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Prep Standard - Chemical Standard Summary

Order ID : N2487

Test : EPH_NF

Prepbatch ID : PB144264,

Sequence ID/Qc Batch ID: FC042222AL,

Standard ID :
EP2236,EP2239,PP19590,PP19593,PP19594,PP19595,PP19596,PP19598,PP19599,PP19853,PP19898,PP19918,

Chemical ID :
E2865,E3237,E3243,E3290,E3292,E3294,E3296,E3314,P10270,P10271,P10976,P10977,P10982,P 11000,P11001,P11112,
P11113,P11321,P11322,P11323,P11328,P11329,P11330,P11331,P11344,P11345,P11346,P11398,P11399,P11400,P11401,P
11402,P11403,P11404,P11405,P11406,P11407,P11436,P11437,P11438,P11439,P11440,P11441,P11442,P11443,P11444,P1
1445,P11449,P11450,

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Extractions STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3923	Baked Sodium Sulfate	EP2236	04/01/2022	10/01/2022	Rajesh Parikh	None	None	RUPESHKUMAR SHAH 04/01/2022

FROM 4000.00000gram of E3296 = Final Quantity: 4000.000 gram

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3868	METHELENE CHLORIDE+ACETONE	EP2239	04/06/2022	09/29/2022	Rajesh Parikh	None	None	RUPESHKUMAR SHAH 04/06/2022

FROM 8000.00000ml of E3292 + 8000.00000ml of E3294 = Final Quantity: 1600.000 ml

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Pest/Pcb STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
781	100 PPM Aliphatic HC Working STD (Restek)	PP19590	02/15/2022	08/14/2022	Yogesh Patel	None	None	Ankita Jodhani 02/18/2022

FROM 0.50000ml of P10976 + 0.50000ml of P11000 + 1.25000ml of P10270 + 1.25000ml of P10271 + 46.50000ml of E3243 = Final Quantity: 50.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
783	50 PPM Aliphatic HC STD	PP19593	02/15/2022	08/14/2022	Yogesh Patel	None	None	Ankita Jodhani 02/18/2022

FROM 0.50000ml of E3243 + 0.50000ml of PP19590 = Final Quantity: 1.000 ml

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Pest/Pcb STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
784	20 PPM Aliphatic HC STD	PP19594	02/15/2022	08/14/2022	Yogesh Patel	None	None	Ankita Jodhani 02/18/2022

FROM 0.80000ml of E3243 + 0.20000ml of PP19590 = Final Quantity: 1.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
785	10 PPM Aliphatic HC STD	PP19595	02/15/2022	08/14/2022	Yogesh Patel	None	None	Ankita Jodhani 02/18/2022

FROM 0.90000ml of E3243 + 0.10000ml of PP19590 = Final Quantity: 1.000 ml

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Pest/Pcb STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
786	5 PPM Aliphatic HC STD	PP19596	02/15/2022	08/14/2022	Yogesh Patel	None	None	Ankita Jodhani 02/18/2022

FROM 0.90000ml of E3243 + 0.10000ml of PP19593 = Final Quantity: 1.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
2900	100 PPM Aliphatic HC STD (Absolute)	PP19598	02/15/2022	08/14/2022	Yogesh Patel	None	None	Ankita Jodhani 02/18/2022

FROM 0.25000ml of P10977 + 0.25000ml of P11001 + 1.25000ml of P11112 + 1.25000ml of P11113 + 22.00000ml of E3243 = Final Quantity: 25.000 ml

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Pest/Pcb STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
2901	20 PPM Aliphaitic HC STD ICV (Absolute)	PP19599	02/15/2022	08/15/2022	Yogesh Patel	None	None	Ankita Jodhani 02/18/2022

FROM

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1339	100 PPM NJEPH Surrogate Spike	PP19853	03/29/2022	09/28/2022	Yogesh Patel	None	None	Sohil Jodhani 03/31/2022

FROM 1.25000ml of P10982 + 1.25000ml of P11328 + 1.25000ml of P11329 + 1.25000ml of P11330 + 1.25000ml of P11331 + 1.25000ml of P11344 + 1.25000ml of P11345 + 1.25000ml of P11346 + 490.00000ml of E3290 = Final Quantity: 200.000 ml

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Pest/Pcb STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1330	100 PPM NJEPH Spike Solution	PP19898	04/08/2022	10/08/2022	Abdul Mirza	None	None	Yogesh Patel 04/25/2022

FROM 5.00000ml of P11398 + 5.00000ml of P11399 + 5.00000ml of P11400 + 5.00000ml of P11401 + 5.00000ml of P11402 + 5.00000ml of P11403 + 5.00000ml of P11404 + 5.00000ml of P11405 + 5.00000ml of P11406 + 5.00000ml of P11407 + 5.00000ml of P11436 + 5.00000ml of P11437 + 5.00000ml of P11438 + 5.00000ml of P11439 + 5.00000ml of P11440 + 5.00000ml of P11441 + 5.00000ml of P11442 + 5.00000ml of P11443 + 5.00000ml of P11444 + 5.00000ml of P11445 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1331	100 PPM NJEPH Fractionating Surrogate	PP19918	04/09/2022	06/09/2022	Abdul Mirza	None	None	Yogesh Patel 04/25/2022

FROM 1.00000ml of P11321 + 1.00000ml of P11322 + 1.00000ml of P11323 + 1.00000ml of P11449 + 1.00000ml of P11450 + 195.00000ml of E3237 = Final Quantity: 200.000 ml

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3382-05 / Sand, Purified (cs/4x2.5kg)	0000243821	10/29/2022	04/30/2020 / RAJESH	04/28/2020 / RAJESH	E2865

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9262-03 / Hexane, Ultra-Resi (cs/4x4L)	21K1662002	10/30/2022	01/25/2022 / Rajesh	01/19/2022 / Rajesh	E3237

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9262-03 / Hexane, Ultra-Resi (cs/4x4L)	0000286118	08/14/2022	02/14/2022 / Rajesh	02/02/2022 / Rajesh	E3243

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9254-03 / Acetone, Ultra Resi (cs/4x4L)	0000285502	09/28/2022	03/28/2022 / Rajesh	03/23/2022 / Rajesh	E3290

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9644-A4 / Methylene Chloride,U-Resi, Cycle-Tainer (215L)	22B242008	09/29/2022	03/29/2022 / Rajesh	03/29/2022 / Rajesh	E3292

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9254-03 / Acetone, Ultra Resi (cs/4x4L)	0000285137	10/01/2022	04/01/2022 / Rajesh	03/30/2022 / Rajesh	E3294

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	PC19631-100 / SODIUM SULFATE, ANHYDROUS, PEST GRADE, 1	125102	10/01/2022	04/01/2022 / Rajesh	03/28/2022 / Rajesh	E3296

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9262-03 / Hexane, Ultra-Resi (cs/4x4L)	22B0762004	10/22/2022	04/22/2022 / Rajesh	04/14/2022 / Rajesh	E3314

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30540 / Custom NJEPH Aliphatics Calibration Standard	A0163892	08/15/2022	02/15/2022 / yogesh	01/26/2021 / dhaval	P10270

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30540 / Custom NJEPH Aliphatics Calibration Standard	A0163892	08/15/2022	02/15/2022 / yogesh	01/26/2021 / dhaval	P10271

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31098 / 1-Chlorooctadecane Standard	A0171297	08/15/2022	02/15/2022 / yogesh	08/06/2021 / Abdul	P10976

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31098 / 1-Chlorooctadecane Standard	A0171297	08/15/2022	02/15/2022 / yogesh	08/06/2021 / Abdul	P10977

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31098 / 1-Chlorooctadecane Standard	A0171297	09/29/2022	03/29/2022 / yogesh	08/06/2021 / Abdul	P10982

