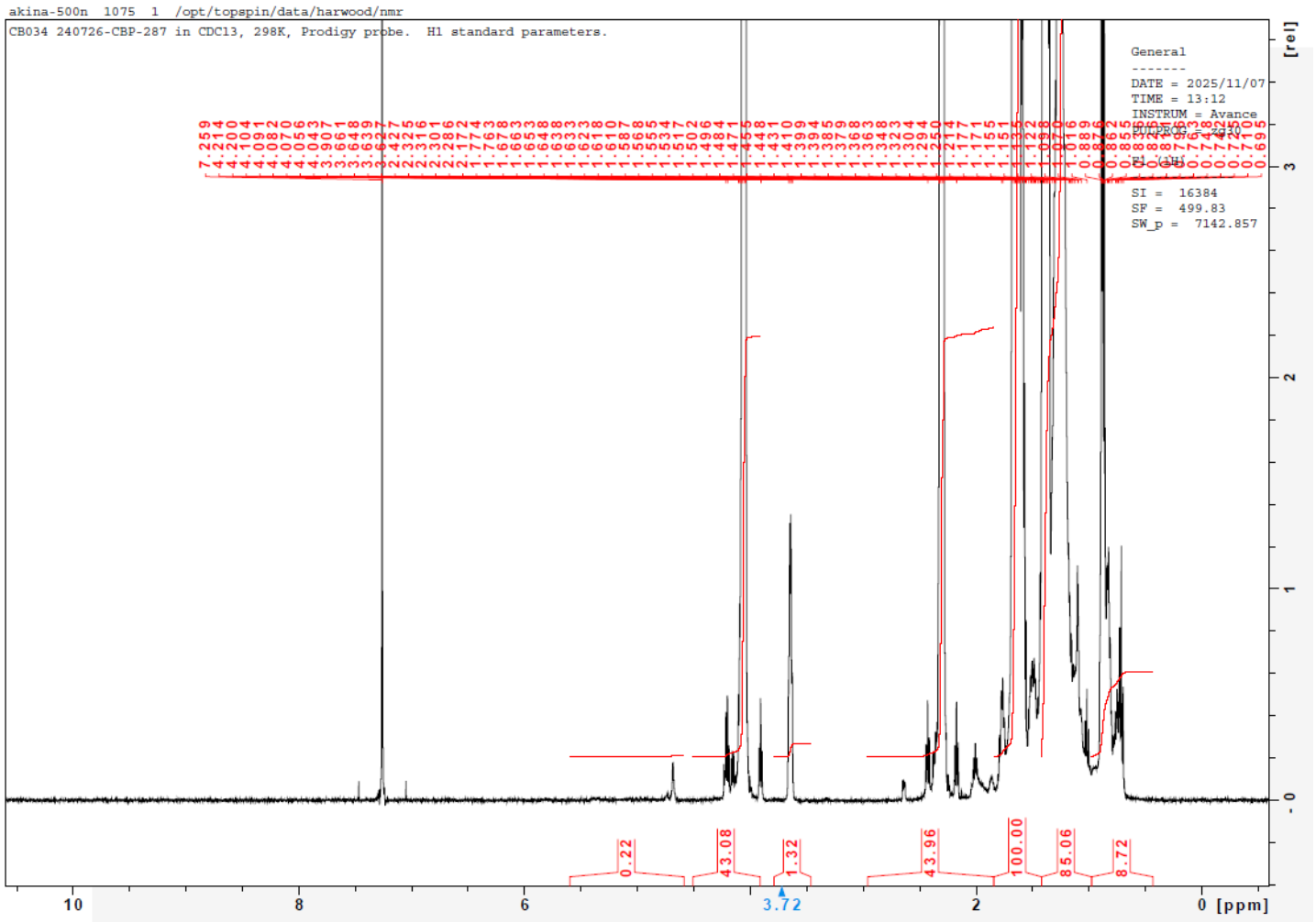
No. CB034 Certificate of Analysis

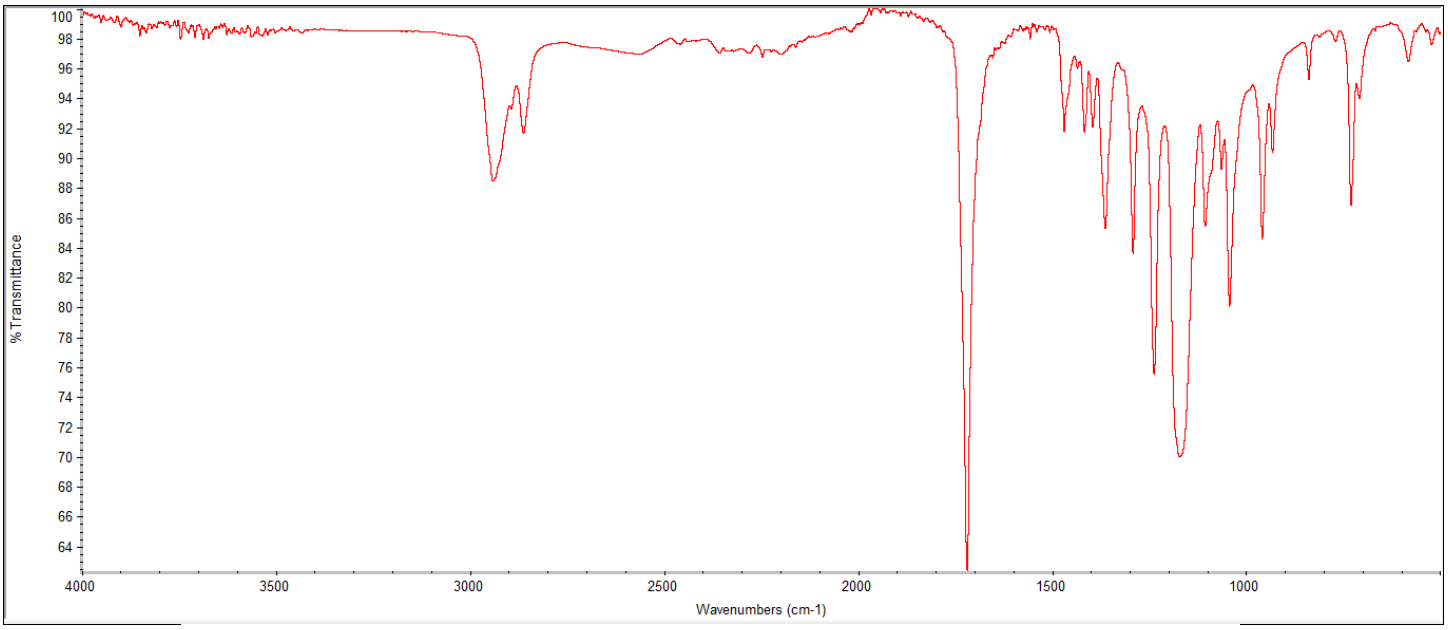
Product Name: Poly(Caprolactone) I.V. 0.20 – 0.26 dl/g, ester endcap (PC 02)
(Lot # 240726CPB-287)

H-NMR



