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

GB/T 41490-2022

**Silicon nitride ceramics - Test method for rolling contact fatigue
at room temperature - Balls-on-flat method**

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Table of Contents

foreword

1 Scope

2 Normative references

3 Terms and Definitions

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 of Standardization Documents"

drafted.

This document is modified using ISO 14628.2012 "Fine ceramics (advanced ceramics, advanced technical ceramics) Nitrogen

Test Method for Determination of Rolling Contact Fatigue of Silica Ceramics at Room Temperature".

Compared with ISO 14628.2012, this document has more structural adjustments.
Comparison list of structure number changes between two files

See Appendix A.

The technical differences between this document and ISO 14628.2012 and their reasons are as follows.

--- Modified the scope of the ISO document (see Chapter 1) according to the test situation in my country;

--- According to the test situation in my country, the content of 6.1, 6.2, 6.3, 7.1 and 9.2c)" has been increased or decreased.

The following editorial changes have been made to this document.

--- In order to harmonize with the existing standards, the standard name is changed to "Spherical plate method for rolling contact fatigue test method of silicon nitride ceramics at room temperature";

--- Modified the "Note" in 5.2.

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

1 Scope

This document describes a method for performing rolling contact fatigue testing of silicon nitride ceramic balls with progressive loading at room temperature.

This document applies to the evaluation of the contact fatigue properties of rolling element materials, or the determination of test loads for constant load rolling contact fatigue tests.

2 Normative references

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

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

GB/T 308.2-2010 Rolling bearing balls - Part 2.Ceramic balls (ISO 3290-2.2008, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1

rollingcontact rollingcontact

contact between the rolling elements.

NOTE. In pure rolling contact conditions, the relative velocity at the point of contact is zero. But in most cases, the actual relative velocity between the rolling elements is not zero.

3.2

surfacefailure

The sample surface peeled off.

3.3

rolling contact fatigue

A mode of surface failure under rolling contact stress, which is much smaller than the stress of surface failure caused by unidirectional compression.

3.4

A test in which rolling contact stress is repeatedly applied to a sample and the number of cycles at which the surface fails is measured.

3.5

Stepwise loading stepwiseloading

A loading method that increases a certain load at regular intervals until the final failure of the test sample.

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