

International Standard**4384/2**

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

**Plain bearings — Hardness testing of bearing metals —
Part 2 : Solid materials***Paliers lisses — Essai de dureté des matériaux antifricition — Partie 2 : Matériaux massifs***First edition — 1982-01-15**

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4384/2 was developed by Technical Committee ISO/TC 123, *Plain bearings*, and was circulated to the member bodies in September 1978.

It has been approved by the member bodies of the following countries :

Australia	Italy	Romania
Chile	Korea, Rep. of	South Africa, Rep. of
Czechoslovakia	Libyan Arab Jamahiriya	Spain
France	Mexico	Sweden
Germany, F. R.	Netherlands	United Kingdom
India	New Zealand	USA
Ireland	Poland	

The member body of the following country expressed disapproval of the document on technical grounds :

USSR

Plain bearings — Hardness testing of bearing metals — Part 2 : Solid materials

1 Scope and field of application

This International Standard specifies parameters for the hardness testing of solid materials for plain bearings made from cast and wrought copper and aluminium alloys by machining and forming of their wrought products and ingots and of lead and tin ingots. It represents a supplement to the existing ISO publications on hardness testing and therefore includes only the extensions and restrictions to be observed as compared to those publications.

Owing to the heterogeneous structural composition of the majority of these bearing metals, a Brinell test is used.

2 References

ISO 410, *Metallic materials — Hardness test — Tables of Brinell hardness values for use in tests made on flat surfaces.*¹⁾

ISO 6506, *Metallic materials — Hardness test — Brinell test.*²⁾

3 Specimen

The surface of the specimen in the test area shall be metallic bright and conditioned in such a way that a satisfactory measurement of the test impression is possible. During the preparation of the specimens, it shall be ensured that the material is not heated.

The testing of cast and wrought copper and aluminium alloys shall always be carried out on turned or filed and subsequently prepared surfaces, with the exception of hot-pressed parts.

If the manufacturing method permits, the specimens shall be carefully polished. In the case of lead and tin alloys with a roughness value $R_t \leq 6 \mu\text{m}$, the polishing may be carried out with abrasive paper of grain size 240, and in the case of copper and aluminium alloys with a roughness value $R_t \leq 4 \mu\text{m}$, with abrasive paper of grain size 320, and with suitable lubricant.

4 Procedure

The test conditions shall be according to the following table.

Table — Test conditions

Form and nature of bearing material	Thickness mm	Test conditions ¹⁾	Test temperature °C
Bars, tubes based on Cu and Al	—	Preferably : HB 2,5/62,5/10 Or, if the test surface is too small : HB/1/10/10 In the case of cast alloys with larger porosity : HB 5/250/10	18 to 24
Ingots based on Pb and Sn	> 7	HB 10/250/180	
Ingots based on Cu and Al	> 7	HB 10/1 000/10	

1) *Examples :*

HB 5/250/10 = Brinell hardness determined with a ball of 5 mm diameter and with a test force of 2 452 N applied for 10 s.

HB is to be differentiated in :

HBS, with a steel ball;

HBW, with a hardmetal ball.

1) At present at the stage of draft. (Revision of ISO/R 410-1964.)

2) At present at the stage of draft. (Revision of ISO/R 79-1968, ISO/R 191-1971 and ISO/R 403-1964.)