

Prep Standard - Chemical Standard Summary**Order ID :** O4699**Test :** Diesel Range Organics**Prepbatch ID :** PB156105,**Sequence ID/Qc Batch ID:** FE100623,**Standard ID :**

EP2394,PP22137,PP22486,PP22553,PP22555,PP22556,PP22557,PP22558,

Chemical ID :

E3412,E3518,E3557,E3570,E3572,P11855,P11856,P11861,P11862,P11973,P11974,P11975,P11976,P12292,

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3923	Baked Sodium Sulfate	EP2394	10/03/2023	10/23/2023	RUPESHKUMAR SHAH	Extraction_SCALE_2 (EX-SC-2)	None	Rajesh Parikh 10/03/2023
<u>FROM</u> 1.00000gram of E3412 = Final Quantity: 4000.000 gram								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3609	20 PPM DRO SPIKE SOLUTION (RESTEK)	PP22137	06/19/2023	12/13/2023	Yogesh Patel	None	None	Ankita Jodhani 06/20/2023
<u>FROM</u> 1.00000ml of P11855 + 1.00000ml of P11856 + 48.00000ml of E3518 = Final Quantity: 50.000 ml								

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<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
147	20 PPM DRO Surrogate Spike Solution	PP22486	08/15/2023	02/10/2024	Ankita Jodhani	None	None	Yogesh Patel 08/18/2023
<u>FROM</u> 1.00000ml of P11973 + 1.00000ml of P11974 + 1.00000ml of P11975 + 1.00000ml of P11976 + 196.00000ml of E3557 = Final Quantity: 200.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
433	100/100 PPM DRO (Restek)	PP22553	09/21/2023	03/21/2024	Yogesh Patel	None	None	Ankita Jodhani 09/22/2023
<u>FROM</u>	1.00000ml of P11861 + 1.00000ml of P11862 + 1.00000ml of P12292 + 7.00000ml of E3570 = Final Quantity: 10.000 ml							

CHEMTECH

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Pest/Pcb STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
435	50 PPM ICC DRO STD (Restek)	PP22555	09/21/2023	03/21/2024	Yogesh Patel	None	None	Ankita Jodhani
09/22/2023								

FROM 0.50000ml of E3570 + 0.50000ml of PP22553 = Final Quantity: 1.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
437	20 PPM ICC DRO STD (Restek)	PP22556	09/21/2023	03/21/2024	Yogesh Patel	None	None	Ankita Jodhani
09/22/2023								

FROM 0.80000ml of E3570 + 0.20000ml of PP22553 = Final Quantity: 1.000 ml

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<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
438	10 PPM ICC DRO STD (Restek)	PP22557	09/21/2023	03/21/2024	Yogesh Patel	None	None	Ankita Jodhani 09/22/2023
<u>FROM</u>	0.90000ml of E3570 + 0.10000ml of PP22553 = Final Quantity: 1.000 ml							

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
439	5 PPM ICC DRO STD (Restek)	PP22558	09/21/2023	03/21/2024	Yogesh Patel	None	None	Ankita Jodhani 09/22/2023
<u>FROM</u>	0.90000ml of E3570 + 0.10000ml of PP22555 = Final Quantity: 1.000 ml							

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	139404	04/10/2024	10/18/2022 / Rajesh	10/13/2022 / Rajesh	E3412

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)	23E0962014	12/13/2023	06/13/2023 / Rajesh	06/07/2023 / Rajesh	E3518

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)	23F0862004	02/10/2024	08/10/2023 / Rajesh	07/14/2023 / Rajesh	E3557

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)	23G0562006	08/24/2024	09/15/2023 / RUPESH	06/29/2023 / RUPESH	E3570

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)	23H2962015	03/25/2024	09/25/2023 / Rajesh	09/25/2023 / Rajesh	E3572

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31266 / Florida TRPH Standard	A0184585	12/19/2023	06/19/2023 / yogesh	06/17/2022 / Yogesh	P11855

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31266 / Florida TRPH Standard	A0184585	12/19/2023	06/19/2023 / yogesh	06/17/2022 / Yogesh	P11856

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31266 / Florida TRPH Standard	A0184585	03/21/2024	09/21/2023 / yogesh	06/17/2022 / Yogesh	P11861

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	31266 / Florida TRPH Standard	A0184585	03/21/2024	09/21/2023 / yogesh	06/17/2022 / Yogesh	P11862

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	72072 / n-Tetracosane-d50, 1000 ug/ml	091120	02/15/2024	08/15/2023 / Ankita	07/25/2022 / Yogesh	P11973

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	72072 / n-Tetracosane-d50, 1000 ug/ml	091120	02/15/2024	08/15/2023 / Ankita	07/25/2022 / Yogesh	P11974

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	72072 / n-Tetracosane-d50, 1000 ug/ml	091120	02/15/2024	08/15/2023 / Ankita	07/25/2022 / Yogesh	P11975



284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	72072 / n-Tetracosane-d50, 1000 ug/ml	091120	02/15/2024	08/15/2023 / Ankita	07/25/2022 / Yogesh	P11976

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	72072 / n-Tetracosane-d50, 1000 ug/ml	101122	03/21/2024	09/21/2023 / yogesh	02/22/2023 / Yogesh	P12292




**PRODUCTOS
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www.pqm.com.mx

CERTIFICATE OF ANALYSIS

PRODUCT : SODIUM SULFATE CRYSTALS ANHYDROUS
QUALITY : ACS (CODE RMB3375) **FORMULA :** Na₂SO₄
SPECIFICATION NUMBER : 6399 **RELEASE DATE:** OCT/28/2021
LOT NUMBER : 139404

TEST	SPECIFICATIONS	LOT VALUES
Assay (Na ₂ SO 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 foreign matter	Passes test	Passes test
Retained on US Standard No. 10 sieve	Max. 1%	0.2 %
Retained on US Standard No. 60 sieve	Min. 94%	97.6 %
Through US Standard No. 60 sieve	Max. 5%	2.1 %
Through US Standard No. 100 sieve	Max. 10%	0.2 %
COMMENTS		
 QC: PhC Irma Belmares		

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

E 3412

Recd. by RP on 10/13/22

RE-02-01, Ed. 3

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



Material No.: 9266-A4
Batch No.: 23E0962014
Manufactured Date: 2023-04-24
Expiration Date: 2024-07-23
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	≤ 5	2
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	≤ 10	6
Assay (CH_2Cl_2) (by GC, exclusive of preservative, corrected for water)	$\geq 99.8 \%$	100.0 %
Color (APHA)	≤ 10	5
Residue after Evaporation	$\leq 1.0 \text{ ppm}$	$< 0.1 \text{ ppm}$
Titration Acid ($\mu\text{eq/g}$)	≤ 0.3	< 0.1
Chloride (Cl)	$\leq 10 \text{ ppm}$	5 ppm
Water (by KF, coulometric)	$\leq 0.02 \%$	$< 0.01 \%$

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

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

E3518

Ken Koehnlein
Sr. Manager, Quality Assurance

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)



Material No.: 9266-A4
Batch No.: 23F0862004
Manufactured Date: 2023-05-16
Expiration Date: 2024-08-14
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	4
Assay (CH_2Cl_2) (by GC, exclusive of preservative, corrected for water)	$\geq 99.8 \%$	100.0 %
Color (APHA)	≤ 10	10
Residue after Evaporation	$\leq 1.0 \text{ ppm}$	0.4 ppm
Titration Acid ($\mu\text{eq/g}$)	≤ 0.3	< 0.1
Chloride (Cl)	$\leq 10 \text{ ppm}$	< 5 ppm
Water (by KF, coulometric)	$\leq 0.02 \%$	< 0.01 %

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

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC
Manufacturer source batch: MG23E16942

E 3557

Ken Koehnlein
Sr. Manager, Quality Assurance

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)



Material No.: 9266-A4
Batch No.: 23G0562006
Manufactured Date: 2023-05-26
Expiration Date: 2024-08-24
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	2
Assay (CH ₂ Cl ₂) (by GC, exclusive of preservative, corrected for water)	$\geq 99.8 \%$	100.0 %
Color (APHA)	≤ 10	5
Residue after Evaporation	≤ 1.0 ppm	0.2 ppm
Titration Acid (μ eq/g)	≤ 0.3	< 0.1
Chloride (Cl)	≤ 10 ppm	< 5 ppm
Water (by KF, coulometric)	$\leq 0.02 \%$	< 0.01 %

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

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC
Manufacturer source batch: MG23E26991

E3570

Ken Koehnlein
Sr. Manager, Quality Assurance

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC

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



Material No.: 9266-A4
Batch No.: 23H2962015
Manufactured Date: 2023-08-08
Expiration Date: 2024-11-06
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	≤ 5	3
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	≤ 10	7
Assay (CH ₂ Cl ₂) (by GC, exclusive of preservative, corrected for water)	$\geq 99.8 \%$	100.0 %
Color (APHA)	≤ 10	5
Residue after Evaporation	≤ 1.0 ppm	0.1 ppm
Titration Acid (μ eq/g)	≤ 0.3	< 0.1
Chloride (Cl)	≤ 10 ppm	< 5 ppm
Water (by KF, coulometric)	$\leq 0.02 \%$	< 0.01 %

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

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC
Manufacturer source batch: MG23H08469

E 3572

Ken Koehnlein
Sr. Manager, Quality Assurance

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

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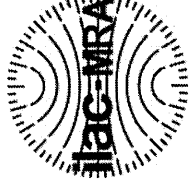


110 Benner Circle
Bellefonte, PA 16823-8812
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Fax: (814)353-1309

www.restek.com

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.

Catalog No. : 31266 Lot No.: A0184585

Description : Florida TRPH Standard

Container Size : 2 mL Pkg Amt: > 1 mL

Expiration Date : May 31, 2029 Storage: 25°C nominal

Handling: Sonicate prior to use. Ship: Ambient

P11852
↓
y.p
06/17
P1866

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.I.; K=2)
1	n-Octane (C8) CAS # 111-65-9 Purity 99%	500.3 µg/mL (Lot SHBN3807)	+/- 2.9718 µg/mL Gravimetric +/- 12.4305 µg/mL Unstressed +/- 14.9001 µg/mL Stressed
2	n-Decane (C10) CAS # 124-18-5 Purity 99%	501.7 µg/mL (Lot SHBN8619)	+/- 2.9797 µg/mL Gravimetric +/- 12.4637 µg/mL Unstressed +/- 14.9398 µg/mL Stressed
3	n-Dodecane (C12) CAS # 112-40-3 Purity 99%	504.7 µg/mL (Lot SHBN7174)	+/- 2.9976 µg/mL Gravimetric +/- 12.5382 µg/mL Unstressed +/- 15.0291 µg/mL Stressed
4	n-Tetradecane (C14) CAS # 629-59-4 Purity 99%	503.7 µg/mL (Lot STBJ3715)	+/- 2.9916 µg/mL Gravimetric +/- 12.5133 µg/mL Unstressed +/- 14.9993 µg/mL Stressed
5	n-Hexadecane (C16) CAS # 544-76-3 Purity 98%	502.7 µg/mL (Lot SHBM4146)	+/- 2.9861 µg/mL Gravimetric +/- 12.4903 µg/mL Unstressed +/- 14.9717 µg/mL Stressed
6	n-Octadecane (C18) CAS # 593-45-3 Purity 98%	502.7 µg/mL (Lot UESNG)	+/- 2.9861 µg/mL Gravimetric +/- 12.4903 µg/mL Unstressed +/- 14.9717 µg/mL Stressed
7	n-Eicosane (C20) CAS # 112-95-8 Purity 97%	500.5 µg/mL (Lot MKCN8767)	+/- 2.9729 µg/mL Gravimetric +/- 12.4352 µg/mL Unstressed +/- 14.9056 µg/mL Stressed

8	n-Docosane (C22) CAS # 629-97-0 Purity 99%	(Lot MKCL8918)	501.3 µg/mL	+/- 2.9778 +/- 12.4554 +/- 14.9298	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	n-Tetracosane (C24) CAS # 646-31-1 Purity 99%	(Lot MKCN2863)	502.3 µg/mL	+/- 2.9837 +/- 12.4802 +/- 14.9596	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
10	n-Hexacosane (C26) CAS # 630-01-3 Purity 99%	(Lot MKCD4540)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
11	n-Octacosane (C28) CAS # 630-02-4 Purity 99%	(Lot BCCG0084)	502.3 µg/mL	+/- 2.9837 +/- 12.4802 +/- 14.9596	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
12	n-Triacontane (C30) CAS # 638-68-6 Purity 98%	(Lot MKCJ4572)	500.8 µg/mL	+/- 2.9745 +/- 12.4416 +/- 14.9134	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
13	n-Dotriacontane (C32) CAS # 544-85-4 Purity 99%	(Lot BCBW0661)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
14	n-Tetatriacontane (C34) CAS # 14167-59-0 Purity 99%	(Lot OML4N)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
15	n-Hexatriacontane (C36) CAS # 630-06-8 Purity 99%	(Lot U25B014)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
16	n-Octatriacontane (C38) CAS # 7194-85-6 Purity 97%	(Lot 0000127235)	501.5 µg/mL	+/- 2.9787 +/- 12.4593 +/- 14.9345	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
17	n-Tetracontane (C40) CAS # 4181-95-7 Purity 98%	(Lot PADGI)	504.7 µg/mL	+/- 2.9978 +/- 12.5390 +/- 15.0301	µg/mL µg/mL 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:

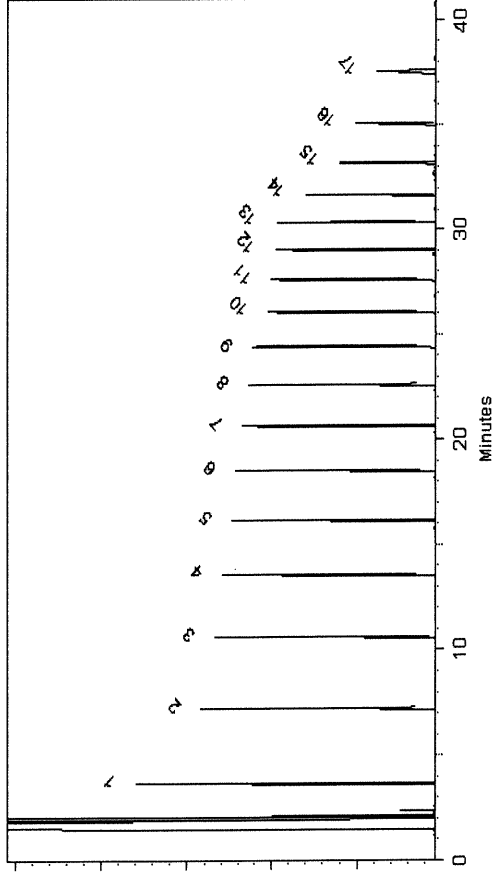
250°C

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.


Lane Kibe - Mix Technician

Date Mixed: 27-Apr-2022 Balance: 1128360905


Peng-Yen Lu - QC Analyst

Date Passed: 29-Apr-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:

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

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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Fax: (814)353-1309

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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.

Catalog No.: 31266 Lot No.: A0184585

Description: Florida TRPH Standard

Container Size: 2 mL Pkg Amt: > 1 mL

Expiration Date: May 31, 2029 Storage: 25°C nominal

Handling: Sonicate prior to use. Ship: Ambient

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CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.I.; K=2)
1	n-Octane (C8) CAS # 111-65-9 Purity 99%	500.3 µg/mL (Lot SHBN3807)	+/- 2.9718 µg/mL Gravimetric +/- 12.4305 µg/mL Unstressed +/- 14.9001 µg/mL Stressed
2	n-Decane (C10) CAS # 124-18-5 Purity 99%	501.7 µg/mL (Lot SHBN8619)	+/- 2.9797 µg/mL Gravimetric +/- 12.4637 µg/mL Unstressed +/- 14.9398 µg/mL Stressed
3	n-Dodecane (C12) CAS # 112-40-3 Purity 99%	504.7 µg/mL (Lot SHBN7174)	+/- 2.9976 µg/mL Gravimetric +/- 12.5382 µg/mL Unstressed +/- 15.0291 µg/mL Stressed
4	n-Tetradecane (C14) CAS # 629-59-4 Purity 99%	503.7 µg/mL (Lot STBJ3715)	+/- 2.9916 µg/mL Gravimetric +/- 12.5133 µg/mL Unstressed +/- 14.9993 µg/mL Stressed
5	n-Hexadecane (C16) CAS # 544-76-3 Purity 98%	502.7 µg/mL (Lot SHBM4146)	+/- 2.9861 µg/mL Gravimetric +/- 12.4903 µg/mL Unstressed +/- 14.9717 µg/mL Stressed
6	n-Octadecane (C18) CAS # 593-45-3 Purity 98%	502.7 µg/mL (Lot UESNG)	+/- 2.9861 µg/mL Gravimetric +/- 12.4903 µg/mL Unstressed +/- 14.9717 µg/mL Stressed
7	n-Eicosane (C20) CAS # 112-95-8 Purity 97%	500.5 µg/mL (Lot MKCN8767)	+/- 2.9729 µg/mL Gravimetric +/- 12.4352 µg/mL Unstressed +/- 14.9056 µg/mL Stressed

8	n-Docosane (C22) CAS # 629-97-0 Purity 99%	(Lot MKCL8918)	501.3 µg/mL	+/- 2.9778 +/- 12.4554 +/- 14.9298	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	n-Tetracosane (C24) CAS # 646-31-1 Purity 99%	(Lot MKCN2863)	502.3 µg/mL	+/- 2.9837 +/- 12.4802 +/- 14.9596	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
10	n-Hexacosane (C26) CAS # 630-01-3 Purity 99%	(Lot MKCD4540)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
11	n-Octacosane (C28) CAS # 630-02-4 Purity 99%	(Lot BCCG0084)	502.3 µg/mL	+/- 2.9837 +/- 12.4802 +/- 14.9596	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
12	n-Triacontane (C30) CAS # 638-68-6 Purity 98%	(Lot MKCJ4572)	500.8 µg/mL	+/- 2.9745 +/- 12.4416 +/- 14.9134	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
13	n-Dotriacontane (C32) CAS # 544-85-4 Purity 99%	(Lot BCBW0661)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
14	n-Tetratriacontane (C34) CAS # 14167-59-0 Purity 99%	(Lot OML4N)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
15	n-Hexatriacontane (C36) CAS # 630-06-8 Purity 99%	(Lot U25B014)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
16	n-Octatriacontane (C38) CAS # 7194-85-6 Purity 97%	(Lot 0000127235)	501.5 µg/mL	+/- 2.9787 +/- 12.4593 +/- 14.9345	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
17	n-Tetracontane (C40) CAS # 4181-95-7 Purity 98%	(Lot PADGI)	504.7 µg/mL	+/- 2.9978 +/- 12.5390 +/- 15.0301	µg/mL µg/mL 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:

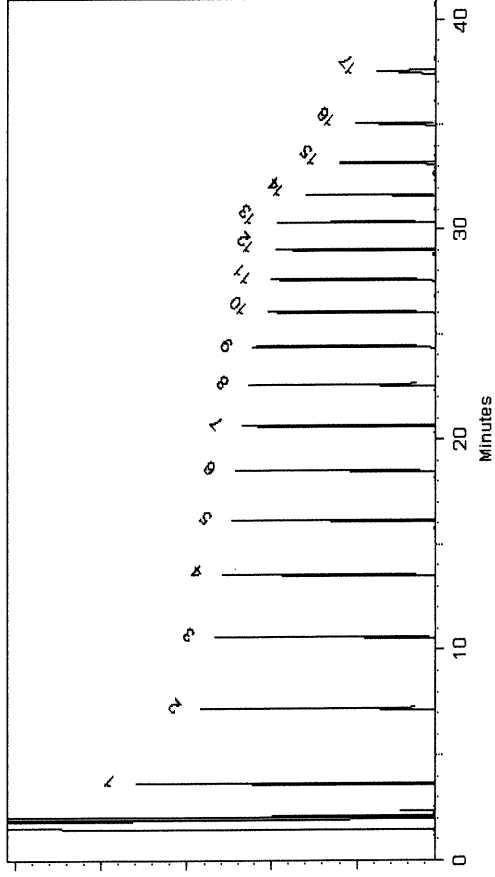
250°C

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.