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31097 / o-Terphenyl Standard	A0173046	08/15/2022	02/15/2022 / yogesh	08/06/2021 / Abdul	P11000

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31097 / o-Terphenyl Standard	A0173046	08/15/2022	02/15/2022 / yogesh	08/06/2021 / Abdul	P11001

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95899 / NJ EPH Aliphatic n-Hydrocarbons-Revised, 1000 PPM	092821	08/15/2022	02/15/2022 / yogesh	09/30/2021 / Abdul	P11112

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95899 / NJ EPH Aliphatic n-Hydrocarbons-Revised, 1000 PPM	092821	08/15/2022	02/15/2022 / yogesh	09/30/2021 / Abdul	P11113

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31480 / MA Fractionation Surrogate Spike Mix	A0175042	06/09/2022	04/09/2022 / Abdul	01/06/2022 / yogesh	P11321

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31480 / MA Fractionation Surrogate Spike Mix	A0175042	10/09/2022	04/09/2022 / Abdul	01/06/2022 / yogesh	P11322

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31480 / MA Fractionation Surrogate Spike Mix	A0175042	10/09/2022	04/09/2022 / Abdul	01/06/2022 / yogesh	P11323

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31097 / o-Terphenyl Standard	A0177896	09/29/2022	03/29/2022 / yogesh	01/06/2022 / yogesh	P11328

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31097 / o-Terphenyl Standard	A0177896	09/29/2022	03/29/2022 / yogesh	01/06/2022 / yogesh	P11329

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31097 / o-Terphenyl Standard	A0177896	09/29/2022	03/29/2022 / yogesh	01/06/2022 / yogesh	P11330

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31097 / o-Terphenyl Standard	A0177896	09/29/2022	03/29/2022 / yogesh	01/06/2022 / yogesh	P11331

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31098 / 1-Chlorooctadecane Standard	A0177029	09/29/2022	03/29/2022 / yogesh	01/06/2022 / Abdul	P11344

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31098 / 1-Chlorooctadecane Standard	A0177029	09/29/2022	03/29/2022 / yogesh	01/06/2022 / Abdul	P11345

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31098 / 1-Chlorooctadecane Standard	A0177029	09/29/2022	03/29/2022 / yogesh	01/06/2022 / Abdul	P11346

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	10/08/2022	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11398

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	10/08/2022	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11399

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	10/08/2022	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11400

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	10/08/2022	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11401

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	10/08/2022	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11402

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	10/08/2022	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11403

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	10/08/2022	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11404

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	10/08/2022	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11405

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	02/28/2029	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11406

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30542 / Custom NJEPH Aliphatics Matrix Spike Mix	A0180740	10/08/2022	04/08/2022 / Abdul	02/09/2022 / Yogesh	P11407

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11436

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11437

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11438

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11439

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11440

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11441

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11442

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11443

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11444

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30543 / Custom NJEPH Aromatics Matrix Spike Mix	A0177559	10/08/2022	04/08/2022 / Abdul	11/16/2021 / Yogesh	P11445

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31480 / MA Fractionation Surrogate Spike Mix	A0179976	11/30/2027	04/09/2022 / Abdul	02/10/2022 / Yogesh	P11449

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31480 / MA Fractionation Surrogate Spike Mix	A0179976	11/30/2027	04/09/2022 / Abdul	02/10/2022 / Yogesh	P11450

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

DD
01/26/21
P10270 To P10274 (5)

Catalog No. : 30540 **Lot No.:** A0163892

Description : NJEPH Aliphatics Calibration Standard

Aliphatics Calibration Standard 2000µg/mL, Hexane/Carbon Disulfide (80:20), 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2027 **Storage:** 25°C nominal

Handling: Sonicate prior to use. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	n-Nonane (C9)		2,003.5 µg/mL	+/- 11.7577 µg/mL		Gravimetric
	CAS # 111-84-2	(Lot SHBK7143)		+/- 49.7420 µg/mL		Unstressed
	Purity 99%			+/- 59.6365 µg/mL		Stressed
2	n-Decane (C10)		2,008.5 µg/mL	+/- 11.7870 µg/mL		Gravimetric
	CAS # 124-18-5	(Lot SHBL4313)		+/- 49.8662 µg/mL		Unstressed
	Purity 99%			+/- 59.7853 µg/mL		Stressed
3	Naphthalene		2,000.5 µg/mL	+/- 11.7401 µg/mL		Gravimetric
	CAS # 91-20-3	(Lot MKBZ8680V)		+/- 49.6676 µg/mL		Unstressed
	Purity 99%			+/- 59.5472 µg/mL		Stressed
4	n-Dodecane (C12)		2,002.5 µg/mL	+/- 11.7518 µg/mL		Gravimetric
	CAS # 112-40-3	(Lot SHBK0925)		+/- 49.7172 µg/mL		Unstressed
	Purity 99%			+/- 59.6068 µg/mL		Stressed
5	2-Methylnaphthalene		2,008.8 µg/mL	+/- 11.7888 µg/mL		Gravimetric
	CAS # 91-57-6	(Lot STBG8884)		+/- 49.8736 µg/mL		Unstressed
	Purity 96%			+/- 59.7943 µg/mL		Stressed
6	n-Tetradecane (C14)		2,010.0 µg/mL	+/- 11.7958 µg/mL		Gravimetric
	CAS # 629-59-4	(Lot STBJ0716)		+/- 49.9034 µg/mL		Unstressed
	Purity 99%			+/- 59.8300 µg/mL		Stressed
7	n-Hexadecane (C16)		2,009.0 µg/mL	+/- 11.7899 µg/mL		Gravimetric
	CAS # 544-76-3	(Lot SHBJ7508)		+/- 49.8786 µg/mL		Unstressed
	Purity 99%			+/- 59.8002 µg/mL		Stressed

8	n-Octadecane (C18)		2,000.5	µg/mL	+/-	11.7401	µg/mL	Gravimetric
	CAS # 593-45-3	(Lot RI6FI)			+/-	49.6676	µg/mL	Unstressed
	Purity 99%				+/-	59.5472	µg/mL	Stressed
9	n-Eicosane (C20)		2,009.5	µg/mL	+/-	11.7929	µg/mL	Gravimetric
	CAS # 112-95-8	(Lot MKCF7888)			+/-	49.8910	µg/mL	Unstressed
	Purity 99%				+/-	59.8151	µg/mL	Stressed
10	n-Heneicosane (C21)		2,005.5	µg/mL	+/-	11.7694	µg/mL	Gravimetric
	CAS # 629-94-7	(Lot MKBZ8320V)			+/-	49.7917	µg/mL	Unstressed
	Purity 99%				+/-	59.6961	µg/mL	Stressed
11	n-Docosane (C22)		2,011.5	µg/mL	+/-	11.8046	µg/mL	Gravimetric
	CAS # 629-97-0	(Lot MKCH2086)			+/-	49.9407	µg/mL	Unstressed
	Purity 99%				+/-	59.8746	µg/mL	Stressed
12	n-Tetracosane (C24)		2,010.5	µg/mL	+/-	11.7987	µg/mL	Gravimetric
	CAS # 646-31-1	(Lot MKCJ8741)			+/-	49.9158	µg/mL	Unstressed
	Purity 99%				+/-	59.8449	µg/mL	Stressed
13	n-Hexacosane (C26)		2,005.5	µg/mL	+/-	11.7694	µg/mL	Gravimetric
	CAS # 630-01-3	(Lot MKCG6079)			+/-	49.7917	µg/mL	Unstressed
	Purity 99%				+/-	59.6961	µg/mL	Stressed
14	n-Octacosane (C28)		2,008.5	µg/mL	+/-	11.7870	µg/mL	Gravimetric
	CAS # 630-02-4	(Lot BCCB6836)			+/-	49.8662	µg/mL	Unstressed
	Purity 99%				+/-	59.7853	µg/mL	Stressed
15	n-Triacontane (C30)		2,001.7	µg/mL	+/-	11.7468	µg/mL	Gravimetric
	CAS # 638-68-6	(Lot MKCJ4572)			+/-	49.6961	µg/mL	Unstressed
	Purity 98%				+/-	59.5815	µg/mL	Stressed
16	n-Dotriacontane (C32)		2,001.0	µg/mL	+/-	11.7430	µg/mL	Gravimetric
	CAS # 544-85-4	(Lot BCBW0661)			+/-	49.6800	µg/mL	Unstressed
	Purity 99%				+/-	59.5621	µg/mL	Stressed
17	n-Tetratriacontane (C34)		2,005.0	µg/mL	+/-	11.7665	µg/mL	Gravimetric
	CAS # 14167-59-0	(Lot OML4N)			+/-	49.7793	µg/mL	Unstressed
	Purity 99%				+/-	59.6812	µg/mL	Stressed
18	n-Hexatriacontane (C36)		2,006.5	µg/mL	+/-	11.7753	µg/mL	Gravimetric
	CAS # 630-06-8	(Lot MKCK2834)			+/-	49.8165	µg/mL	Unstressed
	Purity 99%				+/-	59.7258	µg/mL	Stressed
19	n-Octatriacontane (C38)		2,013.5	µg/mL	+/-	11.8163	µg/mL	Gravimetric
	CAS # 7194-85-6	(Lot 0000050904)			+/-	49.9903	µg/mL	Unstressed
	Purity 99%				+/-	59.9342	µg/mL	Stressed
20	n-Tetracontane (C40)		2,000.2	µg/mL	+/-	11.7382	µg/mL	Gravimetric
	CAS # 4181-95-7	(Lot 4LJYN)			+/-	49.6596	µg/mL	Unstressed
	Purity 98%				+/-	59.5377	µg/mL	Stressed

