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

# Prep Standard - Chemical Standard Summary

**Order ID :** P4892

**Test :** TCLP Herbicide

**Prepbatch ID :** PB165193,

**Sequence ID/Qc Batch ID:** PS112224,

**Standard ID :**
EP2503,PP23457,PP23458,PP23459,PP23460,PP23461,PP23462,PP23467,PP23468,PP23469,PP23930,PP23949,

**Chemical ID :**
e3370,E3551,E3754,E3818,E3827,ep2528,ep2553,m4459,M5037,P 11179,P12618,P12661,P12707,P12784,P12785,P13502,P13503,P13504,P13505,P13517,P8828,P8901,P9004,

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Fax : 908 789 8922

# Extractions STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 601 | Acidified Sodium Sulphate 2 | EP2503 | 07/01/2024 | 12/15/2024 | Rajesh Parikh | Extraction_SCALE_2 (EX-SC-2) | None | RUPESHKUMAR SHAH 07/01/2024 |

**FROM** 100.00000ml of E3370 + 150.00000ml of M5037 + 3000.00000ml of E3551 = Final Quantity: 3000.000 gram

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1321 | 2/200 PPM Herb Mega Mix | PP23457 | 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

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# Pest/Pcb STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1452 | 1500 PPB HERB MIX STD | PP23458 | 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

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1453 | 1000 PPB Herb MIX STD | PP23459 | 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

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# Pest/Pcb STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1455 | 500 PPB Herb MIX STD | PP23460 | 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

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1456 | 200 PPB Herb MIX STD | PP23461 | 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

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# Pest/Pcb STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1454 | 750 PPB Herb MIX STD | PP23462 | 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

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1851 | 2/200 PPM Herb Mega Mix 2nd Source | PP23467 | 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

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# Pest/Pcb STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1854 | 1000 PPB HERB MIX ICV STD | PP23468 | 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

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1691 | 750 PPB ICV HERB STD | PP23469 | 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

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# Pest/Pcb STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1848 | 5000/500000 PPB Herbicide Spike (Free Acid) | PP23930 | 10/30/2024 | 04/23/2025 | Abdul Mirza | None | None | Ankita Jodhani 10/30/2024 |

**FROM** 0.50000ml of P13517 + 1.00000ml of P12784 + 1.00000ml of P12785 + 47.50000ml of E3818 = Final Quantity: 50.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 60 | 5000 PPB Herbicide Surg Spike (Free Acid) | PP23949 | 11/11/2024 | 05/08/2025 | Abdul Mirza | None | None | Ankita Jodhani 11/13/2024 |

**FROM** 1.25000ml of P13502 + 1.25000ml of P13503 + 1.25000ml of P13504 + 1.25000ml of P13505 + 195.00000ml of E3827 = Final Quantity: 200.000 ml

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# CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| 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-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) | 24H1462005 | 04/23/2025 | 10/23/2024 / Rajesh | 10/09/2024 / Rajesh | E3818 |

| 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 | 05/08/2025 | 11/08/2024 / Rajesh | 11/07/2024 / Rajesh | E3827 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Seidler Chemical | BA-3624-05 / Sodium Chloride, Crystal (cs/4x2.5kg) | 0000237721 | 04/13/2026 | 10/03/2022 / Ankita | 10/30/2019 / AMANDEEP | M4459 |

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# CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Seidler Chemical | BA-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 # |
|---|---|---|---|---|---|---|
| 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 |

| 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 |

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# 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 | 0006750243 | 04/30/2025 | 10/30/2024 / Abdul | 09/11/2023 / Abdul | P12784 |

| 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 | 04/30/2025 | 10/30/2024 / Abdul | 09/11/2023 / Abdul | P12784 |

| 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 | 04/30/2025 | 10/30/2024 / Abdul | 09/11/2023 / Abdul | P12785 |

| 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 | 04/30/2025 | 10/30/2024 / Abdul | 09/11/2023 / Abdul | P12785 |

| 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 | A0212676 | 05/11/2025 | 11/11/2024 / Abdul | 08/16/2024 / yogesh | P13502 |

| 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 | A0212676 | 05/11/2025 | 11/11/2024 / Abdul | 08/16/2024 / yogesh | P13503 |

