

INTERPRETATION AND IDENTIFICATION

REPORT

PRODUCT: POLY(D,L-LACTIDE-CO-GLYCOLIDE), 75:25



Submitted by

Nomisma Healthcare

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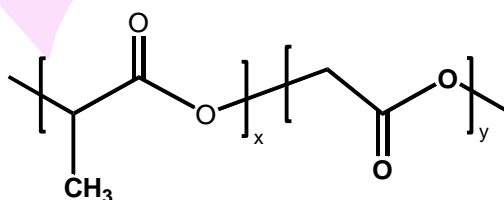
I. General information

Name of Compound	:	Poly(D,L-lactide-co-glycolide), 75:25
Batch No.	:	DLG75W001
CatLog ID.	:	DLG752A
Molecular formula	:	$[C_3H_4O_2]_x[C_2H_2O_2]_y$
Molecular weight	:	4,000 - 15,000 Da

II. Introduction

Poly(D,L-lactide-co-glycolide),(PLGA) 75:25 is an acid-terminated tin-free copolymer composed of DL-lactide and glycolide with a molar ratio of 75:25. It possesses an inherent viscosity ranging from 0.14 to 0.22 dL/g. This material is provided in the form of a white lyophilized powder.

DLG75-2A finds its primary application in various fields such as microsphere formulation, gene therapy, cancer therapy, polymeric (non-gelatin-containing) drug delivery systems (e.g., Artigel), tissue engineering, and numerous other applications. Its biodegradable and biocompatible properties make it a valuable choice for controlled release and targeted delivery of therapeutic agents. Poly(D,L-lactide-co-glycolide), has the following formula:



III. Solubility

Poly(D,L-lactide-co-glycolide), 75:25 is insoluble in water, freely soluble in chloroform, Acetone, DMSO and N-methyl pyrrolidone.

IV. ¹H NMR Experimental Data

Sample Name	:	Poly(D,L-lactide-co-glycolide), 75:25
Batch No.	:	DLG75W001
Instrument Make	:	Bruker
Frequency in MHz	:	400 MHz
Solvent	:	CDCl ₃
Structure	:	

¹H NMR Interpretation.

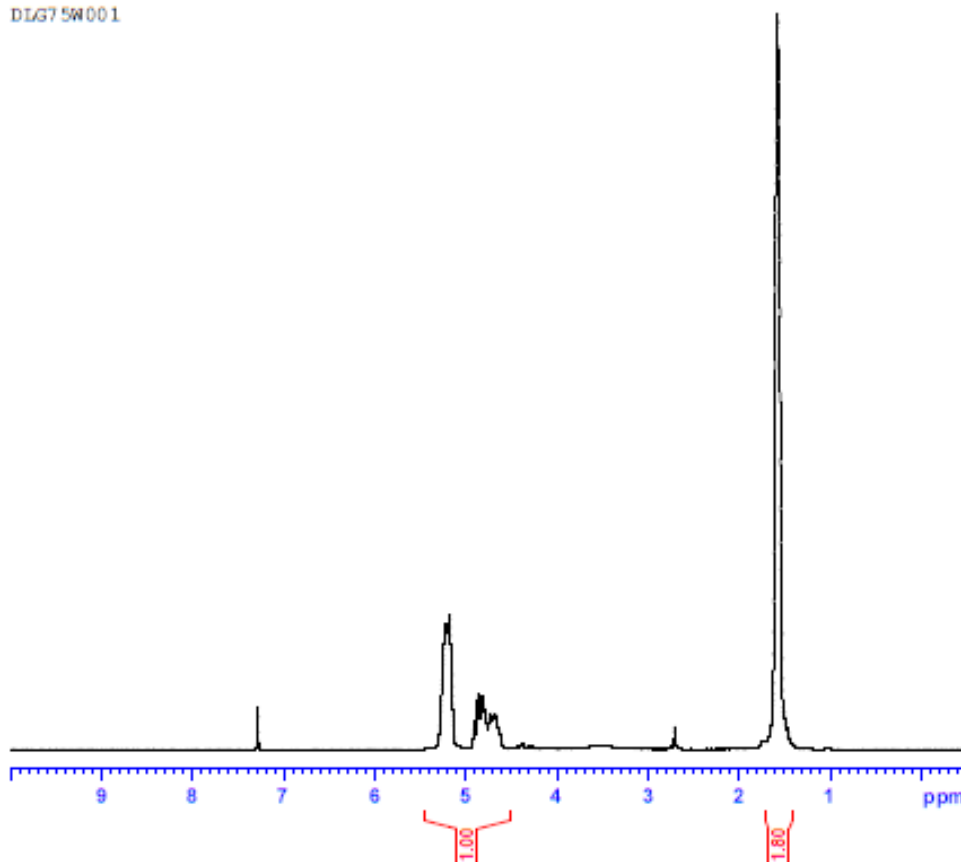
Sr No	Chemical shift (ppm)	Multiplicity	No of Protons	J-Values	Allocation
1.	5.1-5.4	M	1	-	7(CH)
2.	4.5-4.9	M	2	-	3(CH ₂)
3.	1.4-1.8	M	3	-	8(CH ₃)
Total			6		
Note : 1. M- multiplet, 2. 7.26 ppm CDCl ₃ NMR Solvent and 2.6 ppm Residual DMSO.					

