

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 276a

Tungsten Carbide

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

This material is in the form of a fine powder, which passes through a 74 μ m sieve (-200 mesh). It is intended as a calibrant in the determination of total carbon by combustion-thermal conductivity and combustion-gravimetric methods of analysis.

CAUTION: The containers should be kept tightly closed except when in use. Store in a desiccator over a desiccant.

	Certified Value ^a	Estimated Uncertainty ^b
	<u>Percent by Weight</u>	
Total Carbon	6.11	0.03

^aThe certified value listed is the *present best estimate* of the "true" value based on the cooperative program for certification. (The maximum deviation among the average results from cooperating laboratories was ± 0.03 wt % for total carbon.)

^bThe estimated uncertainty listed is based on judgement and represents an evaluation of the combined effects of method imprecision, possible systematic errors among methods, and material variability for samples of 0.2 g (or more).

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.

Washington, D.C. 20234
May 30, 1980

George A. Uriano, Chief
Office of Standard Reference Materials

(over)

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM was prepared and provided by GTE Sylvania, Inc., Towanda, Pa., through the courtesy of R. Dyck.

At NBS the material was carefully transferred to bulk storage containers and samples representative of the lot were taken for homogeneity testing. This processing was done in an argon atmosphere.

Homogeneity testing was performed at Leco Corporation, St. Joseph, Mich., courtesy of R. B. Fricioni; and at NBS by B. I. Diamondstone.

The testing showed no significant differences for total carbon between the top and bottom portions of the bulk storage containers.

Stability studies at NBS indicate no decomposition of the material over a twelve-week period and at several different relative humidities (0, 52, 90 percent).

The material was analyzed by seven cooperating laboratories using combustion-thermal conductivity and combustion-gravimetric methods of analysis.

Cooperative analyses for certification were performed in the following laboratories:

General Electric Company, Carboloy Systems Department, Detroit, Mich., F. Iannaci.

GTE Sylvania Inc., Towanda, Pa., R. Dyck.

Kennametal, Inc., Latrobe, Pa., J. Kratofil.

Leco Corporation, St. Joseph, Mich., R. B. Fricioni.

Los Alamos Scientific Laboratory, Los Alamos, New Mexico, G. R. Waterbury.

National Bureau of Standards, Inorganic Analytical Research Division, Washington, D.C., B. I. Diamondstone.

Westinghouse Electric Corp., Lamp Division, Bloomfield, N.J., P. J. Walitsky and R. A. Farnum.

Constituents other than total carbon have been determined as indicated below. These are *not certified*, but are given as additional information on the composition.

<u>Element</u>	<u>Percent by Weight</u>
"Free" Carbon	(0.02)
Oxygen	(.03)
Nitrogen	(.003)