

Test Report

Molecular weights measurement of polymer by GPC (000000)

Client

000000

Date: MM DD, YYYY

tested by

Korea Polymer Testing & Research Institute (KOPTRI), Ltd.

(ISO/IEC 17025 Certified Laboratory)

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Pictures, tables and figures captions

Picture 1. **0000** sample.

Table 1. Molecular weights, polydispersity, content of molecular weight below 1 000 Da (%) and content of molecular weight below 500 Da (%) **0000**.

Table 1-1. GPC slice table (run 1).

Table 1-2. GPC slice table (run 2).

Figure 1-1. GPC chromatograms of polystyrene standard samples.

Figure 1-2. The calibration curve obtained from polystyrene standard samples.

Figure 2-1. GPC chromatogram of **0000**(run 1).

Figure 2-2. Cumulative distribution curve and molecular weight distribution curve of **0000**(run 1).

Figure 2-3. GPC chromatogram of **0000**(run 2).

Figure 2-4. Cumulative distribution curve and molecular weight distribution curve of **0000**(run 2).

1. Test name

Molecular weights of **0000**

(Study No.: Koptri-00-00-00000)

2. Client

00000

00000000

3. Testing institute, analyzer and author

Address: Korea Polymer Testing & Research Institute (KOPTRI)

367, 365, Cheonho-daero, Dongdaemun-gu, Seoul 02633, Korea

Analyzer :

Signature : _____ Date: YYYY.MM.DD

Tel: +82-2-3499-8549, Fax: +82-2-963-2587, e-mail: Juan.an@polymer.co.kr

Scientific director:

Signature : _____ Date: YYYY.MM.DD

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Author:

Signature : _____ Date: YYYY.MM.DD

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4. Test period : YYYY.MM.DD ~ YYYY.MM.DD

5. Testing sample (Supplied by the manufacturer)

(1) Sample name : supplied as a name of **OOOOO**

(2) Manufacturer/distributor : OOOOO

(3) Appearance : OOOO

(4) Chemical name : OOOO

(5) Cas no.: OOOO

6. Test contents

Molecular weights, polydispersity

Content of molecular weight below 1 000 Da (%)

Content of molecular weight below 500 Da (%)

7. Sample preparation

The **OOOO** was supplied by the manufacturer. The sample was used directly without any further treatment.

8. Testing methods

The molecular weight results (number-average and weight-average molecular weight and distribution) were measured by GPC (Gel permeation chromatography) according to OECD TEST Guideline 118.

9. Summary of test results

9-1. Molecular weight

Table 1. Molecular weights, polydispersity, content of molecular weight below 1 000 Da (%) and content of molecular weight below 500 Da (%) of OOOO.

Sample name	Run	Mn	Mw	Mp	Mw/Mn	content of molecular weight below 1 000 Da (%)	content of molecular weight below 500 Da (%)
OOOO	1						
	2						
	SD						
	CV						
	Average						

- a) Mobile phase : TCB + 0.04 % BHT (after drying with 0.1 % CaCl₂)
 Column : PLgel guard (7.5 x 50 mm) + 2 x PLgel mixed-B (7.5 x 300 mm)
 Detector : RI detector
- b) Mn : number-average molecular weight
 c) Mw : weight-average molecular weight
 d) Mp : Molecular weight of the highest peak
 e) Mw/Mn : polydispersity
 f) Standard : polystyrene
 g) SD : standard deviation
 h) CV : coefficient of variation

9-2. Conclusions

The number-average molecular weight (M_n) of **OOOO** polymer was OOOO. Content of molecular weight below 1 000 Da was % and content of molecular weight below 500 Da was %, respectively.

Picture 1. **OOOO** sample.

10. Detail testing methods and results

10-1. Molecular weight determination

10-1-1. Objective

The purpose of using this method is to determine the molecular weight and molecular weight distribution of **OOOO** by means of GPC (gel permeation chromatography).

10-1-2. GPC instruments

- (1) Analysis instrument : Tosoh, HLC-8321 GPC/HT
- (2) Mobile phase : TCB + 0.04 % BHT (after drying with 0.1 % CaCl₂)
- (3) GPC column (maker, model no.): PLgel guard (7.5 x 50 mm) + 2 x PLgel mixed-B (7.5 x 300 mm)
- (4) Detector : RI detector
- (5) Column temperature : 160 °C
- (6) Flow rate : 1.0 mL/min
- (7) Injection amount : 300 µL
- (8) Sample concentration : 1.5 mg/mL
- (9) Data system : EcoSEC software

10-1-3. GPC calibration

- (1) Standard sample : polystyrene, Agilent Technologies
- (2) Injection amount : 300 µL, concentration: 1 mg/mL
- (3) Calibration plot (Figure 1-2)

10-1-4. GPC results

The number-average molecular weight (M_n) and weight-average molecular weight (M_w) of **OOOO** were measured by GPC using TCB as a solvent. The results are summarized in Table 1.

11. Archives

Test substance will be stored in the lab for 3 months. Final test report, raw data in the final report and information documents supplied by the sponsor (manufacturer) are stored in our computer as an electronic file with security. Client can ask for the electronic file anytime. Unless instructed otherwise by the Sponsor, all original data and the final report will be retained in KOPTRI for five years.

