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Second edition  
2003-07-01

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## Calculation of load capacity of spur and helical gears —

### Part 5: Strength and quality of materials

*Calcul de la capacité de charge des engrenages cylindriques à dentures droite et hélicoïdale —*

*Partie 5: Résistance et qualité des matériaux*



Reference number  
ISO 6336-5:2003(E)

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Published in Switzerland

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 6336-5 was prepared by Technical Committee ISO/TC 60, *Gears*, Subcommittee SC 2, *Gear capacity calculation*.

This second edition cancels and replaces the first edition (ISO 6336-5:1996), which has been technically revised.

ISO 6336 consists of the following parts, under the general title *Calculation of load capacity of spur and helical gears*:

- *Part 1: Basic principles, introduction and general influence factors*
- *Part 2: Calculation of surface durability (pitting)*
- *Part 3: Calculation of tooth bending strength*
- *Part 5: Strength and quality of materials*

Part 6, *Calculation of service life under variable load*, is under preparation.

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## Introduction

This part of ISO 6336, together with ISO 6336-1, ISO 6336-2 and ISO 6336-3, provides the principles for a coherent system of procedures for the calculation of the load capacity of cylindrical involute gears with external or internal teeth. ISO 6336 is designed to facilitate the application of future knowledge and developments, as well as the exchange of information gained from experience.

Allowable stress numbers, as covered by this part of ISO 6336, may vary widely. Such variation is attributable to defects and variations of chemical composition (charge), structure, the type and extent of hot working (e.g. bar stock, forging, reduction ratio), heat treatment, residual stress levels, etc.

Tables summarize the most important influencing variables and the requirements for the different materials and quality grades. The effects of these influences on surface durability and tooth bending strength are illustrated by graphs.

This part of ISO 6336 covers the most widely used ferrous gear materials and related heat treatment processes. Recommendations on the choice of specific materials, heat treatment processes or manufacturing processes are not included. Furthermore, no comments are made concerning the suitability or otherwise of any materials for specific manufacturing or heat treatment processes.