V. Polymer Composition by 1H NMR

A = Integral Value of 1.57ppm	= 1.80
B = Integral Value of 4.2ppm+5.5ppm	= 1.00
m = Mole Fraction of Lactic Acid = A/3	= 0.600
n = Mole Fraction of Glycolic Acid = (B-m)/2	= 0.200
(m+n)	= 0.800
% Mole Ratio of Lactic Acid = (m/m+n)*100	= 75.000
% Mole Ratio of Glycolic Acid = (n/m+n)*100	= 25.000

¹H NMR Spectral Pattern

DLG75W001



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Current Data Parameters
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PROCNO   1

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VI. ¹³C NMR Experimental Data

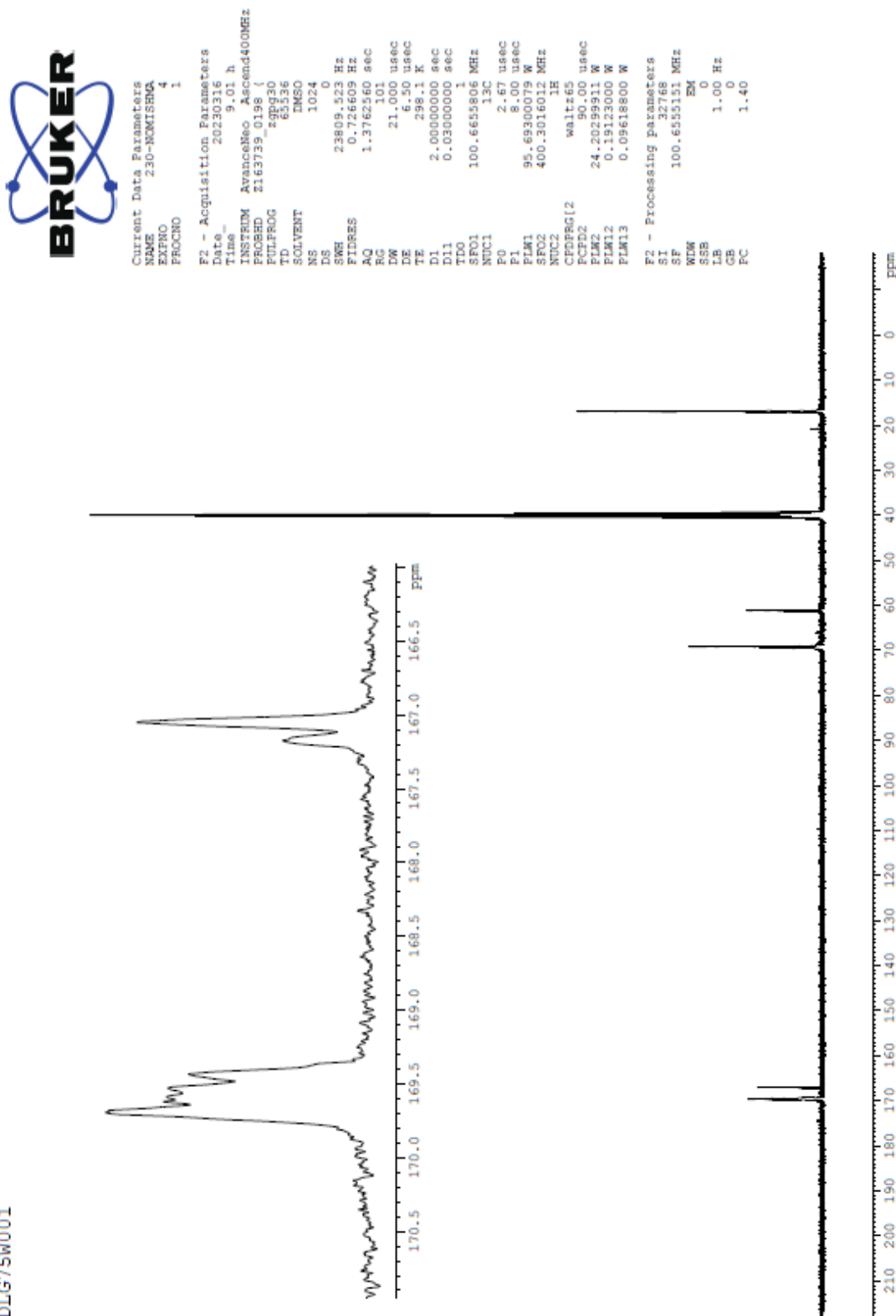
Sample Name	:	Poly(D,L-lactide-co-glycolide), 75:25
Batch No.	:	DLG75W001
Instrument Make	:	Bruker
Frequency in MHz	:	100.65 MHz
Solvent	:	CDCl ₃

¹³C NMR Interpretation.

Sr No	Chemical shift (ppm)	No of Carbon	Allocation
1	169.3-170.0	1	5(C=O)
2	166.9-167.3	1	2(C=O)
3	69.0	1	7(CH)
4	60.1	1	3(CH ₂)
5	10.7	1	8(CH ₃)

