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Aluminium and aluminium alloys — Alloyed ingots for remelting — Specifications

Aluminium et alliages d'aluminium — Lingots pour refusion en aluminium allié — Spécifications

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 17615 was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 7, *Aluminium and cast aluminium alloys*.

Aluminium and aluminium alloys — Alloyed ingots for remelting — Specifications

1 Scope

This International Standard defines the requirements for grades of alloyed aluminium ingots intended for remelting.

It specifies the classifications and designations applicable to these grades, the conditions in which they are produced, their properties and the required identification marking.

This International Standard does not address the issue of radioactivity.

Certain elements, such as Pb, Hg, Cr6 and Cd, may be subject to restrictions.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
alloying element
metallic or non-metallic element whose content lies within specific upper and lower limits for the purpose of giving the resulting alloy specific properties

2.2
impurity
metallic or non-metallic element present but which is not intentionally added to a base metal and for which no lower limit is specified

2.3
casting alloy
alloy primarily intended for the production of castings

2.4
ingot for remelting
metal cast into a form suitable for remelting, which has been processed, as appropriate, to adjust the chemical composition and to control certain metallic or non-metallic impurities

2.5
casting
general term for products at or near finished shape, formed by solidification of a metal or alloy in a mould

2.6
melt
quantity of liquid metal that has simultaneously undergone the same preparatory treatment in the furnace before the casting operation

2.7
bundle
collection of ingots taken from one or more batches and secured, for example by banding, for the purposes of handling, shipment and storage

2.8
heat
cast
quantity of products cast simultaneously from the same melt

NOTE 1 This term is not used for casting.

NOTE 2 The different ingots of a cast can have different dimensions.

3 Ordering information

The purchase order shall define the product required and shall contain the following information:

a) designation of the aluminium alloy according to this International Standard (or the purchaser code after agreement between the supplier and the purchaser);

b) form and approximate shape of the product;

c) quantity:

- mass (in metric tonnes);
- tolerances on quantity, if required;

d) any requirements for certificates of conformance, test and/or analysis reports or inspection certificates;

e) any additional requirements agreed between the supplier and the purchaser, such as metallurgical structure, samples, delivery details, etc.

4 Requirements

4.1 Production and manufacturing processes

Unless otherwise specified in the order, the production and manufacturing processes shall be at the discretion of the producer.

Unless it is explicitly stated in the order, no obligation shall be placed on the producer to use the same processes for subsequent similar orders. However, the supplier should inform the purchaser of any change that may affect the quality of the ingots or the final products.

4.2 Quality control

The supplier shall be responsible for carrying out all inspection and tests required by the relevant International Standard and/or the particular specification prior to shipment of the product. If the purchaser wishes to inspect the product at the supplier's works, he shall stipulate this at the time of placing the order.

4.3 Chemical composition

The alloy shall be in accordance with the designations and chemical composition given in Table 1, and/or equivalent designations as per Annex A.

If the purchaser requires chemical composition limits for elements not specified in the above International Standard, these limits shall be stated on the order, after agreement between supplier and purchaser.

4.4 Quality

To a degree agreed between supplier and purchaser, the ingots shall be reasonably free from:

a) visible surface contamination (such as grease, dirt, products of corrosion, dross or any other foreign material, including paint) apart from that which is approved for marking purposes;

b) metallic or non-metallic inclusions;

c) gas porosity.

The ingots can have shrinkage holes or cracks, which might retain water. They shall therefore be thoroughly dried and preheated before coming in contact with liquid metal to avoid the risk of a violent explosion.

4.5 Form of products

Ingots may have several possible shapes, for example:

— trapezoidal which can be stacked. This type of ingot may have one or more notches to enable it to be divided into pieces if required;

— continuously cast material;

— other shapes.

The dimensions and tolerances on dimensions of the ingots and bundles, and the tolerances on the unit masses, shall be agreed between supplier and purchaser at the time of ordering, and stated in the purchase order.

5 Product inspection and test methods

5.1 Analysis of chemical composition

Sampling procedures and analytical tests shall be carried out in accordance with agreed quality assurance procedures. The results shall be traceable to standard reference materials. The capability of the analytical procedures shall be verified and recorded.

