

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 115

ITL STANDARD PREVIEW
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CLASSIFICATION AND COMPOSITION
OF UNALLOYED ALUMINIUM INGOTS FOR REMELTING

ISO/R 115:1968

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2nd EDITION

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This second edition supersedes the first edition

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BRIEF HISTORY

The ISO Recommendation R 115, *Classification and composition of remelt ingots and pigs of unalloyed aluminium*, 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 by the Technical Committee began in 1955 and led, in 1957, to the adoption of a Draft ISO Recommendation.

In January 1958, this Draft ISO Recommendation (No. 202) was circulated to all the ISO Member Bodies for enquiry. It was approved by 25 Member Bodies and disapproved by 2 Member Bodies.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in July 1959, to accept it as an ISO RECOMMENDATION.

BRIEF HISTORY CONCERNING THE 2nd EDITION

Working Group ISO/TC 79/WG 2 was entrusted, in 1964, by the Secretariat of Technical Committee ISO/TC 79, *Light metals and their alloys*, with the study of the revision of ISO Recommendation R 115-1959. This work led, in 1966, to the adoption of a Draft Revision.

In August 1966, this Draft Revision (No. 1065) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	India	Switzerland
Austria	Japan	Thailand
Belgium	Korea, Rep. of	Turkey
Brazil	Netherlands	U.A.R.
Canada	Norway	United Kingdom
Chile	Poland	U.S.A.
Czechoslovakia	South Africa, Rep. of	U.S.S.R.
France	Spain	Yugoslavia
Germany	Sweden	
Hungary		

One Member Body opposed the approval of the Draft :

Italy

The new title, *Classification and composition of unalloyed aluminium ingots for remelting*, supersedes the title of the first edition : *Classification and composition of remelt ingots and pigs of unalloyed aluminium*; some amendments were made to the text.

The Draft Revision of ISO Recommendation R 115-1959 was then submitted by correspondence to the ISO Council which decided, in March 1968, to accept it.

The present edition (2nd edition) supersedes the first edition of ISO Recommendation R 115-1959.

CLASSIFICATION AND COMPOSITION OF UNALLOYED ALUMINIUM INGOTS FOR REMELTING

1. SCOPE

This ISO Recommendation relates to the classification and composition of ingots for remelting of primary and secondary unalloyed aluminium, excluding refined aluminium.

Ingots for remelting are classified according to their type (primary or secondary aluminium) and graded according to their composition.

2. REQUIREMENTS

In all cases the type and grade should be agreed between the purchaser and the vendor and stated on delivery.

3. CLASSIFICATION

The type is designated by the terms *primary*, *secondary* and *refined aluminium* which are defined hereafter.

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- 3.1 The term *primary* applies to metal extracted by reduction from or by decomposition of an aluminium compound and which has not been subjected to any fabricating other than casting into pigs or ingots.

Scrap from the ingot producer's own operations, which arises directly from the casting or working of primary unalloyed ingots, may be incorporated in primary melts without modifying the character of primary melts, provided that the identity of the scrap metal is fully established and maintained, and provided that no metallic impurities foreign to the producer's primary unalloyed aluminium operation are a possible cause of contamination.

- 3.2 The term *secondary* applies to metal obtained by the recovery and treatment of metal that has been submitted to at least one fabricating process by casting or working and does not conform to the definition of primary or refined aluminium.
- 3.3 The term *refined aluminium* applies to metal of very high purity (conventional aluminium content : 99.95 % and more) which is obtained by special metallurgical treatments. This metal will be the subject of another ISO Recommendation.

4. COMPOSITION

- 4.1 The conventional aluminium content, expressed to two decimal places, is the difference between 100 % and the sum of all metallic impurities present in amount equal to or greater than 0.010 %, the value for each metallic impurity being expressed to two decimal places before determining the sum.

4.2 The various grades are defined in the following Table.

Grade (ISO symbol)	Maximum contents (per cent)					Total of analysed and controlled elements	Minimum conventional aluminium content (per cent)
	Elements analysed in each batch			Controlled elements			
	Fe	Si	Cu	Zn	Each of metallic elements other than Fe, Si, Cu, Zn		
1	2	3	4	5	6	7	8
Al 99.0	0.80	0.50	0.03	0.08	0.03	1.00	99.00
Al 99.5	0.40	0.30	0.03	0.07	0.03	0.50	99.50
Al 99.7	0.25	0.20	0.02	0.06	0.03	0.30	99.70
Al 99.8	0.15	0.15	0.02	0.06	0.03	0.20	99.80

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5. DELIVERY SPECIFICATIONS

- 5.1 The producer should be responsible for the conventional aluminium content of the metal supplied, as defined in clause 4.1 and in column 8 of the Table above. Moreover, the producer should undertake to keep the contents of the metallic elements other than aluminium less than or equal to the limits indicated in columns 2, 3, 4, 5 and 6 of the Table.
- 5.2 The producer should carry out on each batch of metal an analysis of iron, silicon and copper and periodically check the contents of other metallic elements under conditions left to his discretion, subject to his ability to give the guarantee defined by clauses 4.1 and 5.1.
- 5.3 In quoting analyses for a batch, the producer of the ingots should give the iron, silicon and copper figures which have been obtained by analysis of samples taken from the batch concerned. In special cases figures for other impurities may be given if requested by the purchaser.
- 5.4 The ingot should bear a mark or marks such as will enable it to be identified as to source, type (primary or secondary) and grade.

NOTE. – In the recording of results of chemical analysis, the number representing the result of the determination of an element content should be taken to the same number of decimal places as the corresponding number in this ISO Recommendation.

The following rule should be applied for the rounding-off of this number :

- (a) When the figure immediately after the last figure to be retained is lower than 5, the last figure to be retained remains unchanged.
- (b) When the figure immediately after the last figure to be retained is greater than 5, or equal to 5 and followed by at least one figure other than zero, the last figure to be retained is increased by one.
- (c) When the figure immediately after the last figure to be retained is equal to 5 and followed by zeros only, the last figure to be retained remains unchanged if even and is increased by one if odd.