National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material® 1483a

Linear Polyethylene

This Standard Reference Material (SRM) is intended primarily for use in calibration and performance evaluation of instruments used to determine the molecular mass and molecular mass distribution by high temperature size exclusion chromatography (SEC) and instruments used to obtain the high temperature dilute solution viscosity of the polymer. SRM 1483a is supplied in the form of a white powder in units of 0.3 g.

Certified Mass-Average Molecular Mass (M_w):	32 100 g/mol ± 3 500 g/mol
Certified Number-Average Molecular Mass (M_n):	28 900 g/mol ± 600 g/mol
Certified Intrinsic Viscosity [η]:	80.0 mL/g ± 1.84 mL/g

Certified Measurement Technique and Uncertainty: The mass-average molecular mass (M_w), and number-average molecular mass (M_n) and their combined expanded ($k = 2$, 95 % confidence) uncertainties are described references 1 and 2.

Intrinsic viscosity measurements were made at 130 °C in the solvent 1,2,4-trichlorobenzene. Butylated hydroxytoluene (2,6-di-tert-butyl-4-methylphenol) was added to the solvent at about 0.7 g/L as an antioxidant. Details of the intrinsic viscosity measurement and its combined expanded (k = 2, 95 % confidence) uncertainty on SRM 1483a are given in reference 3.

Expiration of Certification: The certification of SRM 1483a is valid, within the measurement uncertainties specified, until **31 January 2010** provided the SRM is handled in accordance with the instructions given in this certificate. This certification is nullified if the SRM is modified or contaminated.

Maintenance of Certification: NIST will monitor representative solutions from this SRM lot over the period of its certification. If substantive changes occur that affect the certification before the expiration of certification, NIST will notify the purchaser. Registration (see attached sheet) will facilitate notification.

The technical coordination leading to the certification of this material was provided by B.M. Fanconi. The technical measurement and data interpretation were provided by C.M. Guttman and W.R. Blair, all of the NIST Polymers Division.

The statistical consultation was provided by S.D. Leigh of the NIST Statistical Engineering Division.

The support aspects involved with the preparation, certification, and issuance of this SRM were coordinated through the NIST Standard Reference Materials Program by C.S. Davis of the NIST Measurement Services Division.

Eric J. Amis, Chief
Polymers Division

Gaithersburg, MD 20899
Certificate Issue Date: 30 March 2004

John Rumble, Jr., Chief
Measurement Services Division

Homogeneity and Characterization: The homogeneity of SRM 1483a was tested by SEC analysis of solutions in 1,2,4-trichlorobenzene at 130 °C. The characterization of this polymer is described in reference 3.

Storage: The SRM should be stored in the original bottle with the lid tightly closed under normal laboratory conditions.

REFERENCES

[1] Wagner, H.L.; Verdier, P.H.; Journal of Research: NBS, Vol. 83, p. 179 (1978): see also NBS Special Publication 260-61, U.S. Department of Commerce, NBS (1978).

[2] Han, C.C.; Verdier P.H.; Wagner, H.L.; Journal of Research NBS, Vol. 83, p. 185 (1978): see also NBS Special Publication 260-61, U.S. Department of Commerce, NBS (1978).

[3] Guttman, C.M.; Blair, W.R.; NISTIR 6054.

Users of this SRM should ensure that the certificate in their possession is current. This can be accomplished by contacting the SRM Program at: Telephone (301) 975-6776 Fax (301) 926-4751, e-mail srminfo@nist.gov, or via the Internet at http://www.nist.gov/srm.