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

Prep Standard - Chemical Standard Summary

Order ID : Q1623

Test : Pesticide-TCL

Prepbatch ID : PB167279,

Sequence ID/Qc Batch ID: PD032625,

Standard ID :
EP2582,EP2589,PP23713,PP23714,PP23715,PP23716,PP23717,PP23718,PP23719,PP23720,PP23721,PP23722,PP23723,PP23724,PP23725,PP23726,PP23727,PP23728,PP23729,PP23730,PP23731,PP23732,PP23975,PP24060,

Chemical ID :
E3551,E3788,E3805,E3806,E3826,E3829,E3873,E3874,E3877,E3878,P11763,P11797,P11945,P13191,P13360,P13383,

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Extractions STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
2017	1:1 ACETONE/METHYLENE CHLORIDE	EP2582	02/04/2025	07/29/2025	Rajesh Parikh	None	None	RUPESHKUMAR SHAH 02/04/2025

FROM 8000.00000ml of E3873 + 8000.00000ml of E3874 = Final Quantity: 16000.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3923	Baked Sodium Sulfate	EP2589	02/14/2025	07/01/2025	Rajesh Parikh	Extraction_SCALE_2 (EX-SC-2)	None	RUPESHKUMAR SHAH 02/14/2025

FROM 4000.00000gram of E3551 = Final Quantity: 4000.000 gram

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Pest/Pcb STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3921	CS6 IND STD MIX A	PP23713	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 1.00000ml of P11945 + 49.00000ml of E3805 = Final Quantity: 50.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
679	CS5 IND STD MIX A	PP23714	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23713 = 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
680	CS4 IND STD MIX A	PP23715	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23714 = Final Quantity: 1.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
681	CS3 IND STD MIX A	PP23716	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23715 = 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
682	CS2 IND STD MIX A	PP23717	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23716 = Final Quantity: 1.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
683	CS1 IND STD MIX A	PP23718	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23717 = 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
3920	CS6 IND STD MIX B	PP23719	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 1.00000ml of P11763 + 49.00000ml of E3805 = Final Quantity: 50.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
684	CS5 IND STD MIX B	PP23720	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23719 = 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
685	CS4 IND STD MIX B	PP23721	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23720 = Final Quantity: 1.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
686	CS3 IND STD MIX B	PP23722	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23721 = Final Quantity: 1.000 ml

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Fax : 908 789 8922

Pest/Pcb STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
687	CS2 IND STD MIX B	PP23723	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23722 = Final Quantity: 1.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
688	CS1 IND STD MIX B	PP23724	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23723 = 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
70	10/20 PPM Pest/PCB SOM01.2 Surg Stock	PP23725	10/02/2024	04/01/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 1.00000ml of P13383 + 9.00000ml of E3788 = Final Quantity: 10.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3922	Toxaphene CS6	PP23726	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.80000ml of P13360 + 48.40000ml of E3805 + 0.80000ml of PP23725 = Final Quantity: 50.000 ml

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Pest/Pcb STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
674	Toxaphene CS5	PP23727	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23726 = Final Quantity: 1.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
675	Toxaphene CS4	PP23728	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23727 = 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
676	Toxaphene CS3	PP23729	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23727 = Final Quantity: 1.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
677	Toxaphene CS2	PP23730	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23729 = 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
678	Toxaphene CS1	PP23731	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of E3805 + 0.50000ml of PP23730 = Final Quantity: 1.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
776	EPA S0M01.2 RESCHK	PP23732	10/02/2024	03/30/2025	Abdul Mirza	None	None	Yogesh Patel 10/03/2024

FROM 0.50000ml of PP23716 + 0.50000ml of PP23722 = 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
758	PEM Mix w/Surr	PP23975	11/14/2024	05/09/2025	Ankita Jodhani	None	None	Yogesh Patel 11/18/2024

FROM 1.00000ml of P11797 + 99.00000ml of E3826 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3793	20/40 PPB PEST GPC spike solution	PP24060	11/25/2024	05/18/2025	Ankita Jodhani	None	None	Yogesh Patel 11/27/2024

FROM 0.08000ml of P13191 + 99.92000ml of E3829 = Final Quantity: 100.000 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 #
PCI Scientific Supply, Inc.	PC19631-100 / SODIUM SULFATE, ANHYDROUS, PEST GRADE, 1	313201	07/01/2025	01/03/2024 / Rajesh	07/20/2023 / Rajesh	E3551

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)	23H1462005	04/23/2025	08/13/2024 / Rajesh	08/13/2024 / Rajesh	E3788

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)	24C1862008	03/30/2025	09/30/2024 / Rajesh	09/25/2024 / Rajesh	E3805

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Agela Technologies Inc.	FS0006 / Cleanert Florisil cartridge	M06518	09/25/2025	10/01/2024 / Rajesh	09/25/2024 / Rajesh	E3806

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)	24G1962003	05/09/2025	11/09/2024 / Rajesh	11/07/2024 / Rajesh	E3826

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)	24J0862003	05/18/2025	11/18/2024 / Rajesh	11/04/2024 / Rajesh	E3829

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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-9254-03 / Acetone, Ultra Resi (cs/4x4L)	24H2762008	07/29/2025	01/29/2025 / Rajesh	01/29/2025 / Rajesh	E3873

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)	25A0262002	07/30/2025	01/30/2025 / Rajesh	01/20/2025 / Rajesh	E3874

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)	243570	08/12/2025	02/12/2025 / Rajesh	02/12/2025 / Rajesh	E3877