Lane Kibe - Mix Technician

Date Mixed: 27-Apr-2022 Balance: 1128360905


Pong Yuen Lu - QC Analyst

Date Passed: 29-Apr-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:

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

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.

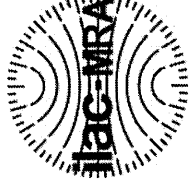


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CERTIFIED REFERENCE MATERIAL

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.

Catalog No. : 31266 Lot No.: A0184585

Description : Florida TRPH Standard

Container Size : 2 mL Pkg Amt: > 1 mL

Expiration Date : May 31, 2029 Storage: 25°C nominal

Handling: Sonicate prior to use. Ship: Ambient

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P1866

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.I.; K=2)
1	n-Octane (C8) CAS # 111-65-9 Purity 99%	500.3 µg/mL (Lot SHBN3807)	+/- 2.9718 µg/mL Gravimetric +/- 12.4305 µg/mL Unstressed +/- 14.9001 µg/mL Stressed
2	n-Decane (C10) CAS # 124-18-5 Purity 99%	501.7 µg/mL (Lot SHBN8619)	+/- 2.9797 µg/mL Gravimetric +/- 12.4637 µg/mL Unstressed +/- 14.9398 µg/mL Stressed
3	n-Dodecane (C12) CAS # 112-40-3 Purity 99%	504.7 µg/mL (Lot SHBN7174)	+/- 2.9976 µg/mL Gravimetric +/- 12.5382 µg/mL Unstressed +/- 15.0291 µg/mL Stressed
4	n-Tetradecane (C14) CAS # 629-59-4 Purity 99%	503.7 µg/mL (Lot STBJ3715)	+/- 2.9916 µg/mL Gravimetric +/- 12.5133 µg/mL Unstressed +/- 14.9993 µg/mL Stressed
5	n-Hexadecane (C16) CAS # 544-76-3 Purity 98%	502.7 µg/mL (Lot SHBM4146)	+/- 2.9861 µg/mL Gravimetric +/- 12.4903 µg/mL Unstressed +/- 14.9717 µg/mL Stressed
6	n-Octadecane (C18) CAS # 593-45-3 Purity 98%	502.7 µg/mL (Lot UESNG)	+/- 2.9861 µg/mL Gravimetric +/- 12.4903 µg/mL Unstressed +/- 14.9717 µg/mL Stressed
7	n-Eicosane (C20) CAS # 112-95-8 Purity 97%	500.5 µg/mL (Lot MKCN8767)	+/- 2.9729 µg/mL Gravimetric +/- 12.4352 µg/mL Unstressed +/- 14.9056 µg/mL Stressed

8	n-Docosane (C22) CAS # 629-97-0 Purity 99%	(Lot MKCL8918)	501.3 µg/mL	+/- 2.9778 +/- 12.4554 +/- 14.9298	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	n-Tetracosane (C24) CAS # 646-31-1 Purity 99%	(Lot MKCN2863)	502.3 µg/mL	+/- 2.9837 +/- 12.4802 +/- 14.9596	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
10	n-Hexacosane (C26) CAS # 630-01-3 Purity 99%	(Lot MKCD4540)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
11	n-Octacosane (C28) CAS # 630-02-4 Purity 99%	(Lot BCCG0084)	502.3 µg/mL	+/- 2.9837 +/- 12.4802 +/- 14.9596	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
12	n-Triacontane (C30) CAS # 638-68-6 Purity 98%	(Lot MKCJ4572)	500.8 µg/mL	+/- 2.9745 +/- 12.4416 +/- 14.9134	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
13	n-Dotriacontane (C32) CAS # 544-85-4 Purity 99%	(Lot BCBW0661)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
14	n-Tetratriacontane (C34) CAS # 14167-59-0 Purity 99%	(Lot OML4N)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
15	n-Hexatriacontane (C36) CAS # 630-06-8 Purity 99%	(Lot U25B014)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
16	n-Octatriacontane (C38) CAS # 7194-85-6 Purity 97%	(Lot 0000127235)	501.5 µg/mL	+/- 2.9787 +/- 12.4593 +/- 14.9345	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
17	n-Tetracontane (C40) CAS # 4181-95-7 Purity 98%	(Lot PADGI)	504.7 µg/mL	+/- 2.9978 +/- 12.5390 +/- 15.0301	µg/mL µg/mL 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:

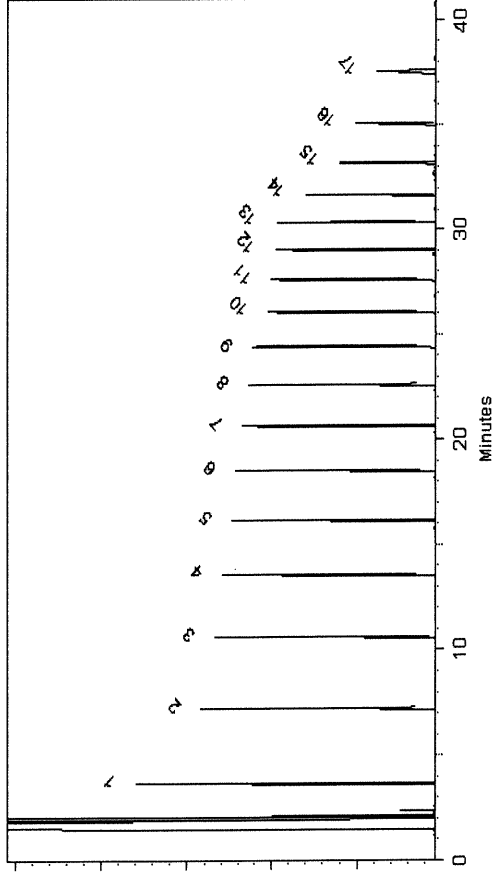
250°C

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.


Lane Kibe - Mix Technician

Date Mixed: 27-Apr-2022 Balance: 1128360905


Pong Yuen Lu - QC Analyst

Date Passed: 29-Apr-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:

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

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

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- 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.

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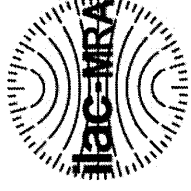


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CERTIFIED REFERENCE MATERIAL

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.

Catalog No. : 31266 Lot No.: A0184585

Description : Florida TRPH Standard

Container Size : 2 mL Pkg Amt: > 1 mL

Expiration Date : May 31, 2029 Storage: 25°C nominal

Handling: Sonicate prior to use. Ship: Ambient

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P1866

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	n-Octane (C8) CAS # 111-65-9 Purity 99%	500.3 µg/mL (Lot SHBN3807)	+/- 2.9718 µg/mL Gravimetric +/- 12.4305 µg/mL Unstressed +/- 14.9001 µg/mL Stressed
2	n-Decane (C10) CAS # 124-18-5 Purity 99%	501.7 µg/mL (Lot SHBN8619)	+/- 2.9797 µg/mL Gravimetric +/- 12.4637 µg/mL Unstressed +/- 14.9398 µg/mL Stressed
3	n-Dodecane (C12) CAS # 112-40-3 Purity 99%	504.7 µg/mL (Lot SHBN7174)	+/- 2.9976 µg/mL Gravimetric +/- 12.5382 µg/mL Unstressed +/- 15.0291 µg/mL Stressed
4	n-Tetradecane (C14) CAS # 629-59-4 Purity 99%	503.7 µg/mL (Lot STBJ3715)	+/- 2.9916 µg/mL Gravimetric +/- 12.5133 µg/mL Unstressed +/- 14.9993 µg/mL Stressed
5	n-Hexadecane (C16) CAS # 544-76-3 Purity 98%	502.7 µg/mL (Lot SHBM4146)	+/- 2.9861 µg/mL Gravimetric +/- 12.4903 µg/mL Unstressed +/- 14.9717 µg/mL Stressed
6	n-Octadecane (C18) CAS # 593-45-3 Purity 98%	502.7 µg/mL (Lot UESNG)	+/- 2.9861 µg/mL Gravimetric +/- 12.4903 µg/mL Unstressed +/- 14.9717 µg/mL Stressed
7	n-Eicosane (C20) CAS # 112-95-8 Purity 97%	500.5 µg/mL (Lot MKCN8767)	+/- 2.9729 µg/mL Gravimetric +/- 12.4352 µg/mL Unstressed +/- 14.9056 µg/mL Stressed

8	n-Docosane (C22) CAS # 629-97-0 Purity 99%	(Lot MKCL8918)	501.3 µg/mL	+/- 2.9778 +/- 12.4554 +/- 14.9298	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	n-Tetracosane (C24) CAS # 646-31-1 Purity 99%	(Lot MKCN2863)	502.3 µg/mL	+/- 2.9837 +/- 12.4802 +/- 14.9596	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
10	n-Hexacosane (C26) CAS # 630-01-3 Purity 99%	(Lot MKCD4540)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
11	n-Octacosane (C28) CAS # 630-02-4 Purity 99%	(Lot BCCG0084)	502.3 µg/mL	+/- 2.9837 +/- 12.4802 +/- 14.9596	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
12	n-Triacontane (C30) CAS # 638-68-6 Purity 98%	(Lot MKCJ4572)	500.8 µg/mL	+/- 2.9745 +/- 12.4416 +/- 14.9134	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
13	n-Dotriacontane (C32) CAS # 544-85-4 Purity 99%	(Lot BCBW0661)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
14	n-Tetratriacontane (C34) CAS # 14167-59-0 Purity 99%	(Lot OML4N)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
15	n-Hexatriacontane (C36) CAS # 630-06-8 Purity 99%	(Lot U25B014)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
16	n-Octatriacontane (C38) CAS # 7194-85-6 Purity 97%	(Lot 0000127235)	501.5 µg/mL	+/- 2.9787 +/- 12.4593 +/- 14.9345	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
17	n-Tetracontane (C40) CAS # 4181-95-7 Purity 98%	(Lot PADGI)	504.7 µg/mL	+/- 2.9978 +/- 12.5390 +/- 15.0301	µg/mL µg/mL 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:

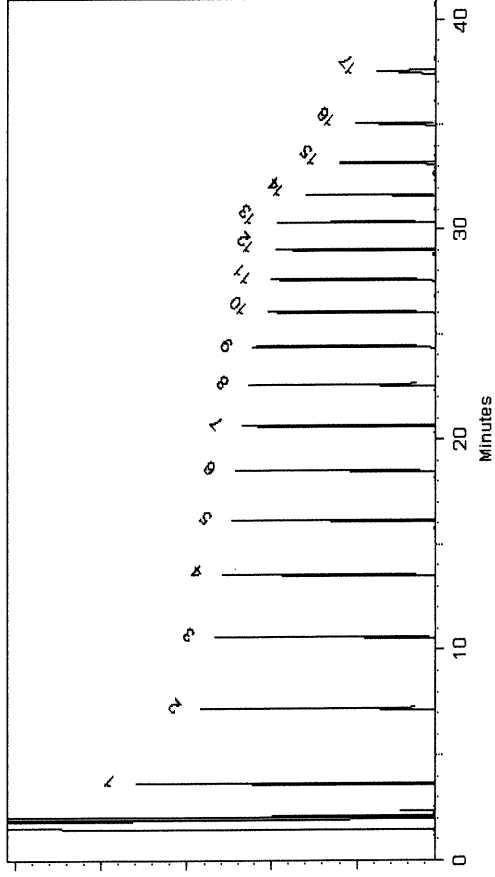
250°C

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.


