

Supporting information

***gem*-Dimethyl-substituted bis(imino)dihydroquinolines as thermally stable supports for highly active cobalt catalysts that produce linear PE waxes**

Randi Zhang,^{a,b} Yongfeng Huang,^{a,c} Gregory A. Solan^{*,a,d} Wenjuan Zhang,^{e,*} Xinquan Hu,^{c,*} Xiang Hao^a and Wen-Hua Sun^{*,a,b}

^a Key Laboratory of Engineering Plastics and Beijing National Laboratory for Molecular Sciences, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China. E-mail: whsun@iccas.ac.cn

^b CAS Research/Education Center for Excellence in Molecular Sciences, University of Chinese Academy of Sciences, Beijing 100049, China.

^c College of Chemical Engineering, Zhejiang University of Technology, Hangzhou 310014, China.

^d Department of Chemistry, University of Leicester, University Road, Leicester LE1 7RH, UK. E-mail: gas8@leicester.ac.uk

^e Beijing Key Laboratory of Clothing Materials R&D and Assessment, Beijing Engineering Research Center of Textile Nanofiber, School of Materials Science and Engineering, Beijing Institute of Fashion Technology, Beijing 100029, China.

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Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1535.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1535.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 11137
 Mn: 4972
 Mw: 12869
 Mz: 32892
 Mz+1: 128821
 PD: 2.5883

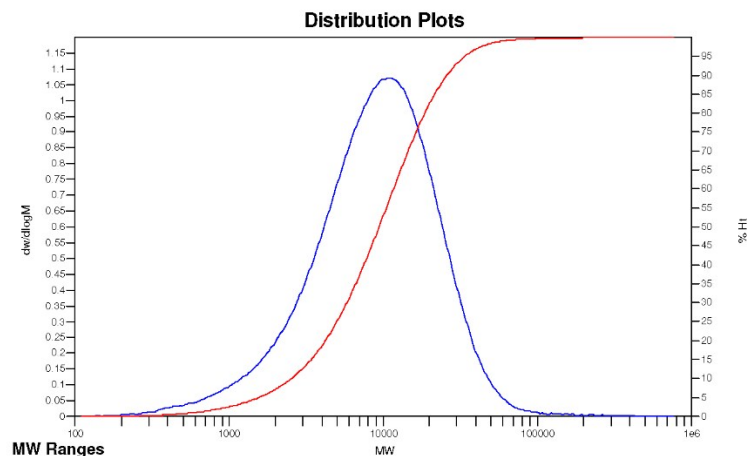


Figure S1 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 1, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1540.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1540.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{^1}$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 9105
 Mn: 4191
 Mv: 9560
 Mw: 10564
 Mz: 21137
 Mz+1: 42654
 PD: 2.5206

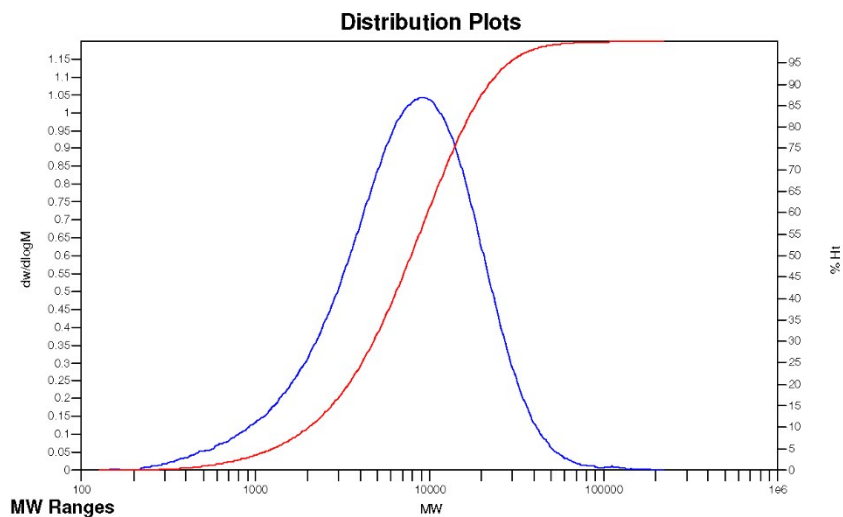


Figure S2 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MAO** (entry 2, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1204.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1204.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 6474
 Mn: 3316
 Mv: 6900
 Mw: 7585
 Mz: 13943
 Mz+1: 22001
 PD: 2.2874

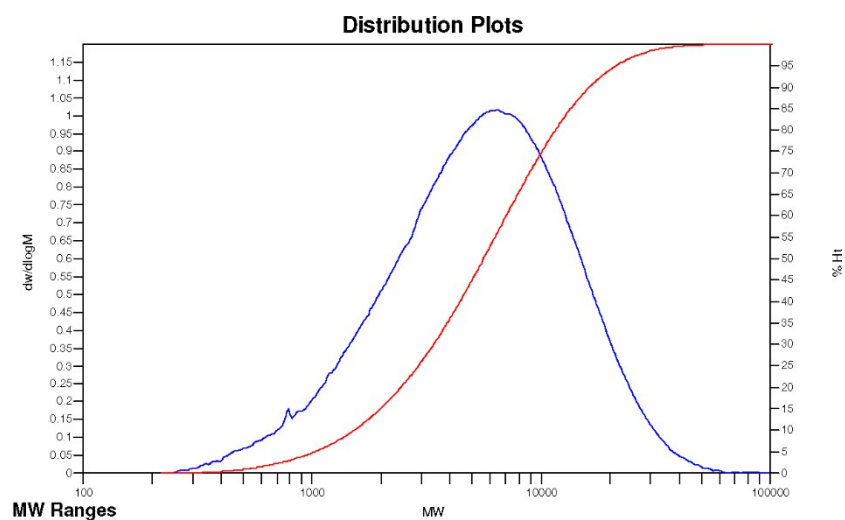


Figure S3 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 3, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1519.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details

Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607

Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1519-Repeat (01).rst

Calibration Used: 2018/5/5 15:01:43

Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 5052
 Mn: 2541
 Mw: 6706
 Mz: 29404
 Mz+1: 155666
 PD: 2.6391

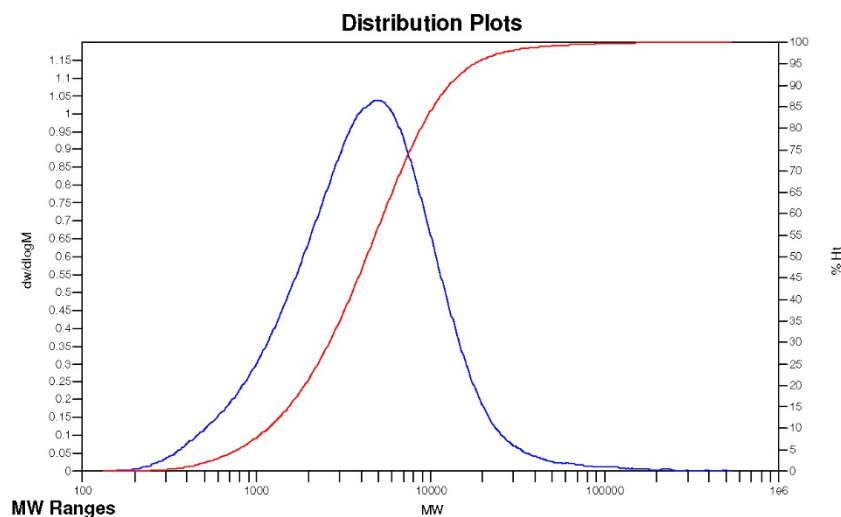


Figure S4 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 4, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1542.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1542.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 3882	Mn: 2170	Mv: 4500	Mw: 5108
Mz: 16208	Mz+1: 61999	PD: 2.3539	

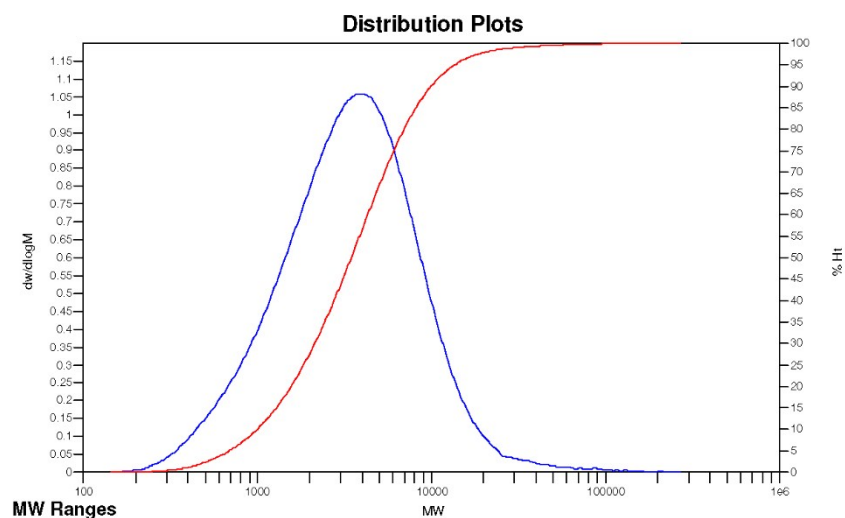


Figure S5 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 5, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1521.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1521-Repeat (01).rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{0.1}$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 3764
 Mn: 1961
 Mv: 4129
 Mw: 4650
 Mz: 12748
 Mz+1: 42291
 PD: 2.3712

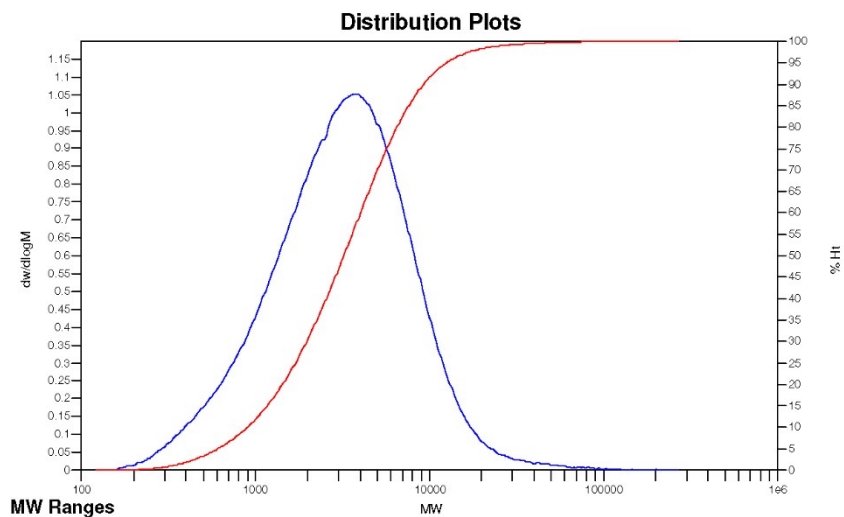


Figure S6 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MAO** (entry 6, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI\2018\imported-1262.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI\2018\imported-1262-Repeat (01).rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 762
 Mn: 344
 Mw: 820
 Mw: 928
 Mz: 2072
 Mz+1: 3696
 PD: 2.6977

