

## Prep Standard - Chemical Standard Summary

**Order ID :** Q1872

**Test :** Herbicide Group1

**Prepbatch ID :** PB168207,

**Sequence ID/Qc Batch ID:** PS060425,ps060925,

**Standard ID :**

EP2576,EP2612,PP24553,PP24554,PP24556,PP24557,PP24558,PP24559,PP24560,PP24561,PP24562,PP24595,PP24601,

**Chemical ID :**

E2865,E3370,E3551,E3930,E3932,E3933,M5173,M6151,P11183,P12620,P12630,P12689,P12710,P13535,P13536,P13542,P13971,P13972,P13973,P13974,P13975,P8829,

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## Pest/Pcb STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1456	200 PPB Herb MIX STD	<a href="#">PP24556</a>	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	<a href="#">PP24557</a>	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	<a href="#">PP24558</a>	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	<a href="#">PP24559</a>	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	<a href="#">PP24560</a>	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	<a href="#">PP24561</a>	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	<a href="#">PP24562</a>	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)	<a href="#">PP24595</a>	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)	<a href="#">PP24601</a>	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 #
Seidler Chemical	BA-9244-03 / Ether, Anhydrous, Purified (cs/4x4L)	0000288039	07/17/2025	08/01/2022 / Rajesh	07/13/2022 / Rajesh	E3370

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 #
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-9673-33 / Sulfuric Acid, Instra-Analyzed (cs/6c2.5L)	0000281827	06/02/2025	06/01/2022 /	04/05/2022 / william	M5173

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 #
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

Ether, Anhydrous  
BAKER ANALYZED® A.C.S. Reagent  
Contains BHT as a Preservative  
Suitable for Fat Extraction



Material No.: 9244-03  
Batch No.: 0000288039  
Manufactured Date: 2021/07/22  
Expiration Date: 2023/07/22  
Revision No: 1

## Certificate of Analysis

Meets ACS Reagent Chemical Requirements,

Test	Specification	Result
Assay ((C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> O) (by GC, corrected for water)	>= 99.0 %	100.0
Alcohol (C <sub>2</sub> H <sub>5</sub> OH)	Passes Test	PT
Carbonyl Compounds (as HCHO) (by polarography)	<= 0.001 %	< 0.001
Color (APHA)	<= 10	< 5
Peroxide (as H <sub>2</sub> O <sub>2</sub> )	<= 1 ppm	< 1
Preservative (BHT)	>= 7 ppm	9
Residue after Evaporation	<= 0.0010 %	< 0.0010
Titration Acid (μeq/g)	<= 0.2	< 0.2
Water (by KF, coulometric)	<= 0.01 %	0.01

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

Country of Origin: US

Recd. by RP on 7/13/22

E 3370

  
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



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## CERTIFICATE OF ANALYSIS

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

TEST	SPECIFICATIONS	LOT VALUES
Assay (Na <sub>2</sub> SO <sub>4</sub> )	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 <sub>4</sub> )	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



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)	$\leq 5$	1
ECD Sensitive Impurities (as HeptachlorEpoxide) Single Peak (pg/mL)	$\leq 10$	4
Assay (CH <sub>2</sub> Cl <sub>2</sub> ) (by GC, exclusive of preservative, corrected for water)	$\geq 99.8\%$	99.9%
Color (APHA)	$\leq 10$	10
Residue after Evaporation	$\leq 1.0$ ppm	0.8 ppm
Titration Acid ( $\mu$ eq/g)	$\leq 0.3$	<0.1
Chloride (Cl)	$\leq 10$ 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 <sub>3</sub> ) <sub>2</sub> 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 <sub>2</sub> 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

 **avantors**<sup>TM</sup>



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)	$\leq 5$	1
ECD Sensitive Impurities (as HeptachlorEpoxide) Single Peak (pg/mL)	$\leq 10$	6
ECD-Sensitive Impurities (as EthyleneDibromide) - Single Impurity Peak (ng/mL)	$\leq 5$	5
Assay (Total Saturated C <sub>6</sub> 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)	$\leq 10$	10
Residue after Evaporation	$\leq 1.0$ ppm	0.1 ppm
Substances Darkened by H <sub>2</sub> SO <sub>4</sub>	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



