

4.4 เอกสารสอบเทียบเครื่องมือ

(บริษัท บริษัท ปิ่นทองกรุ๊ป แมนเนจเม้นท์ แอนด์ คอนซัลแตนท์ จำกัด
ทะเบียนเลขที่ ว-278)

Validation Calibration Report

Customer Name: PINTHONG GROUP MANAGEMENT AND
CONSULTANTS CO.,LTD. CO.,LTD.

Department: LAB Analytical

Present By: Meshcotech Co., Ltd.

Instrument System ID: GC 1

Instrument List in System

Name and Model	Serial Number	Manufacturer
Clarus 580	580S17020103	Perkin Elmer
TotalChrom	Version. 6.3.2.0646	Perkin Elmer

This report confirms that the above instrument has been calibrated.

The actual measurement results are stated on the inside of Validation Calibration Report.

Qualifier's signature / Date

Acceptor's signature / Date

Performance Qualification Report

Carrier Pressure Accuracy Result

Customer: **PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.** Qualifier: **Mescotech Co., Ltd.**
Department: **LAB Analytical** Procedure: **VKIT.GC.FLOW**
Manufacturer: **PERKIN ELMER** Model: **Clarus 580**
Serial No: **580S17020103** Detector Type: **FID**
Standard Batch: **N/A** Traceable To: **4071-DMA**
Expiry Date: **March 31, 2024** System ID: **GC 1**

The result reference to raw data on page: 1

Setpoint Pressure PSI.	Observed Pressure PSI.	Deviation ml/min. % Error
5.00	4.90	2.00
10.00	10.00	0.00
20.00	20.10	0.50
30.00	30.20	0.67
40.00	40.30	0.75

Acceptance criteria
of absolute deviation
Evaluate Result

≤ 5%.

PASS

Qualifier's signature:

Date:

31/3/2023

Authorised by:

Date:

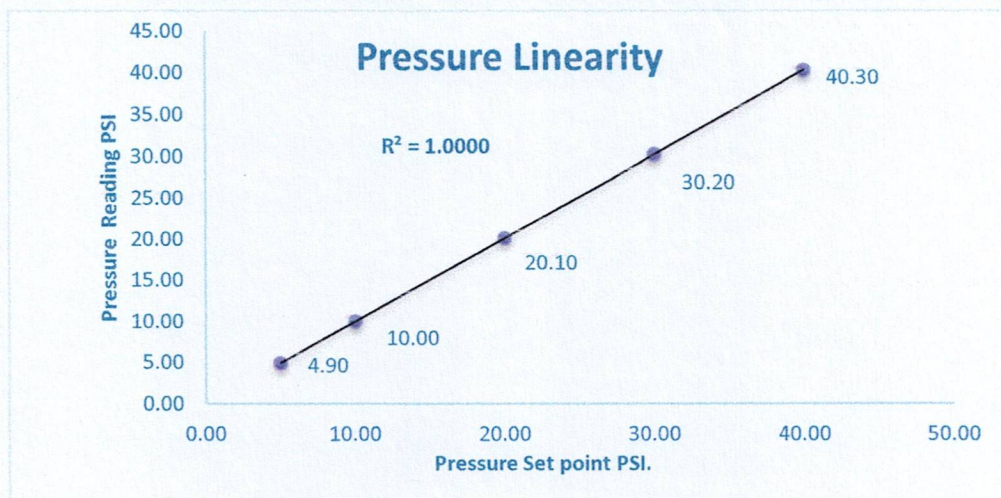
31/3/2023

Carrier Pressure Linearity Result

Customer: **PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO., LTD.** Qualifier: **Mescotech Co., Ltd.**
 Department: **LAB Analytical** Procedure: **VKIT.GC.FLOW**
 Manufacturer: **PERKIN ELMER** Model: **Clarus 580**
 Serial No: **580S17020103** Detector Type: **FID**
 Standard Batch: **N/A** Traceable To: **4071-DMA**
 Expiry Date: **March 31, 2024** System ID: **GC 1**

The result reference to raw data on page: 1

Flow Rate Setpoint (ml/min)	Flow Rate (ml/min) Reading
5.00	4.90
10.00	10.00
20.00	20.10
30.00	30.20
40.00	40.30
R-Square	1.0000



Acceptance criteria of R^2 > 0.9990

Evaluate Result **PASS**

Qualifier's signature

Date:

31/3/2023

Authorised by:

Date:

31/3/2023



Detector Gas Flow Rate Accuracy Result

Customer: **PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.** Qualifier: **Mescotech Co., Ltd.**
 Department: **LAB Analytical** Procedure: **VKIT.GC.FLOW**
 Manufacturer: **PERKIN ELMER** Model: **Clarus 580**
 Serial No: **580S17020103** Detector Type: **FID**
 Standard Batch: **N/A** Traceable To: **4075-GFM**
 Expiry Date: **March 31,2024** System ID: **GC 1**

The result reference to raw data on page: 2

Setpoint Flow Rate ml/min.	Observed Flow Rate ml/min.	Deviation ml/min. % Error
20.00	19.80	1.00
30.00	29.40	2.00
40.00	39.50	1.25
50.00	49.30	1.40
60.00	59.20	1.33

Acception criteria
of absolute deviation
Evaluate Result

≤ 5%.

PASS

Qualifier's signature

Date:

31/3/2023

Authorised by:

Date:

31/3/2023

PQR

82 Moo.18, Buengkamproi, Lamlukka, Pathum thani, Thailand 12150
 Tel. (6698)970-7090, Fax.(662)540-2541 Email: sales.meshcotect@gmail.com
 VCR-CARRFLOW



Carrier Gas Flow Rate Accuracy Result

Customer: PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.

Department: **LAB Analytical**Manufacturer: **PERKIN ELMER**Serial No: **580S17020103**Standard Batch: **N/A**Expiry Date: **March 31,2024**Qualifier: **Mescotech Co., Ltd.**Procedure: **VKIT.GC.FLOW**Model: **Clarus 580**Detector Type: **FID**Traceable To: **4075-GFM**System ID: **GC 1**

The result reference to raw data on page: 3

Setpoint Flow Rate ml/min.	Observed Flow Rate ml/min.	Deviation ml/min. % Error
100.00	98.80	1.20
200.00	197.60	1.20
300.00	295.30	1.57
400.00	394.70	1.33

Acception criteria
of absolute deviation
Evaluate Result

≤ 5%.

PASS

Qualifier's signature

Date:

31/3/2023

Authorised by:

Date:

31/3/2023

PQR

82 Moo.18, Buengkamproi, Lamlukka, Pathum thani, Thailand 12150
Tel. (6698)970-7090, Fax.(662)540-2541 Email: sales.meshcotect@gmail.com

VCR-CARRFLOW



GC Column Oven Temperature Performance Result

Customer: **PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO., LTD.** Qualifier: **Mescotech Co., Ltd.**
 Department: **LAB Analytical** Procedure: **VKIT.GC.TEMPACC**
 Manufacturer: **PERKIN ELMER** Model: **Clarus 580**
 Serial No: **580S17020103** Detector Type: **FID**
 Standard Batch: **N/A** Traceable To: **1513-DTM**
 Expiry Date: **March 31, 2024** System ID: **GC 1**

The result reference to raw data on page: 4

Setpoint Temperature (°C)	Collected 1 Temperature (°C)	Collected 2 Temperature (°C)	Collected 3 Temperature (°C)	Collected 4 Temperature (°C)	Collected 5 Temperature (°C)	Average Temperature (°C)	Deviation of Accuracy Absolute/°C. (Set Temp-Average Temp)
40.0	39.8	39.8	39.7	39.8	39.7	39.8	0.24
100.0	100.5	100.3	100.3	100.3	100.4	100.4	0.36
150.0	150.2	150.3	150.3	150.4	150.5	150.3	0.34
200.0	200.2	200.2	200.4	200.4	200.5	200.3	0.34
280.0	280.0	280.2	280.3	280.3	280.3	280.2	0.22