The melt shall be clearly identified with a traceable number. For chemical analysis, the sample and the sampling procedures and conditions shall be so designed that they are representative of the melt being cast. The analytical samples shall be taken during the cast from the metal distribution system. At least two samples shall be taken, one from the beginning and one from the end of every melt, unless otherwise agreed between the manufacturer and the purchaser, in which case the procedure shall be designed to produce samples representative of the melts.

When analysed by emission spectrometry, each analytical sample shall be suitably machined and shall be analysed using at least two sparks. The analysis result shall be the arithmetic mean of the individual results.

Each sample shall meet the specified composition limits. The analysis of the melt shall be the arithmetic mean of all the samples taken from this melt.

The producer shall determine and periodically check the analytical accuracy for each element analysed. The producer shall be able to demonstrate the validity of the whole test procedure, including sampling, sample preparation and measurement.

The analytical methods are at the discretion of the producer, who shall use methods accepted at the international level.

5.2 Chemical composition limits

In Table 1, composition is expressed as mass fraction (percent); The values given are maximum limits, unless shown as a range or otherwise.

6 Inspection documents

The producer shall supply the grade of aluminium alloy quoted on the order. By agreement between the supplier and the purchaser or when specified on the order, the consignment shall be accompanied by a certificate listing the results of the analysis of the chemical elements noted in Table 1 and any other element that has been requested in advance.

7 Marking of products

Unless otherwise indicated on the order, each unit (i.e. bundle of ingots, T-bar or sow) shall bear one or more marks which indicate the following:

— the producer identification;

— the alloy designation;

— the melt number;

— the mass of the unit.

The method of marking is at the discretion of the supplier, but it shall be sufficiently weatherproof and shall not be a source of contamination.

Each unit shall carry a warning of the risk of explosion when ingots contact liquid metal without first being properly dried (see 5.4).

8 Packaging

Small ingots shall be gathered together in bundles, the mass of which generally should not exceed one tonne.

Each bundle shall originate from only one heat.

The packaging shall be sufficiently strong for the bundle to be handled without breakage.

9 Delivery documents

The delivery documents shall accompany the delivery and include:

— the producer identification;

— the order number;

— the alloy designation;

— the melt number(s);

— the results of chemical analysis for all elements for which specific limits are given in Table 1, in the same sequence as given in the table;

— the mass of each unit and the total mass delivered;

— the form of the product (shape of the supplied ingot).

10 Complaints

The chemical composition or physical condition of the delivered product may give rise to complaints if it affects the processing or the end use of the relevant finished product.

The purchaser shall enable the supplier to check the basis of the complaint. The purchaser shall provide at least one of the following:

— a piece of the ingot(s) in question, with complete identification;

— a specimen showing the objectionable conditions of the semi-finished or final product that has been fabricated from the relevant ingot(s), together with information which gives evidence of a relationship between the objectionable condition and the ingot(s), and details about the fabrication conditions and intermediate controls.

It should be noted that the direct spectrographic analysis of ingot slices can give rise to inaccuracy due to segregation. The sampling and analysis methods shall be agreed between supplier and purchaser.

In case of dispute concerning conformity with the requirements of this International Standard or the specification stated on the order, examinations and tests shall be performed by a referee laboratory chosen by mutual agreement between supplier and purchaser.

An arbitrator shall be appointed by mutual agreement between the supplier and the purchaser.

The arbitrator's decision should be final.

Table 1 — Alloyed ingots – Chemical composition [in mass fraction (percent)]

