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ISO 6104

Second edition
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Superabrasive products — Rotating grinding tools with diamond or cubic boron nitride — General survey, designation and multilingual nomenclature

Produits superabrasifs — Meules rotatives à base de diamant ou de nitrure de bore — Généralités, désignation et nomenclature multilingue

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Foreword

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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 6104 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 5, *Grinding wheels and abrasives*.

This second edition cancels and replaces the first edition (ISO 6104:1979), which been technically revised.

Superabrasive products — Rotating grinding tools with diamond or cubic boron nitride — General survey, designation and multilingual nomenclature

1 Scope

This International Standard gives a general survey, and specifies the designation, of rotating grinding tools with diamond or cubic boron nitride superabrasive section. It also gives a multilingual nomenclature concerning these tools.

NOTE In addition to terms in English and French, two of the three official ISO languages, this International Standard gives the equivalent terms in German; these terms are published under the responsibility of the member body for Germany (DIN). However, only the terms given in the official language can be considered as ISO terms.

2 Terms and dimensional abbreviations

See Annex A.

3 Designation

3.1 Structure of designation

3.1.1 Elements

The structure of designation comprises three symbols intended only for the designation of the rotating grinding wheel and cutting-off wheels (saws). The three symbols shall be included in any designation. A supplementary symbol may be used if necessary.

The meaning of these symbols is the following:

— digit or characteristic number for the basic core shape on which the superabrasive section is mounted (see 3.1.2);

— one- or two-letter symbols for the shape or superabrasive section (see 3.1.3);

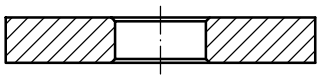
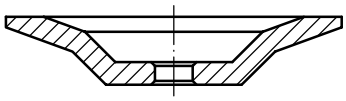
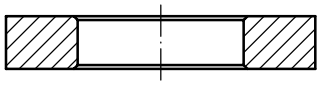
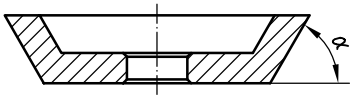
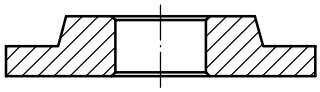
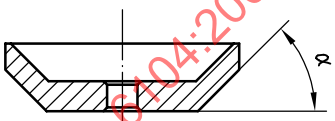
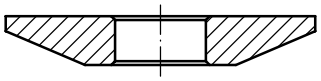
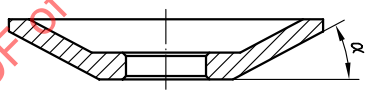
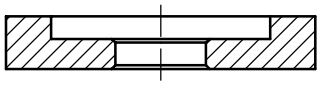
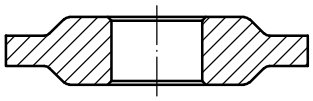
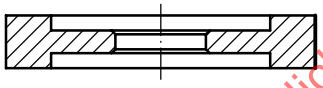
— digit or characteristic number for location of the superabrasive section on the core (see 3.1.4);

— possibly, one or several letter symbols for the core modifications (see 3.1.5).

3.1.2 Basic core shape

Basic core shapes are defined by symbols irrespective of their location of the superabrasive section on the core and the end use of the rotating grinding tools. The presence of a recess in the core to accommodate the superabrasive section does not affect the determination of the symbol. For basic core shapes, see Table 1.

Table 1 — Basic core shapes

Core shape	Designation	Illustration	Core shape	Designation	Illustration
1	Straight peripheral wheel		10	Concave double-angle cup wheel	
2	Face or rim wheel		11	Taper cup wheel	 $\alpha > 60°$
3	Single hubbed wheel		12	Taper cup wheel	 $30° < \alpha \leqslant 60°$
4	Wheel tapered one side		13	Taper cup wheel	 $\alpha \leqslant 30°$
6	Straight cup wheel		14	Double hubbed wheel	
9	Double cup wheel		—		

3.1.3 Shape of superabrasive section

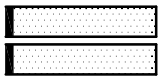
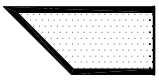
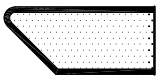
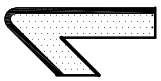
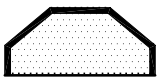
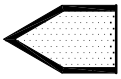
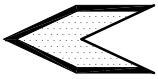
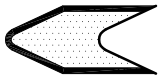
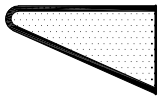
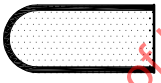
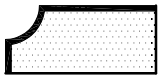
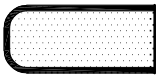
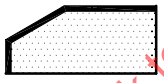
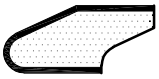
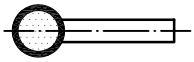
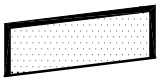
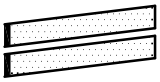
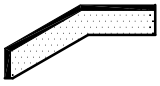
Superabrasive section shapes and their codes are shown and indicated in Table 2.