Lane Kibe - Mix Technician

Date Mixed: 27-Apr-2022 Balance: 1128360905


Peng-Yuan Lu - QC Analyst

Date Passed: 29-Apr-2022

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

General Certified Reference Material Notes

Expiration Notes:

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- 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:

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

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.



CERTIFIED WEIGHT REPORT

Part Number: **72072**
Lot Number: **091120**
Description: **n-Tetracosane-d50**

Solvent(s):
Methylene chloride
Lot#
104929

		091120
Formulated By:	Benson Chan	DATE
		091120
Reviewed By:	Pedro L. Rentas	DATE

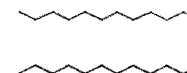
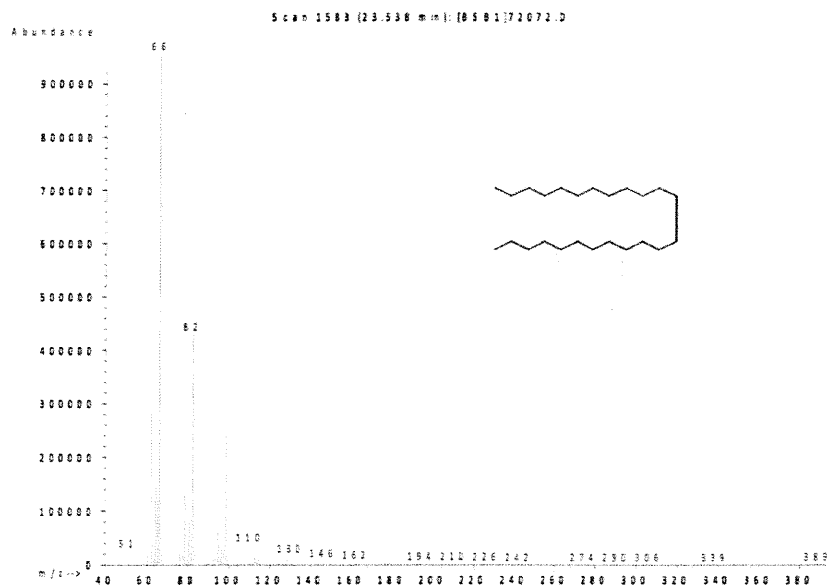
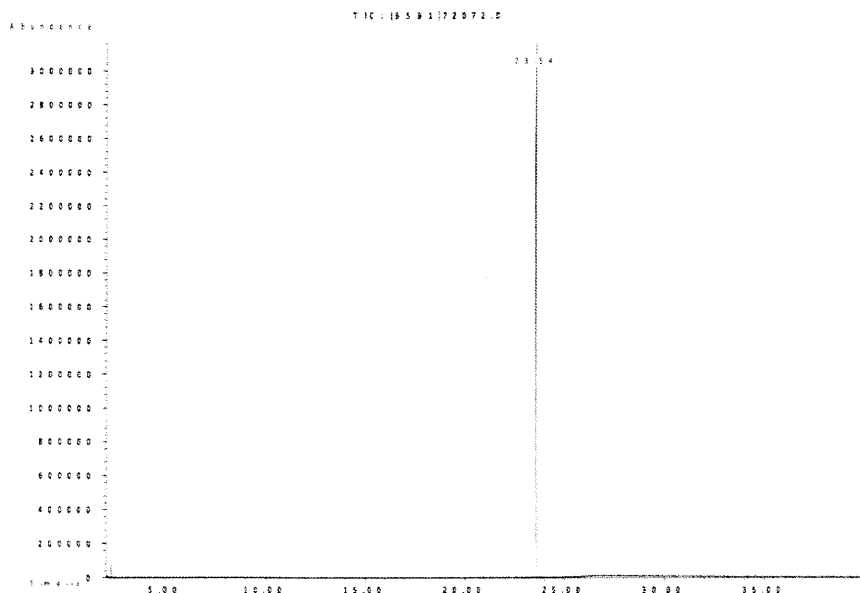
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0.718

Expiration Date: 091130
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test ID#: 23060
5E-05 Balance Uncertainty

Weight(s) shown below were combined and diluted to (mL): 200.0 0.058 Flask Uncertainty

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Assay (%D)	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. n-Tetracosane-d50	2072	PR-26606	1000	98.7	0.2	99.0	0.20471	0.20481	1000.5	4.1	16416-32-3	N/A	N/A

Method GC8MSD-3.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (9min.), Rate = 10°C/min., Injector B= 250°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by: Candice Warren.



- 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 certified (+/-) 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).

**Run 75, "P72072 L091120 [1000µg/mL in MeCl2]"**

Run Length: 35.00 min, 20999 points at 10 points/second.

Created: Thu, Sep 17, 2020 at 9:46:03 AM.

Sampled: Sequence "091420-GC4M2", Method "GC4-M1".

Analyzed using Method "GC4-M1".

Comments

GC4-M1 Analysis by Candice Warren

Column ID SPB5 L#60062-01A : 30 meter x 0.53mm x 1.5µm Film Thickness

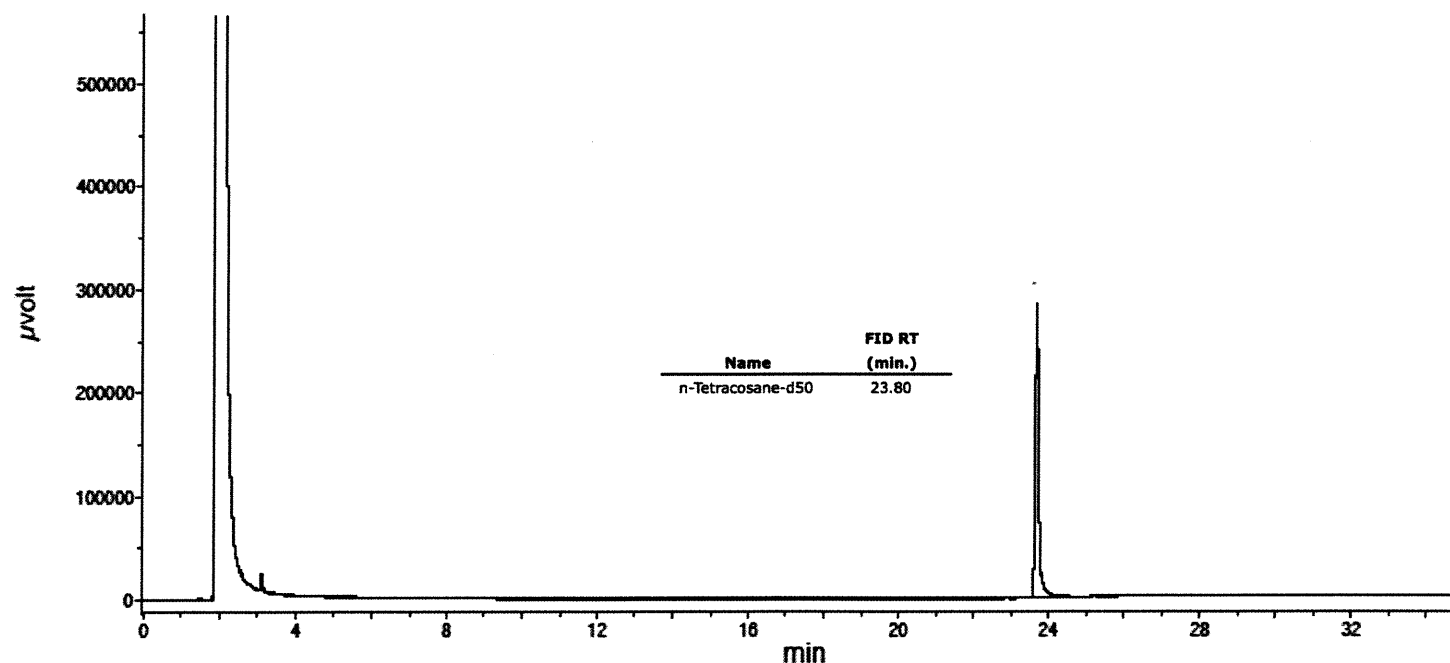
Flow rates: Total Flow = 300 mL/min, Helium (carrier) = 6.5 mL, Helium (make-up) = 25 mL, Hydrogen (detector) = 30 mL,

Air (detector) = 360 mL

Oven Temp 1 = 50°C (1 min), Rate = 10°C/min, Oven Temp 2 = 300°C (9 min), Total Run Time = 35 Minutes.

Injector Temp = 200°C, FID Temp = 300°C, FID Signal = eDaq Channel 1.

