

Prep Standard - Chemical Standard Summary

Order ID : Q2259

Test : Herbicide Group1

Prepbatch ID : PB168375,

Sequence ID/Qc Batch ID: ps061025,ps061125,ps061625,

Standard ID :

EP2612,EP2621,PP24553,PP24554,PP24556,PP24557,PP24558,PP24559,PP24560,PP24561,PP24562,PP24595,PP24601,

Chemical ID :

E2865,E3551,E3881,E3930,E3932,E3933,M6151,M6157,P11183,P12620,P12630,P12689,P12710,P13535,P13536,P13542,P13971,P13972,P13973,P13974,P13975,P8829,

Extractions 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>
2017	1:1 ACETONE/METHYLENE CHLORIDE	EP2612	05/09/2025	11/05/2025	RUPESHKUMAR SHAH	None	None	Riteshkumar Patel
								05/09/2025

FROM 8000.00000ml of E3930 + 8000.00000ml of E3932 = Final Quantity: 16000.000 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>
601	Acidified Sodium Sulphate 2	EP2621	06/03/2025	08/14/2025	RUPESHKUMAR SHAH	Extraction_SC ALE_2	None	Riteshkumar Patel
						(EX-SC-2)		06/03/2025

FROM 100.00000ml of E3881 + 150.00000ml of M6157 + 3000.00000ml of E3551 = Final Quantity: 3000.000 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>
1321	2/200 PPM Herb Mega Mix	PP24553	05/12/2025	11/05/2025	Abdul Mirza	None	None	Yogesh Patel 05/22/2025
<u>FROM</u>	0.20000ml of P8829 + 1.00000ml of P11183 + 1.00000ml of P12620 + 1.00000ml of P12630 + 1.00000ml of P12689 + 95.80000ml of E3933 = Final Quantity: 100.000 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>
1851	2/200 PPM Herb Mega Mix 2nd Source	PP24554	05/12/2025	08/12/2025	Abdul Mirza	None	None	Yogesh Patel 05/22/2025
<u>FROM</u> 0.50000ml of P13971 + 1.00000ml of P12710 + 48.50000ml of E3933 = Final Quantity: 50.000 ml								

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>
1456	200 PPB Herb MIX STD	PP24556	05/12/2025	11/05/2025	Abdul Mirza	None	None	Yogesh Patel
								05/22/2025

FROM 0.90000ml of E3933 + 0.10000ml of PP24553 = 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>
1455	500 PPB Herb MIX STD	PP24557	05/12/2025	11/05/2025	Abdul Mirza	None	None	Yogesh Patel
								05/22/2025

FROM 0.75000ml of E3933 + 0.25000ml of PP24553 = Final Quantity: 1.000 ml

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>
1453	1000 PPB Herb MIX STD	PP24558	05/12/2025	11/05/2025	Abdul Mirza	None	None	Yogesh Patel
								05/22/2025

FROM 0.50000ml of E3933 + 0.50000ml of PP24553 = 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>
1454	750 PPB Herb MIX STD	PP24559	05/12/2025	11/05/2025	Abdul Mirza	None	None	Yogesh Patel
								05/22/2025

FROM 0.25000ml of E3933 + 0.75000ml of PP24558 = Final Quantity: 1.000 ml

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>
1452	1500 PPB HERB MIX STD	PP24560	05/12/2025	11/05/2025	Abdul Mirza	None	None	Yogesh Patel
								05/22/2025

FROM 0.25000ml of E3933 + 0.75000ml of PP24553 = 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>
1854	1000 PPB HERB MIX ICV STD	PP24561	05/12/2025	08/12/2025	Abdul Mirza	None	None	Yogesh Patel
								05/22/2025

FROM 0.50000ml of E3933 + 0.50000ml of PP24554 = Final Quantity: 1.000 ml

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>
1691	750 PPB ICV HERB STD	PP24562	05/12/2025	08/12/2025	Abdul Mirza	None	None	Yogesh Patel
								05/22/2025

FROM 0.25000ml of E3933 + 0.75000ml of PP24561 = 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>
1848	5000/500000 PPB Herbicide Spike (Free Acid)	PP24595	05/20/2025	11/05/2025	Abdul Mirza	None	None	Yogesh Patel
								05/22/2025

FROM 0.50000ml of P13542 + 1.00000ml of P13535 + 1.00000ml of P13536 + 47.50000ml of E3932 = Final Quantity: 50.000 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>
60	5000 PPB Herbicide Surg Spike (Free Acid)	PP24601	05/22/2025	11/05/2025	Abdul Mirza	None	None	Yogesh Patel 06/11/2025
<u>FROM</u>	1.25000ml of P13972 + 1.25000ml of P13973 + 1.25000ml of P13974 + 1.25000ml of P13975 + 195.00000ml of E3933 = Final Quantity: 200.000 ml							

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3382-05 / Sand, Purified (cs/4x2.5kg)	0000243821	06/30/2025	04/30/2020 / RAJESH	04/28/2020 / RAJESH	E2865

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	PC19631-100 / SODIUM SULFATE, ANHYDROUS, PEST GRADE, 1	313201	12/04/2025	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 #
PCI Scientific Supply, Inc.	PC04977-3 / Ether, Anhydrous, Glass Distilled, HRGC/HPLC, 4L	242789	08/14/2025	02/14/2025 / Rajesh	01/06/2025 / Rajesh	E3881

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	02/20/2026	05/02/2025 / RUPESH	03/09/2025 / RUPESH	E3930

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)	24H1462005	11/05/2025	05/05/2025 / RUPESH	04/23/2025 / RUPESH	E3932

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)	25C0362005	11/05/2025	05/05/2025 / RUPESH	04/23/2025 / RUPESH	E3933

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	22G2862015	08/18/2025	02/18/2025 / Sagar	01/15/2025 / Sagar	M6151

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9673-33 / Sulfuric Acid, Instra-Analyzed (cs/6c2.5L)	24i1262013	11/07/2025	05/07/2025 / RUPESH	02/18/2025 / Mohan	M6157

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32050 / Herbicide, 8000 series, 515 Surrogate [ester] 2,4-dichlorophenyl acetic acid methyl ester, 1mL, 200ug/mL, Hexane	A0172864	11/12/2025	05/12/2025 / Abdul	11/01/2021 / Abdul	P11183

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32062 / Herbicide Mix, 500/8000, Standard #4 [methyl ester] 200ug/mL, hexane, 1mL/ampul	A0155055	11/12/2025	05/12/2025 / Abdul	07/03/2023 / Abdul	P12620

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32055 / Herbicide Mix, 500/8000, Standard #1 [methyl ester] 200ug/mL, hexane, 1mL/ampul	A192429	11/12/2025	05/12/2025 / Abdul	07/03/2023 / Abdul	P12630

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32059 / Herbicide Mix#3 (Methyl Ester), 20000 ug/ml	A0199844	11/12/2025	05/12/2025 / Abdul	07/24/2023 / Abdul	P12689

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Agilent Technologies	HBM-8151M / Chlorinated Herbicide Mixtures, Methyl Esters	0006752480	08/12/2025	05/12/2025 / Abdul	08/09/2023 / Abdul	P12710