Acceptance criteria $\leq 1^{\circ}\text{C}$.
of absolute deviation Accuracy

Evaluate Result **PASS**

Qualifier's signature:

Date: 31/3/2023

Authorised by:

Date: 31/3/2023



GC Column Oven Temperature Stability Performance Result

Customer: **PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.** Qualifier: **Mescotech Co., Ltd.**
 Department: **LAB Analytical** Procedure: **VKIT.GC.TEMPSTEB**
 Manufacturer: **PERKIN ELMER** Model: **Clarus 580**
 Serial No: **580S17020103** Detector Type: **FID**
 Standard Batch: **N/A** Traceable To: **4078-DTM**
 Expiry Date: **March 31,2024** System ID: **GC 1**

The result reference to raw data on page: 5

Setpoint Temperature (°C)	Collected Point1 Temperature (°C)	Collected Point2 Temperature (°C)	Collected Point3 Temperature (°C)	Collected Point4 Temperature (°C)	Collected Point5 Temperature (°C)	Average Temperature (°C)	STDEV Temperature (°C)
100.0	100.5	100.3	100.3	100.3	100.4	100.36	0.09

Acceptance criteria $\leq 0.5^{\circ}\text{C}$.
of absolute deviation Stability

Evaluate Result **PASS**

Qualifier's signature:

Date:

31/3/2023

Authorised by:

Date:

31/3/2023

GC Injector Temperature Performance Result

Customer: **PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.** Qualifier: **Mescotech Co., Ltd.**
 Department: **LAB Analytical** Procedure: **VKIT.GC.TEMPACC**
 Manufacturer: **PERKIN ELMER** Model: **Clarus 580**
 Serial No: **580S17020103** Detector Type: **FID**
 Standard Batch: **N/A** Traceable To: **4078-DTM**
 Expiry Date: **March 31,2024** System ID: **GC 1**

The result reference to raw data on page: 6

Setpoint Temperature (°C)	Collected Temperature (°C)	Deviation of Accuracy Absolute/°C. (Set Temp-Average Temp)
150.0	146.5	3.5
200.0	196.5	3.5
280.0	276.7	3.3

Acceptance criteria $\leq 10^{\circ}\text{C}.$
 of absolute deviation Accuracy
 Evaluate Result **PASS**

Qualifier's signature:

Date:

31/3/2023

Authorised by:

Date:

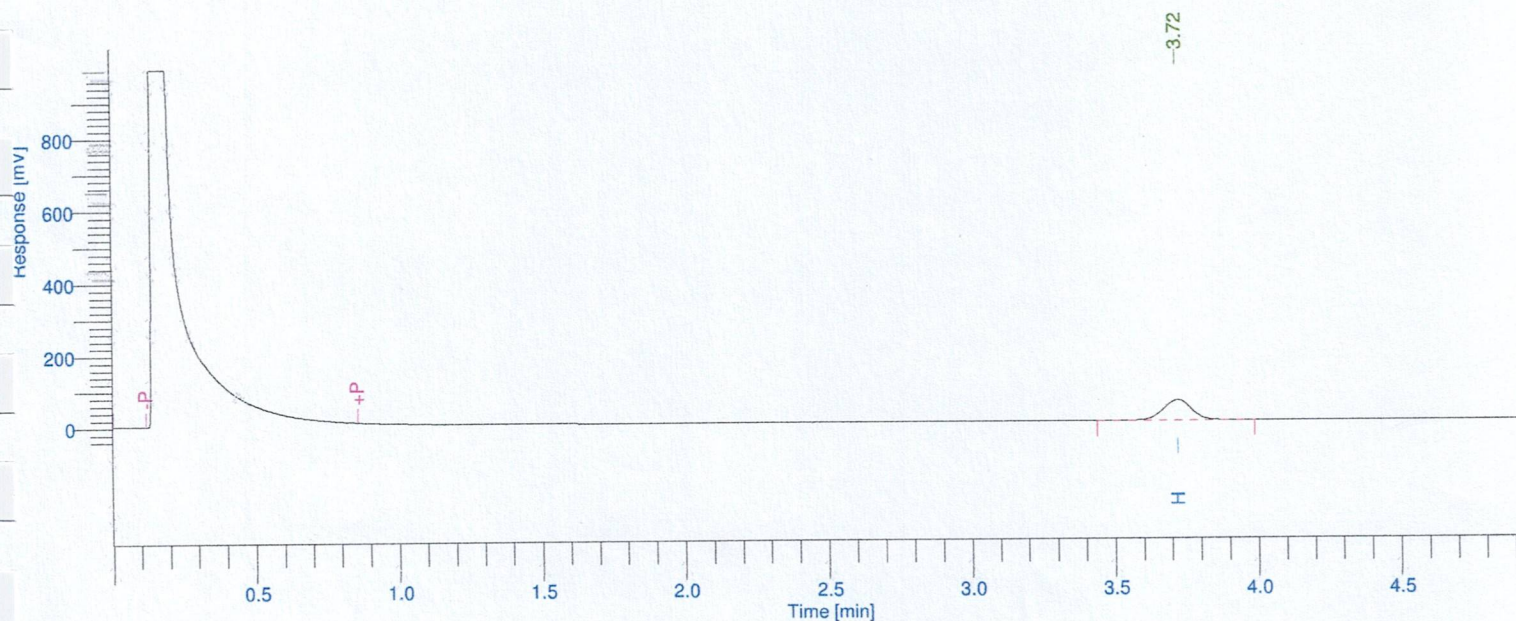
31/3/2023

Software Version : 6.3.2.0646
Operator : manager
Sample Number : 006
AutoSampler : BUILT-IN
Instrument Name : Clarus580
Instrument Serial # : None
Delay Time : 0.00 min
Sampling Rate : 12.5000 pts/s
Sample Volume : 1.000000 ul
Sample Amount : 1.0000
Data Acquisition Time : 01-Apr-24 2:43:50 PM

Date : 01-Apr-24 2:59:22 PM
Sample Name : Carry Over Blank 1
Study : Calibration
Rack/Vial : 0/1
Channel : A
A/D mV Range : 1000
End Time : 5.00 min

Area Reject : 0.000000
Dilution Factor : 1.00
Cycle : 6

Raw Data File : D:\PMOQ2023\Carry Over Blank 1_006.raw
Result File : D:\PMOQ2023\Carry Over Blank 1_006.rst [Editing in Progress]
Inst Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Carry Over Blank 1_006.raw
Proc Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Carry Over Blank 1_006.rst [Editing in Progress]
Calib Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Carry Over Blank 1_006.rst [Editing in Progress]
Report Format File: D:\DATA\REPORT FORMAT\ANALYSIS REPORT.rpt
Sequence File : D:\PMOQ2023\Calibration2023.seq



ANALYSIS REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	Norm. Area [%]	Adjusted Amount
1	Hexadecane	3.721	378105.11	56147.29	100.00	100.00	0.3781
			378105.11	56147.29	100.00	100.00	0.3781

Missing Component Report

Component	Expected Retention (Calibration File)
Tetradecane	1.450

Software Version : 6.3.2.0646
Operator : manager
Sample Number : 009
AutoSampler : BUILT-IN
Instrument Name : Clarus580
Instrument Serial # : None
Delay Time : 0.00 min
Sampling Rate : 12.5000 pts/s
Sample Volume : 1.000000 ul
Sample Amount : 1.0000
Data Acquisition Time : 01-Apr-24 3:38:06 PM

Date : 01-Apr-24 3:50:32 PM
Sample Name : Precision 8
Study : Calibration
Rack/Vial : 0/5
Channel : A
A/D mV Range : 1000
End Time : 5.00 min

Area Reject : 0.000000
Dilution Factor : 1.00
Cycle : 14

Raw Data File : D:\PMOQ2023\Precision 8_014.raw

Result File : D:\PMOQ2023\Precision 8_014.rst [Editing in Progress]