Note : Total Carbon = 5
39.5ppm Due to DMSO-d₆ NMR Solvent

¹³C NMR Spectral Pattern



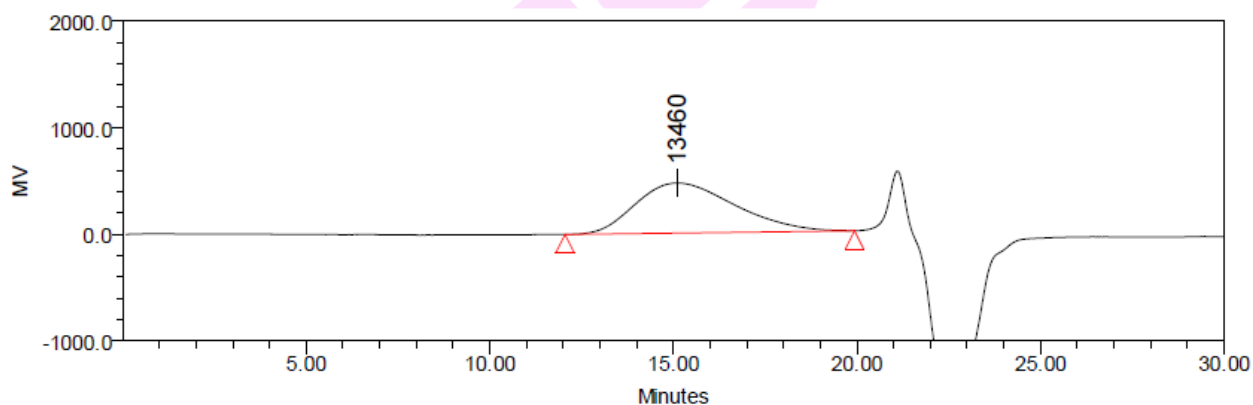
VII. GPC Data Experimental Data

Sample Name	:	Poly(D,L-lactide-co-glycolide), 75:25
Batch No.	:	DLG75W001
Instrument Make	:	PerkinElmer Series 200, Column : PLgel MIXED
Detector	:	Refractive index detector
Solvent	:	Tetrahydrofuran

GPC Results

	Retention Time (min)	Mn	Mw	MP	Mz	Mz+1	Poly dispersity
1	15.118	8065	13583	13460	19428	25263	1.68

GPC Chromatogram



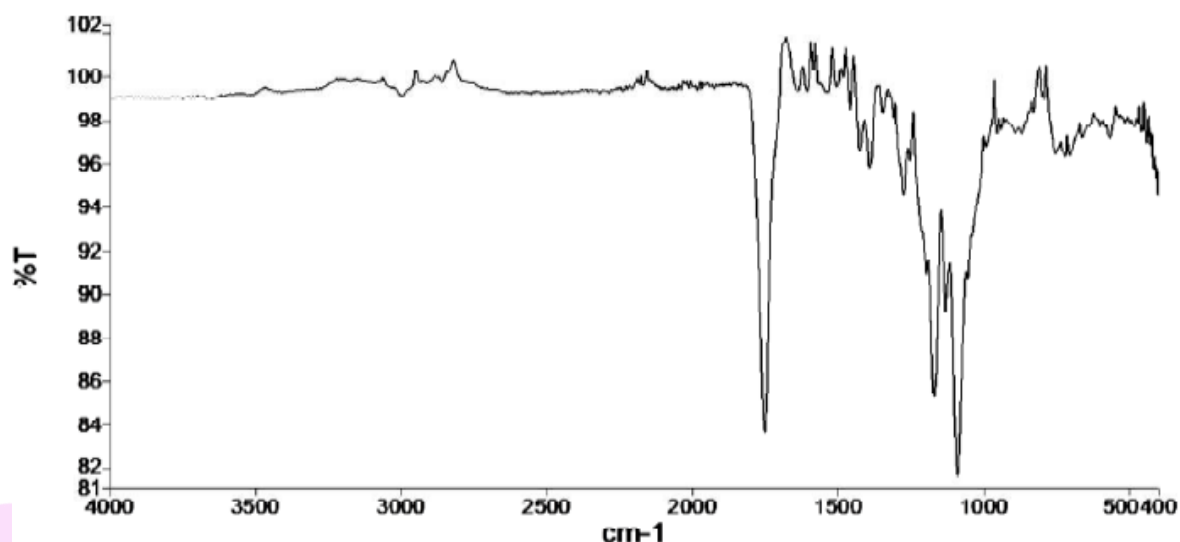
VIII. FTIR Experimental Data

Sample Name	:	Poly(D,L-lactide-co-glycolide), 75:25
Batch No.	:	DLG75W001
Instrument Make	:	Perkin Elmer
Frequency in cm^{-1}	:	4000 cm^{-1} to 400 cm^{-1}

FTIR Spectroscopic Data

Frequency (cm^{-1})	Interpretation
2514	-CH strong stretching vibrations.
1751	-C=O strong stretching vibrations.
1457, 1425, 1392, 1169, 1131	-CH strong bending vibrations (scissoring, rocking, wagging, twisting)

FTIR Spectrum



IX. Conclusion

^1H and ^{13}C NMR, GPC and IR Spectral Pattern confirm to the structure of Poly(D,L-lactide-co-glycolide), 75:25.