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Agilent Technologies	HBM-8151M / Chlorinated Herbicide Mixtures, Methyl Esters	0006752480	08/12/2025	05/12/2025 / Abdul	08/09/2023 / Abdul	P12710

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Agilent Technologies	HBM-8151A / Chlorinated Herbicide Mixtures, Free Acids	0006810955	11/20/2025	05/20/2025 / Abdul	09/03/2024 / Abdul	P13535

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Agilent Technologies	HBM-8151A / Chlorinated Herbicide Mixtures, Free Acids	0006810955	11/20/2025	05/20/2025 / Abdul	09/03/2024 / Abdul	P13535

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Agilent Technologies	HBM-8151A / Chlorinated Herbicide Mixtures, Free Acids	0006810955	11/20/2025	05/20/2025 / Abdul	09/03/2024 / Abdul	P13536

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Agilent Technologies	HBM-8151A / Chlorinated Herbicide Mixtures, Free Acids	0006810955	11/20/2025	05/20/2025 / Abdul	09/03/2024 / Abdul	P13536

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Agilent Technologies	HBM-8151A / Chlorinated Herbicide Mixtures, Free Acids	0006810955	11/20/2025	05/20/2025 / Abdul	09/24/2024 / Abdul	P13542

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Agilent Technologies	HBM-8151A / Chlorinated Herbicide Mixtures, Free Acids	0006810955	11/20/2025	05/20/2025 / Abdul	09/24/2024 / Abdul	P13542

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32050 / Herbicide, 8000 series, 515 Surrogate [ester] 2,4-dichlorophenyl acetic acid methyl ester, 1mL, 200ug/mL, Hexane	A0221255	11/12/2025	05/12/2025 / Abdul	04/02/2025 / Abdul	P13971

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32050 / Herbicide, 8000 series, 515 Surrogate [ester] 2,4-dichlorophenyl acetic acid methyl ester, 1mL, 200ug/mL, Hexane	A0221255	11/22/2025	05/22/2025 / Abdul	04/02/2025 / Abdul	P13972

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32050 / Herbicide, 8000 series, 515 Surrogate [ester] 2,4-dichlorophenyl acetic acid methyl ester, 1mL, 200ug/mL, Hexane	A0221255	11/22/2025	05/22/2025 / Abdul	04/02/2025 / Abdul	P13973

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32050 / Herbicide, 8000 series, 515 Surrogate [ester] 2,4-dichlorophenyl acetic acid methyl ester, 1mL, 200ug/mL, Hexane	A0221255	11/22/2025	05/22/2025 / Abdul	04/02/2025 / Abdul	P13974

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32050 / Herbicide, 8000 series, 515 Surrogate [ester] 2,4-dichlorophenyl acetic acid methyl ester, 1mL, 200ug/mL, Hexane	A0221255	11/22/2025	05/22/2025 / Abdul	04/02/2025 / Abdul	P13975

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32254 / Dalapon Methyl Ester, 1000 ug/ml	A0148063	11/12/2025	05/12/2025 / Abdul	08/16/2019 / Stephen	P8829

Sand
Purified
Washed and Ignited



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

Certificate of Analysis

Test	Specification	Result
Substances Soluble in HCl	$\leq 0.16\%$	0.01

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

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

E 2865


Jamie Ethier
Vice President Global Quality

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

Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700



**PRODUCTOS
QUÍMICOS
MONTERREY, S.A. DE C.V.**

MIRADOR 201, COL. MIRADOR
MONTERREY, N.L. MEXICO
CP 64070
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CERTIFICATE OF ANALYSIS

PRODUCT :	SODIUM SULFATE CRYSTALS ANHYDROUS		
QUALITY :	ACS (CODE RMB3375)	FORMULA :	Na ₂ SO ₄
SPECIFICATION NUMBER :	6399	RELEASE DATE:	ABR/21/2023
LOT NUMBER :	313201		

TEST	SPECIFICATIONS	LOT VALUES
Assay (Na ₂ SO 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 foreign 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 R3 on 7/24/23 E 3551

RC-02-01, Ed. 3

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	E199	Quality Test / Release Date	08/02/2024
Lot Number	242789	Expiration Date	Jun/2025
Description	ETHYL ETHER, PESTICIDE GRADE		
Country of Origin	Mexico		
Chemical Origin	Organic - synthetic		
BSE/TSE Comment	This product was derived from synthetic raw materials and the manufacturing process excluded contamination with any animal products.		

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Clear, colorless liquid free of suspended matter
ASSAY	%	>= 99.5	99.97
COLOR	APHA	<= 10	5
EVAPORATION RESIDUE	ppm	<= 3	0.2
GC-ECD ANALYSIS	pg/ml	<= 10	<1
OPTICAL ABS AT 218 NM	ABSORBANCE UNITS	<= 1.00	0.19
OPTICAL ABS AT 250 NM	ABSORBANCE UNITS	<= 0.08	0.05
OPTICAL ABS AT 270 NM	ABSORBANCE UNITS	<= 0.02	0.01
OPTICAL ABS AT 300 NM	ABSORBANCE UNITS	<= 0.01	0.002
OPTICAL ABS AT 350 NM	ABSORBANCE UNITS	<= 0.01	<0.001
PEROXIDE	ppm	<= 5	<1
PRESERVATIVE - ETHANOL	%	Inclusive Between 1.5 - 2.5	1.8
WATER (H2O)	%	<= 0.08	0.003

Kalyan Paruchuri

Kalyan Paruchuri - Quality Control Supervisor - Bridgewater

E 3881

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)



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 ₂ Cl ₂) (by GC, exclusive of preservative, corrected for water)	$\geq 99.8\%$	99.9%
Color (APHA)	≤ 10	10
Residue after Evaporation	≤ 1.0 ppm	0.8 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: United States
Packaging Site: Phillipsburg Mfg Ctr & DC

E3930

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

Acetone
BAKER RESI-ANALYZED® Reagent
For Organic Residue Analysis

avantor™



Material No.: 9254-03

Batch No.: 24H1462005

Manufactured Date: 2024-05-24

Expiration Date: 2027-05-24

Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay ((CH ₃) ₂ CO) (by GC, corrected for water)	>= 99.4 %	99.8 %
Color (APHA)	<= 10	5
Residue after Evaporation	<= 1.0 ppm	0.2 ppm
Substances Reducing Permanganate	Passes Test	Passes Test
Titration Acid (µeq/g)	<= 0.3	0.2
Titration Base (µeq/g)	<= 0.6	<0.1
Water (H ₂ O)	<= 0.5 %	0.2 %
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

RS

Country of Origin: United States

Packaging Site: Phillipsburg Mfg Ctr & DC

E 3932

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

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

 **avantorsTM**



Material No.: 9262-03

Batch No.: 25C0362005

Manufactured Date: 2025-01-29

Expiration Date: 2026-04-30

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 HeptachlorEpoxide) Single Peak (pg/mL)	≤ 10	6
ECD-Sensitive Impurities (as EthyleneDibromide) - Single Impurity Peak (ng/mL)	≤ 5	5
Assay (Total Saturated C ₆ Isomers) (by GC, corrected for water)	$\geq 99.5 \%$	100.0 %
Assay (as n-Hexane) (by GC, corrected for water)	$\geq 95 \%$	100 %
Color (APHA)	≤ 10	10
Residue after Evaporation	≤ 1.0 ppm	0.1 ppm
Substances Darkened by H ₂ SO ₄	Passes Test	Passes Test
Water (by KF, coulometric)	$\leq 0.05 \%$	$< 0.01 \%$

