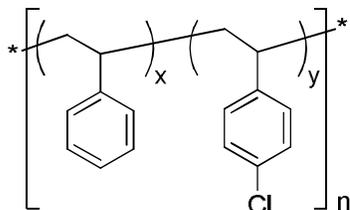


**Sample Name:** Poly(styrene-co-4-chlorostyrene)  
random copolymer

**Sample #** P19641B-S4ClSran

**Structure:**



**Composition:**

$M_n \times 10^3$ (g/mol)	$M_w/M_n$
22.5	1.07
Content of poly(4-chlorostyrene):	54 mol%
$T_g$ of PS-co-P4ClS:	123 °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  $^1\text{H}$  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 ( $T_g$ ).

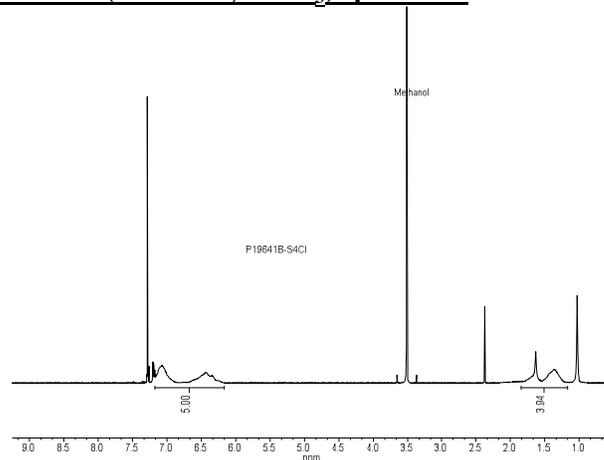
**Solubility:**

PS-co-P4ClS is soluble in  $\text{CHCl}_3$ , THF, DMF, toluene. The copolymer precipitates from hexane.

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

<b>Sample:</b> P19641B		<b>Received:</b> 2016-01-19		
<b>Lab ID:</b> 2016-A-9368				
Analysis	Method	Result	Basis	Sample Amount Used
C: Carbon	GLI Procedure ME-14	74.20 %	As Received	1.883 mg
Cl: Chlorine	GLI Procedure ME-4A	15.69 %	As Received	22.14 mg
H: Hydrogen	GLI Procedure ME-14	5.88 %	As Received	1.883 mg

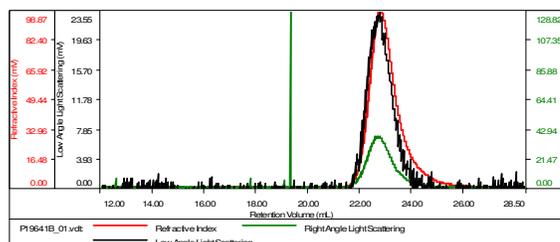
**$^1\text{H}$ -NMR (500 MHz,  $\text{CDCl}_3$ ) spectrum:**



**SEC elugram of the random copolymer:**

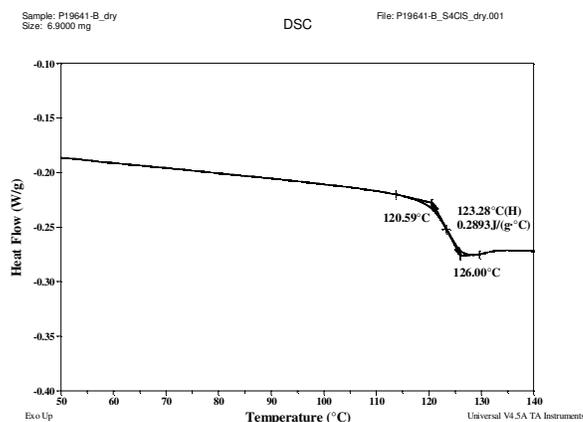
**Sample ID-PD19641B-4ClS**

Concentration (mg/mL)	0.6383
Sample chxct (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)
P19641B_01.vct	22,442	23,992	24,987	1.069	4.7548

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



**Reference:** Thermal transition of  $T_g$  for S4ClSran copolymer ( $M_n=19.5-22.5$  kDa).

<b>4ClS:</b>	7 mol%	8 mol%	19 mol%	35 mol%	36 mol%	54 mol%
<b><math>T_g</math>:</b>	103°C	105°C	107°C	112°C	114°C	123°C