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

# Prep Standard - Chemical Standard Summary

**Order ID :** Q3097

**Test :** VOCMS Group1

**Prepbatch ID :**

**Sequence ID/Qc Batch ID:** VX091925,VX092225,Vx092325,VX092425,

**Standard ID :**
VP134142,VP134149,VP134933,VP134956,VP134957,VP135059,VP135480,VP135543,VP135544,VP135545,VP135552,VP135556,VP135557,VP135558,VP135576,VP135577,VP135578,VP135588,VP135589,VP135590,VP135591,VP135593,VP135594,VP135605,VP135606,VP135607,VP135608,VP135609,VP135610,

**Chemical ID :**
V13391,V14200,V14204,V14205,V14290,V14444,V14446,V14507,V14508,V14509,V14510,V14529,V14530,V14531,V14532,V14625,V14626,V14636,V14637,V14638,V14639,V14668,V14671,V14673,V14675,V14702,V14705,V14716,V14727,V14728,V14745,V14751,V14803,V14806,V14807,V14815,V14843,V14844,V14906,V14928,V14929,V14951,V14952,V15066,V15067,V15068,W3112,

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 719 | 8260 Working STD (BCM)-First source, 400PPM | VP134142 | 06/06/2025 | 12/06/2025 | Semsettin Yesilyurt | None | None | Mahesh Dadoda 06/10/2025 |

**FROM** 1.00000ml of V14668 + 1.00000ml of V14671 + 1.00000ml of V14673 + 1.00000ml of V14675 + 16.00000ml of V14929 = Final Quantity: 20.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1810 | 8260 Working Std(2-CVE)-800ppm | VP134149 | 06/06/2025 | 12/06/2025 | Semsettin Yesilyurt | None | None | Mahesh Dadoda 06/10/2025 |

**FROM** 1.00000ml of V14636 + 1.00000ml of V14637 + 1.00000ml of V14638 + 1.00000ml of V14639 + 46.00000ml of V14929 = Final Quantity: 50.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 617 | 8260 Surrogate, 400PPM | VP134933 | 07/29/2025 | 01/29/2026 | Semsettin Yesilyurt | None | None | Mahesh Dadoda 08/19/2025 |

**FROM** 0.40000ml of V14906 + 24.60000ml of V14625 = Final Quantity: 25.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 247 | 8260 Internal Standard, 250PPM | VP134956 | 08/01/2025 | 11/09/2025 | Semsettin Yesilyurt | None | None | Mahesh Dadoda 08/06/2025 |

**FROM** 0.25000ml of V14290 + 24.75000ml of V14626 = Final Quantity: 25.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 218 | BFB, 25PPM | VP134957 | 08/01/2025 | 11/22/2025 | Semsettin Yesilyurt | None | None | Mahesh Dadoda 08/06/2025 |

**FROM** 0.50000ml of V13391 + 49.50000ml of V14625 = Final Quantity: 50.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 257 | 8260 Calibration Working STD Mix-First source, 160PPM | VP135059 | 08/11/2025 | 09/19/2025 | Semsettin Yesilyurt | None | None | Mahesh Dadoda 08/19/2025 |

**FROM** 0.40000ml of V14843 + 1.00000ml of V14444 + 1.00000ml of V14446 + 1.00000ml of V14507 + 1.00000ml of V14508 + 1.00000ml of V14529 + 1.00000ml of V14530 + 1.00000ml of V14705 + 1.00000ml of V14745 + 1.00000ml of V14751 + 1.00000ml of V14806 + 1.00000ml of V14807 + 1.50000ml of V14702 + 1.50000ml of V14716 + 10.60000ml of V14625 = Final Quantity: 25.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 51 | 8260 Working STD (Acrolein) -first source, 800PPM | VP135480 | 09/16/2025 | 10/15/2025 | Semsettin Yesilyurt | None | None | Mahesh Dadoda 09/19/2025 |

**FROM** 1.00000ml of V15066 + 1.50000ml of V15067 + 1.50000ml of V15068 + 21.00000ml of V14625 = Final Quantity: 25.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 589 | BFB TUNE CHECK | VP135543 | 09/19/2025 | 09/20/2025 | John Carlone | None | None | Mahesh Dadoda 09/22/2025 |

**FROM** 39.98400ml of W3112 + 0.01600ml of VP134957 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135544 | 09/19/2025 | 09/19/2025 | John Carlone | None | None | Mahesh Dadoda 09/22/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135059 + 0.01250ml of VP135480 = Final Quantity: 40.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135545 | 09/19/2025 | 09/19/2025 | John Carlone | None | None | Mahesh Dadoda 09/22/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135059 + 0.01250ml of VP135480 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 257 | 8260 Calibration Working STD Mix-First source, 160PPM | VP135552 | 09/22/2025 | 11/03/2025 | Semsettin Yesilyurt | None | None | Mahesh Dadoda 09/26/2025 |

**FROM** 0.40000ml of V14844 + 1.00000ml of V14200 + 1.00000ml of V14509 + 1.00000ml of V14510 + 1.00000ml of V14531 + 1.00000ml of V14532 + 1.00000ml of V14727 + 1.00000ml of V14728 + 1.00000ml of V14803 + 1.00000ml of V14815 + 1.00000ml of V14951 + 1.00000ml of V14952 + 1.50000ml of V14204 + 1.50000ml of V14205 + 10.60000ml of V14928 = Final Quantity: 25.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 589 | BFB TUNE CHECK | VP135556 | 09/22/2025 | 09/23/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.98400ml of W3112 + 0.01600ml of VP134957 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135557 | 09/22/2025 | 09/23/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135558 | 09/22/2025 | 09/23/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 589 | BFB TUNE CHECK | VP135576 | 09/22/2025 | 09/23/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.98400ml of W3112 + 0.01600ml of VP134957 = Final Quantity: 40.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135577 | 09/22/2025 | 09/23/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135578 | 09/22/2025 | 09/23/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 589 | BFB TUNE CHECK | VP135588 | 09/23/2025 | 09/24/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.98400ml of W3112 + 0.01600ml of VP134957 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135589 | 09/23/2025 | 09/24/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135590 | 09/23/2025 | 09/24/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 589 | BFB TUNE CHECK | VP135591 | 09/23/2025 | 09/24/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.98400ml of W3112 + 0.01600ml of VP134957 = Final Quantity: 40.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135593 | 09/23/2025 | 09/24/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135594 | 09/23/2025 | 09/24/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 589 | BFB TUNE CHECK | VP135605 | 09/24/2025 | 09/25/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.98400ml of W3112 + 0.01600ml of VP134957 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135606 | 09/24/2025 | 09/25/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135607 | 09/24/2025 | 09/25/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 589 | BFB TUNE CHECK | VP135608 | 09/24/2025 | 09/25/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.98400ml of W3112 + 0.01600ml of VP134957 = Final Quantity: 40.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135609 | 09/24/2025 | 09/25/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 ml

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# VOC STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 620 | 50 PPB CCC, 8260-Water | VP135610 | 09/24/2025 | 09/25/2025 | John Carlone | None | None | Semsettin Yesilyurt 09/26/2025 |

**FROM** 39.94450ml of W3112 + 0.00500ml of VP134142 + 0.00500ml of VP134933 + 0.00800ml of VP134956 + 0.01250ml of VP134149 + 0.01250ml of VP135480 + 0.01250ml of VP135552 = Final Quantity: 40.000 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 # |
|---|---|---|---|---|---|---|
| Restek | 30067 / BFB tuneing solution | A0191805 | 11/22/2025 | 11/22/2024 / SAM | 01/13/2023 / SAM | V13391 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml | A0200785 | 03/22/2026 | 09/22/2025 / sam | 02/28/2024 / SAM | V14200 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml | A0200785 | 03/22/2026 | 09/22/2025 / sam | 02/28/2024 / SAM | V14204 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml | A0200785 | 03/22/2026 | 09/22/2025 / sam | 02/28/2024 / SAM | V14205 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 555581 / Custom Standard, 8260 Internal Std [CS 5179-1] | A0210184 | 12/12/2025 | 12/12/2024 / SAM | 04/15/2024 / SAM | V14290 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30489 / VOA Mix, 8260B Acetates Mix, P&TM, 1mL | A0209618 | 09/30/2025 | 08/08/2025 / SAM | 08/15/2024 / SAM | V14444 |

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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 | 30489 / VOA Mix, 8260B Acetates Mix, P&TM, 1mL | A0209618 | 09/30/2025 | 08/08/2025 / SAM | 08/15/2024 / SAM | V14446 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 95317 / Universal VOA Mega Mix (Min order = 5) | 021624 | 02/08/2026 | 08/08/2025 / SAM | 09/17/2024 / SAM | V14507 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 95317 / Universal VOA Mega Mix (Min order = 5) | 021624 | 02/08/2026 | 08/08/2025 / SAM | 09/17/2024 / SAM | V14508 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 95317 / Universal VOA Mega Mix (Min order = 5) | 021624 | 03/22/2026 | 09/22/2025 / sam | 09/17/2024 / SAM | V14509 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 95317 / Universal VOA Mega Mix (Min order = 5) | 021624 | 03/22/2026 | 09/22/2025 / sam | 09/17/2024 / SAM | V14510 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 95319 / Revised Additions Mix (Min = 5) | 091724 | 02/08/2026 | 08/08/2025 / SAM | 09/18/2024 / SAM | V14529 |

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# CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 95319 / Revised Additions Mix (Min = 5) | 091724 | 02/08/2026 | 08/08/2025 / SAM | 09/18/2024 / SAM | V14530 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 95319 / Revised Additions Mix (Min = 5) | 091724 | 03/22/2026 | 09/22/2025 / sam | 09/18/2024 / SAM | V14531 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 95319 / Revised Additions Mix (Min = 5) | 091724 | 03/22/2026 | 09/22/2025 / sam | 09/18/2024 / SAM | V14532 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Seidler Chemical | BA9077-02 / Methanol, Purge/Trap (cs=6x1L) | 23I0762004 | 01/29/2026 | 07/29/2025 / SAM | 11/26/2024 / SAM | V14625 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Seidler Chemical | BA9077-02 / Methanol, Purge/Trap (cs=6x1L) | 23I0762004 | 11/09/2025 | 05/09/2025 / SAM | 11/26/2024 / SAM | V14626 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | / 2-Chloroethyl vinyl ether | 120524 | 12/06/2025 | 06/06/2025 / SAM | 12/06/2024 / SAM | V14636 |

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# CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | / 2-Chloroethyl vinyl ether | 120524 | 12/06/2025 | 06/06/2025 / SAM | 12/06/2024 / SAM | V14637 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | / 2-Chloroethyl vinyl ether | 120524 | 12/06/2025 | 06/06/2025 / SAM | 12/06/2024 / SAM | V14638 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | / 2-Chloroethyl vinyl ether | 120524 | 12/06/2025 | 06/06/2025 / SAM | 12/06/2024 / SAM | V14639 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul | A0214960 | 12/06/2025 | 06/06/2025 / SAM | 12/09/2024 / SAM | V14668 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul | A0214960 | 12/06/2025 | 06/06/2025 / SAM | 12/09/2024 / SAM | V14671 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul | A0214960 | 12/06/2025 | 06/06/2025 / SAM | 12/09/2024 / SAM | V14673 |

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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 | 30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul | A0214960 | 12/06/2025 | 06/06/2025 / SAM | 12/09/2024 / SAM | V14675 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml | A02110618 | 02/08/2026 | 08/08/2025 / SAM | 12/17/2024 / SAM | V14702 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml | A02110618 | 02/08/2026 | 08/08/2025 / SAM | 12/17/2024 / SAM | V14705 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml | A02110618 | 02/08/2026 | 08/08/2025 / SAM | 12/17/2024 / SAM | V14716 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30042 / VOA Mix,500 series method 502.2 Calibration Std #1 gases, 2000uq/ml, PTM, 1ml | A0216826 | 03/22/2026 | 09/22/2025 / sam | 12/17/2024 / SAM | V14727 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30042 / VOA Mix,500 series method 502.2 Calibration Std #1 gases, 2000uq/ml, PTM, 1ml | A0216826 | 03/22/2026 | 09/22/2025 / sam | 12/17/2024 / SAM | V14728 |