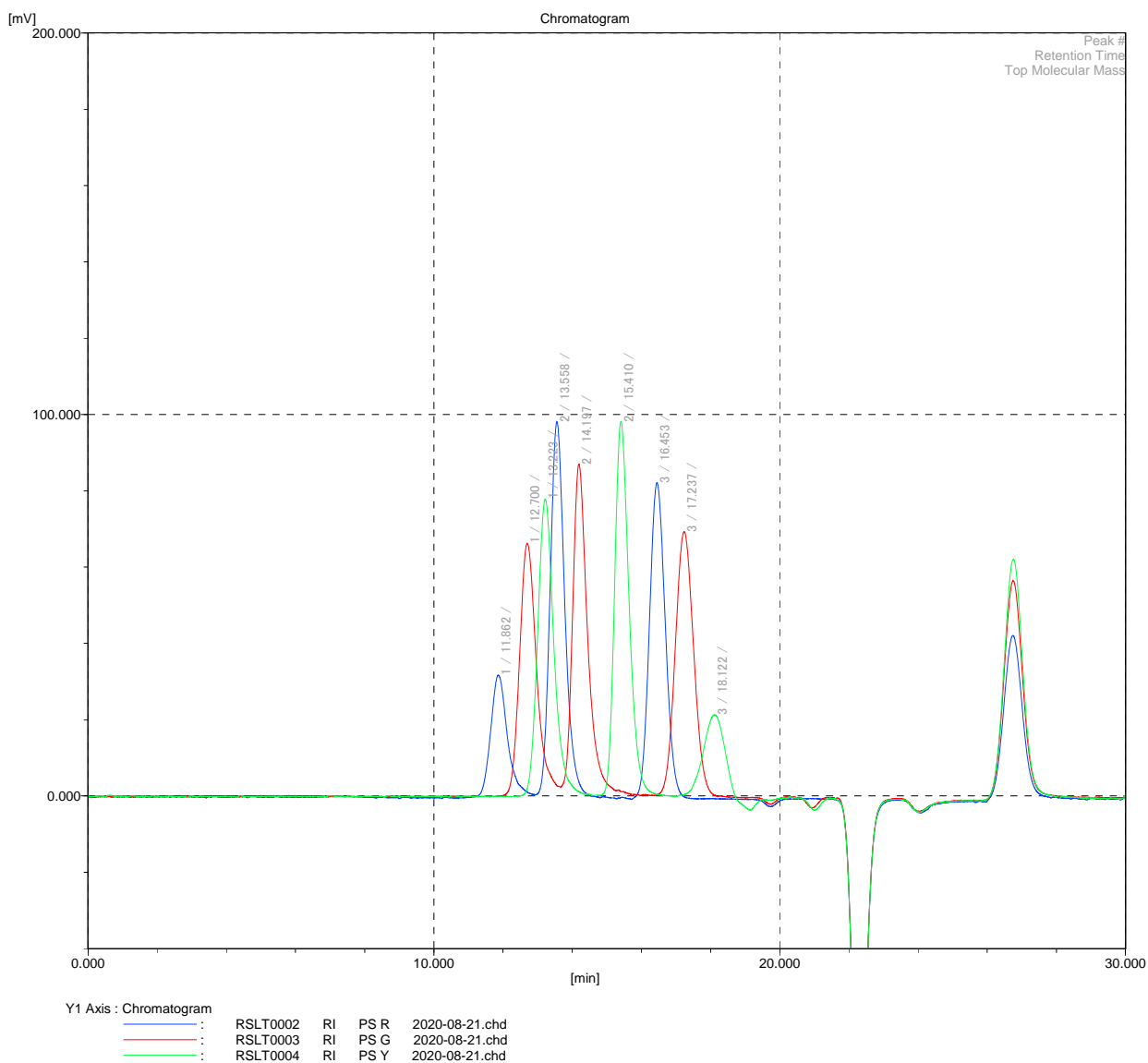


Figure 1-1. GPC chromatograms of polystyrene standard samples.

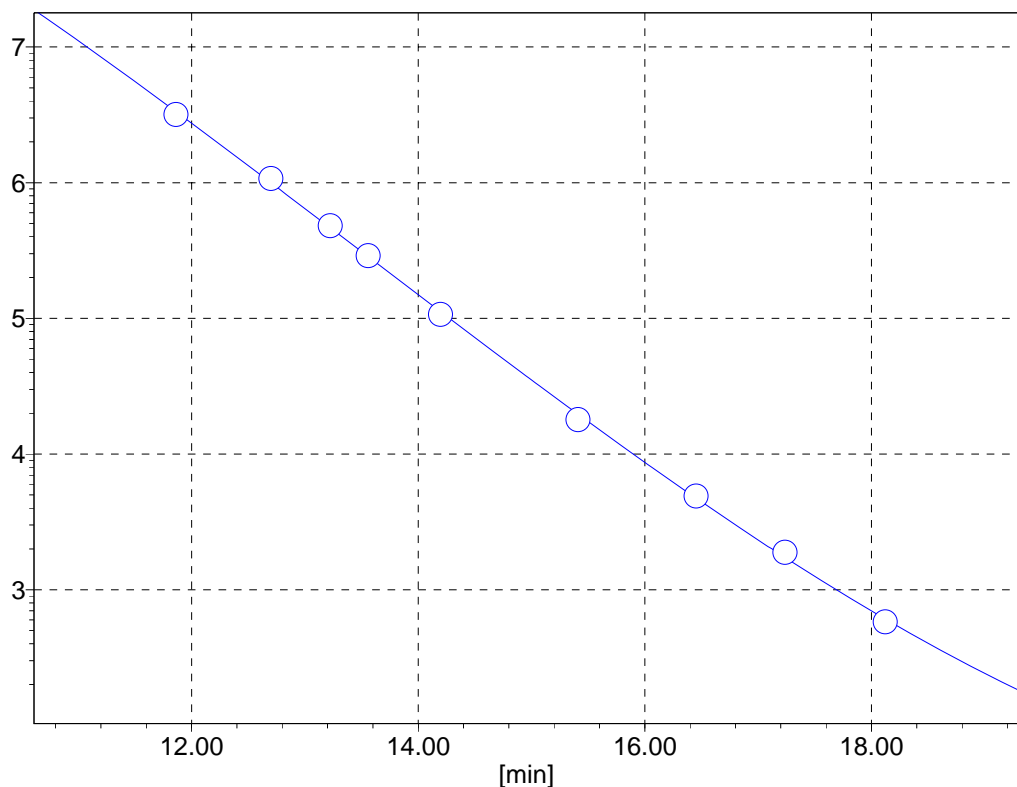
Calibration curve

Database name	SystemDataBase.syd
Method name	200821

Calibration condition (RI)

Formula of approximation	Cubic: At ³ +Bt ² +Ct+D
Correction	Non

[LogM]



Calibration data (RI)

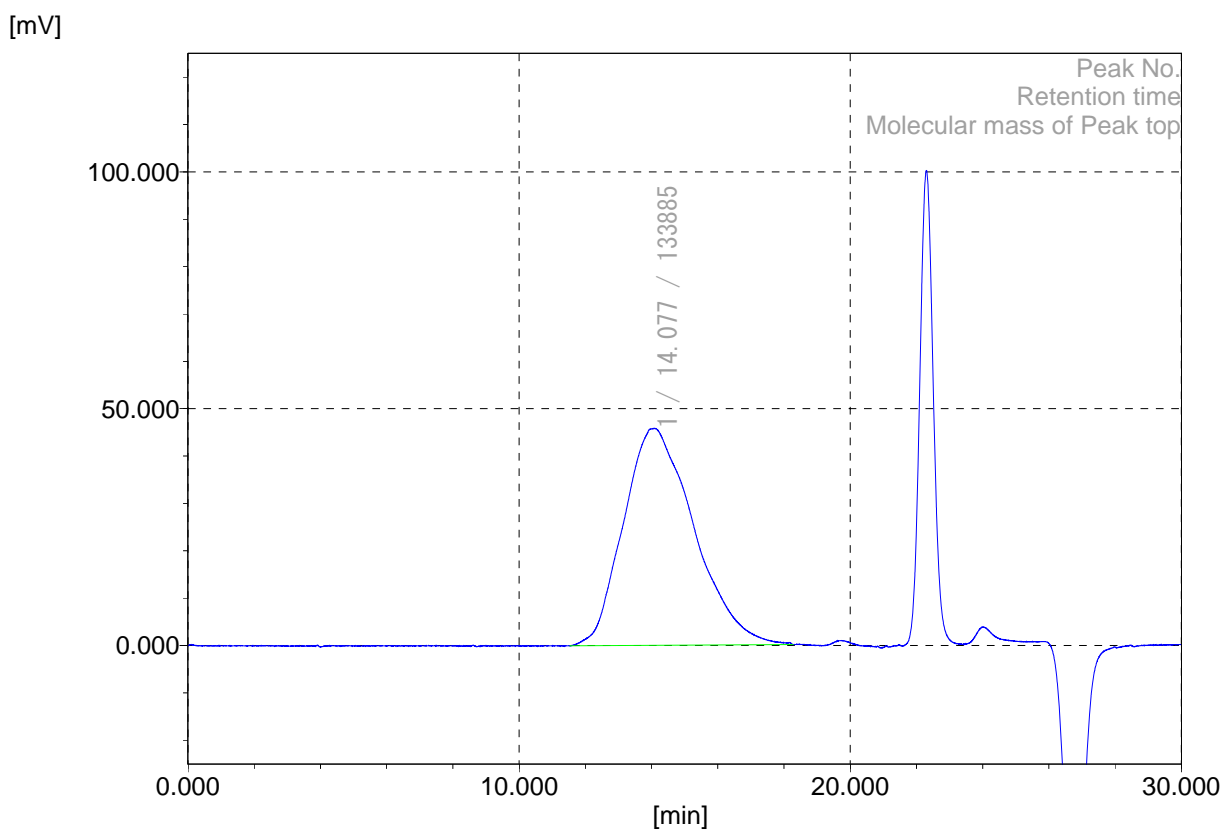
Time [min]	Molecular mass	Error [%]	Weight	Mark	Data name	Coefficient	
11.862	3,187,000	-4.99481	1	STD	RSLT0002	A =	2.317300e-003
12.700	1,074,000	6.78455	1	STD	RSLT0003	B =	-9.374815e-002
13.223	482,000	3.17829	1	STD	RSLT0004	C =	6.283618e-001
13.558	290,300	1.55272	1	STD	RSLT0002	D =	8.394218e+000
14.197	107,100	-4.90206	1	STD	RSLT0003		
15.410	17,970	-9.75396	1	STD	RSLT0004	Correlation coefficient	-0.999
16.453	4,910	3.45357	1	STD	RSLT0002		
17.237	1,890	8.24149	1	STD	RSLT0003		
18.122	580	-5.09474	1	STD	RSLT0004		

