



BSI Standards Publication

# Rolling bearings — Load ratings for hybrid bearings with rolling elements made of ceramic

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Part 2: Static load ratings

## National foreword

This British Standard is the UK implementation of ISO 20056-2:2017.

The UK participation in its preparation was entrusted to Technical Committee MCE/7, Rolling bearings.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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# INTERNATIONAL STANDARD

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**20056-2**

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## **Rolling bearings — Load ratings for hybrid bearings with rolling elements made of ceramic —**

### **Part 2: Static load ratings**

*Roulements — Charges de base pour roulements hybrides avec  
éléments roulants en céramique —*

*Partie 2: Charges statiques*





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## Foreword

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This document was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Subcommittee SC 8, *Load ratings and life*.

A list of all the parts in the ISO 20056 series can be found on the ISO website.

## Introduction

Hybrid bearings are rolling bearings with raceways consisting of commonly used rolling bearing steel and rolling elements made from silicon nitride (for definitions, see ISO 5593). Due to the higher modulus of elasticity of the ceramic rolling elements, hybrid bearings have a noticeably smaller contact ellipse at the same load than rolling bearings with rolling elements made of rolling bearing steel. This will lead to higher contact stresses at the same load.

Since the second edition of ISO 76 in 1987, the static capacity of rolling bearings is defined by a permissible Hertzian contact stress in the highest loaded contact. In rolling bearings made of steel, this contact stress will lead to a permanent plastic deformation at raceway and rolling element of approximately 1/10 000th of the rolling element diameter. In hybrid bearings, no significant plastic deformation will occur at the rolling element, resulting in a smaller total plastic deformation in the rolling contact. Therefore, in accordance with industrial practice, slightly higher permissible Hertzian stresses are defined for hybrid bearings. The guideline values of the static safety factor,  $S_0$ , have been increased accordingly to maintain the same overall safety for the raceway.