



Designation: E3061 – 17

Standard Test Method for Analysis of Aluminum and Aluminum Alloys by Inductively Coupled Plasma Atomic Emission Spectrometry (Performance Based Method)¹

This standard is issued under the fixed designation E3061; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method describes the inductively coupled plasma atomic emission spectrometric analysis of aluminum and aluminum alloys for the following elements:

Elements	Application Range, %	
	Minimum	Maximum
Si	0.02	16.8
Fe	0.02	3.06
Cu	0.005	7.0
Mn	0.003	1.41
Mg	0.006	8.2
Cr	0.004	0.52
Ni	0.004	2.71
Zn	0.02	9.65
Ti	0.009	0.20
Ag	0.003	0.4
As	0.005	0.012
B	0.009	0.027
Ba	0.002	0.03
Be	0.002	0.11
Bi	0.01	0.59
Ca	0.003	0.048
Cd	0.002	0.055
Co	0.002	0.034
Ga	0.01	0.019
Li	0.001	2.48
Mo	0.02	0.15
Na	0.008	0.026
P	0.01	0.025
Pb	0.009	0.51
Sb	0.01	0.28
Sc	0.01	0.065
Sn	0.008	6.28
Sr	0.0008	0.028
Ti	0.005	0.20
Tl	0.009	0.13
V	0.01	0.12
Zr	0.004	0.25

1.2 This test method has only been interlaboratory tested for the elements and ranges specified. It may be possible to extend this test method to other elements or different composition ranges if method validation, which includes evaluation of method sensitivity and precision and bias (as described in

Section 14), is performed. Additionally, the validation study must evaluate the acceptability of sample preparation methodology using reference materials and/or spike recoveries. The user should carefully evaluate the validation data against the laboratory's data quality objectives. Method validation of scope extensions is also a requirement of ISO/IEC 17025.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Safety hazard statements are given in Section 10 and specific warning statements are given in Sections 15, 17, 18, 19, 20 and 21.

2. Referenced Documents

2.1 ASTM Standards:²

- B985** Practice for Sampling Aluminum Ingots, Billets, Castings and Finished or Semi-Finished Wrought Aluminum Products for Compositional Analysis
- D1193** Specification for Reagent Water
- E34** Test Methods for Chemical Analysis of Aluminum and Aluminum-Base Alloys
- E50** Practices for Apparatus, Reagents, and Safety Considerations for Chemical Analysis of Metals, Ores, and Related Materials
- E135** Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials
- E177** Practice for Use of the Terms Precision and Bias in ASTM Test Methods
- E406** Practice for Using Controlled Atmospheres in Spectrochemical Analysis
- E691** Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

¹ This test method is under the jurisdiction of ASTM Committee E01 on Analytical Chemistry for Metals, Ores, and Related Materials and is the direct responsibility of Subcommittee E01.04 on Aluminum and Magnesium.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.