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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 121

COMPOSITION OF MAGNESIUM-ALUMINIUM-ZINC ALLOY CASTINGS AND MECHANICAL PROPERTIES OF SAND CAST REFERENCE TEST BARS

2nd EDITION

July 1971

This second edition supersedes the first edition

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 121, *Composition of magnesium-aluminium-zinc alloy castings*, was drawn up by Technical Committee ISO/TC 79, *Light metals and their alloys*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question led to the adoption of Draft ISO Recommendation No. 196, which was circulated to all the ISO Member Bodies for enquiry in December 1957. It was approved by 22 Member Bodies. One Member Body (U.S.A.) opposed the approval of the Draft.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

BRIEF HISTORY RELATING TO THE SECOND EDITION

Technical Committee ISO/TC 79 decided to revise ISO Recommendation R 121-1959 so as to incorporate therein the mechanical properties of sand cast reference test bars. A Draft ISO Recommendation (No. 2138) on the subject was adopted and submitted to all ISO Member Bodies for enquiry in October 1970. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Austria	Israel	South Africa, Rep. of
Belgium	Italy	Switzerland
Canada	Japan	Thailand
Finland	New Zealand	Turkey
France	Norway	U.A.R.
Germany	Poland	U.S.A.
India	Portugal	U.S.S.R.

The following Member Bodies opposed the approval of the Draft :

United Kingdom
Sweden

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as the second edition of ISO Recommendation R 121. The title of that Recommendation has been amended as follows : *Composition of magnesium-aluminium-zinc alloy castings and mechanical properties of sand cast reference test bars.*

This second edition supersedes the first edition of ISO Recommendation R 121.

ISO Recommendation | R 121 | July 1971

COMPOSITION OF MAGNESIUM-ALUMINIUM-ZINC ALLOY CASTINGS AND MECHANICAL PROPERTIES OF SAND CAST REFERENCE TEST BARS

1. SCOPE

This ISO Recommendation specifies the chemical composition of castings in certain magnesium-aluminium-zinc alloys and gives the mechanical properties to be obtained from sand cast reference test bars in these alloys in various temper conditions. (The temper designations are defined in ISO Recommendation R 2107, *Light metals and their alloys – Temper designations*).

NOTE. – The alloys referred to in Table 1 are based on the same magnesium-aluminium-zinc alloy system, but the development of compositions for use in foundries has proceeded, in different countries and at different times, along two distinct lines :

(1) alloys of relatively high zinc content;

(2) alloys of relatively low zinc content.

To take account of these differences, it has been necessary to specify five compositions as given in Table 1.

Alloy Mg-Al 8 Zn 1, although having wider compositional tolerances, has properties which are suitable for numerous applications for which more closely specified alloys are not necessary.

Differences between these five compositions are less marked in regard to mechanical properties than in regard to some other characteristics, such as casting qualities, provided that comparisons are made between alloys in corresponding states.

2. CHEMICAL COMPOSITION

The chemical composition of castings in the relevant alloys should be as listed in Table 1.

TABLE 1 – **Chemical composition (per cent)**

Alloy	Al	Zn	Mn	Si max.	Fe max.	Cu max.	Ni max.
Mg-Al 8 Zn	7.5 to 9.0	0.2 to 1.0	0.15 to 0.6	0.3	0.05	0.2	0.01
Mg-Al 9 Zn	8.3 to 10.3	0.2 to 1.0	0.15 to 0.6	0.3	0.05	0.2	0.01
Mg-Al 9 Zn 2	8.0 to 10.0	1.5 to 2.5	0.10 to 0.5	0.3	0.05	0.2	0.01
Mg-Al 6 Zn 3	5.0 to 7.0	2.0 to 3.5	0.10 to 0.5	0.3	0.05	0.2	0.01
Mg-Al 8 Zn 1	7.0 to 9.5	0.3 to 2.0	0.15 min.	0.5	0.05	0.35	0.02