National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 1710

Aluminum Alloy 3004

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

This Standard Reference Material (SRM) is in the form of a disk approximately 63 mm (2 l/2 in) in diameter and 19 mm (3/4 in) thick, and is intended primarily for use with optical emission and x-ray fluorescence methods of analysis.

Element	Certified Value[1] % by wt.	Total[2] Uncertainty
Lead	0.00177	0.00010
Cadmium	0.000843	0.000021

[1]The certified value listed for a constituent is the mean of isotope dilution thermal ionization mass spectrometric (IDTIMS) measurements, and is the present best estimate of the "true" value.

[2]The total uncertainty is the half-width of a 95% confidence, 95% coverage tolerance interval. This interval incorporates differences between samples as well as uncertainties due to spike calibration, blank correction, and mass fractionation, and should cover the true concentration in 95% of the samples with 95% confidence.

The IDTIMS analyses were performed by J.D. Fassett, W.R. Kelly, and R.D. Vocke, Jr. of the NIST Inorganic Analytical Research Division.

Statistical analysis of the experimental data was provided by S.B. Schiller of the NIST Statistical Engineering Division.

The overall direction and coordination of the technical measurements leading to certification were performed under the direction of J.I. Shultz, Research Associate, ASTM/NIST Research Associate Program.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Standard Reference Materials Program by P.A. Lundberg.

Gaithersburg, MD 20899
January 26, 1993

William P. Reed, Chief
Standard Reference Materials Program

(over)

PLANNING, PREPARATION, AND TESTING

The material for this SRM was prepared by the Aluminum Company of America courtesy of J.L. Genna.

Homogeneity testing was performed at the Aluminum Company of America under the direction of J.L. Genna.

This alloy was specially prepared to include specified low levels of lead and cadmium suitable for use in instrumental methods of analysis of recycled aluminum. The acquisition, preparation, and issuance were undertaken under a contract with the Aluminum Association, Inc., Washington, DC, courtesy of S.G. Epstein.

NOTE: Analysts using this SRM should be aware of all possible spectral interferences, in particular, a significant interference on the lead 405.78 nm spectral line caused by manganese.

Confirmatory analyses for the certification of these materials were performed by the following analytical techniques in the labororatories listed below.

Methods/Techniques

a. Atomic Absorption Spectrometry (Furnace)
b. Optical Emission Spectrometry
c. Atomic Absorption Spectrometry (Flame)
d. Inductively Coupled Plasma-Mass Spectrometry
e. Inductively Coupled Plasma-Atomic Emission Spectrometry
f. Zeeman Atomic Absorption Spectrometry

Laboratories

- Alcan Rolled Products Company, Aswego, New York, D.J. Lagoe and N. Phelps.
- Alcan International Ltd., Arvida Research & Development Center, Jonquiere, Quebec, Canada, F.M. Kimmerle and L. Lepine.
- Alcoa Company of America, Alcoa Technical Center, Alcoa, Pennsylvania, J.L. Genna.
- National Institute of Standards & Technology, Gaithersburg, Maryland, J.D. Fassett, W.R. Kelly, and R.D. Vocke, Jr.
- Ravenswood Aluminum Corp., Ravenswood, West Virginia, J.M. Hunter.
- Reynolds Metal Co., Richmond, Virginia, C.D. Davis, J.F. Green, V.S. Edwards, H.M. Gatewood, Jr., and T.W. May.
- Reynolds Metals Co., Corporate Research & Development, Manufacturing Technology Laboratory, Muscle Shoals, Alabama, C.L. Compton and S. Clark.