

**Sample Name:** Poly(styrene-b-ethylene oxide)Cleavage

**Sample #:** P8775A-SEOCleavage

**Structure:**

**Composition:**

Mn x 10 <sup>3</sup> S-b-EO	PDI
6.0-b-15.0	1.07

**Synthesis Procedure:**

Synthesis of poly(styrene-block-ethylene oxide) copolymers by anionic polymerization and acid cleavage into its constituent homopolymers for the formation of ordered nanoporous thin films: e-polymer, 2008, 094, 1618

**Characterization:**

The molecular weight and polydispersity index (PDI) of the block copolymer are characterized by size exclusion chromatography (SEC). The composition of the block copolymer was calculated from <sup>1</sup>H-NMR by comparing the peak area of the phenyl polystyrene protons between 6.4 to 7.2 ppm and the ethylene oxide protons at 3.65 ppm.

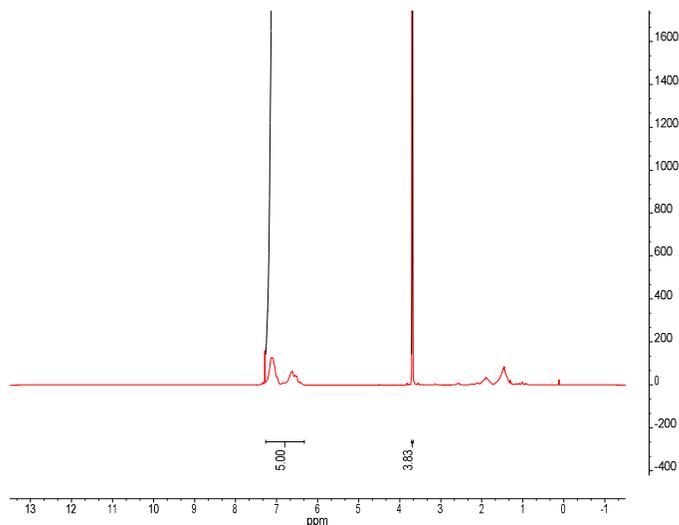
**Solubility:**

The polymer is soluble in THF (at 35 °C), CHCl<sub>3</sub>, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

**Quick test for the presence of cleavage group at the junction:**

Prepare the solution of polymer in toluene (10mg in 1 ml of toluene) and add a drop of trifluoroacetic acid. Immediately the color turns to yellow. This indicates the formation of Phenyl moiety (Phenyl-C+) charge with cation with the liberation of PEO block. This indicates the cleavage of PEO block from Polystyrene block at the junction.

**<sup>1</sup>H NMR spectrum of The polymer:**



**SEC elugram of the block copolymer:**