Material No.: 9530-33  
Batch No.: 0000281827  
Manufactured Date: 2021/03/30  
Retest Date: 2026/03/29  
Revision No: 1

## Certificate of Analysis

Test	Specification	Result
ACS – Assay (as HCl) (by acid–base titrn)	36.5 – 38.0 %	37.6
ACS – Color (APHA)	<= 10	5
ACS – Residue after Ignition	<= 3 ppm	1
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.189
ACS – Bromide (Br)	<= 0.005 %	< 0.005
ACS – Extractable Organic Substances	<= 5 ppm	< 1
ACS – Free Chlorine (as Cl <sub>2</sub> )	<= 0.5 ppm	< 0.5
Phosphate (PO <sub>4</sub> )	<= 0.05 ppm	< 0.03
Sulfate (SO <sub>4</sub> )	<= 0.5 ppm	< 0.3
Sulfite (SO <sub>3</sub> )	<= 0.8 ppm	0.3
Ammonium (NH <sub>4</sub> )	<= 3 ppm	< 1
Trace Impurities – Arsenic (As)	<= 0.010 ppm	< 0.003
Trace Impurities – Aluminum (Al)	<= 10.0 ppb	0.5
Arsenic and Antimony (as As)	<= 5 ppb	< 3
Trace Impurities – Barium (Ba)	<= 1.0 ppb	< 0.2
Trace Impurities – Beryllium (Be)	<= 1.0 ppb	< 0.2
Trace Impurities – Bismuth (Bi)	<= 10.0 ppb	< 1.0
Trace Impurities – Boron (B)	<= 20.0 ppb	< 5.0
Trace Impurities – Cadmium (Cd)	<= 1.0 ppb	< 0.3
Trace Impurities – Calcium (Ca)	<= 50.0 ppb	15.0
Trace Impurities – Chromium (Cr)	<= 1.0 ppb	< 0.4
Trace Impurities – Cobalt (Co)	<= 1.0 ppb	< 0.3
Trace Impurities – Copper (Cu)	<= 1.0 ppb	< 0.1
Trace Impurities – Gallium (Ga)	<= 1.0 ppb	< 0.2

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

Test	Specification	Result
Trace Impurities – Germanium (Ge)	<= 3.0 ppb	< 2.0
Trace Impurities – Gold (Au)	<= 4.0 ppb	3.0
Heavy Metals (as Pb)	<= 100 ppb	< 50
Trace Impurities – Iron (Fe)	<= 15.0 ppb	1.0
Trace Impurities – Lead (Pb)	<= 1.0 ppb	< 0.5
Trace Impurities – Lithium (Li)	<= 1.0 ppb	< 0.2
Trace Impurities – Magnesium (Mg)	<= 10.0 ppb	< 0.4
Trace Impurities – Manganese (Mn)	<= 1.0 ppb	< 0.4
Trace Impurities – Mercury (Hg)	<= 0.5 ppb	0.2
Trace Impurities – Molybdenum (Mo)	<= 10.0 ppb	< 5.0
Trace Impurities – Nickel (Ni)	<= 4.0 ppb	< 0.3
Trace Impurities – Niobium (Nb)	<= 1.0 ppb	< 0.2
Trace Impurities – Potassium (K)	<= 9.0 ppb	< 2.0
Trace Impurities – Selenium (Se), For Information Only	ppb	1.0
Trace Impurities – Silicon (Si)	<= 100.0 ppb	18.0
Trace Impurities – Silver (Ag)	<= 1.0 ppb	< 0.3
Trace Impurities – Sodium (Na)	<= 100.0 ppb	< 5.0
Trace Impurities – Strontium (Sr)	<= 1.0 ppb	< 0.2
Trace Impurities – Tantalum (Ta)	<= 1.0 ppb	< 0.9
Trace Impurities – Thallium (Tl)	<= 5.0 ppb	< 2.0
Trace Impurities – Tin (Sn)	<= 5.0 ppb	< 0.8
Trace Impurities – Titanium (Ti)	<= 1.0 ppb	< 0.2
Trace Impurities – Vanadium (V)	<= 1.0 ppb	< 0.2
Trace Impurities – Zinc (Zn)	<= 5.0 ppb	0.4
Trace Impurities – Zirconium (Zr)	<= 1.0 ppb	< 0.1