Alloy type	Chemical symbols	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Others [a]		Aluminium
													Each	Total	
AlCu	Al Cu4MgTi	0,15 (0,20)	0,30 (0,35)	4,2 to 5,0	0,10	0,20 to 0,35 (0,15 to 0,35)	—	0,05	0,10	0,05	0,05	0,15 to 0,25 (0,15 to 0,25)	0,03	0,10	Remainder
	Al Cu4Ti	0,15 (0,18)	0,15 (0,19)	4,2 to 5,2	0,55	—	—	—	0,07	—	—	0,15 to 0,25 (0,15 to 0,30)	0,03	0,10	Remainder
	Al Cu5AgMg [b]	0,05	0,10	4,0 to 5,0	0,20 to 0,40	0,20 to 0,35 (0,15 to 0,35)	—	—	0,05	—	—	0,15 to 0,35	0,03	0,10	Remainder
	Al Cu5NiCoZr [c]	0,30	0,50	4,5 to 5,5	0,20 to 0,30	0,10 (0,05)	—	1,3 to 1,8	0,05	0,05	0,05	0,15 to 0,25	0,05	0,15	Remainder
AlSi	Al Si9	8,0 to 11,0	0,55 (0,65)	0,08 (0,10)	0,50	0,10	—	0,05	0,15	0,05	0,05	0,15	0,05	0,15	Remainder
	Al Si11	10,0 to 11,8	0,15 (0,19)	0,03 (0,05)	0,10	0,45	—	—	0,07	—	—	0,15	0,03	0,10	Remainder
	Al Si12(a)	10,5 to 13,5	0,40 (0,55)	0,03 (0,05)	0,35	—	—	—	0,10	—	—	0,15	0,05	0,15	Remainder
	Al Si12(b)	10,5 to 13,5	0,55 (0,65)	0,10 (0,15)	0,55	0,10	—	0,10	0,15	0,10	—	0,15 (0,20)	0,05	0,15	Remainder
	Al Si12(Fe)	10,5 to 13,5	0,45 to 0,9 (1,0)	0,08 (0,10)	0,55	—	—	—	0,15	—	—	0,15	0,05	0,25	Remainder
AlSiMgTi	Al Si2MgTi	1,6 to 2,4	0,50 (0,60)	0,08 (0,10)	0,30 to 0,50	0,50 to 0,65 (0,45 to 0,65)	—	0,05	0,10	0,05	0,05	0,07 to 0,15 (0,05 to 0,20)	0,05	0,15	Remainder
AlSi7Mg	Al Si7Mg	6,5 to 7,5	0,45 (0,55)	0,15 (0,20)	0,35	0,25 to 0,65 (0,20 to 0,65)	—	0,15	0,15	0,15	0,05	0,05 to 0,20 (0,05 to 0,25)	0,05	0,15	Remainder
	Al Si7Mg0,3	6,5 to 7,5	0,15 (0,19)	0,03 (0,05)	0,10	0,30 to 0,45 (0,25 to 0,45)	—	—	0,07	—	—	0,10 to 0,18 (0,08 to 0,25)	0,03	0,10	Remainder
	Al Si7Mg0,6	6,5 to 7,5	0,15 (0,19)	0,03 (0,05)	0,10	0,50 to 0,70 (0,45 to 0,70)	—	—	0,07	—	—	0,10 to 0,18 (0,08 to 0,25)	0,03	0,10	Remainder
AlSi9Mg	Al Si9Mg	9,0 to 10,0	0,15 (0,19)	0,03 (0,05)	0,10	0,30 to 0,45 (0,25 to 0,45)	—	—	0,07	—	—	0,15	0,03	0,10	Remainder
AlSi10Mg	Al Si10Mg	9,0 to 11,0	0,45 (0,55)	0,08 (0,10)	0,45	0,25 to 0,45 (0,20 to 0,45)	—	0,05	0,10	0,05	0,05	0,15	0,05	0,15	Remainder
	Al Si10Mg(Fe)	9,0 to 11,0	0,45 to 0,9 (1,0)	0,08 (0,10)	0,55	0,25 to 0,50 (0,20 to 0,50)	—	0,15	0,15	0,15	0,05	0,15 (0,20)	0,05	0,15	Remainder
	Al Si10Mg(Cu)	9,0 to 11,0	0,55 (0,65)	0,30 (0,35)	0,55	0,25 to 0,45 (0,20 to 0,45)	—	0,15	0,35	0,10	—	0,15 (0,20)	0,05	0,15	Remainder

Table 1 (*continued*)