Gas Chromatograph = HP 5890, Auto Sampler = HP 7673, Standard Injection = 0.5 µL, Range = 3





CERTIFIED WEIGHT REPORT

Part Number: 72072
Lot Number: 091120
Description: n-Tetracosane-d50

Solvent(s): Methylene chloride
Lot# 104929

		091120
Formulated By:	Benson Chan	DATE
		091120
Reviewed By:	Pedro L. Rentas	DATE

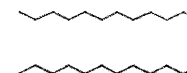
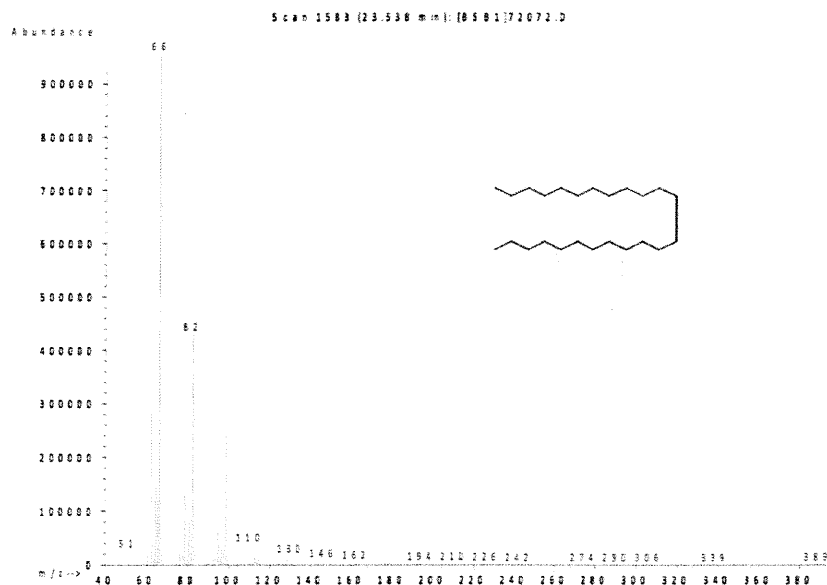
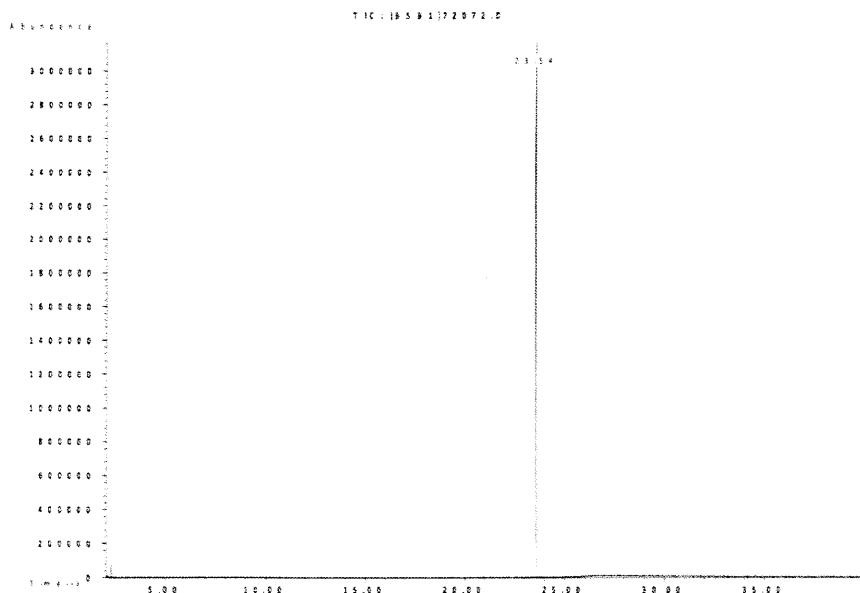
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} 7.4
0.718

Expiration Date: 091130
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test ID#: 23060
5E-05 Balance Uncertainty

Weight(s) shown below were combined and diluted to (mL): 200.0
0.058 Flask Uncertainty

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Assay (%D)	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. n-Tetracosane-d50	2072	PR-26606	1000	98.7	0.2	99.0	0.20471	0.20481	1000.5	4.1	16416-32-3	N/A	N/A

Method GC8MSD-3.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (9min.), Rate = 10°C/min., Injector B= 250°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by: Candice Warren.



- 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 certified (+/-) 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).

**Run 75, "P72072 L091120 [1000µg/mL in MeCl2]"**

Run Length: 35.00 min, 20999 points at 10 points/second.

Created: Thu, Sep 17, 2020 at 9:46:03 AM.

Sampled: Sequence "091420-GC4M2", Method "GC4-M1".

Analyzed using Method "GC4-M1".

Comments

GC4-M1 Analysis by Candice Warren

Column ID SPB5 L#60062-01A : 30 meter x 0.53mm x 1.5µm Film Thickness

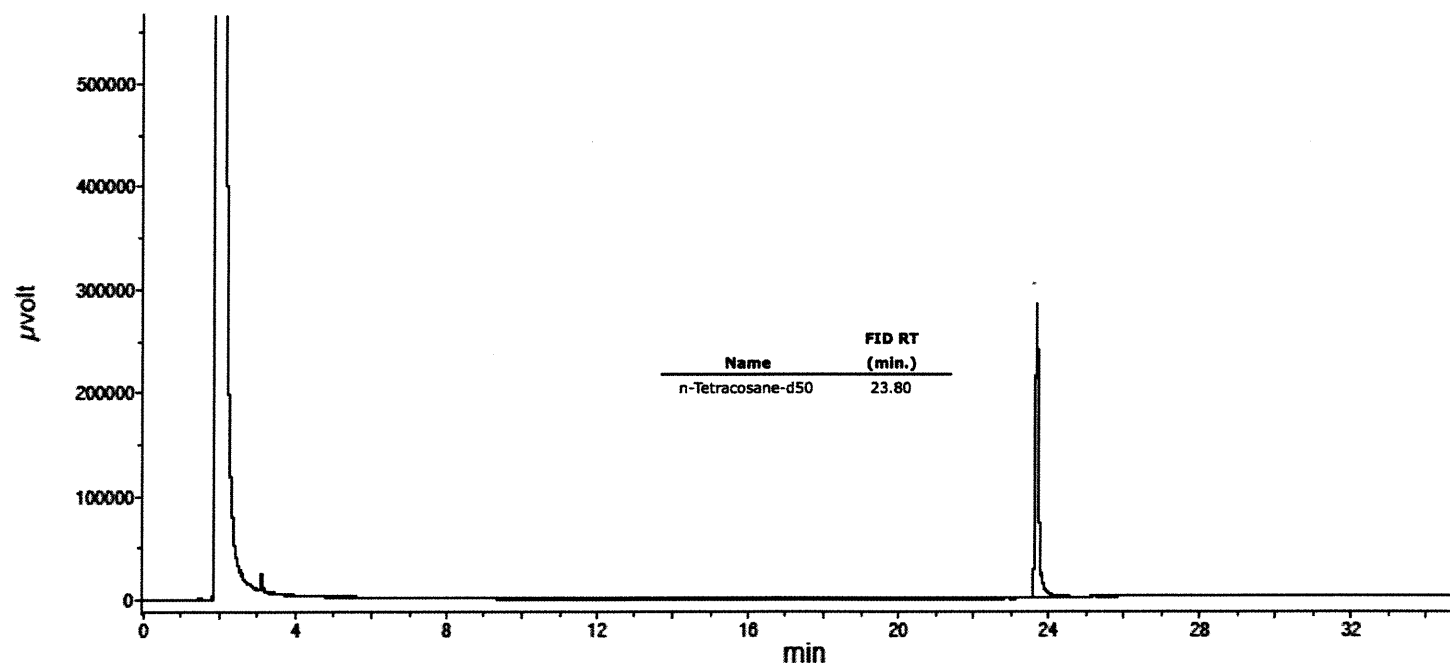
Flow rates: Total Flow = 300 mL/min, Helium (carrier) = 6.5 mL, Helium (make-up) = 25 mL, Hydrogen (detector) = 30 mL,

Air (detector) = 360 mL

Oven Temp 1 = 50°C (1 min), Rate = 10°C/min, Oven Temp 2 = 300°C (9 min), Total Run Time = 35 Minutes.

Injector Temp = 200°C, FID Temp = 300°C, FID Signal = eDaq Channel 1.

Gas Chromatograph = HP 5890, Auto Sampler = HP 7673, Standard Injection = 0.5 µL, Range = 3





CERTIFIED WEIGHT REPORT

Part Number: 72072
Lot Number: 091120
Description: n-Tetracosane-d50

Solvent(s): Methylene chloride
Lot# 104929

		091120
Formulated By:	Benson Chan	DATE
		091120
Reviewed By:	Pedro L. Rentas	DATE

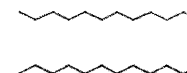
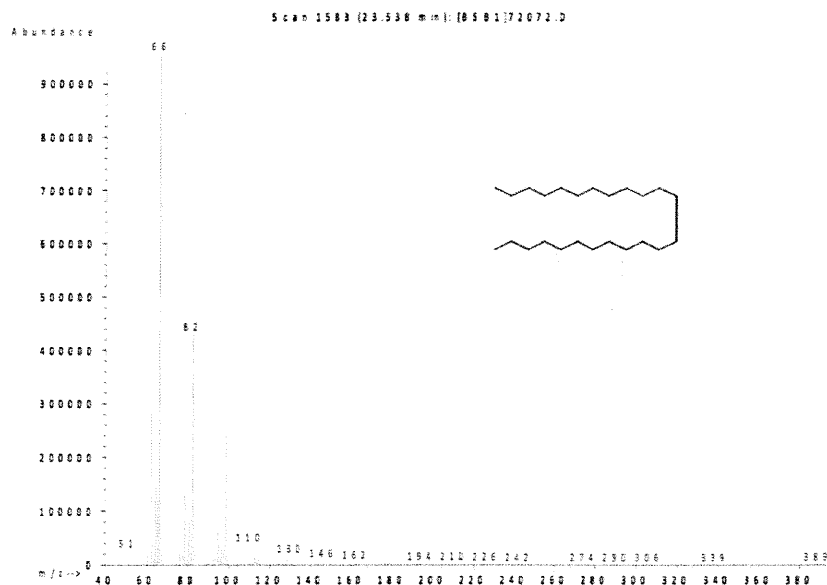
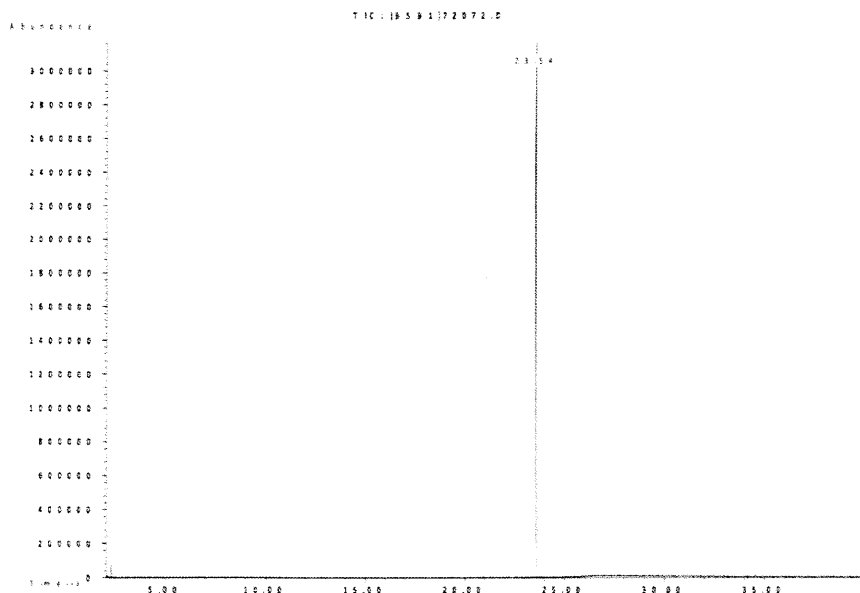
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} 7.4
0.718

