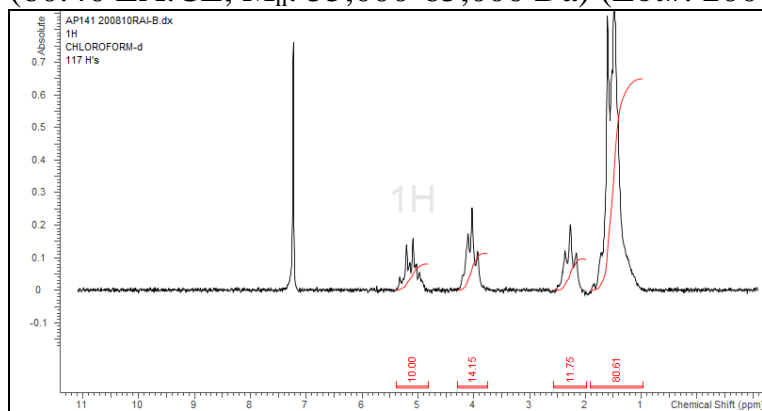


No. AP267

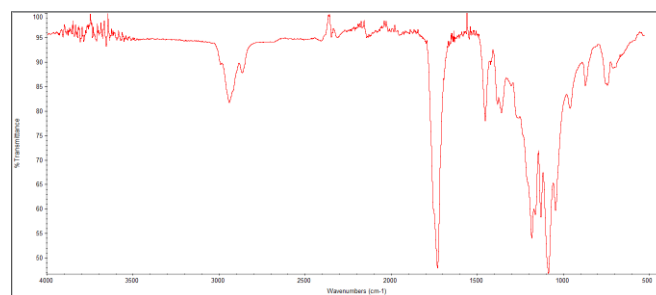
Certificate of Analysis



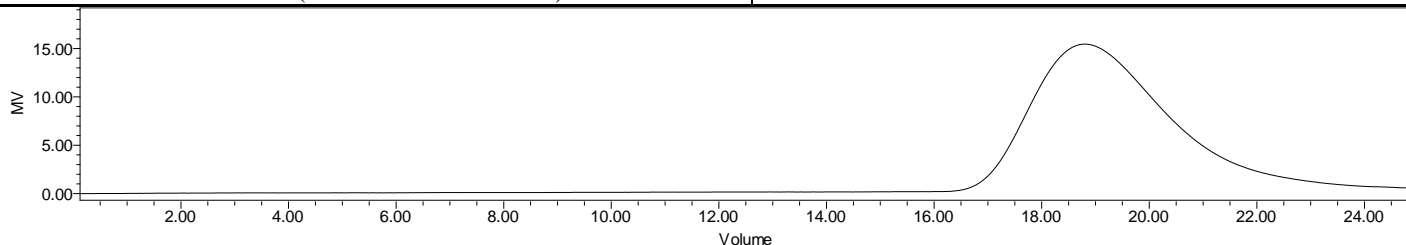
Product Name: Poly(L-Lactic-co-caprolactone) copolymers acid endcap
(60:40 LA:CL, M_n : 55,000-65,000 Da) (Lot#: 200810RAI-B)



H-NMR Spectrum of copolymers in CDCl₃ (NMReady-60e, Nanalysis 60 MHz) NMR of PLGA copolymer: LA-GA = 59%-41% molar ratio (LA-GA 64%-36% w-w)

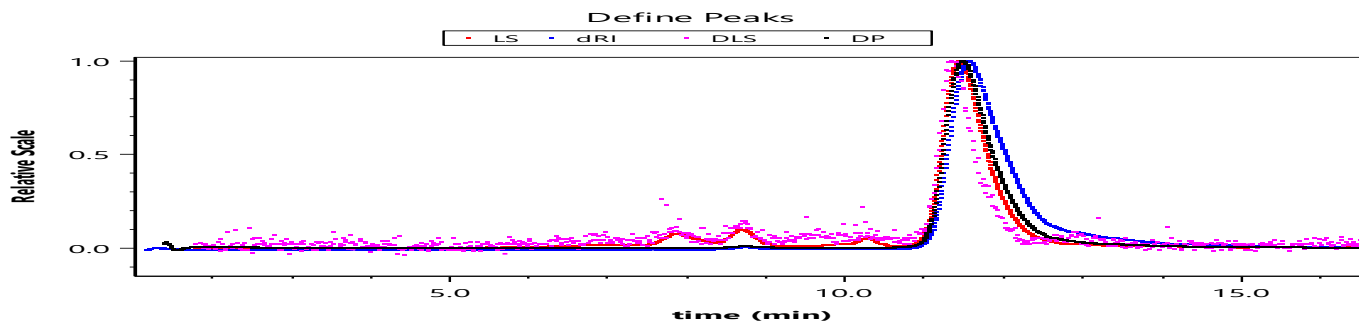


FTIR Analysis: Collected from Nicolet Avatar 380 spectrometer with ATR Smart Orbit and analyzed in transmission mode



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.

Polymer	M_n (from GPC)	M_w (from GPC)	PDI
P(L)LCL	62,023	74,240	1.19



GPC-4D Analysis Method: Agilent 1260 Infinity II system 0.6 ml/min Acetone flow across TSKgel GMHHR-L, 7.8 mm x 30 cm. Detection Dawn Heleos II (MALLS), Optilab T-rex (RI), Dynapro nanostar (DLS), and Viscostar III (viscosity), universal calibration (Wyatt).

Polymer	M_n (from GPC-4D)	M_p (from GPC-4D)	M_w (from GPC-4D)	Radius (r(avg), nm)	Intrinsic viscosity ([η](avg), mL/g)
P(L)LCL	37,655	45,383	55,963	3.3	38.438

* - Due to differences in methodology, Results from GPC-4D universal calibration will be different from those obtained from GPC-ES. The data from GPC-4D analysis is provided for customer information only.

Structure of P(L)LCL copolymers