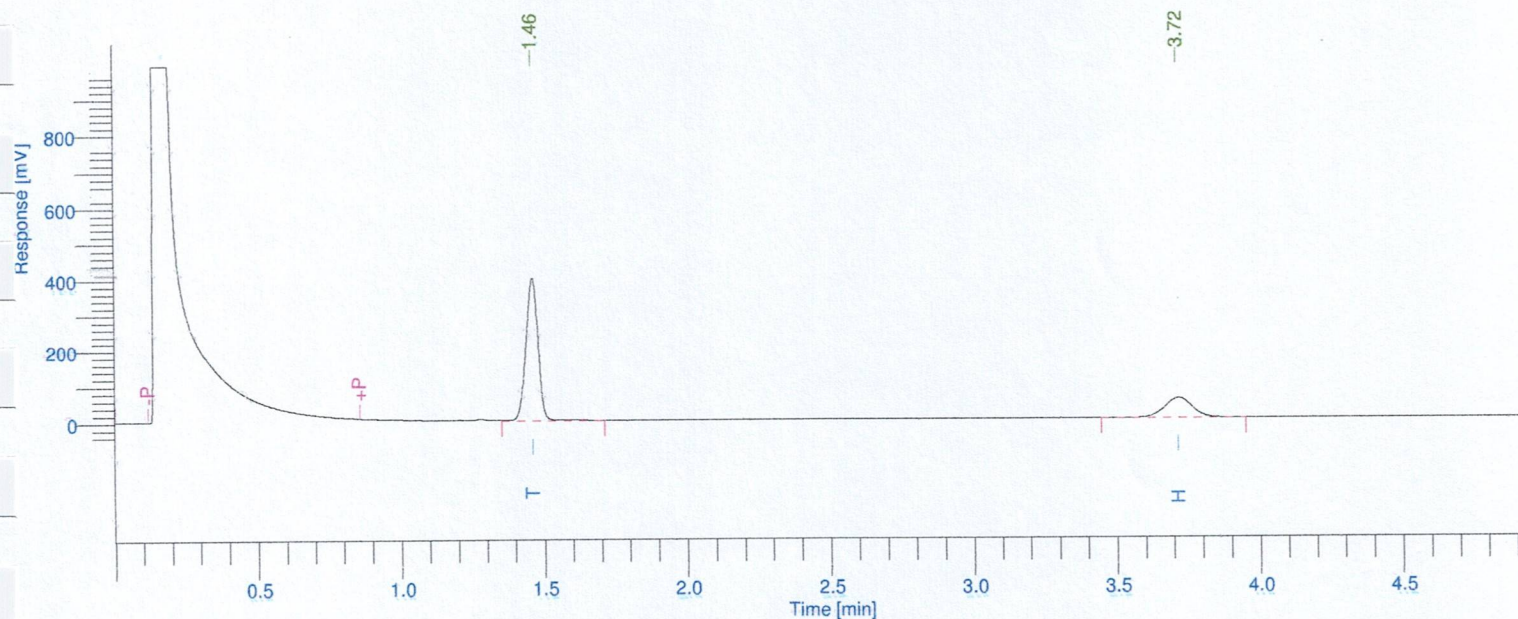
Inst Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 8_014.raw

Proc Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 8_014.rst [Editing in Progress]

Calib Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 8_014.rst [Editing in Progress]

Report Format File: D:\DATA\REPORT FORMAT\ANALYSIS REPORT.rpt

Sequence File : D:\PMOQ2023\Calibration2023.seq



ANALYSIS REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	Norm. Area [%]	Adjusted Amount
1	Tetradecane	1.461	1131130.47	397781.56	75.57	75.57	1.1311
2	Hexadecane	3.715	365705.34	54365.48	24.43	24.43	0.3657
			1496835.81	452147.04	100.00	100.00	1.4968

Missing Component Report

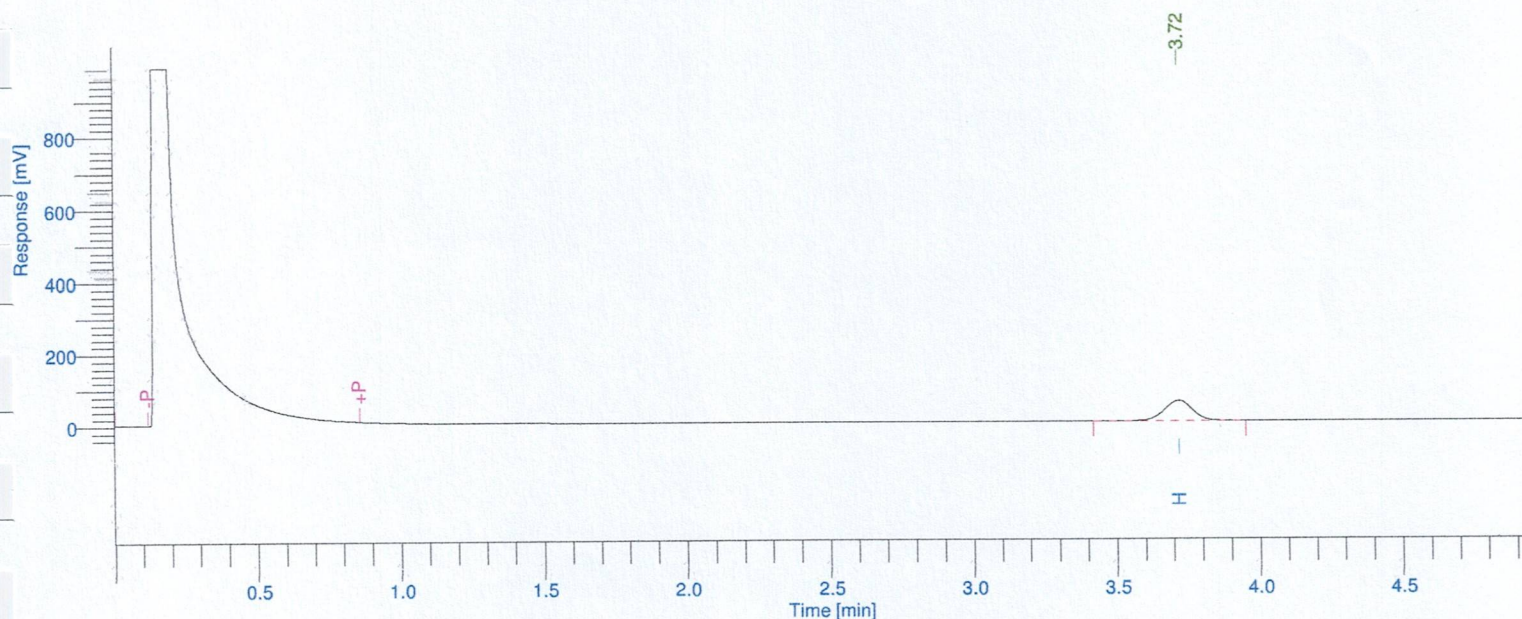
Component Expected Retention (Calibration File)

All components were found

Software Version : 6.3.2.0646
Operator : manager
Sample Number : 010
AutoSampler : BUILT-IN
Instrument Name : Clarus580
Instrument Serial # : None
Delay Time : 0.00 min
Sampling Rate : 12.5000 pts/s
Sample Volume : 1.000000 ul
Sample Amount : 1.0000
Data Acquisition Time : 01-Apr-24 3:44:57 PM

Date : 01-Apr-24 3:51:48 PM
Sample Name : Carry Over Blank 2
Study : Calibration
Rack/Vial : 0/1
Channel : A
A/D mV Range : 1000
End Time : 5.00 min
Area Reject : 0.000000
Dilution Factor : 1.00
Cycle : 15

Raw Data File : D:\PMOQ2023\Carry Over Blank 2_015.raw
Result File : D:\PMOQ2023\Carry Over Blank 2_015.rst [Editing in Progress]
Inst Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Carry Over Blank 2_015.raw
Proc Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Carry Over Blank 2_015.rst [Editing in Progress]
Calib Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Carry Over Blank 2_015.rst [Editing in Progress]
Report Format File: D:\DATA\REPORT FORMAT\ANALYSIS REPORT.rpt
Sequence File : D:\PMOQ2023\Calibration2023.seq