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)	24K1762005	08/14/2025	02/14/2025 / Rajesh	12/27/2024 / Rajesh	E3878

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32004 / Pesticide Mix, CLP method, Standard Mix B 3/90 SOW, Hexane, 1mL/ampul	A0176477	04/02/2025	10/02/2024 / Abdul	05/27/2022 / Sohil	P11763

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32074 / Pesticide Performance Evaluation Mix w/Surrogate	A0183168	05/14/2025	11/14/2024 / Ankita	05/27/2022 / Sohil	P11797

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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	32003 / Pesticide Mix, CLP method, Standard Mix A 3/90 SOW, Hexane, 1mL/ampul	A0176384	04/02/2025	10/02/2024 / Abdul	06/22/2022 / Abdul	P11945

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32018 / Pesticide Matrix Spike Mix	A0203053	05/25/2025	11/25/2024 / Ankita	01/15/2024 / Abdul	P13191

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32005 / Toxaphene Standard	A0203830	04/02/2025	10/02/2024 / Abdul	05/03/2024 / Abdul	P13360

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32453 / SOM01.1 Pesticide Surrogate Standard	A0194530	04/02/2025	10/02/2024 / Abdul	12/06/2023 / Abdul	P13383

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

MIRADOR 201, COL. MIRADOR
MONTERREY, N.L. MEXICO
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:	ABR/21/2023
LOT NUMBER :	313201		

TEST	SPECIFICATIONS	LOT VALUES
Assay (Na_2SO_4)	Min. 99.0%	99.7 %
pH of a 5% solution at 25°C	5.2 - 9.2	6.1
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%	0.003 %
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%	0.1 %
Retained on US Standard No. 60 sieve	Min. 94%	97.3 %
Through US Standard No. 60 sieve	Max. 5%	2.5 %
Through US Standard No. 100 sieve	Max. 10%	0.1 %

COMMENTS

QC: PhC Irma Belmares

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

Recd. by RB on 7/24/23 E3551

Acetone
BAKER RESI-ANALYZED® Reagent
For Organic Residue Analysis

avantor™ | J.T.Baker®

Material No.: 9254-03
Batch No.: 23H1462005
Manufactured Date: 2023-07-26
Expiration Date: 2026-07-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay ($(CH_3)_2CO$) (by GC, corrected for water)	≥ 99.4 %	99.7 %
Color (APHA)	≤ 10	5
Residue after Evaporation	≤ 1.0 ppm	0.3 ppm
Substances Reducing Permanganate	Passes Test	Passes Test
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	1

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 8/13/24

E 3788

Ken Koehnlein
Sr. Manager, Quality Assurance

Hexanes (95% n-hexane)
BAKER RESI-ANALYZED® Reagent
For Organic Residue Analysis

avantor™ | J.T.Baker®

Material No.: 9262-03
Batch No.: 24C1862008
Manufactured Date: 2024-01-30
Expiration Date: 2025-04-30
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	0.4 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

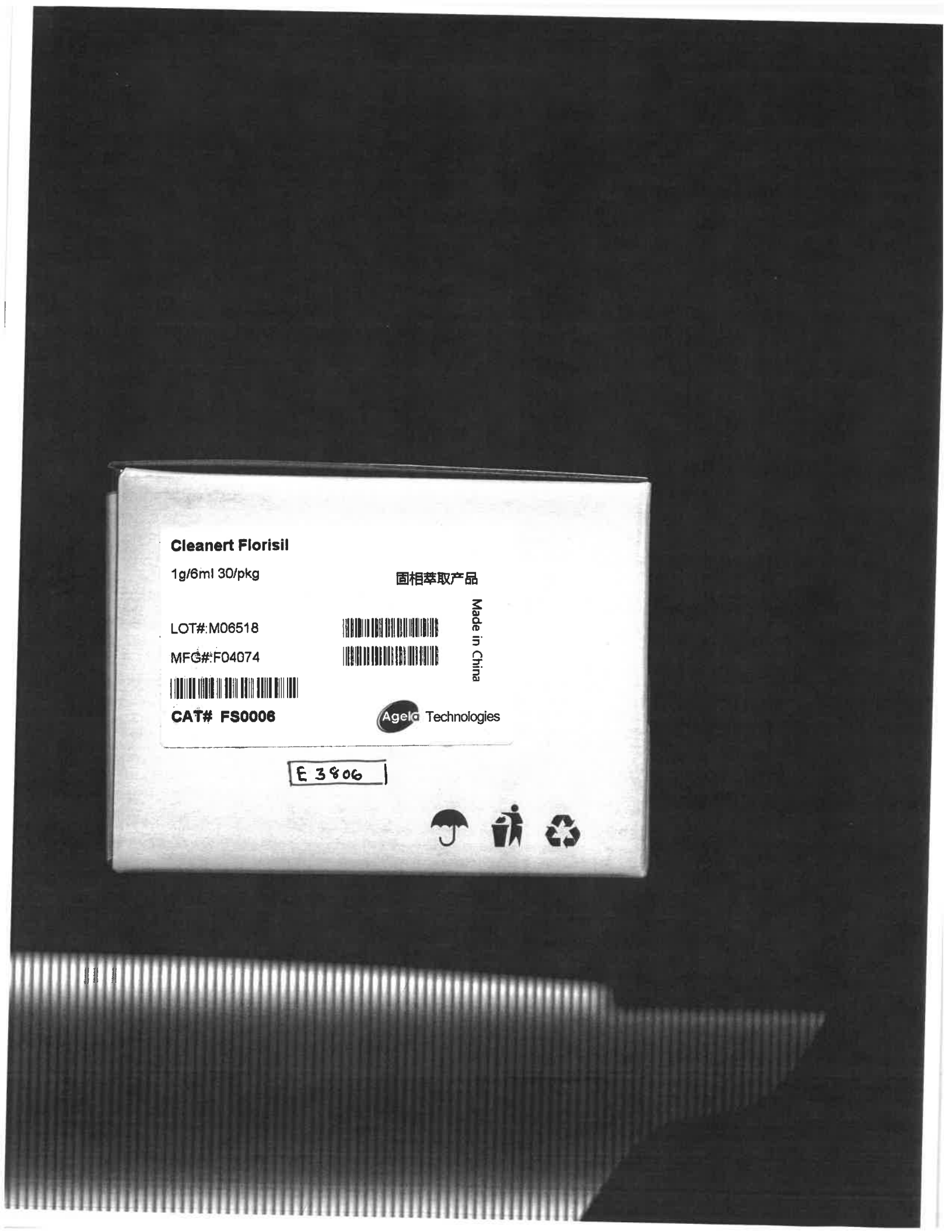
Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd by RP on 9/25/24

