U. S. Department of Commerce
Philip M. Klutznick
Secretary

National Bureau of Standards
Ernest Ambler, Director

National Bureau of Standards
Certificate of Analysis
Standard Reference Material 858
Aluminum Alloy 6011 (Modified)

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

This material is in the form of fine millings, primarily for use in validating chemical methods of analysis. Material from the same lot is available in disk form as SRM 1258, primarily for use in optical emission and x-ray spectrometric methods of analysis.

Constituent	Si	Fe	Cu	Mn	Cr	Ni	Zn	Mg	Be	Ti	V
Certified Value, % by weight[1]	0.79	0.078	0.84	0.48	0.0011	0.0006	1.04	1.01	<0.0001	0.042	0.0030
Estimated Uncertainty[2]	0.01	0.003	0.01	0.01	0.0002	0.0002	0.02	0.01	- - -	0.002	0.0005
Method / Lab	Gravimetric	Atomic Absorption	Atomic Absorption	Atomic Absorption	Atomic Absorption	Atomic Absorption	Atomic Absorption	Atomic Absorption		Photometric	Photometric
A	[a] 0.78	0.080	0.85	0.49	0.0011	0.0007	1.02	1.00	[b] <0.0001	[b] 0.041	[c] 0.0028
B	- - -	.077	.83	.47	- - -	- - -	1.06	1.02	- - -	- - -	- - -
C	[a] .79	.077	.85	.48	.0013	<.001	1.04	1.01	[b] <.0001	[d] .042	[c] .0029
D	[e] .80	[f] .078 [f] .080	.84	.48	.0010	.0006	1.04	1.01	[g] <.0001	[d] .043	[c] .0030
E	[h] .79	- - -	[i] .85	[j] .49	- - -	- - -	[k] 1.06	[k] 1.02	- - -	[l] .044	- - -

[1] The 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.

[2] The 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 for samples 0.5 g or more. (No attempt was made to derive exact statistical measures of imprecision because several methods were involved in the determination of most constituents.)

[a] Alkali dissolution of the sample
[b] Atomic absorption
[c] N-benzoyl-N-phenylhydroxylamine spectrophotometric
[d] Diantipyrylmethane spectrophotometric
[e] Same value obtained by atomic absorption
[f] 1, 10 Phenanthroline spectrophotometric
[g] Fluorimetric with morin after extraction with acetylacetone-chloroform
[h] Acid dissolution of the sample
[i] Electrodeposition
[j] Ammonium peroxydisulfate oxidation - titration with standard solution of sodium arsenite
[k] Titration with EDTA
[l] H_2O_2 spectrophotometric

NOTE: Laboratory C reported a value of <0.001 percent lead.

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.

Washington, D.C. 20234
June 6, 1980

George A. Uriano, Chief
Office of Standard Reference Materials

(over)

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM was prepared under contract with NBS by the Aluminum Company of America, Alcoa Center, Pa.

Homogeneity testing was performed by optical emission spectrometry at the Aluminum Company of America, Alcoa Center, Pa., D. J. Levin, and by R. K. Bell, Assistant Research Associate, ASTM-NBS Research Associate Program.

Fine millings, which were thoroughly blended to form the SRM, were prepared at NBS.

Cooperative analyses for certification were performed in the following laboratories:

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

Kaiser Aluminum and Chemical Corp., Pleasanton, Calif., H. J. Seim, R. C. Calkins, G. M. Calkins, R. C. Kinne, and J. R. Skarset.

Kaiser Aluminum and Chemical Corp., Ravenswood Works, Ravenswood, W.Va., J. M. Hunter and H. E. Newsome.

National Bureau of Standards, Washington, D.C., R. K. Bell, Assistant Research Associate, ASTM-NBS Research Associate Program.

Reynolds Aluminum, Research and Development, Reynolds Metals Company, Richmond, Va., W. E. Pilgram.