



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

GB/T 10095.1-2022

**Cylindrical gears - ISO system of flank tolerance classification -
Part 1: Definitions and allowable values of deviations relevant
to flanks of gear teeth**

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Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020

Directives for Standardization - Part 1. Rules for the Structure and Drafting of
Standardizing Documents.

This document is Part 1 of GB/T 10095 Cylindrical gears - ISO system of flank
tolerance classification. The following parts have been issued for GB/T 10095.

-- Part 1. Definitions and allowable values of deviations relevant to flanks of gear teeth;

-- Part 2. Definitions and allowable values of deviations relevant to radial composite deviations and runout information.

This document replaces GB/T 10095.1-2008, Cylindrical gears - System of accuracy - Part 1. Definitions and allowable values of deviations relevant to corresponding flanks of gear teeth. Compared with GB/T 10095.1-2008, in addition to structural adjustments and editorial changes, the main technical changes of this document are as follows.

a) Change the scope of application (see Clause 1; Clause 1 of the 2008 edition);
b) Change the formulae for calculating the flank tolerance (see 5.3; Clause 6 of the **2008 edition**);

c) Add the analysis method of modified profile and helix (see Annex A and Annex B);

d) Add the calculation of the allowable values of runout (see Annex E).

This document is identical to ISO 1328-1:2013 Cylindrical gears - ISO system of flank tolerance classification - Part 1. Definitions and allowable values of deviations relevant to flanks of gear teeth.

1 Scope

This document establishes a tolerance classification system relevant to manufacturing and conformity assessment of tooth flanks of individual cylindrical involute gears. It specifies definitions for gear flank tolerance terms, the structure of the flank tolerance class system, and allowable values.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable to its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

ISO 701, International gear notation - Symbols for geometrical data

Note. GB/T 2821-2003 Gear - Symbols for geometrical data (ISO 701:1998, IDT)

3 Terms, definitions and symbols

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

Portion of the tooth flank along which the probe is in contact during the profile measurement, which shall include the profile control diameter (3.4.1.1) and the tip form diameter (3.4.1.2).

4 Application of the ISO flank tolerance classification system

Specification of design profile, design helix and pitch requires the definition of an appropriate reference axis of rotation, called the datum axis. It is defined by specification of datum surfaces. See ISO/TR 10064-3.

In this document, the tolerance direction varies with the given elemental parameter.

Original measurement values shall be compensated for if the actual measurement direction and the tolerance direction specified for the given parameter are different. See 4.4.8.2, 4.4.8.4 and 4.4.8.6 for sign conventions and the reporting of values.

5 Tolerance values

The step factor between two consecutive classes is $\sqrt{2}$. Values of the next higher (or lower) class are determined by multiplying (or dividing) by $\sqrt{2}$. The required value for any flank tolerance class may be determined by multiplying the unrounded calculated value for class 5 by $\sqrt{2}^{A-5}$ where A is the number of the required flank tolerance class.

Total helix tolerance, $F_{\beta T}$, shall be calculated as given by Formula (12) using unrounded tolerance values for helix slope and helix form.

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