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

Country of Origin: United States

Packaging Site: Phillipsburg Mfg Ctr & DC

E3933



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

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

 **avantor™**



M6151

R → 11/15/25

Material No.: 9530-33
Batch No.: 22G2862015
Manufactured Date: 2022-06-15
Retest Date: 2027-06-14
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (as HCl) (by acid–base titrn)	36.5 – 38.0 %	37.9 %
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.191
ACS – Bromide (Br)	≤ 0.005 %	< 0.005 %
ACS – Extractable Organic Substances	≤ 5 ppm	< 1 ppm
ACS – Free Chlorine (as Cl ₂)	≤ 0.5 ppm	< 0.5 ppm
Phosphate (PO ₄)	≤ 0.05 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.5 ppm	< 0.3 ppm
Sulfite (SO ₃)	≤ 0.8 ppm	0.3 ppm
Ammonium (NH ₄)	≤ 3 ppm	< 1 ppm
Trace Impurities – Arsenic (As)	≤ 0.010 ppm	< 0.003 ppm
Trace Impurities – Aluminum (Al)	≤ 10.0 ppb	1.3 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 3.0 ppb
Trace Impurities – Barium (Ba)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Beryllium (Be)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	163.0 ppb
Trace Impurities – Chromium (Cr)	≤ 1.0 ppb	0.7 ppb
Trace Impurities – Cobalt (Co)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gallium (Ga)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Germanium (Ge)	≤ 3.0 ppb	< 2.0 ppb
Trace Impurities – Gold (Au)	≤ 4.0 ppb	0.6 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 15 ppb	6 ppb

>>> Continued on page 2 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

 **avantorsm**



Material No.: 9530-33
Batch No.: 22G2862015

Test	Specification	Result
Trace Impurities – Lead (Pb)	≤ 1.0 ppb	< 0.5 ppb
Trace Impurities – Lithium (Li)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	2.9 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	0.1 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 3.0 ppb
Trace Impurities – Nickel (Ni)	≤ 4.0 ppb	< 0.3 ppb
Trace Impurities – Niobium (Nb)	≤ 1.0 ppb	0.8 ppb
Trace Impurities – Potassium (K)	≤ 9.0 ppb	< 2.0 ppb
Trace Impurities – Selenium (Se), For Information Only		< 1.0 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	0.5 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	2.3 ppb
Trace Impurities – Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Tantalum (Ta)	≤ 1.0 ppb	1.6 ppb
Trace Impurities – Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	4.0 ppb
Trace Impurities – Titanium (Ti)	≤ 1.0 ppb	1.5 ppb
Trace Impurities – Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	0.8 ppb
Trace Impurities – Zirconium (Zr)	≤ 1.0 ppb	0.3 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA–ANALYZED® Reagent
For Trace Metal Analysis



Material No.: 9530-33
Batch No.: 22G2862015

Test	Specification	Result
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For Laboratory, Research, or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications
Storage Condition: Store below 25 °C.

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

A handwritten signature in cursive script that reads 'Jamie Ethier'.
Jamie Ethier
Vice President Global Quality

Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium

avantor™



MG157
MS

Material No.: 9673-33

Batch No.: 24I1262013

Manufactured Date: 2024-08-07

Retest Date: 2029-08-06

Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (H ₂ SO ₄)	95.0 – 98.0 %	96.2 %
Appearance	Passes Test	Passes Test
ACS – Color (APHA)	<= 10	5
ACS – Residue after Ignition	<= 3 ppm	<1 ppm
ACS – Substances Reducing Permanganate(as SO ₂)	<= 2 ppm	<2 ppm
Ammonium (NH ₄)	<= 1 ppm	<1 ppm
Chloride (Cl)	<= 0.1 ppm	<0.1 ppm
Nitrate (NO ₃)	<= 0.2 ppm	0.1 ppm
Phosphate (PO ₄)	<= 0.5 ppm	<0.1 ppm
Trace Impurities – Aluminum (Al)	<= 30.0 ppb	<5.0 ppb
Arsenic & Antimony (as As)	<= 4.0 ppb	<2.0 ppb
Trace Impurities – Boron (B)	<= 10.0 ppb	<5.0 ppb
Trace Impurities – Cadmium (Cd)	<= 2.0 ppb	<1.0 ppb
Trace Impurities – Chromium (Cr)	<= 6.0 ppb	<1.0 ppb
Trace Impurities – Cobalt (Co)	<= 0.5 ppb	<0.3 ppb
Trace Impurities – Copper (Cu)	<= 1.0 ppb	<1.0 ppb
Trace Impurities – Gold (Au)	<= 10.0 ppb	<5.0 ppb
Heavy Metals (as Pb)	<= 500.0 ppb	<100.0 ppb
Trace Impurities – Iron (Fe)	<= 50.0 ppb	<1.0 ppb
Trace Impurities – Lead (Pb)	<= 0.5 ppb	<0.5 ppb
Trace Impurities – Magnesium (Mg)	<= 7.0 ppb	<1.0 ppb
Trace Impurities – Manganese (Mn)	<= 1.0 ppb	<1.0 ppb
Trace Impurities – Mercury (Hg)	<= 0.5 ppb	<0.1 ppb
Trace Impurities – Nickel (Ni)	<= 2.0 ppb	<0.3 ppb
Trace Impurities – Potassium (K)	<= 500.0 ppb	<10.0 ppb
Trace Impurities – Selenium (Se)	<= 50.0 ppb	7.2 ppb
Trace Impurities – Silicon (Si)	<= 100.0 ppb	12.8 ppb
Trace Impurities – Silver (Ag)	<= 1.0 ppb	<1.0 ppb

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

Avantor Performance Materials LLC

Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium

 **avantor**™



Material No.: 9673-33
Batch No.: 24I1262013

Test	Specification	Result
Trace Impurities – Sodium (Na)	≤ 500.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 5.0 ppb	< 1.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	1.1 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	< 1.0 ppb

For Laboratory, Research, or Manufacturing Use

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



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

Column:

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

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

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

Inj. Temp:

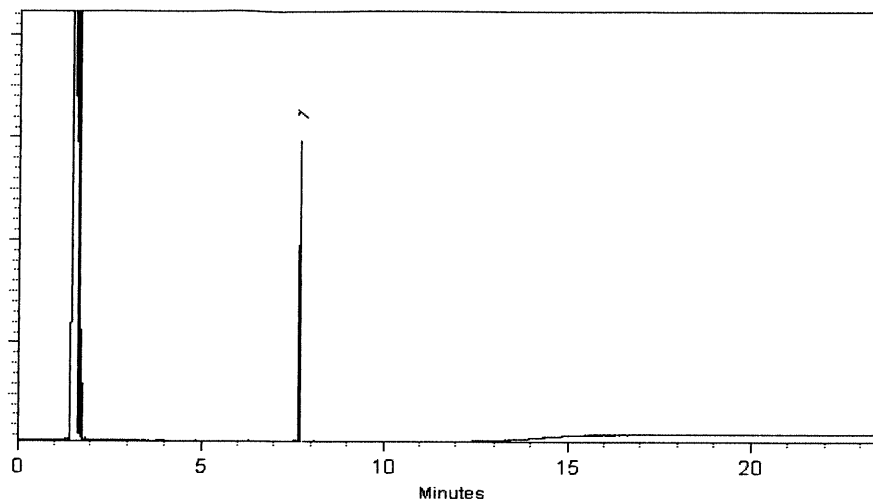
250°C

Det. Temp:

330°C

Det. Type:

FID



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


Katelyn McGinnis - Operations Tech I

Date Mixed: 28-May-2021

Balance: B345965662


Marlene Cowan - Operations Tech I

Date Passed: 02-Jun-2021

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

1911177
70
P 111 86
AR
11/02/21



CERTIFIED REFERENCE MATERIAL

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

www.restek.com

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. : 32050 **Lot No.:** A0172864
Description : 2,4-Dichlorophenylacetic Acid Methyl Ester Standard
515 Surrogate (ester) 2, 4-dichlorophenyl Acetic Acid Methyl Ester
200µg/mL, Hexane, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : February 29, 2028 **Storage:** 10°C or colder
Handling: This product is photosensitive. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	2,4-Dichlorophenyl acetic acid methyl ester	202.0 µg/mL	+/- 1.4323 µg/mL Gravimetric
	CAS # 55954-23-9 (Lot CSC42194-01)		+/- 6.8182 µg/mL Unstressed
	Purity 99%		+/- 6.8182 µg/mL Stressed

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

P11177
↓
P11186
—
AR
01/02/21



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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. : 32062 **Lot No.:** A0155055

Description : Herbicide Mix #4/ME (Methyl Ester)

Herbicide Mix #4/ME (Methyl Ester) 200µg/mL,
Hexane/Methyl-tert-butyl-ether, 1mL/ampul

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

Expiration Date : November 30, 2026 **Storage:** 10°C or colder

P12616 / (5)
↓
P12620
✓ *Paul* = 7/5/2023

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)			
1	3,5-Dichlorobenzoic acid methyl ester CAS # 2905-67-1 (Lot 3903900) Purity 99%	200.0 µg/mL	+/- 1.4182	µg/mL	Gravimetric	
			+/- 6.7507	µg/mL	Unstressed	
			+/- 6.7507	µg/mL	Stressed	
2	4-Nitroanisole CAS # 100-17-4 (Lot 24765/7) Purity 99%	200.0 µg/mL	+/- 1.4182	µg/mL	Gravimetric	
			+/- 6.7507	µg/mL	Unstressed	
			+/- 6.7507	µg/mL	Stressed	
3	Pentachloroanisole CAS # 1825-21-4 (Lot 7921100) Purity 99%	200.0 µg/mL	+/- 1.4182	µg/mL	Gravimetric	
			+/- 6.7507	µg/mL	Unstressed	
			+/- 6.7507	µg/mL	Stressed	
4	Chloramben methyl ester CAS # 7286-84-2 (Lot 6487100) Purity 98%	199.9 µg/mL	+/- 1.4176	µg/mL	Gravimetric	
			+/- 6.7480	µg/mL	Unstressed	
			+/- 6.7480	µg/mL	Stressed	
5	Bentazon methyl ester CAS # 61592-45-8 (Lot 817100) Purity 99%	200.0 µg/mL	+/- 1.4182	µg/mL	Gravimetric	
			+/- 6.7507	µg/mL	Unstressed	
			+/- 6.7507	µg/mL	Stressed	
6	Picloram methyl ester CAS # 14143-55-6 (Lot 386-21B) Purity 98%	201.9 µg/mL	+/- 1.4315	µg/mL	Gravimetric	
			+/- 6.8141	µg/mL	Unstressed	
			+/- 6.8141	µg/mL	Stressed	
7	DCPA methyl ester (Chlorthal-dimethyl) CAS # 1861-32-1 (Lot 8008700) Purity 99%	200.0 µg/mL	+/- 1.4182	µg/mL	Gravimetric	
			+/- 6.7507	µg/mL	Unstressed	
			+/- 6.7507	µg/mL	Stressed	

8	Acifluorfen methyl ester	200.0 µg/mL	+/- 1.4182	µg/mL	Gravimetric
	CAS # 50594-67-7 (Lot 6282300)		+/- 6.7507	µg/mL	Unstressed
	Purity 99%		+/- 6.7507	µg/mL	Stressed

Solvent: Hexane/Methyl-tert-butyl-ether
CAS # 110-54-3/1634-04-4
Purity 99%

Column:

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

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

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

Inj. Temp:

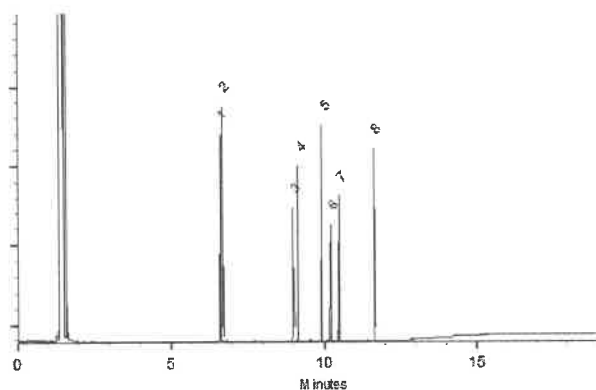
250°C

Det. Temp:

330°C

Det. Type:

FID



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

Michael Maje

Date Mixed: 14-Nov-2019 **Balance:** 1128353505

Justine Albertson
Justine Albertson - Operations Tech-ARM QC

Date Passed: 18-Nov-2019

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



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Tel: 1-814-353-1300
Fax: 1-814-353-1309

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis chromatographic plus



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. : 32055 **Lot No.:** A0192429

Description : Herbicide Mix #1/ME (Methyl Ester)
Herbicide Mix #1/ME (Methyl Ester) 200 µg/mL, Hexane, 1mL/ampul

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

Expiration Date : December 31, 2029 **Storage:** 10°C or colder

Handling: This product is photosensitive. **Ship:** Ambient

P12626 / 5
P12630
7/5/2023

CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Dicamba methyl ester	6597-78-0	11705400	99%	201.6 µg/mL	+/- 3.4204
2	Dichlorprop methyl ester	57153-17-0	11672100	99%	201.4 µg/mL	+/- 3.4170
3	2,4-D methyl ester	1928-38-7	10048000	99%	201.2 µg/mL	+/- 3.4136
4	2,4,5-TP (silvex) methyl ester	4841-20-7	6364900	99%	201.2 µg/mL	+/- 3.4136
5	2,4,5-T methyl ester	1928-37-6	6875800	98%	200.7 µg/mL	+/- 3.4052
6	Dinoseb methyl ether	6099-79-2	12914300	99%	200.8 µg/mL	+/- 3.4068
7	2,4-DB methyl ester	18625-12-2	12542000	99%	201.0 µg/mL	+/- 3.4102

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

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

Quality Confirmation Test

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:

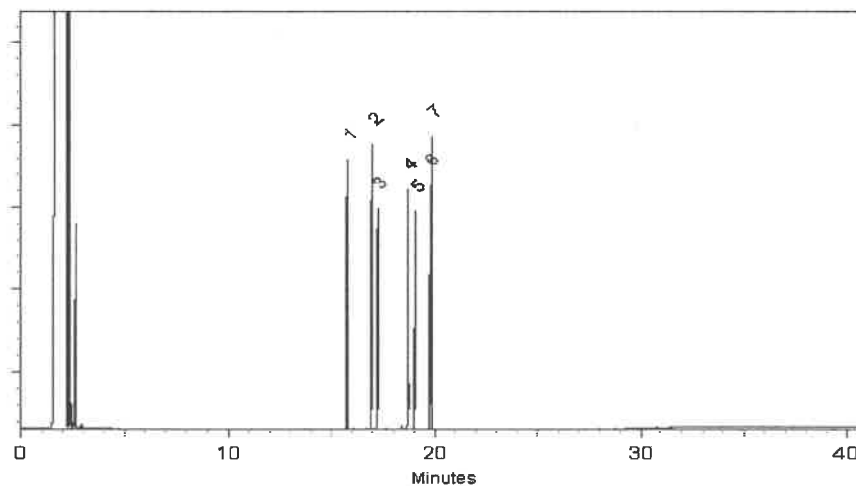
FID

Split Vent:

2 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.


Penelope Riglin - Operations Tech I

Date Mixed: 09-Dec-2022

Balance Serial # 1128360905


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 12-Dec-2022

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



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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis chromatographic plus



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. : 32059 **Lot No.:** A0199844

Description : Herbicide Mix #3/ME (Methyl Ester)
Herbicide Mix #3/ME (Methyl Ester) 20,000 µg/mL, Hexane, 1mL/ampul

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

Expiration Date : July 31, 2030 **Storage:** 10°C or colder

Handling: This product is photosensitive. **Ship:** Ambient

P 12685 / (S)
↓
P 12689
↓
RAU = 7/24/23

CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	MCPP (Mecoprop) methyl ester	23844-56-6	14546400	99%	20,035.0 µg/mL	+/- 360.1907
2	MCPA methyl ester	2436-73-9	SL201209	99%	20,055.0 µg/mL	+/- 360.5503

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

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

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:

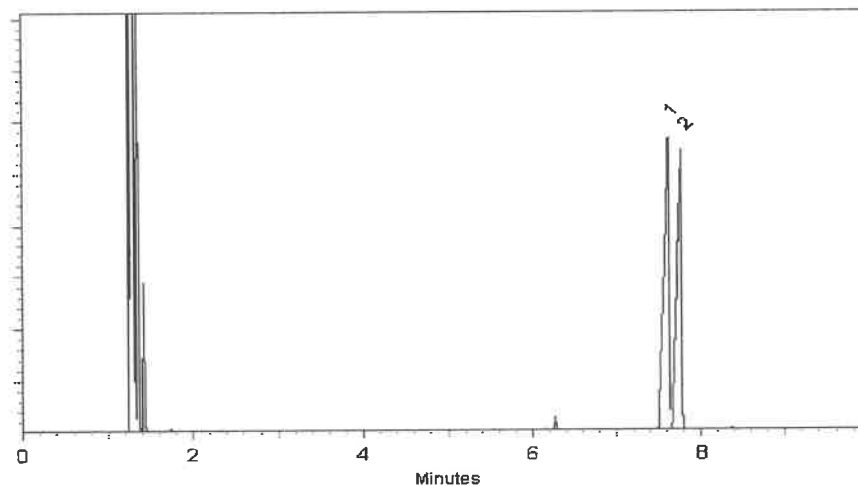
FID

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.


Morgan Craighead - Mix Technician

Date Mixed: 12-Jul-2023

Balance Serial # B442140311


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 19-Jul-2023

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

P12706
↓
P12715
/ (10)
/ 1
/ 8/15/23

ISO 17034

Reference Material Certificate
Product Information Sheet

Product Name: Chlorinated Methylated Herbicides Standard

Lot Number: 0006752480

Product Number: HBM-8151M-1

Lot Issue Date: 18-Jul-2023

Storage Conditions: Store at Room Temperature (15° to 30°C).

Expiration Date: 31-Aug-2025

Component Name	Concentration	Uncertainty	CAS#	Analyte Lot
acifluorfen methyl ester	100.3 ±	0.5 µg/mL	050594-67-7	RM03058
bentazon methyl derivative	100.2 ±	0.5 µg/mL	061592-45-8	RM13829
chloramben methyl ester	100.4 ±	0.5 µg/mL	007286-84-2	RM03055
2,4-D methyl ester	100.2 ±	0.5 µg/mL	001928-38-7	RM03040
dalapon methyl ester	100.4 ±	0.5 µg/mL	017640-02-7	RM14219
2,4-DB methyl ester	100.2 ±	0.5 µg/mL	018625-12-2	RM03029
DCPA	100.2 ±	0.5 µg/mL	001861-32-1	RM13426
dicamba methyl ester	100.4 ±	0.5 µg/mL	006597-78-0	RM03039
methyl-3,5-dichlorobenzoate	100.1 ±	0.5 µg/mL	002905-67-1	RM03048
dichlorprop methyl ester	100.4 ±	0.5 µg/mL	057153-17-0	NT02086
dinoseb methyl ether	100.5 ±	0.5 µg/mL	006099-79-2	RM03051
MCPA methyl ester	10031 ±	50 µg/mL	002436-73-9	RM12863
MCPP methyl ester	10031 ±	50 µg/mL	023844-56-6	RM20060
4-nitroanisole	100.3 ±	0.5 µg/mL	000100-17-4	RM02806
pentachloroanisole	100.4 ±	0.5 µg/mL	001825-21-4	RM02457
picloram methyl ester	100.2 ±	0.5 µg/mL	014143-55-6	RM03044
silvex methyl ester	100.2 ±	0.5 µg/mL	004841-20-7	RM03799
2,4,5-T methyl ester	100.4 ±	0.5 µg/mL	001928-37-6	RM03033

Matrix: methanol (methyl alcohol)

Description:

This document is prepared in accordance with ISO 17034 and Guide 31. This analytical reference material standard was manufactured and verified in accordance with an ISO 9001 registered quality system and analyte concentrations were verified by an ISO 17025 accredited laboratory. The concentration and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed above.

Traceability:

The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z540.3, ISO 9001, ISO 17025, and ISO 17034. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 1088.

Homogeneity:

This analytical reference standard was unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

**Instructions for Use:**

Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening the container and should be processed without delay for the certified values to be valid within the stated uncertainties.

Safety:

Refer to the Safety Data Sheet on www.agilent.com for information regarding this analytical reference material.

Intended Use:

This analytical reference standard is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods, and continuing calibration verification.

Expiration of Certification:

The certification of this analytical reference standard is valid until the expiration date specified above, provided the material is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the material is damaged, contaminated, or otherwise modified.

Maintenance of Certification:

If substantive changes are noted that affect the certification before the expiration of this certificate, Agilent will notify the purchaser.

