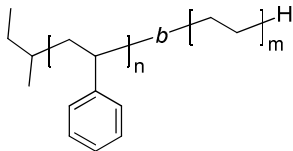


Sample Name: Poly(styrene-*b*-ethylene),
tapered diblock copolymer

Sample #: P4134-SE tapered

Structure:



Composition:

$M_n \times 10^3$, g/mol	M_w/M_n
54- <i>b</i> -67	1.07

Synthesis procedure:

Poly(styrene-*b*-butadiene [rich in 1,4-addition]) was prepared by living anionic polymerization, followed by hydrogenation of polymer (Bd block) to get poly(styrene-*b*-polyethylene).

Characterization:

An aliquot of the anionic polystyrene (1st block) was terminated before addition of butadiene and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight of the first block.

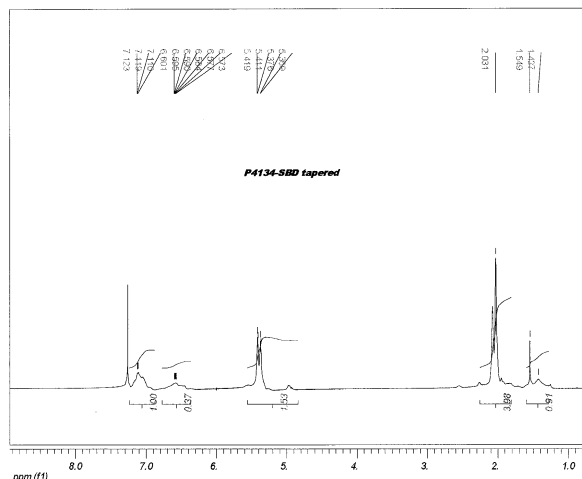
The composition of the poly(styrene-*b*-butadiene) diblock copolymer was calculated from ¹H NMR by comparing the peak area of polybutadiene protons (double bond 4.9–5.6 ppm) and aromatic protons of polystyrene at 6.3–7.2 ppm. ¹H NMR spectrum also confirms 1,4-addition of polybutadiene (2nd block before hydrogenation), and complete conversion into polyethylene (after hydrogenation).

Polydispersity index of the final diblock copolymer was determined by SEC.

Solubility:

Poly(styrene-*b*-ethylene) is soluble in hot toluene and dichlorobenzene.

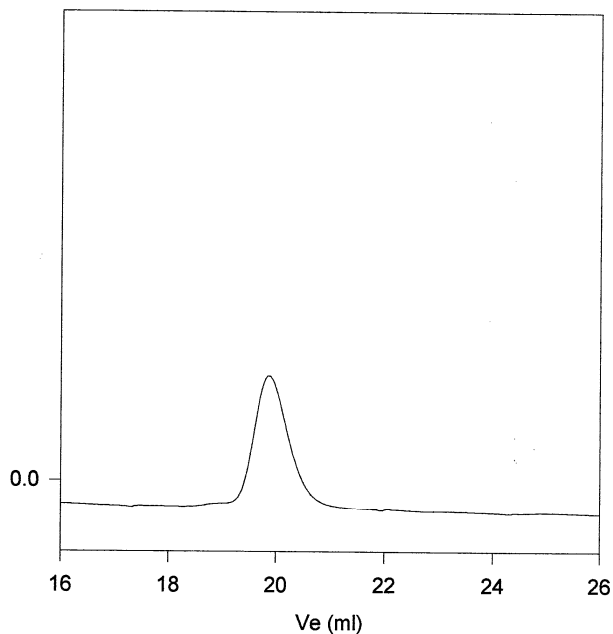
¹H NMR spectrum of poly(styrene-*b*-butadiene):



Sample # P4134-taperedSBd
(similar to 230694)

SEC elugram:

P4134-SE tapered



Size exclusion chromatography of polystyrene-*b*-polybutadiene

— Tapered Block Copolymer Poly(styrene-*b*-butadiene)
 M_n = PS (54000)-*b*- Bd (65000) PI=1.07

After hydrogenation: PS(54000)-*b*-PE(67000)