ANALYSIS REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	Norm. Area [%]	Adjusted Amount
1	Hexadecane	3.718	373276.70	55744.69	100.00	100.00	0.3733
			373276.70	55744.69	100.00	100.00	0.3733

Missing Component Report

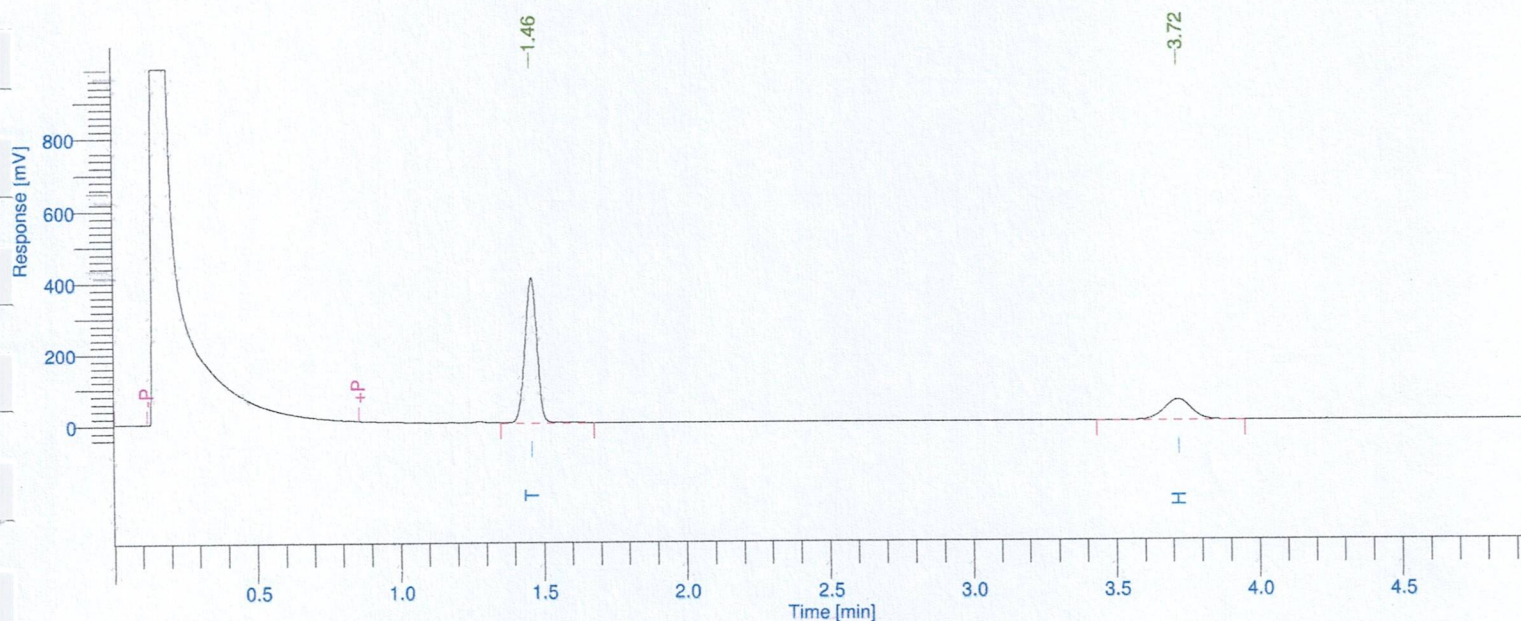
Component Expected Retention (Calibration File)

Tetradecane 1.450

Software Version : 6.3.2.0646
Operator : manager
Sample Number : 007
AutoSampler : BUILT-IN
Instrument Name : Clarus580
Instrument Serial # : None
Delay Time : 0.00 min
Sampling Rate : 12.5000 pts/s
Sample Volume : 1.000000 ul
Sample Amount : 1.0000
Data Acquisition Time : 01-Apr-24 2:50:38 PM

Date : 01-Apr-24 3:04:37 PM
Sample Name : Precision 1
Study : Calibration
Rack/Vial : 0/5
Channel : A
A/D mV Range : 1000
End Time : 5.00 min
Area Reject : 0.000000
Dilution Factor : 1.00
Cycle : 7

Raw Data File : D:\PMOQ2023\Precision 1_007.raw
Result File : D:\PMOQ2023\Precision 1_007.rst [Editing in Progress]
Inst Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 1_007.raw
Proc Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 1_007.rst [Editing in Progress]
Calib Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 1_007.rst [Editing in Progress]
Report Format File: D:\DATA\REPORT FORMAT\ANALYSIS REPORT.rpt
Sequence File : D:\PMOQ2023\Calibration2023.seq



ANALYSIS REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	Norm. Area [%]	Adjusted Amount
1	Tetradecane	1.461	1146805.50	405483.26	75.49	75.49	1.1468
2	Hexadecane	3.719	372264.12	55556.46	24.51	24.51	0.3723
			1519069.62	461039.73	100.00	100.00	1.5191

Missing Component Report

Component Expected Retention (Calibration File)

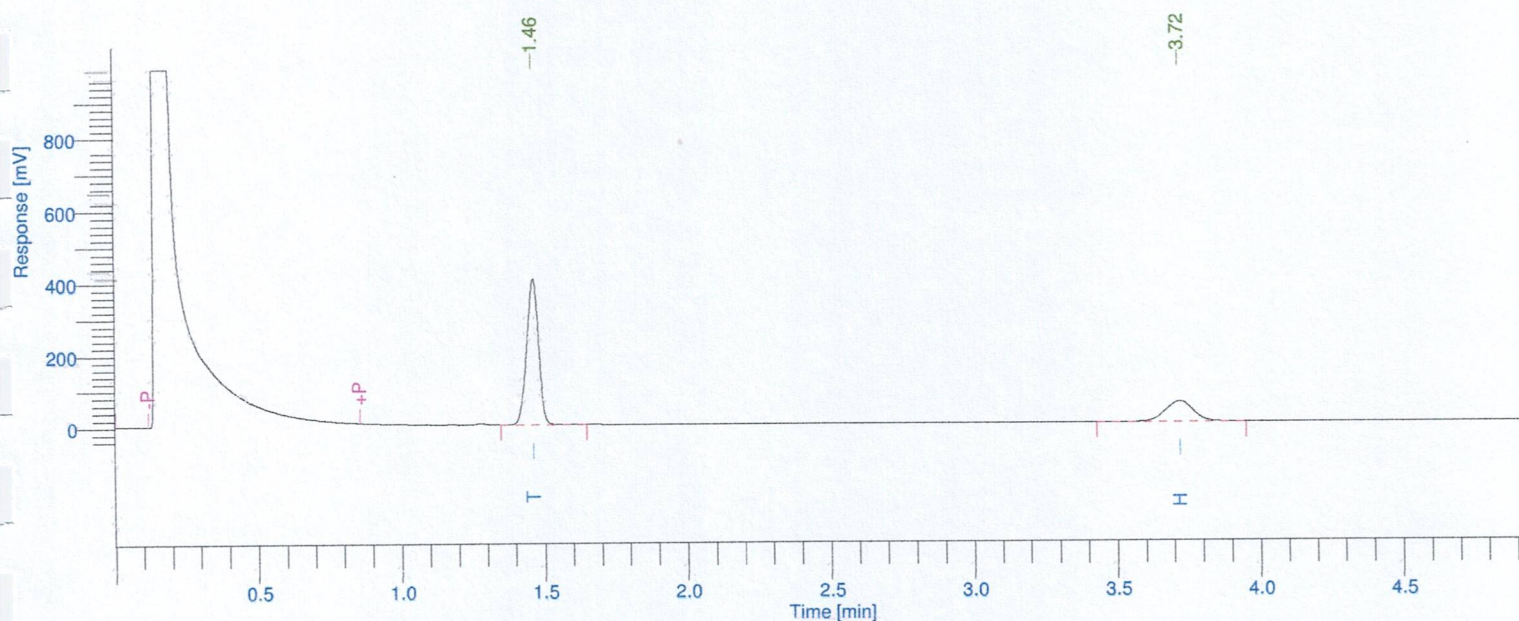
All components were found

Software Version : 6.3.2.0646
Operator : manager
Sample Number : 008
AutoSampler : BUILT-IN
Instrument Name : Clarus580
Instrument Serial # : None
Delay Time : 0.00 min
Sampling Rate : 12.5000 pts/s
Sample Volume : 1.000000 ul
Sample Amount : 1.0000
Data Acquisition Time : 01-Apr-24 2:57:22 PM