Solvent: Hexane/Carbon disulfide (80:20)
CAS # 110-54-3/75-15-0
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

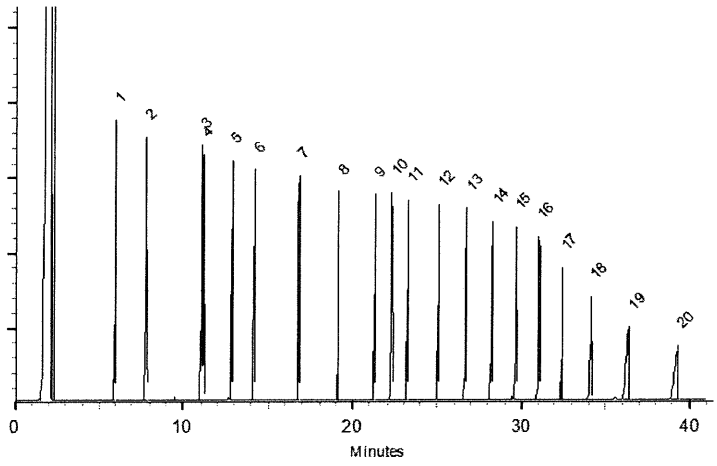
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Clara Windle - Operations Technician I

Date Mixed: 25-Aug-2020 **Balance:** B442140311

Justine Albertson - Operations Tech-ARM QC

Date Passed: 28-Aug-2020

Manufactured under Restek's ISO 9001:2015 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer) -20°C or colder (Deep Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.

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Certificate of Analysis

ACCREDITED
ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

P11311
J
P11323
J.P 01/07/22

Catalog No. : 31480 **Lot No.:** A0175042

Description : MA Fractionation Surrogate Spike Mix

MA Fractionation Surrogate Spike Mix 4000µg/mL, Hexane, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : July 31, 2027 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2-Fluorobiphenyl **CAS #** 321-60-8 **Purity** 99% (Lot 00019169)	4,018.0 µg/mL	+/- 23.5263 µg/mL +/- 180.9945 µg/mL +/- 200.8313 µg/mL	Gravimetric Unstressed Stressed
2	2-Bromonaphthalene **CAS #** 580-13-2 **Purity** 99% (Lot STBC5362V)	4,040.0 µg/mL	+/- 23.6551 µg/mL +/- 181.9855 µg/mL +/- 201.9310 µg/mL	Gravimetric Unstressed Stressed

Solvent: Hexane
CAS # 110-54-3
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

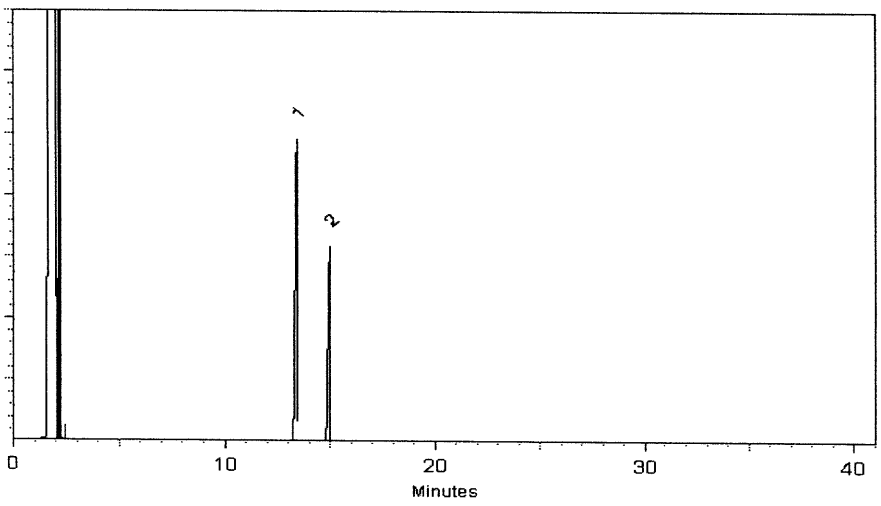
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Russ Bookhamer - Operations Technician I

Date Mixed: 03-Aug-2021 **Balance:** 1128360905

Marlina Cowan - Operations Tech I

Date Passed: 05-Aug-2021

Manufactured under Restek's ISO 9001:2015 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer) -20°C or colder (Deep Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

P11426 ↓ P11448 Y.P 02/10/22

Catalog No. : 30543 **Lot No.:** A0177559

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : September 30, 2027 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	1,2,3-Trimethylbenzene **CAS #** 526-73-8 **Purity** 99%	(Lot 8776.10-14)	201.2 µg/mL	+/- 1.1951 µg/mL +/- 9.0655 µg/mL +/- 10.0586 µg/mL		Gravimetric Unstressed Stressed
2	Naphthalene **CAS #** 91-20-3 **Purity** 99%	(Lot MKCH0219)	201.2 µg/mL	+/- 1.1951 µg/mL +/- 9.0655 µg/mL +/- 10.0586 µg/mL		Gravimetric Unstressed Stressed
3	2-Methylnaphthalene **CAS #** 91-57-6 **Purity** 99%	(Lot STBG8884)	201.2 µg/mL	+/- 1.1951 µg/mL +/- 9.0655 µg/mL +/- 10.0586 µg/mL		Gravimetric Unstressed Stressed
4	Acenaphthylene **CAS #** 208-96-8 **Purity** 98%	(Lot P06V)	201.1 µg/mL	+/- 1.1944 µg/mL +/- 9.0608 µg/mL +/- 10.0534 µg/mL		Gravimetric Unstressed Stressed
5	Acenaphthene **CAS #** 83-32-9 **Purity** 99%	(Lot MKCN0610)	201.2 µg/mL	+/- 1.1951 µg/mL +/- 9.0655 µg/mL +/- 10.0586 µg/mL		Gravimetric Unstressed Stressed
6	Fluorene **CAS #** 86-73-7 **Purity** 99%	(Lot 094650L18G)	201.2 µg/mL	+/- 1.1951 µg/mL +/- 9.0655 µg/mL +/- 10.0586 µg/mL		Gravimetric Unstressed Stressed
7	Phenanthrene **CAS #** 85-01-8 **Purity** 99%	(Lot MKCL7390)	201.2 µg/mL	+/- 1.1951 µg/mL +/- 9.0655 µg/mL +/- 10.0586 µg/mL		Gravimetric Unstressed Stressed