E3805

JCroak

Jamie Croak
Director Quality Operations, Bioscience Production


Cleanert Florisil
1g/6ml 30/pkg
固相萃取产品
LOT#:M06518
MFG#:F04074
CAT# FS0006
Agela Technologies
Made in China
E3806

n-Hexane 95%
ULTRA RESI-ANALYZED
For Organic Residue Analysis

avantor™ | J.T.Baker®

Material No.: 9262-03
Batch No.: 24G1962003
Manufactured Date: 2024-05-23
Expiration Date: 2025-08-22
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	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

E3826

Rec'd by RP on 11/7/24

Jamie Croak
Director Quality Operations, Bioscience Production

1/16/24

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

avantor™ | J.T.Baker

Material No.: 9266-A4
Batch No.: 24J0862003
Manufactured Date: 2024-09-12
Expiration Date:2025-12-12
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 HeptachlorEpoxide) 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	0.2 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: United States
Packaging Site: Phillipsburg Mfg Ctr & DC

E 3829

JCroak

Jamie Croak
Director Quality Operations, Bioscience Production

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

Acetone
BAKER RESI-ANALYZED® Reagent
For Organic Residue Analysis

avantor™ | J.T.Baker

Material No.: 9254-03
Batch No.: 24H2762008
Manufactured Date: 2024-04-18
Expiration Date:2027-04-18
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay ($(CH_3)_2CO$) (by GC, corrected forwater)	>= 99.4 %	100.0 %
Color (APHA)	<= 10	5
Residue after Evaporation	<= 1.0 ppm	0.0 ppm
Substances Reducing Permanganate	Passes Test	Passes Test
Titrable Acid (µeq/g)	<= 0.3	0.2
Titrable Base (µeq/g)	<= 0.6	<0.1
Water (H_2O)	<= 0.5 %	<0.1 %
FID-Sensitive Impurities (as 2-Octanol)Single Impurity Peak (ng/mL)	<= 5	1
ECD Sensitive Impurities (as HeptachlorEpoxide) Single Peak (pg/mL)	<= 10	1

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

Country of Origin: United States
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd. by RP on 1/29/25

E 3873

JCroak
Jamie Croak
Director Quality Operations, Bioscience Production

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

PO: PO2-1178.2 PRODUCT CODE: SHIP DATE: 1/20/2025

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

avantor | J.T.Baker

Material No.: 9266-A4
Batch No.: 25A0262002
Manufactured Date: 2024-11-21
Expiration Date:2026-02-20
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 HeptachlorEpoxide) Single Peak (pg/mL)	<= 10	4
Assay (CH_2Cl_2) (by GC, exclusive of preservative, corrected for water)	>= 99.8 %	99.9 %
Color (APHA)	<= 10	10
Residue after Evaporation	<= 1.0 ppm	0.8 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: United States
Packaging Site: Phillipsburg Mfg Ctr & DC

E 3874

Jamie Croak
Director Quality Operations, Bioscience Production

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

Certificate of Analysis

1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120633

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

Catalog Number	H303	Quality Test / Release Date	11/07/2024
Lot Number	243570		
Description	HEXANES - OPTIMA		
Country of Origin	United States	Suggested Retest Date	Nov/2029
Chemical Origin	Organic - non animal		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Clear, colorless liquid
ASSAY (N-HEXANE)	%	>= 60	69
ASSAY (SUM C6 HYDROCARBONS)	%	>= 99.9	>99.9
COLOR	APHA	<= 5	<5
DENSITY AT 25 DEGREES C	GM/ML	Inclusive Between 0.653 - 0.673	0.669
EVAPORATION RESIDUE	ppm	<= 1	<1
FLUORESCENCE BACKGROUND	ppb	<= 1	<1
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
OPTICAL ABS AT 195 NM	ABS. UNITS	<= 1	0.74
OPTICAL ABS AT 210 NM	ABS. UNITS	<= 0.25	0.17
OPTICAL ABS AT 220 NM	ABS. UNITS	<= 0.07	0.05
OPTICAL ABS AT 254 NM	ABS. UNITS	<= 0.005	0.001
PESTICIDE RESIDUE ANALYSIS	NG/L	<= 10	<10
REFRACTIVE INDEX @ 25 DEG C		Inclusive Between 1.375 - 1.385	1.379
SUITABILITY FOR GC/MS		= PASS TEST	PASS TEST
SULFUR COMPOUNDS	%	<= 0.005	<0.005
THIOPHENE	PASS/FAIL	= PASS TEST	PASS TEST
WATER (H2O)	%	<= 0.01	<0.01
WATER-SOLUBLE TITRABLE ACID	MEQ/G	<= 0.0003	0.0001

Recd by RP on 2/12/25

E3877

Harout Sahagian - Quality Control Manager - Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.
If there are any questions with this certificate, please call at (800) 227-6701.
*Based on suggested storage condition.

