S. Department of Commerce
Malcolm Baldrige
Secretary
National Bureau of Standards
Ernest Ambler, Director

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 173b

Titanium-Base Alloy (6Al-4V)

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

This Standard Reference Material (SRM) is in the form of chips sized between 0.50 and 1.18 mm sieve openings (35 and 16 mesh). It is intended for use primarily in chemical methods of analysis.

Constituent	Al	V	Fe	Si	Cu	Mo	C	N
Certified Value,[1] Percent by Weight	6.36	4.31	0.23	0.046	0.008	0.013	0.025	0.015
Estimated Uncertainty[2]	0.04	0.05	0.01	0.005	0.001	0.004	0.003	0.003
	Atomic Absorption	Volumetric					Combustion-Infrared	Thermal Conductivity
1	6.40	4.25	[a] 0.22	---	[b] 0.008	[b] 0.012	0.022	0.012
2	[b] 6.32 6.36 [c] 6.35	[b] 4.37 [a] 4.31 4.32	[b,d] .23	0.052	[e] .009	[b] .011	.028	[f] .017
3	---	4.27	---	---	---	---	.025	.013
4	6.35	4.33	.23	.045	.008	.017	.026	---
5	[b] 6.36	[b] 4.27	[b] .23	[b] .044	[b] .007	[b] .012	.026	.015
6	6.38	4.34	.23	[a] .044	[a] .007	[g] .012	.024	[h] .017

[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. (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] DCP spectrometry
[c] Volumetric
[d] Same value obtained by spectrophotometric method
[e] Optical emission spectroscopy
[f] Spectrophotometric
[g] ICP spectrometry
[h] Distillation-titration

Gaithersburg, MD 20899
December 17, 1984

Stanley D. Rasberry Chief
Office of Standard Reference Materials

(over)

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM was provided by Oremet Titanium, Oregon Metallurgical Corporation, Albany, Oregon.

Homogeneity testing was performed at NBS by R.K. Bell, ASTM/NBS Research Associate Program, and D.E. Brown and B.I. Diamondstone, Inorganic Analytical Research Division.

Cooperative analyses for certification were performed in the following laboratories:

Analytical Associates, Inc., Detroit, Mich., C.K. Deak.

Ledoux & Company, Teaneck, N.J., S. Kallmann and C.L. Maul.

National Bureau of Standards, Gaithersburg, Md., R.K. Bell, ASTM/NBS Research Associate Program, D.E. Brown, and B.I. Diamondstone, Inorganic Analytical Research Division.

Oregon Metallurgical Corporation, Albany, Ore., A.D. Fryer.

Teledyne, Wah Chang Albany, Albany, Ore., J.H. Schlewitz.

Timet, Henderson Technical Laboratory, Henderson, Nev., G.F. Boesenecker.

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 W.P. Reed and R. Alvarez.

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.

Element	Concentration %, by weight
Ni	(0.03)
Cr	(.03)
Sn	(.03)
Zr	(.01)
Yt	(<.0001)
O	(.17)
H	(.002)
S	(.001)