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# CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 32049 / Herbicide, 8000 series, 515 Surrogate [free acid] 2,4-dichlorophenyl acetic acid, 1mL, 200ug/mL, MeOH | A0212676 | 05/11/2025 | 11/11/2024 / Abdul | 08/16/2024 / yogesh | P13504 |

| 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 | A0212676 | 05/11/2025 | 11/11/2024 / Abdul | 08/16/2024 / yogesh | P13505 |

| 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 | 04/30/2025 | 10/30/2024 / Abdul | 09/03/2024 / Abdul | P13517 |

| 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 | 04/30/2025 | 10/30/2024 / Abdul | 09/03/2024 / Abdul | P13517 |

| 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 |

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# CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 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 |

Sodium Chloride, Crystal
BAKER ANALYZED® A.C.S. Reagent

avantor™ | J.T.Baker®

From M4452 to M4459

Received on : 10/30/2019
Received by : AK

Material No.: 3624-05
Batch No.: 0000237721
Manufactured Date: 2019/04/15
Retest Date: 2026/04/13
Revision No: 1

# Certificate of Analysis

Meets ACS Reagent Chemical Requirements,

| Test | Specification | Result |
|---|---|---|
| Assay (NaCl) (by Ag titrn) | >= 99.0 % | 100.3 |
| pH of 5% Solution at 25°C | 5.0 - 9.0 | 6.0 |
| ACS - Insoluble Matter | <= 0.005 % | < 0.001 |
| Iodide (I) | <= 0.002 % | < 0.002 |
| Bromide (Br) | <= 0.01 % | < 0.01 |
| Chlorate and Nitrate (as $NO_3$) | <= 0.003 % | < 0.001 |
| ACS - Phosphate ($PO_4$) | <= 5 ppm | < 5 |
| Sulfate ($SO_4$) | <= 0.004 % | < 0.004 |
| Barium (Ba) | Passes Test | PT |
| ACS - Heavy Metals (as Pb) | <= 5 ppm | < 5 |
| Iron (Fe) | <= 2 ppm | < 2 |
| Calcium (Ca) | <= 0.002 % | < 0.001 |
| Magnesium (Mg) | <= 0.001 % | < 0.001 |
| Potassium (K) | <= 0.005 % | 0.002 |

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

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

James Ethier
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

avantor™ | J.T.Baker®

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 ($(C_2H_5)_2O$) (by GC, corrected for water) | >= 99.0 % | 100.0 |
| Alcohol ($C_2H_5OH$) | Passes Test | PT |
| Carbonyl Compounds (as HCHO) (by polarography) | <= 0.001 % | < 0.001 |
| Color (APHA) | <= 10 | < 5 |
| Peroxide (as $H_2O_2$) | <= 1 ppm | < 1 |
| Preservative (BHT) | >= 7 ppm | 9 |
| Residue after Evaporation | <= 0.0010 % | < 0.0010 |
| Titrable 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 9/13/22

E 3370

James T Ethier
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 QUIMICOS MONTERREY, S.A. DE C.V.

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

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| PRODUCT : | SODIUM SULFATE CRYSTALS ANHYDROUS | | |
| QUALITY : | ACS (CODE RMB3375) | FORMULA : | $Na_2SO_4$ |
| SPECIFICATION NUMBER : | 6399 | RELEASE DATE: | ABR/21/2023 |
| LOT NUMBER : | 313201 | | |

| TEST | SPECIFICATIONS | LOT VALUES |
|---|---|---|
| Assay ($Na_2SO_4$) | Min. 99.0% | 99.7 % |
| pH of a 5% solution at 25°C | 5.2 - 9.2 | 6.1 |
| Insoluble matter | Max. 0.01% | 0.005 % |
| Loss on ignition | Max. 0.5% | 0.1 % |
| Chloride (Cl) | Max. 0.001% | <0.001 % |
| Nitrogen compounds (as N) | Max. 5 ppm | <5 ppm |
| Phosphate ($PO_4$) | Max. 0.001% | <0.001 % |
| Heavy metals (as Pb) | Max. 5 ppm | <5 ppm |
| Iron (Fe) | Max. 0.001% | <0.001 % |
| Calcium (Ca) | Max. 0.01% | 0.002 % |
| Magnesium (Mg) | Max. 0.005% | 0.001 % |
| Potassium (K) | Max. 0.008% | 0.003 % |
| Extraction-concentration suitability | Passes test | Passes test |
| Appearance | Passes test | Passes test |
| Identification | Passes test | Passes test |
| Solubility and foreing matter | Passes test | Passes test |
| Retained on US Standard No. 10 sieve | Max. 1% | 0.1 % |
| Retained on US Standard No. 60 sieve | Min. 94% | 97.3 % |
| Through US Standard No. 60 sieve | Max. 5% | 2.5 % |
| Through US Standard No. 100 sieve | Max. 10% | 0.1 % |