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

avantor | J.T.Baker

Material No.: 9266-A4
Batch No.: 24K1762005
Manufactured Date: 2024-10-08
Expiration Date:2026-01-07
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 HeptachlorEpoxide) Single Peak (pg/mL)	<= 10	2
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	0.5 ppm
Titrable Acid (µeq/g)	<= 0.3	0.0
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: United States
Packaging Site: Phillipsburg Mfg Ctr & DC

E 3878

JCroak
Jamie Croak
Director Quality Operations, Bioscience Production

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

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Certificate #3222.01

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

P11759 to P11763

Received by : SJ 5/27/2022

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. : 32004 **Lot No.:** A0176477

Description : Pesticide Standard Mix B (3/90)

Pesticide Standard Mix B (3/90) 8-16 µg/mL, Hexane/Toluene (90:10), 1mL/ampul

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

Expiration Date : September 30, 2025 **Storage:** 10°C or colder

Handling: Contains PCBs - sonicate prior to use. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2,4,5,6-Tetrachloro-m-xylene **CAS #** 877-09-8 (Lot 0052481) **Purity** 98%	8.0 µg/mL	+/- 0.1453 µg/mL +/- 0.3910 µg/mL +/- 0.5461 µg/mL	Gravimetric Unstressed Stressed
2	beta-BHC **CAS #** 319-85-7 (Lot SL210106) **Purity** 99%	8.0 µg/mL	+/- 0.1447 µg/mL +/- 0.3892 µg/mL +/- 0.5436 µg/mL	Gravimetric Unstressed Stressed
3	delta-BHC **CAS #** 319-86-8 (Lot 8-TAH-175-1) **Purity** 98%	8.0 µg/mL	+/- 0.1453 µg/mL +/- 0.3910 µg/mL +/- 0.5461 µg/mL	Gravimetric Unstressed Stressed
4	Aldrin **CAS #** 309-00-2 (Lot 12044700) **Purity** 99%	8.0 µg/mL	+/- 0.1447 µg/mL +/- 0.3892 µg/mL +/- 0.5436 µg/mL	Gravimetric Unstressed Stressed
5	Heptachlor epoxide (isomer B) **CAS #** 1024-57-3 (Lot 11129300) **Purity** 99%	8.0 µg/mL	+/- 0.1447 µg/mL +/- 0.3892 µg/mL +/- 0.5436 µg/mL	Gravimetric Unstressed Stressed
6	trans-Chlordane **CAS #** 5103-74-2 (Lot 32095) **Purity** 99%	8.0 µg/mL	+/- 0.1447 µg/mL +/- 0.3892 µg/mL +/- 0.5436 µg/mL	Gravimetric Unstressed Stressed
7	cis-Chlordane **CAS #** 5103-71-9 (Lot 31707) **Purity** 99%	8.0 µg/mL	+/- 0.1447 µg/mL +/- 0.3892 µg/mL +/- 0.5436 µg/mL	Gravimetric Unstressed Stressed

8	4,4'-DDE		16.1	µg/mL	+/-	0.2906	µg/mL	Gravimetric
	CAS # 72-55-9	(Lot GHYQG)			+/-	0.7817	µg/mL	Unstressed
	Purity 99%				+/-	1.0918	µg/mL	Stressed
9	Endosulfan II		16.0	µg/mL	+/-	0.2894	µg/mL	Gravimetric
	CAS # 33213-65-9	(Lot 10861900)			+/-	0.7785	µg/mL	Unstressed
	Purity 99%				+/-	1.0873	µg/mL	Stressed
10	Endrin aldehyde		16.0	µg/mL	+/-	0.2894	µg/mL	Gravimetric
	CAS # 7421-93-4	(Lot 30606)			+/-	0.7785	µg/mL	Unstressed
	Purity 99%				+/-	1.0873	µg/mL	Stressed
11	Endosulfan sulfate		16.0	µg/mL	+/-	0.2894	µg/mL	Gravimetric
	CAS # 1031-07-8	(Lot BCCB0424)			+/-	0.7785	µg/mL	Unstressed
	Purity 99%				+/-	1.0873	µg/mL	Stressed
12	Endrin ketone		16.0	µg/mL	+/-	0.2895	µg/mL	Gravimetric
	CAS # 53494-70-5	(Lot 11058900)			+/-	0.7788	µg/mL	Unstressed
	Purity 98%				+/-	1.0877	µg/mL	Stressed
13	Decachlorobiphenyl (BZ# 209)		16.1	µg/mL	+/-	0.2906	µg/mL	Gravimetric
	CAS # 2051-24-3	(Lot 30679)			+/-	0.7817	µg/mL	Unstressed
	Purity 99%				+/-	1.0918	µg/mL	Stressed

Solvent: Hexane/Toluene (90:10)
CAS # 110-54-3/108-88-3
Purity 99%

Column:
30m x .25mm x .2um
Rtx-CLP II (cat.# 11323)

