U.S. Department of Commerce
Juanita M. Kreps
Secretary

National Bureau of Standards
Ernest Ambler, Director

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 698

Bauxite (Jamaican)

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

(All analyses are based on samples dried 2 hours at 140 °C)

This material is in the form of fine powder (<0.08 mm) for use in checking chemical and instrumental methods of analyses.

Constituent	Certified Value[1] Percent, by weight	Estimated Uncertainty[2]
Al_2O_3	48.2	0.4
Fe_2O_3	19.6	.2
SiO_2	0.69	.03
TiO_2	2.38	.07
ZrO_2	0.061	.009
P_2O_5	.37	.01
V_2O_5	.064	.005
Cr_2O_3	.080	.006
CaO	.62	.02
MgO	.058	.008
MnO	.38	.03
ZnO	.029	.002
K_2O	.010	.002
SO_3	.22	.03
Loss on Ignition[3]	27.3	.2

[1]The certified value listed for a constituent is the *present best estimate* of the "true" value.

[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 1.0 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.)

[3]Determined by igniting to constant weight at 1050 °C.

Washington, D.C. 20234
August 24, 1979

George A. Uriano, Chief
Office of Standard Reference Materials

(over)

ADDITIONAL INFORMATION ON THE COMPOSITION

Elements other than those certified may be present in this material as indicated below. These are not certified but are given as additional information on the composition.

Constituent	Concentration, Percent by weight	Constituent	Concentration, Percent by weight
BaO	(0.008)	Co	(0.0045)
Na_2O	(0.015)	Hf	(0.0015)
Ce	(0.030)	Sc	(0.0051)

The mineralogical composition of SRM 698 was determined by x-ray diffraction studies at the Geological Survey, U.S. Department of the Interior, Reston, Va., (J.W. Hosterman) to be 75% gibbsite, 20% hematite, and 5% anatase. These results are semiquantitative (to the nearest 5%).

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM was mined in Jamaica, and was provided by the Reynolds Metals Company, Bauxite, Arkansas, through the courtesy of J. B. Ezell, Jr. It was processed (crushed, ground, sieved, and mixed) at the Colorado School of Mines Research Institute under a contract with the National Bureau of Standards.

Homogeneity testing was performed at NBS by J.S. Maples and T.E. Gills.

Cooperative analyses for certification were performed in the following laboratories:

Aluminum Company of America, Alcoa Center, Pa., R. C. Obbink.

Aluminum Company of Canada, Ltd., Arvida Research Center, Arvida, Quebec, Canada, L. Girolami.

Andrew S. McCreath & Son, Inc., Harrisburg, Pa., F. A. Pennington, Jr., R. F. Eakin, and S. L. Miller.

General Refractories Co., U.S. Refractories Division, Research Center, Baltimore, Md., S. Banerjee.

Geological Survey, U.S. Department of the Interior, Reston, Va., H. J. Rose, Jr., and J. W. Hosterman.

Kaiser Aluminum and Chemical Corp., Center for Technology, Pleasanton, Calif., H. J. Seim, A. E. McLaughlin, D. F. G. Marten, A. Kermaninejad, R. C. Kinne, J. R. Skarset, J. Boruk, and U. Vogel.

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

National-Southwire Aluminum Co., Hawesville, Ky., N. Robinson and E. Gotzy.

Ormet Corp., Burnside, La., W. L. Brown and A. D. Lafleur.

Reynolds Aluminum Co., Alumina Research Division, Bauxite, Ark., J. B. Ezell, Jr.

University of Kentucky, Institute for Mining and Minerals Research, Center for Energy Research Laboratory, Lexington, Ky., T. V. Rebagay.

The overall coordination of the technical measurements leading to certification were 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.

NBS Standard Reference Materials

BAUXITE SERIES

September 4, 1979

R. E. Michaelis and R. Alvarez, NBS Office of Standard Reference Materials
and
J. I. Shultz, ASTM Research Associate

The following table gives the values for four bauxite SRM's that are available in the form of fine powder (<0.08 mm) for use in chemical and instrumental methods of analysis. They are being issued as a culmination of a major Industry-ASTM-NBS cooperative program.

SRM No. Designation	69b Arkansas	696 Surinam	697 Dominican	698 Jamaican
Constituent		Percent by Weight		
Al_2O_3	48.8	54.5	45.8	48.2
Fe_2O_3	7.14	8.70	20.0	19.6
SiO_2	13.43	3.79	6.81	0.69
TiO_2	1.90	2.64	2.52	2.38
ZrO_2	0.29	0.14	0.065	0.061
P_2O_5	0.118	0.050	0.97	0.37
V_2O_5	0.028	0.072	0.063	0.064
Cr_2O_3	0.011	0.047	0.100	0.080
CaO	0.13	0.018	0.71	0.62
MgO	0.085	0.012	0.18	0.058
MnO	0.110	0.004	0.41	0.38
ZnO	0.0035	0.0014	0.037	0.029
BaO	(0.008)[a]	(0.004)	(0.015)	(0.008)
Na_2O	(0.025)	(0.007)	(0.036)	(0.015)
K_2O	0.068	0.009	0.062	0.010
SO_3	0.63	0.21	0.13	0.22
Loss on Ign.	27.2	29.9	22.1	27.3
Ce	(0.024)	(0.0041)	(0.069)	(0.030)
Co	(0.0001)	(0.00009)	(0.0013)	(0.0045)
Hf	(0.0063)	(0.0032)	(0.0014)	(0.0015)
Sc	(0.0008)	(0.0008)	(0.0058)	(0.0051)
Total	(100.0)	(100.1)	(100.1)	(100.1)

[a]Values in parenthesis are *not certified.*

The value listed for a certified constituent is the *present best estimate* of the "true" value based on the results of the analytical program for certification (10-12 laboratories). The individual certificates of analysis list the "estimated uncertainties" associated with the certified values (also listed is a semiquantitative mineralogical composition (±5%) as determined by x-ray diffraction studies at the U.S. Geological Survey).

Inquiries regarding the Bauxite SRM's 69b, 696, 697, and 698, should be directed to the Office of Standard Reference Materials, Chemistry Building, B311, National Bureau of Standards, Washington, D.C. 20234. (301) 921-2045.

George A. Uriano, Chief
Office of Standard Reference Materials