ICS 21.200
CCS J17

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 10224-2025

Replacing GB/T 10224-1988

Basic rack tooth profile of fine-pitch bevel gears

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Issued on: August 29, 2025 **Implemented on: March 1, 2026**

Issued by: State Administration for Market Regulation;
Standardization Administration of China

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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 10224-1988 "Basic Tooth Profile of Small Module Bevel Gears". Compared with GB/T 10224-1988, the only differences are in the structural design. Aside from integration and editorial changes, the main technical changes are as follows:

a) The scope has been changed (see Chapter 1, Chapter 1 of the 1988 edition);

b) Added definitions for the basic tooth profile, tooth angle, and working tooth height of bevel gears, and removed the definition for the basic tooth profile of small module spur bevel gears. Righteousness (see Chapter 3, Chapter 2 in the 1988 edition);

c) The mathematical expressions for the basic tooth profile parameters have been removed (see Chapter 3 of the 1988 edition);

d) Added modified tooth profiles and main parameters (see 4.3). Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Gear Standardization (SAC/TC52). This document was drafted by: Zhengzhou Machinery Research Institute Co., Ltd., China Academy of Machinery Science and Technology Corporation; Zhengzhou Machinery Research Institute (Zhengzhou) Transmission Technology Co., Ltd. Jinhua Xintian Gear Co., Ltd., Henan University of Science and Technology, Xi'an Laser Transmission Technology Co., Ltd., Tianjin Jinyan Transmission Equipment Co., Ltd., Chongqing Universities, Dalian University of Technology, Northwestern Polytechnical University, Shanxi Aerospace Tsinghua Equipment Co., Ltd., Changsha Haohua Precision Machinery Co., Ltd. Company, Chongqing Zhizhan Gear Transmission Co., Ltd., Henan University of Technology, Zhengzhou University of Aeronautics and Astronautics. The main drafters of this document are. Cao Zhigang, Wei Bingyang, Lu Shiping, Zhao Ning, Fan Ruili, Li Jubo, Wang Zhigang, Yan Yaolong, and Li Haixia. Yu Yongwang, Guo Hui, Guo Qingqing, Du Jianguo, Guan

Hongjie, Zhao Jiadong, Pei Bang, Sun Linlin, Yan Hongxiang, Song Chaosheng, Wang Zhi, Han Zhengyang, Xu Wenbo Shi Lubing, Chen Junyan, Zhi Yanfeng, Yu Feipeng, He Rong, Shen Huipeng, Wang Xiaopeng, Hou Nai, Xu Yingjie, Yan Shidang. This document was first published in 1988, and this is its first revision. Basic tooth profile of small module bevel gears

1 Scope

GB/T 10224-2025 is the Chinese national standard on basic rack tooth profile of fine-pitch bevel gears, in the field of mechanical systems and components. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 29 August 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 March 2026. Classification: ICS 21.200, CCS J17. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

4.3 Modified Tooth Profile and Main Parameters The modified tooth profile is shown in Figure

2.The main parameters are as follows:

---Non-working tooth surface normal cutting pressure angle (alphanC);

---Working tooth surface normal cutting pressure angle (alphanD);

---Midpoint tooth tip height (ham);

---Midpoint working tooth height (hmw);

---Tooth tip clearance (c);

---Midpoint tooth pitch (pm);

---Basic tooth thickness of the displacement (sm);

---Single-sided tooth thickness displacement (Deltas);

--- Tooth height displacement (Deltah). Indexing number and symbol explanation. 1

--- Basic rack tooth profile; 2

--- Tooth profile with changes in tooth height and thickness; 3

--- The graduation line after displacement; p

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 3374.1 Gears - Terminology and Definitions - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 3374.1 and GB/T 43146, as well as the following terms and definitions, apply to this document.

3.1 The imaginary tooth profile at the midpoint end face of the basic crown ring.

3.2 tooth profile angle (nominal pressure angle) Midpoint normal pressure angle.

3.3 working depth In actual meshing transmission, the height of the midpoint tooth profile involved in meshing.

4 Parameters

4.1 Overview This document uses the pitch line to define the parameters of the basic tooth profile.

4.2 Basic Tooth Profile and Main Parameters The basic tooth profile of the bevel gear is shown in Figure

1.The main parameters are as follows:

--- Tooth angle (alpha);

---Tooth crest height (ha);

---Root height (hf);

---Working tooth height (h);

---Tooth tip clearance (c);

---Toe pitch (p);

---Root radius of fillet (rhof). Indexing number and symbol explanation. 1

--- Working tooth height; ha

--- Tooth crest height; hf

--- tooth root height; c

--- Tooth tip clearance; p