COMMENTS

QC: PhC Irma Belmares

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

Recd. by RB on 7/24/23 E3551

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

avantor™ | J.T.Baker®

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

# Certificate of Analysis

| Test | Specification | Result |
|---|---|---|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 1 |
| ECD-Sensitive Impurities (as Ethylene Dibromide) - Single Impurity Peak (ng/mL) | ≤ 5 | 1 |
| Assay (Total Saturated $C_6$ Isomers) (by GC, corrected for water) | ≥ 99.5 % | 99.7 % |
| Assay (as n-Hexane) (by GC, corrected for water) | ≥ 95 % | 98 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | ≤ 1.0 ppm | 0.4 ppm |
| Substances Darkened by $H_2SO_4$ | Passes Test | Passes Test |
| Water (by KF, coulometric) | ≤ 0.05 % | < 0.01 % |

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

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

Recd. by RP on 5/31/24

E3754

JCroak

Jamie Croak
Director Quality Operations, Bioscience Production

PO: PO2-329 PRODUCT CODE: SHIP DATE: 9/30/2024

Acetone
BAKER RESI-ANALYZED® Reagent
For Organic Residue Analysis

avantor™ | J.T.Baker

Material No.: 9254-03
Batch No.: 24H1462005
Manufactured Date: 2024-05-24
Expiration Date:2027-05-24
Revision No.: 0

# Certificate of Analysis

| Test | Specification | Result |
|---|---|---|
| Assay ($(CH_3)_2CO$) (by GC, corrected forwater) | >= 99.4 % | 99.8 % |
| Color (APHA) | <= 10 | 5 |
| Residue after Evaporation | <= 1.0 ppm | 0.2 ppm |
| Substances Reducing Permanganate | Passes Test | Passes Test |
| Titrable Acid (µeq/g) | <= 0.3 | 0.2 |
| Titrable Base (µeq/g) | <= 0.6 | <0.1 |
| Water ($H_2O$) | <= 0.5 % | 0.2 % |
| FID-Sensitive Impurities (as 2-Octanol)Single Impurity Peak (ng/mL) | <= 5 | <1 |
| ECD Sensitive Impurities (as HeptachlorEpoxide) Single Peak (pg/mL) | <= 10 | 1 |

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

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

Recd. by RP on 10/9/24

E 3818

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™ | J.T.Baker

Material No.: 9254-03
Batch No.: 24H1462005
Manufactured Date: 2024-05-24
Expiration Date:2027-05-24
Revision No.: 0

# Certificate of Analysis

| Test | Specification | Result |
|---|---|---|
| Assay ($(CH_3)_2CO$) (by GC, corrected forwater) | >= 99.4 % | 99.8 % |
| Color (APHA) | <= 10 | 5 |
| Residue after Evaporation | <= 1.0 ppm | 0.2 ppm |
| Substances Reducing Permanganate | Passes Test | Passes Test |
| Titrable Acid (µeq/g) | <= 0.3 | 0.2 |
| Titrable Base (µeq/g) | <= 0.6 | <0.1 |
| Water ($H_2O$) | <= 0.5 % | 0.2 % |
| FID-Sensitive Impurities (as 2-Octanol)Single Impurity Peak (ng/mL) | <= 5 | <1 |
| ECD Sensitive Impurities (as HeptachlorEpoxide) Single Peak (pg/mL) | <= 10 | 1 |

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

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

E3827

Recd. by RP on ~~11/6~~ 11/7/24
RP
11/7

JCroak
Jamie Croak
Director Quality Operations, Bioscience Production

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

M5037-38-39-40
ND

avantor™ | J.T.Baker®

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 ($H_2SO_4$) | 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 $SO_2$) | <= 2 ppm | < 2 |
| Ammonium ($NH_4$) | <= 1 ppm | < 1 |
| Chloride (Cl) | <= 0.1 ppm | < 0.1 |
| Nitrate ($NO_3$) | <= 0.2 ppm | < 0.1 |
| Phosphate ($PO_4$) | <= 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 |

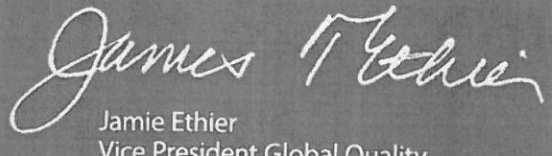
For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

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)