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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 | 30042 / VOA Mix,500 series method 502.2 Calibration Std #1 gases, 2000uq/ml, PTM, 1ml | A0216826 | 02/08/2026 | 08/08/2025 / SAM | 12/17/2024 / SAM | V14745 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30042 / VOA Mix,500 series method 502.2 Calibration Std #1 gases, 2000uq/ml, PTM, 1ml | A0216826 | 02/08/2026 | 08/08/2025 / SAM | 12/17/2024 / SAM | V14751 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 555408 / Custom Standard, Vinyl Acetate Standard w/ Grav [CS 5066-6] TWO SEPARATE LOTS | A0220471 | 03/22/2026 | 09/22/2025 / sam | 01/08/2025 / SAM | V14803 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 555408 / Custom Standard, Vinyl Acetate Standard w/ Grav [CS 5066-6] TWO SEPARATE LOTS | A0220471 | 02/08/2026 | 08/08/2025 / SAM | 01/08/2025 / SAM | V14806 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 555408 / Custom Standard, Vinyl Acetate Standard w/ Grav [CS 5066-6] TWO SEPARATE LOTS | A0220471 | 02/08/2026 | 08/08/2025 / SAM | 01/08/2025 / SAM | V14807 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 555408 / Custom Standard, Vinyl Acetate Standard w/ Grav [CS 5066-6] TWO SEPARATE LOTS | A0220471 | 03/22/2026 | 09/22/2025 / sam | 01/08/2025 / SAM | V14815 |

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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 | 30470 / VOA Stock Solution, tert-butanol std, 1mL, P&TM | A0217535 | 11/12/2025 | 05/12/2025 / SAM | 01/21/2025 / SAM | V14843 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30470 / VOA Stock Solution, tert-butanol std, 1mL, P&TM | A0217535 | 03/22/2026 | 09/22/2025 / sam | 01/21/2025 / SAM | V14844 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 555582 / Custom Mixture, 8260 A/B Surrogate Mix [CS 5179-2] | A0223904 | 07/29/2026 | 07/29/2025 / SAM | 03/24/2025 / SAM | V14906 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Seidler Chemical | BA9077-02 / Methanol, Purge/Trap (cs=6x1L) | 24G0262002 | 03/22/2026 | 09/22/2025 / sam | 05/09/2025 / SAM | V14928 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Seidler Chemical | BA9077-02 / Methanol, Purge/Trap (cs=6x1L) | 24G0262002 | 12/06/2025 | 06/06/2025 / SAM | 05/09/2025 / SAM | V14929 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Restek | 30489 / VOA Mix, 8260B Acetates Mix, P&TM, 1mL | A0222076 | 03/22/2026 | 09/22/2025 / sam | 05/19/2025 / SAM | V14951 |

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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 | 30489 / VOA Mix, 8260B Acetates Mix, P&TM, 1mL | A0222076 | 03/22/2026 | 09/22/2025 / sam | 05/19/2025 / SAM | V14952 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 091525 | 10/15/2025 | 09/16/2025 / sam | 09/16/2025 / sam | V15066 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 091525 | 10/15/2025 | 09/16/2025 / sam | 09/16/2025 / sam | V15067 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 091525 | 10/15/2025 | 09/16/2025 / sam | 09/16/2025 / sam | V15068 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Seidler Chemical | DIW / DI Water | Daily Lab-Certified | 07/03/2029 | 07/03/2024 / Iwona | 07/03/2024 / Iwona | W3112 |

Methanol
ULTRA RESI-ANALYZED
For Purge and Trap Analysis

avantor™ | J.T.Baker®

Material No.: 9077-02
Batch No.: 2310762004
Manufactured Date: 2023-08-11
Expiration Date: 2026-08-10
Revision No.: 0

# Certificate of Analysis

| Test | Specification | Result |
|---|---|---|
| Assay ($CH_3OH$) (by GC, corrected for water) | ≥ 99.9 % | 100.0 % |
| Residue after Evaporation | ≤ 1.0 ppm | 0.5 ppm |
| Titrable Acid (µeq/g) | ≤ 0.3 | 0.2 |
| Titrable Base (µeq/g) | ≤ 0.10 | 0.01 |
| Water (by KF, coulometric) | ≤ 0.08 % | < 0.01 % |
| Volatile Organic Trace Analysis – Below EPA 8260B CRQL | Conforms | Conforms |

For Laboratory,Research,or Manufacturing Use
Performance Tested for Use in EPA Methods
500 Series for Drinking Water
600 Series for Wastewater
846 for Solid Waste

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

Ken Koehnlein
Sr. Manager, Quality Assurance

Methanol
ULTRA RESI-ANALYZED
For Purge and Trap Analysis

avantor™ | J.T.Baker®

Material No.: 9077-02
Batch No.: 2310762004
Manufactured Date: 2023-08-11
Expiration Date: 2026-08-10
Revision No.: 0

# Certificate of Analysis

| Test | Specification | Result |
|---|---|---|
| Assay ($CH_3OH$) (by GC, corrected for water) | ≥ 99.9 % | 100.0 % |
| Residue after Evaporation | ≤ 1.0 ppm | 0.5 ppm |
| Titrable Acid (µeq/g) | ≤ 0.3 | 0.2 |
| Titrable Base (µeq/g) | ≤ 0.10 | 0.01 |
| Water (by KF, coulometric) | ≤ 0.08 % | < 0.01 % |
| Volatile Organic Trace Analysis – Below EPA 8260B CRQL | Conforms | Conforms |

For Laboratory,Research,or Manufacturing Use
Performance Tested for Use in EPA Methods
500 Series for Drinking Water
600 Series for Wastewater
846 for Solid Waste

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

Ken Koehnlein
Sr. Manager, Quality Assurance

**Absolute Standards, Inc.**
800-368-1131
www.absolutestandards.com

**Certified Reference Material CRM**

Rec 09/17/24

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT

Part Number: 95317
Lot Number: 021624
Description: Universal VOA Megamix
69 components
Expiration Date: 021627
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 2000
NIST Test ID#: 6UTB

Solvent(s): Lot#
Methanol EG359-USQ12

| | | |
|---|---|---|
| Formulated By: | Prashant Chauhan | 021624 DATE |
| Reviewed By: | Pedro L. Rentas | 021624 DATE |

Weight(s) shown below were combined and diluted to (mL): 100.0 | 5E-05 Balance Uncertainty | 0.021 Flask Uncertainty