— Code is irrespective of the location of the superabrasive section.

— The superabrasive section can be at any position relative to the core.

— The bold black lines in the drawings indicate the grinding face.

Table 2 — Superabrasive section shapes and codes

A 	AA 	B 	BF 
BH 	BT 	C 	D 
DD 	E 	EE 	EF 
EH 	ET 	F 	FF 
G 	J 	K 	L 
LL 	M 	Q 	QV 
R 	S 	U 	V 
VF 	VL 	V V 	Y 
NOTE The most common shapes are shown.			

3.1.4 Location of superabrasive section on core

See Table 3.

Table 3 — Location of the superabrasive section on the core

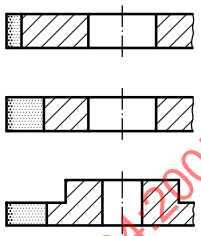
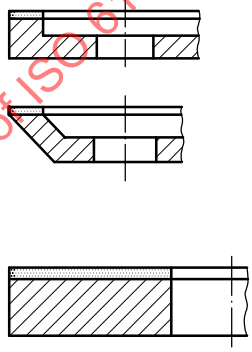
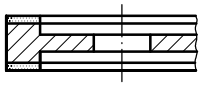
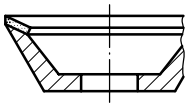
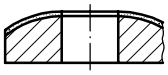
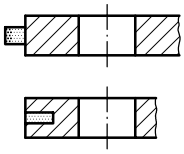
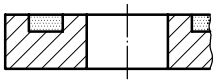
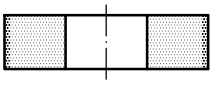
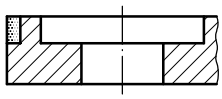
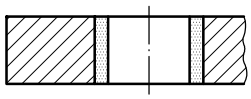
No.	Location	Description	Shape
1	Periphery	The superabrasive section is placed on the periphery of the core and extends over the full thickness of the wheel. The axial length of this section may be greater than, equal to, or less than the depth of diamond or CBN, measured radially. One or more hubs are not added to the wheel thickness for the purpose of this description.	
2	One side	The superabrasive section is placed on the side of the wheel and the length of the superabrasive section extends from the periphery towards the centre. It may or may not include the entire side.	
3	Both sides	The superabrasive sections are placed on both sides of the wheel and extend from the periphery towards the centre. They may or may not include the entire sides.	
4	Concave or arc	This description applies to the general wheel types 2, 6, 10, 11, 12 or 13, and locates the superabrasive section on the side wall. This wall has an angle or arc extending from a higher point at the wheel periphery to a lower point towards the wheel centre.	
5	Convex or arc	This description applies to the general wheel types 2, 6 and 11, and locates the superabrasive section on the side wall. This wall has an angle or arc extending from a lower point at the wheel periphery to a higher point toward the wheel centre.	
6	Part of periphery	The superabrasive section is placed on the periphery of the core but does not extend over the full thickness of the wheel and does not reach to either side.	
7	Part of side	The superabrasive section is placed on the side of the core and does not extend to the wheel periphery. It may or may not extend to the centre.	
8	Throughout	No core, superabrasive wheel consists of solid superabrasive section.	

Table 3 (*continued*)

No.	Location	Description	Shape
9	Corner	This description is of a location which would commonly be considered to be on the periphery, except that the superabrasive section is on one corner but does not extend to the other corner.	
10	Annular	This description is of a location of the superabrasive section on the inner annular of the wheel.	

3.1.5 Modification of basic core shapes

Modifications that are made to basic core shapes are optional within the meaning of the descriptions given in Table 4.

