



National Institute of Standards & Technology

Certificate

STANDARD REFERENCE MATERIAL 1487

POLY(METHYL METHACRYLATE)

(6 K NARROW MOLECULAR WEIGHT DISTRIBUTION)

This Standard Reference Material (SRM) is intended for use in calibration and performance evaluation of instruments used in polymer technology and science for the determination of molecular weight and molecular weight distribution. It can also be used as a characterized sample for measurements of the limiting viscosity number of poly(methyl methacrylate). The SRM is supplied in the form of a powder.

Property	Value	Expected limit of error (random plus systematic)
Weight-average molecular weight, g/mol ^a	6.3×10^3	0.8×10^3 (12%)
Limiting viscosity number, mL/g, at 25.0 °C in tetrahydrofuran ^b	7.9	0.2 (2%)

^aDetermined by sedimentation equilibrium ultracentrifugation in acetonitrile at 36 °C.

^bDetermined by capillary viscometry at shear rates not exceeding 1800 s^{-1} .

The variability of the viscosity values among a set of randomly selected samples from the lot of this SRM was no greater than that due to measurement variability alone. Hence there is no measurable evidence of heterogeneity. Because this material is quite hygroscopic, care must be taken to prevent moisture pickup. See PRECAUTIONS FOR USE (page 2).

The technical coordination leading to certification was provided by F.W. Wang, with technical measurement and data interpretation provided by H.L. Wagner, C.M. Guttman, J.R. Maurey, and P.H. Verdier, all of the Polymers Division, Institute for Materials Science and Engineering.

Contributions to the development and certification of this SRM were also provided in the following areas by R.C. Paule, technical statistical assistance, and D.L. Vanderhart, nuclear magnetic resonance.

The technical 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.L. McKenzie.

Gaithersburg, MD 20899
June 1, 1989

Stanley D. Rasberry, Chief
Office of Standard Reference Materials

(Over)

PRECAUTIONS FOR USE: Since the weight increase of a dried polymer sample on exposure to laboratory air was as much as 0.14 percent in 2 minutes, appropriate drying and weighing procedures should be employed to eliminate this source of error. The procedure followed for certification was: A desired amount of polymer sample in a weighing bottle was dried to constant weight in a vacuum oven at 60 °C for two days. The weighing bottle containing the dried sample was first weighed, most of the sample was then transferred rapidly from the bottle directly to a container in which the solution was made up, care being taken that all of the sample leaving the bottle was caught in the container; the difference in weight before and after the transfer represented the sample taken. For very small samples, the polymer powder was compressed into a disc before drying so that the transfer would be quantitative.

Shelf Life: This SRM is anticipated to have an indefinite shelf life under normal use and prescribed storage conditions. We recommend that the SRM be stored in a dry environment, protected from light at temperatures not exceeding normal room temperatures. The SRM will be monitored from time to time at NIST; if the value of any parameter significantly changes from the certified value the purchaser will be notified.