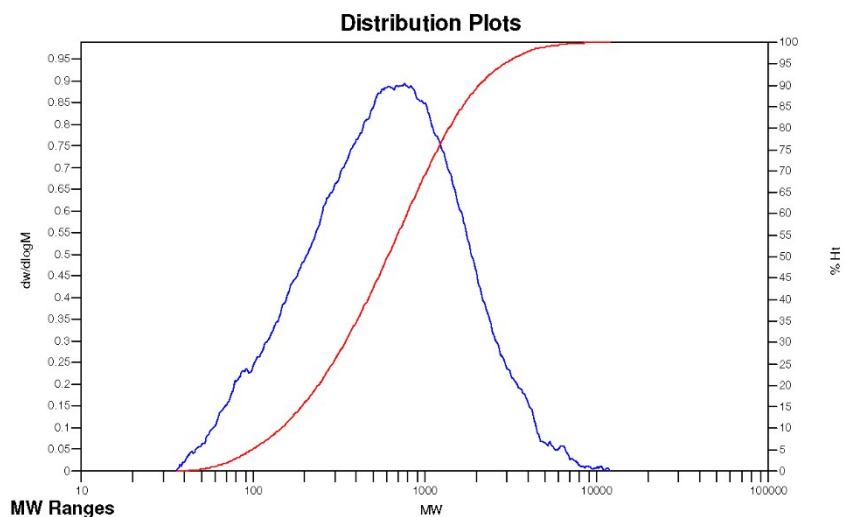


Figure S7 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 7, Table 2).

Cirrus GPC Sample Peak Report

Generated by: Administrator

2018年8月7日 19:10

Workbook: E:\Cirrus Workbooks\RI2018\RI2018.plw

Sample Details

Sample Name: 6

Acquired: 2018/8/7 8:34:25

By Analyst: Administrator

Batch Name: Imported

Filename: E:\Cirrus Workbooks\RI2018\Imported-1522.cgrm

Concentration: 0.10 mg/ml

K of Sample: 40.6000

Injection Volume: 200.0 ul

Alpha of Sample: 0.7270

LIMS ID:

Bottle ID:

Workbook Details

Eluent: TCB stabilised with 0.0125% BHT

Flow Rate: 1.00 ml/min

Column Set:

Column Set Length: 950 mm

Detector: RI

Temperature: 150

Analysis Using Method: 20170607

Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\Imported-1522-Repeat (01).rst

Calibration Used: 2018/5/5 15:01:43

Calibration Type: Narrow Standard

Curve Fit Used: 1

Calibration Curve: $y = 13.015884 - 0.408555x^{0.1}$

High Limit MW RT: 17.95 mins

Low Limit MW RT: 22.90 mins

High Limit MW: 481198

Low Limit MW: 4570

K: 12.1000

FRM Name:

Alpha: 0.7070

Flow Marker RT: 0.00 mins

FRCF: 1.0000

MW Averages

Mp: 4195

Mn: 2510

Mv: 7967

Mw: 11218

Mz: 157349

Mz+1: 472180

PD: 4.4693

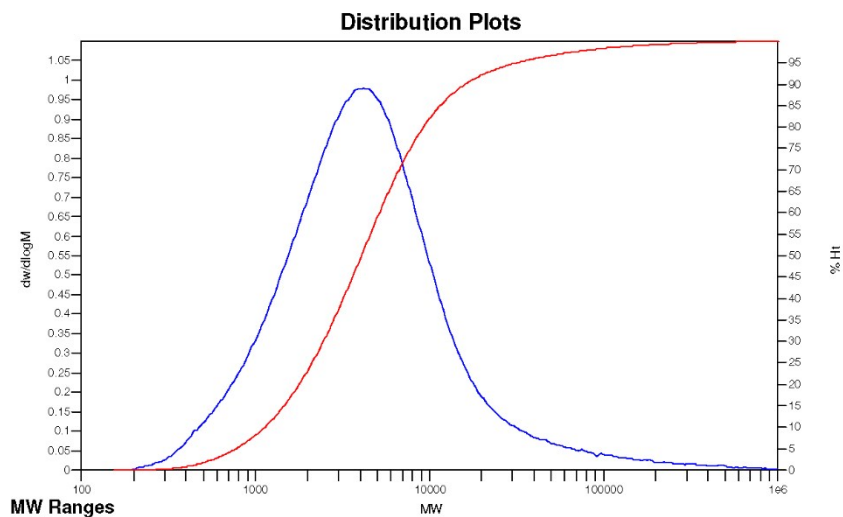


Figure S8 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 8, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-4826.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook
 Results File: E:\Cirrus Workbooks\RI2018\imported-4826-Repeat (01).rst

Calibration Used: 2018/11/9 14:57:49
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.128135 - 0.411265x^1$
 Curve Fit Used: 1

High Limit MW RT: 16.37 mins
 High Limit MW: 2495172
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 25.08 mins
 Low Limit MW: 648
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 4725
 Mn: 2820
 Mw: 8121
 Mz: 27568
 Mz+1: 60879
 PD: 2.8798

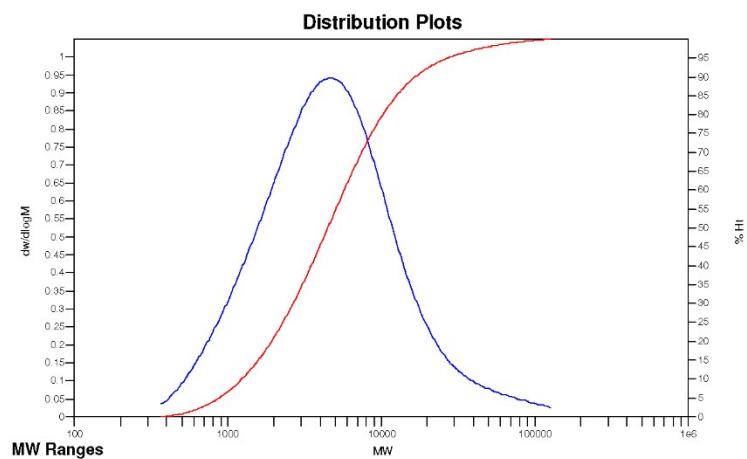


Figure S9 GPC sample text Report for the polyethylene obtained using Co1/MAO (entry 9, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1524.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details

Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607

Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1524.rst

Calibration Used: 2018/5/5 15:01:43

Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 4260
 Mn: 2407
 Mw: 5534
 Mz: 14098
 Mz+1: 39593
 PD: 2.2991

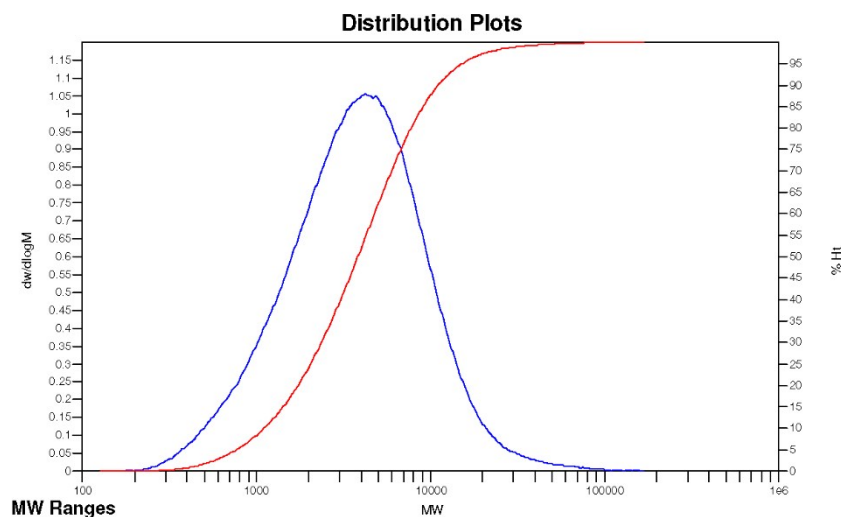


Figure S10 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 10, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1541.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1541-Repeat (01).rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 3943	Mn: 1930	Mv: 4215	Mw: 4707
Mz: 10468	Mz+1: 22876	PD: 2.4389	

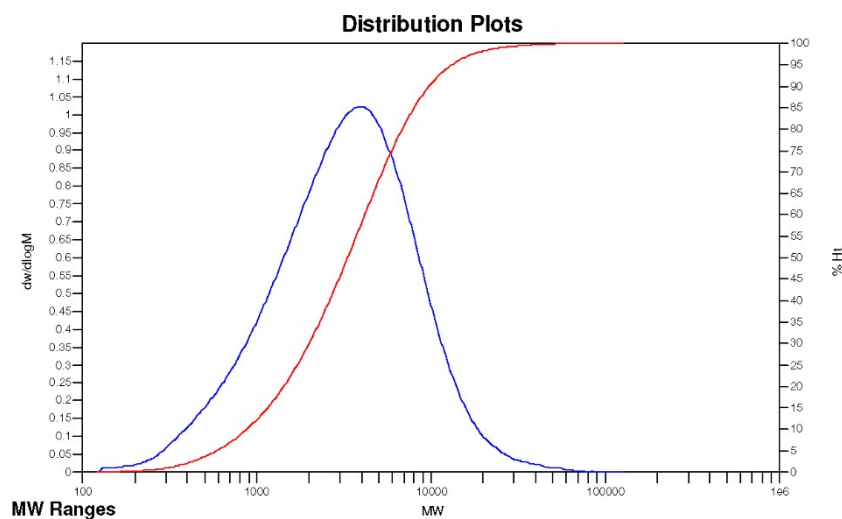


Figure S11 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 11, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-4827.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-4827.rst

Calibration Used: 2018/11/9 14:57:49
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.128135 - 0.411265x^1$
 Curve Fit Used: 1

High Limit MW RT: 16.37 mins
 High Limit MW: 2495172
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 25.08 mins
 Low Limit MW: 648
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 4799
 Mn: 2695
 Mw: 5482
 Mz: 9533
 Mz+1: 14133
 PD: 2.0341