8	Anthracene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 120-12-7	(Lot MKCN0922)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed
9	Fluoranthene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 206-44-0	(Lot MKCF7378)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed
10	Pyrene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 129-00-0	(Lot BCCG2258)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed
11	Benz(a)anthracene		201.6	µg/mL	+/-	1.1974	µg/mL	Gravimetric
	CAS # 56-55-3	(Lot RP210125)			+/-	9.0835	µg/mL	Unstressed
	Purity 96%				+/-	10.0786	µg/mL	Stressed
12	Chrysene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 218-01-9	(Lot STBJ1016)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed
13	Benzo(b)fluoranthene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 205-99-2	(Lot 012012B)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed
14	Benzo(k)fluoranthene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 207-08-9	(Lot 012019K)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed
15	Benzo(a)pyrene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 50-32-8	(Lot Z8BKF)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed
16	Indeno(1,2,3-cd)pyrene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 193-39-5	(Lot 8-URV-2-1)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed
17	Dibenz(a,h)anthracene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 53-70-3	(Lot ER032211-01)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed
18	Benzo(g,h,i)perylene		201.2	µg/mL	+/-	1.1951	µg/mL	Gravimetric
	CAS # 191-24-2	(Lot 8GFYJ)			+/-	9.0655	µg/mL	Unstressed
	Purity 99%				+/-	10.0586	µg/mL	Stressed

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

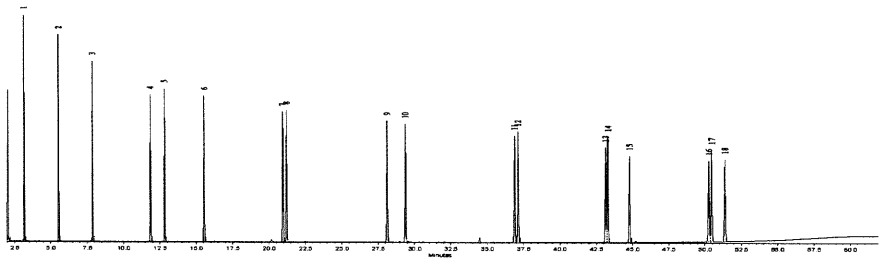
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Ketelyn McGinnl - Operations Tech I

Date Mixed: 18-Oct-2021 **Balance:** 1128353505

John Lidgett

John Lidgett - AD Chemist

Date Passed: 21-Oct-2021

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer) -20°C or colder (Deep Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.

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Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31097 **Lot No.:** A0177896

Description : o-Terphenyl Standard

o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : May 31, 2025 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P11324
1
P11343
Y.P.
01/07/22

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	o-Terphenyl		10,000.6 µg/mL	+/- 58.1413	µg/mL	Gravimetric
	CAS # 84-15-1	(Lot MKCH4487)		+/- 450.4326	µg/mL	Unstressed
	Purity 99%			+/- 499.8107	µg/mL	Stressed

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

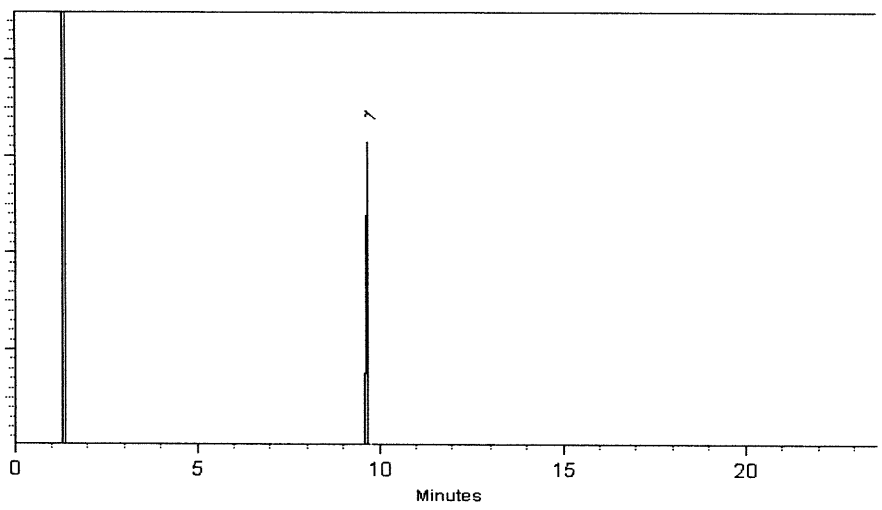
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Morgan Craighead - Mix Technician

Date Mixed: 27-Oct-2021 **Balance:** B442140311

Alexis Shelow - Operations Tech I

Date Passed: 29-Oct-2021

Manufactured under Restek's ISO 9001:2015 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer) -20°C or colder (Deep Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.

RESTEK®
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

P11hh9 J P11h38 Y.P 02/10/24

Catalog No. : 31480 **Lot No.:** A0179976

Description : MA Fractionation Surrogate Spike Mix

MA Fractionation Surrogate Spike Mix 4000µg/mL, Hexane, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2027 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2-Fluorobiphenyl **CAS #** 321-60-8 (Lot 19169) **Purity** 99%	4,026.3 µg/mL	+/- 23.5751 µg/mL +/- 181.3699 µg/mL +/- 201.2479 µg/mL	Gravimetric Unstressed Stressed
2	2-Bromonaphthalene **CAS #** 580-13-2 (Lot STBC5362V) **Purity** 99%	4,023.0 µg/mL	+/- 23.5555 µg/mL +/- 181.2198 µg/mL +/- 201.0812 µg/mL	Gravimetric Unstressed Stressed

Solvent: Hexane
CAS # 110-54-3
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

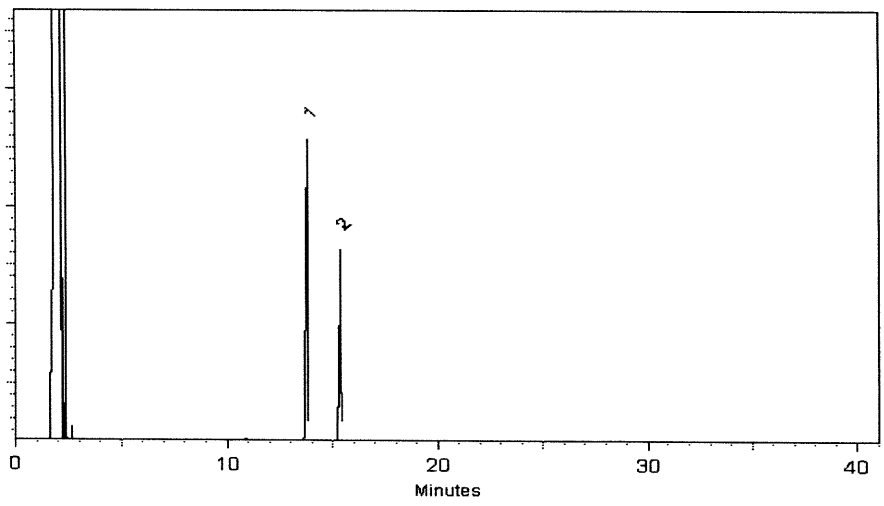
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Damian Mains - Operations Tech I

Date Mixed: 26-Dec-2021 **Balance:** B345965662

Clara Windle - Operations Technician I

Date Passed: 29-Dec-2021

Manufactured under Restek's ISO 9001:2015 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer) -20°C or colder (Deep Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.

