National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 889

Cemented Carbide

(W-75,Co-9,Ta-5,Ti-4)

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

This Standard Reference Material (SRM) is a sintered tungsten carbide base material in the form of a fine powder (150 μm) intended for use in checking chemical and instrumental methods of analysis. SRM 889 was developed under the cooperative program for certification with the National Institute of Standards and Technology (NIST) and the American Society for Testing and Materials (ASTM).

	Certified Value[a]	Estimated Uncertainty[b]
	Percent by Weight	
Cobalt	9.50	0.15
Tantalum	4.60	.15
Titanium	4.03	.10

[a] The certified value is the present best estimate of the "true" value based on the NIST/ASTM cooperative program for certification.

b The estimated uncertainty 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 the certified constituent.

The overall coordination of the technical measurements leading to certification was 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 Office of Standard Reference Materials by W.P. Reed.

PLANNING, PREPARATION, TESTING, AND ANALYSIS:

The material for this SRM was provided by GTE Products Corp., Towanda, Pennsylvania through the courtesy of R. Dyck.

The preparation of the material was under the direction of M.E. Shaffer of the Hard Materials Section, GTE Products Corp., Towanda, Pennsylvania.

Homogeneity testing was performed at GTE Products Corp. by J.S. Mras and at NIST by G.A. Sleater.

Cooperative analyses for certification were performed in the following laboratories:

- GTE Products Corp., Towanda, Pennsylvania, J. Mras, J.R. Barton, L.J. Kring and M. Fedorchak.
- Ledoux & Company, Teaneck, N.J., S. Kallmann and C.L. Maul.

September 5, 1988
Gaithersburg, MD 20899

Stanley D. Rasberry, Chief
Office of Standard Reference Materials

Metallurgical Industries, Inc., Tinton Falls, N.J., R. Liu.
- National Institute of Standards and Technology, Gas and Particulate Science Division, Gaithersburg, MD, Z. Wang and P.A. Pella.
- Timken Company, Canton, Ohio, N.J. Stecyk.
- Valeron Corporation, Troy, Michigan, R. Fike.

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
Molybdenum	(<.05)
Nickel	(<.05)
Iron	(<.05)
Niobium	(<.05)
Carbon	(6.0)