Date : 01-Apr-24 3:06:20 PM
Sample Name : Precision 2
Study : Calibration
Rack/Vial : 0/5
Channel : A
A/D mV Range : 1000
End Time : 5.00 min

Area Reject : 0.000000
Dilution Factor : 1.00
Cycle : 8

Raw Data File : D:\PMOQ2023\Precision 2_008.raw
Result File : D:\PMOQ2023\Precision 2_008.rst [Editing in Progress]
Inst Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 2_008.raw
Proc Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 2_008.rst [Editing in Progress]
Calib Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 2_008.rst [Editing in Progress]
Report Format File: D:\DATA\REPORT FORMAT\ANALYSIS REPORT.rpt
Sequence File : D:\PMOQ2023\Calibration2023.seq



ANALYSIS REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	Norm. Area [%]	Adjusted Amount
1	Tetradecane	1.462	1142966.78	404053.91	75.57	75.57	1.1430
2	Hexadecane	3.719	369492.88	55077.66	24.43	24.43	0.3695
			1512459.66	459131.57	100.00	100.00	1.5125

Missing Component Report

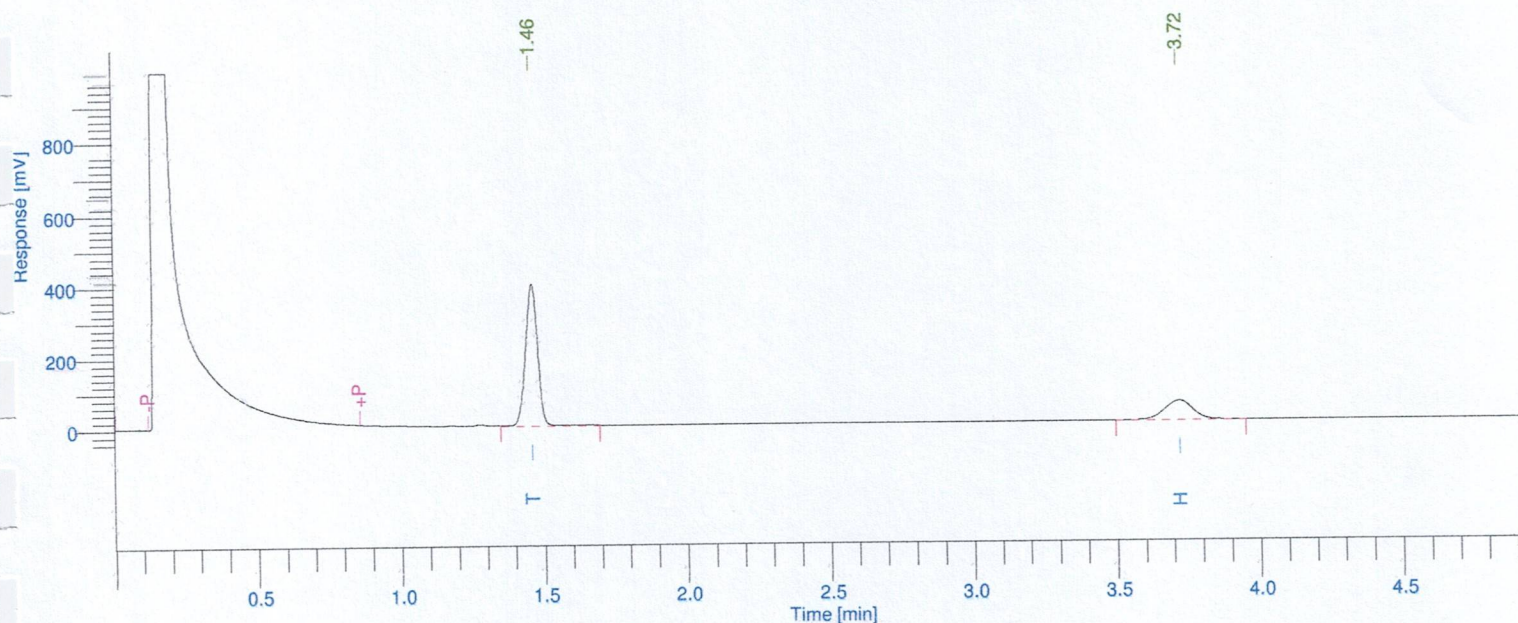
Component Expected Retention (Calibration File)

All components were found

Software Version : 6.3.2.0646
Operator : manager
Sample Number : 008
AutoSampler : BUILT-IN
Instrument Name : Clarus580
Instrument Serial # : None
Delay Time : 0.00 min
Sampling Rate : 12.5000 pts/s
Sample Volume : 1.000000 ul
Sample Amount : 1.0000
Data Acquisition Time : 01-Apr-24 3:04:10 PM

Date : 01-Apr-24 3:12:08 PM
Sample Name : Precision 3
Study : Calibration
Rack/Vial : 0/5
Channel : A
A/D mV Range : 1000
End Time : 5.00 min
Area Reject : 0.000000
Dilution Factor : 1.00
Cycle : 9

Raw Data File : D:\PMOQ2023\Precision 3_009.raw
Result File : D:\PMOQ2023\Precision 3_009.rst [Editing in Progress]
Inst Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 3_009.raw
Proc Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 3_009.rst [Editing in Progress]
Calib Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 3_009.rst [Editing in Progress]
Report Format File: D:\DATA\REPORT FORMAT\ANALYSIS REPORT.rpt
Sequence File : D:\PMOQ2023\Calibration2023.seq



ANALYSIS REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	Norm. Area [%]	Adjusted Amount
1	Tetradecane	1.460	1131811.87	397094.47	75.51	75.51	1.1318
2	Hexadecane	3.720	367090.85	54445.14	24.49	24.49	0.3671
			1498902.72	451539.61	100.00	100.00	1.4989

