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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Calculation of load capacity of spur and helical gears - Part 22: Calculation of micropitting load capacity

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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 for standardization documents"

Drafting:

This document is part 22 of GB/T 3480 "Calculation of load capacity of spur and helical gears": GB/T 3480 has published the following

part:

--- Part 1: Basic principles, overview and general influence coefficients;

--- Part 2: Calculation of tooth surface contact strength (pitting);

--- Part 3: Calculation of gear tooth bending strength;

--- Part 4: Calculation of tooth surface fracture load capacity;

--- Part 5: Strength and quality of materials;

--- Part 6: Calculation of service life under variable load conditions;

--- Part 22: Calculation of micropitting load-bearing capacity:

This document is equivalent to ISO /T S6336-22:2018 "Calculation of load capacity of spur and helical gears Part 22: Micropitting load capacity

Capacity Calculation", the document type was adjusted from ISO technical specifications to my country's national standardization guiding technical documents:

The following minimal editorial changes were made to this document:

---Added the mention of formula (3) to formula (5) in the text:

Introduction

GB/T (Z) 3480 "Calculation of load capacity of spur gears and helical gears" is widely used in my country's gear industry:

The calculation system of the load-bearing capacity of involute cylindrical gears in my country will help my country's gear products to fully keep pace with international standards:

GB/T (Z) 3480 mainly stipulates the calculation of the load capacity of involute spur gears and helical gears:

The standard is divided into 11 parts, each of which is interrelated and independent, and together constitutes a relatively complete calculation framework:

According to different research objects and calculation methods, GB/T (Z) 3480 is planned to consist of 11 parts:

--- Part 1: Basic principles, overview and general influence factors: The purpose is to establish the load capacity of involute spur gears and helical gears:

The basic principles of force calculation are given, and the values of general influence coefficients and some correction coefficients are given:

--- Part 2: Calculation of tooth surface contact strength (pitting): The purpose is to give the tooth surface contact strength (pitting) based on Hertz contact theory:

The calculation method of erosion) and the values of some correction coefficients:

--- Part 3: Calculation of gear tooth bending strength: The purpose is to give a calculation method for the tooth surface bending strength based on the cantilever beam theory and

The values of some correction coefficients:

--- Part 4: Calculation of tooth surface fracture load capacity: The purpose is to describe a method developed in recent years to assess the risk of tooth surface fracture:

method:

--- Part 5: Strength and quality of materials: The purpose is to give the technical requirements of different material quality grades and the influence of gear tooth surface joints:

The main factors and allowable values of contact strength limit and tooth root bending strength limit:

--- Part 6: Calculation of service life under variable load conditions: The purpose is to give the calculation results of the service life under variable load conditions by Palmgren-Miner

The calculation method of the equivalent value of variable load is based on the law:

--- Part 20: Flash temperature method for calculation of bonding load capacity: The purpose is to describe the maximum contact temperature of the meshing tooth surface and the contact temperature

Variations along the contact path:

--- Part 21: Accumulated temperature method for calculation of bonding load capacity: The purpose is to describe the weighted contact temperature of the meshing tooth surface along the contact path

average value:

--- Part 22: Calculation of micropitting load carrying capacity: The purpose is to describe the minimum oil film thickness model of a specific lubricant in the gear contact area:

Type, in order to evaluate the gear's ability to resist micropitting:

--- Part 30: Calculation examples based on GB/T 3480:1, 2, 3, and 5:

Reference examples for GB/T 3480:2, GB/T 3480:3 and GB/T 3480:5 series standards:

--- Part 31: Calculation example of micropitting load carrying capacity: The purpose is to provide a reference example based on GB /Z 3480:22:

The names of the various parts and their ISO correspondence are shown in Table 1:

Table 1 Parts of the GB/T 3480 series (status as of the publication date of this document)

Calculation of load capacity of spur and helical gears

ISO file types are converted into Chinese standardized file types

ISO ISO /TS ISO /TR GB/T GB /Z

Part 1: Basic principles, overview and general influence coefficients sqrt sqrt

Part 2: Calculation of tooth surface contact strength (pitting) sqrt sqrt

Part 3: Calculation of gear tooth bending strength sqrt sqrt