| | Compound | (RM#) Part Number | Lot Number | Dil. Factor | Initial Vol. (mL) | Initial Conc.(ug/mL) | Nominal Conc (µg/mL) | Purity (%) | Purity Uncertainty | Uncertainty Pipette (mL) | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Acetonitrile | (0324) | 021644 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20020 | 2001.3 | 8.1 | 75-05-8 | 40 ppm (70mg/m3/8H) | orl-rat 2460mg/kg |
| 2. | Allyl chloride (3-Chloropropene) | (0325) | 102396 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 107-05-1 | 1 ppm (3mg/m3/8H) | orl-rat 700mg/kg |
| 3. | Carbon disulphide | (0060) | MKCR6561 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20023 | 2001.6 | 8.1 | 75-15-0 | 4 ppm (12mg/m3) (skin) | orl-rat 1200mg/kg |
| 4. | cis-1,4-Dichloro-2-butene | (1196) | 14718EF | NA | NA | NA | 2000 | 95 | 0.2 | NA | 0.21058 | 0.21069 | 2001.1 | 8.5 | 1476-11-5 | N/A | N/A |
| 5. | trans-1,4-Dichloro-2-butene | (0466) | MKBP6041V | NA | NA | NA | 2000 | 96.5 | 0.2 | NA | 0.20731 | 0.20748 | 2001.7 | 8.4 | 110-57-6 | N/A | N/A |
| 6. | Diethyl ether | (0153) | IK18CAS0000 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 60-29-7 | N/A | N/A |
| 7. | Ethyl methacrylate | (0381) | 06128PX | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20230 | 2002.3 | 8.2 | 97-63-2 | N/A | orl-rat 14800mg/kg |
| 8. | Iodomethane | (0489) | SHBF8718V | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20121 | 2001.5 | 8.2 | 74-88-4 | 5 ppm(28mg/m3/8H)(skin) | orl-rat 76mg/kg |
| 9. | 2-Methyl-1-propanol | (0445) | 15241EB | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20120 | 2001.4 | 8.1 | 78-83-1 | 50 ppm (150mg/m3/8H) | orl-rat 2460mg/kg |
| 10. | Methacrylonitrile | (0442) | 00427ET | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 126-98-7 | 1 ppm (3mg/m3/8H)(skin) | orl-rat 120mg/kg |
| 11. | Methyl acrylate | (1075) | SHBK0679 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 96-33-3 | 10 ppm(35mg/m3/8H)(skin) | orl-rat 277mg/kg |
| 12. | Methyl methacrylate | (0404) | MKBW6137V | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20041 | 2001.6 | 8.1 | 80-62-6 | 100 ppm (410mg/m3/8H) | orl-rat 7872mg/kg |
| 13. | Nitrobenzene | (0228) | 01213TV | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20220 | 2001.3 | 8.2 | 98-95-3 | 1 ppm (5mg/m3/8H)(skin) | orl-rat 780mg/kg |
| 14. | 2-Nitropropane | (0461) | 14002JX | NA | NA | NA | 2000 | 97.3 | 0.2 | NA | 0.20560 | 0.20577 | 2001.6 | 8.3 | 79-46-9 | 10 ppm (35mg/m3/8H) | orl-rat 720mg/kg |
| 15. | Pentachloroethane | (0450) | HGA01 | NA | NA | NA | 2000 | 98 | 0.2 | NA | 0.20413 | 0.20430 | 2001.6 | 8.3 | 76-01-7 | N/A | N/A |
| 16. | 1,1,2-Trichlorotrifluoroethane | (0474) | 18930 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20225 | 2001.8 | 8.2 | 76-13-1 | 1000 ppm (7600mg/m3/8H) | orl-rat 43g/kg |
| 17. | Bromodichloromethane | 35171 | 101623 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-27-4 | N/A | orl-rat 916mg/kg |
| 18. | Dibromochloromethane | 35171 | 101623 | 0.05 | 5.00 | 40002.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 124-48-1 | N/A | orl-rat 848mg/kg |
| 19. | cis-1,2-Dichloroethene | 35171 | 101623 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 156-59-2 | N/A | N/A |
| 20. | trans-1,2-Dichloroethene | 35171 | 101623 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 156-60-5 | N/A | orl-rat 1235mg/kg |
| 21. | Methylene chloride | 35171 | 101623 | 0.05 | 5.00 | 40002.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-09-2 | 500 ppm | orl-rat 820mg/kg |
| 22. | 1,1-Dichloroethene | 32251 | 102023 | 0.10 | 10.00 | 20001.6 | 2000 | NA | NA | 0.042 | NA | NA | 1999.7 | 20.4 | 75-35-4 | 1 ppm (4mg/m3/8H) | orl-rat 200mg/kg |
| 23. | Bromoform | 95321 | 020724 | 0.10 | 10.00 | 20003.2 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-25-2 | 0.5 ppm (5mg/m3) (skin) | orl-rat 933mg/kg |
| 24. | Carbon tetrachloride | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 56-23-5 | 2 ppm (12.6mg/m3/8H) | orl-rat 2350mg/kg |
| 25. | Chloroform | 95321 | 020724 | 0.10 | 10.00 | 20024.0 | 2000 | NA | NA | 0.042 | NA | NA | 2001.9 | 20.5 | 67-66-3 | 50 ppm (240mg/m3) (CL) | orl-rat 908mg/kg |
| 26. | Dibromomethane | 95321 | 020724 | 0.10 | 10.00 | 20002.9 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 74-95-3 | N/A | orl-rat 108mg/kg |
| 27. | 1,1-Dichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-34-3 | 100 ppm | orl-rat 725mg/kg |
| 28. | 2,2-Dichloropropane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 594-20-7 | N/A | N/A |
| 29. | Tetrachloroethene | 95321 | 020724 | 0.10 | 10.00 | 20201.1 | 2000 | NA | NA | 0.042 | NA | NA | 2019.6 | 20.8 | 127-18-4 | 25 ppm (170mg/m3/8H)(final) | orl-rat 2629mg/kg |
| 30. | 1,1,1-Trichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.0 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 71-55-6 | 350 ppm (1900mg/m3/8H) | orl-rat 10300mg/kg |
| 31. | 1,2-Dibromo-3-chloropropane | 35161 | 112322 | 0.05 | 5.00 | 40016.5 | 2000 | NA | NA | 0.017 | NA | NA | 2000.3 | 22.9 | 96-12-8 | 0.001 ppm | orl-rat 170mg/kg |
| 32. | 1,2-Dibromoethane | 35161 | 112322 | 0.05 | 5.00 | 40024.8 | 2000 | NA | NA | 0.017 | NA | NA | 2000.7 | 22.9 | 106-93-4 | 20 ppm (8H) | orl-rat 108mg/kg |
| 33. | 1,2-Dichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40018.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 22.9 | 107-06-2 | 50 ppm (8H) | orl-rat 670mg/kg |
| 34. | 1,2-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40051.0 | 2000 | NA | NA | 0.017 | NA | NA | 2002.0 | 22.9 | 78-87-5 | 75 ppm (350mg/m3/8H) | orl-rat 1947mg/kg |
| 35. | 1,3-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40005.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 142-28-9 | N/A | unr-mus 3600mg/kg |
| 36. | 1,1-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40012.1 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 29.7 | 563-58-6 | N/A | N/A |
| 37. | cis-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40010.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.0 | 23.0 | 10061-01-5 | N/A | N/A |
| 38. | trans-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40017.6 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 23.0 | 10061-02-6 | N/A | N/A |
| 39. | Hexachloro-1,3-butadiene | 35161 | 112322 | 0.05 | 5.00 | 40021.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.6 | 29.7 | 87-68-3 | 0.02 ppm (0.24mg/m3/8H) | orl-rat 82mg/kg |
| 40. | 1,1,1,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40011.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 22.9 | 630-20-6 | N/A | orl-rat 670mg/kg |
| 41. | 1,1,2,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 79-34-5 | 5 ppm (35mg/m3/8H)(skin) | orl-rat 800mg/kg |
| 42. | 1,1,2-Trichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40006.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 23.0 | 79-00-5 | 10 ppm (45mg/m3/8H)(skin) | orl-rat 836mg/kg |
| 43. | Trichloroethene | 35161 | 112322 | 0.05 | 5.00 | 40029.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.9 | 22.9 | 79-01-6 | 50 ppm (270mg/m3/8H) | orl-mus 2402mg/kg |
| 44. | 1,2,3-Trichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 96-18-4 | 10 ppm (60mg/m3/8H) | orl-rat 149.8mg/kg |
| 45. | Benzene | 35162 | 050823 | 0.05 | 5.00 | 40005.0 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 71-43-2 | 1 ppm | orl-rat 4894mg/kg |
| 46. | Bromobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-86-1 | N/A | orl-rat 2699mg/kg |
| 47. | n-Butyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 104-51-8 | N/A | N/A |
| 48. | Ethyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-41-4 | 100 ppm (435mg/m3/8H) | orl-rat >2000mg/kg |
| 49. | p-Isopropyl toluene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 99-87-6 | N/A | orl-rat 4750mg/kg |
| 50. | Naphthalene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 91-20-3 | 10 ppm (50mg/m3/8H) | orl-rat 490mg/kg |
| 51. | Styrene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-42-5 | 100 ppm | orl-rat 5000mg/kg |
| 52. | Toluene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-88-3 | 200 ppm | orl-rat 5000mg/kg |
| 53. | 1,2,3-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 87-61-6 | N/A | ipr-mus 1390mg/kg |
| 54. | 1,2,4-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 120-82-1 | 5 ppm (CL) (40mg/m3) | orl-rat 756mg/kg |
| 55. | 1,2,4-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40001.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 95-63-6 | N/A | orl-rat 5g/kg |
| 56. | 1,3,5-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-67-8 | N/A | orl-rat 5000mg/kg |
| 57. | m-Xylene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-38-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |
| 58. | tert-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40001.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 98-06-6 | N/A | N/A |
| 59. | sec-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 135-98-8 | N/A | orl-rat 2240mg/kg |
| 60. | Chlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 108-90-7 | 75 ppm (350mg/m3/8H) | orl-rat 2290mg/kg |
| 61. | 2-Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40000.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 95-49-8 | 50 ppm (250mg/m3/8H) | orl-rat 3900mg/kg |
| 62. | 4-Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40003.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 106-43-4 | N/A | orl-rat 2100mg/kg |
| 63. | 1,2-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 95-50-1 | 50 ppm (300mg/m3) (CL) | orl-rat 500mg/kg |
| 64. | 1,3-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 541-73-1 | N/A | ipr-mus 1062mg/kg |
| 65. | 1,4-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 106-46-7 | 75 ppm (450mg/m3/8H) | orl-rat 500mg/kg |
| 66. | Isopropylbenzene | 35163 | 101923 | 0.05 | 5.00 | 40000.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 98-82-8 | 50 ppm (245mg/m3/8H) | orl-rat 1400mg/kg |
| 67. | n-Propylbenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 23.0 | 103-65-1 | N/A | orl-rat 8040mg/kg |
| 68. | o-Xylene | 35163 | 101923 | 0.05 | 5.00 | 40040.8 | 2000 | NA | NA | 0.017 | NA | NA | 2001.5 | 23.0 | 95-47-6 | 100 ppm (435mg/m3/8H) | ipr-mus 1364mg/kg |
| 69. | p-Xylene | 35163 | 101923 | 0.05 | 5.00 | 40000.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 106-42-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |

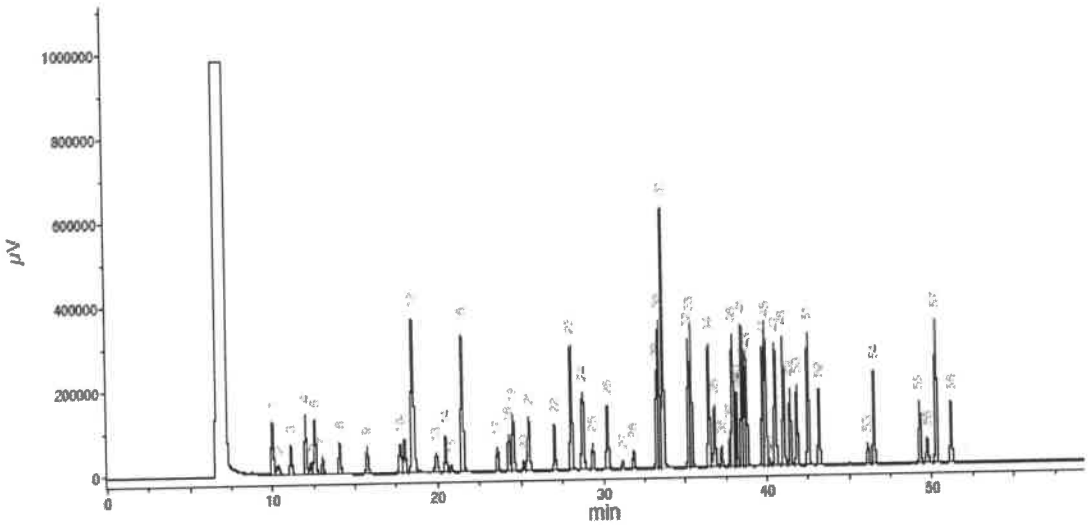
- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

## Run 16, "P95317 L021624 (2000µg/mL in MeOH)"

Run Length: 60.00 min, 35998 points at 10 points/second.
Created: Sat, Feb 17, 2024 at 8:56:46 AM.
Sampled: Sequence "021624-GC5M1", Method "GC5-M1".
Analyzed using Method "GC5-M1".

### Comments

GC5-M1 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min.,
Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min.
Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.),
Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C.
FID Signal = Edaq Channel 1
Standard injection = 0.5µL, Range=3




| Peak # | Name | FID RT (min.) |
|---|---|---|
| 1 | Ether | 9.97 |
| 2 | 1,1,2-Trichloro-1,2,3-trifluoroethane | 10.33 |
| 3 | 1,1-Dichloroethene | 11.10 |
| 4 | Acetonitrile | 12.00 |
| 5 | Iodomethane | 12.31 |
| 6 | Allyl chloride | 12.56 |
| 7 | Carbon disulfide/Methylene chloride | 13.04 |
| 8 | trans-1,2-Dichloroethene | 14.07 |
| 9 | 1,1-Dichloroethane | 15.74 |
| 10 | 2,2-Dichloropropane | 17.74 |
| 11 | cis-1,2-Dichloroethene | 18.00 |
| 12 | Methacrylonitrile/Methyl acrylate/Chloroform | 18.49 |
| 13 | Isobutanol/1,1,1-Trichloroethane | 18.91 |
| 14 | 1,1-Dichloropropene | 20.46 |
| 15 | Carbon tetrachloride | 20.79 |
| 16 | Benzene/1,2-Dichloroethane | 21.48 |
| 17 | Trichloroethene | 23.86 |
| 18 | 1,2-Dichloropropane | 24.26 |
| 19 | Methyl methacrylate | 24.62 |
| 20 | Bromodichloromethane | 25.13 |
| 21 | Dibromomethane/2-Nitropropane | 25.46 |
| 22 | cis-1,3-Dichloropropene | 27.07 |
| 23 | Toluene | 28.09 |
| 24 | Ethyl methacrylate/trans-1,3-Dichloropropene | 28.73 |
| 25 | 1,1,2-Trichloroethane | 29.34 |
| 26 | Tetrachloroethane/1,3-Dichloropropane | 30.34 |
| 27 | Dibromochloromethane | 31.16 |
| 28 | 1,2-Dibromoethane | 31.84 |
| 29 | Chlorobenzene | 33.26 |
| 30 | Ethylbenzene/1,1,1,2-Tetrachloroethane | 33.40 |
| 31 | m-Xylene/p-Xylene | 33.85 |
| 32 | o-Xylene | 35.33 |
| 33 | Styrene | 35.50 |
| 34 | Isopropylbenzene/Bromoform | 35.48 |
| 35 | cis-1,4-Dichloro-2-butene | 36.80 |
| 36 | 1,1,2,2-Tetrachloroethane | 37.23 |
| 37 | 1,2,3-Trichloropropane | 37.77 |
| 38 | n-Propylbenzene | 37.92 |
| 39 | trans-1,4-Dichloro-2-butene | 38.05 |
| 40 | Bromobenzene | 38.14 |
| 41 | 1,3,5-Trimethylbenzene | 38.50 |
| 42 | 2-Chlorotoluene | 38.62 |
| 43 | 4-Chlorotoluene | 38.77 |
| 44 | tert-Butylbenzene | 39.76 |
| 45 | 1,2,4-Trimethylbenzene | 39.91 |
| 46 | Pentachloroethane | 40.17 |
| 47 | sec-Butylbenzene | 40.52 |
| 48 | p-Isopropyltoluene | 41.02 |
| 49 | 1,3-Dichlorobenzene | 41.42 |
| 50 | 1,4-Dichlorobenzene | 41.63 |
| 51 | n-Butylbenzene | 42.02 |
| 52 | 1,2-Dichlorobenzene | 42.18 |
| 53 | 1,2-Dibromo-3-chloropropane | 46.12 |
| 54 | Nitrobenzene | 46.58 |
| 55 | 1,2,4-Trichlorobenzene | 49.26 |
| 56 | Hexachlorobutadiene | 49.72 |
| 57 | Naphthalene | 50.46 |
| 58 | 1,2,3-Trichlorobenzene | 51.16 |