Figure 1-2. The calibration curve obtained from polystyrene standard samples.

(Run 1)

Chromatogram report

Title		Data acquisition date and time	2020/08/21 12:58:04
Sample name		Calculation date and time	2020/09/04 14:42:39
Database name	2020-08-21.chd	Acquisition time [min]	0.000 - 30.000
Data name	RSLT0006	Sampling interval [ms]	100
Method name	200821	Cup number	5
Channel	RI	Calculation type	Molecular Mass



Molecular mass calculation result (RI)

Total					
	[min]	[mV]	[mol]		
Peak start	11.527	-0.083	5,373,714	Mn	28,248
Peak top	14.077	45.869	133,885	Mz	751,445
Peak end	18.262	0.207	522	Mz+1	1,537,929
				Mv	221,912
Height [mV]		45.842		Mp	128,779
Area [mV*s]		6785.796		Mz/Mw	3.386
Area% [%]		100.000		Mw/Mn	7.856
[eta]		221911.80800		Mz+1/Mw	6.930

Figure 2-1. GPC chromatogram of OOOO (run 1).

Table 1-1. GPC slice table.

slice table

Molecular distribution list (RI)

Differential distribution factor	1
Formula of distribution	TOSOH
Sampling interval	100

Peak no. 1 Time(Range) [min] 11.53 - 14.08 - 18.26

Time [min]	Molecular weight	Differential distribution(Area)	Differential distribution(Height)	Integral distribution
11.53	5,373,714	0	0	100
11.54	5,261,792	0.12	174.67	100
11.57	5,092,165	0.09	127.3	100
11.59	4,927,842	0.08	116.44	100
11.61	4,768,663	0.15	227.62	99.99
11.64	4,614,476	0.2	300.1	99.99
11.66	4,465,130	0.27	404.48	99.99
11.68	4,320,479	0.41	608.97	99.98
11.71	4,180,384	0.47	702.2	99.98
11.73	4,044,706	0.49	727.1	99.97
11.75	3,913,311	0.59	869.02	99.96
11.78	3,786,070	0.73	1082.98	99.95
11.8	3,662,858	0.85	1256.21	99.94
11.82	3,543,551	0.97	1441.89	99.93
11.85	3,428,031	1.13	1678.15	99.91
11.87	3,316,182	1.2	1778.41	99.9
11.89	3,207,891	1.29	1908.17	99.88
11.92	3,103,051	1.48	2187.93	99.86
11.94	3,001,555	1.66	2452.46	99.84
11.96	2,903,301	1.78	2640.55	99.81
11.99	2,808,188	1.93	2849.49	99.78
12.01	2,716,121	2.04	3020.17	99.76
12.03	2,627,004	2.1	3114.78	99.73
12.06	2,540,746	2.23	3299.81	99.69
12.08	2,457,260	2.45	3625.57	99.66
12.1	2,376,459	2.62	3871.01	99.62
12.13	2,298,259	2.78	4107.73	99.58
12.15	2,222,579	2.98	4405.06	99.54
12.17	2,149,342	3.15	4666.35	99.5
12.2	2,078,471	3.34	4948.32	99.45
12.22	2,009,891	3.64	5389.19	99.4
12.24	1,943,531	3.98	5898.65	99.34
12.27	1,879,321	4.29	6357.3	99.28
12.29	1,817,194	4.63	6859.37	99.22
12.31	1,757,084	5.06	7486.28	99.15
12.34	1,698,927	5.47	8104.17	99.07
12.36	1,642,663	5.96	8823.71	98.98
12.38	1,588,231	6.58	9744.87	98.89
12.41	1,535,573	7.19	10635.9	98.79
12.43	1,484,633	7.77	11505.23	98.68
12.45	1,435,356	8.42	12463.31	98.56
12.48	1,387,690	9.14	13528.76	98.43
12.5	1,341,583	9.88	14622.39	98.29
12.52	1,296,985	10.72	15862.73	98.14
12.55	1,253,850	11.62	17197.64	97.98
12.57	1,212,129	12.49	18483.68	97.8
12.59	1,171,777	13.47	19936.92	97.61
12.62	1,132,751	14.52	21497	97.4

12.64	1,095,008	15.36	22734.37	97.18
12.66	1,058,508	16.16	23927.38	96.95
12.69	1,023,209	17.07	25275.14	96.7
12.71	989,073	18.05	26711.19	96.45
12.73	956,064	18.99	28113.28	96.17
12.76	924,144	19.99	29587.08	95.88
12.78	893,278	21.08	31202.95	95.58
12.8	863,433	22.12	32743.53	95.26
12.83	834,574	23.13	34239.99	94.93
12.85	806,671	24.15	35742.05	94.58
12.87	779,693	25.08	37117.48	94.21
12.9	753,608	25.94	38395.37	93.84
12.92	728,389	26.87	39780.37	93.44
12.94	704,006	27.82	41187.75	93.04
12.97	680,434	28.72	42506.06	92.62
12.99	657,644	29.58	43793.22	92.19
13.01	635,613	30.48	45113.27	91.75
13.04	614,314	31.29	46315.62	91.29
13.06	593,725	32.13	47559.22	90.82
13.08	573,821	33.1	48990.5	90.33
13.11	554,581	34.05	50397.03	89.84
13.13	535,982	34.98	51772.69	89.32
13.15	518,004	35.94	53204.12	88.8
13.18	500,626	36.92	54643.93	88.26
13.2	483,828	37.87	56059.22	87.7
13.22	467,591	38.93	57621.01	87.13
13.25	451,898	40.08	59329.31	86.55
13.27	436,729	41.16	60928.75	85.94
13.29	422,068	42.23	62503.84	85.33
13.32	407,897	43.34	64153.5	84.69
13.34	394,202	44.43	65764.51	84.04
13.36	380,965	45.51	67369.89	83.37
13.39	368,171	46.64	69037.63	82.69
13.41	355,807	47.75	70687.49	81.99
13.43	343,858	48.76	72177.5	81.27
13.46	332,309	49.75	73643.6	80.54
13.48	321,148	50.76	75139.34	79.79
13.5	310,362	51.7	76524.81	79.03
13.53	299,939	52.63	77900.92	78.26
13.55	289,865	53.59	79327.42	77.47
13.57	280,131	54.45	80600.56	76.67
13.6	270,723	55.22	81738.91	75.85
13.62	261,632	55.99	82874.24	75.03
13.64	252,847	56.75	84008.65	74.19
13.67	244,358	57.47	85063.93	73.34
13.69	236,154	58.18	86118.37	72.49
13.71	228,226	58.88	87155.51	71.62
13.74	220,566	59.43	87975.59	70.74
13.76	213,164	59.96	88753.67	69.86
13.78	206,011	60.53	89596.9	68.96
13.81	199,099	61.04	90354.9	68.06
13.83	192,420	61.52	91062.69	67.15
13.85	185,966	61.99	91755.33	66.24
13.88	179,730	62.41	92385.41	65.32
13.9	173,704	62.88	93076.65	64.39
13.92	167,881	63.3	93695.03	63.45
13.95	162,255	63.6	94141.5	62.51
13.97	156,818	63.67	94252.92	61.57
13.99	151,565	63.72	94320.12	60.63
14.02	146,490	63.81	94458.68	59.69