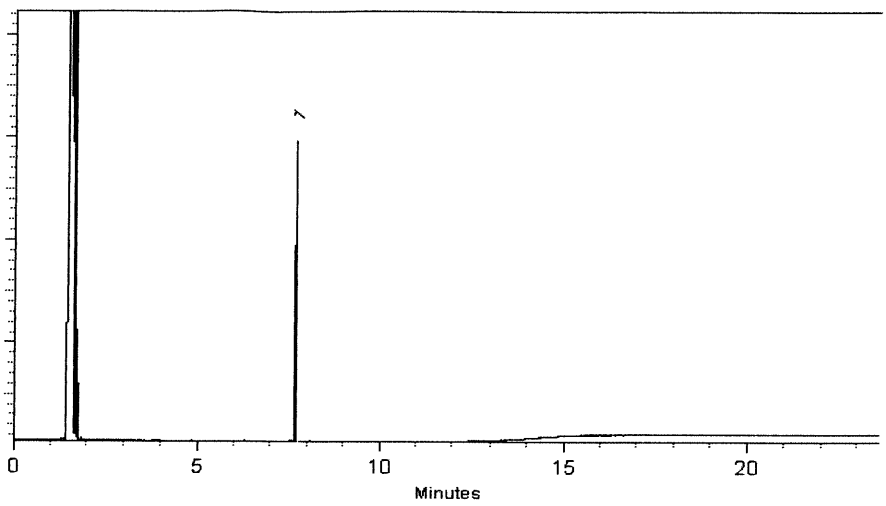
**Carrier Gas:**
hydrogen-constant pressure 10 psi.

**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 McGlinn - Operations Tech I

**Date Mixed:** 28-May-2021 **Balance:** B345965662

Marlina Cowan - Operations Tech I

**Date Passed:** 02-Jun-2021

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

P 11177 to P 11186

AR 11/02/21

RESTEK®
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# CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

ACCREDITED
ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

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

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

**Catalog No. :** 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%

P111177
↓
P111186

AR
11/02/21

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

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# CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

ACCREDITED ISO 17034 Accredited Reference Material Producer Certificate #3222.01

ACCREDITED ISO/IEC 17025 Accredited Testing Laboratory Certificate #3222.02

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

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

P12616 (S) → P12620

7/5/2023

**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

## CERTIFIED VALUES

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

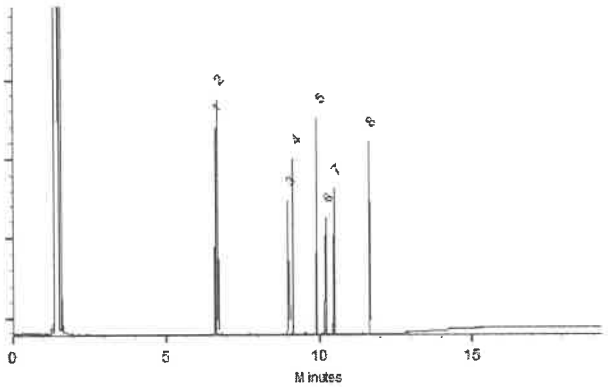
**Carrier Gas:**
hydrogen-constant pressure 10 psi.

**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 J Maye

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

Justine Albertson - Operations Tech-ARM QC

**Date Passed:** 18-Nov-2019

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

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Bellefonte, PA 16823-8812
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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

***chromatographic plus***

ACCREDITED ISO 17034 Accredited Reference Material Producer Certificate #3222.01

ACCREDITED ISO/IEC 17025 Accredited Testing Laboratory Certificate #3222.02

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

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

**Catalog No. :** 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
07/14/23

# 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.)

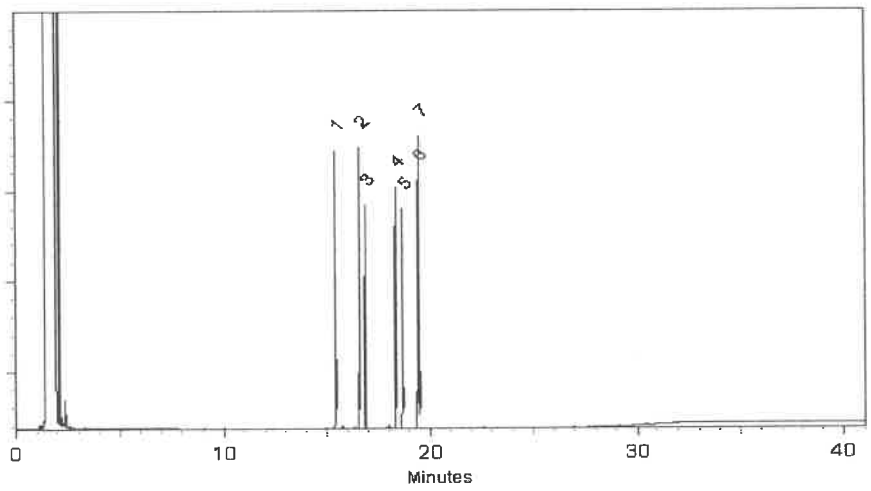
**Inj. Temp:**
250°C

**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 - Operations Tech I

**Date Mixed:** 07-Jul-2023 **Balance Serial #** 1128360905

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)