Sample lot approver:


Monica Bourgeois
QMS Representative

P12706 / (10)
↓
P12715
✓ RAUF
8.15.23



ISO 17034
Cert No. AR-1936

RM was produced in accordance with the TUV/SUD registered ISO 9001:2015 Quality Management System. Cert# 951215321

Page: 2 of 2

www.agilent.com/quality/
CSD-QA-015.2

ISO 17025
Cert No. AT-1937

Reference Material Certificate
Product Information Sheet

Product Name: Chlorinated Herbicides Standard
Product Number: HBM-8151A-1
Storage Conditions: Store at Room Temperature (15° to 30°C).

Lot Number: 0006810955
Lot Issue Date: 20-Aug-2024
Expiration Date: 30-Sep-2026

Component Name	Concentration	Uncertainty	CAS#	Analyte Lot
acifluorfen	100.2 ±	0.5 µg/mL	050594-66-6	NT02057
bentazon	100.4 ±	0.5 µg/mL	025057-89-0	RM21359
chloramben	100.3 ±	0.5 µg/mL	000133-90-4	RM02698
2,4-D	100.4 ±	0.5 µg/mL	000094-75-7	RM17172
dalapon	100.4 ±	0.5 µg/mL	000075-99-0	RM19677
2,4-DB	100.1 ±	0.5 µg/mL	000094-82-6	RM02866
tetrachloroterephthalic acid	100.4 ±	0.5 µg/mL	002136-79-0	RM15140
dicamba	100.3 ±	0.5 µg/mL	001918-00-9	RM22113
3,5-dichlorobenzoic acid	100.4 ±	0.5 µg/mL	000051-36-5	RM02768
dichlorprop	100.2 ±	0.5 µg/mL	000120-36-5	RM21688
dinoseb	100.3 ±	0.5 µg/mL	000088-85-7	RM22275
MCPA	10019 ±	50 µg/mL	000094-74-6	RM12220
MCPP (mecoprop)	10011 ±	50 µg/mL	000093-65-2	RM09273
4-nitrophenol	100.4 ±	0.5 µg/mL	000100-02-7	RM02391
pentachlorophenol	100.2 ±	0.5 µg/mL	000087-86-5	RM02474
picloram	100.4 ±	0.5 µg/mL	001918-02-1	RM20442
silvex	100.5 ±	0.5 µg/mL	000093-72-1	RM22116
2,4,5-T	100.3 ±	0.5 µg/mL	000093-76-5	RM19314

Matrix: methanol (methyl alcohol)

Description:

This document is prepared in accordance with ISO 17034 and Guide 31. This analytical reference material standard was manufactured and verified in accordance with an ISO 9001 registered quality system and analyte concentrations were verified by an ISO 17025 accredited laboratory. The concentration and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed above.

Traceability:

The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z540.3, ISO 9001, ISO 17025, and ISO 17034. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 1088.

Homogeneity:

This analytical reference standard was unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

P13520
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P13536 } (18)

BACF
9/4/2024

Reference Material Certificate
Product Information Sheet

Product Name: Chlorinated Herbicides Standard
Product Number: HBM-8151A-1
Storage Conditions: Store at Room Temperature (15° to 30°C).

Lot Number: 0006810955
Lot Issue Date: 20-Aug-2024
Expiration Date: 30-Sep-2026

Component Name	Concentration	Uncertainty	CAS#	Analyte Lot
acifluorfen	100.2 ±	0.5 µg/mL	050594-66-6	NT02057
bentazon	100.4 ±	0.5 µg/mL	025057-89-0	RM21359
chloramben	100.3 ±	0.5 µg/mL	000133-90-4	RM02698
2,4-D	100.4 ±	0.5 µg/mL	000094-75-7	RM17172
dalapon	100.4 ±	0.5 µg/mL	000075-99-0	RM19677
2,4-DB	100.1 ±	0.5 µg/mL	000094-82-6	RM02866
tetrachloroterephthalic acid	100.4 ±	0.5 µg/mL	002136-79-0	RM15140
dicamba	100.3 ±	0.5 µg/mL	001918-00-9	RM22113
3,5-dichlorobenzoic acid	100.4 ±	0.5 µg/mL	000051-36-5	RM02768
dichlorprop	100.2 ±	0.5 µg/mL	000120-36-5	RM21688
dinoseb	100.3 ±	0.5 µg/mL	000088-85-7	RM22275
MCPA	10019 ±	50 µg/mL	000094-74-6	RM12220
MCPP (mecoprop)	10011 ±	50 µg/mL	000093-65-2	RM09273
4-nitrophenol	100.4 ±	0.5 µg/mL	000100-02-7	RM02391
pentachlorophenol	100.2 ±	0.5 µg/mL	000087-86-5	RM02474
picloram	100.4 ±	0.5 µg/mL	001918-02-1	RM20442
silvex	100.5 ±	0.5 µg/mL	000093-72-1	RM22116
2,4,5-T	100.3 ±	0.5 µg/mL	000093-76-5	RM19314

Matrix: methanol (methyl alcohol)

Description:

This document is prepared in accordance with ISO 17034 and Guide 31. This analytical reference material standard was manufactured and verified in accordance with an ISO 9001 registered quality system and analyte concentrations were verified by an ISO 17025 accredited laboratory. The concentration and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed above.

Traceability:

The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z540.3, ISO 9001, ISO 17025, and ISO 17034. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 1088.

Homogeneity:

This analytical reference standard was unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

P13520
↓
P13536 } (18)

BACF
9/4/2024

Reference Material Certificate
Product Information Sheet

Product Name: Chlorinated Herbicides Standard
Product Number: HBM-8151A-1
Storage Conditions: Store at Room Temperature (15° to 30°C).

Lot Number: 0006810955
Lot Issue Date: 20-Aug-2024
Expiration Date: 30-Sep-2026

Component Name	Concentration	Uncertainty	CAS#	Analyte Lot
acifluorfen	100.2 ±	0.5 µg/mL	050594-66-6	NT02057
bentazon	100.4 ±	0.5 µg/mL	025057-89-0	RM21359
chloramben	100.3 ±	0.5 µg/mL	000133-90-4	RM02698
2,4-D	100.4 ±	0.5 µg/mL	000094-75-7	RM17172
dalapon	100.4 ±	0.5 µg/mL	000075-99-0	RM19677
2,4-DB	100.1 ±	0.5 µg/mL	000094-82-6	RM02866
tetrachloroterephthalic acid	100.4 ±	0.5 µg/mL	002136-79-0	RM15140
dicamba	100.3 ±	0.5 µg/mL	001918-00-9	RM22113
3,5-dichlorobenzoic acid	100.4 ±	0.5 µg/mL	000051-36-5	RM02768
dichlorprop	100.2 ±	0.5 µg/mL	000120-36-5	RM21688
dinoseb	100.3 ±	0.5 µg/mL	000088-85-7	RM22275
MCPA	10019 ±	50 µg/mL	000094-74-6	RM12220
MCPP (mecoprop)	10011 ±	50 µg/mL	000093-65-2	RM09273
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pentachlorophenol	100.2 ±	0.5 µg/mL	000087-86-5	RM02474
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silvex	100.5 ±	0.5 µg/mL	000093-72-1	RM22116
2,4,5-T	100.3 ±	0.5 µg/mL	000093-76-5	RM19314

Matrix: methanol (methyl alcohol)

