



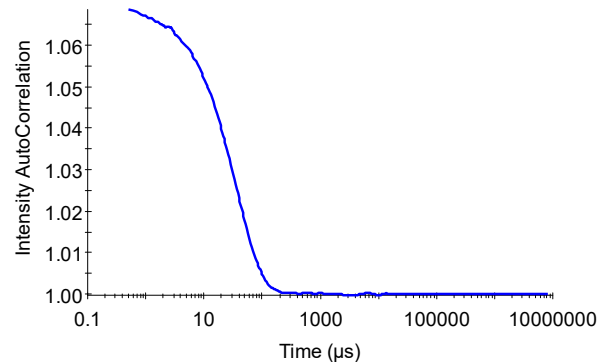
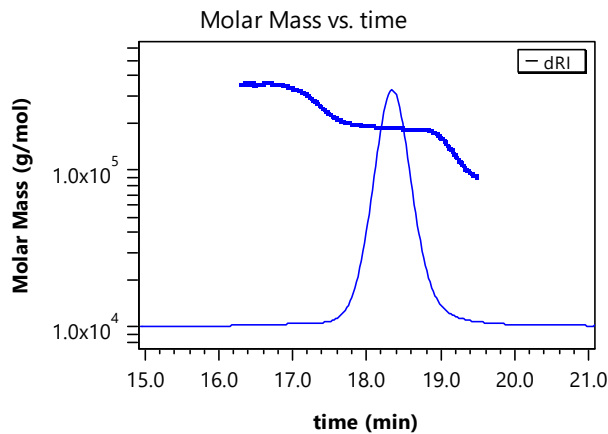
Certificate of Analysis

Polystyrene Standard (200 kDa)

Polystyrene in toluene: $dn/dc = 0.110 \text{ mL/g}$; $A_2 = 4.4 \times 10^{-4} \text{ (mol mL)/g}^2$

Wyatt p/n: P8402-20001
Lot Number: J-1143-001-3

Manufactured by: Pressure Chemical Company
Expires: 03 Dec 2024
Storage: Room temperature



Standard characterization data by Wyatt MALS and ViscoStar® detectors following SEC separation (MZ-Gel SDplus linear 5 μm , 300 mm x 8.0 mm column):

Solvent and SEC mobile phase were toluene. Solution was prepared at 0.67 mg/mL.

RMS Radius $R_{g,z}$ (monomer) = $(16.0 \pm 0.1) \text{ nm}$ $R_{g,z}$ (entire eluted mass) = $(16.1 \pm 0.2) \text{ nm}$

Molar Mass (monomer) $M_w = (185 \pm 5) \text{ kDa}$ $M_w/M_n = 1.00 \pm 0.01$

Molar Mass (entire eluted mass) $M_w = (184 \pm 4) \text{ kDa}$ $M_w/M_n = 1.01 \pm 0.02$

Intrinsic Viscosity (monomer) $[\eta]_w = (73.4 \pm 0.9) \text{ mL/g}$ $[\eta]_z = (73.4 \pm 0.9) \text{ mL/g}$

Intrinsic Viscosity (entire eluted mass) $[\eta]_w = (73.4 \pm 1.1) \text{ mL/g}$ $[\eta]_z = (73.8 \pm 1.1) \text{ mL/g}$

Standard characterization data by Wyatt DynaPro® NanoStar®:

Solvent was toluene. Solution was prepared at 0.5 mg/mL.

R_h (Cumulants) = $(11.6 \pm 0.1) \text{ nm}$

R_h (Regularization) = $(11.9 \pm 0.3) \text{ nm}$

Certification: Sophia Kenrick
Sophia Kenrick
Director of Analytical Sciences

Date: 03 Dec 2020