

BS ISO 6987:2012



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Indexable hard material inserts with rounded corners, with partly cylindrical fixing hole — Dimensions

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National foreword

This British Standard is the UK implementation of ISO 6987:2012. It supersedes BS 4193-13:1998, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MTE/18, Tools tips and inserts for cutting applications.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2012

ISBN 978 0 580 69445 5

ICS 25.100.01

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 29 February 2012.

Amendments issued since publication

Date	Text affected
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*Plaquettes amovibles en matériaux durs avec arrondi de pointe et trou
de fixation partiellement cylindrique — Dimensions*



Reference number
ISO 6987:2012(E)

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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
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Published in Switzerland

Foreword

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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 6987 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with cutting edges made of hard cutting materials*.

This second edition cancels and replaces the first edition (ISO 6987:1998), which has been technically revised.

Indexable hard material inserts with rounded corners, with partly cylindrical fixing hole — Dimensions

1 Scope

This International Standard specifies the dimensions of hard material inserts with rounded corners and with a partly cylindrical fixing hole. These inserts are primarily intended to be mounted on turning and boring tools using a countersunk head screw or any other fixing element, such as a pin lock.

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 513, *Classification and application of hard cutting materials for metal removal with defined cutting edges — Designation of the main groups and groups of application*

ISO 1832, *Indexable inserts for cutting tools — Designation*

3 Types of inserts

The types of indexable hard material insert specified in this International Standard are the following:

- TC: triangular inserts, with 7° normal clearance;
- TP: triangular inserts, with 11° normal clearance;
- SC: square inserts, with 7° normal clearance;
- SP: square inserts, with 11° normal clearance;
- CC: rhombic inserts, with 7° normal clearance and 80° included angle;
- CP: rhombic inserts, with 11° normal clearance and 80° included angle;
- DC: rhombic inserts, with 7° normal clearance and 55° included angle;
- VB: rhombic inserts, with 5° normal clearance and 35° included angle;
- VC: rhombic inserts, with 7° normal clearance and 35° included angle;
- RC: round inserts, with 7° normal clearance;
- RP: round inserts, with 11° normal clearance;
- WC: hexagonal (trigon) inserts, with 7° normal clearance and 80° included angle.

Inserts dealt with in this International Standard are standardized with chip breakers on the face (designated by the letter T) and without chip breakers (designated by the letter W).

Neither the shape nor the dimensions of chip breakers are standardized. Thus, if necessary, special features shall be explained with a diagram or additional specifications.

Tables C.1 to C.4 give the range of sizes for these inserts.

4 Interchangeability

4.1 Tolerances

The indexable hard material inserts which are the subject of this International Standard are provided in tolerance class M and for VC-shape inserts also in tolerance class G in accordance with ISO 1832.

The values of tolerance class G are in accordance with ISO 1832 and the values of tolerance class M are given in Annex A.

Other tolerances are included in Table 1 for hole dimensions and in Tables 3 to 12 for insert dimensions.

4.2 Thickness, s , of inserts with chip breakers

The thickness, s , of inserts with chip breakers is defined as the distance between the cutting edge at the corner and the supporting surface of the insert; see Figure 1.

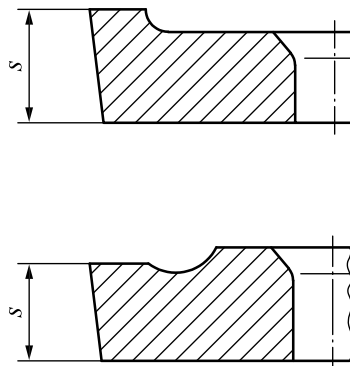


Figure 1 — Thickness of inserts with chip breakers

4.3 Fixing hole

In order to guarantee interchangeability when mounting the insert by a countersunk head screw having a head taper angle between 40° and 60°, the form of the hole is partly cylindrical and its dimensions are related to the diameter of the inscribed circle of the insert. Figure 2 and Table 1 give the elements of definition of the fixing hole.

The position of point P is given by diameter d_2 (see Table 1), the distance t , measured from the cutting edge at the corner and dimension c , measured from the upper face.