Description:

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Homogeneity:

This analytical reference standard was unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

P13541
↓
P13561
20
9/25/2024



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

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



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. : 32050 **Lot No.:** A0221255

Description : 2,4-Dichlorophenylacetic Acid Methyl Ester Standard

515 Surrogate (ester) 2, 4-dichlorophenyl Acetic Acid Methyl Ester
200µg/mL, Hexane, 1mL/ampul

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

Expiration Date : October 31, 2031 **Storage:** 10°C or colder

Handling: This product is photosensitive. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	2,4-Dichlorophenyl acetic acid methyl ester	55954-23-9	13054200	99%	202.0 µg/mL	+/- 3.4272

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

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

13968
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13977

10

AWF
4/16/2025

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:

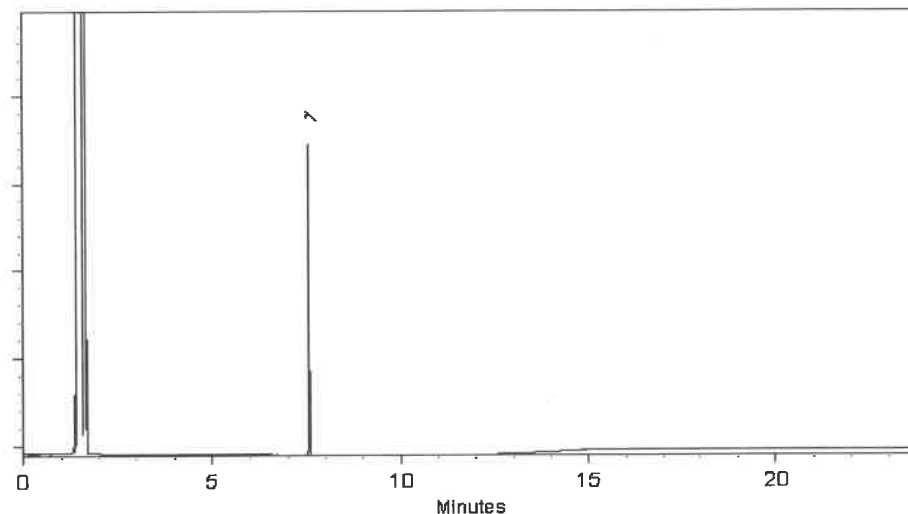
FID

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.


Ethan Winiarski - Operations Tech I

Date Mixed: 20-Jan-2025

Balance Serial # B345965662


Brittany Federinko - Operations Tech I

Date Passed: 22-Jan-2025

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



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

Expiration Date : October 31, 2031 **Storage:** 10°C or colder

Handling: This product is photosensitive. **Ship:** Ambient

CERTIFIED VALUES

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

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

13968
↓
13977

10

AWF
4/16/2025

Quality Confirmation Test

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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.)

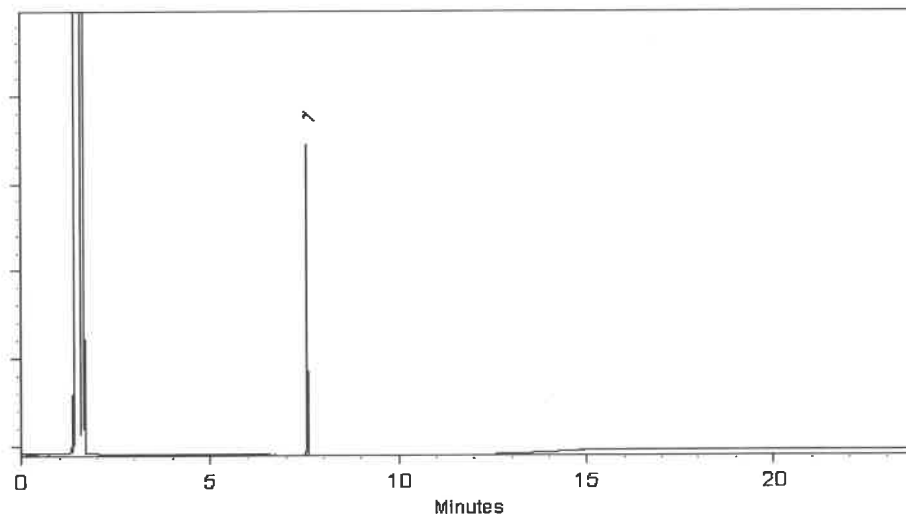
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



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Ethan Winiarski - Operations Tech I

Date Mixed: 20-Jan-2025 **Balance Serial #** B345965662


Brittany Federinko - Operations Tech I

Date Passed: 22-Jan-2025

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Certificate #FM 80397



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Catalog No. : 32050 **Lot No.:** A0221255

Description : 2,4-Dichlorophenylacetic Acid Methyl Ester Standard

515 Surrogate (ester) 2, 4-dichlorophenyl Acetic Acid Methyl Ester
200µg/mL, Hexane, 1mL/ampul

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

Expiration Date : October 31, 2031 **Storage:** 10°C or colder

Handling: This product is photosensitive. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	2,4-Dichlorophenyl acetic acid methyl ester	55954-23-9	13054200	99%	202.0 µg/mL	+/- 3.4272

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

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

13968
↓
13977

10

AWF
4/16/2025

Quality Confirmation Test

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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.)

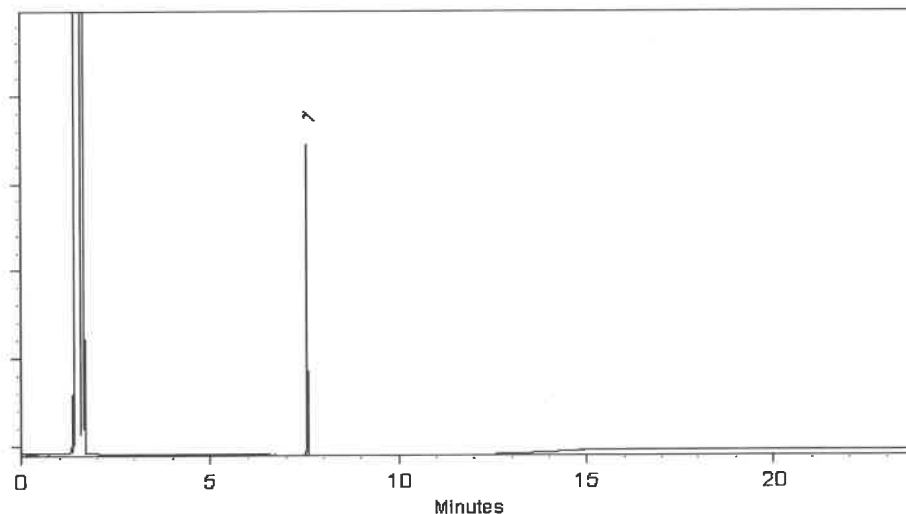
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



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Ethan Winiarski - Operations Tech I

Date Mixed: 20-Jan-2025 **Balance Serial #** B345965662


Brittany Federinko - Operations Tech I

Date Passed: 22-Jan-2025

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



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Catalog No. : 32050 **Lot No.:** A0221255

