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Plain bearings — Reuse, recycling and disposal of plain bearing materials

Paliers lisses — Réutilisation, recyclage et entreposage des matériaux pour les paliers lisses

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Foreword

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This document was prepared by Technical Committee ISO/TC 123, *Plain bearings*, Subcommittee SC 6, *Terms and common items*.

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.

Introduction

The recycling, reuse and extension of life of plain bearings play an important role not only as an economic advantage, but also as an effective way to utilize material resources.

Furthermore, when disposing of plain bearings after use, there is concern about the environmental impact by the bearing material components.

Plain bearings — Reuse, recycling and disposal of plain bearing materials

1 Scope

This document specifies how to effectively utilize material resources when recycling and reusing plain bearing materials. This document also specifies how to reduce the environmental impact of disposing of plain bearings.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

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

3.1
reuse
use of a used plain bearing again for the same purpose

3.2
repair
fix of a used plain bearing that is damaged or no longer functions, to use it again for the same purpose

3.3
recover
make a used plain bearing recyclable as raw materials

3.4
recycle
use of a used plain bearing as raw material for plain bearings or any other product

3.5
dispose
discarding of a used plain bearing as waste that can neither be *reused* (3.1) nor *recycled* (3.4)

4 Treatment of used plain bearings

Figure 1 shows the treatment of used plain bearings.

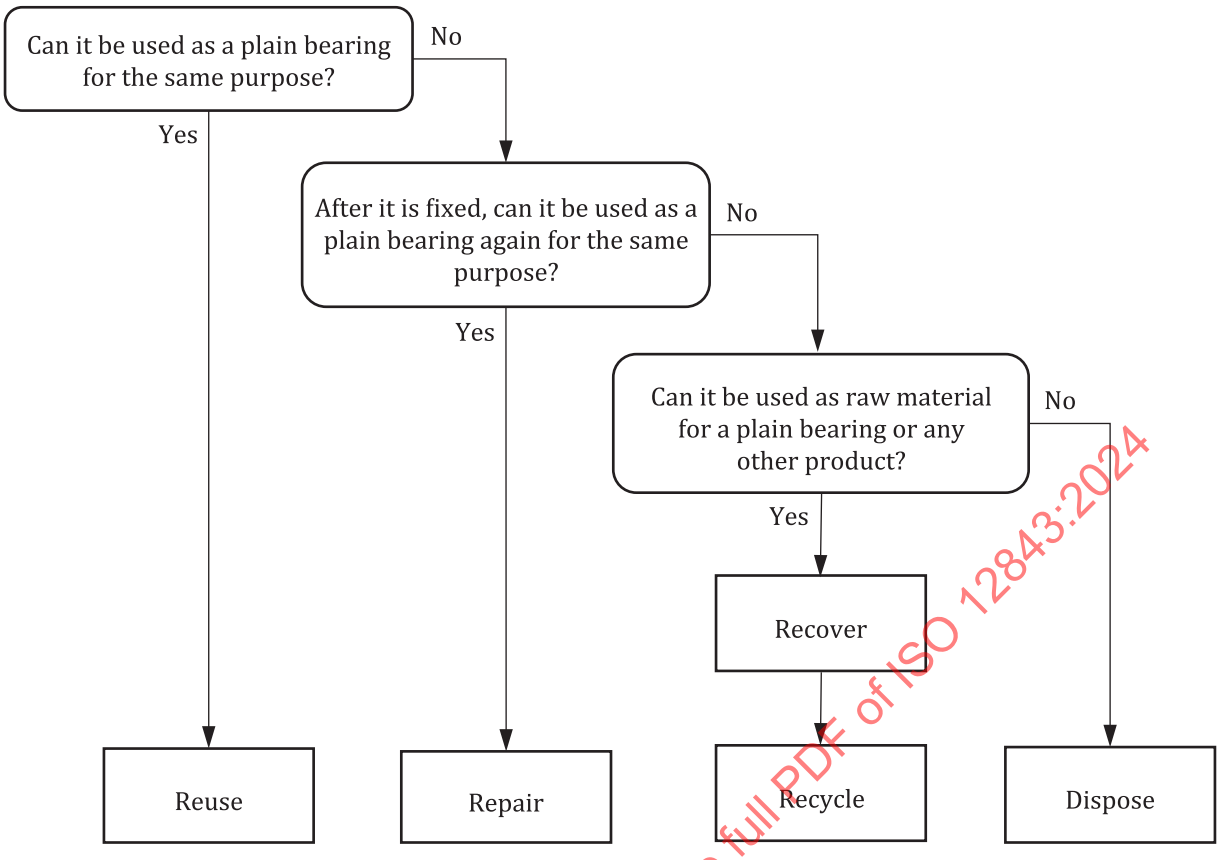

Figure 1 — Treatment of used plain bearings

5 Guidelines

5.1 Design stage of plain bearings

At the design stage of plain bearings, the following points should be considered:

a) the selection of bearing materials which do not contain environmentally hazardous substances;

b) the selection of bearing materials which can be recycled after use;

c) the design of a plain bearing to be easily removed from the equipment for reuse, repair, recycling or disposal;

d) the design of the dimensions and shape of a plain bearing to be repaired easily;

e) the predetermination of the disposal procedure by specifying the ingredients in the agreement between the user and the manufacturer, if the ingredients can have an impact on the environment.

5.2 Manufacturing stage of plain bearings

At the manufacturing stage of plain bearings, the following points should be considered:

a) the devising of a manufacturing method to minimize scrap and increase yields;

EXAMPLE Scrap includes: runners and risers in casting, sprues and runners in the injection moulding of resin materials, and chips generated during the machining process of metallic materials.

b) the separation of scrap into reusable and non-reusable fractions and store separately;

c) the use of the reusable scrap as raw material after proper processing;

d) the disposal of the non-reusable scrap according to 5.4.

5.3 Operating stage of plain bearings

At the operating stage of plain bearings, the following points should be considered:

a) a check of whether the plain bearing is damaged and, if it is, a judgement whether it is still usable if:

   1) abnormalities occur when operating the equipment or signs are present that using the plain bearing would be dangerous;

      EXAMPLE Increased fricative noise, increased frictional vibration, rapid frictional temperature rise, occurrence of smoke and odour, discoloration of lubricating oil.

   2) abnormalities are found in the plain bearing during the periodic inspection of the equipment;

      EXAMPLE Mechanical damage such as cracking of plain bearings or various types of damage on the bearing surfaces.

      NOTE The inspection can be based on ISO 7146-1 and ISO 7146-2.

b) once a bearing is judged usable, its use after appropriate repair;

c) the disposal of a bearing judged unusable according to 5.4.

5.4 Disposal of plain bearings

When disposing of plain bearings, the following points should be considered:

a) the removal of a bearing, if possible, from a piece of equipment when that piece of equipment is being recycled or disposed of due to it reaching the end of its life cycle or for other reasons; when the bearing cannot be removed, its disposal with the rest of the equipment;

b) the separation of the portion containing hazardous substances when the bearing material contains such substances;

c) the disposal of the bearing by

   1) rendering the substance harmless, for example, through chemical treatment,

   2) employing specialists certified for disposal.

      NOTE Substances recognized as “not harmful” today can be designated as harmful in the future.