
**Indexable hardmetal (carbide) inserts
with rounded corners, with cylindrical
fixing hole — Dimensions**

*Plaquettes amovibles en métaux-durs (carbures métalliques) avec
arrondi de pointe et trou de fixation cylindrique — Dimensions*

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO 3364:2017](https://standards.iteh.ai/catalog/standards/iso/b6d45ed9-81ed-4f19-aa99-5db4712080dd/iso-3364-2017)

<https://standards.iteh.ai/catalog/standards/iso/b6d45ed9-81ed-4f19-aa99-5db4712080dd/iso-3364-2017>



iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO 3364:2017

<https://standards.iteh.ai/catalog/standards/iso/b6d45ed9-81ed-4f19-aa99-5db4712080dd/iso-3364-2017>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

| | |
|--|-----------|
| Foreword | iv |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 1 |
| 4 Types of insert | 1 |
| 5 Interchangeability | 2 |
| 5.1 Tolerances | 2 |
| 5.2 Thickness, s , of inserts with chip breakers | 2 |
| 6 Designation and marking | 2 |
| 6.1 Designation | 2 |
| 6.2 Marking | 2 |
| 7 Measurement | 3 |
| 8 Recommended dimensions | 3 |
| 8.1 General | 3 |
| 8.2 Triangular inserts | 3 |
| 8.3 Square inserts | 4 |
| 8.4 Rhombic inserts with 80° included angle | 5 |
| 8.5 Rhombic inserts with 55° included angle | 6 |
| 8.6 Hexagonal (trigon) inserts with 80° included angle | 7 |
| 8.7 Rhombic inserts with 35° included angle | 8 |
| 8.8 Round inserts | 9 |
| Annex A (normative) Methods of measurement of “m” dimension | 10 |
| Annex B (informative) Range of sizes of inserts with rounded corners with cylindrical fixing hole, with shapes covered by this document | 13 |
| Annex C (informative) Relationship between designations in this document and ISO 13399 | 15 |
| Bibliography | 16 |

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with defined cutting edges, cutting items*.

This fifth edition cancels and replaces the fourth edition (ISO 3364:2011), which has been technically revised and contains the following changes:

- the specifications of inserts, especially the designations given in [Tables 2 to 8](#), have been revised;
- the recommendations in [Annex B](#) have been modified;
- [Annex C](#) has been revised.

Indexable hardmetal (carbide) inserts with rounded corners, with cylindrical fixing hole — Dimensions

1 Scope

This document specifies the dimensions of indexable hardmetal (carbide) inserts with rounded corners, with cylindrical fixing hole and with 0° normal clearance. These inserts are primarily intended to be mounted by top and hole clamping or by hole alone on turning and boring tools.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at <http://www.electropedia.org/>

— ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Types of insert

The types of indexable hardmetal (carbide) insert specified in this document are the following:

- TN: triangular inserts, with 0° normal clearance;
- SN: square inserts, with 0° normal clearance;
- CN: rhombic inserts, with 0° normal clearance and 80° included angle;
- DN: rhombic inserts, with 0° normal clearance and 55° included angle;
- WN: hexagonal (trigon) inserts, with 0° normal clearance and 80° included angle.
- VN: rhombic inserts, with 0° normal clearance and 35° included angle.

Inserts covered by this document are standardized with chip breakers on both faces, with chip breakers on one face only and with no chip breakers at all.

At present, neither the shape nor the dimensions of chip breakers are standardized. Thus, if necessary, special features have to be explained by means of a diagram or additional specifications.

[Table B.1](#) gives the range of sizes for these inserts.

5 Interchangeability

5.1 Tolerances

Indexable hard metal (carbide) inserts specified in this document are provided in tolerance classes in accordance with ISO 1832.

Other tolerances are given either in [Table 1](#) for hole dimensions or in [Tables 2 to 8](#) for insert dimensions.

5.2 Thickness, s , of inserts with chip breakers

The thickness, s , of inserts with chip breakers is defined as the distance between the cutting edge of the corner and the opposing supporting surface of the insert; see [Figure 1](#) a) and b) for inserts with chip breakers on one face only and [Figure 1](#) c) for inserts with chip breakers on both faces.

