INTERNATIONAL STANDARD

ISO 6279

Second edition
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Plain bearings — Aluminium alloys for solid bearings

Paliers lisses — Alliages d'aluminium pour paliers massifs

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 6279 was prepared by Technical Committee ISO/TC 123, *Plain bearings*, Subcommittee SC 2, *Materials and lubricants, their properties, characteristics, test methods and testing conditions*.

This second edition cancels and replaces the first edition (ISO 6279:1979), which has been technically revised.

Plain bearings — Aluminium alloys for solid bearings

1 Scope

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

2 Normative references

The following referenced documents are indispensable for the application 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 Composition and mechanical properties

3.1 Composition

Preferred compositions are given in Table 1.

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

3.2 Mechanical properties

Mechanical properties are given in Table 1.

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

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

Typical values of other properties are given for design guidance.

4 Test methods

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

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

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

Table 1 — Aluminium alloys

		Aluminium alloy					
		Al Sn6 Cu	Al Sn6 Cu Ni	Al Sn20 Cu	Al Zn4,5 Si Cu Pb	Al Zn5 Si Cu Pb	Al Si12 Cu Mg Ni
		Chemical composition % (m/m)					
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 38	48 to 56	50 to 60	90 to 120
Tensile strength R_m N/mm^2		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 $R_{p0,2}$ N/mm^2		50 to 60	45 to 60	40 to 60	80 to 110	100 to 120	190 to 230
Elastic modulus E N/mm^2 × 10^3	≈	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 kg/dm^3	≈	2,9	2,9	3,12	2,9	2,9	2,7

5 Designation

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

a) “Aluminium alloy”;

b) reference to this International Standard, i.e. “ISO 6279”;

c) name of alloy.

EXAMPLE The aluminium alloy Al Sn6 Cu is designated by the following:

Aluminium alloy ISO 6279 - Al Sn6 Cu

ICS 21.100.10; 77.150.10

Price based on 3 pages