

## Prep Standard - Chemical Standard Summary

**Order ID :** P4258

**Test :** TCLP Herbicide

**Prepbatch ID :** PB163890,

**Sequence ID/Qc Batch ID:** PS100324,

**Standard ID :**

EP2491,EP2503,EP2505,PP23457,PP23458,PP23459,PP23460,PP23461,PP23462,PP23467,PP23468,PP23469,PP23624,PP23665,

**Chemical ID :**

E3370,E3551,E3554,E3657,E3754,E3788,M5037,M5039,P11179,P12618,P12661,P12707,P12780,P12781,P13174,P13175,P13176,P13177,P23457,P8828,P8901,P9004,W2606,



<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>
3884	6 N NAOH	<a href="#">EP2491</a>	06/03/2024	10/24/2024	Rajesh Parikh	Extraction_SC ALE_2 (EX-SC-2)	None	RUPESHKUMAR SHAH 06/03/2024
<u>FROM</u>	1000.00000ml of W2606 + 240.00000gram of E3657 = Final Quantity: 1000.000 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	<a href="#">EP2503</a>	07/01/2024	12/15/2024	Rajesh Parikh	Extraction_SC ALE_2 (EX-SC-2)	None	RUPESHKUMAR SHAH 07/01/2024
<u>FROM</u>	100.00000ml of E3370 + 150.00000ml of M5037 + 3000.00000ml of E3551 = Final Quantity: 3000.000 gram							

## 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>
3883	12N H2SO4 solution	<a href="#">EP2505</a>	07/01/2024	10/24/2024	Rajesh Parikh	None	None	RUPESHKUMAR SHAH 07/01/2024

**FROM** 333.00000ml of M5039 + 667.00000ml of W2606 = Final Quantity: 1000.000 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>
1321	2/200 PPM Herb Mega Mix	<a href="#">PP23457</a>	06/17/2024	12/04/2024	Abdul Mirza	None	None	Ankita Jodhani 06/18/2024

**FROM** 0.20000ml of P8828 + 1.00000ml of P11179 + 1.00000ml of P12618 + 1.00000ml of P12661 + 1.00000ml of P8901 +  
95.80000ml of E3754 = Final Quantity: 100.000 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="#">PP23458</a>	06/17/2024	12/04/2024	Abdul Mirza	None	None	Ankita Jodhani
06/18/2024								

**FROM** 0.25000ml of E3754 + 75.00000ml of PP23457 = 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>
1453	1000 PPB Herb MIX STD	<a href="#">PP23459</a>	06/17/2024	12/04/2024	Abdul Mirza	None	None	Ankita Jodhani
06/18/2024								

**FROM** 0.50000ml of E3754 + 0.50000ml of PP23457 = 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>
1455	500 PPB Herb MIX STD	<a href="#">PP23460</a>	06/17/2024	12/04/2024	Abdul Mirza	None	None	Ankita Jodhani
								06/18/2024

**FROM** 0.50000ml of E3754 + 0.50000ml of PP23459 = 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>
1456	200 PPB Herb MIX STD	<a href="#">PP23461</a>	06/17/2024	12/04/2024	Abdul Mirza	None	None	Ankita Jodhani
								06/18/2024

**FROM** 0.80000ml of E3754 + 0.20000ml of PP23459 = 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>
1454	750 PPB Herb MIX STD	<a href="#">PP23462</a>	06/17/2024	12/04/2024	Abdul Mirza	None	None	Ankita Jodhani
								06/18/2024

**FROM** 0.25000ml of E3754 + 0.75000ml of PP23459 = 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>
1851	2/200 PPM Herb Mega Mix 2nd Source	<a href="#">PP23467</a>	06/17/2024	12/04/2024	Abdul Mirza	None	None	Ankita Jodhani
								06/18/2024

**FROM** 0.50000ml of P9004 + 1.00000ml of P12707 + 48.50000ml of E3754 = 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>
1854	1000 PPB HERB MIX ICV STD	<a href="#">PP23468</a>	06/17/2024	12/04/2024	Abdul Mirza	None	None	Ankita Jodhani
								06/18/2024

**FROM** 0.50000ml of E3754 + 0.50000ml of PP23467 = 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>
1691	750 PPB ICV HERB STD	<a href="#">PP23469</a>	06/17/2024	12/04/2024	Abdul Mirza	None	None	Ankita Jodhani
								06/18/2024

**FROM** 0.25000ml of E3754 + 0.75000ml of PP23468 = 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>
1848	5000/500000 PPB Herbicide Spike (Free Acid)	<a href="#">PP23624</a>	08/26/2024	02/13/2025	Abdul Mirza	None	None	Ankita Jodhani
								08/28/2024

**FROM** 1.25000ml of P12780 + 1.25000ml of P12781 + 47.50000ml of E3788 = 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="#">PP23665</a>	09/13/2024	02/08/2025	Abdul Mirza	None	None	Ankita Jodhani
								09/16/2024

**FROM** 1.25000ml of P13174 + 1.25000ml of P13175 + 1.25000ml of P13176 + 1.25000ml of P13177 + 195.00000ml of E3788 = 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-9244-03 / Ether, Anhydrous, Purified (cs/4x4L)	0000288039	01/17/2025	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	01/03/2025	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-9335-02 / Iso-Octane (2,2,4-Trimethypentane) Ultra Resi-Analyzed Grade	63160	01/05/2025	08/09/2023 / Rajesh	08/09/2023 / Rajesh	E3554