**Absolute Standards Inc.**

PO Box 5585
Hamden, CT 06518-0585

Phone: 203-281-2917
FAX: 203-281-2922

**Safety Data Sheet (SDS)** GHS/OSHA Compliant

## Section I Product and Company Identification

**IDENTITY** **ANALYTICAL STANDARD DISSOLVED IN METHANOL**

| | | | |
|---|---|---|---|
| Manufacturer's Name | ABSOLUTE STANDARDS INC | Emergency Telephone USA & CANADA | **1-800-535-5053** |
| Address | 44 Rossotto Dr. | Emergency Telephone International | **1-352-323-3500** |
| | Hamden CT, 06514 | Date Prepared/Revised | January 1, 2024 |

## Section II - Hazards Identification

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

| | | | |
|---|---|---|---|
| **H225** | **Highly Flammable Liquid and Vapor** | **H301, 311, 331** | **Toxic if swallowed, skin contact, inhaled** |
| **H370** | **Cause damage to organs** | **H351** | **Suspected of causing cancer** |
| **P271** | **Use in ventilated area** | **P280** | **Use gloves, eye protection/face sheild** |
| **P302,332** | **If on skin, wash with soap and water** | **P305,351,338** | **If in eyes, remove contacts, rinse with water** |

**Signal Word: DANGER**

## Section III - Composition

| Components (Specific Chemical Identity; Common Name(s)) | | | % (optional) |
|---|---|---|---|
| Methanol | METHYL ALCOHOL | CAS#: 67-56-1 | > 97 |

**See Certified Weight Report For Other Analytes Present At Trace Quantities.**

**INTENDED USE: REFERENCE MATERIAL**

## Section IV. FIRST AID MEASURES

| | |
|---|---|
| **General advice** | Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. |
| **If inhaled** | If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| **In case of skin contact** | Wash with soap and water. Consult a physician. |
| **In case of eye contact** | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. |
| **If swallowed** | Do NOT induce vomiting. Rinse mouth with water. Consult a physician. |

## Section V. FIREFIGHTING MEASURES

| | |
|---|---|
| **Flammability** | Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking. |
| **Suitable extinguishing media** | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| **Protective equipment for fire** | Wear self contained breathing apparatus for fire fighting if necessary. |

## Section VI. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions | Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations. |
| Environmental precautions | Prevent further leakage or spillage if safe to do so. Do not let product enter drains. |
| Clean up | Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). |

## Section VII. HANDLING AND STORAGE

| | |
|---|---|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. |
| Storage Conditions | Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. |

## Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Methanol 67-56-1 TWA 200 ppm
Skin notation TWA 200 ppm
Potential for skin absorption , ingestion and inhalation.
Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.
Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

## Section IX - Physical/Chemical Characteristics

| | | | |
|---|---|---|---|
| Boiling Point | 65°C | Specific Gravity (H2O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |

Solubility in Water COMPLETE

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

## Section X. STABILITY AND REACTIVITY

Chemical stability Stable under recommended storage conditions.
Possibility of hazardous reactions Vapours may form explosive mixture with air.
Conditions to avoid Heat, flames, sparks, extreme temperature and sunlight.
Materials to avoid Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
Hazardous decomposition products formed under fire conditions. - Carbon oxides

## Section XI. TOXICOLOGICAL INFORMATION

LD50 Oral - rat - 5,628 mg/kg
LC50 Inhalation - rat - 4 h - 64000 ppm
LD50 Dermal - rabbit - 15,800 mg/kg
Toxic if absorbed through skin. Causes skin irritation.
Eye damage/eye irritation
Toxic if inhaled. Causes respiratory tract irritation.
Toxic if swallowed.

## Section XII. ECOLOGICAL INFORMATION FOR REPORTABLE QUANTITY OF 5000 lbs.

| | |
|---|---|
| LC50 | 15,400 mg/l - 96 h |
| EC50 | 24,500.00 mg/l - 48 h |
| EC100 | 10,000.00 mg/l - 24 h |

## Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

## Section XIV. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

IATA
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

## Section XV. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## Section XVI. Misc. INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by trained personnel, or supervised by a person trained in chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

**Absolute Standards, Inc.**
800-368-1131
www.absolutestandards.com

**Certified Reference Material CRM**

Rec 09/17/24

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT

Part Number: 95317
Lot Number: 021624
Description: Universal VOA Megamix
69 components
Expiration Date: 021627
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 2000
NIST Test ID#: 6UTB

Solvent(s): Lot#
Methanol EG359-USQ12

| | | |
|---|---|---|
| Formulated By: | Prashant Chauhan | 021624 DATE |
| Reviewed By: | Pedro L. Rentas | 021624 DATE |

Weight(s) shown below were combined and diluted to (mL): 100.0 | 5E-05 Balance Uncertainty | 0.021 Flask Uncertainty

| | Compound | (RM#) Part Number | Lot Number | Dil. Factor | Initial Vol. (mL) | Initial Conc.(ug/mL) | Nominal Conc (µg/mL) | Purity (%) | Purity Uncertainty | Uncertainty Pipette (mL) | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Acetonitrile | (0324) | 021644 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20020 | 2001.3 | 8.1 | 75-05-8 | 40 ppm (70mg/m3/8H) | orl-rat 2460mg/kg |
| 2. | Allyl chloride (3-Chloropropene) | (0325) | 102396 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 107-05-1 | 1 ppm (3mg/m3/8H) | orl-rat 700mg/kg |
| 3. | Carbon disulphide | (0060) | MKCR6561 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20023 | 2001.6 | 8.1 | 75-15-0 | 4 ppm (12mg/m3) (skin) | orl-rat 1200mg/kg |
| 4. | cis-1,4-Dichloro-2-butene | (1196) | 14718EF | NA | NA | NA | 2000 | 95 | 0.2 | NA | 0.21058 | 0.21069 | 2001.1 | 8.5 | 1476-11-5 | N/A | N/A |
| 5. | trans-1,4-Dichloro-2-butene | (0466) | MKBP6041V | NA | NA | NA | 2000 | 96.5 | 0.2 | NA | 0.20731 | 0.20748 | 2001.7 | 8.4 | 110-57-6 | N/A | N/A |
| 6. | Diethyl ether | (0153) | IK18CAS0000 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 60-29-7 | N/A | N/A |
| 7. | Ethyl methacrylate | (0381) | 06128PX | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20230 | 2002.3 | 8.2 | 97-63-2 | N/A | orl-rat 14800mg/kg |
| 8. | Iodomethane | (0489) | SHBF8718V | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20121 | 2001.5 | 8.2 | 74-88-4 | 5 ppm(28mg/m3/8H)(skin) | orl-rat 76mg/kg |
| 9. | 2-Methyl-1-propanol | (0445) | 15241EB | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20120 | 2001.4 | 8.1 | 78-83-1 | 50 ppm (150mg/m3/8H) | orl-rat 2460mg/kg |
| 10. | Methacrylonitrile | (0442) | 00427ET | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 126-98-7 | 1 ppm (3mg/m3/8H)(skin) | orl-rat 120mg/kg |
| 11. | Methyl acrylate | (1075) | SHBK0679 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 96-33-3 | 10 ppm(35mg/m3/8H)(skin) | orl-rat 277mg/kg |
| 12. | Methyl methacrylate | (0404) | MKBW6137V | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20041 | 2001.6 | 8.1 | 80-62-6 | 100 ppm (410mg/m3/8H) | orl-rat 7872mg/kg |
| 13. | Nitrobenzene | (0228) | 01213TV | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20220 | 2001.3 | 8.2 | 98-95-3 | 1 ppm (5mg/m3/8H)(skin) | orl-rat 780mg/kg |
| 14. | 2-Nitropropane | (0461) | 14002JX | NA | NA | NA | 2000 | 97.3 | 0.2 | NA | 0.20560 | 0.20577 | 2001.6 | 8.3 | 79-46-9 | 10 ppm (35mg/m3/8H) | orl-rat 720mg/kg |
| 15. | Pentachloroethane | (0450) | HGA01 | NA | NA | NA | 2000 | 98 | 0.2 | NA | 0.20413 | 0.20430 | 2001.6 | 8.3 | 76-01-7 | N/A | N/A |
| 16. | 1,1,2-Trichlorotrifluoroethane | (0474) | 18930 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20225 | 2001.8 | 8.2 | 76-13-1 | 1000 ppm (7600mg/m3/8H) | orl-rat 43g/kg |
| 17. | Bromodichloromethane | 35171 | 101623 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-27-4 | N/A | orl-rat 916mg/kg |
| 18. | Dibromochloromethane | 35171 | 101623 | 0.05 | 5.00 | 40002.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 124-48-1 | N/A | orl-rat 848mg/kg |
| 19. | cis-1,2-Dichloroethene | 35171 | 101623 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 156-59-2 | N/A | N/A |
| 20. | trans-1,2-Dichloroethene | 35171 | 101623 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 156-60-5 | N/A | orl-rat 1235mg/kg |
| 21. | Methylene chloride | 35171 | 101623 | 0.05 | 5.00 | 40002.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-09-2 | 500 ppm | orl-rat 820mg/kg |
| 22. | 1,1-Dichloroethene | 32251 | 102023 | 0.10 | 10.00 | 20001.6 | 2000 | NA | NA | 0.042 | NA | NA | 1999.7 | 20.4 | 75-35-4 | 1 ppm (4mg/m3/8H) | orl-rat 200mg/kg |
| 23. | Bromoform | 95321 | 020724 | 0.10 | 10.00 | 20003.2 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-25-2 | 0.5 ppm (5mg/m3) (skin) | orl-rat 933mg/kg |
| 24. | Carbon tetrachloride | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 56-23-5 | 2 ppm (12.6mg/m3/8H) | orl-rat 2350mg/kg |
| 25. | Chloroform | 95321 | 020724 | 0.10 | 10.00 | 20024.0 | 2000 | NA | NA | 0.042 | NA | NA | 2001.9 | 20.5 | 67-66-3 | 50 ppm (240mg/m3) (CL) | orl-rat 908mg/kg |
| 26. | Dibromomethane | 95321 | 020724 | 0.10 | 10.00 | 20002.9 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 74-95-3 | N/A | orl-rat 108mg/kg |
| 27. | 1,1-Dichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-34-3 | 100 ppm | orl-rat 725mg/kg |
| 28. | 2,2-Dichloropropane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 594-20-7 | N/A | N/A |
| 29. | Tetrachloroethene | 95321 | 020724 | 0.10 | 10.00 | 20201.1 | 2000 | NA | NA | 0.042 | NA | NA | 2019.6 | 20.8 | 127-18-4 | 25 ppm (170mg/m3/8H)(final) | orl-rat 2629mg/kg |
| 30. | 1,1,1-Trichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.0 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 71-55-6 | 350 ppm (1900mg/m3/8H) | orl-rat 10300mg/kg |
| 31. | 1,2-Dibromo-3-chloropropane | 35161 | 112322 | 0.05 | 5.00 | 40016.5 | 2000 | NA | NA | 0.017 | NA | NA | 2000.3 | 22.9 | 96-12-8 | 0.001 ppm | orl-rat 170mg/kg |
| 32. | 1,2-Dibromoethane | 35161 | 112322 | 0.05 | 5.00 | 40024.8 | 2000 | NA | NA | 0.017 | NA | NA | 2000.7 | 22.9 | 106-93-4 | 20 ppm (8H) | orl-rat 108mg/kg |
| 33. | 1,2-Dichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40018.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 22.9 | 107-06-2 | 50 ppm (8H) | orl-rat 670mg/kg |
| 34. | 1,2-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40051.0 | 2000 | NA | NA | 0.017 | NA | NA | 2002.0 | 22.9 | 78-87-5 | 75 ppm (350mg/m3/8H) | orl-rat 1947mg/kg |
| 35. | 1,3-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40005.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 142-28-9 | N/A | unr-mus 3600mg/kg |
| 36. | 1,1-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40012.1 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 29.7 | 563-58-6 | N/A | N/A |
| 37. | cis-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40010.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.0 | 23.0 | 10061-01-5 | N/A | N/A |
| 38. | trans-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40017.6 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 23.0 | 10061-02-6 | N/A | N/A |
| 39. | Hexachloro-1,3-butadiene | 35161 | 112322 | 0.05 | 5.00 | 40021.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.6 | 29.7 | 87-68-3 | 0.02 ppm (0.24mg/m3/8H) | orl-rat 82mg/kg |
| 40. | 1,1,1,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40011.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 22.9 | 630-20-6 | N/A | orl-rat 670mg/kg |
| 41. | 1,1,2,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 79-34-5 | 5 ppm (35mg/m3/8H)(skin) | orl-rat 800mg/kg |
| 42. | 1,1,2-Trichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40006.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 23.0 | 79-00-5 | 10 ppm (45mg/m3/8H)(skin) | orl-rat 836mg/kg |
| 43. | Trichloroethene | 35161 | 112322 | 0.05 | 5.00 | 40029.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.9 | 22.9 | 79-01-6 | 50 ppm (270mg/m3/8H) | orl-mus 2402mg/kg |
| 44. | 1,2,3-Trichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 96-18-4 | 10 ppm (60mg/m3/8H) | orl-rat 149.8mg/kg |
| 45. | Benzene | 35162 | 050823 | 0.05 | 5.00 | 40005.0 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 71-43-2 | 1 ppm | orl-rat 4894mg/kg |
| 46. | Bromobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-86-1 | N/A | orl-rat 2699mg/kg |
| 47. | n-Butyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 104-51-8 | N/A | N/A |
| 48. | Ethyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-41-4 | 100 ppm (435mg/m3/8H) | orl-rat >2000mg/kg |
| 49. | p-Isopropyl toluene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 99-87-6 | N/A | orl-rat 4750mg/kg |
| 50. | Naphthalene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 91-20-3 | 10 ppm (50mg/m3/8H) | orl-rat 490mg/kg |
| 51. | Styrene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-42-5 | 100 ppm | orl-rat 5000mg/kg |
| 52. | Toluene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-88-3 | 200 ppm | orl-rat 5000mg/kg |
| 53. | 1,2,3-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 87-61-6 | N/A | ipr-mus 1390mg/kg |
| 54. | 1,2,4-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 120-82-1 | 5 ppm (CL) (40mg/m3) | orl-rat 756mg/kg |
| 55. | 1,2,4-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40001.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 95-63-6 | N/A | orl-rat 5g/kg |
| 56. | 1,3,5-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-67-8 | N/A | orl-rat 5000mg/kg |
| 57. | m-Xylene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-38-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |
| 58. | tert-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40001.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 98-06-6 | N/A | N/A |
| 59. | sec-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 135-98-8 | N/A | orl-rat 2240mg/kg |
| 60. | Chlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 108-90-7 | 75 ppm (350mg/m3/8H) | orl-rat 2290mg/kg |
| 61. | 2-Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40000.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 95-49-8 | 50 ppm (250mg/m3/8H) | orl-rat 3900mg/kg |
| 62. | 4-Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40003.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 106-43-4 | N/A | orl-rat 2100mg/kg |
| 63. | 1,2-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 95-50-1 | 50 ppm (300mg/m3) (CL) | orl-rat 500mg/kg |
| 64. | 1,3-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 541-73-1 | N/A | ipr-mus 1062mg/kg |
| 65. | 1,4-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 106-46-7 | 75 ppm (450mg/m3/8H) | orl-rat 500mg/kg |
| 66. | Isopropylbenzene | 35163 | 101923 | 0.05 | 5.00 | 40000.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 98-82-8 | 50 ppm (245mg/m3/8H) | orl-rat 1400mg/kg |
| 67. | n-Propylbenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 23.0 | 103-65-1 | N/A | orl-rat 8040mg/kg |
| 68. | o-Xylene | 35163 | 101923 | 0.05 | 5.00 | 40040.8 | 2000 | NA | NA | 0.017 | NA | NA | 2001.5 | 23.0 | 95-47-6 | 100 ppm (435mg/m3/8H) | ipr-mus 1364mg/kg |
| 69. | p-Xylene | 35163 | 101923 | 0.05 | 5.00 | 40000.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 106-42-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |

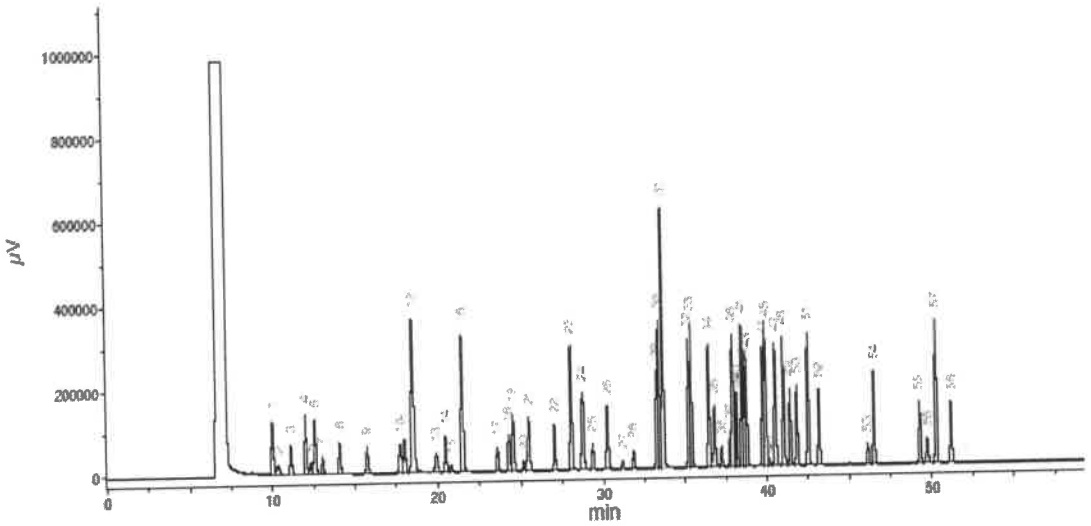
- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

## Run 16, "P95317 L021624 (2000µg/mL in MeOH)"

Run Length: 60.00 min, 35998 points at 10 points/second.
Created: Sat, Feb 17, 2024 at 8:56:46 AM.
Sampled: Sequence "021624-GC5M1", Method "GC5-M1".
Analyzed using Method "GC5-M1".

### Comments

GC5-M1 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min.,
Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min.
Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.),
Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C.
FID Signal = Edaq Channel 1
Standard injection = 0.5µL, Range=3




| Peak # | Name | FID RT (min.) |
|---|---|---|
| 1 | Ether | 9.97 |
| 2 | 1,1,2-Trichloro-1,2,3-trifluoroethane | 10.33 |
| 3 | 1,1-Dichloroethene | 11.10 |
| 4 | Acetonitrile | 12.00 |
| 5 | Iodomethane | 12.31 |
| 6 | Allyl chloride | 12.56 |
| 7 | Carbon disulfide/Methylene chloride | 13.04 |
| 8 | trans-1,2-Dichloroethene | 14.07 |
| 9 | 1,1-Dichloroethane | 15.74 |
| 10 | 2,2-Dichloropropane | 17.74 |
| 11 | cis-1,2-Dichloroethene | 18.00 |
| 12 | Methacrylonitrile/Methyl acrylate/Chloroform | 18.49 |
| 13 | Isobutanol/1,1,1-Trichloroethane | 18.91 |
| 14 | 1,1-Dichloropropene | 20.46 |
| 15 | Carbon tetrachloride | 20.79 |
| 16 | Benzene/1,2-Dichloroethane | 21.48 |
| 17 | Trichloroethene | 23.86 |
| 18 | 1,2-Dichloropropane | 24.26 |
| 19 | Methyl methacrylate | 24.62 |
| 20 | Bromodichloromethane | 25.13 |
| 21 | Dibromomethane/2-Nitropropane | 25.46 |
| 22 | cis-1,3-Dichloropropene | 27.07 |
| 23 | Toluene | 28.09 |
| 24 | Ethyl methacrylate/trans-1,3-Dichloropropene | 28.73 |
| 25 | 1,1,2-Trichloroethane | 29.34 |
| 26 | Tetrachloroethane/1,3-Dichloropropane | 30.34 |
| 27 | Dibromochloromethane | 31.16 |
| 28 | 1,2-Dibromoethane | 31.84 |
| 29 | Chlorobenzene | 33.26 |
| 30 | Ethylbenzene/1,1,1,2-Tetrachloroethane | 33.40 |
| 31 | m-Xylene/p-Xylene | 33.85 |
| 32 | o-Xylene | 35.33 |
| 33 | Styrene | 35.50 |
| 34 | Isopropylbenzene/Bromoform | 35.48 |
| 35 | cis-1,4-Dichloro-2-butene | 36.80 |
| 36 | 1,1,2,2-Tetrachloroethane | 37.23 |
| 37 | 1,2,3-Trichloropropane | 37.77 |
| 38 | n-Propylbenzene | 37.92 |
| 39 | trans-1,4-Dichloro-2-butene | 38.05 |
| 40 | Bromobenzene | 38.14 |
| 41 | 1,3,5-Trimethylbenzene | 38.50 |
| 42 | 2-Chlorotoluene | 38.62 |
| 43 | 4-Chlorotoluene | 38.77 |
| 44 | tert-Butylbenzene | 39.76 |
| 45 | 1,2,4-Trimethylbenzene | 39.91 |
| 46 | Pentachloroethane | 40.17 |
| 47 | sec-Butylbenzene | 40.52 |
| 48 | p-Isopropyltoluene | 41.02 |
| 49 | 1,3-Dichlorobenzene | 41.42 |
| 50 | 1,4-Dichlorobenzene | 41.63 |
| 51 | n-Butylbenzene | 42.02 |
| 52 | 1,2-Dichlorobenzene | 42.18 |
| 53 | 1,2-Dibromo-3-chloropropane | 46.12 |
| 54 | Nitrobenzene | 46.58 |
| 55 | 1,2,4-Trichlorobenzene | 49.26 |
| 56 | Hexachlorobutadiene | 49.72 |
| 57 | Naphthalene | 50.46 |
| 58 | 1,2,3-Trichlorobenzene | 51.16 |

**Absolute Standards Inc.**

PO Box 5585
Hamden, CT 06518-0585

Phone: 203-281-2917
FAX: 203-281-2922

**Safety Data Sheet (SDS)** GHS/OSHA Compliant

## Section I Product and Company Identification

**IDENTITY** **ANALYTICAL STANDARD DISSOLVED IN METHANOL**

| | | | |
|---|---|---|---|
| Manufacturer's Name | ABSOLUTE STANDARDS INC | Emergency Telephone USA & CANADA | **1-800-535-5053** |
| Address | 44 Rossotto Dr. | Emergency Telephone International | **1-352-323-3500** |
| | Hamden CT, 06514 | Date Prepared/Revised | January 1, 2024 |

## Section II - Hazards Identification

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

| | | | |
|---|---|---|---|
| **H225** | **Highly Flammable Liquid and Vapor** | **H301, 311, 331** | **Toxic if swallowed, skin contact, inhaled** |
| **H370** | **Cause damage to organs** | **H351** | **Suspected of causing cancer** |
| **P271** | **Use in ventilated area** | **P280** | **Use gloves, eye protection/face sheild** |
| **P302,332** | **If on skin, wash with soap and water** | **P305,351,338** | **If in eyes, remove contacts, rinse with water** |

**Signal Word: DANGER**

## Section III - Composition

| Components (Specific Chemical Identity; Common Name(s)) | | | % (optional) |
|---|---|---|---|
| Methanol | METHYL ALCOHOL | CAS#: 67-56-1 | > 97 |

**See Certified Weight Report For Other Analytes Present At Trace Quantities.**

**INTENDED USE: REFERENCE MATERIAL**

## Section IV. FIRST AID MEASURES

| | |
|---|---|
| **General advice** | Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. |
| **If inhaled** | If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| **In case of skin contact** | Wash with soap and water. Consult a physician. |
| **In case of eye contact** | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. |
| **If swallowed** | Do NOT induce vomiting. Rinse mouth with water. Consult a physician. |

## Section V. FIREFIGHTING MEASURES

| | |
|---|---|
| **Flammability** | Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking. |
| **Suitable extinguishing media** | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| **Protective equipment for fire** | Wear self contained breathing apparatus for fire fighting if necessary. |

## Section VI. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions | Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations. |
| Environmental precautions | Prevent further leakage or spillage if safe to do so. Do not let product enter drains. |
| Clean up | Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). |

## Section VII. HANDLING AND STORAGE

| | |
|---|---|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. |
| Storage Conditions | Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. |

## Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Methanol 67-56-1 TWA 200 ppm
Skin notation TWA 200 ppm
Potential for skin absorption , ingestion and inhalation.
Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.
Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

## Section IX - Physical/Chemical Characteristics

| | | | |
|---|---|---|---|
| Boiling Point | 65°C | Specific Gravity (H2O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |

Solubility in Water COMPLETE

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

## Section X. STABILITY AND REACTIVITY

Chemical stability Stable under recommended storage conditions.
Possibility of hazardous reactions Vapours may form explosive mixture with air.
Conditions to avoid Heat, flames, sparks, extreme temperature and sunlight.
Materials to avoid Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
Hazardous decomposition products formed under fire conditions. - Carbon oxides

## Section XI. TOXICOLOGICAL INFORMATION

LD50 Oral - rat - 5,628 mg/kg
LC50 Inhalation - rat - 4 h - 64000 ppm
LD50 Dermal - rabbit - 15,800 mg/kg
Toxic if absorbed through skin. Causes skin irritation.
Eye damage/eye irritation
Toxic if inhaled. Causes respiratory tract irritation.
Toxic if swallowed.