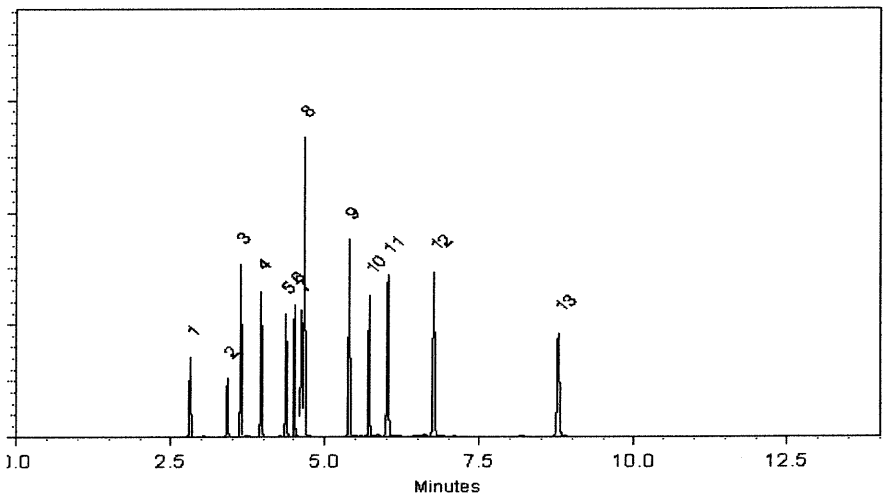
Carrier Gas:
helium-constant pressure 20 psi.

Temp. Program:
200°C to 300°C
@ 25°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
300°C

Det. Type:
ECD



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 B. Confer

Aurelia Confer - Operations Tech I

Date Mixed: 16-Sep-2021 **Balance:** B707717271

Amanda Miller - Operations Tech-ARM QC

Date Passed: 20-Sep-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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Certificate #3222.01

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

P11789 to P11793

Received by SJ 5/27/2022

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. : 32074 **Lot No.:** A0183168

Description : Pesticide Performance Eval Mix w/Surrogate

Performance Evaluation Std. 3/90 SOW w/surrogates 1-25µg/mL, Hexane, 1mL/ampul

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

Expiration Date : March 31, 2026 **Storage:** 10°C or colder

Handling: Contains PCBs - sonicate prior to use. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	2,4,5,6-Tetrachloro-m-xylene	2.0 µg/mL	+/- 0.1220	µg/mL	Gravimetric
	CAS # 877-09-8 (Lot 0052481)		+/- 0.1523	µg/mL	Unstressed
	Purity 98%		+/- 0.1799	µg/mL	Stressed
2	alpha-BHC	1.0 µg/mL	+/- 0.0610	µg/mL	Gravimetric
	CAS # 319-84-6 (Lot 12469000)		+/- 0.0762	µg/mL	Unstressed
	Purity 99%		+/- 0.0900	µg/mL	Stressed
3	gamma-BHC (Lindane)	1.0 µg/mL	+/- 0.0610	µg/mL	Gravimetric
	CAS # 58-89-9 (Lot 12642100)		+/- 0.0762	µg/mL	Unstressed
	Purity 99%		+/- 0.0900	µg/mL	Stressed
4	beta-BHC	1.0 µg/mL	+/- 0.0610	µg/mL	Gravimetric
	CAS # 319-85-7 (Lot BCCC6425)		+/- 0.0762	µg/mL	Unstressed
	Purity 99%		+/- 0.0900	µg/mL	Stressed
5	Endrin	5.1 µg/mL	+/- 0.3045	µg/mL	Gravimetric
	CAS # 72-20-8 (Lot 13000500)		+/- 0.3805	µg/mL	Unstressed
	Purity 99%		+/- 0.4496	µg/mL	Stressed
6	4,4'-DDT	10.1 µg/mL	+/- 0.6090	µg/mL	Gravimetric
	CAS # 50-29-3 (Lot 210916JLM)		+/- 0.7609	µg/mL	Unstressed
	Purity 99%		+/- 0.8992	µg/mL	Stressed
7	Methoxychlor	25.2 µg/mL	+/- 1.5221	µg/mL	Gravimetric
	CAS # 72-43-5 (Lot 12555700)		+/- 1.9018	µg/mL	Unstressed
	Purity 98%		+/- 2.2475	µg/mL	Stressed

8	Decachlorobiphenyl (BZ# 209)		2.0	µg/mL	+/-	0.1221	µg/mL	Gravimetric
	CAS # 2051-24-3	(Lot 30679)			+/-	0.1524	µg/mL	Unstressed
	Purity 99%				+/-	0.1800	µg/mL	Stressed

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

Column:
30m x .25mm x .2um
Rtx-CLP II (cat.# 11323)

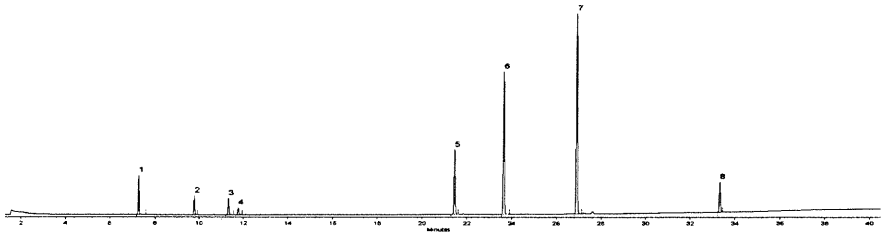
Carrier Gas:
helium-constant pressure 20 psi.