Agilent

Trusted Answers

ISO 17034

8/15/23

# Reference Material Certificate

## Product Information Sheet

**Product Name:** Chlorinated Methylated Herbicides Standard

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

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

**Lot Number:** 0006752480

**Lot Issue Date:** 18-Jul-2023

**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.





ISO 17025
Cert No. AT-1937

Agilent

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

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

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

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

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

**Sample lot approver:**

Monica Bourgeois
QMS Representative

P12706 (10)
↓
P12715

8.15.23

ANAB
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ISO 17034
REFERENCE MATERIAL PRODUCER

ISO 17034
Cert No. AR-1936

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



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

ISO 17025
Cert No. AT-1937

P12766 ↓ P12785 (20)

Agilent
Trusted Answers

ISO 17034

9.11.23

# 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:** 0006750243
**Lot Issue Date:** 07-Jul-2023
**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 | 10004 | ± | 50 µg/mL | 000094-74-6 | RM12220 |
| MCPP (mecoprop) | 10037 | ± | 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.

Agilent

Trusted Answers

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

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

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

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

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

**Sample lot approver:**

Monica Bourgeois
QMS Representative

P12766 ↓ P12785 / 20

9/11/2023

ANAB
ANSI National Accreditation Board
ACCREDITED
REFERENCE MATERIAL PRODUCER

ISO 17034
Cert No. AR-1936

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



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

ISO 17025
Cert No. AT-1937

P12766 ↓ P12785 (20)

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ISO 17034

9.11.23

# 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:** 0006750243
**Lot Issue Date:** 07-Jul-2023
**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 | 10004 | ± | 50 µg/mL | 000094-74-6 | RM12220 |
| MCPP (mecoprop) | 10037 | ± | 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.

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

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

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

**Expiration of Certification:**
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**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 ↓ P12785 / 20

9/11/2023

ANAB
ANSI National Accreditation Board
ACCREDITED
REFERENCE MATERIAL PRODUCER

ISO 17034
Cert No. AR-1936

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



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

ISO 17025
Cert No. AT-1937

RESTEK
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Fax: 1-814-353-1309

www.restek.com

## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

***chromatographic plus***

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. :** 32049 **Lot No.:** A0212676

**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 :** March 31, 2027 **Storage:** 10°C or colder

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

P13497 ↓ P13515 } Y.P. 08/16/24

**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% | 200.0 µg/mL | +/- 2.7154 |

* 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.

# Quality Confirmation Test

**Column:**
150mm x 4.6mm
Allure C18 Cat.(#9164565)

**Flow Rate:**
1.0 ml/min.

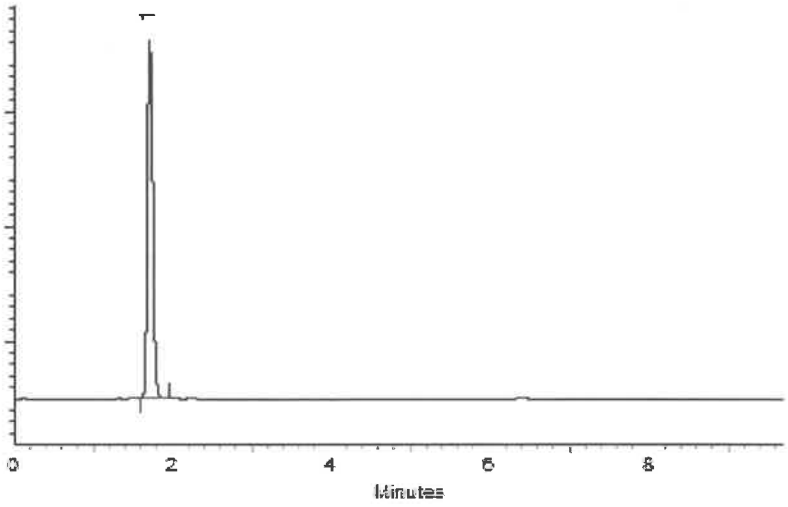
**Mobile Phase A:**
0.14% H3PO4 in water