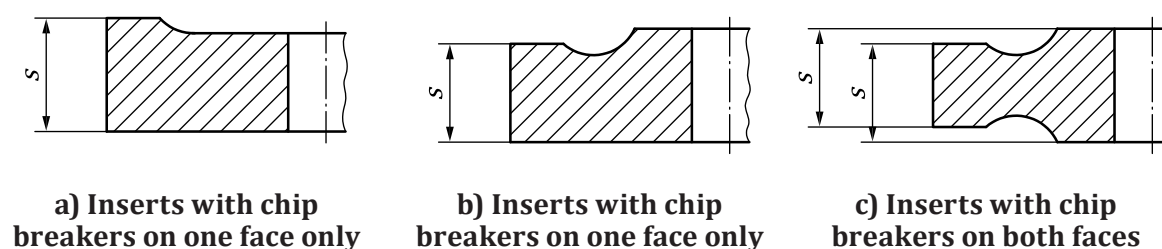


Figure 1 — Inserts with chip breakers

In order to guarantee interchangeability when mounting the insert, the diameter, d_1 , of the fixing hole is related to the diameter, d , of the inscribed circle of the insert according to [Table 1](#).

Table 1 — Fixing hole

| | | Dimensions in millimetres | | | | | |
|-------|------------|---------------------------|-------|------|--------|-------|------|
| d | | 6,35 | 9,525 | 12,7 | 15,875 | 19,05 | 25,4 |
| d_1 | $\pm 0,08$ | 2,26 | 3,81 | 5,16 | 6,35 | 7,94 | 9,12 |

6 Designation and marking

6.1 Designation

The designation of the indexable hardmetal (carbide) inserts complying with this document shall conform to ISO 1832.

In addition to this designation, one or both of the following may be indicated:

- the symbol of the group of application, according to ISO 513;
- the commercial designation of the hardmetal (carbide) grade.

For the relationship between designations in this document and ISO 13399, see [Annex C](#).

6.2 Marking

The following symbols, at least, shall be marked on the insert itself (except when this would be difficult on the smaller inserts):

- symbol of the group of application, or

- commercial designation of the hardmetal (carbide) grade, or
- both, if possible, on large inserts.

7 Measurement

Measuring the dimension m of the indexable inserts covered by this document shall be carried out as specified in [Annex A](#).

8 Recommended dimensions

8.1 General

The choice of the more common dimensions is restricted to the specifications given in [Tables 2 to 8](#). It is strongly recommended that these standard inserts be used wherever possible (first preference). For the full range of sizes of inserts and recommendations, see [Annex B](#). When other inserts are specially required, insert dimensions shall be selected from the non-shaded portions of [Table B.1](#) (second preference). Inserts corresponding to dimensions represented by the shaded portions of this table are not recommended.

[Figures 2 to 8](#) show the different shapes of inserts according to this document.