## Section XII. ECOLOGICAL INFORMATION FOR REPORTABLE QUANTITY OF 5000 lbs.

| | |
|---|---|
| LC50 | 15,400 mg/l - 96 h |
| EC50 | 24,500.00 mg/l - 48 h |
| EC100 | 10,000.00 mg/l - 24 h |

## Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

## Section XIV. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

IATA
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

## Section XV. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## Section XVI. Misc. INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by trained personnel, or supervised by a person trained in chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

**Absolute Standards, Inc.**
800-368-1131
www.absolutestandards.com

**Certified Reference Material CRM**

Rec 09/17/24

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT

Part Number: 95317
Lot Number: 021624
Description: Universal VOA Megamix
69 components
Expiration Date: 021627
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 2000
NIST Test ID#: 6UTB

Solvent(s): Lot#
Methanol EG359-USQ12

| | | |
|---|---|---|
| Formulated By: | Prashant Chauhan | 021624 DATE |
| Reviewed By: | Pedro L. Rentas | 021624 DATE |

Weight(s) shown below were combined and diluted to (mL): 100.0 | 5E-05 Balance Uncertainty | 0.021 Flask Uncertainty

| | Compound | (RM#) Part Number | Lot Number | Dil. Factor | Initial Vol. (mL) | Initial Conc.(ug/mL) | Nominal Conc (µg/mL) | Purity (%) | Purity Uncertainty | Uncertainty Pipette (mL) | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Acetonitrile | (0324) | 021644 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20020 | 2001.3 | 8.1 | 75-05-8 | 40 ppm (70mg/m3/8H) | orl-rat 2460mg/kg |
| 2. | Allyl chloride (3-Chloropropene) | (0325) | 102396 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 107-05-1 | 1 ppm (3mg/m3/8H) | orl-rat 700mg/kg |
| 3. | Carbon disulphide | (0060) | MKCR6561 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20023 | 2001.6 | 8.1 | 75-15-0 | 4 ppm (12mg/m3) (skin) | orl-rat 1200mg/kg |
| 4. | cis-1,4-Dichloro-2-butene | (1196) | 14718EF | NA | NA | NA | 2000 | 95 | 0.2 | NA | 0.21058 | 0.21069 | 2001.1 | 8.5 | 1476-11-5 | N/A | N/A |
| 5. | trans-1,4-Dichloro-2-butene | (0466) | MKBP6041V | NA | NA | NA | 2000 | 96.5 | 0.2 | NA | 0.20731 | 0.20748 | 2001.7 | 8.4 | 110-57-6 | N/A | N/A |
| 6. | Diethyl ether | (0153) | IK18CAS0000 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 60-29-7 | N/A | N/A |
| 7. | Ethyl methacrylate | (0381) | 06128PX | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20230 | 2002.3 | 8.2 | 97-63-2 | N/A | orl-rat 14800mg/kg |
| 8. | Iodomethane | (0489) | SHBF8718V | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20121 | 2001.5 | 8.2 | 74-88-4 | 5 ppm(28mg/m3/8H)(skin) | orl-rat 76mg/kg |
| 9. | 2-Methyl-1-propanol | (0445) | 15241EB | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20120 | 2001.4 | 8.1 | 78-83-1 | 50 ppm (150mg/m3/8H) | orl-rat 2460mg/kg |
| 10. | Methacrylonitrile | (0442) | 00427ET | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 126-98-7 | 1 ppm (3mg/m3/8H)(skin) | orl-rat 120mg/kg |
| 11. | Methyl acrylate | (1075) | SHBK0679 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 96-33-3 | 10 ppm(35mg/m3/8H)(skin) | orl-rat 277mg/kg |
| 12. | Methyl methacrylate | (0404) | MKBW6137V | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20041 | 2001.6 | 8.1 | 80-62-6 | 100 ppm (410mg/m3/8H) | orl-rat 7872mg/kg |
| 13. | Nitrobenzene | (0228) | 01213TV | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20220 | 2001.3 | 8.2 | 98-95-3 | 1 ppm (5mg/m3/8H)(skin) | orl-rat 780mg/kg |
| 14. | 2-Nitropropane | (0461) | 14002JX | NA | NA | NA | 2000 | 97.3 | 0.2 | NA | 0.20560 | 0.20577 | 2001.6 | 8.3 | 79-46-9 | 10 ppm (35mg/m3/8H) | orl-rat 720mg/kg |
| 15. | Pentachloroethane | (0450) | HGA01 | NA | NA | NA | 2000 | 98 | 0.2 | NA | 0.20413 | 0.20430 | 2001.6 | 8.3 | 76-01-7 | N/A | N/A |
| 16. | 1,1,2-Trichlorotrifluoroethane | (0474) | 18930 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20225 | 2001.8 | 8.2 | 76-13-1 | 1000 ppm (7600mg/m3/8H) | orl-rat 43g/kg |
| 17. | Bromodichloromethane | 35171 | 101623 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-27-4 | N/A | orl-rat 916mg/kg |
| 18. | Dibromochloromethane | 35171 | 101623 | 0.05 | 5.00 | 40002.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 124-48-1 | N/A | orl-rat 848mg/kg |
| 19. | cis-1,2-Dichloroethene | 35171 | 101623 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 156-59-2 | N/A | N/A |
| 20. | trans-1,2-Dichloroethene | 35171 | 101623 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 156-60-5 | N/A | orl-rat 1235mg/kg |
| 21. | Methylene chloride | 35171 | 101623 | 0.05 | 5.00 | 40002.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-09-2 | 500 ppm | orl-rat 820mg/kg |
| 22. | 1,1-Dichloroethene | 32251 | 102023 | 0.10 | 10.00 | 20001.6 | 2000 | NA | NA | 0.042 | NA | NA | 1999.7 | 20.4 | 75-35-4 | 1 ppm (4mg/m3/8H) | orl-rat 200mg/kg |
| 23. | Bromoform | 95321 | 020724 | 0.10 | 10.00 | 20003.2 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-25-2 | 0.5 ppm (5mg/m3) (skin) | orl-rat 933mg/kg |
| 24. | Carbon tetrachloride | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 56-23-5 | 2 ppm (12.6mg/m3/8H) | orl-rat 2350mg/kg |
| 25. | Chloroform | 95321 | 020724 | 0.10 | 10.00 | 20024.0 | 2000 | NA | NA | 0.042 | NA | NA | 2001.9 | 20.5 | 67-66-3 | 50 ppm (240mg/m3) (CL) | orl-rat 908mg/kg |
| 26. | Dibromomethane | 95321 | 020724 | 0.10 | 10.00 | 20002.9 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 74-95-3 | N/A | orl-rat 108mg/kg |
| 27. | 1,1-Dichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-34-3 | 100 ppm | orl-rat 725mg/kg |
| 28. | 2,2-Dichloropropane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 594-20-7 | N/A | N/A |
| 29. | Tetrachloroethene | 95321 | 020724 | 0.10 | 10.00 | 20201.1 | 2000 | NA | NA | 0.042 | NA | NA | 2019.6 | 20.8 | 127-18-4 | 25 ppm (170mg/m3/8H)(final) | orl-rat 2629mg/kg |
| 30. | 1,1,1-Trichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.0 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 71-55-6 | 350 ppm (1900mg/m3/8H) | orl-rat 10300mg/kg |
| 31. | 1,2-Dibromo-3-chloropropane | 35161 | 112322 | 0.05 | 5.00 | 40016.5 | 2000 | NA | NA | 0.017 | NA | NA | 2000.3 | 22.9 | 96-12-8 | 0.001 ppm | orl-rat 170mg/kg |
| 32. | 1,2-Dibromoethane | 35161 | 112322 | 0.05 | 5.00 | 40024.8 | 2000 | NA | NA | 0.017 | NA | NA | 2000.7 | 22.9 | 106-93-4 | 20 ppm (8H) | orl-rat 108mg/kg |
| 33. | 1,2-Dichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40018.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 22.9 | 107-06-2 | 50 ppm (8H) | orl-rat 670mg/kg |
| 34. | 1,2-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40051.0 | 2000 | NA | NA | 0.017 | NA | NA | 2002.0 | 22.9 | 78-87-5 | 75 ppm (350mg/m3/8H) | orl-rat 1947mg/kg |
| 35. | 1,3-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40005.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 142-28-9 | N/A | unr-mus 3600mg/kg |
| 36. | 1,1-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40012.1 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 29.7 | 563-58-6 | N/A | N/A |
| 37. | cis-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40010.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.0 | 23.0 | 10061-01-5 | N/A | N/A |
| 38. | trans-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40017.6 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 23.0 | 10061-02-6 | N/A | N/A |
| 39. | Hexachloro-1,3-butadiene | 35161 | 112322 | 0.05 | 5.00 | 40021.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.6 | 29.7 | 87-68-3 | 0.02 ppm (0.24mg/m3/8H) | orl-rat 82mg/kg |
| 40. | 1,1,1,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40011.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 22.9 | 630-20-6 | N/A | orl-rat 670mg/kg |
| 41. | 1,1,2,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 79-34-5 | 5 ppm (35mg/m3/8H)(skin) | orl-rat 800mg/kg |
| 42. | 1,1,2-Trichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40006.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 23.0 | 79-00-5 | 10 ppm (45mg/m3/8H)(skin) | orl-rat 836mg/kg |
| 43. | Trichloroethene | 35161 | 112322 | 0.05 | 5.00 | 40029.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.9 | 22.9 | 79-01-6 | 50 ppm (270mg/m3/8H) | orl-mus 2402mg/kg |
| 44. | 1,2,3-Trichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 96-18-4 | 10 ppm (60mg/m3/8H) | orl-rat 149.8mg/kg |
| 45. | Benzene | 35162 | 050823 | 0.05 | 5.00 | 40005.0 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 71-43-2 | 1 ppm | orl-rat 4894mg/kg |
| 46. | Bromobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-86-1 | N/A | orl-rat 2699mg/kg |
| 47. | n-Butyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 104-51-8 | N/A | N/A |
| 48. | Ethyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-41-4 | 100 ppm (435mg/m3/8H) | orl-rat >2000mg/kg |
| 49. | p-Isopropyl toluene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 99-87-6 | N/A | orl-rat 4750mg/kg |
| 50. | Naphthalene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 91-20-3 | 10 ppm (50mg/m3/8H) | orl-rat 490mg/kg |
| 51. | Styrene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-42-5 | 100 ppm | orl-rat 5000mg/kg |
| 52. | Toluene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-88-3 | 200 ppm | orl-rat 5000mg/kg |
| 53. | 1,2,3-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 87-61-6 | N/A | ipr-mus 1390mg/kg |
| 54. | 1,2,4-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 120-82-1 | 5 ppm (CL) (40mg/m3) | orl-rat 756mg/kg |
| 55. | 1,2,4-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40001.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 95-63-6 | N/A | orl-rat 5g/kg |
| 56. | 1,3,5-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-67-8 | N/A | orl-rat 5000mg/kg |
| 57. | m-Xylene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-38-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |
| 58. | tert-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40001.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 98-06-6 | N/A | N/A |
| 59. | sec-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 135-98-8 | N/A | orl-rat 2240mg/kg |
| 60. | Chlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 108-90-7 | 75 ppm (350mg/m3/8H) | orl-rat 2290mg/kg |
| 61. | 2-Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40000.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 95-49-8 | 50 ppm (250mg/m3/8H) | orl-rat 3900mg/kg |
| 62. | 4-Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40003.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 106-43-4 | N/A | orl-rat 2100mg/kg |
| 63. | 1,2-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 95-50-1 | 50 ppm (300mg/m3) (CL) | orl-rat 500mg/kg |
| 64. | 1,3-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 541-73-1 | N/A | ipr-mus 1062mg/kg |
| 65. | 1,4-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 106-46-7 | 75 ppm (450mg/m3/8H) | orl-rat 500mg/kg |
| 66. | Isopropylbenzene | 35163 | 101923 | 0.05 | 5.00 | 40000.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 98-82-8 | 50 ppm (245mg/m3/8H) | orl-rat 1400mg/kg |
| 67. | n-Propylbenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 23.0 | 103-65-1 | N/A | orl-rat 8040mg/kg |
| 68. | o-Xylene | 35163 | 101923 | 0.05 | 5.00 | 40040.8 | 2000 | NA | NA | 0.017 | NA | NA | 2001.5 | 23.0 | 95-47-6 | 100 ppm (435mg/m3/8H) | ipr-mus 1364mg/kg |
| 69. | p-Xylene | 35163 | 101923 | 0.05 | 5.00 | 40000.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 106-42-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |

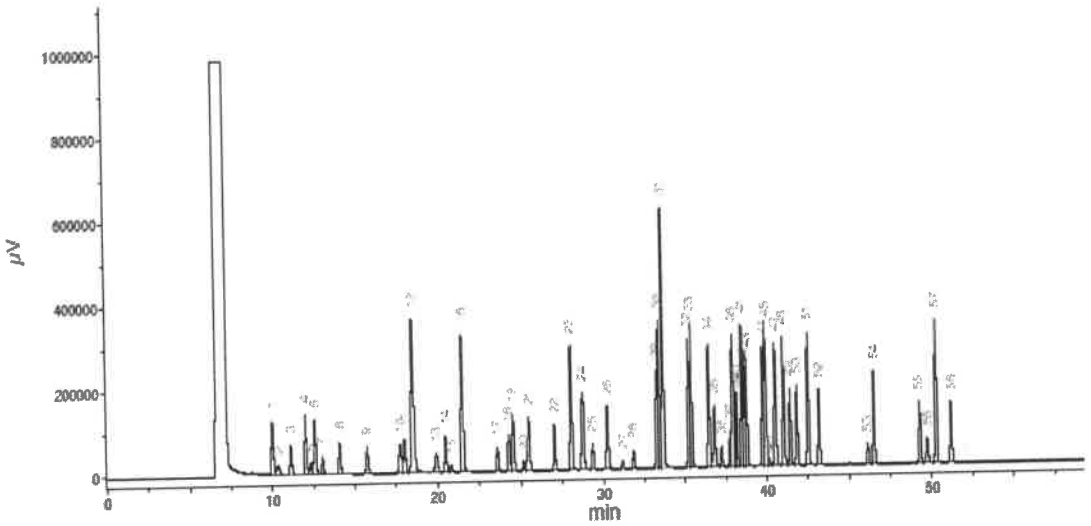
- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

## Run 16, "P95317 L021624 (2000µg/mL in MeOH)"

Run Length: 60.00 min, 35998 points at 10 points/second.
Created: Sat, Feb 17, 2024 at 8:56:46 AM.
Sampled: Sequence "021624-GC5M1", Method "GC5-M1".
Analyzed using Method "GC5-M1".

### Comments

GC5-M1 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min.,
Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min.
Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.),
Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C.
FID Signal = Edaq Channel 1
Standard injection = 0.5µL, Range=3




| Peak # | Name | FID RT (min.) |
|---|---|---|
| 1 | Ether | 9.97 |
| 2 | 1,1,2-Trichloro-1,2,3-trifluoroethane | 10.33 |
| 3 | 1,1-Dichloroethene | 11.10 |
| 4 | Acetonitrile | 12.00 |
| 5 | Iodomethane | 12.31 |
| 6 | Allyl chloride | 12.56 |
| 7 | Carbon disulfide/Methylene chloride | 13.04 |
| 8 | trans-1,2-Dichloroethene | 14.07 |
| 9 | 1,1-Dichloroethane | 15.74 |
| 10 | 2,2-Dichloropropane | 17.74 |
| 11 | cis-1,2-Dichloroethene | 18.00 |
| 12 | Methacrylonitrile/Methyl acrylate/Chloroform | 18.49 |
| 13 | Isobutanol/1,1,1-Trichloroethane | 18.91 |
| 14 | 1,1-Dichloropropene | 20.46 |
| 15 | Carbon tetrachloride | 20.79 |
| 16 | Benzene/1,2-Dichloroethane | 21.48 |
| 17 | Trichloroethene | 23.86 |
| 18 | 1,2-Dichloropropane | 24.26 |
| 19 | Methyl methacrylate | 24.62 |
| 20 | Bromodichloromethane | 25.13 |
| 21 | Dibromomethane/2-Nitropropane | 25.46 |
| 22 | cis-1,3-Dichloropropene | 27.07 |
| 23 | Toluene | 28.09 |
| 24 | Ethyl methacrylate/trans-1,3-Dichloropropene | 28.73 |
| 25 | 1,1,2-Trichloroethane | 29.34 |
| 26 | Tetrachloroethane/1,3-Dichloropropane | 30.34 |
| 27 | Dibromochloromethane | 31.16 |
| 28 | 1,2-Dibromoethane | 31.84 |
| 29 | Chlorobenzene | 33.26 |
| 30 | Ethylbenzene/1,1,1,2-Tetrachloroethane | 33.40 |
| 31 | m-Xylene/p-Xylene | 33.85 |
| 32 | o-Xylene | 35.33 |
| 33 | Styrene | 35.50 |
| 34 | Isopropylbenzene/Bromoform | 35.48 |
| 35 | cis-1,4-Dichloro-2-butene | 36.80 |
| 36 | 1,1,2,2-Tetrachloroethane | 37.23 |
| 37 | 1,2,3-Trichloropropane | 37.77 |
| 38 | n-Propylbenzene | 37.92 |
| 39 | trans-1,4-Dichloro-2-butene | 38.05 |
| 40 | Bromobenzene | 38.14 |
| 41 | 1,3,5-Trimethylbenzene | 38.50 |
| 42 | 2-Chlorotoluene | 38.62 |
| 43 | 4-Chlorotoluene | 38.77 |
| 44 | tert-Butylbenzene | 39.76 |
| 45 | 1,2,4-Trimethylbenzene | 39.91 |
| 46 | Pentachloroethane | 40.17 |
| 47 | sec-Butylbenzene | 40.52 |
| 48 | p-Isopropyltoluene | 41.02 |
| 49 | 1,3-Dichlorobenzene | 41.42 |
| 50 | 1,4-Dichlorobenzene | 41.63 |
| 51 | n-Butylbenzene | 42.02 |
| 52 | 1,2-Dichlorobenzene | 42.18 |
| 53 | 1,2-Dibromo-3-chloropropane | 46.12 |
| 54 | Nitrobenzene | 46.58 |
| 55 | 1,2,4-Trichlorobenzene | 49.26 |
| 56 | Hexachlorobutadiene | 49.72 |
| 57 | Naphthalene | 50.46 |
| 58 | 1,2,3-Trichlorobenzene | 51.16 |

**Absolute Standards Inc.**

PO Box 5585
Hamden, CT 06518-0585

Phone: 203-281-2917
FAX: 203-281-2922

**Safety Data Sheet (SDS)** GHS/OSHA Compliant

## Section I Product and Company Identification

**IDENTITY** **ANALYTICAL STANDARD DISSOLVED IN METHANOL**

| | | | |
|---|---|---|---|
| Manufacturer's Name | ABSOLUTE STANDARDS INC | Emergency Telephone USA & CANADA | **1-800-535-5053** |
| Address | 44 Rossotto Dr. | Emergency Telephone International | **1-352-323-3500** |
| | Hamden CT, 06514 | Date Prepared/Revised | January 1, 2024 |

## Section II - Hazards Identification

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

| | | | |
|---|---|---|---|
| **H225** | **Highly Flammable Liquid and Vapor** | **H301, 311, 331** | **Toxic if swallowed, skin contact, inhaled** |
| **H370** | **Cause damage to organs** | **H351** | **Suspected of causing cancer** |
| **P271** | **Use in ventilated area** | **P280** | **Use gloves, eye protection/face sheild** |
| **P302,332** | **If on skin, wash with soap and water** | **P305,351,338** | **If in eyes, remove contacts, rinse with water** |

**Signal Word: DANGER**

## Section III - Composition

| Components (Specific Chemical Identity; Common Name(s)) | | | % (optional) |
|---|---|---|---|
| Methanol | METHYL ALCOHOL | CAS#: 67-56-1 | > 97 |

**See Certified Weight Report For Other Analytes Present At Trace Quantities.**

**INTENDED USE: REFERENCE MATERIAL**

## Section IV. FIRST AID MEASURES

| | |
|---|---|
| **General advice** | Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. |
| **If inhaled** | If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| **In case of skin contact** | Wash with soap and water. Consult a physician. |
| **In case of eye contact** | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. |
| **If swallowed** | Do NOT induce vomiting. Rinse mouth with water. Consult a physician. |

## Section V. FIREFIGHTING MEASURES

| | |
|---|---|
| **Flammability** | Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking. |
| **Suitable extinguishing media** | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| **Protective equipment for fire** | Wear self contained breathing apparatus for fire fighting if necessary. |

## Section VI. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions | Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations. |
| Environmental precautions | Prevent further leakage or spillage if safe to do so. Do not let product enter drains. |
| Clean up | Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). |

## Section VII. HANDLING AND STORAGE

| | |
|---|---|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. |
| Storage Conditions | Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. |

## Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Methanol 67-56-1 TWA 200 ppm
Skin notation TWA 200 ppm
Potential for skin absorption , ingestion and inhalation.
Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.
Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

## Section IX - Physical/Chemical Characteristics

| | | | |
|---|---|---|---|
| Boiling Point | 65°C | Specific Gravity (H2O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |

Solubility in Water COMPLETE

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

## Section X. STABILITY AND REACTIVITY

Chemical stability Stable under recommended storage conditions.
Possibility of hazardous reactions Vapours may form explosive mixture with air.
Conditions to avoid Heat, flames, sparks, extreme temperature and sunlight.
Materials to avoid Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
Hazardous decomposition products formed under fire conditions. - Carbon oxides

## Section XI. TOXICOLOGICAL INFORMATION

LD50 Oral - rat - 5,628 mg/kg
LC50 Inhalation - rat - 4 h - 64000 ppm
LD50 Dermal - rabbit - 15,800 mg/kg
Toxic if absorbed through skin. Causes skin irritation.
Eye damage/eye irritation
Toxic if inhaled. Causes respiratory tract irritation.
Toxic if swallowed.

