U. S. Department of Commerce
Frederick B. Dent
Secretary

National Bureau of Standards
Richard W. Roberts, Director

National Bureau of Standards Certificate of Analysis

Standard Reference Material 154b

Titanium Dioxide

This standard is in the form of fine powder, certified primarily for application in the paint and ceramic industries.

Constituent	Percent by Weight[a]	Uncertainty[c]
Titanium Dioxide (TiO_2)	99.74[b]	0.05

[a] Based on material dried at 110 °C for two hours.

[b] The value given in this certificate is based on the following pertinent analytical data:

[c] The uncertainty figure represents the 95% confidence interval of the mean of all accepted values.

Method	NBS Average	Standard Deviation[1]	Number of Determinations
Controlled-potential coulometric (0.2g samples)	99.73	0.05	9
Volumetric (0.35g samples)	99.71	0.03	10[2]
	Cooperators[3]		
Volumetric (Analyst A)[4]	99.75	0.04	3
Volumetric (ASTM D1394)	99.78	0.05	3

[1] Of single determinations.

[2] Two discrepant results were omitted.

[3] Results from one cooperating laboratory were deemed significantly high and have been omitted.

[4] Results from Analyst B at the same laboratory were deemed significantly low and have been omitted.

Washington, D. C. 20234
May 16, 1973

J. Paul Cali, Chief
Office of Standard Reference Materials

PLANNING, PREPARATION, TESTING, and ANALYSIS: The material for this SRM has been carefully selected and prepared not only to reflect the present composition needs but also the anticipated future requirements.

A particular ilmenite ore was chosen so that, after beneficiation, the material would provide the desired high rutile to anatase ratio (rutile 97+%, anatase about 2%). Bleaching agents were not added; thus the material has the characteristically yellowish color of rutile. The lot was thoroughly blended in the laboratory and then screened through a 44μm (325 mesh) sieve. Preliminary testing on 6 samples, representative of the lot, showed no evidence of inhomogeneity. The planning, preparation and preliminary testing were under the supervision of John J. Libera, Research and Development Department, National Lead Industries, St. Louis, Missouri.

Cooperative analyses for certification were performed in the analytical laboratories of E. I. Du Pont De Nemours & Co., Pigments Department, Wilmington, Delaware, T. D. McKinley; National Lead Industries, Titanium Pigment Division, South Amboy, New Jersey, Benjamin S. Sanderson; and Sherwin-Williams Research Center, Chicago, Illinois, R. W. Scott.

Analyses were performed in the Analytical Chemistry Division of the National Bureau of Standards by J. R. Baldwin and G. Marinenko.

The overall direction and coordination of the technical measurements at NBS leading to certification were performed under the direction of O. Menis and J. I. Shultz.

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 C. L. Stanley.

ADDITIONAL INFORMATION ON THE COMPOSITION:

Certification is made only for the TiO_2 content. Investigations of this material at NBS and at cooperating laboratories provided some additional information that may be useful, but is not certified:

Constituent	Weight Percent
P_2O_5	(0.04)
SiO_2	(0.01)
Fe_2O_3	(0.006)
Pb	(0.003)
CaO	(∼0.01)
V	(∼0.001
Cr	(∼0.0005)
Cu	(∼0.0005)
MgO	(∼0.01)
Moisture (110 °C-2 hours)	(0.02 to 0.05)
Loss on Ignition (900 °C for one hour under helium)	(0.06 to 0.07)

If in the use of this SRM, determinations are made for any of the uncertified minor and trace constituents, it would be appreciated if the results were forwarded to the Office of Standard Reference Materials. When sufficient information has been received the Certificate will be revised.

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Fe_2O_3	(0.006)
Pb	(0.003)
CaO	($\sim$0.01)
V	($\sim$0.001
Cr	($\sim$0.0005)
Cu	($\sim$0.0005)
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