Missing Component Report

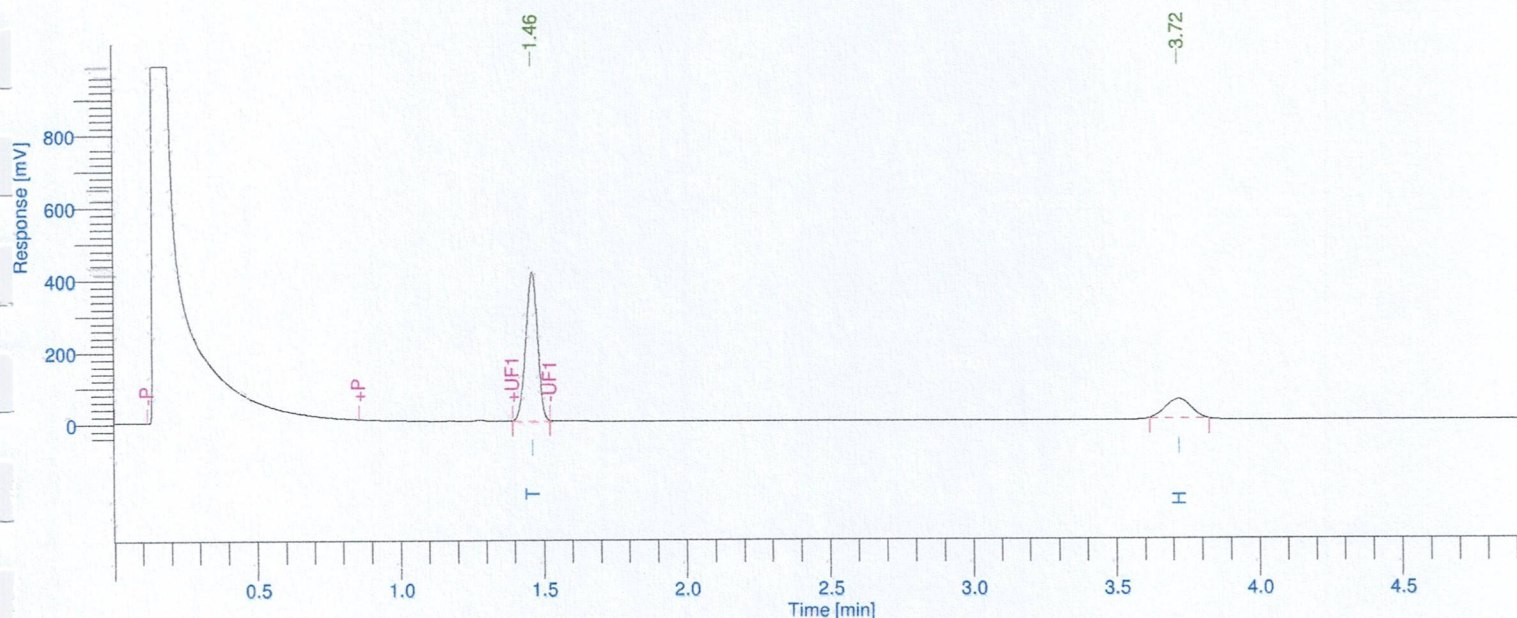
Component Expected Retention (Calibration File)

All components were found

Software Version : 6.3.2.0646
Operator : manager
Sample Number : 008
AutoSampler : BUILT-IN
Instrument Name : Clarus580
Instrument Serial # : None
Delay Time : 0.00 min
Sampling Rate : 12.5000 pts/s
Sample Volume : 1.000000 ul
Sample Amount : 1.0000
Data Acquisition Time : 01-Apr-24 3:10:58 PM

Date : 01-Apr-24 3:22:04 PM
Sample Name : Precision 4
Study : Calibration
Rack/Vial : 0/5
Channel : A
A/D mV Range : 1000
End Time : 5.00 min
Area Reject : 0.000000
Dilution Factor : 1.00
Cycle : 10

Raw Data File : D:\PMOQ2023\Precision 4_010.raw
Result File : D:\PMOQ2023\Precision 4_010.rst [Editing in Progress]
Inst Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 4_010.raw
Proc Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 4_010.rst [Editing in Progress]
Calib Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 4_010.rst [Editing in Progress]
Report Format File: D:\DATA\REPORT FORMAT\ANALYSIS REPORT.rpt
Sequence File : D:\PMOQ2023\Calibration2023.seq



ANALYSIS REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	Norm. Area [%]	Adjusted Amount
1	Tetradecane	1.463	1159745.44	413355.95	78.19	78.19	1.1597
2	Hexadecane	3.720	323562.84	53364.38	21.81	21.81	0.3236
			1483308.28	466720.33	100.00	100.00	1.4833

Missing Component Report

Component Expected Retention (Calibration File)

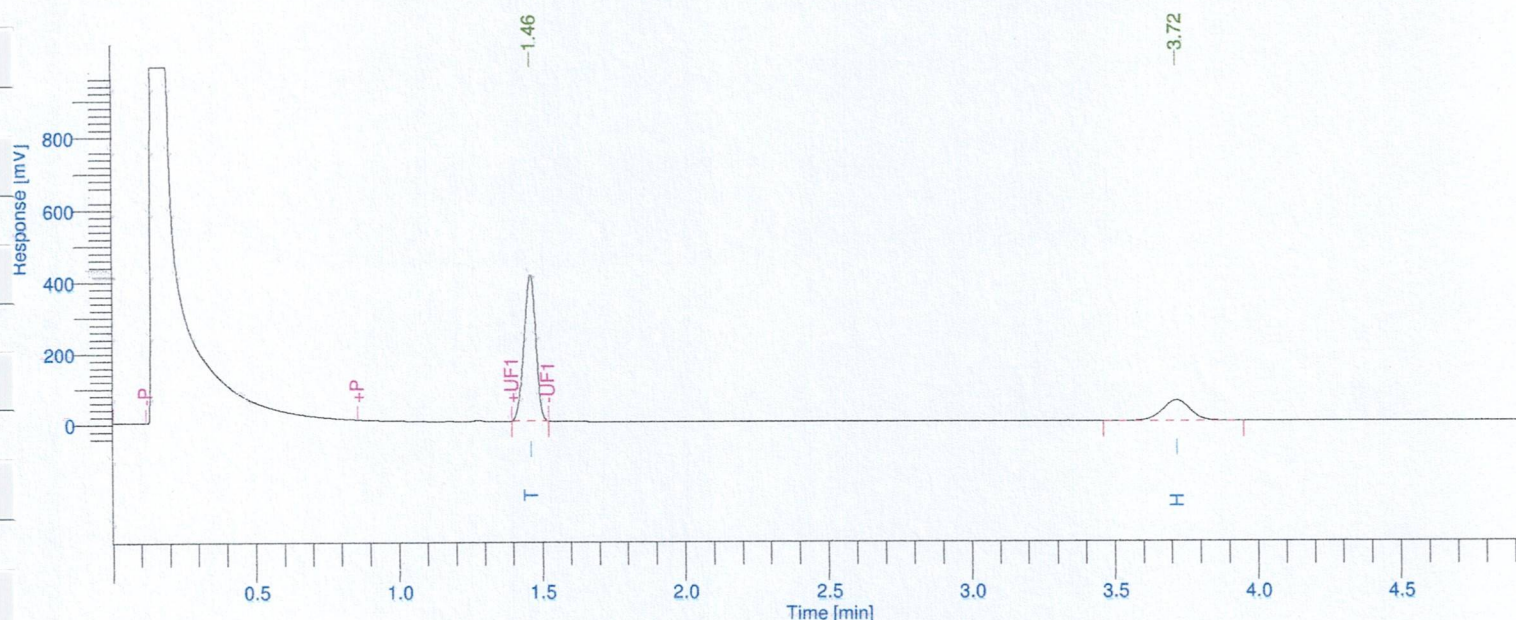
All components were found

Software Version : 6.3.2.0646
Operator : manager
Sample Number : 008
AutoSampler : BUILT-IN
Instrument Name : Clarus580
Instrument Serial # : None
Delay Time : 0.00 min
Sampling Rate : 12.5000 pts/s
Sample Volume : 1.000000 ul
Sample Amount : 1.0000
Data Acquisition Time : 01-Apr-24 3:17:45 PM

Date : 01-Apr-24 3:27:24 PM
Sample Name : Precision 5
Study : Calibration
Rack/Vial : 0/5
Channel : A
A/D mV Range : 1000
End Time : 5.00 min

Area Reject : 0.000000
Dilution Factor : 1.00
Cycle : 11

Raw Data File : D:\PMOQ2023\Precision 5_011.raw
Result File : D:\PMOQ2023\Precision 5_011.rst [Editing in Progress]
Inst Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 5_011.raw
Proc Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 5_011.rst [Editing in Progress]
Calib Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 5_011.rst [Editing in Progress]
Report Format File: D:\DATA\REPORT FORMAT\ANALYSIS REPORT.rpt
Sequence File : D:\PMOQ2023\Calibration2023.seq



ANALYSIS REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	Norm. Area [%]	Adjusted Amount
1	Tetradecane	1.461	1158710.81	412581.94	74.83	74.83	1.1587
2	Hexadecane	3.718	389670.70	58566.34	25.17	25.17	0.3897
			1548381.51	471148.27	100.00	100.00	1.5484

Missing Component Report

Component Expected Retention (Calibration File)

