Analysis Report

HFIP-GPC Analysis of OOOO

Client: OOOOOO

Date: MM.DD.YYYY

tested by

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

(ISO 17025 Certified Laboratory)

Koptri

Korea Polymer Testing & Research Institute

1. Sample Information

(1) Sample Name : Refer to Table 1

(2) Client : OOOOOO

(3) Appearance : OOO

(4) Chemical Structure : OOOO

Table 1. Sample Information

No.	Sample name	KOPTRI ID	Picture of the sample
1		**Koptri-00-00-00000-1**	
2		**Koptri-00-00-00000-2**	
3		**Koptri-00-00-00000-3**	

2. Testing Institute, Analyzer, and Author

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Analyzer: Signature:

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Scientific director: Signature:

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3. Analysis Condition

3-1. GPC (Gel Permeation Chromatography) Sample Treatment

(1) Sample Pretreatment : None

(2) Solvent Solubility : Completely soluble

(3) Filtration of Sample Solution : 0.45 μm PTFE filter

(4) Existence of Pigment/Colour : N/A

(5) Existence of Nanoparticles : N/A

(6) Other Special Note : N/A

3-2. GPC (Gel Permeation Chromatography) Instrument Conditions

(1) Instrument : Tosoh 社 EcoSEC HLC-8320 GPC

(2) Detector : RI-detector

(3) Solvent : HFIP + 0.01 N NaTFA

(4) Column (maker, model no.): TSKgel guardcolumn SuperAW-H + 2 x TSKgel SuperAWM-H (6.0 x 150 mm)

(5) Temperature : 40℃

(6) Flow Rate : 0.3 mL/min

(7) Injection Volume and Sample Concentration : 20 μL, 3 mg/mL

(8) Data Processing : EcoSEC software

(9) Reference Standard : PMMA

4. Analysis Result

Table 3. GPC Analysis Result (Total Peak)

KOPTRI ID	Mn	Mw	Mp	Mw/Mn
Koptri-00-00-00000	0000	0000	0000	0.00
Koptri-00-00-00000	0000	0000	0000	0.00
Koptri-00-00-00000	0000	0000	0000	0.00

a) Mobile phase: HFIP + 0.01 N NaTFA
Column: TSKgel guardcolumn SuperAW-H + 2 x TSKgel SuperAWM-H (6.0 x 150 mm)
Detector: RI-detector
b) Mn: Number average molecular weight
c) Mw: Weight average molecular weight
d) Mp: Molecular weight at the highest peak
e) Mw/Mn: Degree of dispersion
f) Reference Standard: PMMA

Note)

1) Calculation of molecular weight by GPC is relative molecular weight using standard samples. Analytic results could be differed by analysis conditions such as eluent, column condition or standards. If there is any GPC analysis precedent before, one must give specific analysis condition of the test. Unless the information is given, the analysis would be performed under the most general analytic condition.

2) Molecular weight analysis by GPC is exclusively applicable to polymer substances having Gaussian distribution. If a sample contains a number of complex components, solvent or impurities mixed, it becomes very difficult to set start and end points on the baseline of the GPC chromatogram. In such case, please remind that only the GPC chromatogram and the result sheet are provided but not the table with molecular weight values.

3) Only significant figures of the molecular weight values in the table are written. One who needs actual calculations of a ten-digit number as well as a one-digit number should refer to raw data attached.