For Laboratory, Research or Manufacturing Use

Product Information (not specifications):

Appearance (clear, fuming liquid)

Meets ACS Specifications

Country of Origin: US

Packaging Site: Phillipsburg Mfg Ctr & DC

  
Jamie Ethier  
Vice President Global Quality

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 <sub>2</sub> )	≤ 0.5 ppm	< 0.5 ppm
Phosphate (PO <sub>4</sub> )	≤ 0.05 ppm	< 0.03 ppm
Sulfate (SO <sub>4</sub> )	≤ 0.5 ppm	< 0.3 ppm
Sulfite (SO <sub>3</sub> )	≤ 0.8 ppm	0.3 ppm
Ammonium (NH <sub>4</sub> )	≤ 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

 **avantor**™

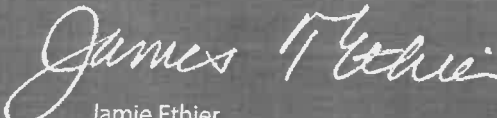


Material No.: 9530-33  
Batch No.: 22G2862015

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

  
Jamie Ethier  
Vice President Global Quality



**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:**

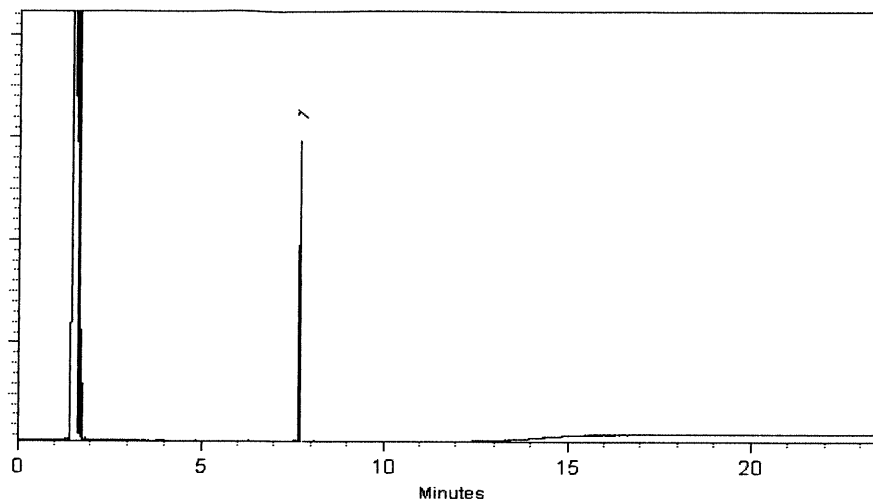
250°C

**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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# CERTIFIED REFERENCE MATERIAL

## Certificate of Analysis



### FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

**Catalog No. :** 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  
Date = 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:**

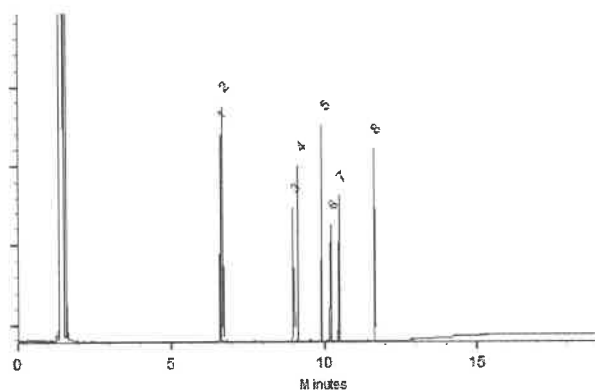
250°C

**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



110 Benner Circle  
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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:**