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	PC19510-5 / Sodium Hydroxide Pellets 2.5 Kg, Pk of 4	23B1556310	12/31/2025	12/04/2023 / Rajesh	12/01/2023 / Rajesh	E3657

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9262-03 / Hexane, Ultra-Resi (cs/4x4L)	24C1862008	12/04/2024	06/04/2024 / Rajesh	05/31/2024 / Rajesh	E3754

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9254-03 / Acetone, Ultra Resi (cs/4x4L)	23H1462005	04/01/2025	08/13/2024 / Rajesh	08/13/2024 / Rajesh	E3788

## 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)	0000250349	12/15/2024	01/06/2022 / mohan	09/18/2021 / mohan	M5037

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)	0000250349	12/15/2024	02/23/2022 / mohan	09/18/2021 / mohan	M5039

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	12/17/2024	06/17/2024 / Abdul	11/01/2021 / Abdul	P11179

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	12/17/2024	06/17/2024 / Abdul	07/03/2023 / Abdul	P12618

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	A0199693	12/17/2024	06/17/2024 / Abdul	07/14/2023 / Ankita	P12661

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	12/17/2024	06/17/2024 / Abdul	08/09/2023 / Abdul	P12707

## 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	12/17/2024	06/17/2024 / Abdul	08/09/2023 / Abdul	P12707

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	0006750243	02/26/2025	08/26/2024 / Abdul	09/11/2023 / Abdul	P12780

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	0006750243	02/26/2025	08/26/2024 / Abdul	09/11/2023 / Abdul	P12780

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	0006750243	02/26/2025	08/26/2024 / Abdul	09/11/2023 / Abdul	P12781

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	0006750243	02/26/2025	08/26/2024 / Abdul	09/11/2023 / Abdul	P12781

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32049 / Herbicide, 8000 series, 515 Surrogate [free acid] 2,4-dichlorophenyl acetic acid, 1mL, 200ug/mL, MeOH	A0201161	02/08/2025	08/08/2024 / Abdul	01/12/2024 / Abdul	P13174

## CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32049 / Herbicide, 8000 series, 515 Surrogate [free acid] 2,4-dichlorophenyl acetic acid, 1mL, 200ug/mL, MeOH	A0201161	02/08/2025	08/08/2024 / Abdul	01/12/2024 / Abdul	P13175

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32049 / Herbicide, 8000 series, 515 Surrogate [free acid] 2,4-dichlorophenyl acetic acid, 1mL, 200ug/mL, MeOH	A0201161	02/08/2025	08/08/2024 / Abdul	01/12/2024 / Abdul	P13176

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	32049 / Herbicide, 8000 series, 515 Surrogate [free acid] 2,4-dichlorophenyl acetic acid, 1mL, 200ug/mL, MeOH	A0201161	02/08/2025	08/08/2024 / Abdul	01/12/2024 / Abdul	P13177

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	12/17/2024	06/17/2024 / Abdul	08/16/2019 / Stephen	P8828

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	A0152499	12/17/2024	06/17/2024 / Abdul	08/16/2019 / Stephen	P8901

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	A0152705	12/17/2024	06/17/2024 / Abdul	10/11/2019 / Stephen	P9004

**CHEMICAL RECEIPT LOG BOOK**

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	DIW / DI Water	Daily Lab-Certified	10/24/2024	10/24/2019 / apatel	10/24/2019 / apatel	W2606

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



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

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

## CERTIFICATE OF ANALYSIS

PRODUCT :	SODIUM SULFATE CRYSTALS ANHYDROUS		
QUALITY :	ACS (CODE RMB3375)	FORMULA :	Na <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

# Certificate of Analysis



Date of Release: 6/9/2023  
Name: 2,2,4-Trimethylpentane [Isooctane]  
OmniSolv®  
Item No: TX1389 all size codes  
Lot / Batch No: 63160  
Country of Origin: Germany

Characteristic	Requirement		Results	Units
	Min.	Max.		
Assay (GC)	99.5		> 99.99	%
Capillary ECD responsive substances (as PCNB)		5	0.24	ng/L
Color (APHA)		10	< 10	
Evaporation residue		1	< 0.5	ppm
Filtered through 0.2 µm filter			Passes test	
Fluorescence (as quinine base)		250	71	ppt
Form			Clear liquid	
Infrared Spectrum			Conforms	
Refractive index (at 20°C)			1.3915	
UV Abs. at 200 nm		1.00	0.137	AU
UV Abs. at 220 nm		0.05	0.024	AU
UV Abs. at 230 nm		0.02	0.003	AU
UV Abs. at 250 nm		0.005	0.003	AU
UV Abs. at 270 nm		0.005	0.002	AU
UV Abs. at 300 nm		0.005	0.004	AU
UV Cut-off		200	191.1	nm
Water (H <sub>2</sub> O)		0.01	0.001	%

Michael Hutchinson,

Quality Control Manager

This document has been produced electronically and is valid without a signature.