Figure 1. GPC chromatograms of PMMA standard samples

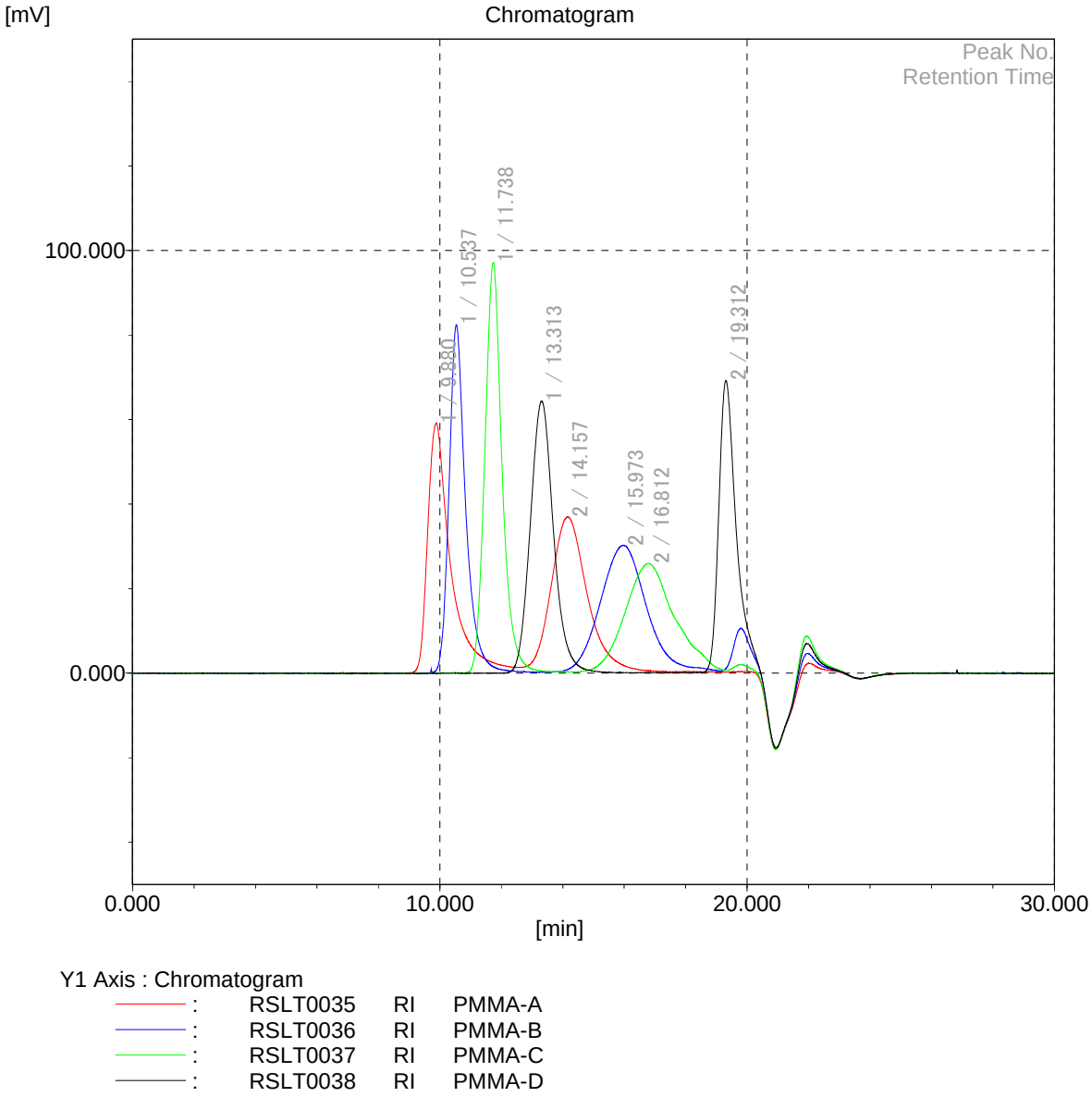


Figure 2. Calibration curve

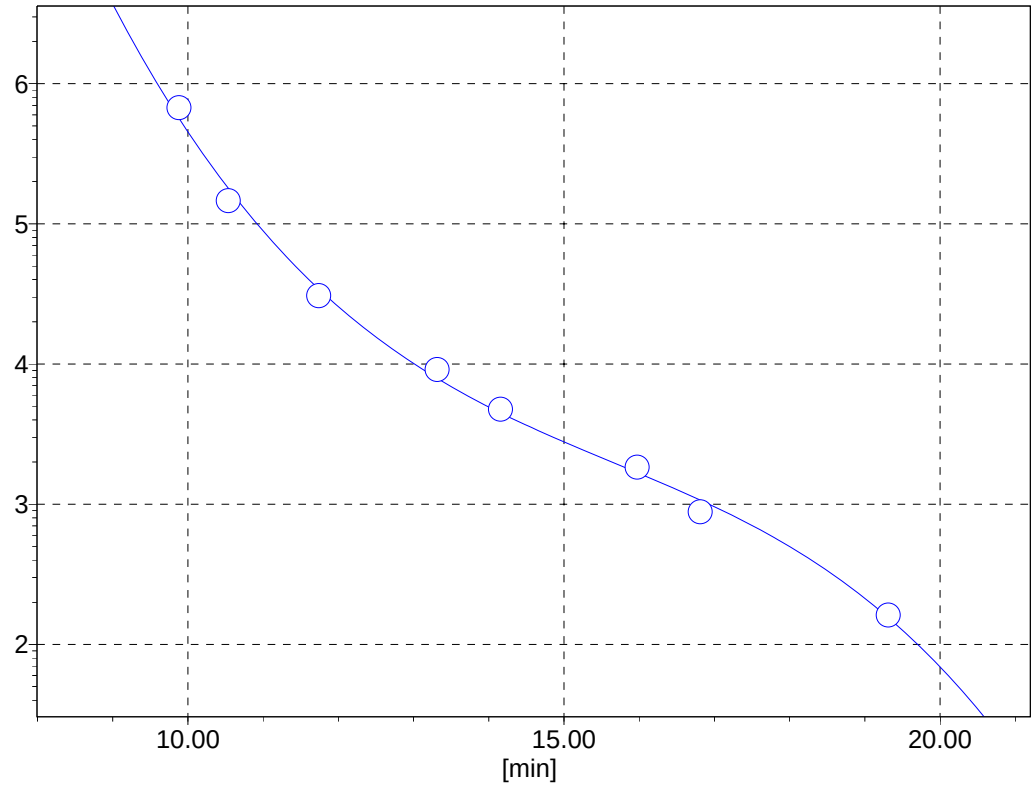
Header

Database name	SystemDataBase.syd
Method name	_HFIP

Calibration condition (RI)

Formula of approximation	Cubic: At3+Bt2+Ct+D
Correction	Non

[LogM]



Calibration data (RI)

Time [min]	Molecular weight	Error [%]	Weight	Mark	Data name	Coefficient	
9.880	675,500	15.94110	1	STD	RSLT0035	A =	-6.011875e-003
10.537	146,500	-22.33232	1	STD	RSLT0036	B =	2.826760e-001
11.738	30,780	-11.94429	1	STD	RSLT0037	C =	-4.653492e+000
13.313	9,150	13.45912	1	STD	RSLT0038	D =	2.993549e+001
14.157	4,760	5.66083	1	STD	RSLT0035		
15.973	1,840	8.52514	1	STD	RSLT0036	Correlation	-0.981
16.812	885	-21.14873	1	STD	RSLT0037		
19.312	162	3.98498	1	STD	RSLT0038		

Figure 3-1. GPC chromatogram of **Koptri-00-00-00000-1**

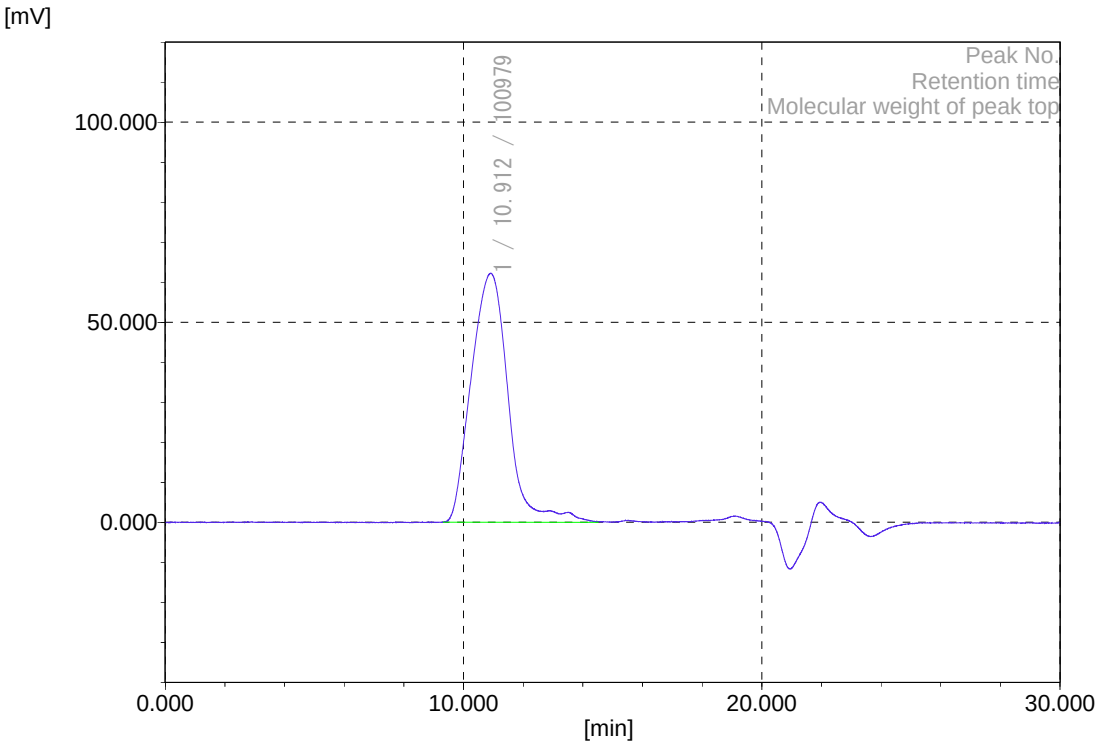


Figure 3-2. Cumulative Distribution and Distribution Curve of Molecular Weight of **Koptri-00-00-00000-1**

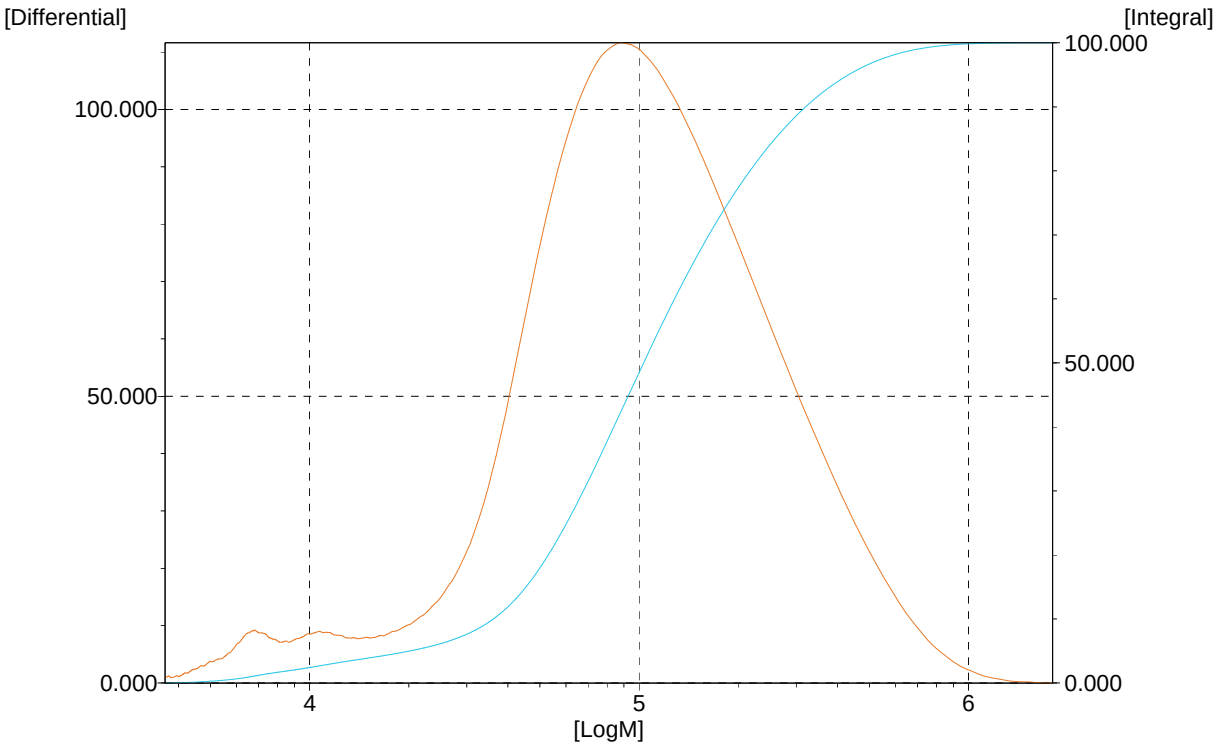


Figure 3-3. GPC chromatogram of **Koptri-00-00-00000-2**

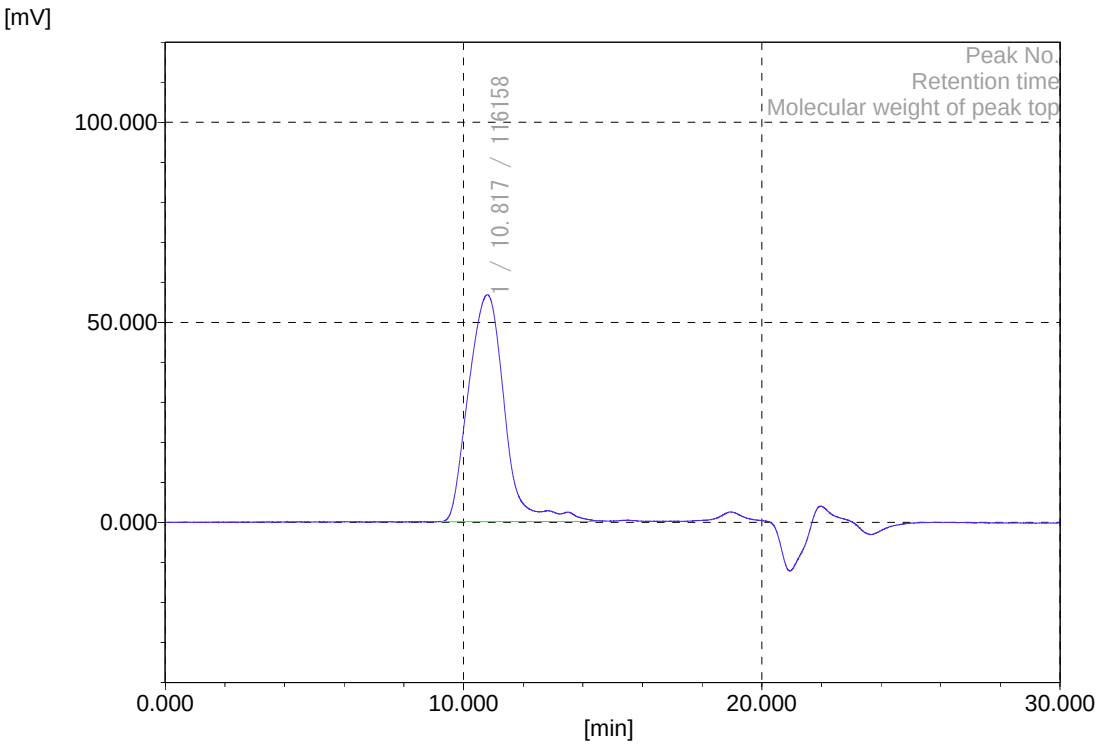


Figure 3-4. Cumulative Distribution and Distribution Curve of Molecular Weight of **Koptri-00-00-00000-2**

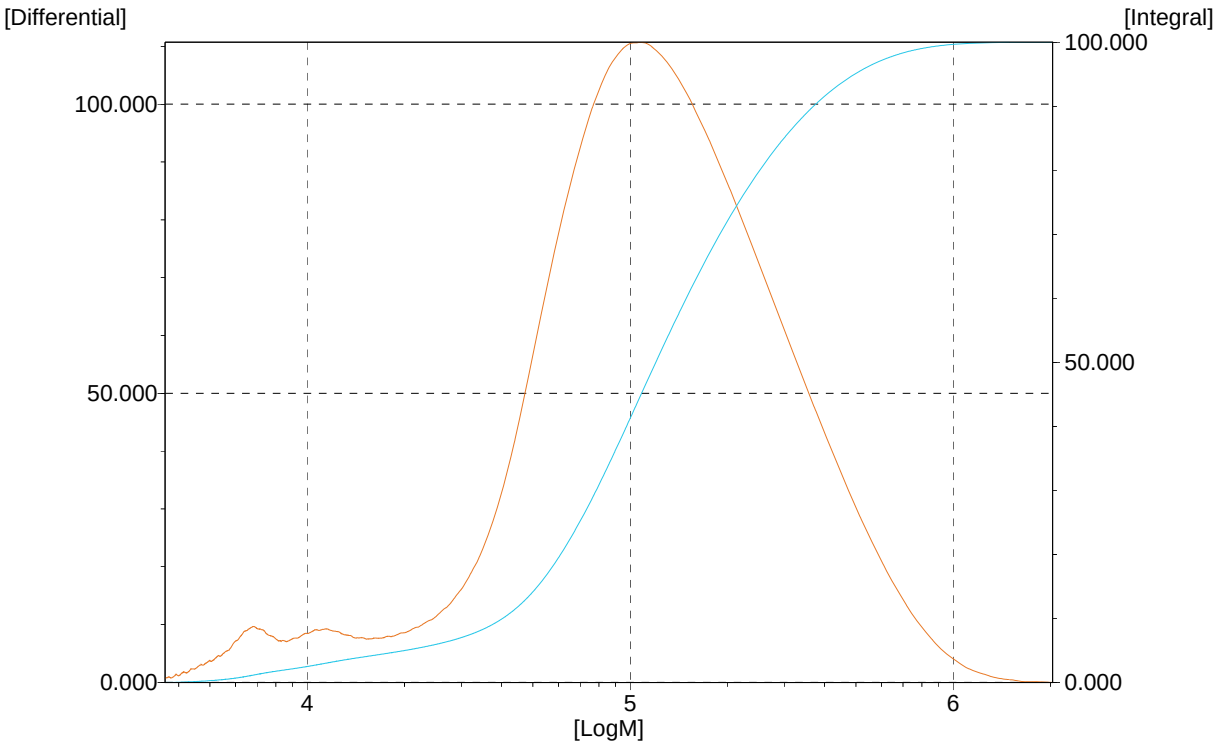


Figure 3-5. GPC chromatogram of **Koptri-00-00-00000-3**

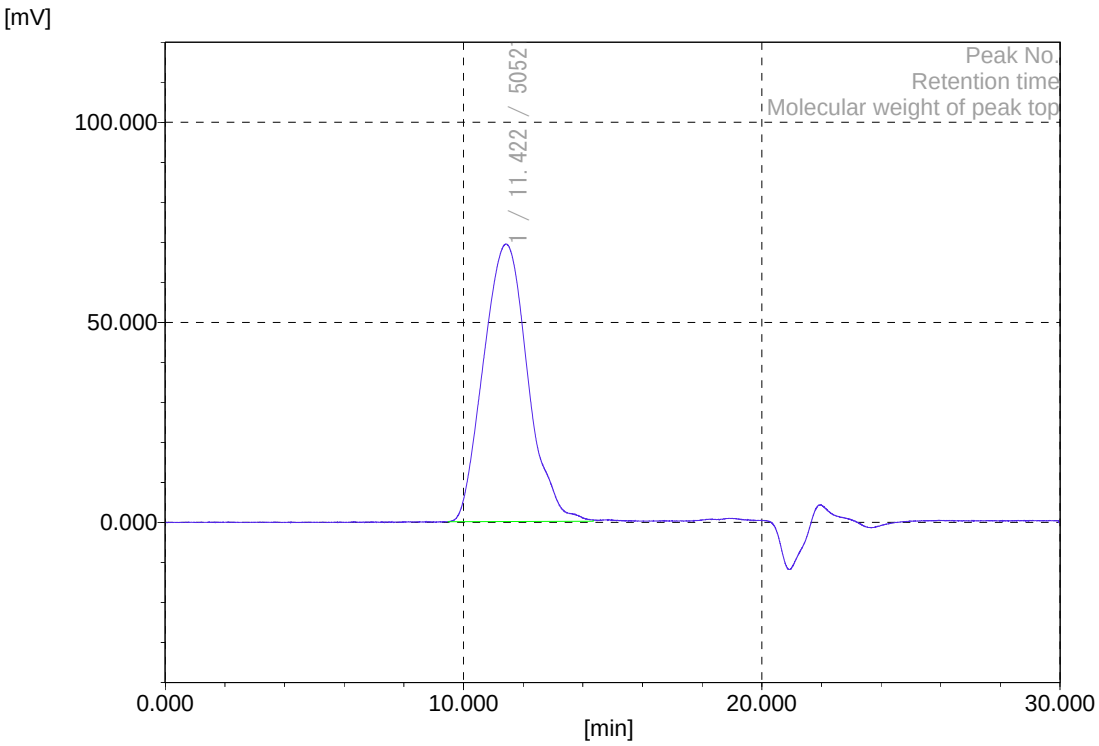
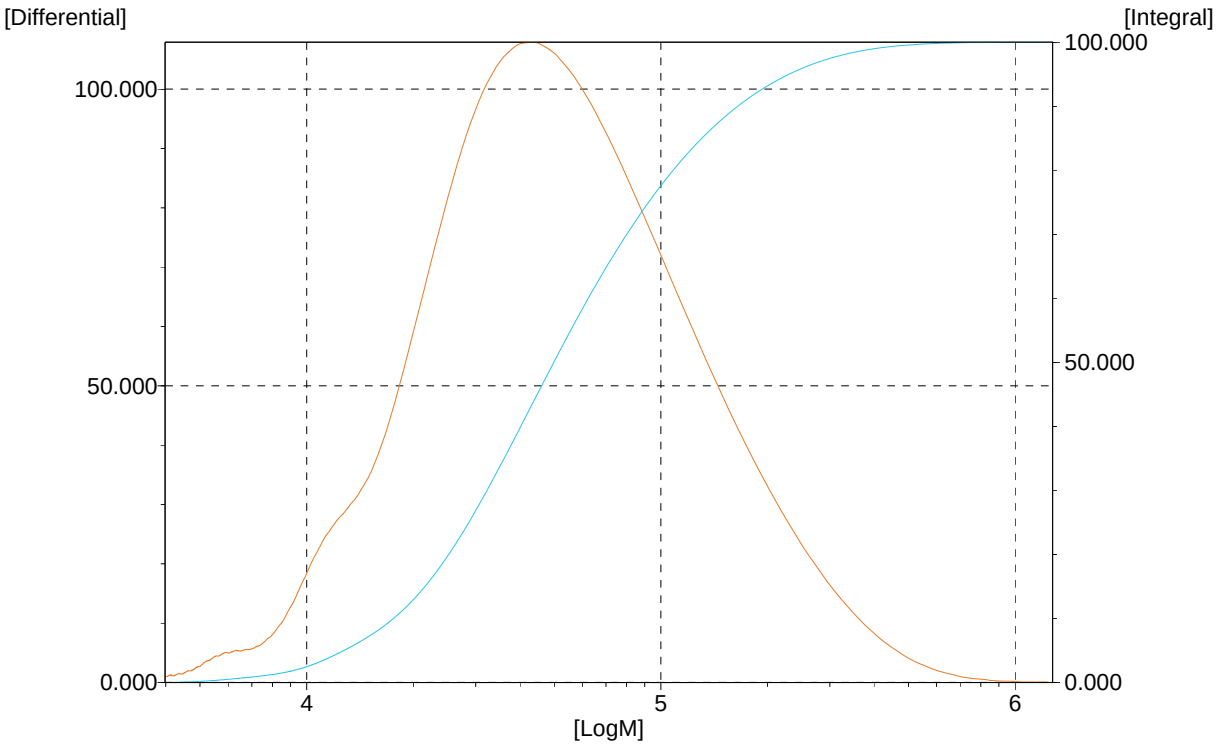


Figure 3-6. Cumulative Distribution and Distribution Curve of Molecular Weight of **Koptri-00-00-00000-3**



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