Table 4 — Modification to basic core shapes

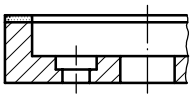
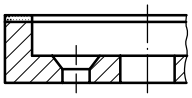
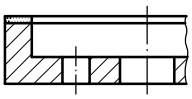
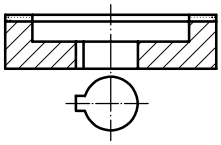
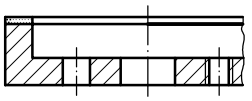
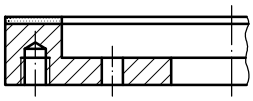
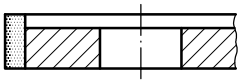
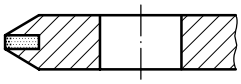
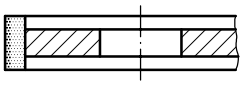
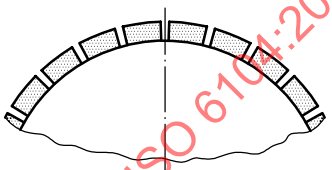
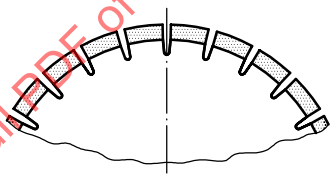
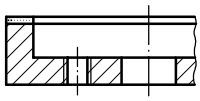
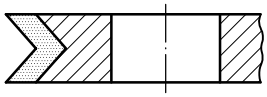
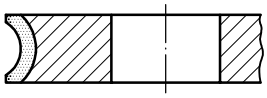
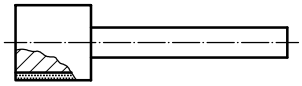
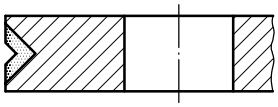
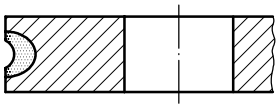
Abbreviation	Description	Shape
B	Holes drilled and counterbored in core	
C	Holes drilled and countersunk in core	
H	Straight holes drilled in core	
K	Hole with keyway in core	
M	Mixed holes, some plain, some threaded, in the core	 

Table 4 (*continued*)

Abbreviation	Description	Shape
P	Relief on one side of the wheel, thickness of core less than wheel thickness	
Q	Three surfaces of superabrasive section partially or wholly enclosed by the core	
R	Relief on both sides of superabrasive wheel. The thickness of the core is less than the wheel thickness.	
S	The cutting off wheel (saw) has a section which is interrupted by grooves and applied to a core with solid rim (clearance between segments has no bearing on definition).	
SS	The cutting-off wheel (saw), with segments mounted on solid and slotted core rim	
T	Threaded holes in core	
V	The superabrasive cross section is considered inverted if mounted on the core so that the interior point of any angle or the concave side of any arc is exposed.	 
W	Superabrasive section core and mounting shaft cannot be dismounted	
Y	See descriptions for Q and V.	 

3.2 Complete designation

The complete designation of rotating grinding wheels with diamond or cubic boron nitride shall comprise the following indications in the order given:

a) designation of the rotating grinding wheel corresponding to Table 1 and Annex B;

b) number block corresponding of this International Standard, i.e. ISO 6104;

c) basic core shape, in accordance with 3.1.2;

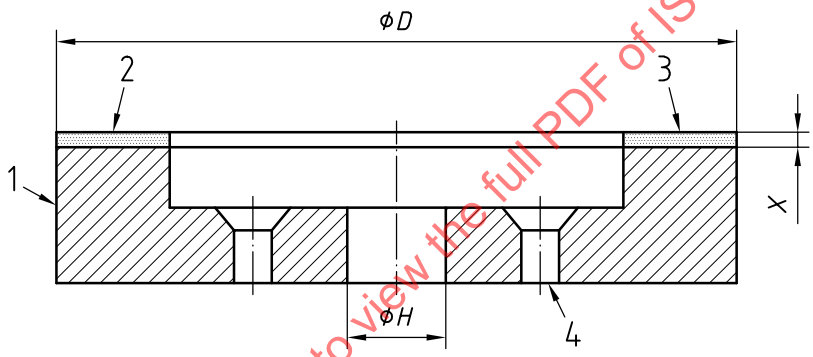
d) shape of the superabrasive section, in accordance with 3.1.3;

e) location of superabrasive section on the core, in accordance with 3.1.4;

f) any modification(s) carried out to the basic core shapes, in accordance with 3.1.5;

