

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 1255

Aluminum Casting Alloy 356

(In Cooperation with the American Society for Testing and Materials)

This material is in the form of disks, 64 mm (2 1/2 in.) in diameter and 19 mm (3/4 in.) thick, primarily for calibration by optical emission methods of analysis. Material from the same lot is available in the form of fine millings as SRM 855 primarily for use in checking chemical methods of analysis.

The certified portion is that extending inward from the periphery 19 mm (3/4 in.). (The center portion, 25 mm (1 in.) in diameter, is not certified.) Note: For x-ray fluorescence methods of analysis, either cut or mask the specimen to include only the certified portion.

Constituent	Si	Fe	Cu	Zn	Mn	Mg	Cr	Ni	Ti	Pb	Sn
Certified Value, % by weight ¹	7.17	0.15	0.12	0.083	0.055	0.35	0.013	0.014	0.15	0.015	0.010
Estimated Uncertainty ²	0.08	0.02	0.01	0.003	0.002	0.02	0.003	0.002	0.02	0.005	0.002
Method	Gravimetric			Atomic Absorption	Atomic Absorption	Atomic Absorption	Atomic Absorption	Atomic Absorption		Atomic Absorption	Atomic Absorption
Lab											
A	7.22	^a 0.14	^a 0.12	0.081	0.056	0.35	0.013	0.013	^b 0.16	0.011	^c 0.011
B	7.13	^d .15	^e .12	.085	.05	.35	.017	.015	^j .14	.02	.008
C	7.12	^a .14	^f .12	^f .082 .081	.055	.35	.012	^f .014 .013	^f .16	^f .011 .010	^f .012 .011
D	7.22	^g .17	^h .12	.083	.055	.37	.012	.015	ⁱ .14	.017	---

¹The certified value listed for a constituent is the *present best estimate* of the "true" value based on the results of the cooperative program for certification.

²The estimated uncertainty listed for a constituent is based on judgment and represents an evaluation of the combined effects of method imprecision, possible systematic errors among methods, and material variability. (No attempt was made to derive exact statistical measures of imprecision because several methods were involved in the determination of most constituents.)

^a Atomic absorption

^b Diantipyrylmethane spectrophotometric

^c Pyrocatechol violet spectrophotometric

^d Orthophenanthroline spectrophotometric

^e Neocuproine spectrophotometric

^f DC plasma emission spectrometry

^g Bathophenanthroline spectrophotometric

^h Zinc dibenzylidithiocarbamate spectrophotometric

ⁱ Flame emission spectrometry

^j Combination of three methods

Washington, D.C. 20234
 January 8, 1980

George A. Uriano, Chief
 Office of Standard Reference Materials

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PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM was prepared by continuous casting under contract with NBS by the Aluminum Company of America, Alcoa Center, PA, coordinated by D. J. Levin. Sodium was added for grain refinement of the aluminum-silicon eutectic.

Homogeneity testing was performed by optical emission and atomic absorption spectrometry at the Aluminum Company of America, Alcoa Center, PA, D. J. Levin.

Millings representative of the certified portion of the lot were cut and blended at NBS to form a composite.

Cooperative analyses for certification were performed on composite samples in the following laboratories:

Aluminum Company of America, Alcoa Technical Center, Alcoa Center, PA, D. J. Levin.

Kawecki Berylco Industries, Inc., Boyertown, PA, F. T. Coyle.

National Bureau of Standards, Inorganic Analytical Research Division, Washington, DC, B. I. Diamondstone, T. C. Rains, J. D. Messman, M. B. Blackburn, T. A. Rush, Y. Dokiya, and R. K. Bell, Assistant Research Associate, ASTM-NBS Research Associate Program.

Reynolds Aluminum, Research and Development, Reynolds Metals Company, Richmond, VA, W. E. Pilgrim.

The overall coordination of the technical measurements leading to certification was performed under the direction of J. I. Shultz, Research Associate, ASTM-NBS Research Associate Program.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by R. E. Michaelis and R. Alvarez.