EMD Millipore is a division of Merck KGaA, Darmstadt, Germany  
EMD Millipore Corporation  
400 Summit Drive,  
Burlington, MA 01803  
U.S.A.

Recd by RP on 8/9/23

E3554





# Certificate of Analysis

## Sodium Hydroxide (Pellets)

**Material:** 0583  
**Grade:** ACS GRADE  
**Batch Number:** 23B1556310

**Chemical Formula:** NaOH  
**Molecular Weight:** 40  
**CAS #:** 1310-73-2  
**Appearance:**

**Manufacture Date:** 12/14/2022  
**Expiration Date:** 12/31/2025

**Storage:** Room Temperature

Pellets

TEST	SPECIFICATION	ANALYSIS	DISPOSITION
Calcium	$\leq 0.005 \%$	$< 0.005 \%$	PASS
Chloride	$\leq 0.005 \%$	0.002 %	PASS
Heavy Metals	$\leq 0.002 \%$	$< 0.002 \%$	PASS
Iron	$\leq 0.001 \%$	$< 0.001 \%$	PASS
Magnesium	$\leq 0.002 \%$	$< 0.002 \%$	PASS
Mercury	$\leq 0.1 \text{ ppm}$	$< 0.1 \text{ ppm}$	PASS
Nickel	$\leq 0.001 \%$	$< 0.001 \%$	PASS
Nitrogen Compounds	$\leq 0.001 \%$	$< 0.001 \%$	PASS
Phosphate	$\leq 0.001 \%$	$< 0.001 \%$	PASS
Potassium	$\leq 0.02 \%$	$< 0.02 \%$	PASS
Purity	$\geq 97.0 \%$	99.2 %	PASS
Sodium Carbonate	$\leq 1.0 \%$	0.5 %	PASS
Sulfate	$\leq 0.003 \%$	$< 0.003 \%$	PASS

Internal ID #: 710

### Signature

We certify that this batch conforms to the specifications listed.

This document has been electronically produced and is valid without a signature.

Leona Edwardson, Quality Control Sr. Manager - Solon  
VWR Chemicals, LLC.  
28600 Fountain Parkway, Solon OH 44139 USA

### Additional Information

Analysis may have been rounded to significant digits in specification limits.

Product meets analytical specifications of the grades listed.



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



Material No.: 9262-03  
Batch No.: 24C1862008  
Manufactured Date: 2024-01-30  
Expiration Date: 2025-04-30  
Revision No.: 0

## Certificate of Analysis

Test	Specification	Result
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	$\leq 5$	< 1
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	$\leq 10$	1
ECD-Sensitive Impurities (as Ethylene Dibromide) - Single Impurity Peak (ng/mL)	$\leq 5$	1
Assay (Total Saturated C <sub>6</sub> Isomers) (by GC, corrected for water)	$\geq 99.5 \%$	99.7 %
Assay (as n-Hexane) (by GC, corrected for water)	$\geq 95 \%$	98 %
Color (APHA)	$\leq 10$	5
Residue after Evaporation	$\leq 1.0$ ppm	0.4 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: USA  
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd. by R1 on 5/31/24

E3754

Jamie Croak  
Director Quality Operations, Bioscience Production

Acetone

BAKER RESI-ANALYZED® Reagent  
For Organic Residue Analysis

Avantor™



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

## Certificate of Analysis

Test	Specification	Result
Assay ((CH <sub>3</sub> ) <sub>2</sub> CO) (by GC, corrected for water)	≥ 99.4 %	99.7 %
Color (APHA)	≤ 10	5
Residue after Evaporation	≤ 1.0 ppm	0.3 ppm
Substances Reducing Permanganate	Passes Test	Passes Test
Titration Acid (μeq/g)	≤ 0.3	0.1
Titration Base (μeq/g)	≤ 0.6	< 0.1
Water (H <sub>2</sub> O)	≤ 0.5 %	0.3 %
FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL)	≤ 5	< 1
ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL)	≤ 10	1

