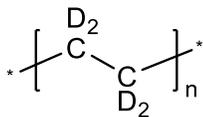


Sample Name: **Deuterated Polyethylene-d<sub>4</sub>**

Sample #: **P41765-dPE**

Structure:



Composition:

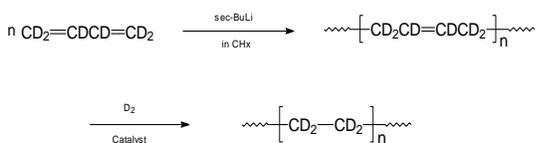
$M_n \times 10^3$ (g/mol)	$M_w/M_n$
152.0	1.35

Thermal properties:

Melting point, $T_m$	Crystallization point, $T_{cr}$
92 °C	81 °C

Synthesis procedure:

The polyethylene-d<sub>4</sub> was obtained by deuteration of poly(1,4-butadiene-d<sub>6</sub>), which was synthesized by living anionic polymerization of butadiene-d<sub>6</sub> in non-polar solvent. The scheme of reaction is presented below:



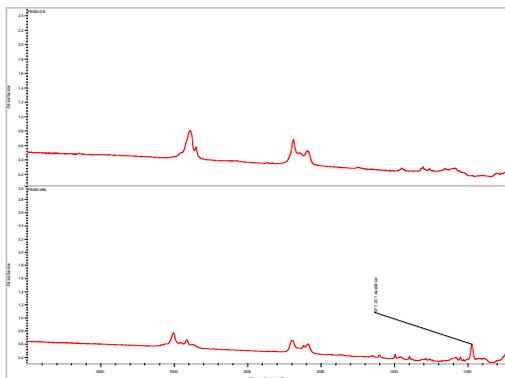
Characterization:

The product was characterized by size exclusion chromatography (SEC), FTIR and DSC.

Solubility:

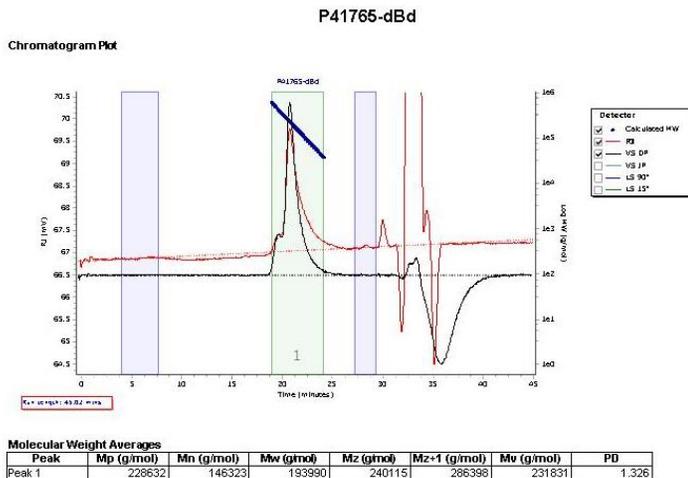
Polyethylene-d<sub>4</sub> is soluble in hot toluene and xylene. The obtained solution has light ivory color; this coloration is due to the presence of trace amount (we expect <5–6 ppm) of the Wilkinson catalyst used in synthesis (and which is hard to remove from the final product).

**FT-IR spectra of dPE (top) and dPBd (bottom):**



**SEC chromatogram of dPBd precursor:**

Agilent GPC/SEC Software



**DSC thermograms of the dPE product:**

1<sup>st</sup> cooling (upper) and 2<sup>nd</sup> heating (lower) scans, both performed at a rate 10 °C/min.:

