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**Plain bearings — Fluid film bearing  
materials for vehicular turbocharger**

*Paliers lisses — Matériaux antifriction à film fluide pour  
turbocompresseurs de véhicule*



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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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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 22507:2018), which has been technically revised.

The main changes compared to the previous edition are as follows:

- [subclause 4.1](#) has been updated to include warnings regarding the application of lead or other restricted substances;
- [Clause 5](#) has been updated to allow materials developed for specific operating conditions;
- the characteristic definitions of [Table 1](#) have been updated;
- [Figures A.2](#) and [A.3](#) have been updated;
- a Bibliography has been added.

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).

# Plain bearings — Fluid film bearing materials for vehicular turbocharger

## 1 Scope

This document specifies the material compositions and the required properties of fluid film bearings used for vehicular turbochargers.

## 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 4378-1, *Plain bearings — Terms, definitions, classification and symbols — Part 1: Design, bearing materials and their properties*

ISO 4378-2, *Plain bearings — Terms, definitions, classification and symbols — Part 2: Friction and wear*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4378-1 and ISO 4378-2 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/>

## 4 Requirements for bearing material

### 4.1 General

See [Annex A](#) for a general description of a vehicular turbocharger and bearings.

Distinctive conditions of turbochargers are:

- sliding speed is high,
- bearings are exposed to high temperature oil, and
- oil contains contaminants such as soot from the engine.

Therefore, fluid film bearing materials for vehicular turbochargers shall have special properties of seizure resistance, wear resistance and chemical corrosion resistance as described in the following subclauses. Manufacturers may use “in-house” test procedures to quantify material performance or refer to standard test procedures such as ISO 7148-1 and ISO 10129.

Materials of mating runner parts such as shaft and thrust collar shall be hard and smooth enough to use the maximum capability of the bearing materials.

Typical bearing material compositions are shown in [Clause 5](#). Manufacturers also use lead-free aluminium-tin based alloys as alternatives with reduced hazardous material utilization. If the