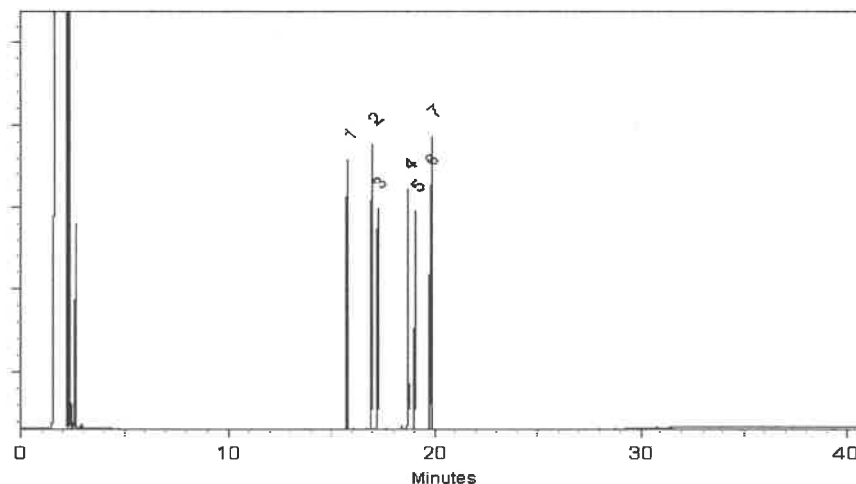
FID

**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



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



#### 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:**

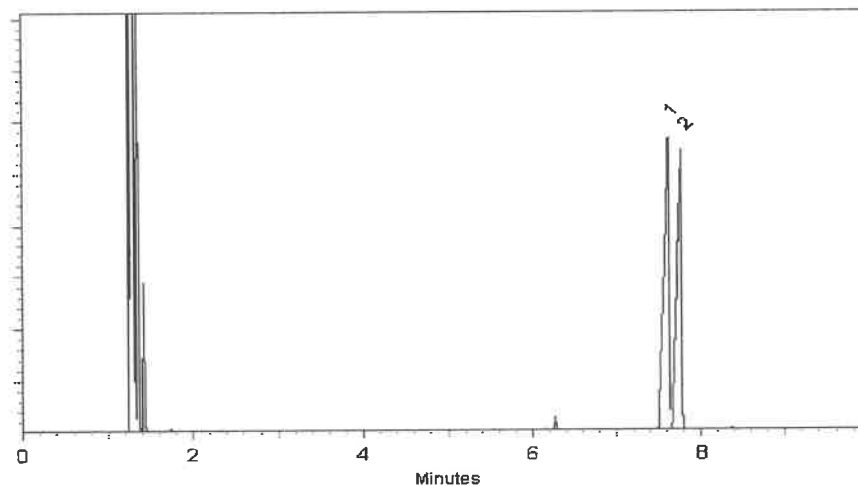
FID

**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](http://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/](http://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  
↓  
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:**

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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
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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:**

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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  
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P13561  
20  
9/25/2024





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



## 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  
↓  
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:**

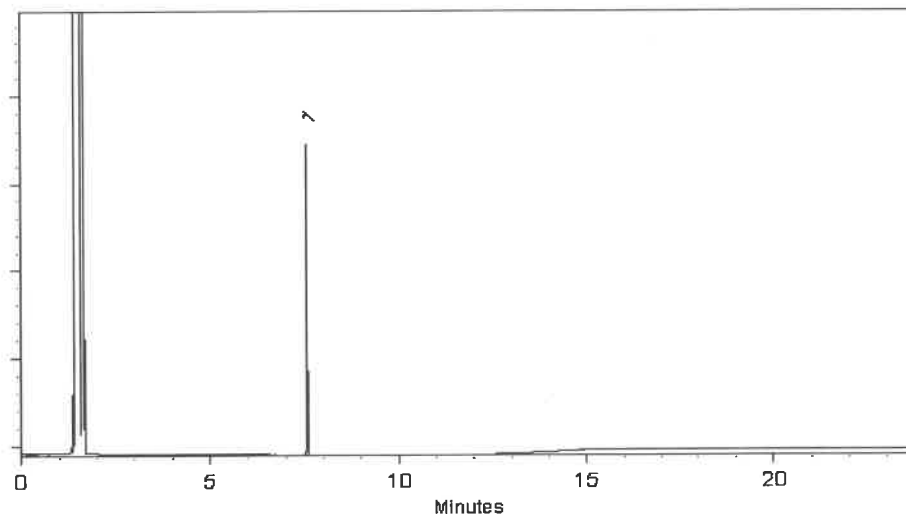
FID

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

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**CAS #** 110-54-3  
**Purity** 99%

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13977

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Rtx-5 (cat.#10223)