The ranges of dimensions t and c are as follows:

$$0,05 d_1 \leq t \leq 0,3 d_1$$

and

$$0,15 d_1 \leq c \leq 0,3 d_1$$

These dimensions take into account three cases: indexable inserts with upper faces below the cutting edges [see Figure 2 a)]; with upper faces on the same level as the cutting edges [see Figure 2 b)]; with upper faces above the cutting edges [see Figure 2 c)].

The dimensions of t and c shall be satisfied in all three cases.

The diameter, d_1 , of the cylindrical part of the hole is given in Table 1.

5.2 Marking

The following symbol, at least, shall be marked on the insert itself (except when this is difficult to carry out on small inserts):

- symbol of the group of application, or
- commercial designation of the hard material grade, or
- both, if possible, on large inserts.

6 Measurement

Annex B indicates the methods of measuring the dimension *m* of the indexable inserts covered by this International Standard.

7 Recommended dimensions

The choice of the more common dimensions is restricted to the values given in Tables 3 to 12. It is strongly recommended that these standard inserts be used wherever possible (first preference). When other inserts are required, their dimensions shall be selected from the non-shaded areas of Tables C.1 to C.4 (second preference). Inserts having dimensions given in the shaded areas of this table are not recommended.

NOTE The *m* dimensions are calculated using the exact values of the corner radius, *r_ε*, given in Table 2, rounded to the third decimal place.

Table 2 — Exact values of *r_ε*

Designation of <i>r_ε</i>	02	04	08	12	16	20	24	32
Exact value of <i>r_ε</i> , mm	0,203 2 ^a	0,397	0,794	1,191	1,588	1,984	2,381	3,175

^a Rounded to the fourth decimal place.

7.1 Triangular inserts — TC

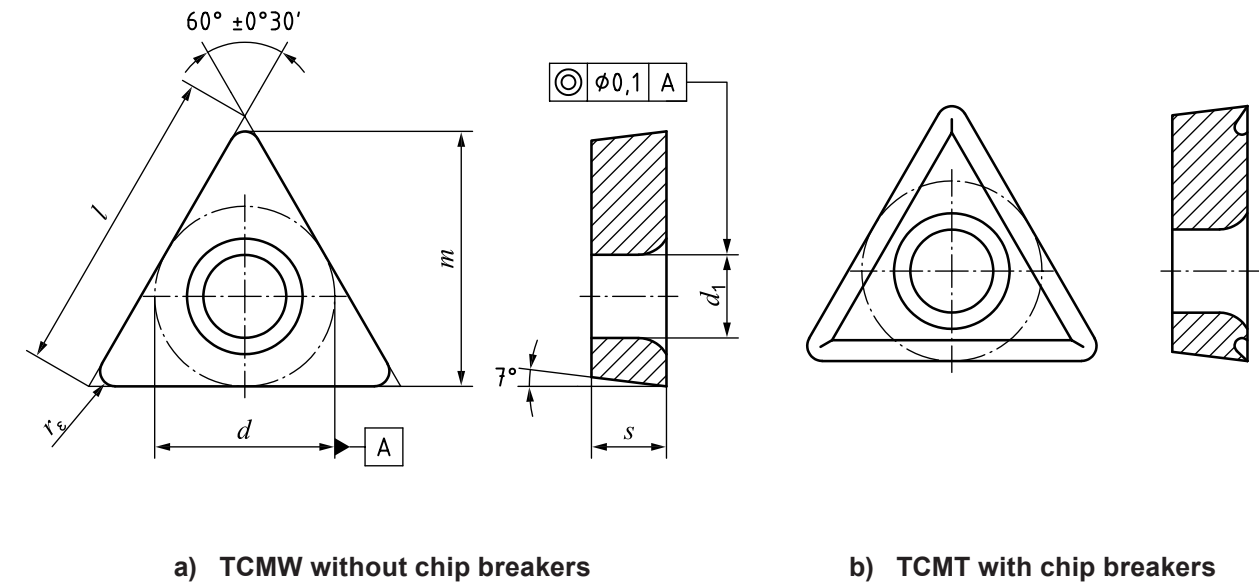


Figure 3 — Triangular inserts — TC