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

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

Recd by RP on 8/13/24

E 3788

Ken Koehnlein  
Sr. Manager, Quality Assurance

Sulfuric Acid

BAKER INSTRA-ANALYZED® Reagent

For Trace Metal Analysis

Low Selenium

avantorsm



Material No.: 9673-33

Batch No.: 0000250349

Manufactured Date: 2019/12/17

Retest Date: 2024/12/15

Revision No: 1

## Certificate of Analysis

Test	Specification	Result
ACS - Assay (H <sub>2</sub> SO <sub>4</sub> )	95.0 - 98.0 %	96.5
Appearance	Passes Test	PT
ACS - Color (APHA)	<= 10	5
ACS - Residue after Ignition	<= 3 ppm	1
ACS - Substances Reducing Permanganate (as SO <sub>2</sub> )	<= 2 ppm	< 2
Ammonium (NH <sub>4</sub> )	<= 1 ppm	< 1
Chloride (Cl)	<= 0.1 ppm	< 0.1
Nitrate (NO <sub>3</sub> )	<= 0.2 ppm	< 0.1
Phosphate (PO <sub>4</sub> )	<= 0.5 ppm	< 0.1
Trace Impurities - Aluminum (Al)	<= 30.0 ppb	0.2
Arsenic and Antimony (as As)	<= 4 ppb	< 2
Trace Impurities - Barium (Ba)	<= 10.0 ppb	< 1.0
Trace Impurities - Beryllium (Be)	<= 10.0 ppb	< 1.0
Trace Impurities - Bismuth (Bi)	<= 10.0 ppb	< 1.0
Trace Impurities - Boron (B)	<= 10.0 ppb	< 5.0
Trace Impurities - Cadmium (Cd)	<= 2.0 ppb	< 0.3
Trace Impurities - Calcium (Ca)	<= 50.0 ppb	2.9
Trace Impurities - Chromium (Cr)	<= 6.0 ppb	< 0.4
Trace Impurities - Cobalt (Co)	<= 0.5 ppb	< 0.3
Trace Impurities - Copper (Cu)	<= 1.0 ppb	< 0.1
Trace Impurities - Gallium (Ga)	<= 10.0 ppb	< 1.0
Trace Impurities - Germanium (Ge)	<= 10.0 ppb	< 10.0
Trace Impurities - Gold (Au)	<= 10.0 ppb	< 0.2
Heavy Metals (as Pb)	<= 500 ppb	< 100

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

Avantor Performance Materials, LLC

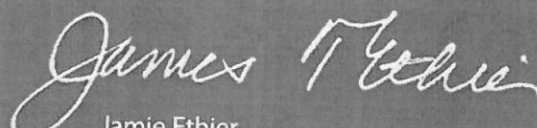
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Material No.: 9673-33  
Batch No.: 0000250349

Test	Specification	Result
Trace Impurities - Iron (Fe)	<= 50.0 ppb	4.1
Trace Impurities - Lead (Pb)	<= 0.5 ppb	< 0.5
Trace Impurities - Lithium (Li)	<= 10.0 ppb	< 1.0
Trace Impurities - Magnesium (Mg)	<= 7.0 ppb	0.4
Trace Impurities - Manganese (Mn)	<= 1.0 ppb	< 0.4
Trace Impurities - Mercury (Hg)	<= 0.5 ppb	< 0.1
Trace Impurities - Molybdenum (Mo)	<= 10.0 ppb	< 5.0
Trace Impurities - Nickel (Ni)	<= 2.0 ppb	< 0.3
Trace Impurities - Niobium (Nb)	<= 10.0 ppb	< 1.0
Trace Impurities - Potassium (K)	<= 500.0 ppb	< 2.0
Trace Impurities - Selenium (Se)	<= 50.0 ppb	22.9
Trace Impurities - Silicon (Si)	<= 100.0 ppb	< 10.0
Trace Impurities - Silver (Ag)	<= 1.0 ppb	< 0.3
Trace Impurities - Sodium (Na)	<= 500.0 ppb	2.7
Trace Impurities - Strontium (Sr)	<= 5.0 ppb	< 0.2
Trace Impurities - Tantalum (Ta)	<= 10.0 ppb	< 5.0
Trace Impurities - Thallium (Tl)	<= 20.0 ppb	< 5.0
Trace Impurities - Tin (Sn)	<= 5.0 ppb	< 0.8
Trace Impurities - Titanium (Ti)	<= 10.0 ppb	< 1.0
Trace Impurities - Vanadium (V)	<= 10.0 ppb	< 1.0
Trace Impurities - Zinc (Zn)	<= 5.0 ppb	0.3
Trace Impurities - Zirconium (Zr)	<= 10.0 ppb	< 1.0

For Laboratory, Research or Manufacturing Use

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

  
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

Sulfuric Acid

BAKER INSTRA-ANALYZED® Reagent

For Trace Metal Analysis

Low Selenium

avantorsm



Material No.: 9673-33

Batch No.: 0000250349

Manufactured Date: 2019/12/17

Retest Date: 2024/12/15

Revision No: 1

## Certificate of Analysis

Test	Specification	Result
ACS - Assay (H <sub>2</sub> SO <sub>4</sub> )	95.0 - 98.0 %	96.5
Appearance	Passes Test	PT
ACS - Color (APHA)	<= 10	5
ACS - Residue after Ignition	<= 3 ppm	1
ACS - Substances Reducing Permanganate (as SO <sub>2</sub> )	<= 2 ppm	< 2
Ammonium (NH <sub>4</sub> )	<= 1 ppm	< 1
Chloride (Cl)	<= 0.1 ppm	< 0.1
Nitrate (NO <sub>3</sub> )	<= 0.2 ppm	< 0.1
Phosphate (PO <sub>4</sub> )	<= 0.5 ppm	< 0.1
Trace Impurities - Aluminum (Al)	<= 30.0 ppb	0.2
Arsenic and Antimony (as As)	<= 4 ppb	< 2
Trace Impurities - Barium (Ba)	<= 10.0 ppb	< 1.0
Trace Impurities - Beryllium (Be)	<= 10.0 ppb	< 1.0
Trace Impurities - Bismuth (Bi)	<= 10.0 ppb	< 1.0
Trace Impurities - Boron (B)	<= 10.0 ppb	< 5.0
Trace Impurities - Cadmium (Cd)	<= 2.0 ppb	< 0.3
Trace Impurities - Calcium (Ca)	<= 50.0 ppb	2.9
Trace Impurities - Chromium (Cr)	<= 6.0 ppb	< 0.4
Trace Impurities - Cobalt (Co)	<= 0.5 ppb	< 0.3
Trace Impurities - Copper (Cu)	<= 1.0 ppb	< 0.1
Trace Impurities - Gallium (Ga)	<= 10.0 ppb	< 1.0
Trace Impurities - Germanium (Ge)	<= 10.0 ppb	< 10.0
Trace Impurities - Gold (Au)	<= 10.0 ppb	< 0.2
Heavy Metals (as Pb)	<= 500 ppb	< 100