Description : 2,4-Dichlorophenylacetic Acid Methyl Ester Standard

515 Surrogate (ester) 2, 4-dichlorophenyl Acetic Acid Methyl Ester
200µg/mL, Hexane, 1mL/ampul

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

Expiration Date : October 31, 2031 **Storage:** 10°C or colder

Handling: This product is photosensitive. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	2,4-Dichlorophenyl acetic acid methyl ester	55954-23-9	13054200	99%	202.0 µg/mL	+/- 3.4272

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

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

13968
↓
13977

10

AWF
4/16/2025

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:

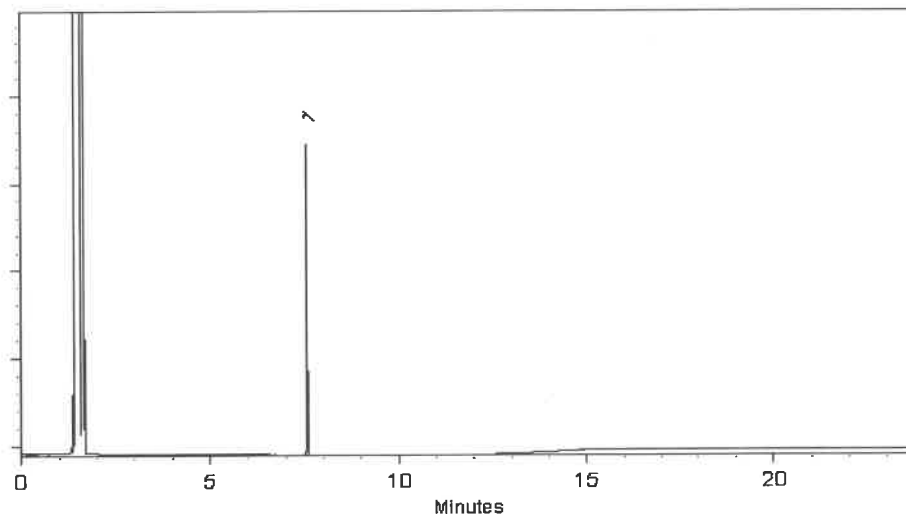
FID

Split Vent:

10 ml/min.

Inj. Vol

1µl



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Ethan Winiarski - Operations Tech I

Date Mixed: 20-Jan-2025

Balance Serial # B345965662


Brittany Federinko - Operations Tech I

Date Passed: 22-Jan-2025

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



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

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chromatographic plus



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

Catalog No. : 32050 **Lot No.:** A0221255

Description : 2,4-Dichlorophenylacetic Acid Methyl Ester Standard

515 Surrogate (ester) 2, 4-dichlorophenyl Acetic Acid Methyl Ester
200µg/mL, Hexane, 1mL/ampul

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

Expiration Date : October 31, 2031 **Storage:** 10°C or colder

Handling: This product is photosensitive. **Ship:** Ambient

CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	2,4-Dichlorophenyl acetic acid methyl ester	55954-23-9	13054200	99%	202.0 µg/mL	+/- 3.4272

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

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

13968
↓
13977

10

AWF
4/16/2025

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:

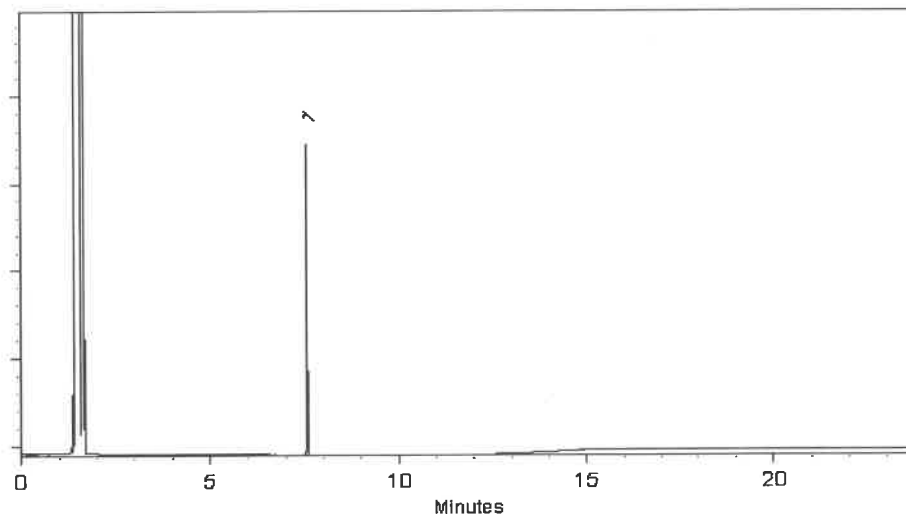
FID

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.


Ethan Winiarski - Operations Tech I

Date Mixed: 20-Jan-2025

Balance Serial # B345965662


Brittany Federinko - Operations Tech I

Date Passed: 22-Jan-2025

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



CERTIFIED REFERENCE MATERIAL

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

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Certificate of Analysis



ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01



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. : 32254 **Lot No.:** A0148063
Description : Dalapon methyl ester Standard
Dalapon methyl ester 1000µg/mL, Methanol, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : April 30, 2026 **Storage:** 10°C or colder
Handling: This product is photosensitive.

Received by
SG on 8/16/19
P8828
P8826

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	Dalapon methyl ester CAS # 17640-02-7 Purity 98% (Lot 1764600)	999.6 µg/mL	+/- 10.0697 µg/mL Gravimetric +/- 34.4896 µg/mL Unstressed +/- 34.4896 µg/mL Stressed

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Column:

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

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

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

Inj. Temp:

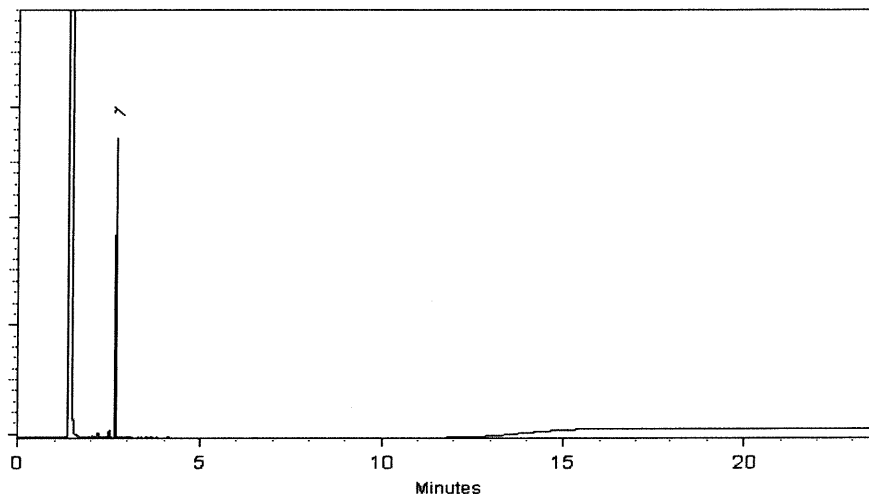
250°C

Det. Temp:

330°C

Det. Type:

FID



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

Russ Bookhamer - Operations Technician I

Date Mixed: 11-Apr-2019

Balance: 1127510105

Feng-Yin Lo - QC Analyst

Date Passed: 15-Apr-2019

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