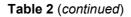
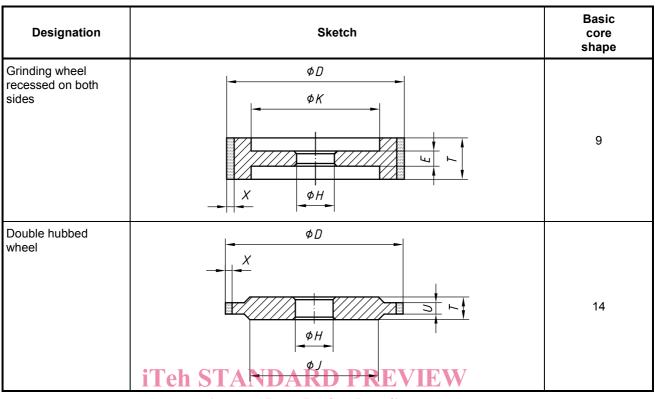


Table 2





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5.1.2 Limit deviations and run-out tolerances for grinding wheels for peripheral grinding ISO 22917:2004

5.1.2.1 Limit deviations T_D of the outside diameter, circular run-out tolerance, axial T_{PL} , and circular run-out tolerance, radial T_{RL}

The limit deviations T_D of the outside diameter, the circular run-out tolerance, axial T_{PL} , and circular run-out tolerance, radial T_{RL} , as specified in Table 3, apply to the respective range of diameters D.

			Dimensions in millimetres
Outside diameter	T _D	T _{PL}	T _{RL}
$D \leqslant 3$	± 0,1	0,05	
3 < <i>D</i> ≤ 6	± 0,15		0,03
6 < <i>D</i> ≤ 30	± 0,2		0,03
30 < <i>D</i> ≤ 120	± 0,3		
120 < <i>D</i> ≤ 400	± 0,5		0,05
<i>D</i> > 400	± 0,8		0,00

Table 3

5.1.2.2 Limit deviations *T*_H of the hole diameter

The limit deviations $T_{\rm H}$ of the hole diameters, as specified in Table 4, correspond to the tolerance zone H7 in accordance with ISO 286-2:1988, Table 6, and apply to the respective range of hole diameters H.

Dimensions in millimetres	
Bore diameter H	T _H
<i>H</i> ≤ 3	+ 0,010 0
3 < <i>H</i> ≤ 6	+ 0,012 0
6 < <i>H</i> ≤ 10	+ 0,015 0
10 < <i>H</i> ≤ 18	+ 0,018 0
18 < <i>H</i> ≤ 30	+ 0,021
30 < <i>H</i> ≤ 50	+ 0,025 0
iT ⁵⁰ < ^H ≤ ⁸⁰ ANDA	
^{80 < H} standar	ds.iteh ^{• 0,035})
120 < <i>H</i> ≤ 180 ISO 22	+ 0,040 917:2004
https://standards.iteh.ai/catalog/stand $H \leq 250$ 2c9632022816	ards/sist/8b17 b,546 -9f7d-4e8e-bbe /iso-22917-2004
250 < <i>H</i> ≤ 315	+ 0,052 0
315 <i>< H</i> ≤ 400	+ 0,057 0
400 < <i>H</i> ≤ 500	+ 0,063 0

Table 4

5.1.2.3 Limit deviations T_{T} of overall thickness and T_{U} of thickness of superabrasive section

The limit deviations T_T of the overall thickness and T_U of the thickness of the superabrasive section, as specified in Table 5, apply to the respective ranges of thickness *T* and *U*.

	Dimensions in millimetres	
Thicknesses T and U	T _T	T _U
<i>T</i> or <i>U</i> < 30	± 0,2	± 0,2
$30 < T$ or $U \leqslant 120$	± 0,5	± 0,3
120 < <i>T</i> or <i>U</i> ≤ 400	± 0,8	± 0,5
400 < <i>T</i> or <i>U</i> ≤ 500	± 1,0	± 0,8

Table 5

5.1.2.4 Limit deviations T_X of depth of superabrasive section

The limit deviations T_X of the depth of superabrasive section, as specified in Table 6, apply to the respective range of depths of the superabrasive section *X*.

Dimensions in millimetres	
Depth of superabrasive section	T _x a
0 ,5 ≤ <i>X</i> ≤ 1	+ 0,2 0
1 < <i>X</i> ≤ 6	+ 0,2 - 0,1
6 < <i>X</i> ≤ 30	+ 0,3 - 0,2
^a Excluding electroplated single layer.	

Table	6
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5.1.2.5 Limit deviations *T*_E of thickness at bore

For grinding wheels with one recess (see type 6), or grinding wheels with two recesses (see type 9), the limit deviations T_E of thickness at bore, as specified in Table 7, apply to the respective range of thickness at bore *E*.

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Thickness at bore E	.7-2004 T _E
<i>E</i> ≤ 6	± 0,1
6 < <i>E</i> ≤ 30	± 0,2
30 < <i>E</i> ≤ 120	± 0,3

5.1.2.6 Limit deviations $T_{\rm J}$ of contact surface diameter and $T_{\rm K}$ of recessed diameter

The limit deviations T_J of contact surface diameter (see types 3, 4, 14) and T_K of the recessed diameter (see types 6, 9), as specified in Table 8, apply to the respective range of outside diameters *D*.

Dimensions	Dimensions in millimetres	
Outside diameter	T T	
D	T_{J}, T_{K}	
6 <i>≤ D ≤</i> 120	± 1	
<i>D</i> > 120	± 2	

Table 8