14.04	141,585	63.85	94517.9	58.74
14.06	136,846	63.85	94514.23	57.8
14.09	132,267	63.92	94621.22	56.85
14.11	127,843	63.98	94702.53	55.91
14.13	123,568	63.93	94634.08	54.96
14.16	119,437	63.8	94438.46	54.02
14.18	115,445	63.64	94204.52	53.08
14.2	111,589	63.34	93756.27	52.14
14.23	107,862	63	93254.96	51.21
14.25	104,262	62.72	92843.47	50.28
14.27	100,783	62.34	92283.56	49.36
14.3	97,421	61.87	91589.54	48.45
14.32	94,173	61.4	90893.97	47.54
14.34	91,034	60.89	90126.27	46.64
14.37	88,001	60.32	89284.24	45.75
14.39	85,071	59.81	88527.67	44.86
14.41	82,240	59.33	87821.33	43.99
14.44	79,504	58.76	86976.08	43.12
14.46	76,860	58.16	86093.62	42.26
14.48	74,305	57.64	85319.52	41.42
14.51	71,837	57.1	84516.5	40.57
14.53	69,452	56.56	83730.32	39.74
14.55	67,147	56.11	83063.1	38.91
14.58	64,920	55.66	82385.72	38.1
14.6	62,768	55.12	81591.73	37.29
14.62	60,689	54.61	80841.64	36.48
14.65	58,679	54.19	80214.91	35.69
14.67	56,738	53.73	79534.05	34.9
14.69	54,861	53.29	78876.32	34.12
14.72	53,048	52.89	78283.61	33.34
14.74	51,296	52.41	77584.27	32.58
14.76	49,603	51.87	76786.47	31.82
14.79	47,967	51.39	76068.23	31.06
14.81	46,385	50.91	75362.53	30.32
14.83	44,857	50.39	74587.48	29.58
14.86	43,381	49.85	73797.53	28.85
14.88	41,953	49.32	73011.57	28.14
14.9	40,574	48.66	72031.72	27.43
14.93	39,241	47.98	71028.14	26.72
14.95	37,953	47.38	70133.52	26.03
14.97	36,708	46.73	69179.32	25.35
15	35,505	46.03	68140.05	24.68
15.02	34,342	45.32	67080.95	24.02
15.04	33,219	44.57	65974.45	23.37
15.07	32,132	43.75	64754.79	22.73
15.09	31,083	42.94	63563.56	22.11
15.11	30,068	42.22	62498.28	21.5
15.14	29,087	41.41	61302.53	20.89
15.16	28,139	40.57	60054.5	20.3
15.18	27,223	39.75	58836.89	19.73
15.21	26,337	38.85	57509.33	19.16
15.23	25,481	37.95	56171.56	18.61
15.25	24,654	37.11	54927.92	18.08
15.28	23,854	36.29	53716.76	17.55
15.3	23,081	35.39	52390.8	17.04
15.32	22,333	34.5	51065.09	16.54
15.35	21,611	33.65	49808.02	16.05
15.37	20,912	32.76	48491.27	15.58
15.39	20,237	31.92	47249.65	15.12
15.42	19,584	31.19	46167.03	14.67

15.44	18,953	30.42	45026.92	14.23
15.46	18,343	29.61	43829.08	13.81
15.49	17,753	28.84	42685.23	13.39
15.51	17,183	28.11	41612.73	12.99
15.53	16,631	27.41	40570.79	12.6
15.56	16,098	26.78	39643.69	12.21
15.58	15,583	26.24	38849.06	11.84
15.6	15,084	25.61	37912.45	11.47
15.63	14,602	24.97	36959.02	11.12
15.65	14,136	24.43	36155.72	10.77
15.67	13,686	23.87	35331.45	10.43
15.7	13,250	23.34	34547	10.1
15.72	12,829	22.87	33852.55	9.77
15.74	12,421	22.41	33176.47	9.46
15.77	12,027	21.86	32359.48	9.15
15.79	11,646	21.34	31582.4	8.85
15.81	11,277	20.9	30937.24	8.55
15.84	10,921	20.44	30260.17	8.26
15.86	10,576	19.98	29581.76	7.98
15.88	10,242	19.58	28976.64	7.71
15.91	9,920	19.09	28255.95	7.44
15.93	9,608	18.56	27467.66	7.18
15.95	9,306	18.1	26785.66	6.92
15.98	9,014	17.68	26166.19	6.68
16	8,732	17.22	25492.3	6.43
16.02	8,459	16.76	24808.03	6.2
16.05	8,194	16.34	24188.67	5.97
16.07	7,939	15.82	23410.24	5.75
16.09	7,691	15.31	22669.92	5.54
16.12	7,452	14.91	22074.73	5.33
16.14	7,221	14.49	21449.1	5.13
16.16	6,997	14.03	20775.01	4.93
16.19	6,780	13.62	20155.1	4.75
16.21	6,570	13.18	19513.44	4.56
16.23	6,367	12.69	18789.32	4.39
16.26	6,171	12.29	18191.3	4.22
16.28	5,981	11.97	17715.44	4.05
16.3	5,797	11.58	17141.41	3.89
16.33	5,619	11.16	16522.91	3.74
16.35	5,447	10.81	15999.87	3.59
16.37	5,280	10.41	15409.69	3.45
16.4	5,119	10.01	14824.6	3.31
16.42	4,963	9.73	14403.65	3.18
16.44	4,812	9.45	13986.05	3.05
16.47	4,665	9.08	13439.57	2.93
16.49	4,524	8.73	12923.4	2.81
16.51	4,387	8.43	12483.42	2.69
16.54	4,254	8.11	12007.71	2.58
16.56	4,125	7.83	11585.61	2.48
16.58	4,001	7.65	11320.84	2.37
16.61	3,881	7.4	10953.93	2.27
16.63	3,764	7.09	10495.86	2.18
16.65	3,651	6.83	10103.32	2.09
16.68	3,542	6.59	9758.13	2
16.7	3,436	6.34	9379.32	1.91
16.72	3,334	6.13	9071.29	1.83
16.75	3,234	5.96	8822.79	1.75
16.77	3,138	5.69	8424.13	1.68
16.79	3,045	5.42	8019.4	1.6
16.82	2,955	5.24	7760.78	1.53