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

Avantor Performance Materials, LLC

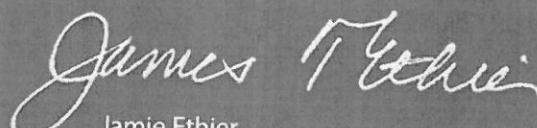
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Material No.: 9673-33  
Batch No.: 0000250349

Test	Specification	Result
Trace Impurities - Iron (Fe)	<= 50.0 ppb	4.1
Trace Impurities - Lead (Pb)	<= 0.5 ppb	< 0.5
Trace Impurities - Lithium (Li)	<= 10.0 ppb	< 1.0
Trace Impurities - Magnesium (Mg)	<= 7.0 ppb	0.4
Trace Impurities - Manganese (Mn)	<= 1.0 ppb	< 0.4
Trace Impurities - Mercury (Hg)	<= 0.5 ppb	< 0.1
Trace Impurities - Molybdenum (Mo)	<= 10.0 ppb	< 5.0
Trace Impurities - Nickel (Ni)	<= 2.0 ppb	< 0.3
Trace Impurities - Niobium (Nb)	<= 10.0 ppb	< 1.0
Trace Impurities - Potassium (K)	<= 500.0 ppb	< 2.0
Trace Impurities - Selenium (Se)	<= 50.0 ppb	22.9
Trace Impurities - Silicon (Si)	<= 100.0 ppb	< 10.0
Trace Impurities - Silver (Ag)	<= 1.0 ppb	< 0.3
Trace Impurities - Sodium (Na)	<= 500.0 ppb	2.7
Trace Impurities - Strontium (Sr)	<= 5.0 ppb	< 0.2
Trace Impurities - Tantalum (Ta)	<= 10.0 ppb	< 5.0
Trace Impurities - Thallium (Tl)	<= 20.0 ppb	< 5.0
Trace Impurities - Tin (Sn)	<= 5.0 ppb	< 0.8
Trace Impurities - Titanium (Ti)	<= 10.0 ppb	< 1.0
Trace Impurities - Vanadium (V)	<= 10.0 ppb	< 1.0
Trace Impurities - Zinc (Zn)	<= 5.0 ppb	0.3
Trace Impurities - Zirconium (Zr)	<= 10.0 ppb	< 1.0

For Laboratory, Research or Manufacturing Use

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

  
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

**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:**

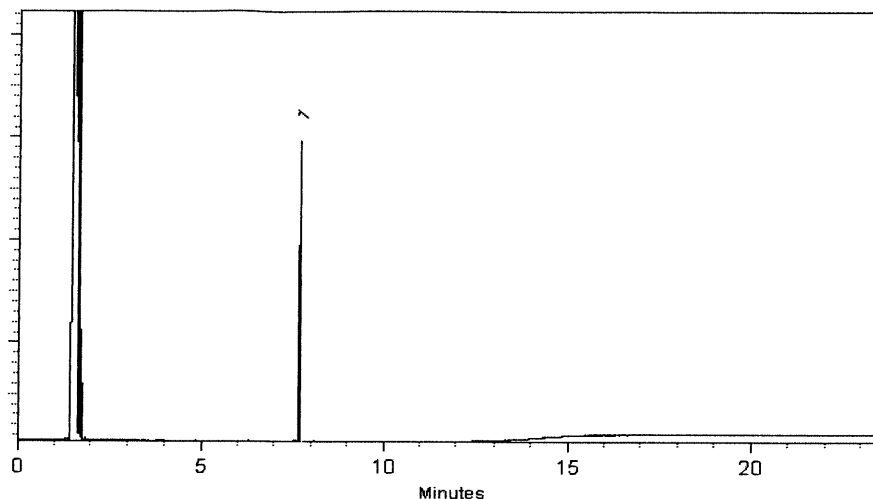
250°C

**Det. Temp:**


330°C

**Det. Type:**

FID

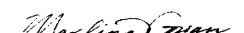


This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

  
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  
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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



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

www.restek.com

# CERTIFIED REFERENCE MATERIAL

## Certificate of Analysis



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

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

**Catalog No. :** 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:**

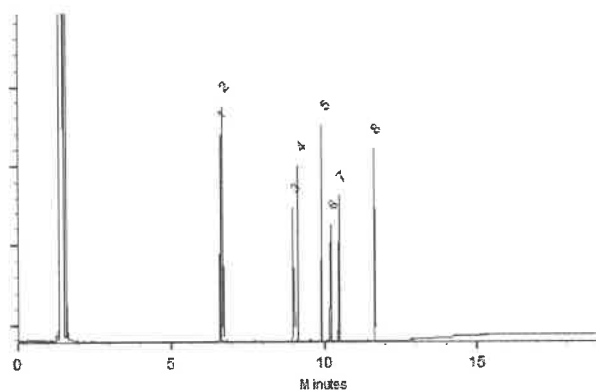
250°C

**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  
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. :** 32055 **Lot No.:** A0199693