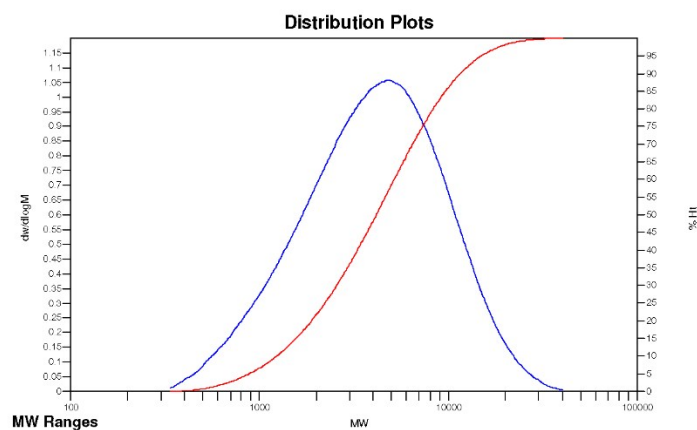


Figure S12 GPC sample text Report for the polyethylene obtained using **Co1**/MAO (entry 12, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI\2018\imported-1543.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:
Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI\2018\imported-1543.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1
 High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 3882	Mn: 1978	Mv: 4090	Mw: 4558
Mz: 11186	Mz+1: 35652	PD: 2.3043	

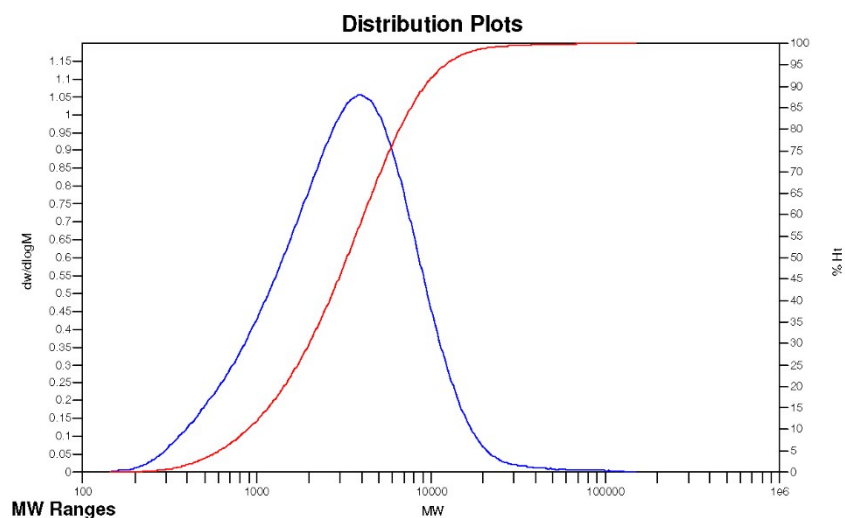


Figure S13 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 13, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1216.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1216.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 4130	Mn: 2274	Mv: 4546	Mw: 4999
Mz: 9418	Mz+1: 15749	PD: 2.1983	

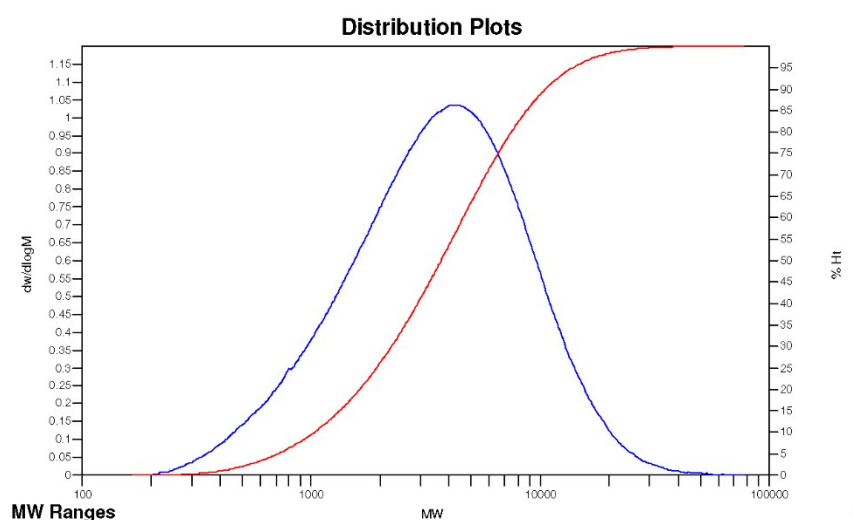


Figure S14 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 14, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1215.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1215.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 4327	Mn: 2288	Mv: 4556	Mw: 4997
Mz: 9068	Mz+1: 14045	PD: 2.1840	

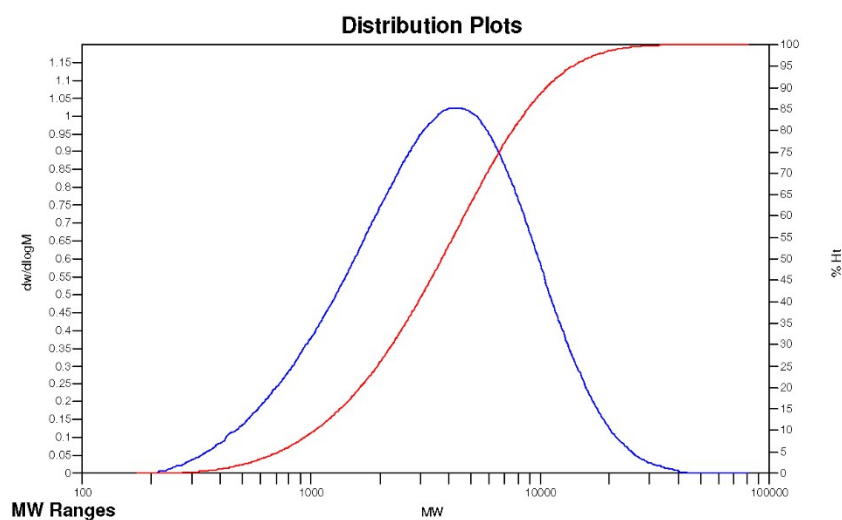


Figure S15 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 15, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1217.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1217.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 4195	Mn: 2258	Mv: 4714	Mw: 5266
Mz: 11976	Mz+1: 27487	PD: 2.3322	

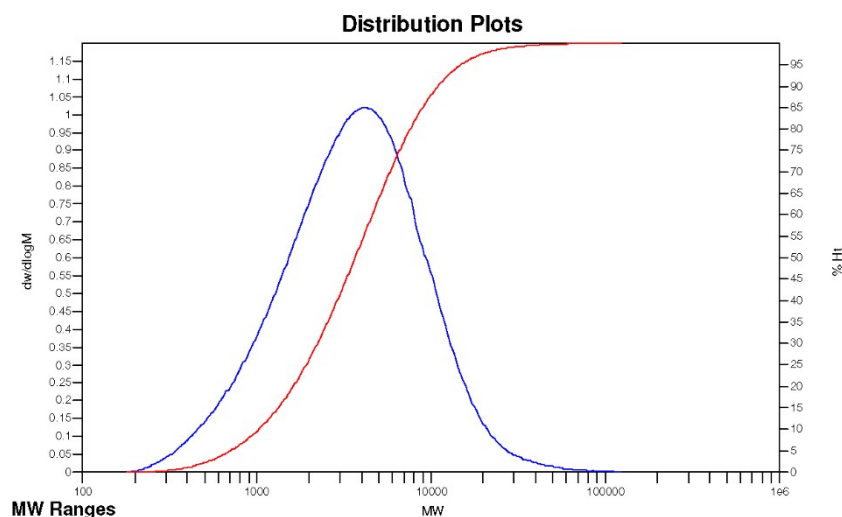


Figure S16 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 16, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1218.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1218.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 4394
 Mn: 2356
 Mv: 5102
 Mw: 5798
 Mz: 16434
 Mz+1: 49464
 PD: 2.4610

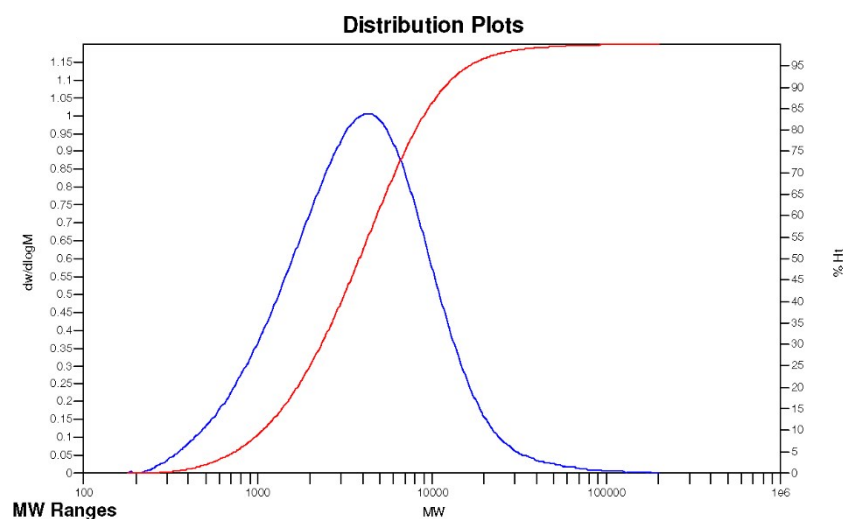


Figure S17 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 17, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1219.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1219.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 11137
 Mn: 5468
 Mw: 12478
 Mz: 33109
 Mz+1: 89405
 PD: 2.5518

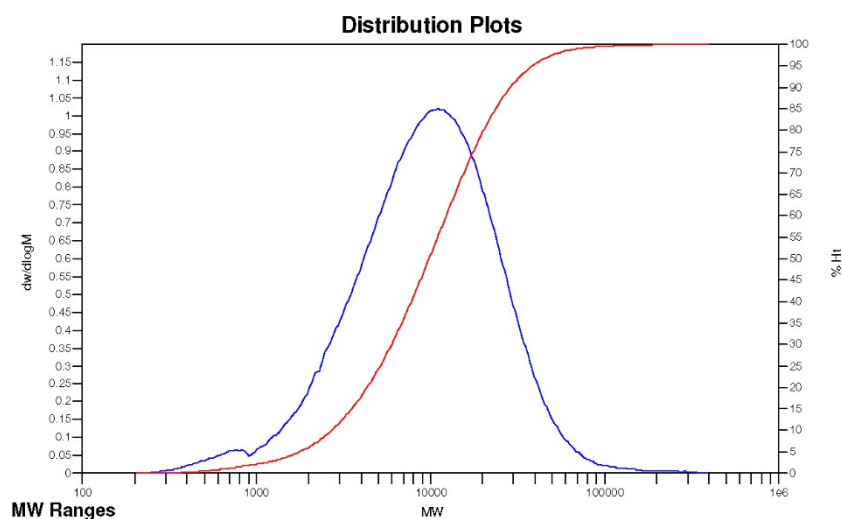


Figure S18 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 18, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1220.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1220.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 9538	Mn: 4611	Mv: 13585	Mw: 15877
Mz: 47330	Mz+1: 115164	PD: 3.4433	