16.84	2,868	5.07	7503.62	1.47
16.86	2,783	4.89	7231.45	1.4
16.89	2,701	4.75	7036.05	1.34
16.91	2,622	4.59	6799.83	1.28
16.93	2,545	4.36	6461.05	1.22
16.96	2,470	4.16	6154.16	1.17
16.98	2,398	4.07	6031.37	1.11
17	2,328	3.94	5836.76	1.06
17.03	2,261	3.81	5634.26	1.01
17.05	2,195	3.71	5493.14	0.96
17.07	2,131	3.53	5231.73	0.92
17.1	2,070	3.34	4940.47	0.87
17.12	2,010	3.23	4780.34	0.83
17.14	1,952	3.16	4682.25	0.79
17.17	1,896	3.05	4511.32	0.75
17.19	1,842	2.93	4342.12	0.72
17.21	1,789	2.84	4201.35	0.68
17.24	1,738	2.67	3945.69	0.64
17.26	1,689	2.52	3727.93	0.61
17.28	1,641	2.49	3680.26	0.58
17.31	1,594	2.42	3581	0.55
17.33	1,549	2.3	3397.86	0.52
17.35	1,505	2.19	3240.98	0.49
17.38	1,463	2.1	3108.07	0.47
17.4	1,422	1.95	2890.51	0.44
17.42	1,382	1.87	2771.08	0.42
17.45	1,343	1.88	2780.29	0.39
17.47	1,306	1.79	2652.62	0.37
17.49	1,270	1.66	2451.95	0.35
17.52	1,234	1.59	2355.44	0.33
17.54	1,200	1.51	2228.37	0.31
17.56	1,167	1.41	2083.08	0.29
17.59	1,135	1.41	2088.4	0.28
17.61	1,104	1.42	2101.35	0.26
17.63	1,073	1.32	1947.1	0.25
17.66	1,044	1.2	1769.2	0.23
17.68	1,016	1.16	1710.16	0.22
17.7	988	1.07	1576.73	0.2
17.73	961	1.04	1537.4	0.19
17.75	935	1.07	1587.78	0.18
17.77	910	1.02	1504.53	0.17
17.8	885	0.9	1335.6	0.15
17.82	862	0.86	1269.36	0.14
17.84	839	0.85	1262.51	0.13
17.87	816	0.83	1221.78	0.12
17.89	795	0.82	1220.02	0.11
17.91	773	0.85	1262.8	0.1
17.94	753	0.76	1127.2	0.09
17.96	733	0.68	1004	0.09
17.98	714	0.68	1006.94	0.08
18.01	695	0.69	1023.16	0.07
18.03	677	0.66	978.35	0.06
18.05	659	0.67	986.62	0.05
18.08	642	0.65	965.53	0.05
18.1	625	0.53	778.02	0.04
18.12	609	0.51	753.49	0.03
18.15	594	0.74	1095.92	0.03
18.17	578	0.81	1199.52	0.02
18.19	564	0.67	988.72	0.01
18.22	549	0.44	645.81	0

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18.24	535	0.18	267.9	0
18.26	522	0	0	0

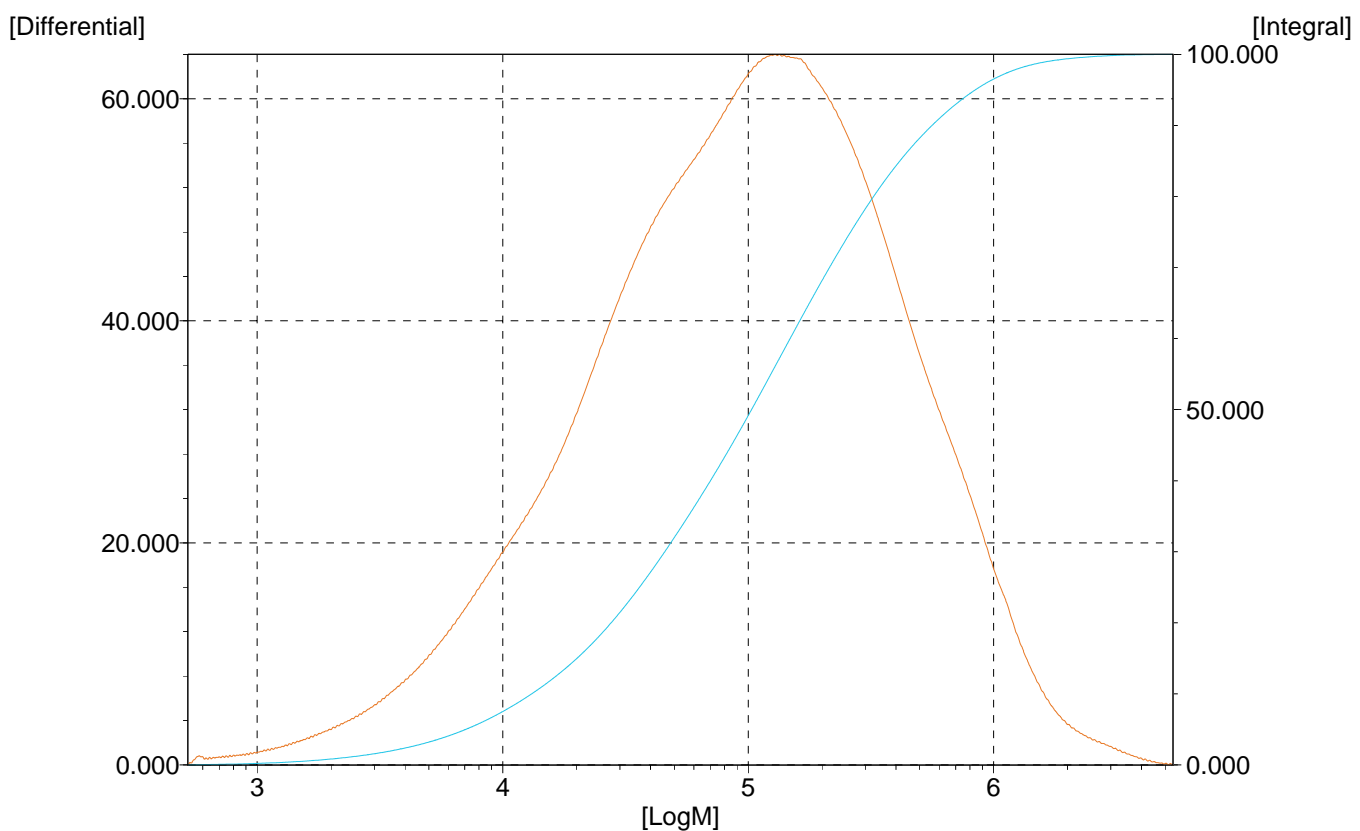
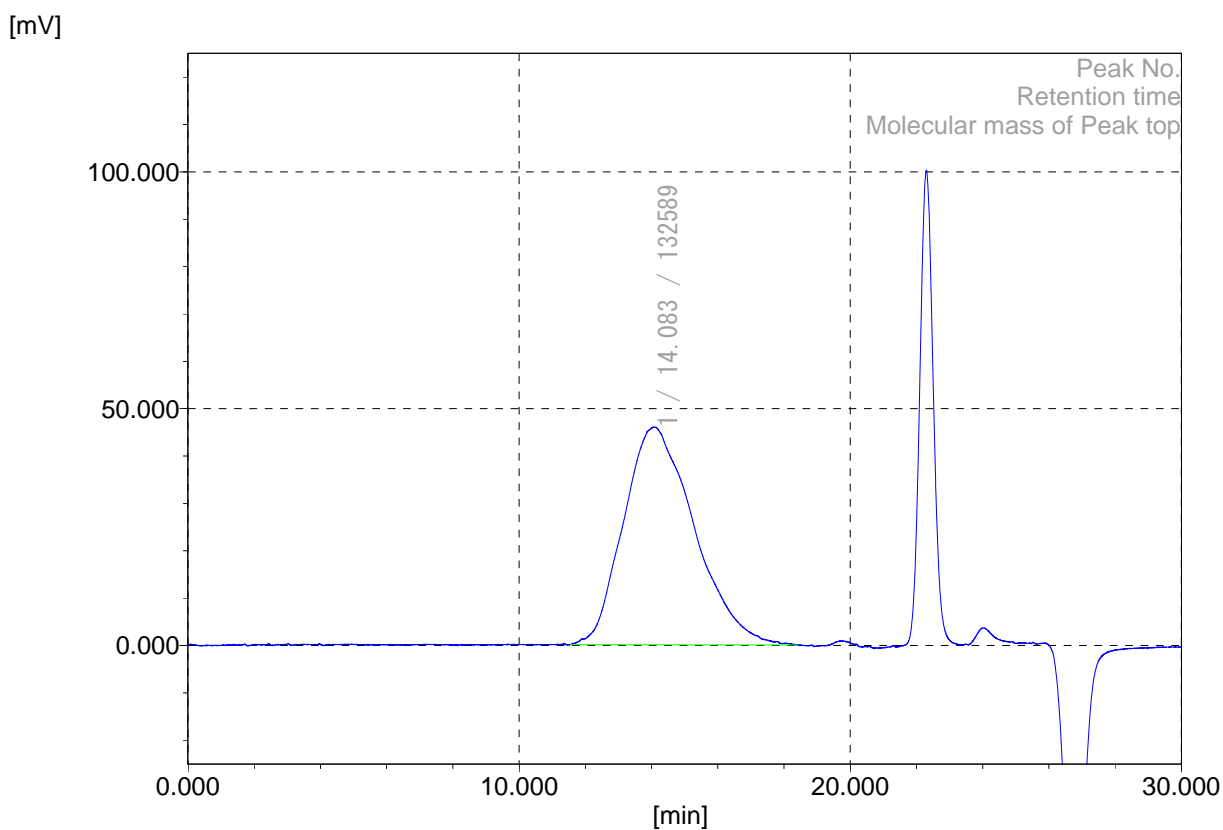