**Mobile Phase B:**
acetonitrile

**Mobile Phase Composition:**
90%B Isocratic

**Det. Type:**
Wavelength: 220 & 254 nm

**Inj. Vol**
5µl




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:** 11-Jun-2024 **Balance Serial #** B345965662

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 13-Jun-2024

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

# General Certified Reference Material Notes

## Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

## Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

## Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

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

  $k$ is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

## Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

## Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

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Fax: 1-814-353-1309

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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

***chromatographic plus***

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. :** 32049 **Lot No.:** A0212676

**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 :** March 31, 2027 **Storage:** 10°C or colder

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

P13497 ↓ P13515 } Y.P. 08/16/24

**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% | 200.0 µg/mL | +/- 2.7154 |

* 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.

# Quality Confirmation Test

**Column:**
150mm x 4.6mm
Allure C18 Cat.(#9164565)

**Flow Rate:**
1.0 ml/min.

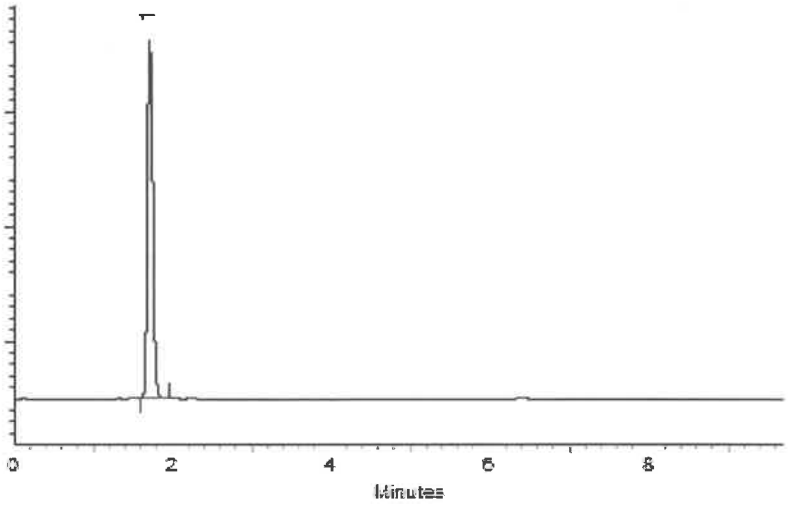
**Mobile Phase A:**
0.14% H3PO4 in water

**Mobile Phase B:**
acetonitrile

**Mobile Phase Composition:**
90%B Isocratic

**Det. Type:**
Wavelength: 220 & 254 nm

**Inj. Vol**
5µl




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:** 11-Jun-2024 **Balance Serial #** B345965662

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 13-Jun-2024

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

# General Certified Reference Material Notes

## Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

## Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

## Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

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

  $k$ is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

## Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

## Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

***chromatographic plus***

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. :** 32049 **Lot No.:** A0212676

**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 :** March 31, 2027 **Storage:** 10°C or colder

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

P13497 ↓ P13515 } Y.P. 08/16/24

**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% | 200.0 µg/mL | +/- 2.7154 |

* 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.

# Quality Confirmation Test

**Column:**
150mm x 4.6mm
Allure C18 Cat.(#9164565)

**Flow Rate:**
1.0 ml/min.

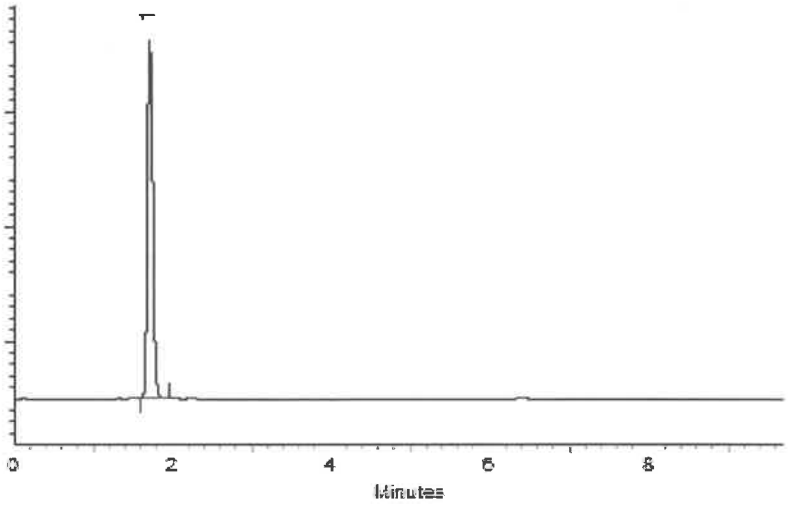
**Mobile Phase A:**
0.14% H3PO4 in water