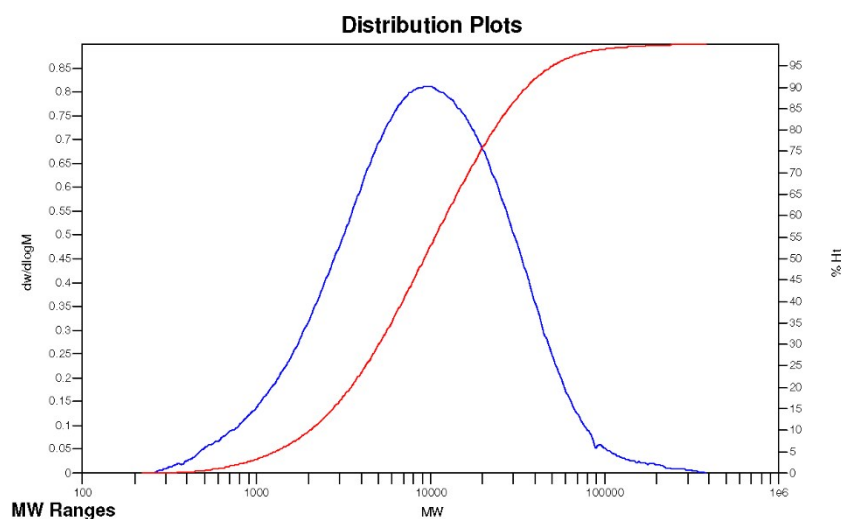


Figure S19 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 19, Table 2).

Batch Name: Imported

Filename: E:\Cirrus Workbooks\RI\2018\Imported-1221.cgrm

Concentration: 0.10 mg/ml

K of Sample: 40.6000

Injection Volume: 200.0 ul

Alpha of Sample: 0.7270

LIMS ID:

Bottle ID:

Workbook Details

Eluent: TCB stabilised with 0.0125% BHT

Flow Rate: 1.00 ml/min

Column Set:

Column Set Length: 950 mm

Detector: RI

Temperature: 150

Analysis Using Method: 20170607

Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI\2018\Imported-1221.rst

Calibration Used: 2018/5/5 15:01:43

Calibration Type: Narrow Standard

Curve Fit Used: 1

Calibration Curve: $y = 13.015884 - 0.408555x^1$

High Limit MW RT: 17.95 mins

Low Limit MW RT: 22.90 mins

High Limit MW: 481198

Low Limit MW: 4570

K: 12.1000

FRM Name:

Alpha: 0.7070

Flow Marker RT: 0.00 mins

FRCF: 1.0000

MW Averages

Mp: 4533

Mn: 2464

Mv: 4855

Mw: 5328

Mz: 9873

Mz+1: 16088

PD: 2.1623

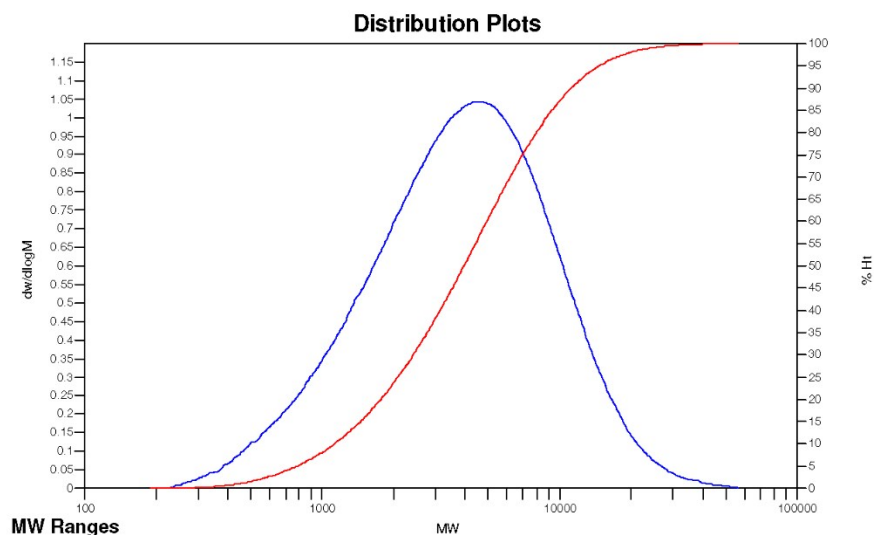


Figure S20 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MAO** (entry 20, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI\2018\imported-1222.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI\2018\imported-1222.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 12804	Mn: 5967	Mv: 13498	Mw: 14904
Mz: 28217	Mz+1: 46125	PD: 2.4977	

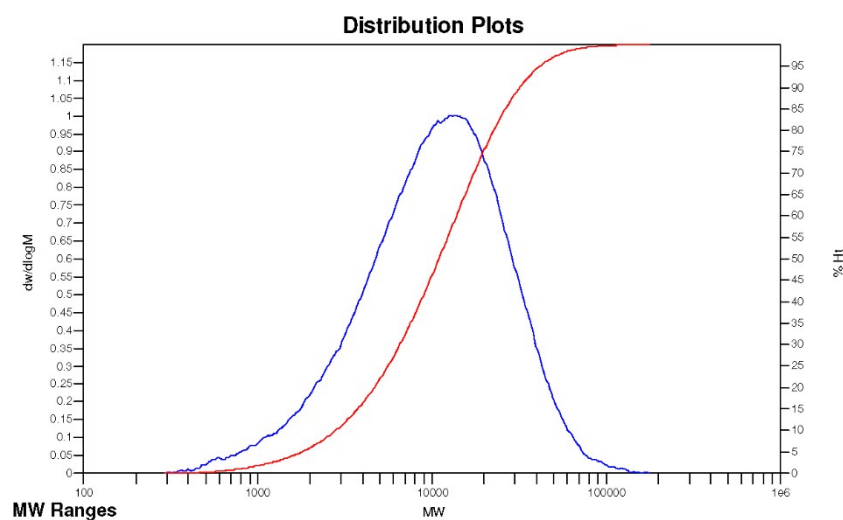


Figure S21 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 21, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1224.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1224-Repeat (01).rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 33468
 Mn: 12045
 Mw: 46119
 Mz: 138536
 Mz+1: 323019
 PD: 3.8289

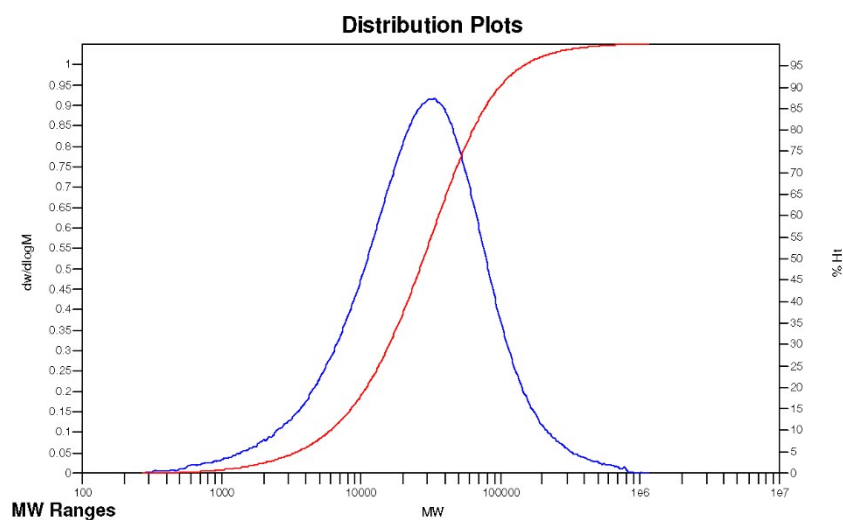


Figure S22 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 22, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1526.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1526.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 4975	Mn: 2497	Mv: 4976	Mw: 5478
Mz: 10986	Mz+1: 23816	PD: 2.1938	

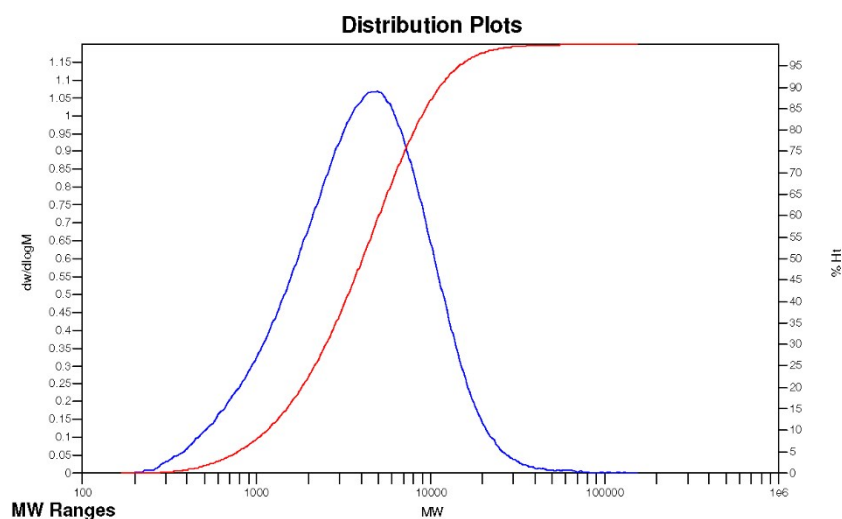


Figure S23 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 23, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1257.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1257.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 3943	Mn: 2696	Mv: 4226	Mw: 4538
Mz: 7492	Mz+1: 11502	PD: 1.6832	

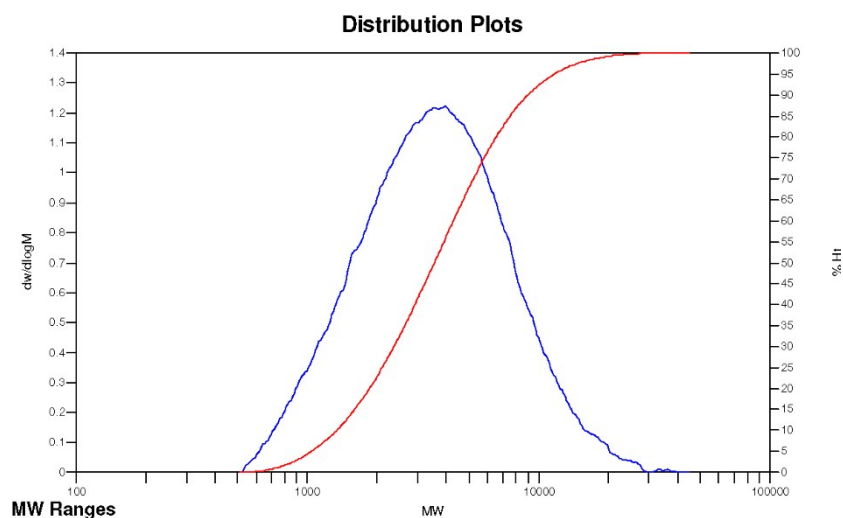


Figure S24 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MAO (entry 24, Table 2).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1228.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:
Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150
Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook
 Results File: E:\Cirrus Workbooks\RI2018\imported-1228.rst
Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1
 High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins
MW Averages
 Mp: 10148
 Mn: 4810
 Mw: 11848
 Mz: 23972
 Mz+1: 46974
 PD: 2.4632

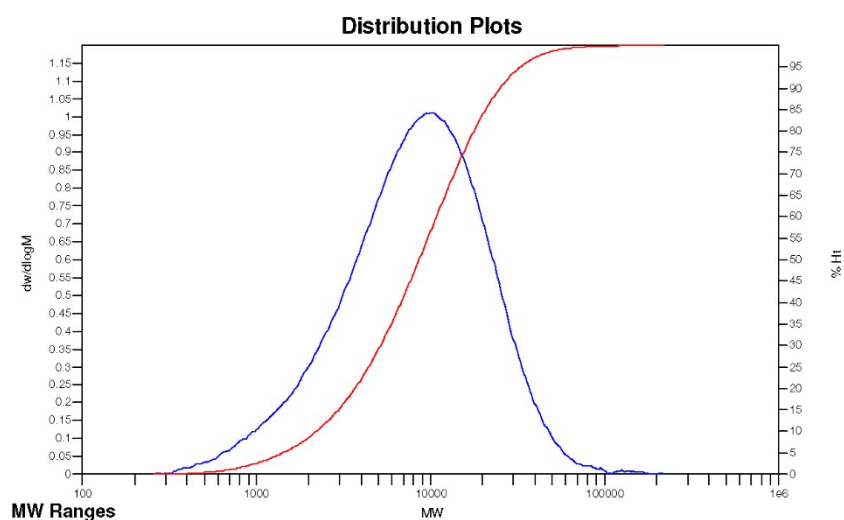


Figure S25 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 1, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1229.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1229.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 7329
 Mn: 3567
 Mw: 9047
 Mz: 17646
 Mz+1: 29337
 PD: 2.5363

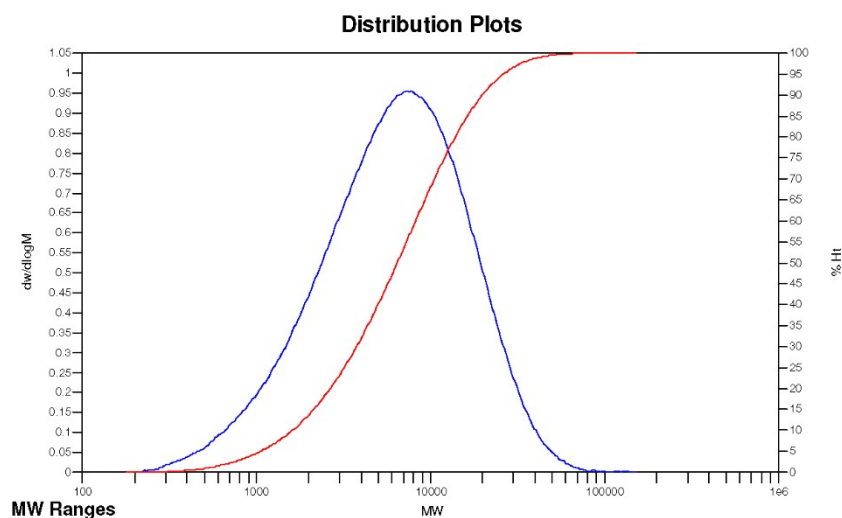


Figure S26 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 2, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1230.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1230.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 6180
 Mn: 3071
 Mw: 7110
 Mz: 13465
 Mz+1: 22622
 PD: 2.3152

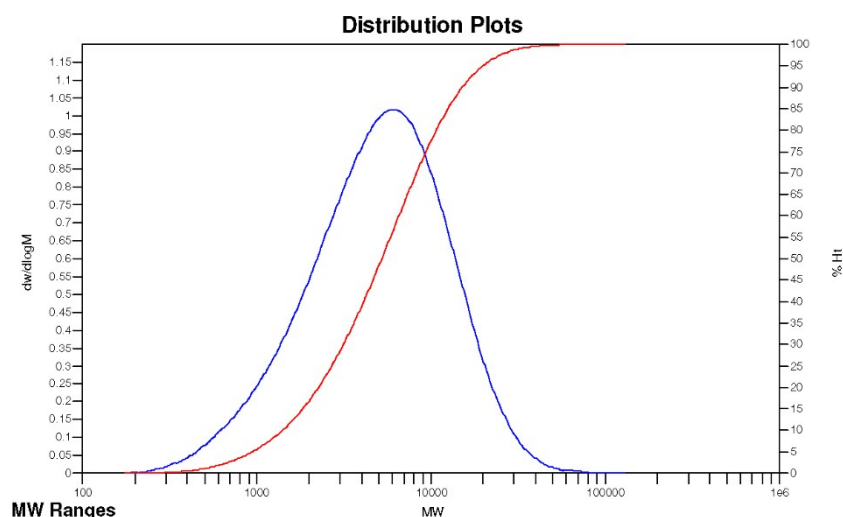


Figure S27 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MMAO** (entry 3, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1231.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:
Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150
Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook
 Results File: E:\Cirrus Workbooks\RI2018\imported-1231.rst
Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1
 High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins
MW Averages
 Mp: 5131
 Mn: 2630
 Mw: 5463
 Mw: 6015
 Mz: 11329
 Mz+1: 19284
 PD: 2.2871

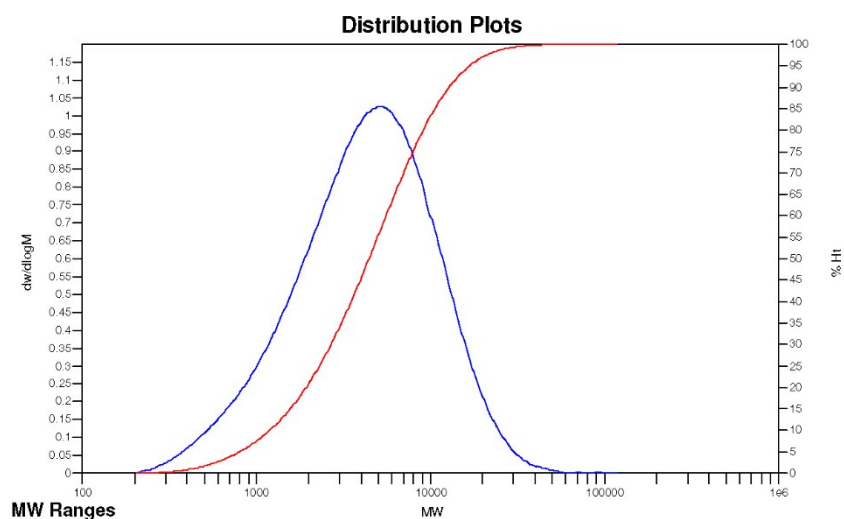


Figure S28 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 4, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI\2018\imported-1232.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI\2018\imported-1232-Repeat (08).rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 4823	Mn: 2483	Mv: 5291	Mw: 5927
Mz: 13281	Mz+1: 26755	PD: 2.3870	

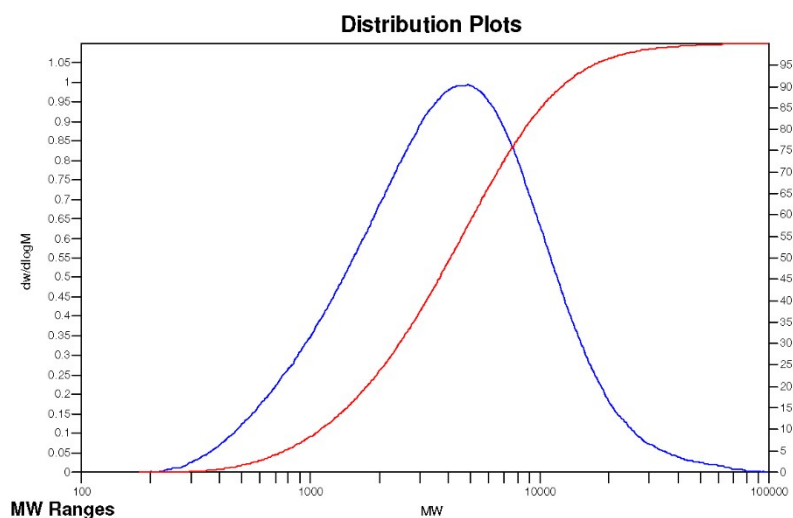


Figure S29 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MMAO** (entry 5, Table 3).

