

ICS 21.200
CCS J 17



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

GB/Z 43147-2023

Design recommendations for bevel gears

Issued on: September 7, 2023

Implemented on: April 1, 2024

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

Table of Contents

Preface	
1 Scope	1
2 Normative reference documents	1
3 Terms and Definitions	1
4 Symbols, descriptions and units	1
5 Application	3
5.1 Geometric parameters	3
5.2 Evaluation	3
5.3 Material	3
5.4 Gear tolerance	4
5.5 Gear noise	4
6 Make	6
6.1 General principles of processing methods and characteristics---Tooth surface milling method and tooth surface hobbing method	6
6.2 Wheel blank design and tolerance	7
6.3 Assembly	15
6.4 Gear tooth contact spots	20
7 Strength	21
7.1 Influence of hypoid gear offset	21
7.2 Effect of cutterhead radius	21
7.3 Support of bevel gears	23
7.4 Direction of force	24
8 Efficiency	25
8.1 Meshing efficiency of hypoid gears and bevel gears	25
8.2 Lubrication	27
Appendix NA (informative) Classification of bevel gears and various expressions of terminology	31
Reference	33

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 is equivalent to ISO /T R22849.2011 "Bevel Gear Design Recommendations". The document type is adjusted from ISO 's technical report to my country's

National standardization guiding technical documents.

This document adds two chapters. "Normative References" and "Terms and Definitions".

This document has made the following minimal editorial changes.

---Correct the informative reference of ISO /T R13989-1 in 5.2.4 to ISO 10300-20;

---Corrected formula (3) and formula (4). The original ISO text mistakenly made the back cone bus and the top cone bus perpendicular, resulting in formula errors;

---Added Appendix NA (informative).

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 provides application information for bevel gears and hypoid gears regarding geometry, load carrying capacity, and accuracy tolerances, respectively.

ISO 23509, ISO 10300 (all parts) and ISO 17485.

This document provides relevant information on the application, manufacturing, strength and efficiency of bevel gears for designers' reference.

The term "bevel gear" is used for the designs of straight bevel gears, spiral bevel gears, zero-degree bevel gears, and hypoid gears. If in this document

The content only involves one or more (but not all) of the forms, and there will be special instructions.

Note. Appendix NA gives the classification of bevel gears and various expressions of terminology.

The target tooth profile described in this document can be processed by various methods and is universal and does not imply a specific process.

This document is intended for experienced gear designers who can rely on their knowledge and background to make reasonable choices for the required values.

This document is not intended for general technical personnel.

2 Normative reference documents

This document has no normative references.

3 Terms and definitions

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

4 Symbols, descriptions and units

The symbols and descriptions used in this document have been harmonized as far as possible with other international standards for bevel gears. Due to certain limitations, there are

Some symbols and descriptions of spur and helical gear transmissions differ from similar literature.

Symbol description unit

Ag alignment coefficient -

av Equivalent center distance of cylindrical gear mm

beff effective tooth width mm

C1 constant-

D Large end rotation outer diameter mm

dae1,dae2 big end outer diameter mm

dv1,dv2 is equivalent to the indexing circle diameter of the cylindrical gear mm

dva1,dva2 is equivalent to the tip circle diameter of the cylindrical gear mm

fg Gear oil immersion coefficient-

ham1, ham2 midpoint addendum height mm