Expiration Date: 091130
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test ID#: 23060
5E-05 Balance Uncertainty

Weight(s) shown below were combined and diluted to (mL): 200.0
0.058 Flask Uncertainty

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Assay (%D)	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. n-Tetracosane-d50	2072	PR-26606	1000	98.7	0.2	99.0	0.20471	0.20481	1000.5	4.1	16416-32-3	N/A	N/A

Method GC8MSD-3.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (9min.), Rate = 10°C/min., Injector B= 250°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by: Candice Warren.



- 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 certified (+/-) 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).

**Run 75, "P72072 L091120 [1000µg/mL in MeCl2]"**

Run Length: 35.00 min, 20999 points at 10 points/second.

Created: Thu, Sep 17, 2020 at 9:46:03 AM.

Sampled: Sequence "091420-GC4M2", Method "GC4-M1".

Analyzed using Method "GC4-M1".

Comments

GC4-M1 Analysis by Candice Warren

Column ID SPB5 L#60062-01A : 30 meter x 0.53mm x 1.5µm Film Thickness

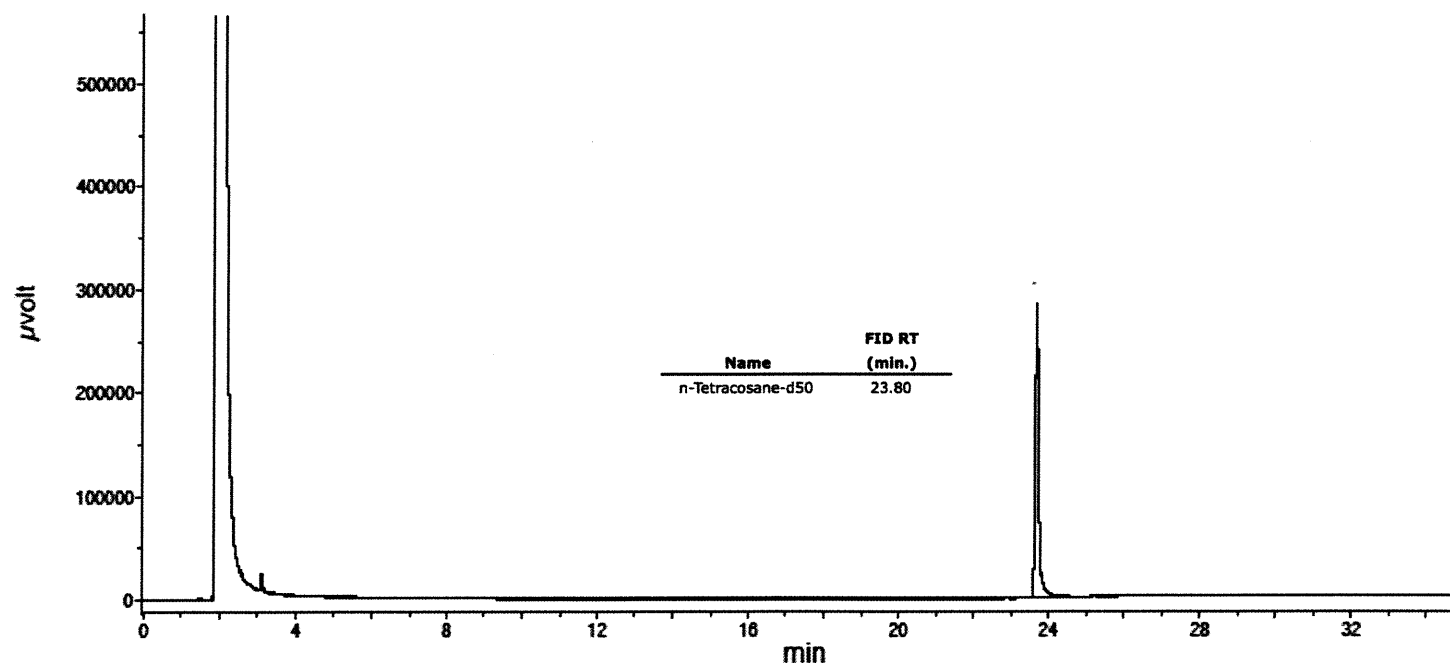
Flow rates: Total Flow = 300 mL/min, Helium (carrier) = 6.5 mL, Helium (make-up) = 25 mL, Hydrogen (detector) = 30 mL,

Air (detector) = 360 mL

Oven Temp 1 = 50°C (1 min), Rate = 10°C/min, Oven Temp 2 = 300°C (9 min), Total Run Time = 35 Minutes.

Injector Temp = 200°C, FID Temp = 300°C, FID Signal = eDaq Channel 1.

Gas Chromatograph = HP 5890, Auto Sampler = HP 7673, Standard Injection = 0.5 µL, Range = 3





CERTIFIED WEIGHT REPORT

Part Number: 72072
Lot Number: 091120
Description: n-Tetracosane-d50

Solvent(s): Methylene chloride
Lot# 104929

		091120
Formulated By:	Benson Chan	DATE
		091120
Reviewed By:	Pedro L. Rentas	DATE

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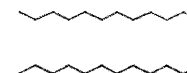
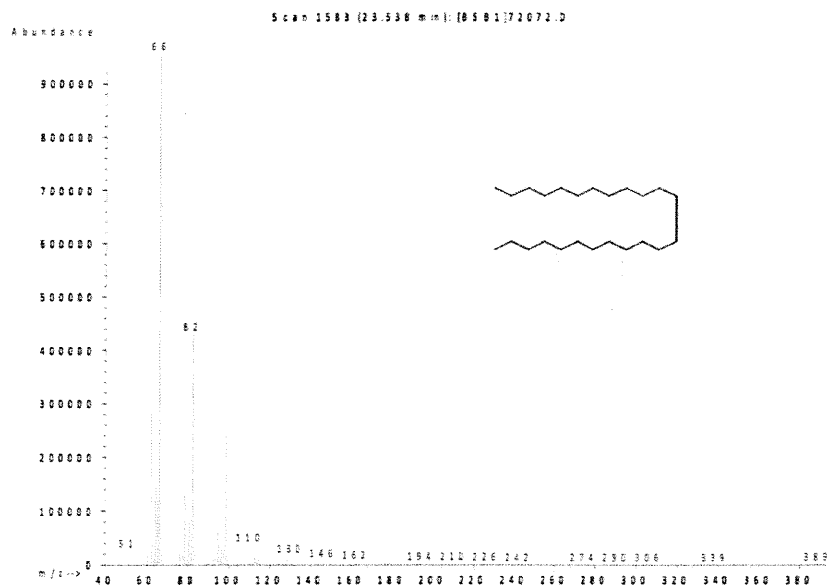
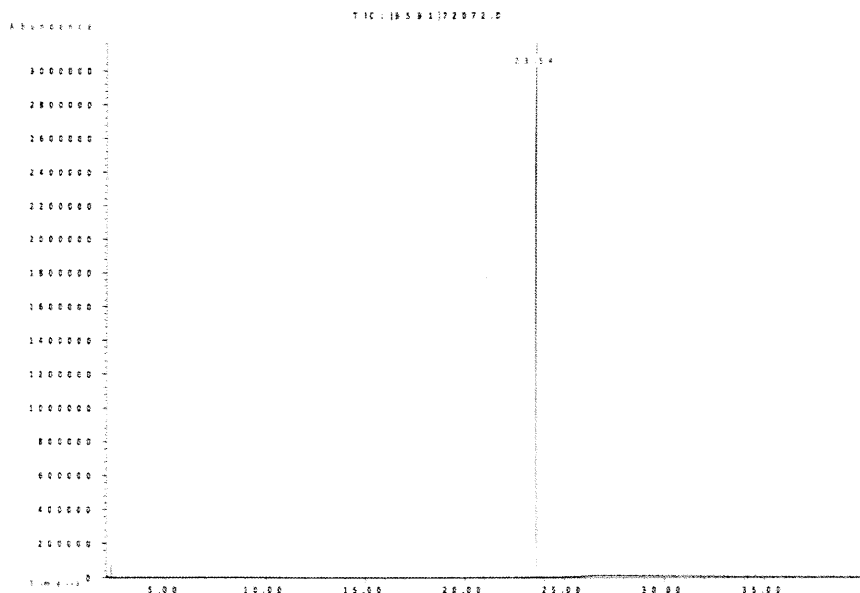
Expiration Date: 091130
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test ID#: 23060

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Weight(s) shown below were combined and diluted to (mL): 200.0

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Assay (%D)	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. n-Tetracosane-d50	2072	PR-26606	1000	98.7	0.2	99.0	0.20471	0.20481	1000.5	4.1	16416-32-3	N/A	N/A

Method GC8MSD-3.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (9min.), Rate = 10°C/min., Injector B= 250°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by: Candice Warren.



- 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 certified (+/-) 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).

**Run 75, "P72072 L091120 [1000µg/mL in MeCl2]"**

Run Length: 35.00 min, 20999 points at 10 points/second.

Created: Thu, Sep 17, 2020 at 9:46:03 AM.