Cirrus GPC Sample Peak Report

Generated by: Administrator

2018年8月9日 15:18

Workbook: E:\Cirrus Workbooks\RI2018\RI2018.plw

Sample Details

Sample Name: zrd

Acquired: 2018/8/9 15:13:46

By Analyst: Administrator

Batch Name: Imported

Filename: E:\Cirrus Workbooks\RI2018\Imported-1576.cgrm

Concentration: 0.10 mg/ml

K of Sample: 40.6000

Injection Volume: 200.0 ul

Alpha of Sample: 0.7270

LIMS ID:

Bottle ID:

Workbook Details

Eluent: TCB stabilised with 0.0125% BHT

Flow Rate: 1.00 ml/min

Column Set:

Column Set Length: 950 mm

Detector: RI

Temperature: 150

Analysis Using Method: 20170607

Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\Imported-1576-Repeat (01).rst

Calibration Used: 2018/5/5 15:01:43

Calibration Type: Narrow Standard

Curve Fit Used: 1

Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$

High Limit MW RT: 17.95 mins

Low Limit MW RT: 22.90 mins

High Limit MW: 481198

Low Limit MW: 4570

K: 12.1000

FRM Name:

Alpha: 0.7070

Flow Marker RT: 0.00 mins

FRCF: 1.0000

MW Averages

Mp: 3593

Mn: 2154

Mv: 4852

Mw: 5515

Mz: 13001

Mz+1: 23631

PD: 2.5604

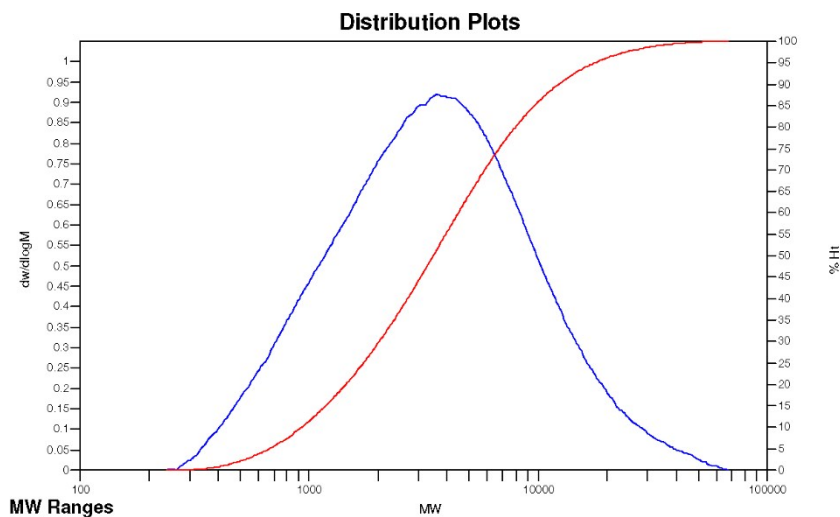


Figure S30 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MMAO** (entry 6, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1237.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1237.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 5211
 Mn: 2721
 Mv: 5754
 Mw: 6371
 Mz: 12642
 Mz+1: 23366
 PD: 2.3414

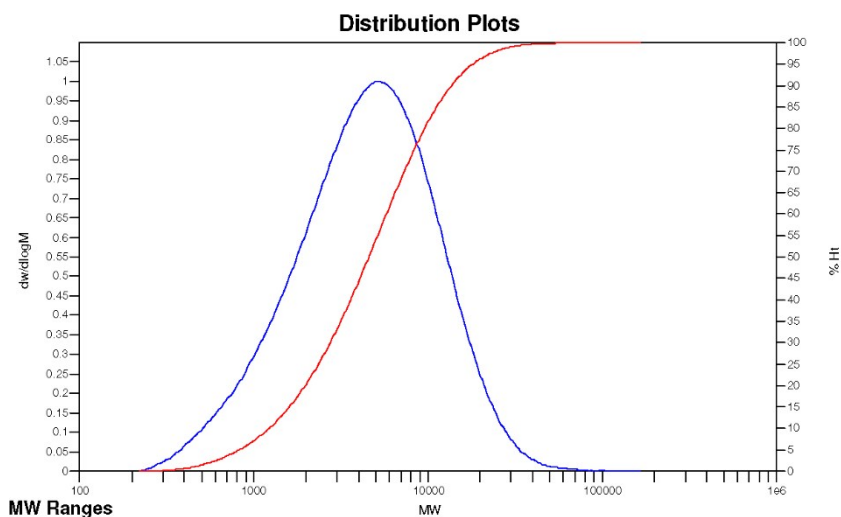


Figure S31 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MMAO** (entry 7, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1238.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1238.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 5631	Mn: 2316	Mv: 5326	Mw: 5916
Mz: 11676	Mz+1: 20220	PD: 2.5544	

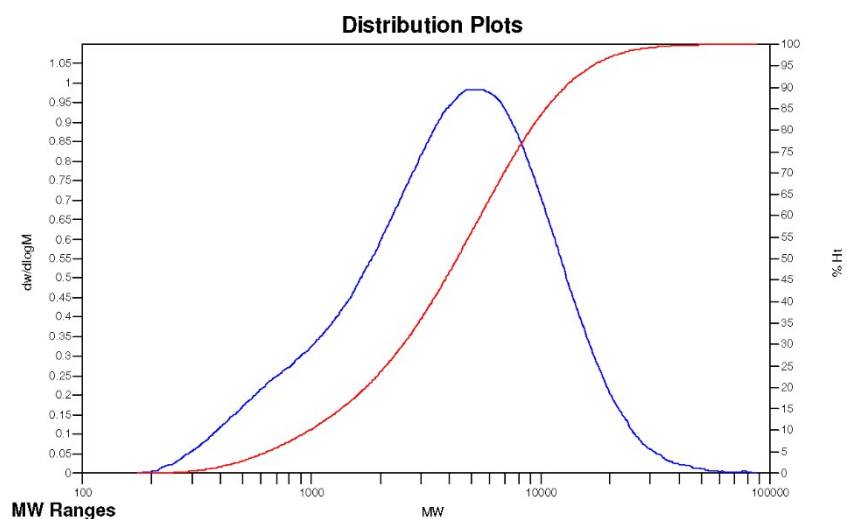


Figure S32 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 8, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1239.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1239-Repeat (02).rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 5991
 Mn: 2716
 Mv: 5288
 Mw: 5725
 Mz: 9232
 Mz+1: 12407
 PD: 2.1079

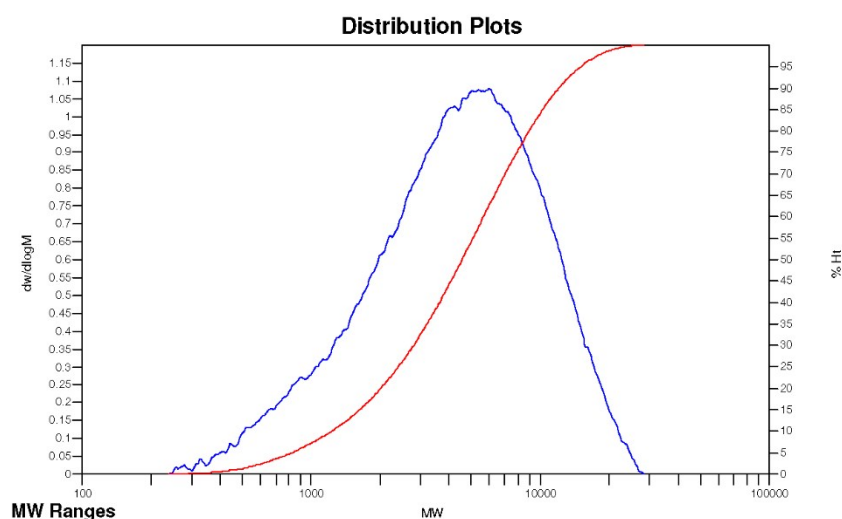


Figure S33 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 9, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1240.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1240.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 5375	Mn: 2867	Mv: 5910	Mw: 6543
Mz: 13335	Mz+1: 25956	PD: 2.2822	

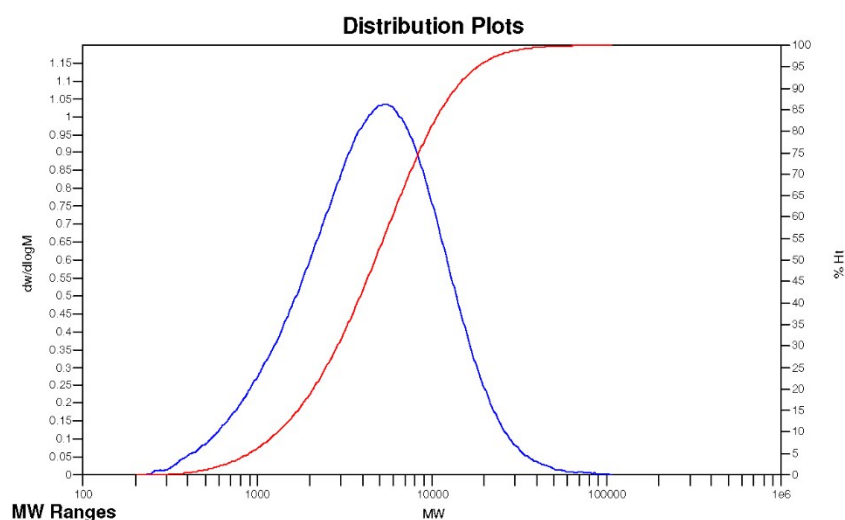


Figure S34 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 10, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1241.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:
Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150
Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook
 Results File: E:\Cirrus Workbooks\RI2018\imported-1241.rst
Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$
 Curve Fit Used: 1
 High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins
MW Averages
 Mp: 4749
 Mn: 2429
 Mw: 5301
 Mw: 5859
 Mz: 11069
 Mz+1: 17274
 PD: 2.4121

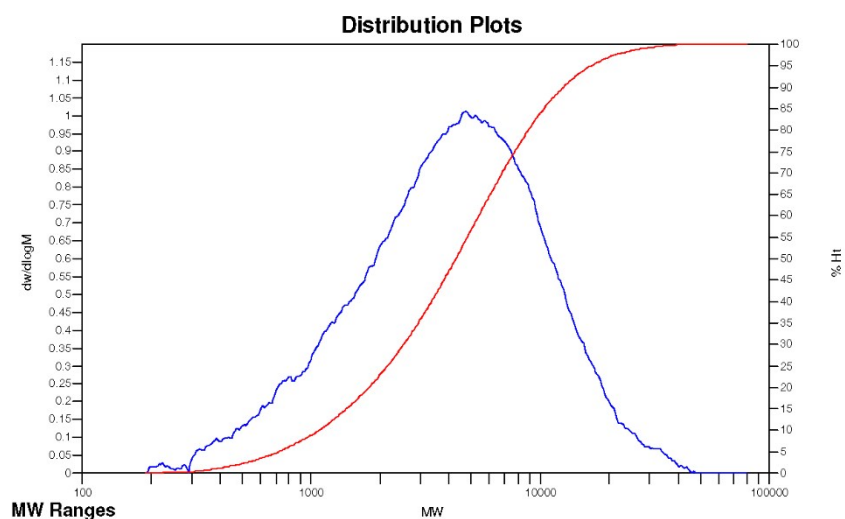


Figure S35 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 11, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI\2018\imported-1242.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:
Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150
Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook
 Results File: E:\Cirrus Workbooks\RI\2018\imported-1242.rst
Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1
 High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins
MW Averages
 Mp: 4898
 Mn: 2595
 Mv: 5179
 Mw: 5682
 Mz: 10369
 Mz+1: 16168
 PD: 2.1896