**Mobile Phase B:**
acetonitrile

**Mobile Phase Composition:**
90%B Isocratic

**Det. Type:**
Wavelength: 220 & 254 nm

**Inj. Vol**
5µl




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:** 11-Jun-2024 **Balance Serial #** B345965662

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 13-Jun-2024

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

# General Certified Reference Material Notes

## Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

## Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

## Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

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

  $k$ is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

## Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

## Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

***chromatographic plus***

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. :** 32049 **Lot No.:** A0212676

**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 :** March 31, 2027 **Storage:** 10°C or colder

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

P13497 ↓ P13515 } Y.P. 08/16/24

**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% | 200.0 µg/mL | +/- 2.7154 |

* 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.

# Quality Confirmation Test

**Column:**
150mm x 4.6mm
Allure C18 Cat.(#9164565)

**Flow Rate:**
1.0 ml/min.

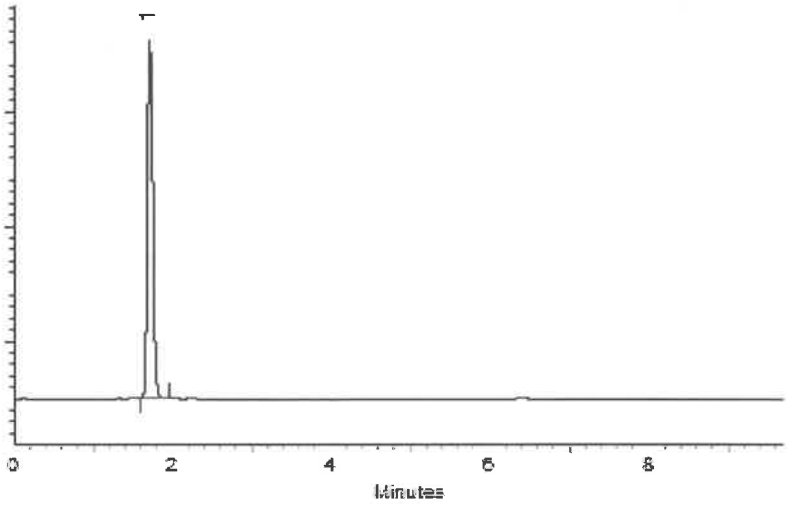
**Mobile Phase A:**
0.14% H3PO4 in water

**Mobile Phase B:**
acetonitrile

**Mobile Phase Composition:**
90%B Isocratic

**Det. Type:**
Wavelength: 220 & 254 nm

**Inj. Vol**
5µl




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:** 11-Jun-2024 **Balance Serial #** B345965662

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 13-Jun-2024

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

# General Certified Reference Material Notes

## Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

## Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

## Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

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

  $k$ is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

## Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

## Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

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ISO 17034

# 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:** 0006750243
**Lot Issue Date:** 07-Jul-2023
**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 | 10004 | ± | 50 µg/mL | 000094-74-6 | RM12220 |
| MCPP (mecoprop) | 10037 | ± | 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.

P13517 } (2)
P13518



CSD-QA-015.2

ISO 17025
Cert No. AT-1937

9/4/2024

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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.*

Received by SG on 8/16/19
P8828
P8826

**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.

### 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)

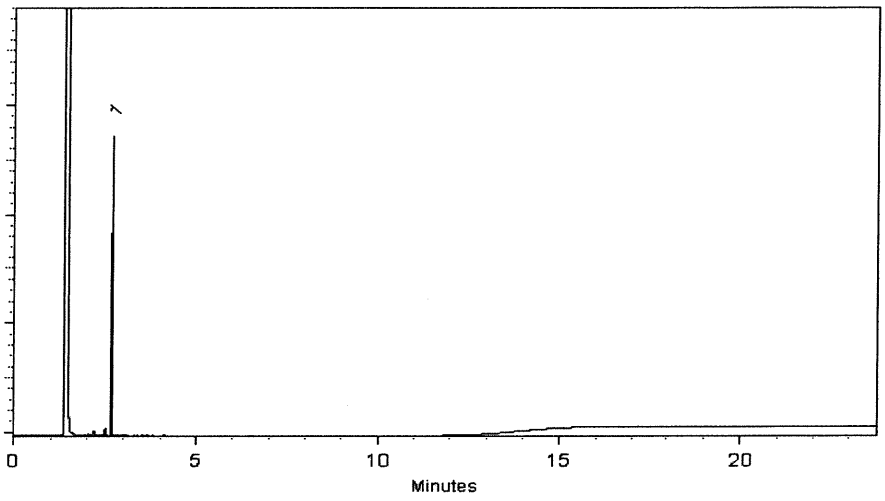
**Carrier Gas:**
hydrogen-constant pressure 10 psi.