All components were found

Data System Number of Detection Check

Customer: **PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.** Qualifier: **Mescotech Co., Ltd.**
 Department: **LAB Analytical** Procedure: **Validator Method**
 Manufacturer: **PERKIN ELMER** Model: **TotalChrom**
 SoftWare Version: **6.3.2.0646** Traceable To: **ValidatorTM**
 Standard Batch: **N/A** Traceable To: **ValidatorTM**
 Expiry Date: **March 31,2023** System ID: **GC 1**

The result reference to raw data on page: 32

Peak Count#	Peak count Detected
Peak Detected Specify	
≥ 32 Peak Number	36 Peak Number

Acception criteria of absolute deviation ≥ 32 Peak

Evaluate Result **PASS**

Qualifier's signature:

Date: 31/3/2023

Authorised by:

Date: 31/3/2023



Data System Square Peak High Check

Customer: **PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.** Qualifier: **Mescotech Co., Ltd.**
 Department: **LAB Analytical** Procedure: **Validator Method**
 Manufacturer: **PERKIN ELMER** Model: **TotalChrom**
 SoftWare Version: **6.3.2.0646** Traceable To: **ValidatorTM**
 Standard Batch: **N/A** Traceable To: **ValidatorTM**
 Expiry Date: **March 31, 2023** System ID: **GC 1**

The result reference to raw data on page: 33

Peak Number#	Peak high /1000	%deviation	Evaluate Result
Peak Detection Specify	Collected (millivolt)		
1 500 millivolt	499.9929	0.00	PASS
2 1000 millivolt	999.998	0.00	PASS

Acception criteria $\leq 1\%$

of % deviation

Evaluate Result **PASS**

Qualifier's signature:

Date:

31/3/2023

Authorised by:

Date:

31/3/2023

PQR

82 Moo.18, Buengkamproi, Lamlukka, Pathum thani, Thailand 12150
 Tel. (6698)970-7090, Fax.(662)540-2541 Email: sales.meshcotect@gmail.com

VCR-DATASYS



Data System Retention Time Reproduced Check

Customer: **PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.** Qualifier: **Mescotech Co., Ltd.**
 Department: **LAB Analytical** Procedure: **Validator Method**
 Manufacturer: **PERKIN ELMER** Model: **TotalChrom**
 SoftWare Version: **6.3.2.0646** Traceable To: **Validator TM**
 Standard Batch: **N/A** System ID: **GC 1**
 Expiry Date: **March 31,2023**

The result reference to raw data on page: 34

Peak Number#	Retention Time Apex	Previous peak-Curent peak Absolute time /min.	Evaluate Result
1	0.476	N/A	
2	1.897	1.421	PASS
3	3.318	1.421	PASS
4	4.738	1.420	PASS
5	6.159	1.421	PASS
6	7.580	1.421	PASS
Acception criteria of absolute deviation			1.41-1.43 Minute
Evaluate Result			PASS

Qualifier's signature:

Date:

31/3/2023

Authorised by:

Date:

31/3/2023

Qualification Raw Data
Attached

Carrier Gas Inlet Pressure Accuracy Raw data Record

Raw Data Page 1

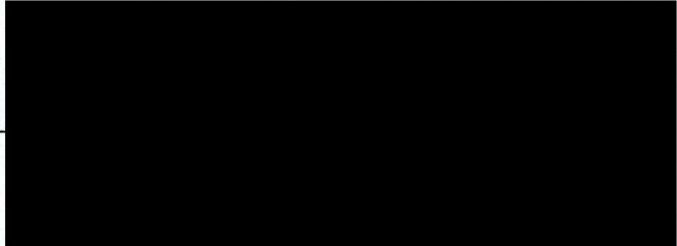
Customer Name: PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.
Instrument Model: Clarus 580 GC
Gas Type: He

Department: Quality Control
Serial Name: 580S17020103

Carrier Gas Inlet Pressure

Inlet Pressure Setpoint (PSI)	Pressure Reading
5.00	4.90
10.00	10.00
20.00	20.10
30.00	30.20
40.00	40.30

Report Reference Number: VCP NO. GC-0427-034

Engineer/Technical : 

Detector Gas Flow Accuracy Raw data Record

Raw Data Page 2

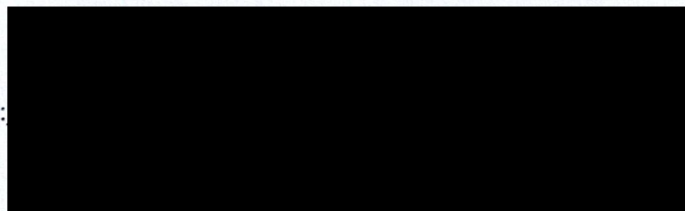
Customer Name: PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD. Department: **Quality Control**
 Instrument Model: **Clarus 580 GC** Serial Name: **580S17020103**
 Gas Type: **H2**

Gas Flow Setpoint

Flow rate ml/min	Flow rate reading
20.00	19.60
30.00	29.40
40.00	39.50
50.00	49.70
60.00	59.20

Report Reference Number: VCR NO - GC-0423- 034

Engineer/Technical :



Detector Gas Flow Accuracy Raw data Record

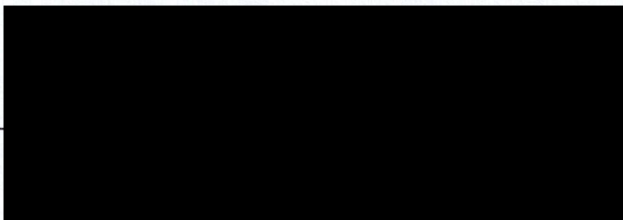
Raw Data Page 3

Customer Name: PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.
Instrument Model: Clarus 580 GC
Gas Type: Air

Department: Quality Control
Serial Name: 580S17020103

Gas Flow Setpoint	
Flow rate ml/min	Flow rate reading
100.00	98.80
200.00	197.60
300.00	295.30
400.00	394.70

Report Reference Number: VCF No. GC-0423-034

Engineer/Technical : 

Column Oven Temperature Raw data Reading

Raw Data Page 4

Customer Name: PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.
Instrument Model: Clarus 580 GC

Department: Quality Control
Serial Name: 580S17020103

Oven Temperature °C		Temperature Reading °C			
Temperature Set °C	Temp at 40 °C	Temp at 100 °C	Temp at 150 °C	Temp at 200 °C	Temp at 280 °C
Reading 1	39.8	100.5	150.2	200.2	280.0
Reading 2	39.8	100.3	150.3	200.2	280.2
Reading 3	39.7	100.3	150.3	200.4	280.3
Reading 4	39.8	100.3	150.4	200.4	280.3
Reading 5	39.7	100.4	150.5	200.5	280.3

T1: 39.9b T2: E01 T1-T2: E04 31-03 14:14:00	T1: 100.5b T2: E01 T1-T2: E04 31-03 13:07:34	T1: 150.2b T2: E01 T1-T2: E04 31-03 13:18:00	T1: 200.2b T2: E01 T1-T2: E04 31-03 13:34:47	T1: 280.0b T2: E01 T1-T2: E04 31-03 13:49:40
T1: 39.8b T2: E01 T1-T2: E04 31-03 14:15:59	T1: 100.3b T2: E01 T1-T2: E04 31-03 13:09:00	T1: 150.3b T2: E01 T1-T2: E04 31-03 13:20:35	T1: 200.2b T2: E01 T1-T2: E04 31-03 13:36:53	T1: 280.2b T2: E01 T1-T2: E04 31-03 13:51:45
T1: 39.7b T2: E01 T1-T2: E04 31-03 14:17:52	T1: 100.3b T2: E01 T1-T2: E04 31-03 13:10:07	T1: 150.3b T2: E01 T1-T2: E04 31-03 13:24:50	T1: 200.4b T2: E01 T1-T2: E04 31-03 13:38:56	T1: 280.3b T2: E01 T1-T2: E04 31-03 13:53:22
T1: 39.8b T2: E01 T1-T2: E04 31-03 14:18:10	T1: 100.3b T2: E01 T1-T2: E04 31-03 13:11:26	T1: 150.4b T2: E01 T1-T2: E04 31-03 13:25:55	T1: 200.4b T2: E01 T1-T2: E04 31-03 13:40:59	T1: 280.3b T2: E01 T1-T2: E04 31-03 13:54:41
T1: 39.7b T2: E01 T1-T2: E04 31-03 14:18:52	T1: 100.4b T2: E01 T1-T2: E04 31-03 13:13:08	T1: 150.5b T2: E01 T1-T2: E04 31-03 13:30:37	T1: 200.5b T2: E01 T1-T2: E04 31-03 13:42:31	T1: 280.3b T2: E01 T1-T2: E04 31-03 13:55:57