Sand
Purified
Washed and Ignited

avantor™ | J.T.Baker®

Material No.: 3382-05
Batch No.: 0000243821
Manufactured Date: 2018/04/09
Retest Date: 2025/04/07
Revision No: 1

Certificate of Analysis

Test	Specification	Result
Substances Soluble in HCl	<= 0.16 %	0.01

For Laboratory, Research or Manufacturing Use
Meets Reagent Specifications for testing USP/NF monographs

Country of Origin: US
Packaging Site: Paris Mfg Ctr & DC

E 2865

James T Ethier

Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Hexanes (95% n-hexane)
BAKER RESI-ANALYZED® Reagent

avantor™ | J.T.Baker®

Material No.: 9262-03
Batch No.: 21K1662002
Manufactured Date: 2021-10-19
Expiration Date: 2023-01-18
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	≤ 5	< 1
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	≤ 10	3
ECD-Sensitive Impurities (as Ethylene Dibromide) - Single Impurity Peak (ng/mL)	≤ 5	< 1
Assay (Total Saturated C_6 Isomers) (by GC, corrected for water)	≥ 99.5 %	99.7 %
Assay (as n-Hexane) (by GC, corrected for water)	≥ 95 %	98 %
Color (APHA)	≤ 10	5
Residue after Evaporation	≤ 1.0 ppm	< 0.1 ppm
Substances Darkened by H_2SO_4	Passes Test	Passes Test
Water (by KF, coulometric)	≤ 0.05 %	< 0.01 %

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD
Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

E 3237

James T Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone 610.386.1700

Hexanes (95% n-hexane)
ULTRA RESI-ANALYZED
For Organic Residue Analysis

avantor™ | J.T.Baker®

Material No.: 9262-03
Batch No.: 0000286118
Manufactured Date: 2021/06/05
Expiration Date: 2022/09/04
Revision No: 1

Certificate of Analysis

Test	Specification	Result
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	<= 5	< 1
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	<= 10	< 1
ECD-Sensitive Impurities (as Ethylene Dibromide) - Single Impurity Peak (ng/mL)	<= 5	< 1
Assay (Total Saturated C_6 Isomers) (by GC, corrected for water)	>= 99.5 %	99.7
Assay (as n-Hexane) (by GC, corrected for water)	>= 95 %	98
Color (APHA)	<= 10	10
Residue after Evaporation	<= 1.0 ppm	0.1
Substances Darkened by H_2SO_4	Passes Test	PT
Water (by KF, coulometric)	<= 0.05 %	< 0.01

For Laboratory, Research or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: US
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd. by RP on 2/2/22.

E 3243

James Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Acetone
ULTRA RESI-ANALYZED
For Organic Residue Analysis

avantor™ | J.T.Baker®

Material No.: 9254-03
Batch No.: 0000285502
Manufactured Date: 2021/02/03
Expiration Date: 2024/02/03
Revision No: 1

Certificate of Analysis

Test	Specification	Result
Assay ($(CH_3)_2CO$) (by GC, corrected for water)	>= 99.4 %	99.7
Color (APHA)	<= 10	10
Residue after Evaporation	<= 1.0000 ppm	0.1000
Substances Reducing Permanganate	Passes Test	PT
Titrable Acid (µeq/g)	<= 0.3	0.2
Titrable Base (µeq/g)	<= 0.6	< 0.1
Water (H_2O)	<= 0.5 %	0.3
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	<= 5	< 1
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	<= 10	1

For Laboratory, Research or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: US
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd. by RP on 3/22/22

E 3290

James Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Methylene Chloride
ULTRA RESI-ANALYZED
For Organic Residue Analysis
(dichloromethane)

avantor™ | J.T.Baker®

Material No.: 9266-A4
Batch No.: 22B2462008
Manufactured Date: 2022-02-03
Expiration Date: 2023-05-05
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	≤ 5	< 1
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	≤ 10	1
Assay (CH_2Cl_2) (by GC, exclusive of preservative, corrected for water)	≥ 99.8 %	100.0 %
Color (APHA)	≤ 10	5
Residue after Evaporation	≤ 1.0 ppm	0.1 ppm
Titrable Acid (µeq/g)	≤ 0.3	< 0.1
Chloride (Cl)	≤ 10 ppm	5 ppm
Water (by KF, coulometric)	≤ 0.02 %	< 0.01 %

For Laboratory,Research,or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD
Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

E 3292

James T Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone 610.386.1700

Acetone
ULTRA RESI-ANALYZED
For Organic Residue Analysis

avantor™ | J.T.Baker®

Material No.: 9254-03
Batch No.: 0000285137
Manufactured Date: 2021/05/12
Expiration Date: 2024/05/11
Revision No: 1

Certificate of Analysis

Test	Specification	Result
Assay ($(CH_3)_2CO$) (by GC, corrected for water)	>= 99.4 %	99.7
Color (APHA)	<= 10	10
Residue after Evaporation	<= 1.0000 ppm	0.4000
Substances Reducing Permanganate	Passes Test	PT
Titrable Acid (µeq/g)	<= 0.3	0.1
Titrable Base (µeq/g)	<= 0.6	< 0.1
Water (H_2O)	<= 0.5 %	0.3
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	<= 5	< 1
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	<= 10	2

For Laboratory, Research or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: US
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd. by RP on 3/30/22

E3294

James Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

PRODUCTOS QUIMICOS MONTERREY, S.A. DE C.V.

MIRADOR 201, COL. MIRADOR
MONTERREY, N.L. MÉXICO
CP 64070
TEL +52 81 13 52 57 57
www.pqm.com.mx

CERTIFICATE OF ANALYSIS

PRODUCT :	SODIUM SULFATE CRYSTALS ANHYDROUS		
QUALITY :	ACS (CODE RMB3375)	FORMULA :	Na_2SO_4
SPECIFICATION NUMBER :	6399	RELEASE DATE:	JUL/22/2021
LOT NUMBER :	125102		

TEST	SPECIFICATIONS	LOT VALUES
Assay (Na_2SO_4)	Min. 99.0%	99.8 %
pH of a 5% solution at 25°C	5.2 - 9.2	6.0
Insoluble matter	Max. 0.01%	0.005 %
Loss on ignition	Max. 0.5%	0.1 %
Chloride (Cl)	Max. 0.001%	<0.001%
Nitrogen compounds (as N)	Max. 5 ppm	<5 ppm
Phosphate (PO_4)	Max. 0.001%	<0.001%
Heavy metals (as Pb)	Max. 5 ppm	<5 ppm
Iron (Fe)	Max. 0.001%	<0.001%
Calcium (Ca)	Max. 0.01%	0.002 %
Magnesium (Mg)	Max. 0.005%	0.001 %
Potassium (K)	Max. 0.008%	0.002 %
Extraction-concentration suitability	Passes test	Passes test
Appearance	Passes test	Passes test
Identification	Passes test	Passes test
Solubility and foreing matter	Passes test	Passes test
Retained on US Standard No. 10 sieve	Max. 1%	0.33 %
Retained on US Standard No. 60 sieve	Min. 94%	97.40 %
Through US Standard No. 60 sieve	Max. 5%	2.04 %
Through US Standard No. 100 sieve	Max. 10%	0.23 %

COMMENTS

E3296

QC: PhC Irma Belmares

If you need further details, please call our factory or contact our local distributor.