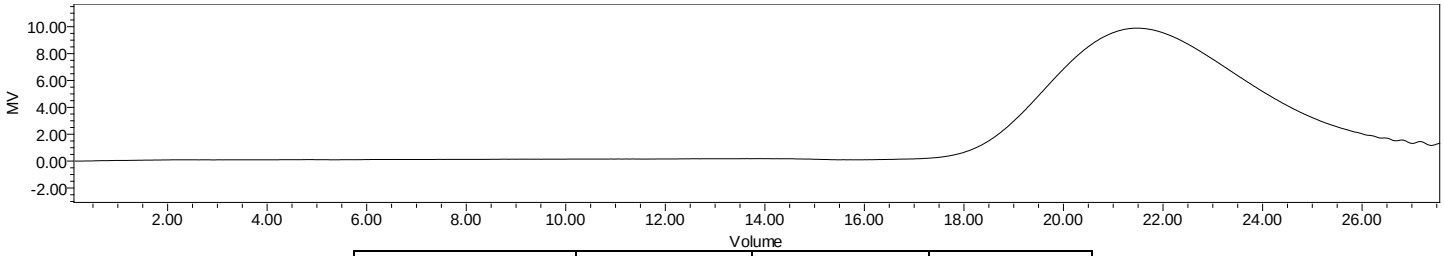
H-NMR Spectrum of copolymers in CDCl3 (NMReady-60e, Nanalysis 60 MHz) NMR of PC copolymer.

FTIR



FTIR Analysis: Collected from IS5 ID7-ATR spectrometer (Thermo Scientific) and analyzed in transmission mode**.**

