
INTERNATIONAL STANDARD



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Aluminium machining alloys – Chemical composition and mechanical properties of alloys Al-Cu6 Bi Pb and Al-Cu4 Pb Mg

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ISO 2779-1973 (E)

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 2779 was drawn up by Technical Committee ISO/TC 79, *Light metals and their alloys*, and circulated to the Member Bodies in June 1972.

It has been approved by the Member Bodies of the following countries :

Austria	Italy	Sweden
Belgium	Netherlands	Thailand
Czechoslovakia	New Zealand	Turkey
Egypt, Arab Rep. of	Norway	United Kingdom
France	Poland	U.S.A.
India	Portugal	U.S.S.R.
Ireland	Romania	
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The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Canada
Germany
Japan
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1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the chemical composition (per cent) and minimum mechanical properties of two machining alloys : Al-Cu6 Bi Pb and Al-Cu4 Pb Mg.

2 REFERENCE

ISO/R 2107, *Light metals and their alloys – Temper designations.*

3 SYMBOLS AND ABBREVIATIONS

The symbols and abbreviations used in section 5 have the following meanings :

$R_p(0,2)$: 0,2 % proof stress or yield strength

R_m : tensile strength

A : percentage elongation after rupture

S_o : original cross-sectional area of the gauge length of the test piece

N/mm² : newton per square millimetre = about 0,102 kgf/mm²

1 000 lbf/in² : 1 000 pounds-force per square inch = about 6,9 N/mm²

4 CHEMICAL COMPOSITION

See Table 1.

TABLE 1

Alloy (ISO symbol)	Chemical composition											Remarks	
	Cu	Mg	Si	Fe	Mn	Zn	Cr	Ti	Pb	Bi	Other elements		
											individual		total
Al-Cu6 Bi Pb	min.	5,0		—	—	—			0,20	0,20	—	—	
	max.	6,0		0,40	0,7		0,30		0,6	0,6	0,05	0,15	
Al-Cu4 Pb Mg	min.	3,5	0,3	—	—	—	—	—	0,8**	—	—	—	*) or other refining element **) Pb+Bi+Cd { 0,8 min. 2 max.
	max.	5,0	1,8	0,8	0,8	1,0	0,8	0,1	0,2*	1,5**	**	0,10	

5 MECHANICAL PROPERTIES

See Table 2.

TABLE 2

Alloy (ISO Symbol)	Temper designa- tion	Diameter D		R_p (0,2) min.		R_m min.		A min. on	
		mm	in	N/mm ²	1 000 lbf/in ²	N/mm ²	1 000 lbf/in ²	5,65 $\sqrt{S_o}$	50 mm (2 in) or 4,5 $\sqrt{S_o}$
								%	%
Al-Cu6 Bi Pb	TB	3 $D \leq 200$	0.125 $D \leq 8.000$	125	18.0	275	40.0	14	16
	TD	3 $D \leq 40$	0.125 $D \leq 1.500$	260	37.5	310	45.0	10	10
		40 $D \leq 50$	1.500 $D \leq 2.000$	235	34.0	295	43.0	10	12
		50 $D \leq 75$	2.000 $D \leq 3.000$	205	30.0	290	42.0	10	14
	TH	3 $D \leq 75$	0.125 $D \leq 3.000$	275	40.0	370	54.0	10	10
TF	3 $D \leq 75$	0.125 $D \leq 3.000$	230	33.0	310	45.0	8	10	
	75 $D \leq 160$	3.000 $D \leq 6.300$	195	28.5	295	43.0	6	8	
Al-Cu4 Pb Mg	TB	3 $D \leq 75$	0.125 $D \leq 3.000$	245	35.5	370	54.0	8	10