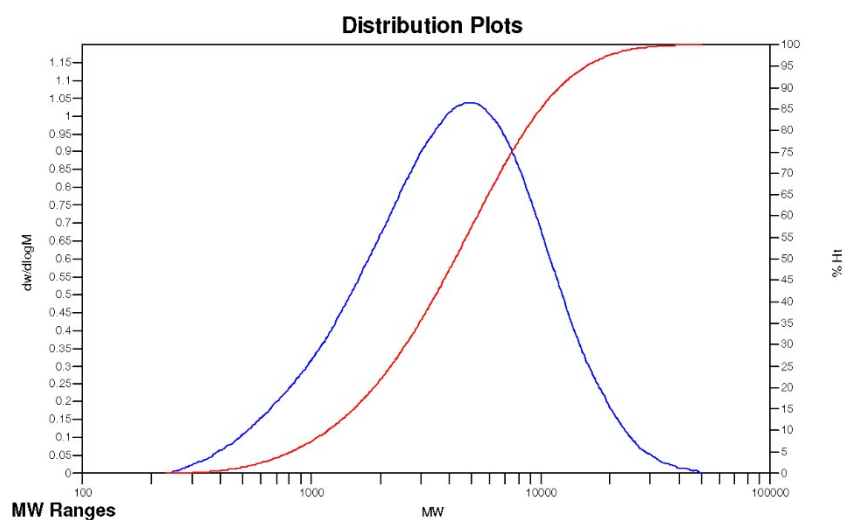


Figure S36 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MMAO** (entry 12, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1248.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1248.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^4$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 3822
 Mn: 2054
 Mw: 4396
 Mw: 4941
 Mz: 11888
 Mz+1: 27701
 PD: 2.4056

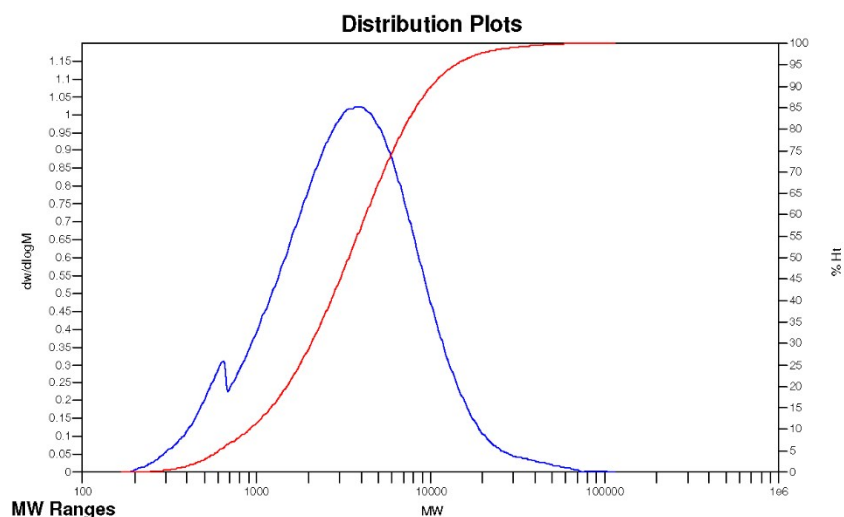


Figure S37 Cirrus GPC sample Peak Report for the polyethylenes obtained using **Co1**/MMAO (entry 13, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1244.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook
 Results File: E:\Cirrus Workbooks\RI2018\imported-1244.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 4327
 Mn: 2485
 Mw: 5067
 Mw: 5579
 Mz: 10765
 Mz+1: 19780
 PD: 2.2451

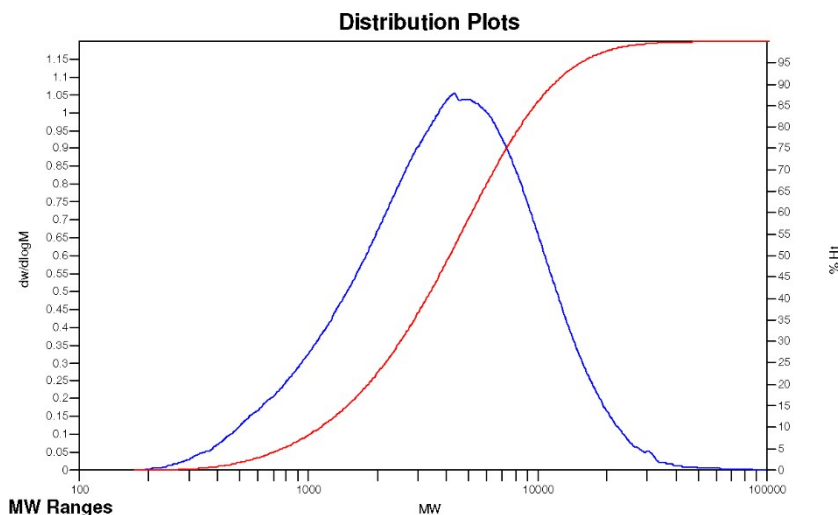


Figure S38 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MMAO** (entry 14, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1245.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:
Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150
Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook
 Results File: E:\Cirrus Workbooks\RI2018\imported-1245.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1
 High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins
MW Averages
 Mp: 5293
 Mn: 2529
 Mv: 5503
 Mw: 6111
 Mz: 12857
 Mz+1: 29966
 PD: 2.4164

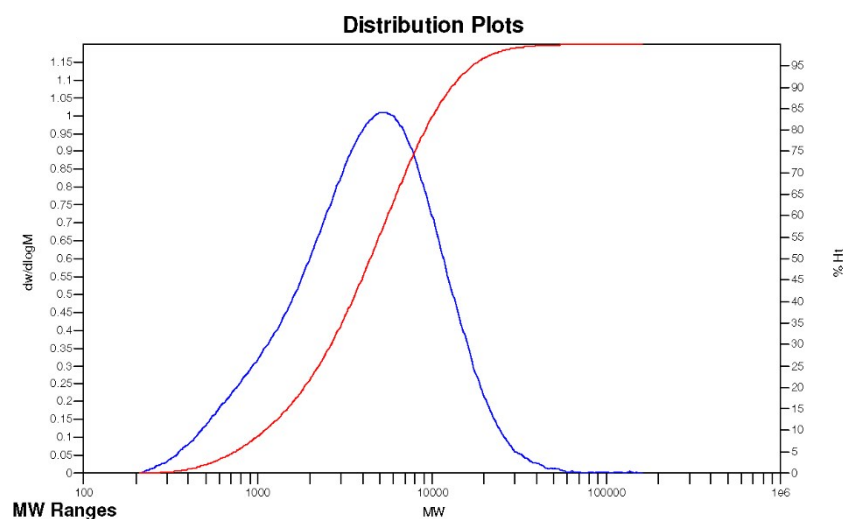


Figure S39 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MMAO** (entry 15, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1249.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40 6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1249-Repeat (02).rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 4130
 Mn: 2046
 Mw: 5918
 Mw: 7649
 Mz: 69379
 Mz+1: 229887
 PD: 3.7385

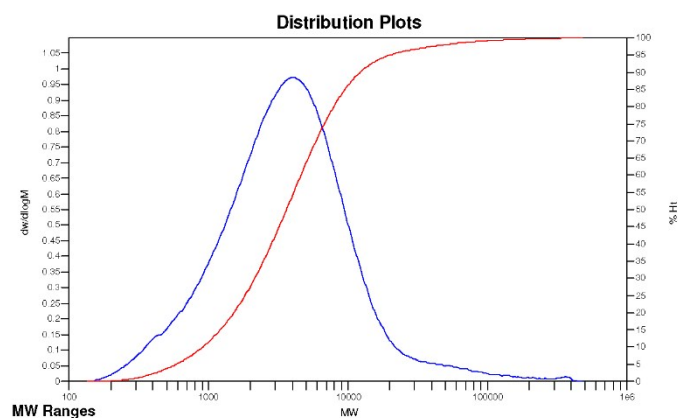


Figure S40 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1/MMAO** (entry 16, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI\2018\imported-1250.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI\2018\imported-1250.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 9992	Mn: 3451	Mv: 10049	Mw: 11242
Mz: 23013	Mz+1: 41133	PD: 3.2576	

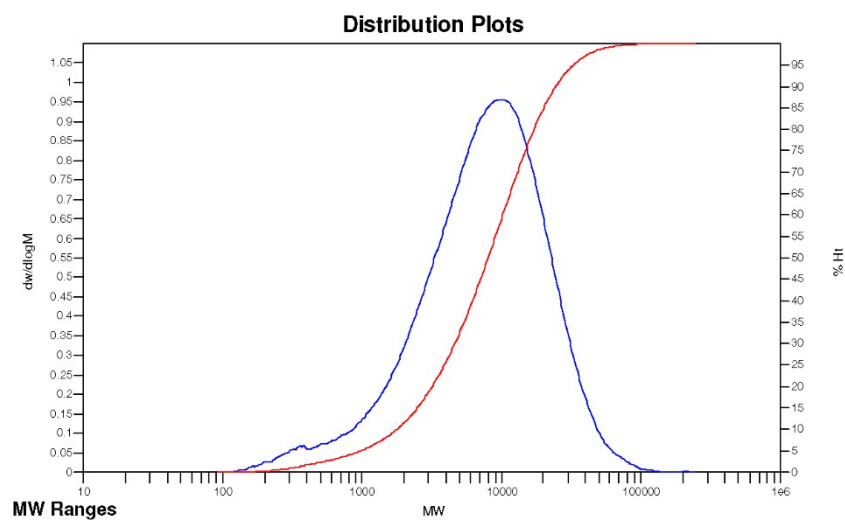


Figure S41 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 17, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1252.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1252.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 4676
 Mn: 2021
 Mv: 5886
 Mw: 6792
 Mz: 16581
 Mz+1: 30167
 PD: 3.3607