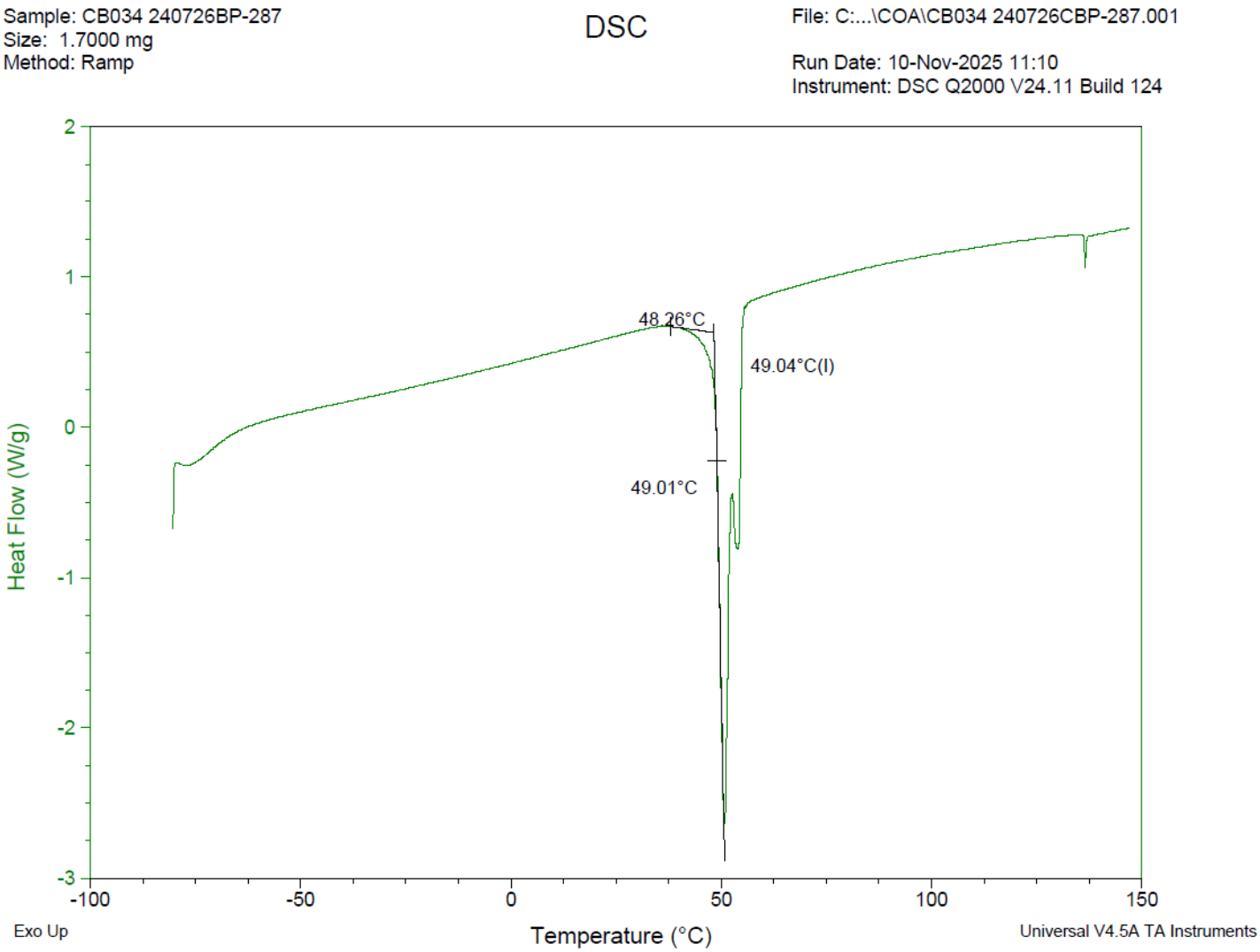
GPC-ES



Polymer	M_n (from GPC)	M_w (from GPC)	PDI
PC	9153	13,850	1.51

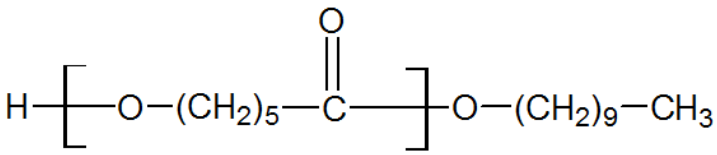
GPC-ES Analysis Method: Waters Breeze 2 system with 1 ml/min THF flow across three GPC columns. Detection via refractive index, calibrated against polystyrene standards.

DSC



DSC Testing: 1-5 mg sample tested in crimped aluminum pan on a TA Instruments Model Q2000 with procedure equilibraion 100 °C, isothermal 5 minutes, equilibrate -80 °C, data on, ramp 10 °C/min to 150 °C. Tg = 49.04 °C

Structure of copolymers



Manufacturer Provided Data

Assay	Specification	Result
Melting onset, DSC, 10 °C/min	50.0 °C	58.4 °C
Melting peak, DSC, 10 °C/min	75.0 °C	61.4 °C
Tin content	<50ppm	8 ppm
Water content[1]	<0.50%	0.04%
Residual monomer, Total	<0.50%	0.20%
Inherent Viscosity[2]	0.20-0.26 dL/g	0.23 dL/g
Residual solvent, Toluene	<890 ppm	3 ppm

1 – Measured by titration

2 – Measured at 25 ºC in Chloroform c=1 g/dL

Approved By:
Amie Tyler
Quality Manager