INTERNATIONAL STANDARD

**ISO 12132**

Second edition
2017-03

# Plain bearings — Quality assurance of thin-walled half bearings — Design FMEA

*Paliers lisses — Assurance qualité des demi-coussinets minces — AMDE à la conception*

Reference number
ISO 12132:2017(E)

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# Foreword

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This document was prepared by Technical Committee ISO/TC 123, *Plain bearings*, Subcommittee SC 5, *Quality analysis and assurance*.

This second edition cancels and replaces the first edition (ISO 12132:1992), which has been technically revised.

# Introduction

FMEA (Failure Mode and Effects Analysis) is a form of analytical method that helps to define potential defects of the designed products and to eliminate these defects at the stage of designing.

FMEA is based on combining the experience gained in practice in designing and operation of plain bearings with the theory of probability.

FMEA increases reliability and quality of the product in question and that of its technology and also reduces the expenses for testing the product and for improving the technological process.

Systems for the implementation of a Design FMEA are well documented elsewhere and are outside the scope of this document. These systems aid in the analysis of complex designs, both existing and projected.

# Plain bearings — Quality assurance of thin-walled half bearings — Design FMEA

## 1 Scope

This document gives guidelines for the preparation of a Design FMEA for thin-walled half bearings used in machinery, e.g. internal combustion engines (the Process FMEA is the responsibility of the supplier). It lists the common potential failure mode(s), potential effect(s) and potential cause(s) of failure.

The numerical evaluation of risks in terms of occurrence, severity and detection can be specific to each application, manufacturer and customer.

Since they have to be assessed in each case, the numerical data are not included in this document. General guidance on statistical assessment can be obtained from the references.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60812, *Analysis techniques for system reliability — Procedure for failure mode and effects analysis (FMEA)*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60812 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

**3.1**
**Failure Mode and Effects Analysis**
**FMEA**
method of reliability analysis intended to identify potential failures which have significant consequences affecting the system performance in the application considered

**3.2**
**Design FMEA**
*FMEA* (3.1) carried out by designers when developing the product

**3.3**
**failure mode**
effect by which a failure is observed in the bearing

**3.4**
**failure effect**
consequence of a *failure mode* (3.3) on the bearing system and equipment condition and operation

**3.5**
**failure cause**
deficiency or defect which causes a *failure mode* (3.3)