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**Plain bearings — Pad materials for  
tilting pad bearings**

*Paliers lisses — Matériaux des patins pour paliers à patins oscillants*



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Published in Switzerland

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 123, *Plain bearings*, Subcommittee SC 7, *Special types of plain bearings*.

This second edition cancels and replaces the first edition (ISO 14287:2012), which has been technically revised. The main changes compared to the previous edition are as follows:

- The content of the Scope has been changed to a concise expression.
- Descriptions on processing and sheet dimensions have been deleted.
- [Table 1](#), [Figure A.1](#) and [Figure A.2](#) have been reviewed.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

Tilting pad bearings are divided in circumferential direction and are pivoted at the supporting points on their back surfaces. This configuration allows the pads to tilt freely, enabling an optimum position and oil film to be realized for the applied duty condition (i.e. speed, pressure and oil viscosity), and improves load-carrying capabilities.

Such bearings are normally used as thrust and journal bearings for rotating machineries; tilting pad bearings are classified to the category of static load conditions with lubricating oil applied. They have been used for many years and have a long history. As a result of developments in high-speed, high-performance rotating machineries, many various types of pad materials have been put into practical use.



# Plain bearings — Pad materials for tilting pad bearings

## 1 Scope

This document specifies requirements for tilting pad bearing lining materials (metals and polymers), backing metals and pivots.

## 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.

ISO 4381, *Plain bearings — Tin casting alloys for multilayer plain bearings*

ISO 4383, *Plain bearings — Multilayer materials for thin-walled plain bearings*

## 3 Terms and definitions

No terms and definitions are listed in this document.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 4 Requirements

### 4.1 General

The sliding surface of a pad may be a metal or a polymer, which is typically bonded to a backing metal, depending on the operating conditions of the bearing. Alloys shall be in accordance with ISO 4381; materials shall be in accordance with ISO 4383. Guidance for the selection of pad surface layer materials is given in [Annex A](#).

### 4.2 Metallic materials

#### 4.2.1 Typical materials

The chemical composition of some typical materials based on metal is given in [Table 1](#).

#### 4.2.2 Tin-based white metals

Tin-based white metals are used as general-purpose metallic lining materials. They are generally provided with linings by casting.

White metals are characterized by good castability. However, attention should be paid to quality problems, such as bonding strength with the back metal, segregation and blow holes.

To ensure appropriate strength/softness of a white metal alloy, the combination of Sb and Cu described in [Table 1](#) is used in many applications.