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

GB/T 24609-2023

Replacing GB/T 24609-2009

Rolling bearings - Thermal speed rating - Calculation

滚动轴承 额定热转速 计算方法

(English Translation)

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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 replaces GB/T 24609-2009 "Calculation Methods and Coefficients of Rated Thermal Speed of Rolling Bearings" and is consistent with GB/T 24609-Compared with:2009, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Changed the order of some symbols (see Table 1, Table 1 of the:2009 version);
- b) Changed the format of "Reference Conditions" (see Chapter 5, Chapter 5 of the:2009 edition);
- c) Move the "Annotation" chapter to the appendix (see Appendix B, Chapter 7 of the:2009 edition);
- d) Move the contents of the appendix "Rated thermal speed of grease-lubricated rolling bearings" to Appendix C (see Appendix C, Appendix B of the:2009 edition):

This document is equivalent to ISO 15312:2018 "Calculation Method for Rated Thermal Speed of Rolling Bearings":

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 specifies the definition of the rated thermal speed of oil bath lubricated rolling bearings and the calculation principles for determining this parameter: From a tribological point of view See, the parameters determined in this document apply not only to bearings of standard construction of a given series and size, but also to other relevant standard constructions:

Structured bearings:

For most standard components, the heat of the entire component is generated by the bearings, and the maximum operating speed is determined by the allowable temperature:

Due to kinematic effects, the rated thermal speed specified in this document does not apply to thrust ball bearings:

Note 1: Appendix A gives the average value of the coefficients f_{0r} and f_{1r} - f_{0r} is the coefficient for calculating the viscous loss of the oil bath lubricated bearing, and f_{1r} is the coefficient for calculating the friction loss of the bearing:

coefficient:

Note 2: Appendix B gives annotations on the limit criteria:

Note 3: Appendix C determines the reference conditions for grease lubrication: The reference conditions can be selected so that the rated thermal speed for grease lubrication is equal to that for oil bath lubrication:

Thermal speed:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations for undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

ISO 76 Rolling Bearing Static Load Ratings (Rollingbearings-Staticloadratings) Note: GB/T 4662-2012 Static load rating of rolling bearings (ISO 76:2006, IDT) ISO 1132-1 Tolerances for rolling bearings Part 1: Terms and definitions (Rollingbearings-Tolerances-Part 1:

Note: GB/T 4199-2003 Rolling bearing tolerance definition (ISO 1132-1:2000, MOD) ISO 5593 Rolling Bearings Vocabulary (Rollingbearings-Vocabulary) Note: GB/T 6930-2002 Rolling bearing vocabulary (ISO 5593:1997, IDT) ISO 5753-1 Rolling bearing clearance Part 1: Radial clearance of

radial bearings (Rolling bearings-Internal clearance-Note: GB/T 4604.1-2012 Rolling bearing clearance Part 1: Radial clearance of radial bearings (ISO 5753-1:2009, IDT) Note: GB/T 7811-2015 Rolling bearing parameter symbols (ISO 15241:2012, IDT)

3 Terms and definitions

The terms and definitions defined in ISO 1132-1 and ISO 5593 and the following apply to this document:

The URLs for the terminology databases used in standardization work maintained by ISO and IEC are as follows:

---ISO online browsing platform: <https://www.iso.org/obp>;

rated thermal speed thermal speed rating Internal temperature when the heat generated by bearing friction and the heat dissipated through the bearing support surface (shaft and housing) are balanced under reference conditions: