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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 46657-2025

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

滑动轴承 车辆涡轮增压器用油膜轴承材料

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is modified to adopt ISO 22507:2022 "Sliding bearings for oil film bearings in vehicle turbochargers" the technical differences between this document and ISO 22507:2022, and the reasons therefor, are as follows.

---The URL of the terminology database maintained by ISO and IEC for standardization has been removed from the terms and definitions (see Chapter 3);

---One new lead-free bearing material, CuZn37, has been added (see Chapter 4, Table 1), which aligns with the green development needs of my country's industry.

---A schematic diagram of a floating ring bearing (semi-floating ring bearing) has been added (see Figure A.3), which is in line with the current state of my country's industry;

---A schematic diagram of a double-sided thrust bearing has been added (see Figure A.5), which is in line with the current state of my country's industry.

The structural adjustments of this document compared to ISO 22507:2022 and the reasons for these adjustments are as follows.

---The section on chemical composition and properties in section 4.5 of this document has been adjusted from Chapter 5 of ISO 22507:2022, which deals with bearing materials, because Chapter 4 is...

The title of Chapter 5, "Bearing Materials," conflicts with Chapter 4: Chapter 5 primarily covers the chemistry of bearing materials.

The composition and properties have been adjusted, resulting in a more rational structure.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Sliding Bearings (SAC/TC236).

1 Scope

This document specifies the composition and property requirements for oil film bearing materials used in vehicle turbochargers.

This document applies to the production and manufacture of oil film bearings for vehicle turbochargers.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

ISO 4378-1 Plain bearings - Terms, definitions, classification and symbols - Part 1: Structure, bearing materials and their properties (Note: GB/T 2889.1-2020 Sliding bearings - Terminology, definitions, classification and symbols - Part 1: Structure, bearing materials and their properties (ISO 4378-1.

2017, IDT)

ISO 4378-2 Sliding bearings - Terms, definitions, classification and symbols - Part 2: Friction and wear (Note: GB/T 2889.2-2020 Sliding bearings - Terminology, definitions, classification and symbols - Part 2: Friction and wear (ISO 4378-2:2017, IDT)

3 Terms and Definitions

The terms and definitions defined in ISO 4378-1 and ISO 4378-2 apply to this document.

4.1 General Rules

For general information on vehicle turbochargers and bearings, see Appendix A.

Special operating conditions for turbochargers include.

---High speed;

---The bearings were exposed to high-temperature engine oil;

---The engine oil contains contaminants, such as emissions from the engine.

Therefore, the oil film bearing material for vehicle turbochargers should possess the anti-seize, wear-resistant, and chemical corrosion-resistant properties described in the following sections.

Manufacturers may use "internal" testing methods to quantitatively test material properties, or refer to relevant standards such as ISO 7148-1 and ISO 10129.

The rotating components of the mating system (such as shafts and thrust rings) should have sufficient hardness and surface roughness to maximize the performance of the bearing materials.

The main components of bearing materials can be found in section 4.5. To reduce the use of hazardous materials, manufacturers may also use lead-free aluminum-tin based alloy bearing materials.

Materials. If the buyer requests restrictions on unspecified elements, or if the restrictions differ from those already specified, the supplier and buyer should negotiate.

Sure.

Warning---The toxicity of lead (Pb) is well-established, and its use has been discontinued in many applications. However, many countries still permit the sale of lead.