



# National Institute of Standards & Technology

## Certificate of Analysis

### Standard Reference Material 1496

#### Unpigmented Polyethylene Gas Pipe Resin

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 the Melt Flow Rate using ASTM Method D1238-82 and for determination of intrinsic viscosity. The SRM is supplied as pellets of polyethylene.

<u>Property</u>	<u>Certified Value</u>	<u>Expected limit of systematic error</u>
Melt flow rate, g/10 min <sup>a</sup>	0.26 <sup>b</sup>	0.04
Intrinsic Viscosity, ml/g <sup>c</sup>	210 <sup>d</sup>	25

<sup>a</sup> ASTM Method D1238-82, condition 190/2.16

<sup>b</sup> Standard deviation of single measurement with 19 degrees of freedom is 2.7%.

<sup>c</sup> Determined at 140 °C in 1,2,4-trichlorobenzene by capillary viscometry at shear rates of 1760 sec<sup>-1</sup>

<sup>d</sup> Standard error of fit with 10 degrees of freedom is 0.7%.

Supplemental Information: A number of other measurements have been made on the material that may be of value to the user of this SRM and are provided as supplemental information. The supplemental values are not certified and are presented for information use only.

The number of methyl groups corresponding to saturated ends and butyl branches as determined by IR spectroscopy is 0.50 per hundred carbon atoms with an estimated error limit of 0.05 methyl groups per hundred carbon atoms. The number of butyl branches as determined by NMR is 0.43 per hundred backbone carbon atoms with an estimated error limit of 0.04 butyl branches per hundred backbone carbon atoms.

The technical coordination leading to certification of this SRM was provided by F.W. Wang with technical measurement and data interpretation provided by J.R. Maurey and C.M. Guttman.

Contributions to the development and certification of this SRM were also provided by the following: H. Wagner, Size Exclusion Chromatography; J.M. Crissman, liaison with the polymer manufacturer; R.C. Paule, technical statistical assistance; B.M. Fanconi, IR spectroscopy; and D.L. VanderHart, NMR.

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Office of Standard Reference Materials