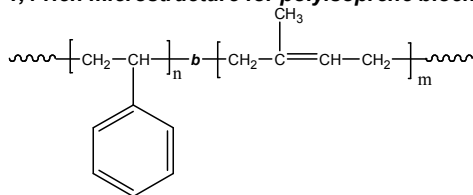


**Sample Name: Poly(styrene-b-isoprene)**  
(Polyisoprene rich in 1,4-addition)

**Sample #: P2844-SIp**

**1,4-rich microstructure for polyisoprene block:**

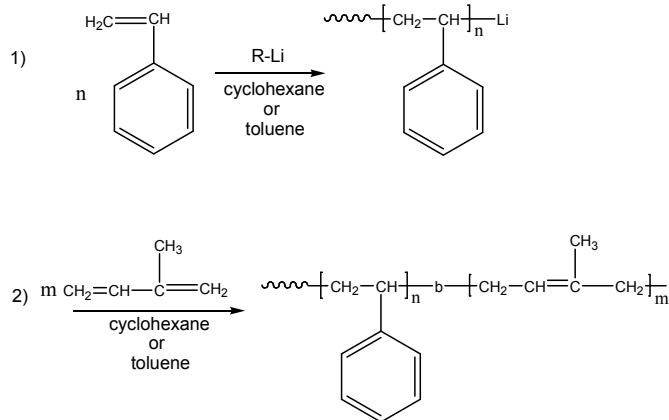


**Composition:**

|                                |             |
|--------------------------------|-------------|
| Mn x 10 <sup>3</sup><br>S-b-IP | Mw/Mn (PDI) |
| 25.2-b-8.5                     | 1.06        |

#### Synthesis Procedure:

Poly(styrene-b-isoprene) is prepared by living anionic polymerization in non-polar solvent with sequence addition of styrene followed by isoprene. The scheme of the reaction is illustrated below:



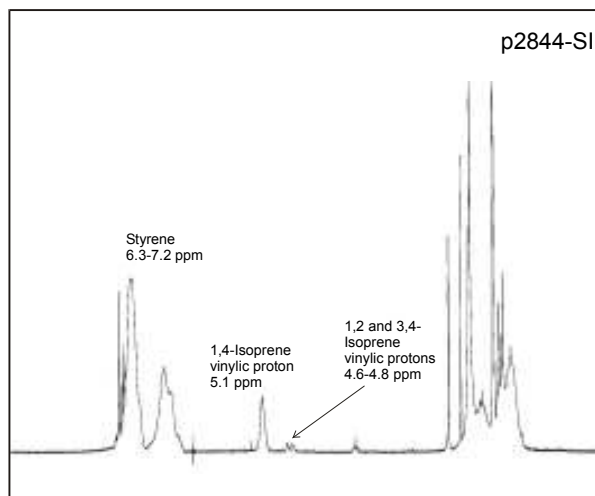
#### Characterization:

An aliquot of the anionic polystyrene block was terminated before addition of isoprene and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The block copolymer composition was then calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the vinylic isoprene proton at about 5.1 ppm with the aromatic protons of polystyrene at about 6.3-7.2 ppm. Copolymer PDI is determined by SEC. **Note:** Peaks attributed to 1,2 and 3,4 isoprene addition appear between 4.6-4.8 ppm.

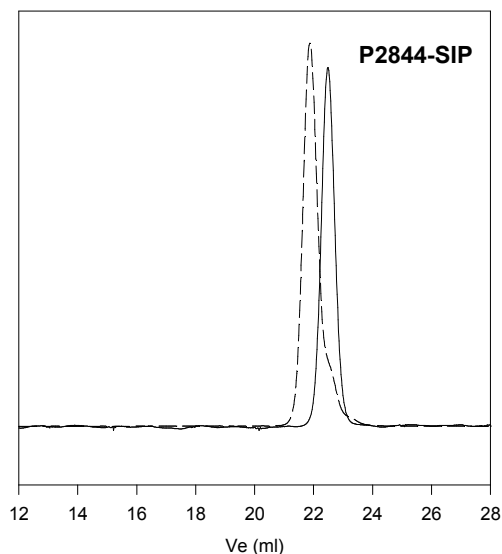
#### Solubility:

Poly(styrene-b-isoprene) is soluble in THF, toluene, dioxane and CHCl<sub>3</sub>. This polymer readily precipitates from methanol, ethanol, and water.

#### <sup>1</sup>H-NMR Spectrum of the block copolymer:



#### SEC of Sample of the block copolymer:



Size exclusion chromatography of polystyrene-b-poly(1,4-isoprene)

- Polystyrene, M<sub>n</sub>=25200, M<sub>w</sub>=26200 PI=1.04
- - - Block Copolymer:  
PS-IP(25200)-b-PI(8500), PI=1.06  
PS-IP(25200)-b-PI(9300), (from light scattering)