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

GB/T 42614-2023

**Plain bearings - Metallic thin-walled half bearings without
flange - Determination of the sigma0.01*-limit**

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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 Standard Documents"

drafting:

This document is modified to adopt ISO 6282:2018 "Determination of $\sigma_{0.01}$ Limit Value of Sliding Bearing Metal Thin-walled Bearing":

The technical differences between this document and ISO 6282:2018 and their reasons are as follows:

--- Added the limitation of "no flange" in the scope to solve the problem that this method is not applicable to thin-walled bearing bushes with flanges;

--- Changed the requirements for test presses, measuring equipment, inspection molds, and standard tiles (see Chapter 4) in order to be consistent with GB/T 7308:3

For supporting use, the normative reference document GB/T 7308:3 is added in Chapter 4;

--- Changed the content about lubricant cleaning on the bearing surface (see Chapter 5) to improve measurement accuracy;

--- Increased the provisions of parallelism of the sample mating surface (see Chapter 5) to ensure uniform compression and improve measurement accuracy:

The following editorial changes have been made to this document:

--- Changed the symbols of the cross-sectional area of the bearing pad, the width of the bearing pad, the thickness of the steel back and the alloy layer, and the measurement diameter of the inner hole of the inspection die, so as to be consistent with

Supporting use of GB/T 7308 series standards;

--- Added the matters needing attention in the sample preparation process:

Please note that some contents of this document may refer to patents: The issuing agency

of this document assumes no responsibility for identifying patents:

1 Scope

This document describes the method for the determination of the limit value of $\sigma_{0.01}$ for multilayer metal flangeless thin-walled bearing shell steel backs:

This document applies to multi-layer metal flangeless thin-walled bearings with an outer diameter $D_o \leq 80\text{mm}$, and can also be used for bearings with an outer diameter $D_o \leq 160\text{mm}$:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document:

GB/T 7308:3 Sliding bearings with flanges or flangeless thin-walled bearings Part 3: Measurement of circumference (GB/T 7308:3-2021, ISO 3548-3:2012, MOD)

3 Terms and Definitions

The following terms and definitions apply to this document:

3:1

$\sigma_{0.01}$ limit value $\sigma_{0.01}$ -limit

Circumferential compressive stress that causes 0.01% permanent deformation on the circumference of the bearing bush:

Note: Due to the difference between the bearing pad and the general compression test sample in geometric shape and detection loading method, the limit value of $\sigma_{0.01}$ is different from the limit value of $\sigma_{0.01}$. In order to distinguish, the bearing pad

The $\sigma_{0.01}$ limit values are marked with an asterisk (*):

3:2

F/A_{cal}

The ratio of the normal pressure (vertical load) (F) applied to the cross-sectional area of the

bearing pad to the cross-sectional area (A_{cal}) obtained by calculation:

Note 1: The unit of F is Newton (N), the unit of A_{cal} is square millimeter (mm^2), and the unit of F/A_{cal} is megapascal (MPa), that is, Newton per square millimeter

(N/mm^2):

Note 2: For the most common material combinations, the calculation of the cross-sectional area (A_{cal}) refers to GB/T 7308:1, and the calculation formula is as follows:

Steel/lead-based alloy or steel/tin-based alloy: $A_{cal}=B_1 \times s_1$

Steel/copper base alloy: $A_{cal}=B_1 \times s_1$

s_2

Steel/aluminum base alloy: $A_{cal}=B_1 \times s_1$

s_2

In the formula:

B_1 --- bearing width, in millimeters (mm);

s_1 --- the thickness of the steel back layer of the bearing bush, in millimeters (mm);

s_2 --- The thickness of the alloy layer of the bearing bush, in millimeters (mm):

Note 3: If the annular oil groove and (or) the chamfer extends to the steel back layer, the cross-sectional area of the steel back is reduced accordingly for calculation: