

ICS 25.100.01

CCS J 41



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 21951-2023

Replacing GB/T 21951-2008

Cubic boron nitride inserts, tipped or solid - Dimensions, types

Issued on: September 7, 2023

Implemented on: April 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Foreword

1 Scope

2 Normative reference documents

3 Terms and definitions

4 Blade shape and structure

4.1 Blade shape

4.2 Normal relief angle α

4.3 Cutting edge tip

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document replaces GB/T 21951-2008 "Dimensions of Inlaid or Solid Cubic Boron Nitride Blades" and is consistent with GB/T 21951-2008

In addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The "Round (R)" blade shape is added, and the "Hexagon" is changed to "Convex Triangle" (see 4.1, 3.1 of the.2008 version);
- b) Change "normal rear angle" to "normal rear angle" (see 4.2, 3.2 of the.2008 version);
- c) Change the blunt cutting edge without chamfers to the rounded cutting edges with chamfers (see 5.2.1, 4.2.1 of the.2008 edition);
- d) Change $\alpha=7^\circ(\text{C})$ in the code example to $\alpha=11^\circ(\text{P})$, and the corresponding code SCGW1204EDR-AL-BL- is changed to SPGW1204EDR-AL-BL- (see 5.3, 4.3 of the.2008 edition);
- e) Change the code name CH.A120412S to CN.A120412S (see Table 3, Table 3 of the.2008 version);
- f) Change the code name DC.A110404S to DN.A110404S, DC.A110408S to DN.A110408S, DH.A150408S is changed to DN.A150408S (see Table 4, Table 4 of the.2008 version);

g) Change the code name SP.W09T3DER to SP.W09T3EDR, SP.W1204DEL to SP.W1204EDR

(See Table 6,.2008 version of Table 6).

This document has been modified to adopt ISO 16462.2014 "Dimensional Types of Inlaid or Solid Cubic Boron Nitride Inserts".

The technical differences between this document and ISO 16462.2014 and their reasons are as follows.

---Replaced ISO 1832 (see 4.4, 4.5, 4.6, Chapter 5) with normatively cited GB/T 2076 to adapt to my country's technology

condition;

---Change the material code BL05 in Chapter 5 to BL to facilitate the use of this document;

---Replaced ISO 513 (see 5.2, 5.3, Chapter 8, Chapter 10) with the normatively quoted GB/T 2075 to adapt to my country's technology

technical conditions;

---Change the code $\alpha=7^{\circ}(C)$ in 5.3 to $\alpha=11^{\circ}(P)$, and change the corresponding code SCGW1204EDR-AL-BL05- to

SPGW1204EDR-AL-BL-, the code name in the original example no longer exists;

---Change the notes in Chapter 6 to requirement clauses to facilitate the use of this document;

---Change the repson value of code SN.N090316S in Table 8 from 0.4 to 1.6, and code SP.N090304S, SP.

The α value of N090308S and SP.N090312S blades was changed from 9.5 to 9.525 , and the α value of code SP.N090304S was changed from 1°

Changed to 11° , the repson value was changed from 1.6 to 0.4 to facilitate the use of this document;

---Replaced ISO 6987 (see Chapter 9) with the normatively quoted GB/T 2080 to adapt to my country's technical conditions;

---Replaced ISO 3365 (see Chapter 9) with the normatively cited GB/T 2081 to adapt to my country's technical conditions.

The following editorial changes have been made to this document.

---For ease of use, ISO 3364 (see Chapter 1) is replaced by GB/T 2078, which is an informative reference.

GB/T 2079 replaces ISO 883 (see Chapter 1);

---In order to coordinate with the existing standards, the name of the standard is changed to "Types and Dimensions of Inlaid or Solid Cubic Boron Nitride Blades".

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

1 Scope

This document stipulates that the cutting part of the blade whose shape conforms to GB/T 2078, GB/T 2079, GB/T 2081 and GB/T 2080 is inlaid with

Types and sizes of cubic boron nitride (BL, BH, BC) blades or solid cubic boron nitride blades.

This document applies to the manufacture of inlaid or solid cubic boron nitride inserts.

The relationship between this document and the priority symbols of ISO 13399 (all parts) is shown in Appendix A.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to

this document.

GB/T 2075 Classification and usage of hard cutting materials for cutting processing
Classification codes of large groups and usage groups (GB/T 2075-

2007,ISO 513.2004,IDT)

GB/T 2076 Rules for model representation of indexable inserts for cutting tools (GB/T 2076-2021, ISO 1832.2017, IDT)

GB/T 2080 Dimensions of indexable carbide inserts with rounded corners and countersunk holes (GB/T 2080-2007, ISO 6987.1998,

IDT)

GB/T 2081 Dimensions of carbide indexable milling inserts with wiper edges and no fixed holes (GB/T 2081-2018, ISO 3365.

2016,IDT)

3 Terms and definitions

There are no terms or definitions to be defined in this document.

4.1 Blade shape

The shapes of the blades are. triangle (T), square (S), rhombus 80° (C), rhombus 55° (D), rhombus 35° (V), circle (R) and convex triangle

Shape (W).

4.2 Normal relief angle α

The normal relief angle α is. 0° (N), 5° (B), 7° (C), 11° (P).

4.3 Cutting edge tip

Turning inserts. with tip radius, r_{ps} are 0.2mm, 0.4mm, 0.8mm, 1.2mm and 1.6mm.

Milling insert. with wiper edge.

Note. The tool tip structure that does not participate in cutting is optional.