Figure 2-2. Cumulative distribution curve and molecular weight distribution curve of **OOOO** (run 1).

(Run2)

Chromatogram report

Title		Data acquisition date and time	2020/08/21 13:51:04
Sample name		Calculation date and time	2020/09/04 14:42:42
Database name	2020-08-21.chd	Acquisition time [min]	0.000 - 30.000
Data name	RSLT0007	Sampling interval [ms]	100
Method name	200821	Cup number	5
Channel	RI	Calculation type	Molecular Mass



Molecular mass calculation result (RI)

Total					
	[min]	[mV]	[mol]		
Peak start	11.540	0.173	5,274,116	Mn	27,768
Peak top	14.083	46.138	132,589	Mz	765,656
Peak end	18.408	0.091	445	Mz+1	1,590,731
				Mv	222,159
Height [mV]			45.995	Mp	132,268
Area [mV*s]			6823.552	Mz/Mw	3.446
Area% [%]			100.000	Mw/Mn	8.000
[eta]			222158.75670	Mz+1/Mw	7.160

Figure 2-3. GPC chromatogram of OOOO (run 2).

Table 1-2. GPC slice table.

slice table

Molecular distribution list (RI)

Differential distribution factor	1
Formula of distribution	TOSOH
Sampling interval	100

Peak no. 1 Time(Range) [min]] 11.54 - 14.08 - 18.41

Time [min]	Molecular weight	Differential distribution(Area)	Differential distribution(Height)	Integral distribution
11.54	5,274,116	0	0	100
11.55	5,212,777	0.08	120.01	100
11.57	5,044,682	0.12	180.32	100
11.6	4,881,844	0.19	285.35	100
11.62	4,724,107	0.21	313.38	99.99
11.64	4,571,318	0.29	430.86	99.99
11.67	4,423,328	0.44	646.03	99.98
11.69	4,279,994	0.51	754.46	99.98
11.71	4,141,174	0.55	813.83	99.97
11.74	4,006,733	0.65	964.37	99.96
11.76	3,876,538	0.75	1108.28	99.95
11.78	3,750,461	0.84	1241.35	99.94
11.81	3,628,377	1	1480.04	99.93
11.83	3,510,164	1.16	1722.56	99.91
11.85	3,395,704	1.3	1926.64	99.89
11.88	3,284,883	1.52	2254.96	99.87
11.9	3,177,590	1.74	2580.65	99.85
11.92	3,073,716	1.71	2543.27	99.82
11.95	2,973,156	1.67	2470.18	99.8
11.97	2,875,810	1.75	2592.95	99.77
11.99	2,781,577	1.81	2690.33	99.75
12.02	2,690,362	1.86	2766.58	99.72
12.04	2,602,071	2.02	3002.31	99.69
12.06	2,516,614	2.25	3344.72	99.66
12.09	2,433,904	2.44	3625.87	99.63
12.11	2,353,854	2.65	3933.88	99.59
12.13	2,276,382	2.9	4298.02	99.55
12.16	2,201,409	3.05	4527.82	99.51
12.18	2,128,855	3.22	4778.26	99.46
12.2	2,058,646	3.51	5212.26	99.41
12.23	1,990,707	3.83	5685.41	99.36
12.25	1,924,969	4.13	6126.72	99.3
12.27	1,861,361	4.49	6665.54	99.24
12.3	1,799,816	4.87	7222.51	99.17
12.32	1,740,271	5.21	7735.15	99.1
12.34	1,682,661	5.65	8388.79	99.02
12.37	1,626,927	6.23	9243.53	98.93
12.39	1,573,007	6.79	10072.44	98.83
12.41	1,520,845	7.38	10948.32	98.73
12.44	1,470,386	8.03	11918.89	98.62
12.46	1,421,575	8.67	12865.71	98.49
12.48	1,374,359	9.34	13861.47	98.36
12.51	1,328,689	10.1	14976.62	98.22
12.53	1,284,514	10.91	16182.01	98.06
12.55	1,241,787	11.71	17365.69	97.9
12.58	1,200,462	12.54	18604.33	97.72
12.6	1,160,493	13.48	19991.03	97.53
12.62	1,121,838	14.39	21345.68	97.32

12.65	1,084,455	15.34	22759.34	97.1
12.67	1,048,301	16.4	24327.05	96.87
12.69	1,013,339	17.43	25852.42	96.62
12.72	979,529	18.39	27281.86	96.35
12.74	946,834	19.38	28747.66	96.08
12.76	915,219	20.39	30253.95	95.78
12.79	884,648	21.35	31668.72	95.47
12.81	855,088	22.34	33146.78	95.15
12.83	826,506	23.38	34681.92	94.81
12.86	798,870	24.31	36063.97	94.46
12.88	772,150	25.19	37367.29	94.09
12.9	746,315	26.1	38713.48	93.71
12.93	721,338	27	40049.04	93.32
12.95	697,190	27.88	41355.5	92.91
12.97	673,844	28.77	42688.48	92.49
13	651,273	29.68	44033.62	92.06
13.02	629,454	30.49	45234.65	91.62
13.04	608,360	31.32	46462.38	91.16
13.07	587,969	32.26	47852.49	90.69
13.09	568,257	33.16	49195.31	90.2
13.11	549,202	34.11	50597.75	89.7
13.14	530,783	35.1	52074.22	89.19
13.16	512,978	36.06	53489.16	88.66
13.18	495,768	36.98	54859.08	88.12
13.21	479,132	38	56379.13	87.56
13.23	463,053	39.1	58004.12	86.99
13.25	447,511	40.18	59602.68	86.4
13.28	432,489	41.26	61203.63	85.8
13.3	417,970	42.37	62854.21	85.18
13.32	403,937	43.4	64388.26	84.54
13.35	390,373	44.44	65928.98	83.89
13.37	377,265	45.58	67613.89	83.22
13.39	364,596	46.69	69266.57	82.54
13.42	352,351	47.73	70813.24	81.84
13.44	340,518	48.78	72366.79	81.12
13.46	329,081	49.79	73867.79	80.39
13.49	318,029	50.72	75244.49	79.64
13.51	307,348	51.67	76656.97	78.88
13.53	297,025	52.67	78138.09	78.11
13.56	287,050	53.54	79427.35	77.32
13.58	277,410	54.35	80629.43	76.52
13.6	268,094	55.17	81851.05	75.71
13.63	259,091	55.93	82977.35	74.88
13.65	250,392	56.65	84039.13	74.05
13.67	241,985	57.4	85153.39	73.2
13.7	233,861	58.14	86248.35	72.34
13.72	226,011	58.75	87163.94	71.48
13.74	218,425	59.31	87984.29	70.6
13.77	211,095	59.89	88851.07	69.72
13.79	204,011	60.4	89610.32	68.82
13.81	197,167	60.9	90344.18	67.92
13.84	190,553	61.52	91260.13	67.02
13.86	184,162	62.1	92119.96	66.1
13.88	177,987	62.45	92646.25	65.18
13.91	172,020	62.63	92912.81	64.25
13.93	166,254	62.83	93203.21	63.32
13.95	160,682	62.99	93451.66	62.39
13.98	155,299	63.21	93775.4	61.46
14	150,097	63.47	94155.97	60.52
14.02	145,071	63.61	94360.88	59.58

14.05	140,214	63.68	94470.27	58.64
14.07	135,522	63.79	94628.22	57.7
14.09	130,988	63.84	94707.06	56.75
14.12	126,606	63.81	94661.39	55.81
14.14	122,373	63.76	94592.1	54.87
14.16	118,282	63.64	94412.54	53.93
14.19	114,330	63.38	94019.49	52.99
14.21	110,511	63.08	93583.95	52.06
14.23	106,821	62.83	93204.94	51.13
14.26	103,255	62.48	92694.6	50.21
14.28	99,810	62.17	92232.47	49.29
14.3	96,481	61.9	91826.88	48.37
14.33	93,265	61.35	91012.69	47.47
14.35	90,157	60.66	89983.77	46.57
14.37	87,154	60.04	89070.91	45.68
14.4	84,252	59.51	88280.42	44.8
14.42	81,448	58.94	87436.41	43.93
14.44	78,739	58.38	86613.35	43.07
14.47	76,121	57.88	85863.1	42.22
14.49	73,592	57.32	85040.51	41.37
14.51	71,147	56.8	84259.61	40.54
14.54	68,785	56.37	83626.32	39.71
14.56	66,503	55.94	82991.29	38.88
14.58	64,298	55.46	82269.23	38.07
14.61	62,167	54.99	81580.63	37.26
14.63	60,108	54.56	80938.01	36.46
14.65	58,118	54.07	80216.47	35.67
14.68	56,195	53.63	79557.54	34.88
14.7	54,337	53.26	79011.35	34.1
14.72	52,541	52.82	78352.76	33.33
14.75	50,806	52.31	77604.51	32.56
14.77	49,130	51.83	76895.91	31.8
14.79	47,509	51.34	76162.21	31.05
14.82	45,943	50.82	75392.88	30.31
14.84	44,430	50.34	74673.64	29.57
14.86	42,968	49.83	73922.87	28.84
14.89	41,555	49.2	72987.43	28.12
14.91	40,189	48.54	72009.56	27.42
14.93	38,869	47.93	71106.69	26.72
14.96	37,593	47.28	70140.29	26.03
14.98	36,360	46.6	69135.41	25.35
15	35,169	45.95	68165.59	24.68
15.03	34,017	45.21	67070.79	24.02
15.05	32,905	44.4	65869.65	23.37
15.07	31,829	43.61	64694.78	22.74
15.1	30,789	42.86	63579.96	22.11
15.12	29,784	42.07	62404.88	21.5
15.14	28,813	41.28	61241.23	20.9
15.17	27,874	40.5	60086.89	20.32
15.19	26,967	39.62	58776.58	19.74
15.21	26,090	38.7	57415.86	19.18
15.24	25,242	37.85	56146.76	18.63
15.26	24,423	37	54897.25	18.09
15.28	23,630	36.13	53597.17	17.57
15.31	22,865	35.28	52333.59	17.06
15.33	22,124	34.43	51072.48	16.56
15.35	21,409	33.5	49705.04	16.08
15.38	20,717	32.62	48397.41	15.61
15.4	20,048	31.87	47280.09	15.15
15.42	19,402	31.08	46114.01	14.7

15.45	18,777	30.3	44946.11	14.26
15.47	18,172	29.56	43853.5	13.84
15.49	17,588	28.8	42718.34	13.43
15.52	17,023	28.03	41587.73	13.02
15.54	16,477	27.38	40620.79	12.63
15.56	15,949	26.79	39740.5	12.25
15.59	15,439	26.13	38759.6	11.88
15.61	14,945	25.49	37820.13	11.51
15.63	14,468	24.94	36993.48	11.16
15.66	14,006	24.34	36104.84	10.81
15.68	13,560	23.77	35262.21	10.47
15.7	13,128	23.32	34595.8	10.14
15.73	12,711	22.85	33900.02	9.82
15.75	12,307	22.32	33105.19	9.5
15.77	11,917	21.82	32369.75	9.19
15.8	11,539	21.35	31672.12	8.89
15.82	11,174	20.84	30922.96	8.6
15.84	10,821	20.4	30270.59	8.31
15.87	10,479	20.02	29702.22	8.03
15.89	10,149	19.52	28961.94	7.75
15.91	9,830	19	28193.79	7.49
15.94	9,521	18.57	27544.71	7.23
15.96	9,222	18.09	26843.69	6.97
15.98	8,933	17.62	26143.3	6.72
16.01	8,653	17.22	25547.16	6.48
16.03	8,382	16.8	24920.99	6.25
16.05	8,120	16.28	24154.12	6.02
16.08	7,867	15.78	23411.95	5.8
16.1	7,622	15.37	22798.78	5.59
16.12	7,385	14.92	22128.62	5.38
16.15	7,156	14.47	21470.13	5.18
16.17	6,934	14.07	20872.33	4.98
16.19	6,719	13.62	20212.81	4.8
16.22	6,512	13.12	19468.93	4.61
16.24	6,311	12.71	18852.78	4.44
16.26	6,116	12.36	18329.08	4.27
16.29	5,928	11.96	17736.68	4.1
16.31	5,746	11.56	17144.91	3.94
16.33	5,569	11.22	16646.02	3.79
16.36	5,399	10.81	16030.79	3.64
16.38	5,234	10.39	15407	3.5
16.4	5,074	10.08	14957.82	3.36
16.43	4,919	9.79	14530.01	3.23
16.45	4,769	9.45	14023.81	3.1
16.47	4,624	9.15	13579.75	2.97
16.5	4,484	8.85	13125.26	2.85
16.52	4,348	8.48	12585	2.74
16.54	4,217	8.18	12139	2.63
16.57	4,089	7.99	11847.26	2.52
16.59	3,966	7.73	11462.94	2.42
16.61	3,847	7.45	11056.73	2.32
16.64	3,731	7.19	10669.93	2.22
16.66	3,620	6.91	10244.99	2.13
16.68	3,511	6.62	9814.02	2.04
16.71	3,406	6.41	9504.23	1.95
16.73	3,305	6.26	9283.81	1.87
16.75	3,206	6.01	8918.71	1.79
16.78	3,111	5.76	8552.35	1.71
16.8	3,019	5.58	8270.96	1.64
16.82	2,930	5.34	7920.86	1.57