8.2 Triangular inserts

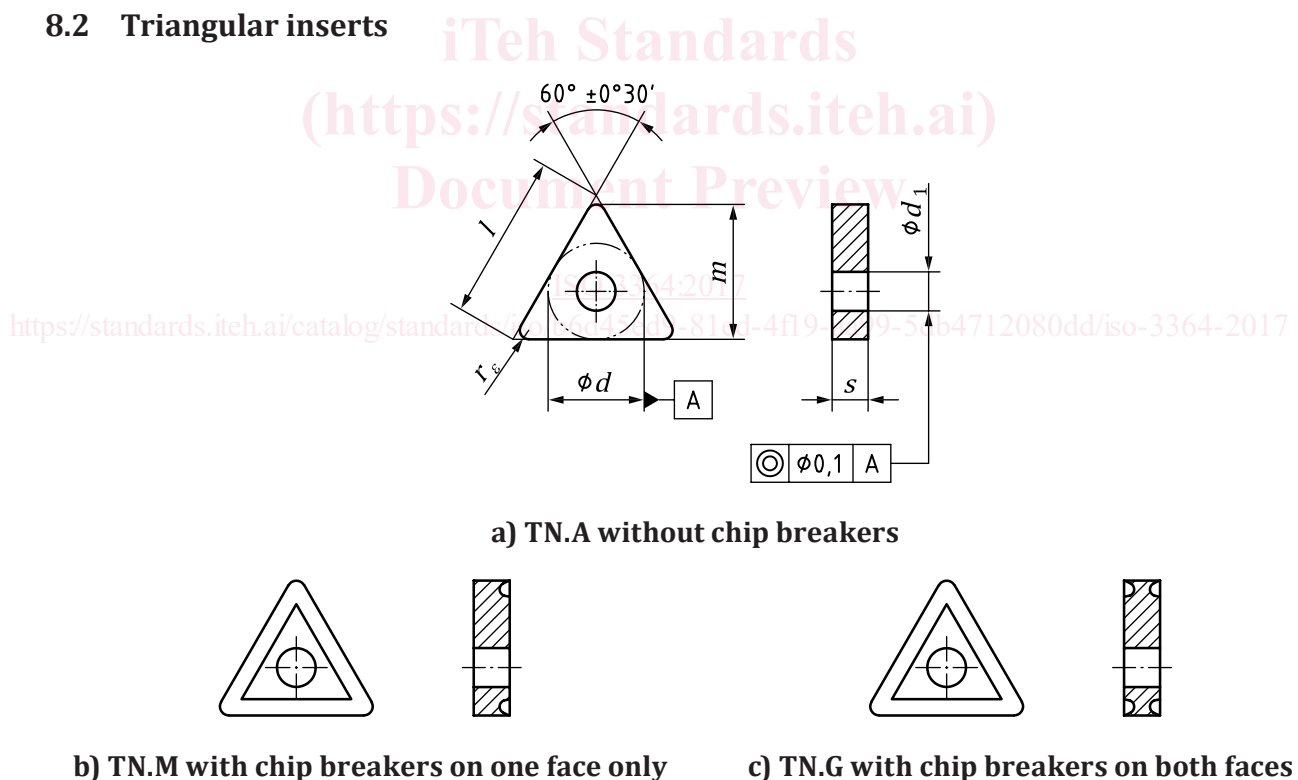


Figure 2 — Triangular inserts

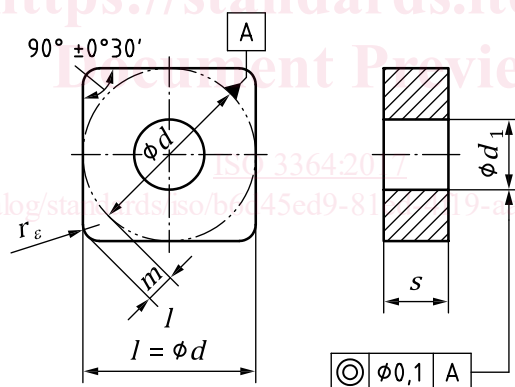
Table 2 — Dimensions of triangular inserts

Dimensions in millimetres

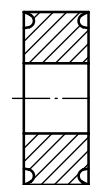
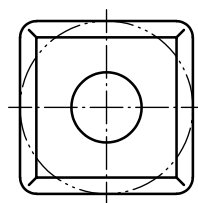
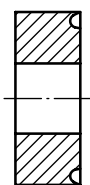
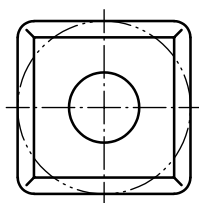
| Insert | | | l \approx | d^a | s^a | m^a | r_ε $\pm 0,1$ | d_1 $\pm 0,08$ |
|------------|------------|------------|------------------|--------|-------|--------|------------------------------|---------------------|
| TN.A110202 | TN.M110202 | TN.G110202 | 11 | 6,35 | 2,38 | 9,322 | 0,2 | 2,26 |
| TN.A110204 | TN.M110204 | TN.G110204 | | | | 9,128 | 0,4 | |
| TN.A110208 | TN.M110208 | TN.G110208 | | | | 8,731 | 0,8 | |
| TN.A160304 | TN.M160304 | TN.G160304 | 16,5 | 9,525 | 3,18 | 13,891 | 0,4 | 3,81 |
| TN.A160308 | TN.M160308 | TN.G160308 | | | | 13,494 | 0,8 | |
| TN.A160312 | TN.M160312 | TN.G160312 | | | | 13,097 | 1,2 | |
| TN.A160404 | — | TN.G160404 | | | 4,76 | 13,891 | 0,4 | |
| TN.A160408 | TN.M160408 | TN.G160408 | | | | 13,494 | 0,8 | |
| TN.A160412 | TN.M160412 | TN.G160412 | | | | 13,097 | 1,2 | |
| TN.A220408 | TN.M220408 | TN.G220408 | 22 | 12,7 | 4,76 | 18,256 | 0,8 | 5,16 |
| TN.A220412 | TN.M220412 | TN.G220412 | | | | 17,859 | 1,2 | |
| TN.A220416 | TN.M220416 | TN.G220416 | | | | 17,463 | 1,6 | |
| — | TN.M270612 | — | 27,5 | 15,875 | 6,35 | 22,622 | 1,2 | 6,35 |
| — | TN.M270616 | — | | | | 22,225 | 1,6 | |

^a Tolerances in accordance with ISO 1832. See [Annex A](#).

8.3 Square inserts



a) SN.A without chip breakers



b) SN.M with chip breakers on one face only

c) SN.G with chip breakers on both faces

Figure 3 — Square inserts

Table 3 — Dimensions of square inserts

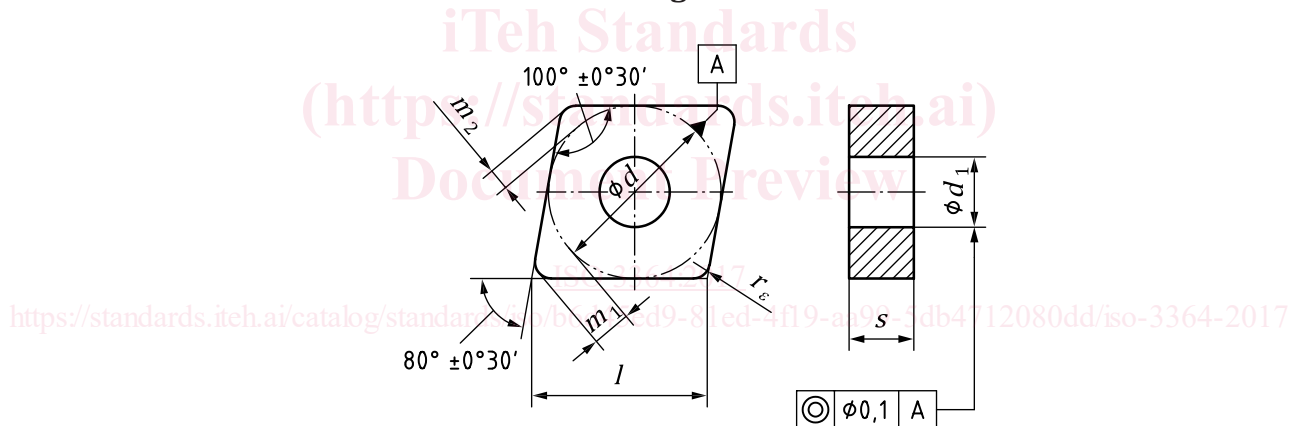
Dimensions in millimetres

| Inserts | | | $d^{a,b}$ | s^a | m^a | r_ε $\pm 0,1$ | d_1 $\pm 0,08$ |
|------------|------------|------------|-----------|-------|-------|------------------------------|---------------------|
| — | SN.M090304 | SN.G090304 | 9,525 | 3,18 | 1,808 | 0,4 | 3,81 |
| — | SN.M090308 | SN.G090308 | | | 1,644 | 0,8 | |
| — | — | SN.G120404 | 12,7 | 4,76 | 2,466 | 0,4 | 5,16 |
| SN.A120408 | SN.M120408 | SN.G120408 | | | 2,301 | 0,8 | |
| SN.A120412 | SN.M120412 | SN.G120412 | | | 2,137 | 1,2 | |
| SN.A120416 | SN.M120416 | SN.G120416 | | | 1,972 | 1,6 | |
| — | SN.M150608 | SN.G150608 | 15,875 | 6,35 | 2,959 | 0,8 | 6,35 |
| — | SN.M150612 | SN.G150612 | | | 2,795 | 1,2 | |
| SN.A190612 | SN.M190612 | SN.G190612 | 19,05 | 6,35 | 3,452 | 1,2 | 7,94 |
| SN.A190616 | SN.M190616 | SN.G190616 | | | 3,288 | 1,6 | |
| SN.A250724 | SN.M250724 | SN.G250724 | 25,4 | 7,94 | 4,274 | 2,4 | 9,12 |