**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 :** July 31, 2030 **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	Dicamba methyl ester	6597-78-0	1813500	99%	202.0 µg/mL	+/- 3.4272
2	Dichlorprop methyl ester	57153-17-0	8578700	98%	201.9 µg/mL	+/- 3.4251
3	2,4-D methyl ester	1928-38-7	10048000	99%	202.0 µg/mL	+/- 3.4272
4	2,4,5-TP (silvex) methyl ester	4841-20-7	504400	99%	202.0 µg/mL	+/- 3.4272
5	2,4,5-T methyl ester	1928-37-6	6875800	98%	201.9 µg/mL	+/- 3.4251
6	Dinoseb methyl ether	6099-79-2	9239100	99%	202.0 µg/mL	+/- 3.4272
7	2,4-DB methyl ester	18625-12-2	6847200	99%	202.0 µg/mL	+/- 3.4272

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

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

P12660  
↓  
P12664

AJ  
07/11/23

## 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:**

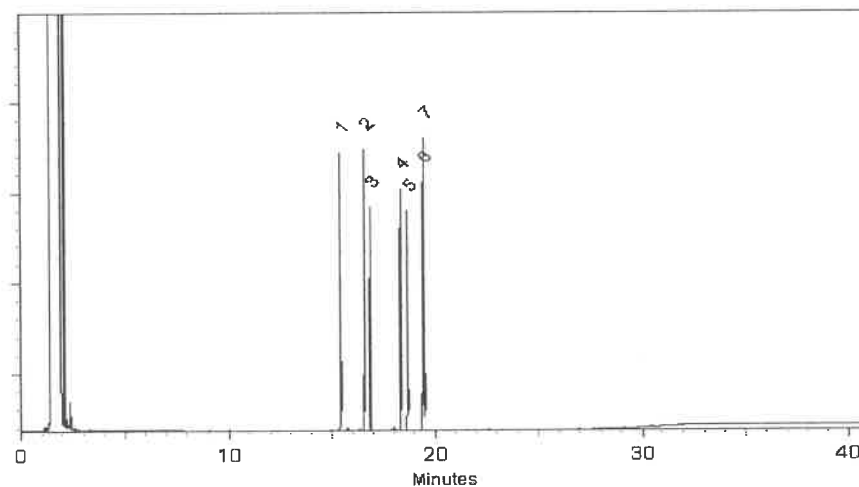
FID

**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.

*Nick Yaw*

Nick Yaw - Operations Tech I

Date Mixed: 07-Jul-2023

Balance Serial # 1128360905

*Christie Mills*

Christie Mills - Operations Lead Tech - ARM QC

Date Passed: 11-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

P12766  
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P12785  
✓  
9.11.23  
20

ISO 17034

**Reference Material Certificate**  
**Product Information Sheet**

**Product Name:** Chlorinated Herbicides Standard

**Lot Number:** 0006750243

**Product Number:** HBM-8151A-1

**Lot Issue Date:** 07-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	100.1	± 0.5 µg/mL	050594-66-6	NT02057
bentazon	100.1	± 0.5 µg/mL	025057-89-0	RM20289
chloramben	100.4	± 0.5 µg/mL	000133-90-4	RM02698
2,4-D	100.1	± 0.5 µg/mL	000094-75-7	RM17172
dalapon	100.4	± 0.5 µg/mL	000075-99-0	RM21030
2,4-DB	100.1	± 0.5 µg/mL	000094-82-6	RM02866
tetrachloroterephthalic acid	100.3	± 0.5 µg/mL	002136-79-0	RM13887
dicamba	100.2	± 0.5 µg/mL	001918-00-9	RM20089
3,5-dichlorobenzoic acid	100.0	± 0.5 µg/mL	000051-36-5	RM02768
dichlorprop	100.0	± 0.5 µg/mL	000120-36-5	RM20896
dinoseb	100.0	± 0.5 µg/mL	000088-85-7	RM20667
MCPA	100.4	± 50 µg/mL	000094-74-6	RM12220
MCPP (mecoprop)	100.37	± 50 µg/mL	000093-65-2	RM09273
4-nitrophenol	100.1	± 0.5 µg/mL	000100-02-7	RM03752
pentachlorophenol	100.1	± 0.5 µg/mL	000087-86-5	RM02474
picloram	100.4	± 0.5 µg/mL	001918-02-1	RM20442
silvex	100.1	± 0.5 µg/mL	000093-72-1	RM20208
2,4,5-T	100.4	± 0.5 µg/mL	000093-76-5	NT01808

**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

P12766 / (20)  
↓  
P12785 /  
✓  
9/11/2023



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

P12766  
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P12785  
✓  
9.11.23  
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ISO 17034