Temp. Program:
150°C to 300°C
@ 4°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
300°C

Det. Type:
ECD



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: 22-Mar-2022 **Balance:** 1128360905

John Lidgett - AD Chemist

Date Passed: 24-Mar-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.

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Certificate #3222.01

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Testing Laboratory
Certificate #3222.02

Certificate of Analysis

P11794 to P11798

Received by SJ 5/27/2022

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. : 32074 **Lot No.:** A0183168

Description : Pesticide Performance Eval Mix w/Surrogate

Performance Evaluation Std. 3/90 SOW w/surrogates 1-25µg/mL, Hexane, 1mL/ampul

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

Expiration Date : March 31, 2026 **Storage:** 10°C or colder

Handling: Contains PCBs - sonicate prior to use. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2,4,5,6-Tetrachloro-m-xylene	2.0 µg/mL	+/- 0.1220 µg/mL	Gravimetric
	CAS # 877-09-8 (Lot 0052481)		+/- 0.1523 µg/mL	Unstressed
	Purity 98%		+/- 0.1799 µg/mL	Stressed
2	alpha-BHC	1.0 µg/mL	+/- 0.0610 µg/mL	Gravimetric
	CAS # 319-84-6 (Lot 12469000)		+/- 0.0762 µg/mL	Unstressed
	Purity 99%		+/- 0.0900 µg/mL	Stressed
3	gamma-BHC (Lindane)	1.0 µg/mL	+/- 0.0610 µg/mL	Gravimetric
	CAS # 58-89-9 (Lot 12642100)		+/- 0.0762 µg/mL	Unstressed
	Purity 99%		+/- 0.0900 µg/mL	Stressed
4	beta-BHC	1.0 µg/mL	+/- 0.0610 µg/mL	Gravimetric
	CAS # 319-85-7 (Lot BCCC6425)		+/- 0.0762 µg/mL	Unstressed
	Purity 99%		+/- 0.0900 µg/mL	Stressed
5	Endrin	5.1 µg/mL	+/- 0.3045 µg/mL	Gravimetric
	CAS # 72-20-8 (Lot 13000500)		+/- 0.3805 µg/mL	Unstressed
	Purity 99%		+/- 0.4496 µg/mL	Stressed
6	4,4'-DDT	10.1 µg/mL	+/- 0.6090 µg/mL	Gravimetric
	CAS # 50-29-3 (Lot 210916JLM)		+/- 0.7609 µg/mL	Unstressed
	Purity 99%		+/- 0.8992 µg/mL	Stressed
7	Methoxychlor	25.2 µg/mL	+/- 1.5221 µg/mL	Gravimetric
	CAS # 72-43-5 (Lot 12555700)		+/- 1.9018 µg/mL	Unstressed
	Purity 98%		+/- 2.2475 µg/mL	Stressed

8	Decachlorobiphenyl (BZ# 209)		2.0	µg/mL	+/-	0.1221	µg/mL	Gravimetric
	CAS # 2051-24-3	(Lot 30679)			+/-	0.1524	µg/mL	Unstressed
	Purity 99%				+/-	0.1800	µg/mL	Stressed

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

Column:
30m x .25mm x .2um
Rtx-CLP II (cat.# 11323)

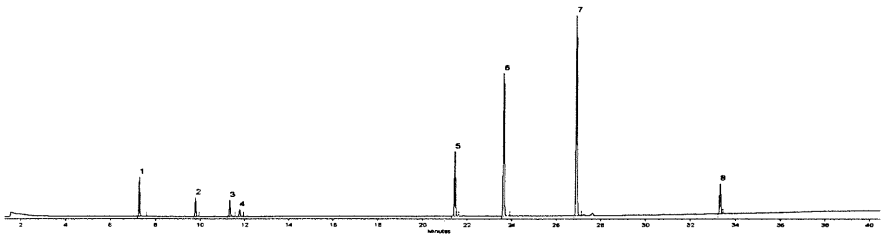
Carrier Gas:
helium-constant pressure 20 psi.

Temp. Program:
150°C to 300°C
@ 4°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
300°C

Det. Type:
ECD



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: 22-Mar-2022 **Balance:** 1128360905

John Lidgett - AD Chemist

Date Passed: 24-Mar-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.

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110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus

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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. : 32018 **Lot No.:** A0203053

Description : Pesticide Matrix Spike Mix

Pesticide Matrix Spike Mix 25-50 µg/mL, Acetone, 1mL/ampul

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

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

Ship: Ambient

P13191 (4)
↓
P13194

0/15/2024

CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	gamma-BHC (Lindane)	58-89-9	14646400	99%	25.0 µg/mL	+/- 1.3149
2	Heptachlor	76-44-8	813251	99%	25.0 µg/mL	+/- 1.3149
3	Aldrin	309-00-2	14389400	98%	25.0 µg/mL	+/- 1.3164
4	Dieldrin	60-57-1	14515000	98%	50.0 µg/mL	+/- 2.6297
5	Endrin	72-20-8	14485300	98%	50.0 µg/mL	+/- 2.6286
6	4,4'-DDT	50-29-3	230410JLMA	98%	50.1 µg/mL	+/- 2.6317

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone
CAS # 67-64-1
Purity 99%

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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. : 32005 **Lot No.:** A0203038

Description : Toxaphene Standard

Toxaphene Standard 1000 µg/mL, Hexane, 1mL/ampul

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

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

Ship: Ambient

CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Toxaphene	8001-35-2	1051817	----%	1,009.0 µg/mL	+/- 55.9920

* Expanded Uncertainty displayed in same units as Grav. Conc.