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

**Inj. Temp:**

250°C

**Det. Temp:**

330°C

**Det. Type:**

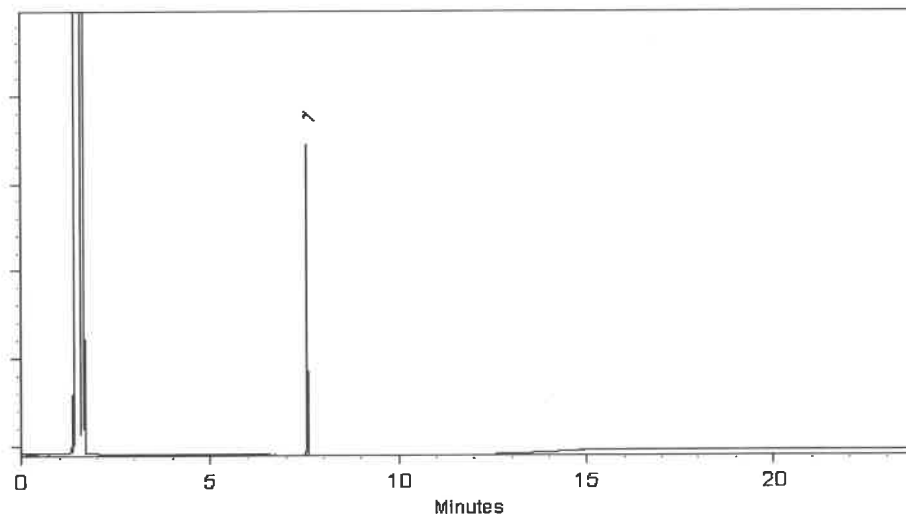
FID

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**Inj. Vol**

1µl



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

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

13968  
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13977

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AWF  
4/16/2025

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250°C

**Det. Temp:**

330°C

**Det. Type:**

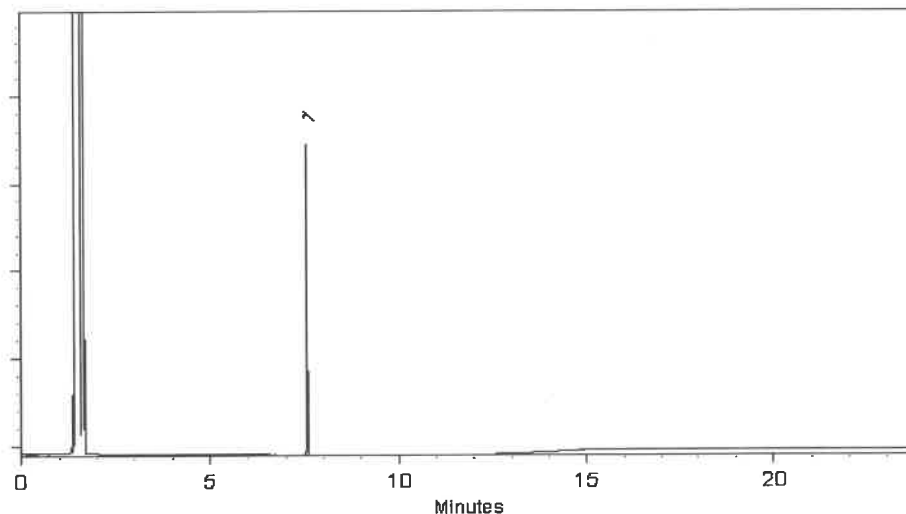
FID

**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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chromatographic plus



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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

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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:**