Alloy type	Chemical symbols	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Others [a]		Aluminium
													Each	Total	
AlSi5Cu	Al Si5Cu1Mg	4,5 to 5,5	0,55 (0,65)	1,0 to 1,5	0,55	0,40 to 0,65 (0,35 to 0,65)	—	0,25	0,15	0,15	0,05	0,05 to 0,20 (0,05 to 0,25)	0,05	0,15	Remainder
	Al Si5Cu3	4,5 to 6,0	0,50 (0,60)	2,6 to 3,6	0,55	0,05	—	0,10	0,20	0,10	0,05	0,20 (0,25)	0,05	0,15	Remainder
	Al Si5Cu3Mg	4,5 to 6,0	0,50 (0,60)	2,6 to 3,6	0,55	0,20 to 0,45 (0,15 to 0,45)	—	0,10	0,20	0,10	0,05	0,20 (0,25)	0,05	0,15	Remainder
	Al Si5Cu3Mn	4,5 to 6,0	0,7 (0,8)	2,5 to 4,0	0,20 to 0,55	0,40	—	0,30	0,55	0,20	0,10	0,15 (0,20)	0,05	0,25	Remainder
Al Si6Cu	Al Si6Cu4	5,0 to 7,0	0,9 (1,0)	3,0 to 5,0	0,20 to 0,65	0,55	0,15	0,45	2,0	0,30	0,15	0,20 (0,25)	0,05	0,35	Remainder
AlSi7Cu	Al Si7Cu2	6,0 to 8,0	0,7 (0,8)	1,5 to 2,5	0,15 to 0,65	0,35	—	0,35	1,0	0,25	0,15	0,20 (0,25)	0,05	0,15	Remainder
	Al Si7Cu3Mg	6,5 to 8,0	0,7 (0,8)	3,0 to 4,0	0,20 to 0,65	0,35 to 0,60 (0,30 to 0,60)	—	0,30	0,65	0,15	0,10	0,20 (0,25)	0,05	0,25	Remainder
AlSi8Cu	Al Si8Cu3	7,5 to 9,5	0,7 (0,8)	2,0 to 3,5	0,15 to 0,65	0,15 to 0,55 (0,05 to 0,55)	—	0,35	1,2	0,25	0,15	0,20 (0,25)	0,05	0,25	Remainder
AlSi9Cu	Al Si9Cu1Mg	8,3 to 9,7	0,7 (0,8)	0,8 to 1,3	0,15 to 0,55	0,30 to 0,65 (0,25 to 0,65)	—	0,20	0,8	0,10	0,10	0,10 to 0,18 (0,10 to 0,20)	0,05	0,25	Remainder
	Al Si9Cu3(Fe)	8,0 to 11,0	0,6 to 1,2 (1,3)	2,0 to 4,0	0,20 to 0,55	0,15 to 0,55 (0,05 to 0,55)	0,15	0,50	1,2	0,35	0,25	0,20 (0,25)	0,05	0,25	Remainder
	Al Si9Cu3(Fe)(Zn)	8,0 to 11,0	0,6 to 1,2 (1,3)	2,0 to 4,0	0,55	0,15 to 0,55 (0,05 to 0,55)	0,15	0,55	3,0	< 0,2	0,25	< 0,2 (0,25)	0,05	0,25	Remainder
AlSi11Cu	Al Si11Cu2(Fe)	10,0 to 12,0	0,45 to 1,0 (1,1)	1,5 to 2,5	0,55	0,30	0,15	0,45	1,7	0,25	0,25	0,20 (0,25)	0,05	0,25	Remainder
	Al Si11Cu3(Fe)	9,6 to 12,0	0,6 to 1,1 (1,3)	1,5 to 3,7	0,60	0,35	—	0,45	1,7	0,25	0,25	0,25	—	—	Remainder

Table 1 (*continued*)