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

P13358 (12)
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P13369

05-06-2024

Quality Confirmation Test

Column:
30m x .25mm x .2um
Rtx-CLP II (cat.# 11323)

Carrier Gas:
helium-constant pressure 20 psi.

Temp. Program:
200°C to 300°C
@ 25°C/min. (hold 10 min.)

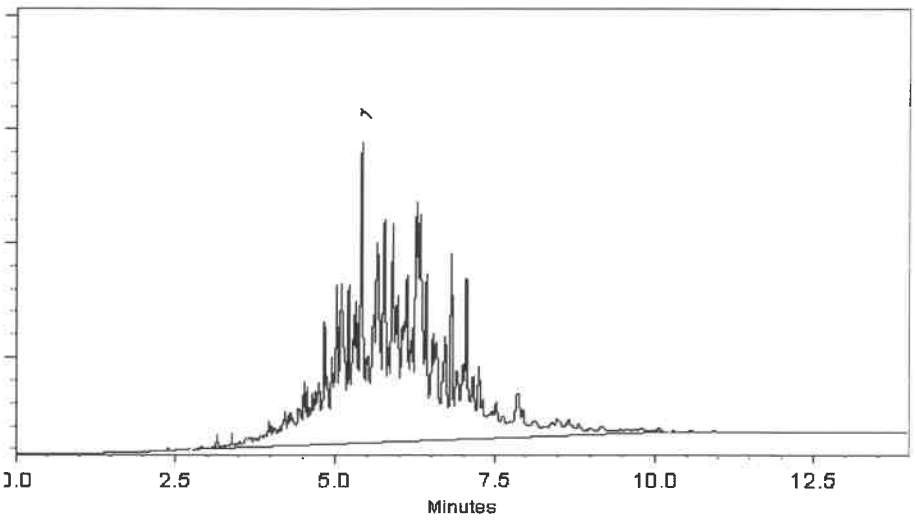
Inj. Temp:
250°C

Det. Temp:
300°C

Det. Type:
ECD

Split Vent:
300 ml/min.

Inj. Vol
0.2µl



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.

Dakota Parson - Operations Technician I **Date Mixed:** 10-Oct-2023 **Balance Serial #** 1128353505

Jennifer Pollino - Operations Tech III - ARM QC **Date Passed:** 16-Oct-2023

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

P13358 (12)

P13369

05-06-2024

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ilac-MRA A2LA 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. : 32453 **Lot No.:** A0194530

Description : SOM01.1 Pesticide Surrogate Standard

Pesticide Surrogate Mix 100-200µg/mL, Acetone, 1mL/ampul

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

Expiration Date : May 31, 2029 **Storage:** 0°C or colder

Handling: Contains PCBs - sonicate prior to use. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	2,4,5,6-Tetrachloro-m-xylene	877-09-8	RP220407	99%	100.6 µg/mL	+/- 5.5961
2	Decachlorobiphenyl (BZ# 209)	2051-24-3	30679	99%	201.3 µg/mL	+/- 11.1978

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone
CAS # 67-64-1
Purity 99%

P13382 (5)
↓
P13386

05/6/2024

Quality Confirmation Test

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.)

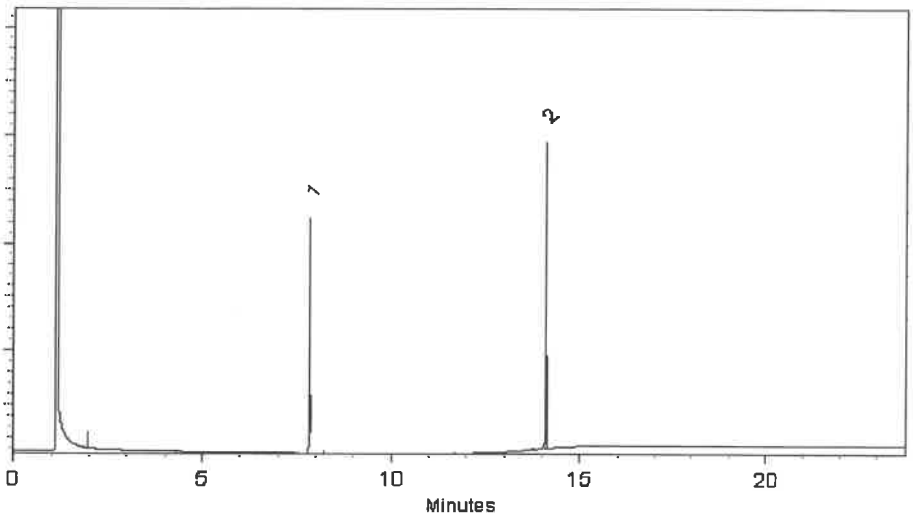
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



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.

Jess Hoy - Operations Tech I

Date Mixed: 09-Feb-2023 **Balance Serial #** 1128353505

Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 15-Feb-2023

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

P13382 (B)
↓
P13386

05/6/2024

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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.