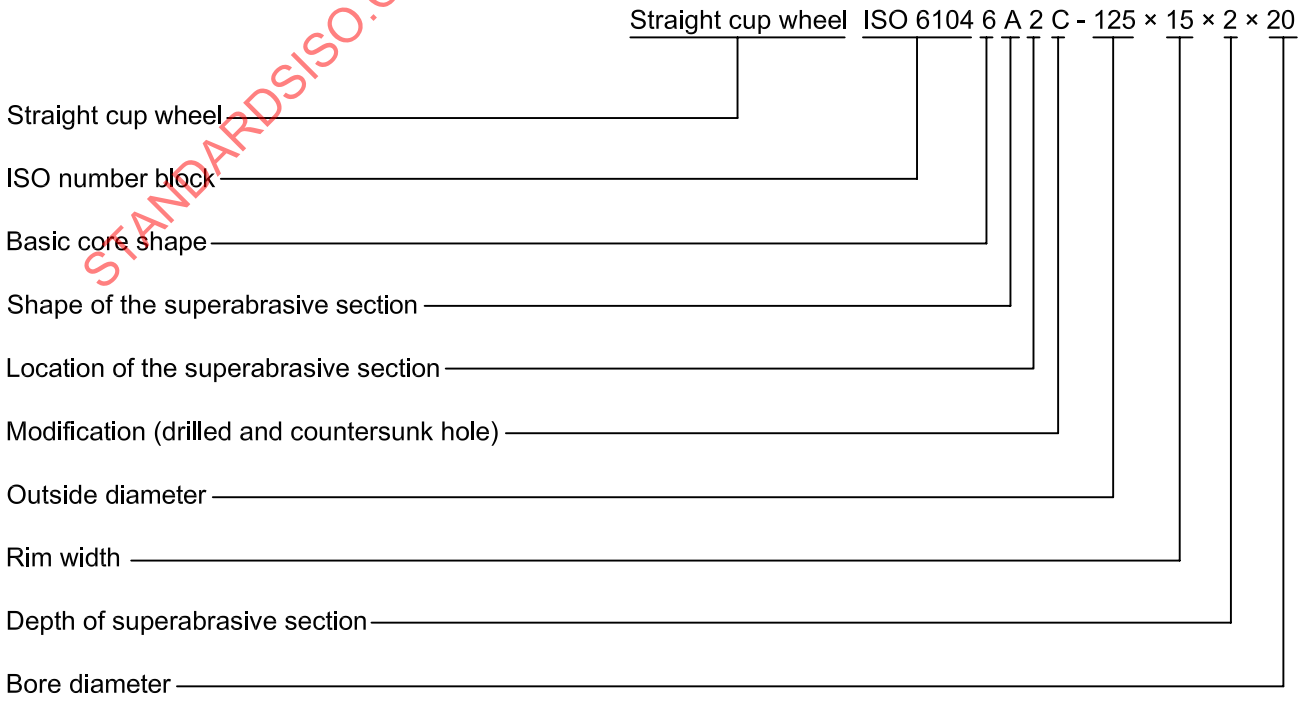
g) nominal dimensions provided by the manufacturer.

EXAMPLE



Key

1 core shape
2 shape of diamond or CBN section
3 location of diamond or CBN section
4 modification (drilled and countersunk hole)



Annex A
(informative)

Dimensional abbreviations and terms

Table A.1 — Dimensional abbreviations and terms
[in English (en), French (fr) and German (de)]

Symbol	Language Langue Sprache	Term Terme Benennung
D	en	Outside diameter
	fr	Diamètre extérieur
	de	Außendurchmesser
E	en	Thickness of a wheel, dish wheel and a recessed or relieved wheel, thickness of a blank
	fr	Épaisseur de meule, meule assiette et meule à embrèvement ou à dépouille, épaisseur de l'âme
	de	Bodendicke von Schleiftöpfen und –tellern sowie ausgesparten und verjüngten Schleifscheiben, Dicke des Stammblattes
H	en	Bore diameter
	fr	Diamètre de l'alésage
	de	Bohrungsdurchmesser
J	en	Smallest diameter of tapered cup, dish or tapered wheel
	fr	Petit diamètre des meules boisseaux coniques, des meules assiettes ou des meules coniques
	de	Kleinerer Durchmesser bei kegeligen Schleiftöpfen, Schleiftellern, konischen und abgesetzten Schleifscheiben
K	en	Internal diameter of recess on tapered cup or dish wheel
	fr	Diamètre intérieur de l'embrèvement des meules boisseaux coniques ou des meules assiettes
	de	Innendurchmesser von kegeligen Schleiftöpfen und Schleiftellern, Durchmesser der Verjüngung von Schleifscheiben
L	en	Overall length of mounted point
	fr	Longueur hors tout de la meule sur tige
	de	Gesamtlänge bei Schleifstiften
L_1	en	Length of segment, spindle length of mounted point
	fr	Longueur de segment, longueur de la tige de la meule sur tige
	de	Länge des Schleifsegmentes, Schaftlänge bei Schleifstiften
L_4	en	Reduced length of spindle of mounted point
	fr	Longueur de la tige décolletée de la meule sur tige
	de	Länge der Absetzung des Schaftes bei Schleifstiften