Alloy type	Chemical symbols	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Others [a]		Aluminium
													Each	Total	
AlSi12Cu	AlSi12(Cu)	10,5 to 13,5	0,7 (0,8)	0,9 (1,0)	0,05 to 0,55	0,35	0,10	0,30	0,55	0,20	0,10	0,15 (0,20)	0,05	0,25	Remainder
	AlSi12Cu1(Fe)	10,5 to 13,5	0,6 to 1,1 (1,3)	0,7 to 1,2	0,55	0,35	0,10	0,30	0,55	0,20	0,10	0,15 (0,20)	0,05	0,25	Remainder
	Al Si12CuMgNi	10,5 to 13,5	0,6 (0,7)	0,8 to 1,5	0,35	0,9 to 1,5 (0,8 to 1,5)	—	0,7 to 1,3	0,35	—	—	0,20 (0,25)	0,05	0,15	Remainder
AlSi17Cu	Al Si17Cu4Mg	16,0 to 18,0	1,0 (1,3)	4,0 to 5,0	0,5	0,45 to 0,65	—	0,3	1,5	—	0,3	—	—	—	Remainder
AlMg	Al Mg3	0,45 (0,55)	0,45 (0,55)	0,08 (0,10)	0,45	2,7 to 3,5 (2,5 to 3,5)	—	—	0,10	—	—	0,15 (0,20)	0,05	0,15	Remainder
	Al Mg5	0,35 (0,55)	0,45 (0,55)	0,05 (0,10)	0,45	4,8 to 6,5 (4,5 to 6,5)	—	—	0,10	—	—	0,15 (0,20)	0,05	0,15	Remainder
	Al Mg5(Si)	1,3 (1,5)	0,45 (0,55)	0,03 (0,05)	0,45	4,8 to 6,5 (4,5 to 6,5)	—	—	0,10	—	—	0,15 (0,20)	0,05	0,15	Remainder
	Al Mg9	2,5	0,45 to 0,9 (1,0)	0,08 (0,10)	0,55	8,5 to 10,5 (8,0 to 10,5)	—	0,10	0,25	0,10	0,10	0,15 (0,20)	0,05	0,15	Remainder
	Al Mg5Si2Mn(Fe) [d]	1,8 to 2,6	0,2 (0,3)	0,05 (0,07)	0,5 to 0,8	5,0 to 6,0 (4,8 to 6,0)	—	—	0,07	—	—	0,20 (0,25)	0,05	0,15	Remainder
AlZnMg	Al Zn5Mg	0,25 (0,30)	0,70 (0,80)	0,15 to 0,35	0,40	0,45 to 0,70 (0,40 to 0,70)	0,15 to 0,60	0,05	4,50 to 6,00	0,05	0,05	0,12 to 0,20 (0,10 to 0,25)	0,05	0,15	Remainder
Al ZnSiMg	Al Zn10Si8Mg	7,5 to 9,0	0,40	0,10	0,40	0,30 to 0,50	—	—	9,0 to 10,5	—	—	0,15	0,05	0,15	Remainder

NOTE Figures in brackets are casting compositions where they differ from the ingot.

[a] "Others" does not include modifying or refining elements such as Na, Sr, Sb and P.

[b] Ag = 0,4 to 1,0.

[c] Zr = 0,10 to 0,30 ; Ti + Zr = 0,50 max.; Sb = 0,10 to 0,40; Co = 0,10 to 0,40; Sb + Co = 0,60 max.

[d] Be = 0,01 max.

Annex A
(normative)

Rules for expressing the designation and chemical composition of alloyed ingots for remelting

A.1 Basis of codification

The designation based on the chemical symbol shall be constituted successively by:

a) the prefix ISO, followed by a blank space;

b) the letter A representing aluminium;

c) a letter representing the form of the product:

— the letter B representing ingots for remelting; or

— the letter C representing castings; or

— the letter M representing master alloys.

The letter B, C or M shall be separated from the following designation by a hyphen.

A.2 Distinguishing by nominal content

When several alloying elements are deemed to be required in the designation, they shall be arranged in order of decreasing nominal content.

EXAMPLE 1 ISO AB-Al Si5Cu3

If these contents are equal, the alloying elements shall be arranged in alphabetical order of the symbols, as specified in Table A.1

EXAMPLE 2 ISO AB-Al Si12CuMgNi

The chemical symbols for alloying elements shall be restricted to a maximum of four elements.

EXAMPLE 3 ISO AB-Al Si12CuMgNi

EXAMPLE 4 ISO AC-Al Si12CuMgNi

EXAMPLE 5 ISO AM-Al Sr10Ti1B0,2

The simplest possible designation shall be used.

A.3 Alloys with similar compositions

In the case of alloys with similar compositions, the following additional designation shall be used for distinguishing between alloys in decreasing priority.

The alloying element shall be distinguished by its nominal content (middle of the range) rounded to the nearest integer or, if necessary, to the nearest 0,5 or, for contents less than 1 %, to the nearest 0,1.

EXAMPLE 1 ISO AB-Al Si7Mg0,3

EXAMPLE 2 ISO AB-Al Si7Mg0,6

A.4 Distinguishing by main impurities

The main impurity or impurities shall be added in parentheses.