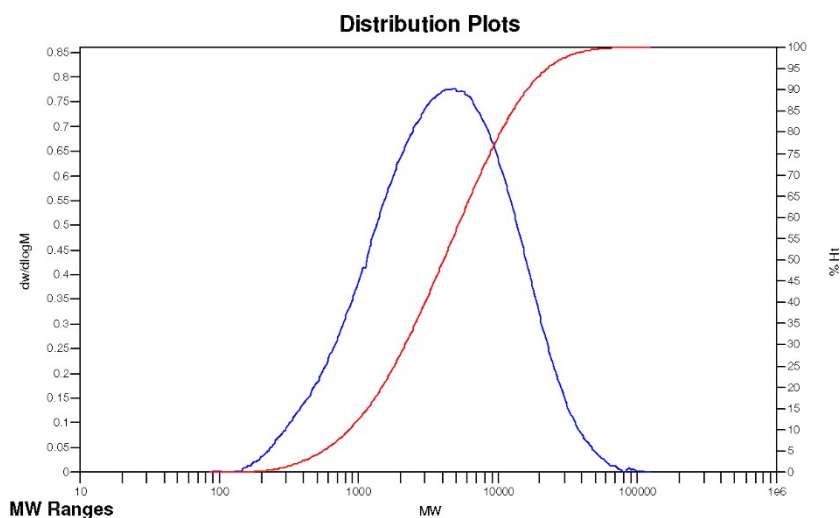


Figure S42 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 18, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1528.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1528.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 4463	Mn: 2351	Mv: 4702	Mw: 5168
Mz: 10455	Mz+1: 26498	PD: 2.1982	

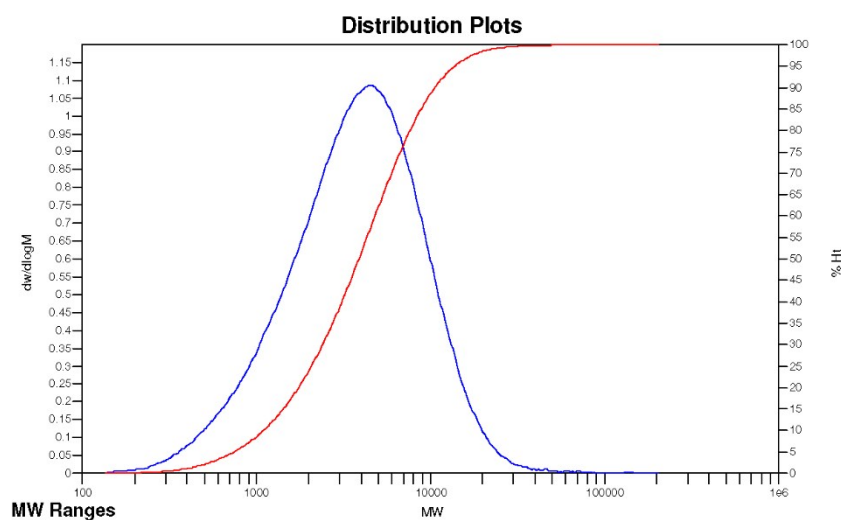


Figure S43 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 19, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1254.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details

Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607

Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1254.rst

Calibration Used: 2018/5/5 15:01:43

Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages

Mp: 3537
 Mz: 8181

Mn: 1943
 Mz+1: 14317

Mv: 3937
 PD: 2.2275

Mw: 4328

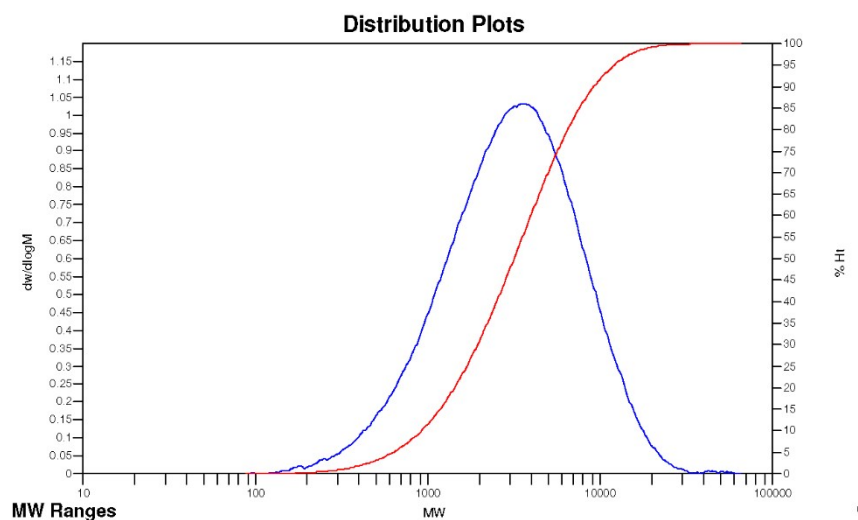


Figure S44 Cirrus GPC sample Peak Report for the polyethylene obtained using Co1/MMAO (entry 20, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1537.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1537-Repeat (04).rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 38478
 Mn: 12566
 Mv: 66167
 Mw: 83315
 Mz: 329442
 Mz+1: 648253
 PD: 6.6302

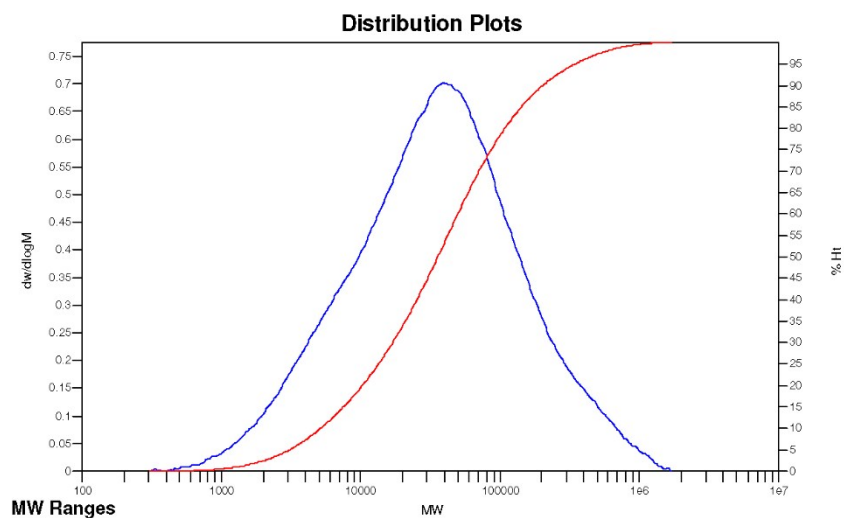


Figure S45 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 21, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1538.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:
 K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI
 Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook
 Results File: E:\Cirrus Workbooks\RI2018\imported-1538.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^{*1}$
 Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000
 Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 4676
 Mn: 2522
 Mv: 4991
 Mw: 5492
 Mz: 10876
 Mz+1: 22076
 PD: 2.1776

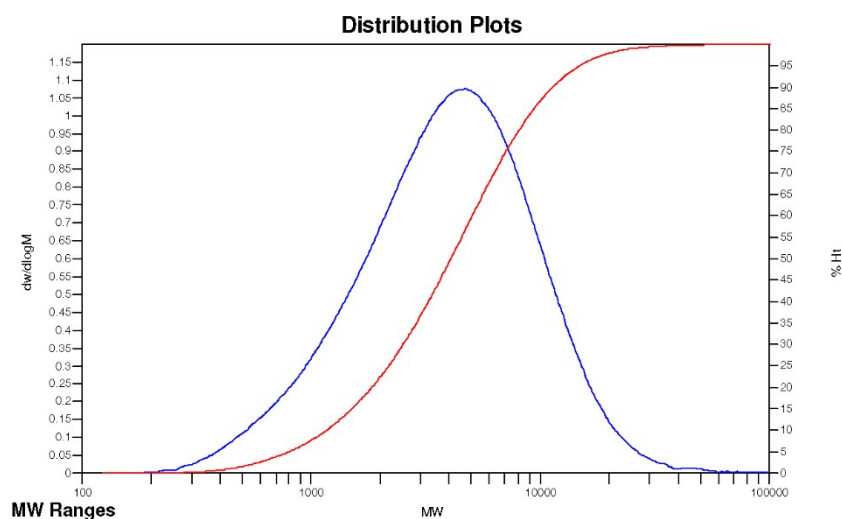


Figure S46 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 22, Table 3).

Batch Name: Imported
 Filename: E:\Cirrus Workbooks\RI2018\imported-1258.cgrm
 Concentration: 0.10 mg/ml
 Injection Volume: 200.0 ul
 LIMS ID:

K of Sample: 40.6000
 Alpha of Sample: 0.7270
 Bottle ID:

Workbook Details
 Eluent: TCB stabilised with 0.0125% BHT
 Column Set:
 Detector: RI

Flow Rate: 1.00 ml/min
 Column Set Length: 950 mm
 Temperature: 150

Analysis Using Method: 20170607
 Comments: this calibration curve is from RI 2017 workbook

Results File: E:\Cirrus Workbooks\RI2018\imported-1258.rst

Calibration Used: 2018/5/5 15:01:43
 Calibration Type: Narrow Standard
 Calibration Curve: $y = 13.015884 - 0.408555x^1$

Curve Fit Used: 1

High Limit MW RT: 17.95 mins
 High Limit MW: 481198
 K: 12.1000
 Alpha: 0.7070
 FRCF: 1.0000

Low Limit MW RT: 22.90 mins
 Low Limit MW: 4570
 FRM Name:
 Flow Marker RT: 0.00 mins

MW Averages
 Mp: 2477
 Mn: 1276
 Mv: 2742
 Mw: 3015
 Mz: 5449
 Mz+1: 8129
 PD: 2.3629

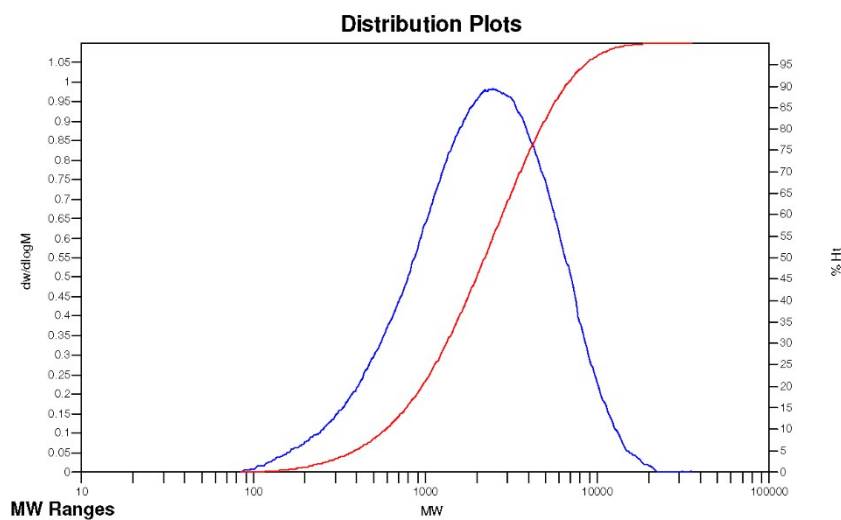


Figure S47 Cirrus GPC sample Peak Report for the polyethylene obtained using **Co1**/MMAO (entry 23, Table 3).