AS 3719.2—1998
Reconfirmed 2016

Australian Standard™

Aluminium and aluminium alloys

Part 2: Determination of silicon—Gravimetric method

This Australian Standard was prepared by Committee CH/10, Analysis of Metals. It was approved on behalf of the Council of Standards Australia on 1 May 1998 and published on 5 July 1998.

The following interests are represented on Committee CH/10:

Australasian Institute of Mining and Metallurgy

Australasian Railway Association

Australian Aluminium Council

Australian Chamber of Manufactures

Copper Technical Data Centre

National Association of Testing Authorities, Australia

The Royal Australian Chemical Institute

University of New South Wales

Additional interests participating in preparation of standard:

Superintendent Companies and Aluminium Smelters

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Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 97180.

STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 3719.2—1998
Aluminium and aluminium alloys
Part 2: Determination of silicon—Gravimetric method

RECONFIRMATION NOTICE

Technical Committee CH-010 has reviewed the content of this publication and, in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 1 November 2016.

The following are represented on Technical Committee CH-010:

Bureau of Steel Manufacturers of Australia
International Copper Association Australia
International Precious Metals Institute
National Association of Testing Authorities Australia

NOTES

Australian Standard™

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Part 2: Determination of silicon—Gravimetric method

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH/10, Analysis of Metals to supersede AS 3719.2—1990.

This Standard is a result of a consensus among representatives of the Joint Committee to produce it as an Australian Standard.

The objective of this Standard is to increase the range for the determination of silicon in aluminium and aluminium alloys by raising the upper limit from 8% to 13%.

This Standard is based on ISO 797:1973, *Aluminium and aluminium alloys—Determination of silicon—Gravimetric method.* It is Part 2 of a series of Standards for the chemical analysis of aluminium and aluminium alloys.

The Committee organized an interlaboratory test program to obtain information on the repeatability and reproducibility of the method. The following laboratories participated in the test program to provide the data given in Table 2:

Tomago Aluminium Co.
Pasminco Cockle Creek Smelter
Affinity Laboratories
Department of Defence, Materials Testing Laboratories
Port Kembla Copper

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard

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Part 2: Determination of silicon—Gravimetric method

1 SCOPE This Standard sets out a gravimetric method for the determination of silicon in aluminium and aluminium alloys. This method applies to the determination of silicon in aluminium and aluminium alloys in the range 0.30% to 13%. The method has been modified for the following conditions:

(a) Aluminium-silicon alloys with silicon content greater than 3% and aluminium-magnesium alloys (see Appendix A).

(b) Aluminium alloys containing tin or antimony (see Appendix B).

2 REFERENCED DOCUMENTS

AS

2162 Verification and use of volumetric apparatus

2162.1 Part 1: General—Volumetric glassware

2164 Laboratory glassware—One-mark volumetric flasks

2166 One-mark pipettes

2612 Aluminium and aluminium alloys—Sampling for chemical and spectrochemical analysis

2850 Chemical analysis—Interlaboratory test programs—For determining precision of analytical method(s)—Guide to the planning and conduct

3 PRINCIPLE After pretreatment with sodium hydroxide, the sample is acidified with perchloric acid and the silica dehydrated, filtered, dried, calcined and weighed. The silica is then volatilized using hydrofluoric acid, and the silicon determined by the difference in mass between the residue and the calcined silica.

4 REAGENTS

4.1 General requirements Except where otherwise specified, only reagents of recognized analytical grade and distilled water or water of an equivalent purity shall be used.

4.2 Solids *Sodium hydroxide pellets*

4.3 Solutions

4.3.1 *Hydrofluoric acid (ρ_{20} 1.15 g/mL)*

WARNING: AS HYDROFLUORIC ACID WILL DISSOLVE GLASS, CARE SHOULD BE TAKEN TO MINIMIZE CONTACT TIME WITH GLASSWARE. GOGGLES AND GLOVES MUST BE WORN.

4.3.2 *Hydrobromic acid (ρ_{20} 1.49 g/mL)*

4.3.3 *Hydrochloric acid (50 mL/L)* Dilute 5 mL of hydrochloric acid (ρ_{20} 1.16 g/mL) to 100 mL with water.

4.3.4 *Nitric acid (ρ_{20} 1.42 g/mL)*