**Reference Material Certificate**  
**Product Information Sheet**

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**Lot Number:** 0006750243

**Product Number:** HBM-8151A-1

**Lot Issue Date:** 07-Jul-2023

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dichlorprop	100.0	± 0.5 µg/mL	000120-36-5	RM20896
dinoseb	100.0	± 0.5 µg/mL	000088-85-7	RM20667
MCPA	10004	± 50 µg/mL	000094-74-6	RM12220
MCPP (mecoprop)	10037	± 50 µg/mL	000093-65-2	RM09273
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pentachlorophenol	100.1	± 0.5 µg/mL	000087-86-5	RM02474
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silvex	100.1	± 0.5 µg/mL	000093-72-1	RM20208
2,4,5-T	100.4	± 0.5 µg/mL	000093-76-5	NT01808

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**Sample lot approver:**

  
Monica Bourgeois  
QMS Representative

P12766 / (20)  
↓  
P12785 / 1  
  
9/11/2023



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



110 Benner Circle  
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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. :** 32049 **Lot No.:** A0201161  
**Description :** 2,4-Dichlorophenylacetic Acid Standard  
2, 4-Dichlorophenyl Acetic Acid 200µg/mL, Methanol, 1mL/ampul  
**Container Size :** 2 mL **Pkg Amt:** > 1 mL  
**Expiration Date :** May 31, 2026 **Storage:** 10°C or colder  
**Handling:** This product is photosensitive. **Ship:** Ambient

P13161  
↓  
P13180  
/ *DR*  
01/15/2023

### CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	2,4-dichlorophenylacetic acid	19719-28-9	STBK3827	99%	202.0 µg/mL	+/- 2.7426

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

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

### Specific Reference Material Notes:

Failure to derivatize this standard will lead to incorrect quantitative results.



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Bellefonte, PA 16823-8812  
Tel: 1-814-353-1300  
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chromatographic plus



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**Container Size :** 2 mL **Pkg Amt:** > 1 mL  
**Expiration Date :** May 31, 2026 **Storage:** 10°C or colder  
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P13161  
↓  
P13180  
/ 20  
✓ Dave  
01/15/2023

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Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
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\* Expanded Uncertainty displayed in same units as Grav. Conc.

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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

chromatographic plus



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**Catalog No. :** 32049 **Lot No.:** A0201161  
**Description :** 2,4-Dichlorophenylacetic Acid Standard  
2, 4-Dichlorophenyl Acetic Acid 200µg/mL, Methanol, 1mL/ampul  
**Container Size :** 2 mL **Pkg Amt:** > 1 mL  
**Expiration Date :** May 31, 2026 **Storage:** 10°C or colder  
**Handling:** This product is photosensitive. **Ship:** Ambient

P13161  
↓  
P13180  
/ 20  
✓ Dave  
01/15/2023

### CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	2,4-dichlorophenylacetic acid	19719-28-9	STBK3827	99%	202.0 µg/mL	+/- 2.7426

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

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

### Specific Reference Material Notes:

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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

chromatographic plus



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**Catalog No. :** 32049 **Lot No.:** A0201161  
**Description :** 2,4-Dichlorophenylacetic Acid Standard  
2, 4-Dichlorophenyl Acetic Acid 200µg/mL, Methanol, 1mL/ampul  
**Container Size :** 2 mL **Pkg Amt:** > 1 mL  
**Expiration Date :** May 31, 2026 **Storage:** 10°C or colder  
**Handling:** This product is photosensitive. **Ship:** Ambient

P13161  
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P13180  
/ *DR*  
01/15/2023

### CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	2,4-dichlorophenylacetic acid	19719-28-9	STBK3827	99%	202.0 µg/mL	+/- 2.7426

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

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

### Specific Reference Material Notes:

Failure to derivatize this standard will lead to incorrect quantitative results.



CERTIFIED REFERENCE MATERIAL

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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:**

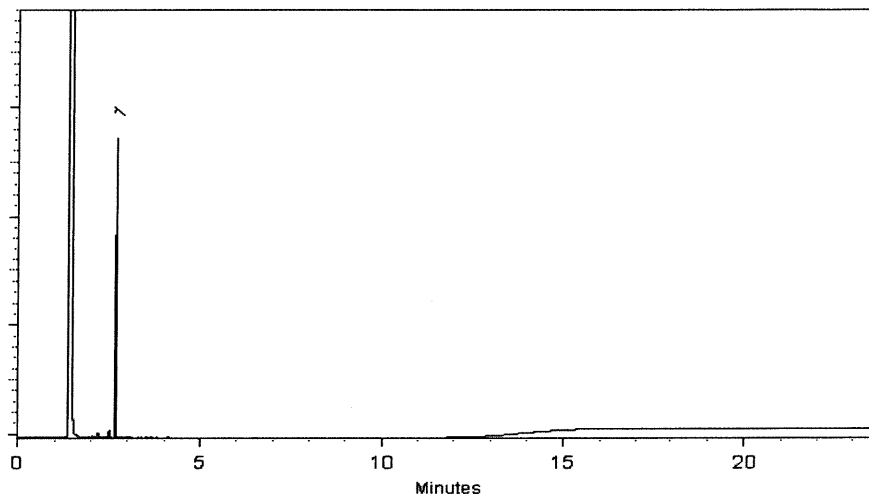
250°C

**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



# CERTIFIED REFERENCE MATERIAL

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Tel: (800)356-1688  
Fax: (814)353-1309

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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.*

Received by  
SG on 9/10/19  
P8892  
P8896

**Catalog No. :** 32059 **Lot No.:** A0152499  
**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 :** September 30, 2026 **Storage:** 10°C or colder  
**Handling:** This product is photosensitive.

### CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)							
1	MCPP (Mecoprop) methyl ester		20,004.0    μg/mL	+/-	185.1208	μg/mL	Gravimetric				
	CAS #	23844-56-6                      (Lot 8685200)						+/-	685.5986	μg/mL	Unstressed
	Purity	99%						+/-	685.5986	μg/mL	Stressed
2	MCPA methyl ester		20,012.0    μg/mL	+/-	185.1948	μg/mL	Gravimetric				
	CAS #	2436-73-9                      (Lot 7964600)						+/-	685.8728	μg/mL	Unstressed
	Purity	99%						+/-	685.8728	μg/mL	Stressed
Solvent:	Hexane										
	CAS #	110-54-3									
	Purity	99%									

**Column:**

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

**Carrier Gas:**

hydrogen-constant pressure 10 psi.

**Temp. Program:**

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

**Inj. Temp:**

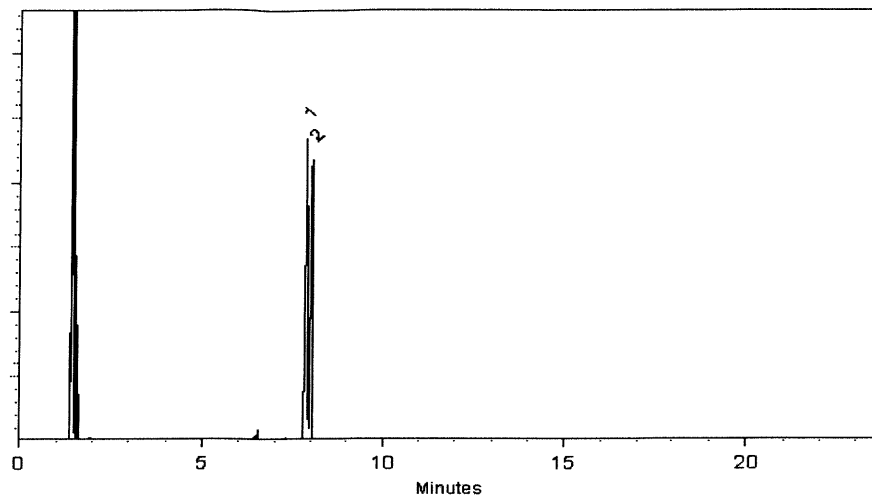
250°C

**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: 03-Sep-2019

Balance: 1128360905

Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 05-Sep-2019

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



CERTIFIED REFERENCE MATERIAL

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Tel: (800)356-1688  
Fax: (814)353-1309

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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. : 32050 Lot No.: A0152705  
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 : June 30, 2026 Storage: 10°C or colder  
Handling: This product is photosensitive.

Received by  
SG on 10/11/19  
P8999  
-  
P9008

### CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	2,4-Dichlorophenyl acetic acid methyl ester CAS # 55954-23-9 (Lot CSC42194-01) Purity 99%	200.0 µg/mL	+/- 1.4182 µg/mL Gravimetric +/- 6.7507 µg/mL Unstressed +/- 6.7507 µg/mL Stressed

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

**Column:**

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

**Carrier Gas:**

hydrogen-constant pressure 10 psi.

**Temp. Program:**

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

**Inj. Temp:**

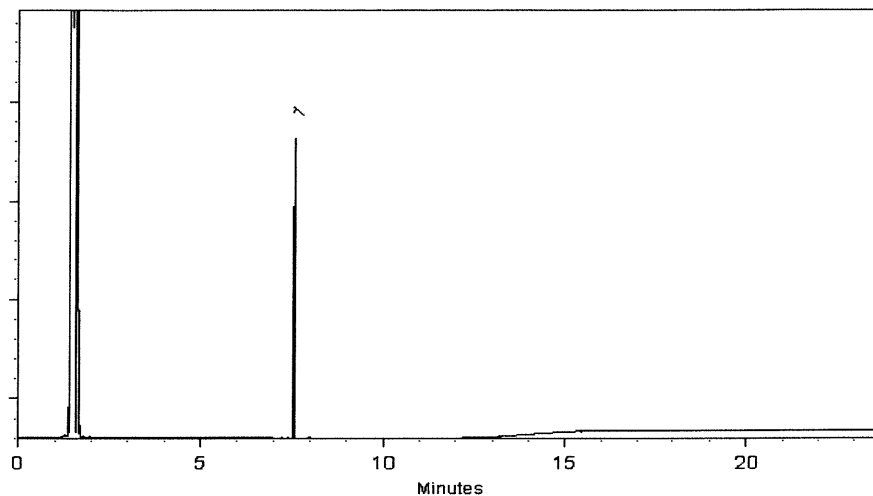
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*Cydnei L. Crust*  
Cydnei L. Crust - Mix Technician

**Date Mixed:** 09-Sep-2019

**Balance:** B707717271

*Fang-Yun Lo*  
Fang-Yun Lo - GC Analyst

**Date Passed:** 11-Sep-2019

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