Hexanes (95% n-hexane)
BAKER RESI-ANALYZED® Reagent

avantor™ | JTBaker

Material No.: 9262-03
Batch No.: 22B0762004
Manufactured Date: 2021-11-24
Expiration Date: 2023-02-23
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	≤ 5	< 1
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	≤ 10	1
ECD-Sensitive Impurities (as Ethylene Dibromide) - Single Impurity Peak (ng/mL)	≤ 5	< 1
Assay (Total Saturated C_6 Isomers) (by GC, corrected for water)	≥ 99.5 %	99.7 %
Assay (as n-Hexane) (by GC, corrected for water)	≥ 95 %	98 %
Color (APHA)	≤ 10	5
Residue after Evaporation	≤ 1.0 ppm	< 0.1 ppm
Substances Darkened by H_2SO_4	Passes Test	Passes Test
Water (by KF, coulometric)	≤ 0.05 %	< 0.01 %

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD
Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd by RP on 4/14/22

E 3314

James T Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone 610.386.1700

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT

Part Number: 95899
Lot Number: 092821
Description: NJ EPH Aliphatic n-Hydrocarbons - Revised
20 components
Expiration Date: 092831
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test ID#: 6UTB

Solvent(s):	Lot#
Cyclohexane	28930

Formulated By:	Benson Chan	092821 DATE
Reviewed By:	Pedro L. Rentas	092821 DATE

5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 25.0 0.005 Flask Uncertainty
CAUTION: Sonicate Before Use

	Compound	(RM#) Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Initial Conc (ug/mL)	Nominal Conc (µg/mL)	Purity (%)	Purity Uncertainty	Uncertainty Pipette	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	2-Methylnaphthalene	(0214)	MKBF3783V	NA	NA	NA	1000	97	0.2	NA	0.02577	0.02581	1001.6	5.7	91-57-6	N/A	orl-rat 1630mg/kg
2.	Naphthalene	(0222)	MKBZ8680V	NA	NA	NA	1000	100	0.2	NA	0.02500	0.02506	1002.6	5.7	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
3.	n-Nonane	95708	081621	1.00	25.00	1000.8	1000	NA	NA	0.013	NA	NA	1000.9	4.2	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
4.	n-Decane	95708	081621	1.00	25.00	1000.9	1000	NA	NA	0.013	NA	NA	1001.1	4.2	124-18-5	N/A	N/A
5.	n-Dodecane	95708	081621	1.00	25.00	1001.2	1000	NA	NA	0.013	NA	NA	1001.3	4.2	112-40-3	N/A	ivn-mus 3494mg/kg
6.	n-Tetradecane	95708	081621	1.00	25.00	1002.0	1000	NA	NA	0.013	NA	NA	1002.2	4.2	629-59-4	N/A	N/A
7.	n-Hexadecane	95708	081621	1.00	25.00	1001.9	1000	NA	NA	0.013	NA	NA	1002.0	4.2	544-76-3	N/A	N/A
8.	n-Octadecane	95708	081621	1.00	25.00	1011.8	1000	NA	NA	0.013	NA	NA	1012.0	4.2	593-45-3	N/A	N/A
9.	n-Eicosane	95708	081621	1.00	25.00	1000.5	1000	NA	NA	0.013	NA	NA	1000.7	4.2	112-95-8	N/A	N/A
10.	n-Heneicosane	95708	081621	1.00	25.00	1001.2	1000	NA	NA	0.013	NA	NA	1001.4	4.2	629-94-7	N/A	N/A
11.	n-Docosane	95708	081621	1.00	25.00	1001.6	1000	NA	NA	0.013	NA	NA	1001.7	4.2	629-97-0	N/A	N/A
12.	n-Tetracosane	95708	081621	1.00	25.00	1001.3	1000	NA	NA	0.013	NA	NA	1001.4	4.2	646-31-1	N/A	N/A
13.	n-Hexacosane	95708	081621	1.00	25.00	1000.4	1000	NA	NA	0.013	NA	NA	1000.5	4.2	630-01-3	N/A	N/A
14.	n-Octacosane	95708	081621	1.00	25.00	1001.7	1000	NA	NA	0.013	NA	NA	1001.9	4.2	630-02-4	N/A	N/A
15.	n-Triacontane	95708	081621	1.00	25.00	1001.0	1000	NA	NA	0.013	NA	NA	1001.2	4.2	638-68-6	N/A	N/A
16.	n-Dotriacontane	95708	081621	1.00	25.00	1000.7	1000	NA	NA	0.013	NA	NA	1000.9	4.3	544-85-4	N/A	ivn-mus 100mg/kg
17.	n-Tetratriacontane	95708	081621	1.00	25.00	1000.8	1000	NA	NA	0.013	NA	NA	1000.9	4.2	14167-59-0	N/A	N/A
18.	n-Hexatriacontane	95708	081621	1.00	25.00	1000.9	1000	NA	NA	0.013	NA	NA	1001.1	4.2	630-06-8	N/A	N/A
19.	n-Octatriacontane	95708	081621	1.00	25.00	1000.8	1000	NA	NA	0.013	NA	NA	1000.9	4.3	7194-85-6	N/A	N/A
20.	n-Tetracontane	95708	081621	1.00	25.00	1000.5	1000	NA	NA	0.013	NA	NA	1000.6	4.3	4181-95-7	N/A	N/A

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

P 11112
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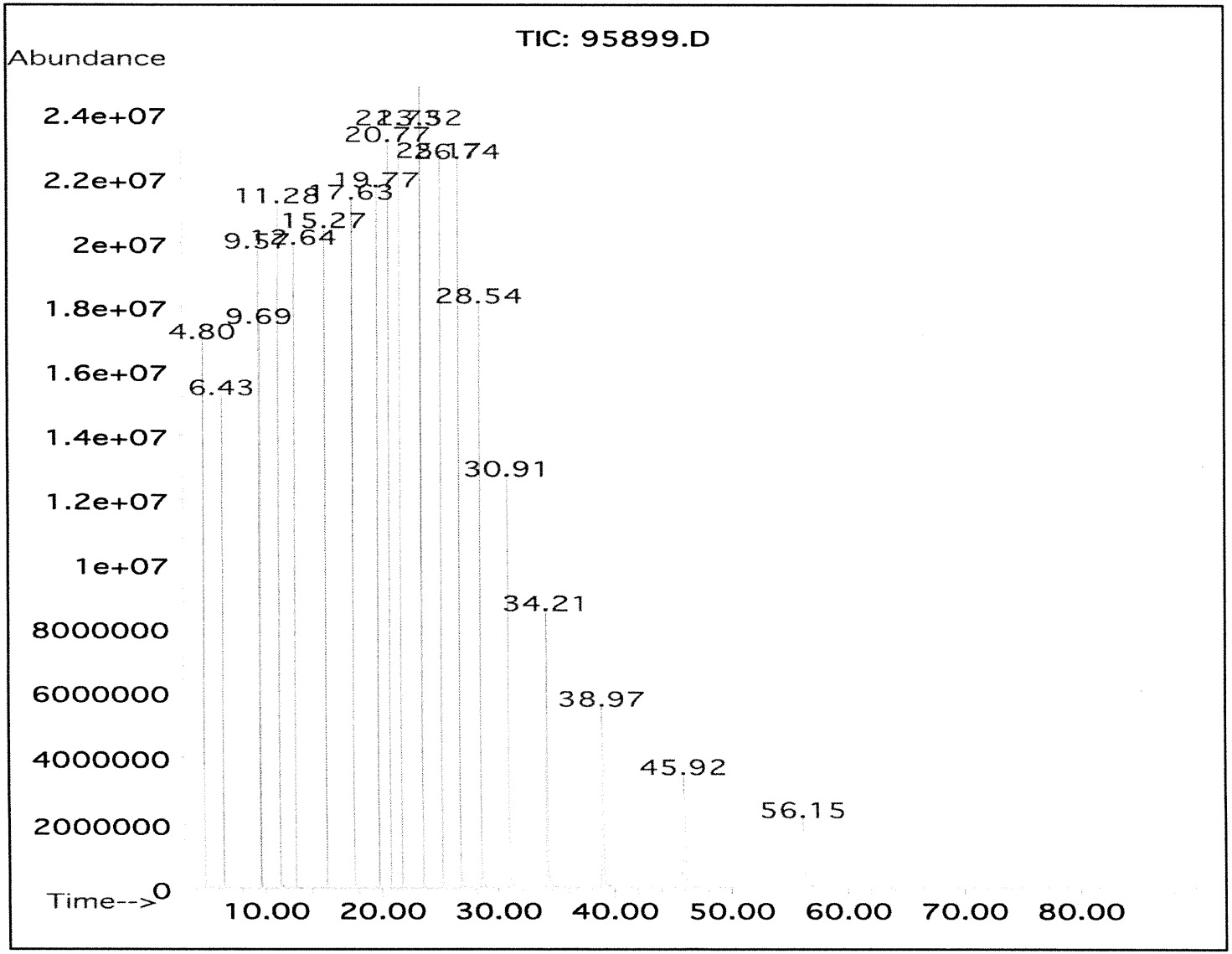
P 11116
AR
10/01/2021