Report Reference Number: VCA NO. GC-0423-034

Engineer/Technical :

Column Oven Temperature Stability Raw data Reading

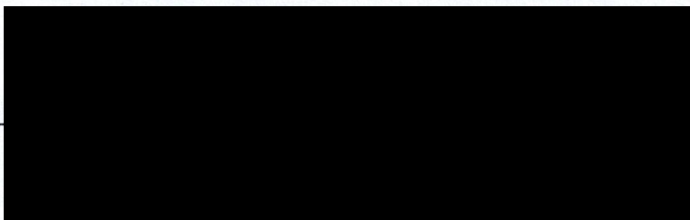
Customer Name: PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD.
Instrument Model: Clarus 580 GC

Department: Quality Control
Serial Name: 580S17020103

Oven Temperature Stability at 100 °C

Temperature °C put on Position #	Temp stability Reading at Position
Position 1	100.5
Position 2	100.3
Position 3	100.3
Position 4	100.3
Position 5	100.4

Report Reference Number: VCR NO. GC-0423-034

Engineer/Technical : 

Injector port Temperature Raw data Reading


Customer Name: PINTHONG GROUP MANAGEMENT AND CONSULTANTS CO.,LTD. Department: Quality Control
Instrument Model: Ciarus 580 GC Serial Name: 580S17020103
Injector Type: Split/Splitless

Injection Port Temperature °C

Temperature °C	Injector Temp 150 °C	Injector Temp 200 °C	Injector Temp 280 °C
Temperature Reading	146.5	196.5	276.7

T1:	146.60
T2:	E01
T1-T2:	E04
31-03 14:22:35	
T1:	196.50
T2:	E01
T1-T2:	E04
31-03 14:25:44	
T1:	276.70
T2:	E01
T1-T2:	E04
31-03 14:28:54	

Report Reference Number: VCR No. GC-0423-034

Engineer/Technical : 

Base Detector Temperature Raw data Reading

Raw Data Page 7

Customer Name: PINTHONG GROUP MANAGEMENT AND CONSULTA/
Instrument Model: Clarus 580 GC
Detector Type: FID

Department: Quality Control
Serial Name: 580S17020103

Base Detector Temperature


Temperature Setpoint°C	Base Detector Temp 200 °C	Base Detector Temp 300 °C
Temperature Reading	197.1	297.0

T1: 197.10
T2: E01
T1-T2: E04
31-03 14:32:51

T1: 297.00
T2: E01
T1-T2: E04
31-03 14:36:51

Report Reference Number:

VCP NO. GC-0223-034

Engineer/Technical : 

Software Version : 6.3.2.0646
Operator : manager
Sample Number : 008
AutoSampler : BUILT-IN
Instrument Name : Clarus580
Instrument Serial # : None
Delay Time : 0.00 min
Sampling Rate : 12.5000 pts/s
Sample Volume : 1.000000 ul
Sample Amount : 1.0000
Data Acquisition Time : 01-Apr-24 3:24:29 PM

Date : 01-Apr-24 3:32:36 PM
Sample Name : Precision 6
Study : Calibration
Rack/Vial : 0/5
Channel : A
A/D mV Range : 1000
End Time : 5.00 min

Area Reject : 0.000000
Dilution Factor : 1.00
Cycle : 12

Raw Data File : D:\PMOQ2023\Precision 6_012.raw

Result File : D:\PMOQ2023\Precision 6_012.rst [Editing in Progress]

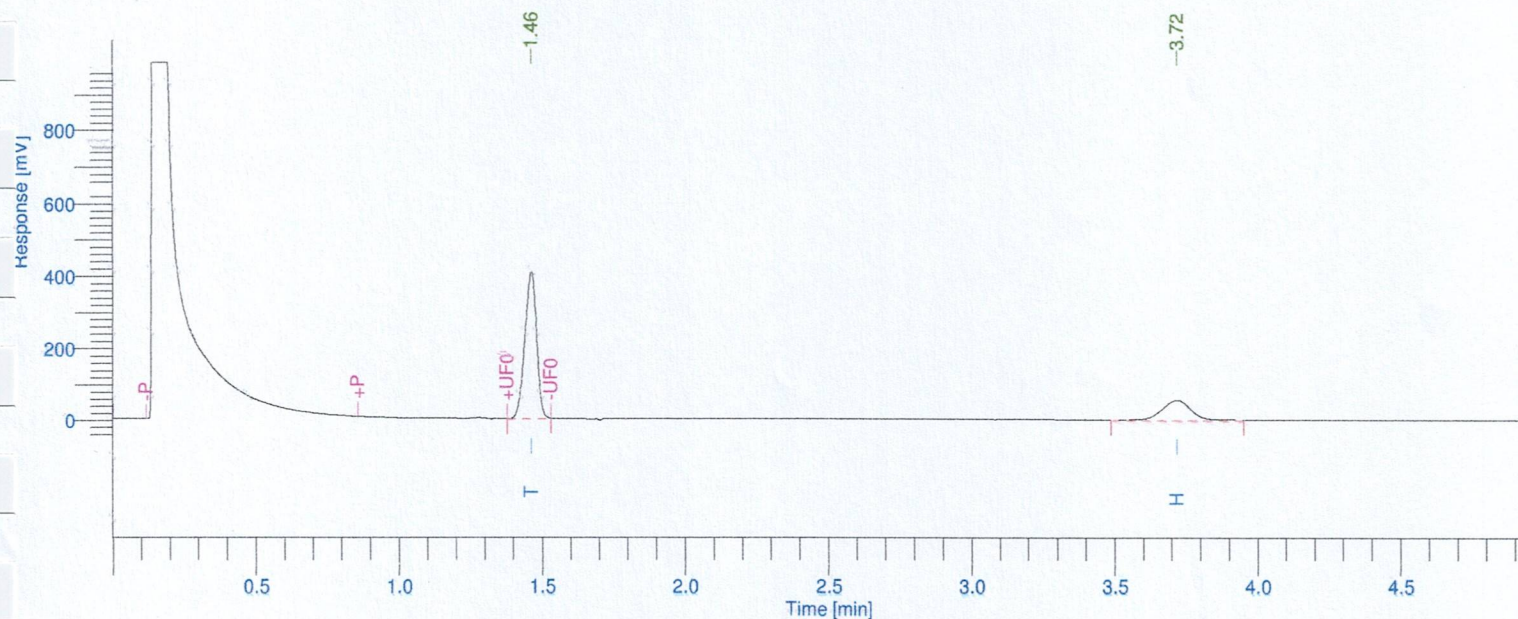
Inst Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 6_012.raw

Proc Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 6_012.rst [Editing in Progress]

Calib Method : d:\pmoq2023\calibration2023_1 from D:\PMOQ2023\Precision 6_012.rst [Editing in Progress]

Report Format File : D:\DATA\REPORT FORMAT\ANALYSIS REPORT.rpt

Sequence File : D:\PMOQ2023\Calibration2023.seq



ANALYSIS REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	Norm. Area [%]	Adjusted Amount
1	Tetradecane	1.461	1150475.11	409190.63	75.48	75.48	1.1505
2	Hexadecane	3.718	373769.66	55477.69	24.52	24.52	0.3738
			1524244.77	464668.32	100.00	100.00	1.5242

Missing Component Report

Component Expected Retention (Calibration File)

All components were found