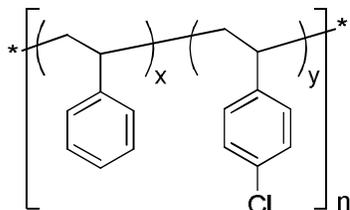


**Sample Name:** Poly(styrene-co-4-chlorostyrene)  
random copolymer

**Sample #** P19641D-S4ClSran

**Structure:**



**Composition:**

$M_n \times 10^3$ (g/mol)	$M_w/M_n$
20.0	1.07
Content of poly(4-chlorostyrene):	36 mol%
T <sub>g</sub> of PS-co-P4ClS:	114 °C

**Synthesis procedure:**

The copolymer was prepared by radical polymerization of styrene and 4-chlorostyrene in presence of TEMPO.

**Characterization:**

Molecular weight and polydispersity index ( $M_w/M_n$ ) of the copolymer were obtained by size exclusion chromatography (SEC). Analysis of the copolymer by <sup>1</sup>H NMR spectroscopy did not reveal any presence of monomer impurities. Content of poly(4-chlorostyrene) in PS-co-P4ClS copolymer was determined by elemental analysis.

**Thermal analysis:**

Thermal analysis of the copolymer was performed on a TA Q100 differential scanning calorimeter (DSC) at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T<sub>g</sub>).

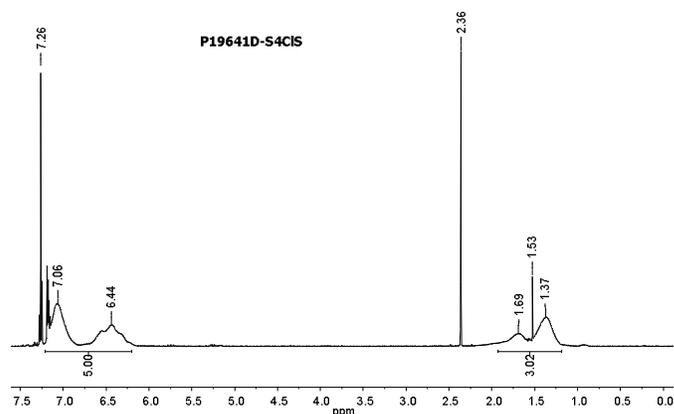
**Solubility:**

PS-co-P4ClS is soluble in CHCl<sub>3</sub>, THF, DMF, toluene. The copolymer precipitates from hexane.

**Elemental analysis of PS-co-P4ClS:**

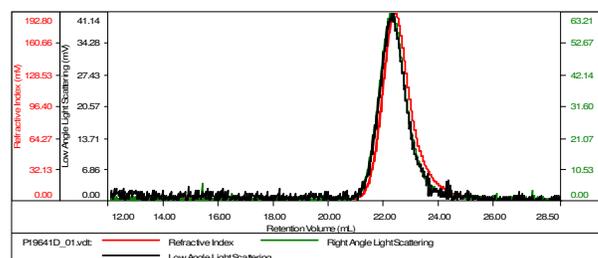
Sample: P19641D		Received: 2016-01-19		
Lab ID: 2016-A-9370				
Analysis	Method	Result	Basis	Sample Amount Used
C: Carbon	GLI Procedure ME-14	78.75 %	As Received	1.209 mg
Cl: Chlorine	GLI Procedure ME-4A	10.89 %	As Received	130.36 mg
H: Hydrogen	GLI Procedure ME-14	6.78 %	As Received	1.209 mg

**<sup>1</sup>H-NMR (500 MHz, CDCl<sub>3</sub>) spectrum:**



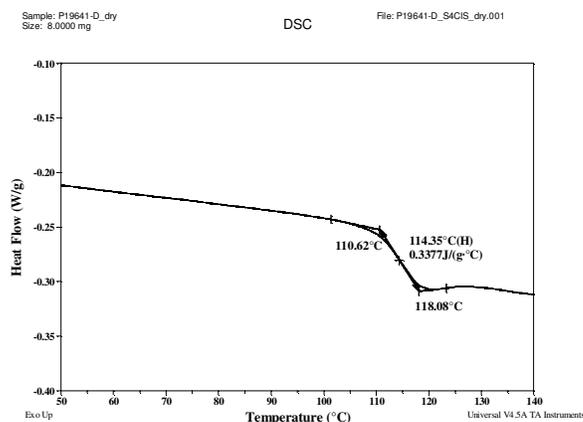
**SEC elugram of the random copolymer:**

Sample ID-PD19641D-4ClS	
Concentration (mg/mL)	1.2423
Sample divd: (mL/g)	0.1850
Method File	PS80K-June30-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19641D_01.vcl	20,027	21,403	21,465	1.069	0.6877

**DSC thermogram of PS-co-P4ClS:**



**Reference:** Thermal transition of T<sub>g</sub> for S4ClSran copolymer ( $M_n=19.5-22.5$  kDa).

4ClS:	7 mol%	8 mol%	19 mol%	35 mol%	36 mol%	54 mol%
T <sub>g</sub> :	103°C	105°C	107°C	112°C	114°C	123°C