



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

GB/T 3480.5-2021

**Calculation of load capacity of spur and helical gears - Part 5:
Strength and quality of materials**

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Foreword

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

This document is the fifth part of GB/T 3480 "Calculation of Load Capacity of Spur Gears and Helical Gears". GB/T 3480 has released the following section.

- Part 1. Basic principles, overview and general influence coefficient;
- Part 2. Calculation of tooth surface contact strength (pitting);
- Part 3. Calculation of the bending strength of gear teeth;
- Part 5. Strength and quality of materials;
- Part 6. Calculation of service life under variable load conditions.

This document replaces GB/T 3480.5-2008 "Calculation of Load Capacity of Spur Gears and Helical Gears Part 5. Strength and Quality of Materials",

Compared with GB/T 3480.5-2008, the main technical changes are as follows.

- a) The scope of application has been changed, and "ISO 6336-6" and the calculation content of bevel gears have been added (see Chapter 1, Chapter 1 of the.2008 edition);
- b) The terms and definitions have been changed, and the reference of "ISO 6336-1" has been added (see Chapter 3, Chapter 3 of the.2008 edition);
- c) Added "Br method" (see 4.4);
- d) The ME wire of quenched and tempered alloy steel is changed from a solid line to a dashed line (see Figure 5, Figure 5 of the.2008 edition);
- e) The reference standards of some materials have been changed (see the notes in Table 1 and the notes in Table 1 of the.2008 edition);
- f) The statement that "the depth of the hardened layer can be determined based on experience" for some materials has been deleted (see the notes in Figure 13 to Figure 16, the.2008 edition

Note in Figure 13~Figure 16);

- g) The general principles of materials and heat treatment have been changed (see 6.1, 6.1 of the.2008 edition);
- h) The quality and heat treatment requirements of materials have been changed in many places (see Table 2 to Table 8, and Table 2 to Table 8 of the.2008 edition), for example, the white

For bright layer requirements, change "and epsilon-/gamma' nitride ratio >8" to "and gamma'/epsilon >8" (see item 10 in Table 7,.2008 edition

Item 10 in Table 7);

i) Changed the shot peening process (see 6.7, 6.7 of the.2008 edition);

j) Removed Appendix C of the.2008 edition.

This document uses the translation method equivalent to ISO 6336-5.2016 ``Calculation of Load Capacity of Spur Gears and Helical Gears Part 5.Material

Strength and quality.

The Chinese documents that have consistent correspondence with the normatively cited international documents in this document are as follows.

---GB/T 225-2006 End quenching test method for steel hardenability (Jominy test) (ISO 642.1999, IDT)

---GB/T 1356-2001 Standard basic rack tooth profile for cylindrical gears for general machinery and heavy machinery (idtISO 53.1998)

---GB/T 3374.1-2010 Gear terms and definitions Part 1.Geometric definitions (ISO 1122-1.1998, IDT)

---GB/T 3480.1-2019 Calculation of load-carrying capacity of spur gears and helical gears Part 1.Basic principles, overview and general effects

Coefficient (ISO 6336-1.2006, IDT)

---GB/T 3480.2-2021 spur gear and helical gear load capacity calculation part 2.tooth surface contact strength (pitting) calculation

(ISO 6336-2.2019, IDT)

---GB/T 3480.3-2021 spur gear and helical gear load capacity calculation part 3.gear tooth bending strength calculation

(ISO 6336-3.2019, IDT)

---GB/T 5617-2005 Determination of the effective hardened layer depth after induction hardening or flame quenching of steel (ISO 3754.1976,

NEQ)

---GB/T 9450-2005 Determination and verification of the carburizing and quenching hardened layer depth of steel parts (ISO 2639.2002, MOD)

---GB/T 10095.1-2008 Cylindrical gear accuracy system Part 1.Definition and allowable value of tooth surface deviation on the same side of the tooth

(ISO 1328-1.1995, IDT)

---GB/T 10561-2005 Determination of the content of non-metallic inclusions in steel
Standard Grading Chart Microscopic Inspection Method (ISO 4967.

1998, IDT)

---GB/T 13304.2-2008 Steel Classification Part 2. Classification by main quality grade and
main performance or service characteristics

(ISO 4948-2.1981, MOD)

---GB/T 17879-1999 Erosion inspection of surface tempered gear after grinding (idt ISO
14104.1995)

---GB/T 18253-2018 Types of steel and steel product inspection documents (ISO
10474.2013, IDT)

---GB/T 33362-2016 Conversion of hardness values of metallic materials (ISO 18265.2013,
IDT)

---GB/T 34484.1-2017 Heat-treated steel Part 1. Non-alloy steel (ISO 683-1.2016, MOD)

---GB/T 34484.2-2018 Heat-treated steel Part 2. Quenched and tempered alloy steel (ISO
683-2.2016, MOD)

---GB/T 37618-2019 Nitrided steel (ISO 683-5.2017, MOD)

This document has made the following editorial changes.

--- Change the symbols "Ydeltarel-T" and "YRrel-T" in 5.3.2 of ISO 6336-5.2016 to
"YdeltareIT" and "YRrelIT" respectively;

---The reference ISO 1122-1 was included in the list of Chapter 2, and ISO 10300 (all parts)
was added to the reference;

---Change the note in Table 1 of ISO 6336-5.2016 to the paragraph in Table 1.

This document was proposed and managed by the National Gear Standardization Technical
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