Method GC8HOT.M: Column: SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 320°C (20 min.), Rate = 30°C/min., Injector B= 250°C, Detector B = 300°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by Melissa Stonier.



Peak No.	Name	MSD RT (min.)
1	n-Nonane	4.80
2	n-Decane	6.43
3	Naphthalene	9.57
4	n-Dodecane	9.69
5	2-Methylnaphthalene	11.28
6	n-Tetradecane	12.64
7	n-Hexadecane	15.27
8	n-Octadecane	17.93
9	n-Eicosane	19.77
10	n-Heneicosane	20.77
11	n-Docosane	21.73
12	n-Tetracosane	23.52
13	n-Hexacosane	25.18
14	n-Octacosane	26.74
15	n-Triacontane	28.54
16	n-Dotriacontane	30.91
17	n-Tetratriacontane	34.21
18	n-Hexatriacontane	38.97
19	n-Octatriacontane	45.92
20	n-Tetracontane	56.15

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This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

P10963
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P10982
AR
08/09/2021

Catalog No. : 31098 **Lot No.:** A0171297

Description : 1-Chlorooctadecane Standard

1-Chlorooctadecane Standard 10,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : May 31, 2028 **Storage:** 10°C or colder

Ship: Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	1-Chlorooctadecane	10,002.3 µg/mL	+/- 58.1539	µg/mL	Gravimetric
	CAS # 3386-33-2 (Lot 10951900)		+/- 560.8162	µg/mL	Unstressed
	Purity 99%		+/- 573.9386	µg/mL	Stressed

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

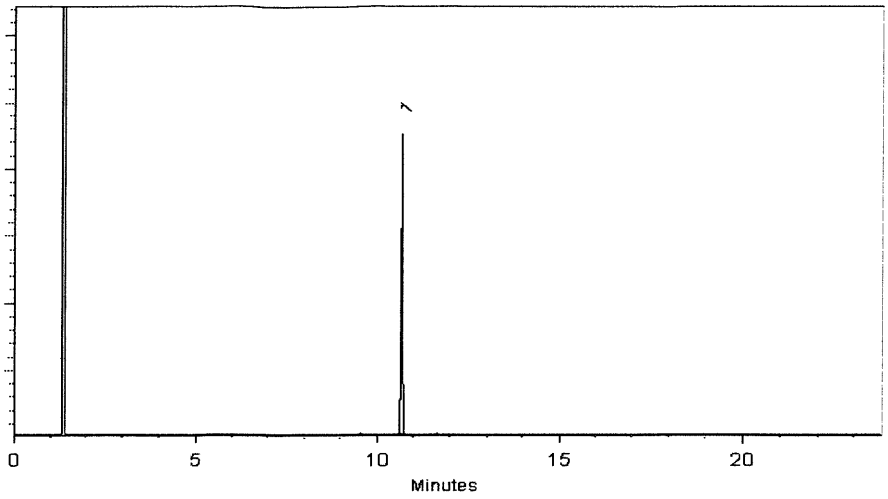
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Sam Moodler - Operations Tech I

Date Mixed: 13-Apr-2021 **Balance:** B442140311

Marlina Cowan - Operations Tech I

Date Passed: 15-Apr-2021

Manufactured under Restek's ISO 9001:2015 Registered Quality System Certificate #FM 80397

P10963
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P10982

AR
08/09/2021

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P10983
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P11092
AR
08/09/2021

Catalog No. : 31097 **Lot No.:** A0173046

Description : o-Terphenyl Standard

o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2025 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	o-Terphenyl	10,063.0 µg/mL	+/- 58.9211	µg/mL	Gravimetric
	CAS # 84-15-1 (Lot MKCH4487)		+/- 453.2972	µg/mL	Unstressed
	Purity 99%		+/- 502.9780	µg/mL	Stressed

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

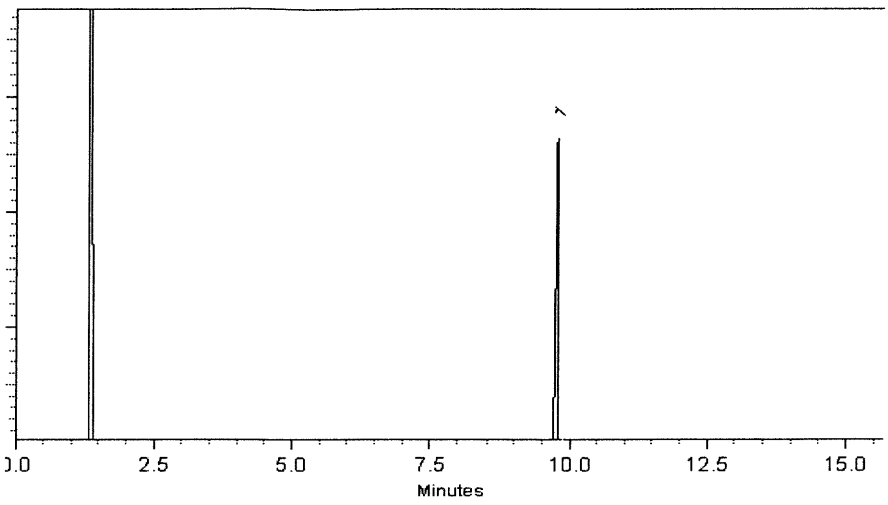
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Aurelia Confer - Operations Tech I

Date Mixed: 04-Jun-2021 **Balance:** B345965662

Alexis Shelow - Operations Tech I

Date Passed: 09-Jun-2021

Manufactured under Restek's ISO 9001:2015 Registered Quality System Certificate #FM 80397

P10983
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P11002

AR 08/09/2021

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P11344 ↓ P11363 (20)

AR 01/11/2022

Catalog No. : 31098 **Lot No.:** A0177029

Description : 1-Chlorooctadecane Standard

1-Chlorooctadecane Standard 10,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2028 **Storage:** 10°C or colder

Ship: Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	1-Chlorooctadecane	10,009.0 µg/mL	+/- 58.1932 µg/mL	Gravimetric
	CAS # 3386-33-2 (Lot 12343600)		+/- 561.1947 µg/mL	Unstressed
	Purity 99%		+/- 574.3259 µg/mL	Stressed