16.85	2,843	5.14	7621	1.5
16.87	2,759	5.04	7470.15	1.43
16.89	2,678	4.88	7245.96	1.37
16.92	2,599	4.66	6915.03	1.31
16.94	2,523	4.47	6630.05	1.25
16.96	2,450	4.33	6419.64	1.19
16.99	2,378	4.14	6144.51	1.14
17.01	2,309	4.01	5944.28	1.08
17.03	2,242	3.95	5864.61	1.03
17.06	2,177	3.77	5586.84	0.98
17.08	2,114	3.56	5284.08	0.94
17.1	2,053	3.45	5111.76	0.89
17.13	1,993	3.33	4941.17	0.85
17.15	1,936	3.21	4755.48	0.81
17.17	1,880	3.17	4706.39	0.77
17.2	1,827	3.25	4828.6	0.73
17.22	1,774	3.11	4610.16	0.69
17.24	1,724	2.77	4114.27	0.65
17.27	1,675	2.58	3825.27	0.62
17.29	1,627	2.38	3535	0.58
17.31	1,581	2.23	3314.28	0.56
17.34	1,536	2.18	3227.22	0.53
17.36	1,493	2.07	3073.55	0.5
17.38	1,451	1.92	2855.23	0.48
17.41	1,410	1.88	2788.79	0.45
17.43	1,371	1.89	2811.05	0.43
17.45	1,333	1.84	2724.44	0.41
17.48	1,295	1.78	2634.96	0.39
17.5	1,259	1.75	2597.36	0.37
17.52	1,224	1.63	2412.34	0.34
17.55	1,191	1.52	2256.45	0.33
17.57	1,158	1.52	2255.36	0.31
17.59	1,126	1.5	2219.08	0.29
17.62	1,095	1.4	2081.77	0.27
17.64	1,065	1.35	1996.88	0.25
17.66	1,036	1.28	1898.89	0.24
17.69	1,008	1.16	1721.63	0.22
17.71	980	1.11	1650.48	0.21
17.73	954	1.17	1732.29	0.2
17.76	928	1.15	1699.27	0.18
17.78	903	1.22	1815.12	0.17
17.8	879	1.31	1941.93	0.15
17.83	855	1.11	1650.95	0.14
17.85	832	0.84	1241.78	0.13
17.87	810	0.7	1040.76	0.12
17.9	788	0.67	992.35	0.11
17.92	768	0.59	875.73	0.1
17.94	747	0.53	787.28	0.1
17.97	728	0.56	837.62	0.09
17.99	708	0.55	822.37	0.08
18.01	690	0.56	836.12	0.08
18.04	672	0.66	971.94	0.07
18.06	654	0.66	986.25	0.06
18.08	637	0.58	864.61	0.06
18.11	621	0.54	795.76	0.05
18.13	605	0.54	807.02	0.04
18.15	589	0.5	742.97	0.04
18.18	574	0.49	724.45	0.03
18.2	559	0.54	795.24	0.03
18.22	545	0.43	635.44	0.02

18.25	531	0.3	447.36	0.02
18.27	518	0.3	444.1	0.01
18.29	505	0.29	432.6	0.01
18.32	492	0.27	393.49	0.01
18.34	480	0.26	387.28	0
18.36	468	0.24	350.53	0
18.39	456	0.09	129.96	0
18.41	445	0	0	0

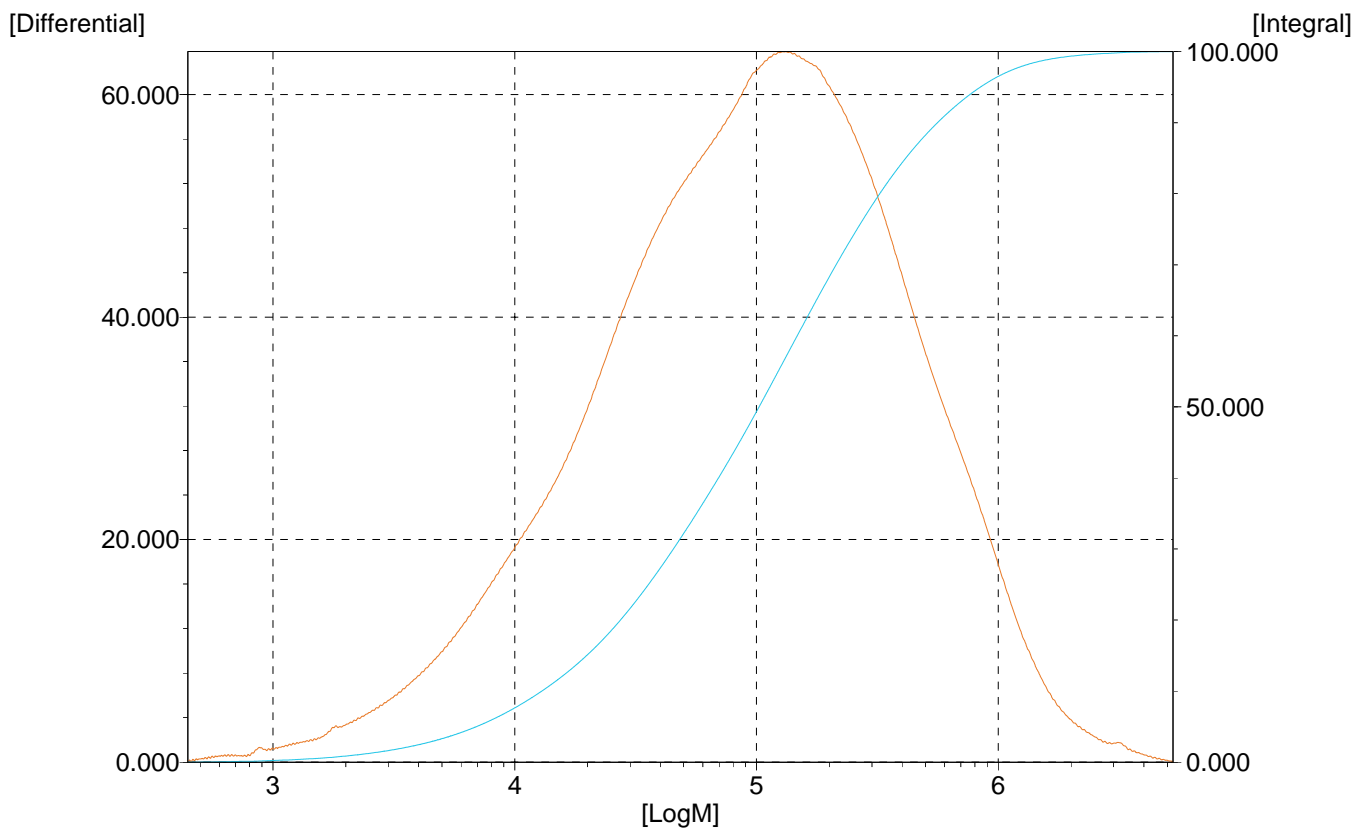


Figure 2-4. Cumulative distribution curve and molecular weight distribution curve of **OOOO** (run 2).

The end.