**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

Fang-Yun Lo - QC Analyst

**Date Passed:** 15-Apr-2019

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

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# CERTIFIED REFERENCE MATERIAL

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Received by SG on 9/10/19
P8897
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<br>**CAS #** 23844-56-6 (Lot 8685200)<br>**Purity** 99% | 20,004.0 µg/mL | +/- 185.1208 µg/mL<br>+/- 685.5986 µg/mL<br>+/- 685.5986 µg/mL | Gravimetric<br>Unstressed<br>Stressed |
| 2 | MCPA methyl ester<br>**CAS #** 2436-73-9 (Lot 7964600)<br>**Purity** 99% | 20,012.0 µg/mL | +/- 185.1948 µg/mL<br>+/- 685.8728 µg/mL<br>+/- 685.8728 µg/mL | Gravimetric<br>Unstressed<br>Stressed |

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

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

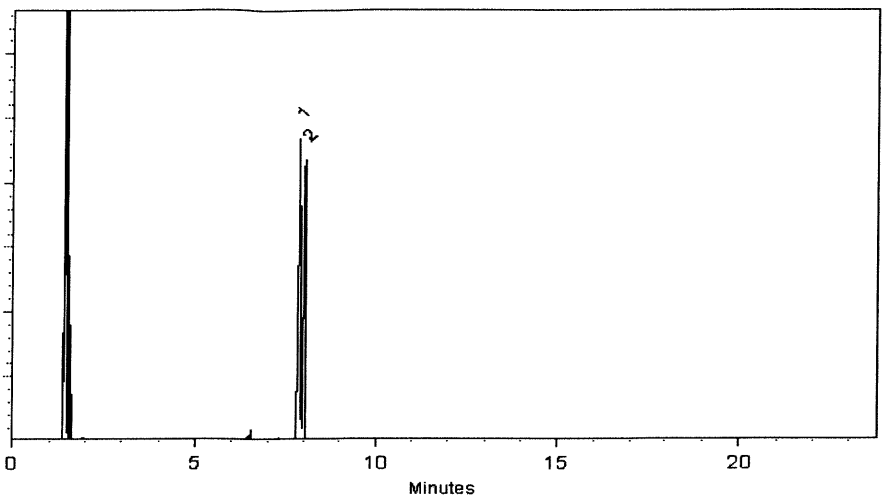
**Carrier Gas:**
hydrogen-constant pressure 10 psi.

**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**

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# CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis



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

Received by SG on 10/11/19
P8999
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P9008

**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.

## CERTIFIED VALUES

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

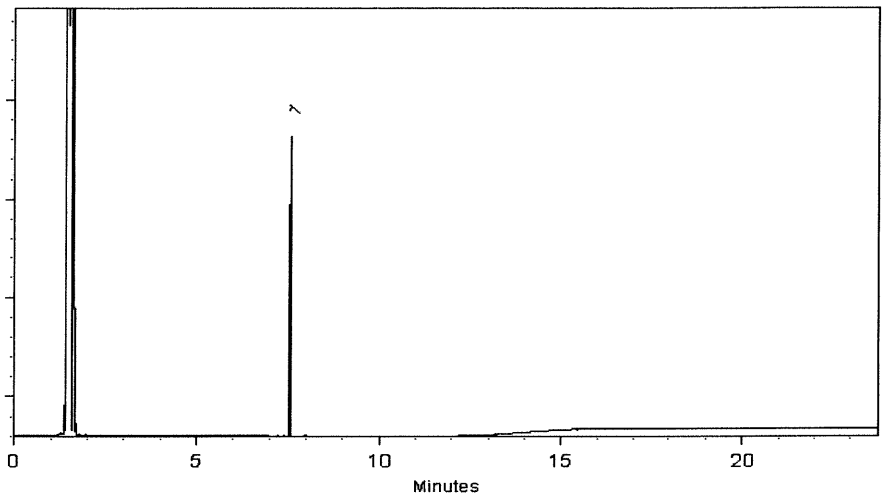
**Carrier Gas:**
hydrogen-constant pressure 10 psi.

**Temp. Program:**
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

**Inj. Temp:**
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.

Cydnei L. Crust
Cydnei L. Crust - Mix Technician

**Date Mixed:** 09-Sep-2019 **Balance:** B707717271

Feng-Yun Lo - QC Analyst

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

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