Sampled: Sequence "091420-GC4M2", Method "GC4-M1".

Analyzed using Method "GC4-M1".

Comments

GC4-M1 Analysis by Candice Warren

Column ID SPB5 L#60062-01A : 30 meter x 0.53mm x 1.5µm Film Thickness

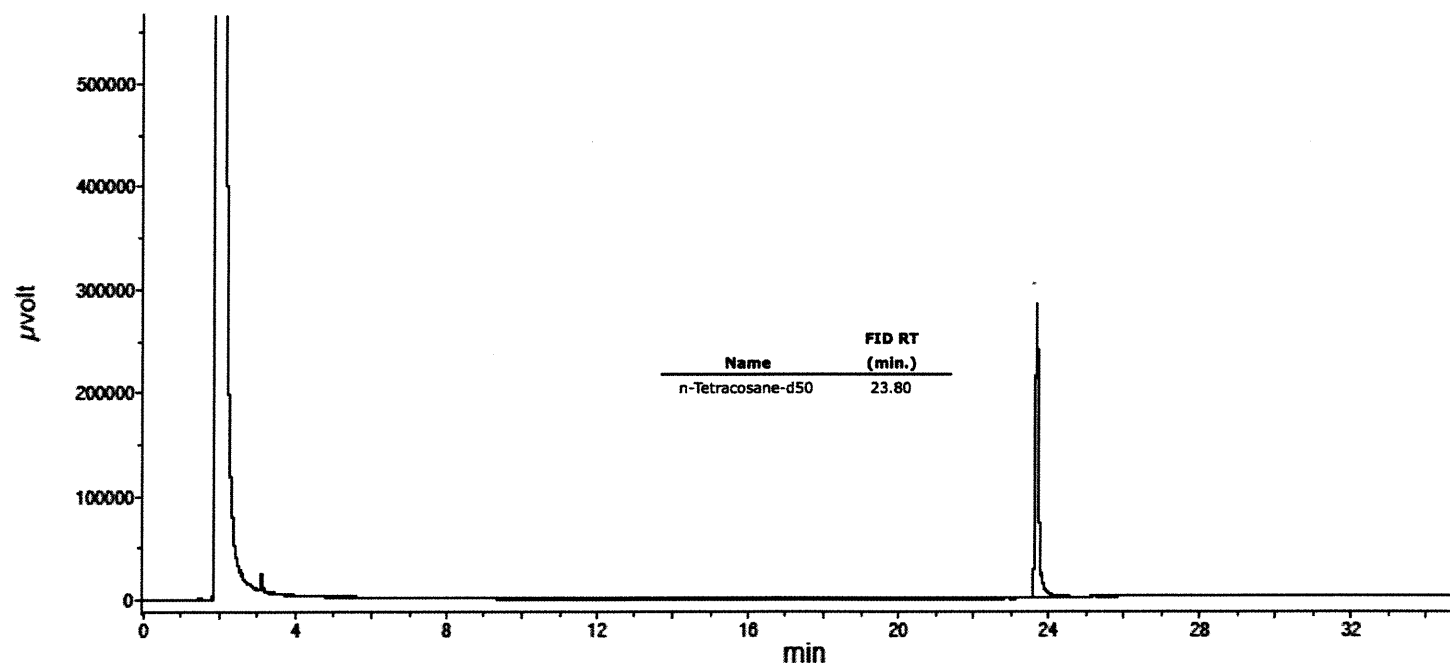
Flow rates: Total Flow = 300 mL/min, Helium (carrier) = 6.5 mL, Helium (make-up) = 25 mL, Hydrogen (detector) = 30 mL,

Air (detector) = 360 mL

Oven Temp 1 = 50°C (1 min), Rate = 10°C/min, Oven Temp 2 = 300°C (9 min), Total Run Time = 35 Minutes.

Injector Temp = 200°C, FID Temp = 300°C, FID Signal = eDaq Channel 1.

Gas Chromatograph = HP 5890, Auto Sampler = HP 7673, Standard Injection = 0.5 µL, Range = 3





CERTIFIED WEIGHT REPORT

Part Number: **72072**
Lot Number: **101122**
Description: **n-Tetracosane-d50**

Solvent(s):
Methylene chloride

Lot#
105345

<i>Prashant Chauhan</i>		101122
Formulated By:	Prashant Chauhan	DATE
<i>Pedro L. Rentas</i>		101122
Reviewed By:	Pedro L. Rentas	DATE

Expiration Date: 101132
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test ID#: 6UTB

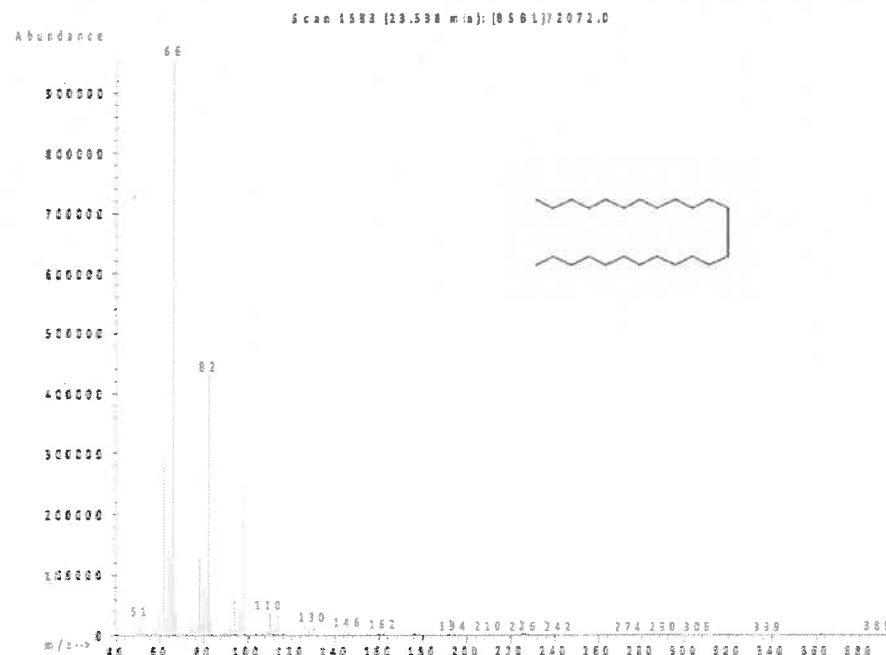
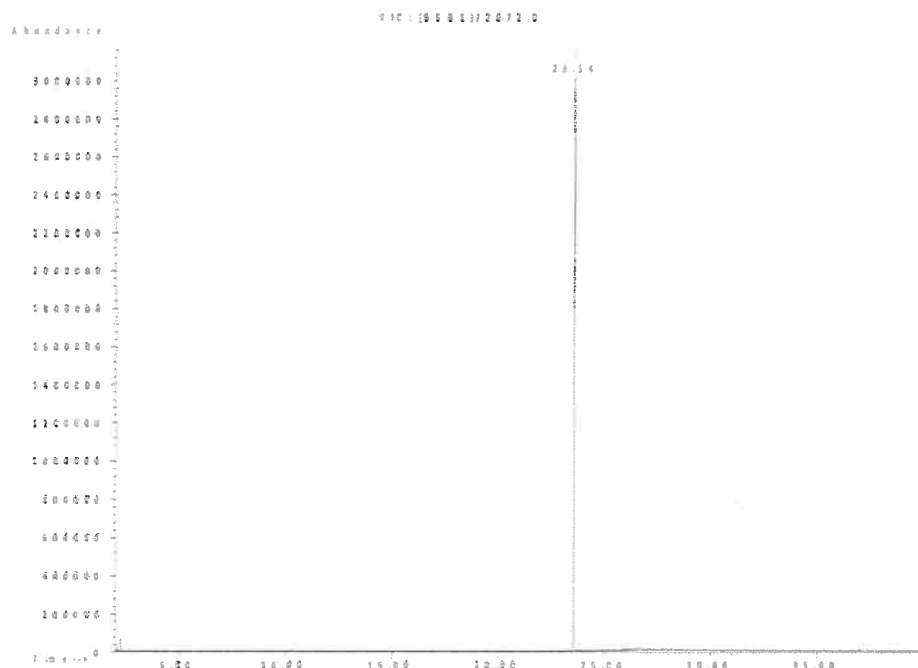
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Weight(s) shown below were combined and diluted to (mL): 200.0

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P12310 } *Y.P.*
02/22/23

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Assay (%)	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. n-Tetracosane-d50	2072	PR-26606	1000	98.7	0.2	99.0	0.20471	0.20482	1000.6	4.1	16416-32-3	N/A	N/A

Method GC8MSD-3.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (9min.), Rate = 10°C/min., Injector B= 250°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by: Candice Warren.



- 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 certified (+/-) 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).

Safety Data Sheet (SDS)

GHS/OSHA Compliant

Section I Product and Company Identification

IDENTITY ANALYTICAL STANDARD DISSOLVED IN METHYLENE CHLORIDE

Manufacturer's Name	ABSOLUTE STANDARDS INC	Emergency Telephone USA & CANADA	1-800-535-5053
Address	44 Rosotto Dr. Hamden CT, 06514	Emergency Telephone International Date Prepared/Revised	1-352-323-3500 January 1, 2022

Section II - Hazards Identification

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

H302	Harmful if swallowed.	H315,H320	Causes skin and eye irritation.
H351	Suspected of causing cancer.	H335	May cause respiratory irritation.
P271	Use in ventilated area	P280	Use gloves, eye protection/face shield
P302,332	If on skin, wash with soap and water	P305,351,338	If in eyes, remove contacts, rinse with water



Signal Word: WARNING

Section III - Composition

Components:	CAS#:	OSHA PEL (TWA)	LD50 orl-rat	% (optional)
Dichloromethane	75-09-2	50 ppm	> 2,000 mg/kg	> 97

See Certified Weight Report For Other Analytes Present At Trace Quantities.
INTENDED USE: REFERENCE MATERIAL

Section IV. FIRST AID MEASURES

General advice
If inhaled Consult a physician. Show this safety data sheet to the doctor in attendance. Move to safe area.
If inhaled If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact
Wash with soap and water. Consult a physician.
In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed
Do NOT induce vomiting. Rinse mouth with water. Consult a physician.

