



**Designations  
and  
Chemical Composition Limits  
for  
Aluminum Alloys in the  
Form of Castings and Ingot**

**The Aluminum Association**

Incorporated

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## FOREWORD

Listed herein are designations and chemical composition limits for aluminum alloys in the form of castings or ingot registered with The Aluminum Association. This list is maintained by the Technical Committee on Product Standards of The Aluminum Association. Additions may be made as required, and alloys will be deleted when no longer in commercial use. In considering requests for additions, the following criteria apply:

1. The aluminum or aluminum alloy shall be offered for sale currently and shall have been sold within the 12 months immediately preceding the date of registration request, in both cases in commercial quantities<sup>a,d</sup>. Such sales shall have been made to external users/customers (i.e., internal use and/or transfer of an alloy within a company does not meet the stated criteria).
  - a. The alloy has undergone bona fide mill production and is NOT a "laboratory" scale volume used for evaluations or experimental purposes.
  - b. The alloy is cast and fabricated in standard production facilities and is NOT a one-time production.
  - c. There is an expected and ongoing commercial demand and/or need for the alloy.
  - d. The alloy must be purchased and sold in a standard business context, which indicates that the alloy is actually "sold" and not "given away" for uses such as promotional evaluations.
2. The complete chemical composition limits must be disclosed and judged to be reasonable and technically correct by the Technical Committee on Product Standards.
3. The composition must be significantly different from that of any aluminum or aluminum alloy for which a numerical designation for castings and ingot has already been assigned.
4. Except in the case of rotor and aluminizing alloy ingot, composition limits for ingot will not be accepted for registration in the absence of limits for castings of the same designation.
5. Ingot designated xxx.1 has chemical composition limits identical to those assigned to the casting (xxx.0) except grain refining elements and except for the following provisions:

### Maximum Iron Percentage:

#### for Sand and Permanent Mold Castings

Up thru 0.15  
Over 0.15 thru 0.25  
Over 0.25 thru 0.6  
Over 0.6 thru 1.0  
Over 1.0

#### for Ingot

0.03 less than castings  
0.05 less than castings  
0.10 less than castings  
0.2 less than castings  
0.3 less than castings

#### for Die Castings

Up thru 1.3  
Over 1.3

#### for Ingot

0.3 less than castings  
1.1 maximum

### Minimum Magnesium Percentage:

#### for All Castings

Less than 0.50  
0.50 and greater

#### for Ingot

0.05 more than castings<sup>e</sup>  
0.1 more than castings<sup>e</sup>

### Maximum Zinc Percentage:

#### for Die Castings

Over 0.25 thru 0.6  
Over 0.6

#### for Ingot

0.10 less than castings  
0.1 less than castings

- e. Applicable only if the resulting magnesium range is 0.15 percent or greater.

Ingot designated xxx.2 has chemical composition limits which differ from, but fall within, those prescribed for xxx.1 ingot.

6. The product (Sand, Permanent Mold, Die or Investment Casting) must be shown at the time of registration. More than one product may be indicated only when no conflict occurs in determining the appropriate ingot (xxx.1) composition. Other products may pertain even when not listed.
7. Composition limits changes:
  - 7.1 Composition limits changes, including the net of changes made sequentially, shall be restricted to the extent allowed by the alloy modifications rules of ANSI H35.1. Also, no change shall be permitted if it affects the validity of any registered alloy or modification.
  - 7.2 The limits of non-experimental compositions may be changed only by formal ballot of the Technical Committee on Product Standards.
  - 7.3 Composition limits change proposals for experimental ("X") aluminum or aluminum alloys are subject to review for 30 days by the Technical Committee on Product Standards. However, the registrant has the final authority to change the composition, as desired, provided the change complies with the rule of 7.1 above. Changes proposed by those other than the registrant are acceptable only with the approval of the registrant.
  - 7.4 A composition shall not be designated as experimental (with prefix "X") for more than five years. During the period that an alloy is designated as experimental, the registrant shall confirm to the Technical Committee on Product Standards at intervals not exceeding two years the reason(s) experimental designation is still required.

## FOREWORD (continued)

In addition to the above criteria, registration of an alloy by the Technical Committee on Product Standards requires that the proposed chemical composition limits must be judged to be technically correct by formal ballot of this committee. Registration shall not be applied to an alloy designated as experimental (with prefix "X").

The numerical designations of these compositions were assigned in conformance with the system adopted by The Aluminum Association in 1954 and approved by the American Standards Association (now American National Standards Institute Incorporated) as an American Standard in 1957 (see American National Standard Alloy and Temper Designation Systems for Aluminum ANSI H35.1).

Some of the registered alloys may be the subject of a U.S. patent or patent application, and their listing herein is not to be construed in any way as the granting of a license under such patent rights.