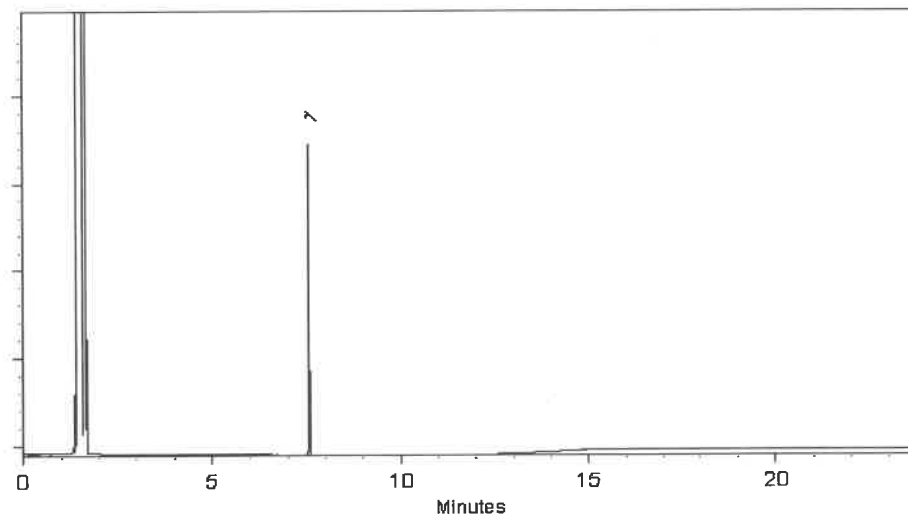
FID

**Split Vent:**

10 ml/min.

**Inj. Vol**

1µl



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Date Mixed: 20-Jan-2025

Balance Serial # B345965662

  
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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:**

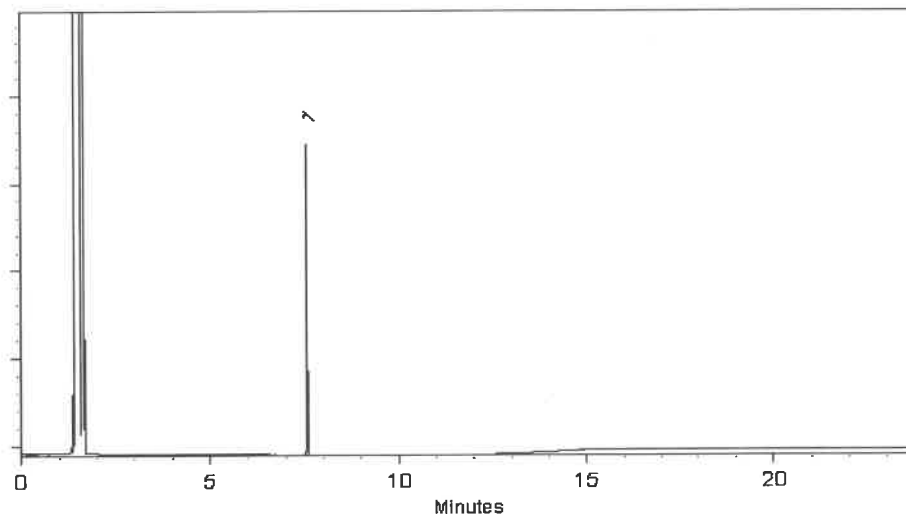
FID

**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  
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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	999.6 µg/mL	+/- 10.0697 µg/mL Gravimetric
	CAS # 17640-02-7 (Lot 1764600)		+/- 34.4896 µg/mL Unstressed
	Purity 98%		+/- 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:**

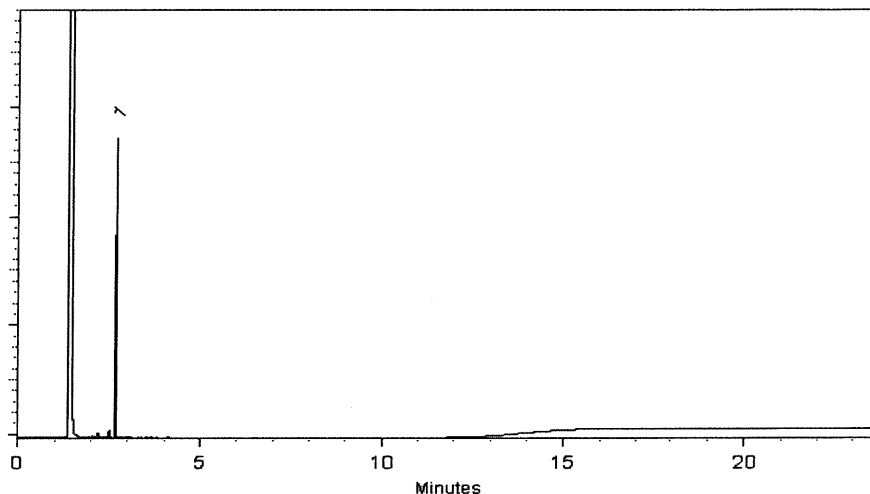
250°C

**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