



AMERICAN NATIONAL STANDARD
ABMA Standard

Rolling Bearings – Damage and Failures – Terms, Characteristics, and Causes

Sponsor

**American Bearing
Manufacturers Association**

**ANSI/ABMA/ISO 15243-2010
(Identical Adoption of ISO 15243:2004)**

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International Standard 15243-2010 was prepared by Technical Committee ISO/TC 4, Rolling Bearings.

This standard was processed and approved for submittal to ANSI for national adoption by Accredited Standards Committee B3. Committee approval of the national adoption of this standard does not necessarily mean that all committee members voted for its adoption.

Suggestions for the improvement of this standard gained through experience with its use will be welcomed. These suggestions should be sent to:

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INTERNATIONAL STANDARD

ISO 15243

First edition
2004-02-15

Rolling bearings — Damage and failures — Terms, characteristics and causes

Roulements — Détérioration et défaillance — Termes, caractéristiques et causes



Reference number
ISO 15243:2004(E)

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Published in Switzerland

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Foreword

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ISO 15243 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*.

Introduction

In practice, damage or failure of a bearing can often be the result of several mechanisms operating simultaneously. The failure can result from improper assembly or maintenance or from faulty manufacture of the bearing or its adjacent parts. In some instances, failure is due to a design compromise made in the interests of economy or from unforeseen operating conditions. It is the complex combination of design, manufacture, assembly, operation and maintenance that often causes difficulty in establishing the primary cause of failure.

In the event of extensive damage to or catastrophic failure of the bearing, the evidence is likely to be lost and it will then be impossible to identify the primary cause of failure. In all cases, knowledge of the actual operating conditions of the assembly and the maintenance history is of the utmost importance.

The classification of bearing failure established in this International Standard is based primarily upon the features visible on rolling element contact surfaces and other functional surfaces. Consideration of each feature is required for reliable determination of the cause of bearing failure. Since more than one process may cause similar effects to these surfaces, a description of appearance alone is occasionally inadequate for determining the reason for the failure. In such cases, the operating conditions must be considered.

This is a preview of "ANSI/ABMA/ISO 15243-...". [Click here to purchase the full version from the ANSI store.](#)

Rolling bearings — Damage and failures — Terms, characteristics and causes

1 Scope

This International Standard defines, describes and classifies the characteristics, changes in appearance and possible causes of failure of rolling bearings occurring in service. It will assist in the understanding of the various forms of change in appearance and the failure that has occurred.

For the purposes of this International Standard the term “failure of rolling bearings” means the result of a defect or damage that prevents the bearing meeting the intended design performance.

Consideration is restricted to characteristic forms of change in appearance and failure, which have a well-defined appearance and which can be attributed to particular causes with a high degree of certainty. The features of particular interest for explaining changes and failures are described. The various forms are illustrated with photographs and diagrams, and the most frequent causes are indicated.

The failure mode designations shown in the subclause titles are recommended for general use, but similar expressions or synonyms are given within parentheses below the titles.

Examples of rolling bearing failures are given in Annex A, together with a description of the causes of failure and proposed corrective actions.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5593:1997, *Rolling bearings — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5593 and the following apply.

3.1

characteristics

visual appearance resulting from service performance

NOTE Surface defects and types of geometrical change that occur during wear (appearance of wear) are partly defined in ISO 6601 and ISO 8785.

4 Classification of failure modes occurring in rolling bearings

Rolling bearing failures are classified strictly according to their primary causes. However, it is not always easy to distinguish between causes and characteristics (symptoms) or, in other words, between failure mechanisms and failure modes. The large number of articles and books written on the subject confirms this (see Bibliography).