P 11945 & P 11946 (2) 1

06/24/2022

Catalog No. : 32003 **Lot No.:** A0176384

Description : Pesticide Standard Mix A (3/90)

Standard Mix A 3/90 SOW 8-80µg/mL, Hexane/Toluene (90:10), 1mL/ampul

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

Expiration Date : September 30, 2025 **Storage:** 10°C or colder

Handling: Contains PCBs - sonicate prior to use. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2,4,5,6-Tetrachloro-m-xylene **CAS #** 877-09-8 (Lot 0052481) **Purity** 98%	8.0 µg/mL	+/- 0.1442 µg/mL +/- 0.3878 µg/mL +/- 0.5417 µg/mL	Gravimetric Unstressed Stressed
2	alpha-BHC **CAS #** 319-84-6 (Lot 3324600) **Purity** 99%	8.0 µg/mL	+/- 0.1447 µg/mL +/- 0.3892 µg/mL +/- 0.5436 µg/mL	Gravimetric Unstressed Stressed
3	gamma-BHC (Lindane) **CAS #** 58-89-9 (Lot 11837800) **Purity** 98%	8.0 µg/mL	+/- 0.1442 µg/mL +/- 0.3878 µg/mL +/- 0.5417 µg/mL	Gravimetric Unstressed Stressed
4	Heptachlor **CAS #** 76-44-8 (Lot 0006617486) **Purity** 99%	8.0 µg/mL	+/- 0.1447 µg/mL +/- 0.3892 µg/mL +/- 0.5436 µg/mL	Gravimetric Unstressed Stressed
5	Endosulfan I **CAS #** 959-98-8 (Lot BCBS8631) **Purity** 99%	8.0 µg/mL	+/- 0.1447 µg/mL +/- 0.3892 µg/mL +/- 0.5436 µg/mL	Gravimetric Unstressed Stressed
6	Dieldrin **CAS #** 60-57-1 (Lot 12074700) **Purity** 97%	16.0 µg/mL	+/- 0.2889 µg/mL +/- 0.7772 µg/mL +/- 1.0854 µg/mL	Gravimetric Unstressed Stressed
7	Endrin **CAS #** 72-20-8 (Lot 11773800) **Purity** 98%	16.0 µg/mL	+/- 0.2895 µg/mL +/- 0.7788 µg/mL +/- 1.0877 µg/mL	Gravimetric Unstressed Stressed

8	4,4'-DDD		16.0	µg/mL	+/-	0.2894	µg/mL	Gravimetric
	CAS # 72-54-8	(Lot HAN02)			+/-	0.7785	µg/mL	Unstressed
	Purity 99%				+/-	1.0873	µg/mL	Stressed
9	4,4'-DDT		16.0	µg/mL	+/-	0.2895	µg/mL	Gravimetric
	CAS # 50-29-3	(Lot 210823JLM)			+/-	0.7788	µg/mL	Unstressed
	Purity 98%				+/-	1.0877	µg/mL	Stressed
10	Methoxychlor		80.0	µg/mL	+/-	1.4132	µg/mL	Gravimetric
	CAS # 72-43-5	(Lot 12325400)			+/-	3.8798	µg/mL	Unstressed
	Purity 97%				+/-	5.4271	µg/mL	Stressed
11	Decachlorobiphenyl (BZ# 209)		16.0	µg/mL	+/-	0.2894	µg/mL	Gravimetric
	CAS # 2051-24-3	(Lot 30638)			+/-	0.7785	µg/mL	Unstressed
	Purity 99%				+/-	1.0873	µg/mL	Stressed

Solvent: Hexane/Toluene (90:10)
CAS # 110-54-3/108-88-3
Purity 99%

P 11945
↓
P 11946
(2)

08/24/2022

Column:
30m x .25mm x .2um
Rtx-CLP II (cat.# 11323)

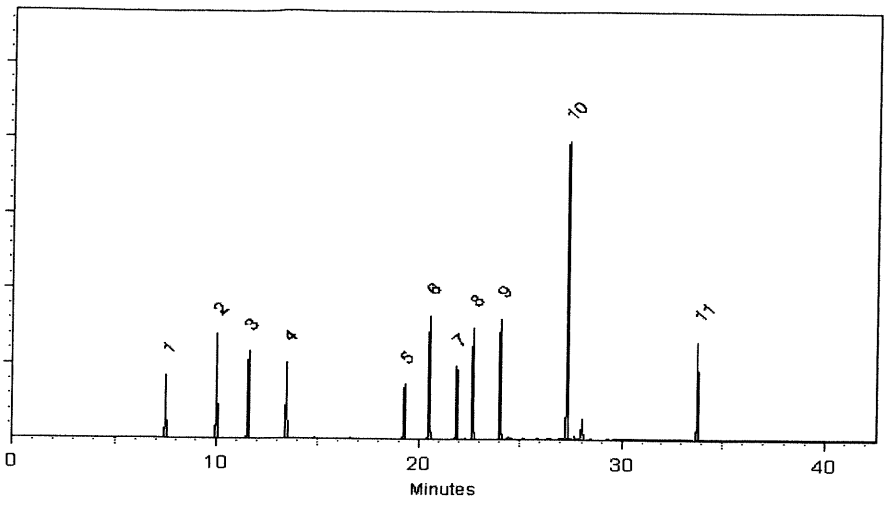
Carrier Gas:
helium-constant pressure 20 psi.

Temp. Program:
150°C to 300°C
@ 4°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
300°C

Det. Type:
ECD



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.

Erik Strommer - Operations Tech I

Date Mixed: 14-Sep-2021 **Balance:** 1128353505

Amanda Miller - Operations Tech-ARM QC

Date Passed: 17-Sep-2021

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

P11945 (2)
↓
P11946

06/24/2022

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.