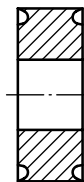
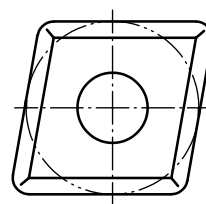
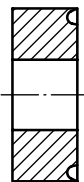
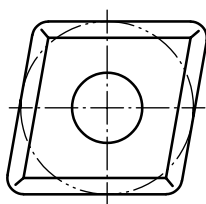
^a Tolerances in accordance with ISO 1832. See [Annex A](#).

^b $d = l$.

8.4 Rhombic inserts with 80° included angle



a) CN.A without chip breakers



b) CN.M with chip breakers on one face only

c) CN.G with chip breakers on both faces

Figure 4 — Rhombic inserts with 80° included angle

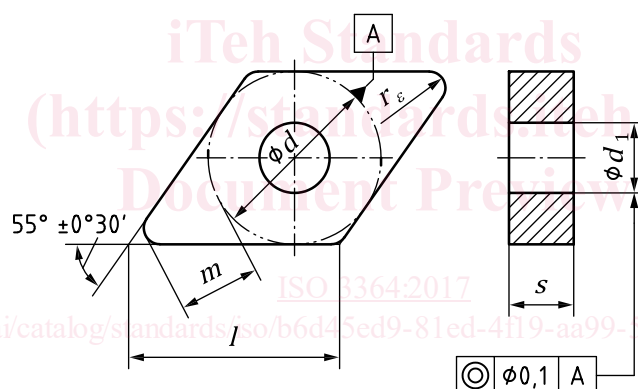
Table 4 — Dimensions of rhombic inserts with 80° included angle

Dimensions in millimetres

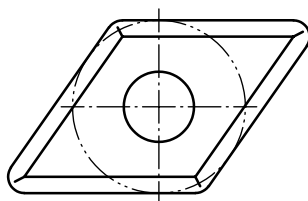
| Insert | | | l \approx | d^a | s^a | m_1^a | m_2^a | r_ε $\pm 0,1$ | d_1 $\pm 0,08$ |
|------------|------------|------------|------------------|--------|-------|---------|---------|------------------------------|---------------------|
| CN.A090304 | CN.M090304 | CN.G090304 | 9,7 | 9,525 | 3,18 | 2,426 | 1,333 | 0,4 | 3,81 |
| CN.A090308 | CN.M090308 | CN.G090308 | | | | 2,206 | 1,212 | 0,8 | |
| — | — | CN.G120404 | 12,9 | 12,7 | 4,76 | 3,308 | 1,818 | 0,4 | 5,16 |
| CN.A120408 | CN.M120408 | CN.G120408 | | | | 3,088 | 1,697 | 0,8 | |
| CN.A120412 | CN.M120412 | CN.G120412 | | | | 2,867 | 1,576 | 1,2 | |
| CN.A120416 | CN.M120416 | CN.G120416 | | | | 2,647 | 1,455 | 1,6 | |
| — | CN.M160608 | CN.G160608 | 16,1 | 15,875 | 6,35 | 3,97 | 2,182 | 0,8 | 6,35 |
| — | CN.M160612 | CN.G160612 | | | | 3,744 | 2,061 | 1,2 | |
| — | — | CN.G190608 | 19,3 | 19,05 | 6,35 | 4,852 | 2,667 | 0,8 | 7,94 |
| CN.A190612 | CN.M190612 | CN.G190612 | | | | 4,632 | 2,545 | 1,2 | |
| CN.A190616 | CN.M190616 | CN.G190616 | | | | 4,411 | 2,424 | 1,6 | |

^a Tolerances in accordance with ISO 1832. See [Annex A](#).

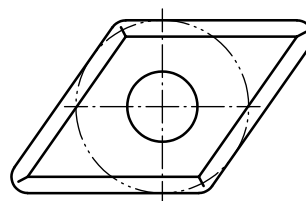
8.5 Rhombic inserts with 55° included angle



a) DN.A inserts without chip breakers



b) DN.M with chip breakers on one face only



c) DN.G with chip breakers on both faces

Figure 5 — Rhombic inserts with 55° included angle