Section V. FIREFIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Protective equipment for fire
Wear self contained breathing apparatus for fire fighting if necessary.

Section VI. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Clean up
Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13).

Section VII. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Storage Conditions
Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge.
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Methylene chloride 75-09-2 TWA 50 ppm
Potential for skin absorption, ingestion and inhalation.
Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.
Personal contact with skin, eyes and clothing. Wash hands thoroughly after handling the product

Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	40°C	Specific Gravity (H2O = 1)	1.325
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Vapor Pressure (mm Hg)	353	Melting Point	-97°C
Vapor Density (AIR = 1)	2.93	Evaporation rate (Butyl Acetate = 1)	0.71
Solubility in Water	Slightly soluble		

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

Section X. STABILITY AND REACTIVITY

Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	No data available
Conditions to avoid	Heat, flames, sparks, extreme temperature and sunlight.
Materials to avoid	Alkali metals, Aluminum, Oxidizing agents, Bases, Amines, Magnesium, Acids, Vinyl compounds
Hazardous decomposition products	- No data available

Section XI. TOXICOLOGICAL INFORMATION

LD50 Oral - Rat - > 2,000 mg/kg
LC50 Inhalation - Rat - 52,000 mg/m3
LD50 Dermal - Rat - > 2,000 mg/kg
Toxic if absorbed through skin. Causes skin irritation.
Eye damage/eye irritation
Toxic if inhaled. Causes respiratory tract irritation.
Toxic if swallowed.

Section XII. ECOLOGICAL INFORMATION FOR REPORTABLE QUANTITY OF 1000 lbs.

LC50 193.00 mg/l - 96 h
EC50 1,682.00 mg/l - 48 h

Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Section XIV. TRANSPORT INFORMATION

DOT (US) IATA
UN number: 1593 Class: 6.1 Packing group: III UN number: 1593 Class: 6.1 Packing group: III
Proper shipping name: Dichloromethane Proper shipping name: Dichloromethane
Reportable Quantity (RQ): 1000 lbs

Section XV. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Section XVI. Misc. INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by trained personnel, or supervised by a person trained in chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC. DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Material Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

ABSOLUTE STANDARDS, INC.

ISO - 17034



Certificate of Analysis



Certified Reference Material (CRM)

Conformance: The "Certificate of Analysis" is applicable for CRM's, fulfilling the requirements in the current version of: ISO 17034.

Health & Safety: See the attached SDS & Certified Weight Report before use.

Intended Use: This Certified Reference Material (CRM) is intended primarily for use in the characterization of unknowns and the establishment of analyzer or instrument response factors by qualified personnel. Typical instrumental organic assays include: GC & LC, and inorganic assays include: ICP & AA. This product is for laboratory use only.

Characterization Values: In production, gravimetric/volumetric readings are certified to be within $\pm 0.5\%$ of the stated value & are valid between 18 °C & 30 °C. The measured characterization of uncertainty can be found on the Certified Weight Report. All product weightings are performed on an analytical balance that is calibrated to NIST Traceable standard weights & certified by the manufacturer. The volumetric glassware used is Class "A" type & conforms to ASTM E-288 unless otherwise stated. The solvents & compounds used are of the highest practical purity & typically meet or exceed ACS Reagent Grade & ACS Standards Grade specifications. The expanded uncertainty field on Certified Wt. Report represents CRM uncertainty as described in ISO 17034.

Homogeneity: Uncertainties that are due to the analytical procedure(s) are within $\pm 0.5\%$ unless specifically stated on the Certified Wt. Report.

Verification: Uncertainties that are due to the analytical procedure(s) are within $\pm 0.5\%$ unless specifically stated on the Certified Wt. Report.

Stability: Uncertainties for short-term stability are determined in accordance with ISO 17034. Long-term stability is determined in accordance with ISO 17034. The shelf life is limited by the stated expiration for each product. Expiration dates and additional technical information can be found on the Certified Weight Report and on the product label.

Uncertainty: UCRM is the expanded uncertainty which utilizes a $K = 2$ (coverage factor of 2), in accordance with ISO 17034 as listed above (Characterization, Homogeneity, Verification, and Stability).

Purity & Identity: Organic solutions are typically formulated from neat materials whose purity & identity have been characterized by GC-MSD & LC-PDA techniques with comparison to a NIST Traceable library of mass spectra when available. Additional characterization techniques may include but are not limited to: refractive index measurements of liquids, melting point measurements of solids, & GC-FID, ECD, PID, ELCD, LC-PDA measurements for purity. Inorganic solutions & neat are typically formulated from materials whose purity & identity have been characterized by ICPMS with comparison to a NIST SRM® when available. Additional characterization techniques may include but are not limited to: titrimetry, and densitometry.

Storage: Sealed ampules and other containers should be stored in the dark and at temperatures indicated on the Certified Weight Report or product label. Certification by Absolute Standards, Inc. is typically valid for 3 years from the date of manufacture. Each product will show its own expiration date as the limit of certification. Certified values are not applicable to opened ampules or for any materials stored in re-sealable containers. Please see the "Certified Weight Report" for specific values and any exceptions.

Usage: Ampules & bottles should be brought to room temperature (18 to 30 °C) before opening. Sonication may be required for high concentration solutions or solutions that may precipitate during storage. After opening, care should be exercised to avoid concentration changes owing to evaporation of the solvent or essential components. We recommend that a suitable re-sealable container be available before opening an ampule to decant the standard for short-term storage and use.

Minimum Sample Size: 0.5 uL for analytical applications.

Legal Notice: Warranty of products are as described when shipped. No warranty as to fitness for any particular application is expressed or implied. Errant shipments and/or quality claims must be made within 10 days of receipt. Liability is limited solely to the replacement of the product or refund of purchase price.

Certifying Officer: Stephen J. Arpie, M.S., Director General

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Document Identification: Certificate of Analysis Rev 14, Date Issued: 05/30/2019



ABSOLUTE STANDARDS, INC.

ISO - 17034



Understanding the Certified Weight Report



Each Certified Reference Material (CRM) is supported by a Certified Weight Report. Assigned values for concentrations and associated uncertainties are based upon NIST traceable masses & volumes used in production.

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



Certified Reference Material CRM



ISO 17034 Accredited
Scope: <http://AbsoluteStandards.com>

CERTIFIED WEIGHT REPORT

Part # 100098
Lot # 070716
Shelf Life 6 months (25 °C)

Part Number: 100098
Lot Number: 070716
Description: C1P Priority Pollutant Internal Standards
GC/MS Calibration - 8 components
Expiration Date: 07/07/16
Recommended Storage: 25 °C (77 °F)
Nominal Concentration: 4000 µg/mL
NIST Test ID#: 822-57872-11
Weights shown below were combined and diluted to 1mL:

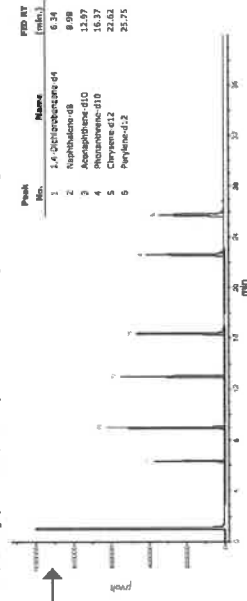
Compound	Stock	Lot	Conc. (µg/mL)	Purity	Target	Actual	Expanded Uncertainty	MSDS Information
1. 1,4-Dichlorobenzene-d4	118	PR-100098 L070716 (4000µg/mL in MeCN)	4000	99	0.2	2.04083	2.04083	4004.7
2. Naphthalene-d8	229	PR-25250031618P1	4000	99	0.2	2.00032	2.00032	4001.9
3. Acenaphthene-d10	2	PR-25444	4000	99	0.2	2.00032	2.00032	4004.2
4. Phenanthrene-d10	249	PR-2505007171P1	4000	99	0.2	2.04093	2.04198	4000.8
5. Chrysene-d12	92	1-12850	4000	99	0.2	2.04093	2.04199	4001.3
6. Pyrene-d12	247	PR-24119	4000	99	0.2	2.04093	2.04199	4001.2

Target Compounds

Method of Analysis

Run 35, "P100098 L070716 (4000µg/mL in MeCN)"
Column: 1D 5µm 150m 0.32mm i.d. (Agilent)
Carrier Gas: Helium (flow rate = 1.0 mL/min)
Injection Volume: 0.5 µL
Oven Temp: 50 °C (1 min) → 250 °C (10 min) → 300 °C (1 min)
Total Run Time = 40 minutes. Injection Temp = 250 °C
GC/MS Method: 100098 L070716 (4000µg/mL in MeCN)
Analyzed using Method 100098 L070716

Component: C1P-100098 L070716 (4000µg/mL in MeCN)
Column: 1D 5µm 150m 0.32mm i.d. (Agilent)
Carrier Gas: Helium (flow rate = 1.0 mL/min)
Injection Volume: 0.5 µL
Oven Temp: 50 °C (1 min) → 250 °C (10 min) → 300 °C (1 min)
Total Run Time = 40 minutes. Injection Temp = 250 °C
GC/MS Method: 100098 L070716 (4000µg/mL in MeCN)
Analyzed using Method 100098 L070716



Qualitative Quantitative

Formulator Reviewer

Formulated By: *Paul Simon*
Reviewed By: *Pedro L. Ruelas*
DATE: 07/07/16
DATE: 07/07/16

Actual Concentration Uncertainty Values Health & Safety

Absolute Standards, Inc. certifies that the values listed and associated uncertainties are based upon NIST traceable masses and volumes used in production. They are provided for your information and are not intended to be used for legal or regulatory purposes. The values are provided as a guide only and are not intended to be used for legal or regulatory purposes. The values are provided as a guide only and are not intended to be used for legal or regulatory purposes.

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Superior, IN
P100098 L070716
P100098 L070716

3rd Party Comparison

Analysis	Sup/Ass	Dev (%)
1,4-Dichlorobenzene-d4	(Sup/Ass) X 100-100	2.55
Naphthalene-d8		2.43
Acenaphthene-d10		2.74
Phenanthrene-d10		0.03
Chrysene-d12		1.92
Pyrene-d12		-1.72
Total		-0.56

Part # 100098 Lot # 041219

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For More Information, Contact:

Stephen Arpie@AbsoluteStandards.com

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