BS ISO 6279:2017

BSI Standards Publication

Plain bearings — Aluminium alloys for solid bearings

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National foreword

This British Standard is the UK implementation of ISO 6279:2017. It supersedes BS ISO 6279:2006 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MCE/12, Plain bearings.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Foreword

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This document was prepared by Technical Committee ISO/123, *Plain bearings*, Subcommittee SC 2, *Materials and lubricants, their properties, characteristics, test methods and testing conditions*.

This third edition cancels and replaces the second edition (ISO 6279:2006), which has been technically revised.

Plain bearings — Aluminium alloys for solid bearings

1 Scope

This document specifies the composition and properties of preferred cast aluminium alloys for use in solid plain bearings. Other alloys can be specified with agreement between the manufacturer and user.

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 4384-2, *Plain bearings — Hardness testing of bearing metals — Part 2: Solid materials*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

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

4 Composition and mechanical properties

4.1 Composition

Preferred compositions are given in Table 1.

Methods of analysis shall be mutually agreed between the manufacturer and user.

4.2 Mechanical properties

Mechanical properties are given in Table 1.

Tensile strength and elongation are mandatory properties that are the subject of quality control checks carried out by the material manufacturers.

Hardness is a mandatory property that may be checked on individual bearings.

Typical values of other properties are given for design guidance.

5 Test methods

The tensile test shall be carried out as agreed between the manufacturer and user.

Test methods and mandatory values shall be agreed between the manufacturer and user.

Hardness testing shall be carried out in accordance with ISO 4384-2.

Table 1 — Aluminium alloys

		Aluminium alloy					
		AlSn6Cu	AlSn6CuNi	AlSn20Cu	AlZn4,5SiCuMg	AlZn5SiCuMg	AlSi12CuMgNi
Chemical composition (mass fraction in %)							
Chemical element	Al	Remainder	Remainder	Remainder	Remainder	Remainder	Remainder
	Sn	5,5 to 6,5	5,5 to 7	17,5 to 22,5	0,2 max.	0,2 max.	—
	Cu	1,3 to 1,7	0,7 to 1,3	0,7 to 1,3	0,9 to 1,2	0,9 to 1,2	0,8 to 1,5
	Ni	0,2 max.	0,7 to 1,3	—	0,2 max.	0,2 max.	1,3 max.
	Si	0,3 max.	0,7 max.	0,7 max.	1,0 to 2,0	1,2 to 2,0	11,0 to 13,0
	Fe	0,4 max.	0,7 max.	0,7 max.	0,4 max.	0,6 max.	0,7 max.
	Mn	0,2 max.	0,1 max.	0,7 max.	0,3 max.	0,3 max.	0,3 max.
	Zn	0,2 max.	—	—	4,4 to 5,0	5,0 to 5,5	0,3 max.
	Mg	0,1 max.	—	—	0,4 to 0,6	0,4 to 0,6	0,8 to 1,3
	Ti	0,05 to 0,2	0,2 max.	—	0,02 to 0,15	0,02 to 0,15	0,2 max.
Total other elements, max.		0,5	0,5	0,5	0,5	0,5	0,5
Mechanical properties							
Hardness Brinell HB10/1 000/10		35 to 40	35 to 45	30 to 55	48 to 56	50 to 60	90 to 120
Tensile strength R_m MPa		130 to 140	110 to 140	110 to 130	160 to 200	180 to 220	200 to 250
Elongation A %		30 to 36	10 to 20	28 to 32	20 to 22	19 to 21	0,3 to 0,8
0,2 % Proof stress $R_{p0,2}$ MPa		50 to 60	45 to 60	40 to 60	80 to 110	100 to 120	190 to 230
Elastic modulus E GPa	≈	69	71	63	75	75	75
Thermal expansion α 10^{-6}/K	≈	23	23	24	23	23	21
Thermal conductivity λ W/(m · K)	≈	160	160	155	170	170	184
Density ρ 10^3kg/m^3	≈	2,9	2,9	3,12	2,9	2,9	2,7

6 Designation

The designation shall include the following information, in the order given:

a) “Aluminium alloy”;

b) reference to this document, i.e. ISO 6279;

c) name of alloy.

EXAMPLE The aluminium alloy AlSn6Cu is designated by the following:

Aluminium alloy ISO 6279 – AlSn6Cu

ICS 77.150.10; 21.100.10
Price based on 2 pages

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