EXAMPLE 1 ISO AB-Al Si10Mg(Cu)

EXAMPLE 2 ISO AB-Al Si10Mg(Fe)

EXAMPLE 3 ISO AB-Al Si9Cu3(Fe)(Zn)

A.5 Distinguishing by a suffix

If the above provision is not sufficient for differentiating between several alloys, a suffix shall be used: (a), (b), (c), etc., according to the date of registration. This suffix shall consist of a lower case letter placed in parentheses to avoid confusion with the chemical symbols.

EXAMPLE 1 ISO AB- Al Si12(a)

EXAMPLE 2 ISO AB- Al Si12(b)

Table A.1 — Designation of chemical elements

Silver	Ag	Molybdenum	Mo
Aluminium	Al	Sodium	Na
Boron	B	Niobium	Nb
Beryllium	Be	Nickel	Ni
Bismuth	Bi	Phosphorus	P
Calcium	Ca	Lead	Pb
Cadmium	Cd	Rare earths	RE
Cerium	Ce	Antimony	Sb
Cobalt	Co	Silicon	Si
Chromium	Cr	Tin	Sn
Copper	Cu	Strontium	Sr
Iron	Fe	Titanium	Ti
Gallium	Ga	Vanadium	V
Lithium	Li	Zinc	Zn
Magnesium	Mg	Zirconium	Zr
Manganese	Mn		

Annex B
(informative)

Comparison between cast aluminium alloy designations

Table B.1 — ISO, AA, EN and JIS designations

ISO alloy designation	Corresponding AA alloy designation	Corresponding EN alloy designation	Corresponding JIS alloy designation
Al Cu4Ti	—	EN AC-21100	Al-Cu4Ti
Al Cu4MgTi	204.0	EN AC-21000	AC1B
Al Cu5MgAg	A201.0	—	—
Al Si9	—	EN AC-44400	—
Al Si11	—	EN AC-44000	—
Al Si12(a)	—	EN AC-44200	—
Al Si12(b)	B413.0	EN AC-44100	AC3A,Al-Si12
Al Si12(Fe)	A413.0	EN AC-44300	ADC1
Al Si2MgTi	—	EN AC-41000	—
Al Si7Mg		EN AC-42000	AC4C
Al Si7Mg0,3	—	EN AC-42100	AC4CH
Al Si7Mg0,6	357.0	EN AC-42200	—
Al Si9Mg	—	EN AC-43300	—
Al Si10Mg	—	EN AC-43100	AC4A,Al-Si10Mg
Al Si10Mg(Fe)	—	EN AC-43400	ADC3
Al Si10Mg(Cu)	—	EN AC-43200	—
Al Si5Cu1Mg	355.0	EN AC-45300	AC4D
Al Si5Cu3	—	EN AC-45400	Al-Si5Cu3
Al Si5Cu3Mg		EN AC-45100	—
Al Si5Cu3Mn	—	EN AC-45200	AC2A,AC2B
Al Si6Cu4	—	EN AC-45000	Al-Si6Cu4
Al Si7Cu2	—	EN AC-46600	—
Al Si7Cu3Mg	320.0	EN AC-46300	—
Al Si8Cu3	—	EN AC-46200	AC4B
Al Si9Cu1Mg	—	EN AC-46400	—
Al Si9Cu3(Fe)	—	EN AC-46000	ADC10
Al Si9Cu3(Fe)(Zn)	—	EN AC-46500	ADC10Z
Al Si11Cu2(Fe)	—	EN AC-46100	ADC12Z
Al Si11Cu3(Fe)	—	-	ADC12
Al Si12(Cu)	—	EN AC-47000	Al-Si12Cu
Al Si12Cu1(Fe)	—	EN AC-47100	—
Al Si12CuMgNi	—	EN AC-48000	AC8A
Al Si17Cu4Mg	B390.0	-	ADC14
Al Mg3	—	EN AC-51000	ADC6,Al-Mg3
Al Mg5	—	EN AC-51300	ADC5,AC7A,Al-Mg6
Al Mg5(Si)	—	EN AC-51400	Al-Mg5Si1
Al Mg9	—	EN AC-51200	Al-Mg10
Al Zn5Mg	712.0	EN AC-71000	Al-Zn5Mg
Al Zn10Si8Mg	—	—	—

NOTE Alloys listed as corresponding alloy designations are very close or similar, but not equivalent. Caution should be exercised when exchanging alloy designations.

Bibliography

[1] ISO 3522, *Aluminium and aluminium alloys — Castings — Chemical composition and mechanical properties*

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