



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

GB/T 35088-2018

Plain bearings -- Tin casting alloys for multilayer plain bearings

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Table of Contents

Foreword

1 Scope

2 Normative references

3 requirements

3.1 Chemical composition

3.2 Mechanical properties

3.3 Selection of materials

100 ° C 10

4 mark

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method equivalent to ISO 4381:2011 "Silicon cast alloy for sliding bearing multi-layer sliding bearings".

This standard has made the following editorial changes.

--- Added the scope of Chapter 1 "Note. In addition to the materials specified in this standard, the chemical composition and technical requirements of other grades of tin-based casting alloys

See Appendix A. "

This standard was proposed by the China Machinery Industry Federation.

This standard is under the jurisdiction of the National Sliding Bearing Standardization Technical Committee (SAC/TC236).

This standard is drafted by. China National Machinery Productivity Promotion Center, Hefei Bolin New Materials Co., Ltd., Changzhou Hengye Bearing Materials

Limited company.

Participated in the drafting of this standard. Hunan Chongde Industrial Technology Co., Ltd., Linan Oriental Sliding Bearing Co., Ltd., Shanghai Nuclear Power Industry Co., Ltd.

Limited company, Jinhua Chengkai Alloy Materials Co., Ltd., Hunan UFO New Materials Co., Ltd.

This standard is interpreted by the National Standardization Technical Committee for Plain Bearings.

Sliding bearing

Tin-based casting alloy for multi-layer sliding bearings

1 Scope

This standard specifies the technical requirements for tin-based cast bearing alloys for multi-layer plain bearings. Chemical composition and material properties refer to raw materials

Raw materials should be tested using representative samples. Due to the influence of bearing manufacturing, the test results of finished bearings may be related to the detection of raw materials.

Inconsistent. Therefore, the test results of finished bearings should not be used as the basis for determining the material performance indicators.

Note. In addition to the materials specified in this standard, the chemical composition and technical requirements of other grades of tin-based casting alloys are given in Appendix A.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO 1143 Metallic material slewing beam bending fatigue test
(Metallicmaterials-Rotatingbarbendingfatigue

Testing)

ISO 4384-2 Plain bearings bearing alloys - Determination of hardness - Part 2. Single layer materials (Plainbearings-Hardnesstes-

Tingofbearingmetals-Part 2. Solidmaterials)

Plain bearings - Multilayer plain bearings with sliding bearings - Part 2. Bearing alloys with a thickness greater than or equal to 2 mm

Non-destructive testing of layer bond strength
(Plainbearings-Metalicmultilayerplainbearings-Part 2. Destructive

Testingofbondforbearingmetallayerthicknessesgreaterthanorequalto2mm)

3.1 Chemical composition

The chemical composition of the alloying elements shall be within the range specified in Table 1. When there is a dispute, chemical analysis is an arbitration method.

3.2 Mechanical properties

Material properties shall comply with the requirements of Table 1.

All performance values for a material are averages or ranges as typical values at design time. Due to the large range of certain alloys and cold

However, the condition has a significant effect on the mechanical properties. In some cases, some performance values will deviate significantly from the given values.

3.3 Selection of materials

Guidelines for bearing alloy applications and bearing pair (shaft) hardness are given in Appendix A.

Table 1 Tin-based casting alloy

chemical element

Chemical composition (mass fraction) /%

SnSb8Cu4

Sn rest

Sb 7~8

Cu 3~4

Impurity

Pb < 0.35

As < 0.1

Bi < 0.08

Fe < 0.1

Al < 0.01

Zn < 0.01

Cd < 0.05

Other total amount 0.2

Mechanical behavior

Brinell hardness

According to ISO 4384-2, HBW10/250/180

20°C 22

100 ° C 10

0.2% tensile yield stress $R_{p0.2}$

N/mm²

20°C 46

Tensile strength R_m

N/mm²

20°C 77

0.2% compression yield stress $\sigma_{ad0.2}$

N/mm²

20°C 47

100°C 27

Bond strength R_{Ch}

N/mm²

See 8.1 and 8.2 in ISO 4386-2:2012

Rotary beam bending fatigue R_{rbf}

According to ISO 1143, 10⁷ cycles

N/mm²

+/-29

Linear thermal expansion coefficient α

10⁻⁶/K

23.9

Melting temperature

233~360

Casting temperature

440~460