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

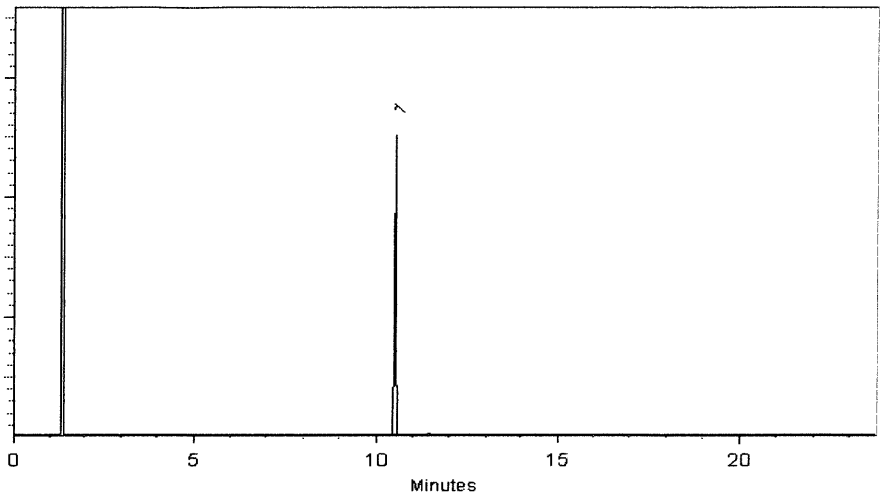
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cathleen Soltis - Mix Technician

Date Mixed: 30-Sep-2021 **Balance:** B345965662

Marlina Cowan - Operations Tech I

Date Passed: 04-Oct-2021

Manufactured under Restek's ISO 9001:2015 Registered Quality System Certificate #FM 80397

P11344 ↓ P11363 (20)

AR 01/11/2022

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0180740

Description : NJEPH Aliphatics Matrix Spike Mix

NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : February 28, 2029 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P11394 J Y-P 02/10/22
P11425

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	n-Nonane (C9) **CAS #** 111-84-2 **Purity** 99%	(Lot SHBK7143)	202.0 µg/mL	+/- 1.4323 µg/mL +/- 5.0792 µg/mL +/- 6.0663 µg/mL	Gravimetric Unstressed Stressed
2	n-Decane (C10) **CAS #** 124-18-5 **Purity** 99%	(Lot SHBM1113)	202.0 µg/mL	+/- 1.4323 µg/mL +/- 5.0792 µg/mL +/- 6.0663 µg/mL	Gravimetric Unstressed Stressed
3	n-Dodecane (C12) **CAS #** 112-40-3 **Purity** 99%	(Lot SHBK0925)	201.0 µg/mL	+/- 1.4253 µg/mL +/- 5.0541 µg/mL +/- 6.0362 µg/mL	Gravimetric Unstressed Stressed
4	n-Tetradecane (C14) **CAS #** 629-59-4 **Purity** 99%	(Lot STBK2282)	202.0 µg/mL	+/- 1.4323 µg/mL +/- 5.0792 µg/mL +/- 6.0663 µg/mL	Gravimetric Unstressed Stressed
5	n-Hexadecane (C16) **CAS #** 544-76-3 **Purity** 98%	(Lot SHBM4146)	201.9 µg/mL	+/- 1.4315 µg/mL +/- 5.0762 µg/mL +/- 6.0627 µg/mL	Gravimetric Unstressed Stressed
6	n-Octadecane (C18) **CAS #** 593-45-3 **Purity** 97%	(Lot VZKOJ)	200.8 µg/mL	+/- 1.4238 µg/mL +/- 5.0488 µg/mL +/- 6.0299 µg/mL	Gravimetric Unstressed Stressed
7	n-Eicosane (C20) **CAS #** 112-95-8 **Purity** 99%	(Lot MKCF7888)	202.0 µg/mL	+/- 1.4323 µg/mL +/- 5.0792 µg/mL +/- 6.0663 µg/mL	Gravimetric Unstressed Stressed

8	n-Heneicosane (C21) **CAS #** 629-94-7 **Purity** 99%	(Lot MKCL3226)	201.5	µg/mL	+/- 1.4288 +/- 5.0666 +/- 6.0513	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	n-Docosane (C22) **CAS #** 629-97-0 **Purity** 99%	(Lot MKCL8918)	202.0	µg/mL	+/- 1.4323 +/- 5.0792 +/- 6.0663	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
10	n-Tetracosane (C24) **CAS #** 646-31-1 **Purity** 99%	(Lot MKCJ8741)	202.0	µg/mL	+/- 1.4323 +/- 5.0792 +/- 6.0663	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
11	n-Hexacosane (C26) **CAS #** 630-01-3 **Purity** 99%	(Lot MKCD4540)	201.5	µg/mL	+/- 1.4288 +/- 5.0666 +/- 6.0513	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
12	n-Octacosane (C28) **CAS #** 630-02-4 **Purity** 99%	(Lot BCCG0084)	201.0	µg/mL	+/- 1.4253 +/- 5.0541 +/- 6.0362	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
13	n-Triacontane (C30) **CAS #** 638-68-6 **Purity** 99%	(Lot MKCN9321)	201.0	µg/mL	+/- 1.4253 +/- 5.0541 +/- 6.0362	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
14	n-Dotriacontane (C32) **CAS #** 544-85-4 **Purity** 99%	(Lot BCBW0661)	201.5	µg/mL	+/- 1.4288 +/- 5.0666 +/- 6.0513	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
15	n-Tetratriacontane (C34) **CAS #** 14167-59-0 **Purity** 99%	(Lot OML4N)	201.0	µg/mL	+/- 1.4253 +/- 5.0541 +/- 6.0362	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
16	n-Hexatriacontane (C36) **CAS #** 630-06-8 **Purity** 99%	(Lot MKCK2834)	201.5	µg/mL	+/- 1.4288 +/- 5.0666 +/- 6.0513	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
17	n-Octatriacontane (C38) **CAS #** 7194-85-6 **Purity** 97%	(Lot 0000127235)	201.8	µg/mL	+/- 1.4306 +/- 5.0732 +/- 6.0591	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
18	n-Tetracontane (C40) **CAS #** 4181-95-7 **Purity** 98%	(Lot PADGI)	201.9	µg/mL	+/- 1.4315 +/- 5.0762 +/- 6.0627	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

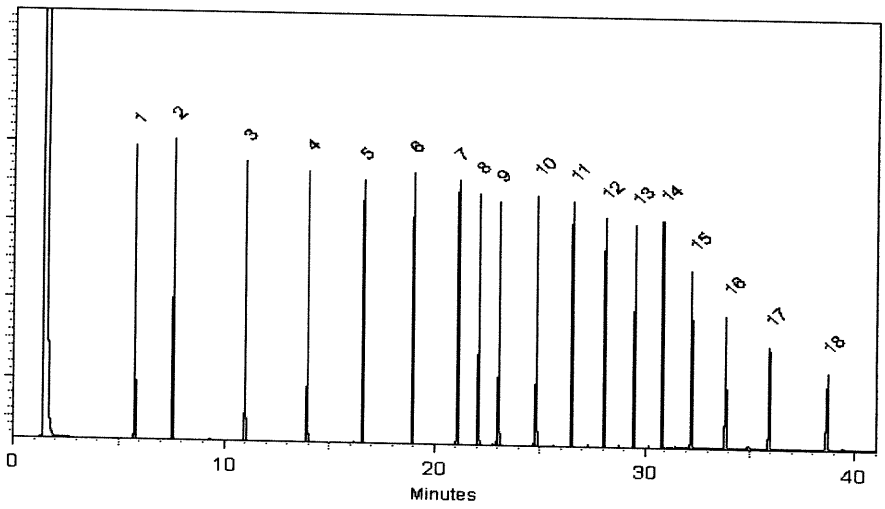
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Brittany Federinko - Operations Tech I

Date Mixed: 18-Jan-2022 **Balance:** 1128360905

Clara Windle - Operations Technician I

Date Passed: 21-Jan-2022

Manufactured under Restek's ISO 9001:2015 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer) -20°C or colder (Deep Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.