## Section XII. ECOLOGICAL INFORMATION FOR REPORTABLE QUANTITY OF 5000 lbs.

| | |
|---|---|
| LC50 | 15,400 mg/l - 96 h |
| EC50 | 24,500.00 mg/l - 48 h |
| EC100 | 10,000.00 mg/l - 24 h |

## Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

## Section XIV. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

IATA
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

## Section XV. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## Section XVI. Misc. INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by trained personnel, or supervised by a person trained in chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

**Absolute Standards, Inc.**
800-368-1131
www.absolutestandards.com

**Certified Reference Material CRM**

Rec 09/17/24

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT

Part Number: 95317
Lot Number: 021624
Description: Universal VOA Megamix
69 components
Expiration Date: 021627
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 2000
NIST Test ID#: 6UTB

Solvent(s): Lot#
Methanol EG359-USQ12

| | | |
|---|---|---|
| Formulated By: | Prashant Chauhan | 021624 DATE |
| Reviewed By: | Pedro L. Rentas | 021624 DATE |

Weight(s) shown below were combined and diluted to (mL): 100.0 | 5E-05 Balance Uncertainty | 0.021 Flask Uncertainty

| | Compound | (RM#) Part Number | Lot Number | Dil. Factor | Initial Vol. (mL) | Initial Conc.(ug/mL) | Nominal Conc (µg/mL) | Purity (%) | Purity Uncertainty | Uncertainty Pipette (mL) | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Acetonitrile | (0324) | 021644 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20020 | 2001.3 | 8.1 | 75-05-8 | 40 ppm (70mg/m3/8H) | orl-rat 2460mg/kg |
| 2. | Allyl chloride (3-Chloropropene) | (0325) | 102396 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 107-05-1 | 1 ppm (3mg/m3/8H) | orl-rat 700mg/kg |
| 3. | Carbon disulphide | (0060) | MKCR6561 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20023 | 2001.6 | 8.1 | 75-15-0 | 4 ppm (12mg/m3) (skin) | orl-rat 1200mg/kg |
| 4. | cis-1,4-Dichloro-2-butene | (1196) | 14718EF | NA | NA | NA | 2000 | 95 | 0.2 | NA | 0.21058 | 0.21069 | 2001.1 | 8.5 | 1476-11-5 | N/A | N/A |
| 5. | trans-1,4-Dichloro-2-butene | (0466) | MKBP6041V | NA | NA | NA | 2000 | 96.5 | 0.2 | NA | 0.20731 | 0.20748 | 2001.7 | 8.4 | 110-57-6 | N/A | N/A |
| 6. | Diethyl ether | (0153) | IK18CAS0000 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 60-29-7 | N/A | N/A |
| 7. | Ethyl methacrylate | (0381) | 06128PX | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20230 | 2002.3 | 8.2 | 97-63-2 | N/A | orl-rat 14800mg/kg |
| 8. | Iodomethane | (0489) | SHBF8718V | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20121 | 2001.5 | 8.2 | 74-88-4 | 5 ppm(28mg/m3/8H)(skin) | orl-rat 76mg/kg |
| 9. | 2-Methyl-1-propanol | (0445) | 15241EB | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20120 | 2001.4 | 8.1 | 78-83-1 | 50 ppm (150mg/m3/8H) | orl-rat 2460mg/kg |
| 10. | Methacrylonitrile | (0442) | 00427ET | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 126-98-7 | 1 ppm (3mg/m3/8H)(skin) | orl-rat 120mg/kg |
| 11. | Methyl acrylate | (1075) | SHBK0679 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 96-33-3 | 10 ppm(35mg/m3/8H)(skin) | orl-rat 277mg/kg |
| 12. | Methyl methacrylate | (0404) | MKBW6137V | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20041 | 2001.6 | 8.1 | 80-62-6 | 100 ppm (410mg/m3/8H) | orl-rat 7872mg/kg |
| 13. | Nitrobenzene | (0228) | 01213TV | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20220 | 2001.3 | 8.2 | 98-95-3 | 1 ppm (5mg/m3/8H)(skin) | orl-rat 780mg/kg |
| 14. | 2-Nitropropane | (0461) | 14002JX | NA | NA | NA | 2000 | 97.3 | 0.2 | NA | 0.20560 | 0.20577 | 2001.6 | 8.3 | 79-46-9 | 10 ppm (35mg/m3/8H) | orl-rat 720mg/kg |
| 15. | Pentachloroethane | (0450) | HGA01 | NA | NA | NA | 2000 | 98 | 0.2 | NA | 0.20413 | 0.20430 | 2001.6 | 8.3 | 76-01-7 | N/A | N/A |
| 16. | 1,1,2-Trichlorotrifluoroethane | (0474) | 18930 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20225 | 2001.8 | 8.2 | 76-13-1 | 1000 ppm (7600mg/m3/8H) | orl-rat 43g/kg |
| 17. | Bromodichloromethane | 35171 | 101623 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-27-4 | N/A | orl-rat 916mg/kg |
| 18. | Dibromochloromethane | 35171 | 101623 | 0.05 | 5.00 | 40002.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 124-48-1 | N/A | orl-rat 848mg/kg |
| 19. | cis-1,2-Dichloroethene | 35171 | 101623 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 156-59-2 | N/A | N/A |
| 20. | trans-1,2-Dichloroethene | 35171 | 101623 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 156-60-5 | N/A | orl-rat 1235mg/kg |
| 21. | Methylene chloride | 35171 | 101623 | 0.05 | 5.00 | 40002.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-09-2 | 500 ppm | orl-rat 820mg/kg |
| 22. | 1,1-Dichloroethene | 32251 | 102023 | 0.10 | 10.00 | 20001.6 | 2000 | NA | NA | 0.042 | NA | NA | 1999.7 | 20.4 | 75-35-4 | 1 ppm (4mg/m3/8H) | orl-rat 200mg/kg |
| 23. | Bromoform | 95321 | 020724 | 0.10 | 10.00 | 20003.2 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-25-2 | 0.5 ppm (5mg/m3) (skin) | orl-rat 933mg/kg |
| 24. | Carbon tetrachloride | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 56-23-5 | 2 ppm (12.6mg/m3/8H) | orl-rat 2350mg/kg |
| 25. | Chloroform | 95321 | 020724 | 0.10 | 10.00 | 20024.0 | 2000 | NA | NA | 0.042 | NA | NA | 2001.9 | 20.5 | 67-66-3 | 50 ppm (240mg/m3) (CL) | orl-rat 908mg/kg |
| 26. | Dibromomethane | 95321 | 020724 | 0.10 | 10.00 | 20002.9 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 74-95-3 | N/A | orl-rat 108mg/kg |
| 27. | 1,1-Dichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-34-3 | 100 ppm | orl-rat 725mg/kg |
| 28. | 2,2-Dichloropropane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 594-20-7 | N/A | N/A |
| 29. | Tetrachloroethene | 95321 | 020724 | 0.10 | 10.00 | 20201.1 | 2000 | NA | NA | 0.042 | NA | NA | 2019.6 | 20.8 | 127-18-4 | 25 ppm (170mg/m3/8H)(final) | orl-rat 2629mg/kg |
| 30. | 1,1,1-Trichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.0 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 71-55-6 | 350 ppm (1900mg/m3/8H) | orl-rat 10300mg/kg |
| 31. | 1,2-Dibromo-3-chloropropane | 35161 | 112322 | 0.05 | 5.00 | 40016.5 | 2000 | NA | NA | 0.017 | NA | NA | 2000.3 | 22.9 | 96-12-8 | 0.001 ppm | orl-rat 170mg/kg |
| 32. | 1,2-Dibromoethane | 35161 | 112322 | 0.05 | 5.00 | 40024.8 | 2000 | NA | NA | 0.017 | NA | NA | 2000.7 | 22.9 | 106-93-4 | 20 ppm (8H) | orl-rat 108mg/kg |
| 33. | 1,2-Dichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40018.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 22.9 | 107-06-2 | 50 ppm (8H) | orl-rat 670mg/kg |
| 34. | 1,2-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40051.0 | 2000 | NA | NA | 0.017 | NA | NA | 2002.0 | 22.9 | 78-87-5 | 75 ppm (350mg/m3/8H) | orl-rat 1947mg/kg |
| 35. | 1,3-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40005.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 142-28-9 | N/A | unr-mus 3600mg/kg |
| 36. | 1,1-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40012.1 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 29.7 | 563-58-6 | N/A | N/A |
| 37. | cis-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40010.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.0 | 23.0 | 10061-01-5 | N/A | N/A |
| 38. | trans-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40017.6 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 23.0 | 10061-02-6 | N/A | N/A |
| 39. | Hexachloro-1,3-butadiene | 35161 | 112322 | 0.05 | 5.00 | 40021.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.6 | 29.7 | 87-68-3 | 0.02 ppm (0.24mg/m3/8H) | orl-rat 82mg/kg |
| 40. | 1,1,1,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40011.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 22.9 | 630-20-6 | N/A | orl-rat 670mg/kg |
| 41. | 1,1,2,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 79-34-5 | 5 ppm (35mg/m3/8H)(skin) | orl-rat 800mg/kg |
| 42. | 1,1,2-Trichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40006.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 23.0 | 79-00-5 | 10 ppm (45mg/m3/8H)(skin) | orl-rat 836mg/kg |
| 43. | Trichloroethene | 35161 | 112322 | 0.05 | 5.00 | 40029.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.9 | 22.9 | 79-01-6 | 50 ppm (270mg/m3/8H) | orl-mus 2402mg/kg |
| 44. | 1,2,3-Trichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 96-18-4 | 10 ppm (60mg/m3/8H) | orl-rat 149.8mg/kg |
| 45. | Benzene | 35162 | 050823 | 0.05 | 5.00 | 40005.0 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 71-43-2 | 1 ppm | orl-rat 4894mg/kg |
| 46. | Bromobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-86-1 | N/A | orl-rat 2699mg/kg |
| 47. | n-Butyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 104-51-8 | N/A | N/A |
| 48. | Ethyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-41-4 | 100 ppm (435mg/m3/8H) | orl-rat >2000mg/kg |
| 49. | p-Isopropyl toluene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 99-87-6 | N/A | orl-rat 4750mg/kg |
| 50. | Naphthalene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 91-20-3 | 10 ppm (50mg/m3/8H) | orl-rat 490mg/kg |
| 51. | Styrene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-42-5 | 100 ppm | orl-rat 5000mg/kg |
| 52. | Toluene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-88-3 | 200 ppm | orl-rat 5000mg/kg |
| 53. | 1,2,3-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 87-61-6 | N/A | ipr-mus 1390mg/kg |
| 54. | 1,2,4-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 120-82-1 | 5 ppm (CL) (40mg/m3) | orl-rat 756mg/kg |
| 55. | 1,2,4-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40001.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 95-63-6 | N/A | orl-rat 5g/kg |
| 56. | 1,3,5-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-67-8 | N/A | orl-rat 5000mg/kg |
| 57. | m-Xylene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-38-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |
| 58. | tert-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40001.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 98-06-6 | N/A | N/A |
| 59. | sec-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 135-98-8 | N/A | orl-rat 2240mg/kg |
| 60. | Chlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 108-90-7 | 75 ppm (350mg/m3/8H) | orl-rat 2290mg/kg |
| 61. | 2-Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40000.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 95-49-8 | 50 ppm (250mg/m3/8H) | orl-rat 3900mg/kg |
| 62. | 4-Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40003.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 106-43-4 | N/A | orl-rat 2100mg/kg |
| 63. | 1,2-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 95-50-1 | 50 ppm (300mg/m3) (CL) | orl-rat 500mg/kg |
| 64. | 1,3-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 541-73-1 | N/A | ipr-mus 1062mg/kg |
| 65. | 1,4-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 106-46-7 | 75 ppm (450mg/m3/8H) | orl-rat 500mg/kg |
| 66. | Isopropylbenzene | 35163 | 101923 | 0.05 | 5.00 | 40000.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 98-82-8 | 50 ppm (245mg/m3/8H) | orl-rat 1400mg/kg |
| 67. | n-Propylbenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 23.0 | 103-65-1 | N/A | orl-rat 8040mg/kg |
| 68. | o-Xylene | 35163 | 101923 | 0.05 | 5.00 | 40040.8 | 2000 | NA | NA | 0.017 | NA | NA | 2001.5 | 23.0 | 95-47-6 | 100 ppm (435mg/m3/8H) | ipr-mus 1364mg/kg |
| 69. | p-Xylene | 35163 | 101923 | 0.05 | 5.00 | 40000.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 106-42-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |

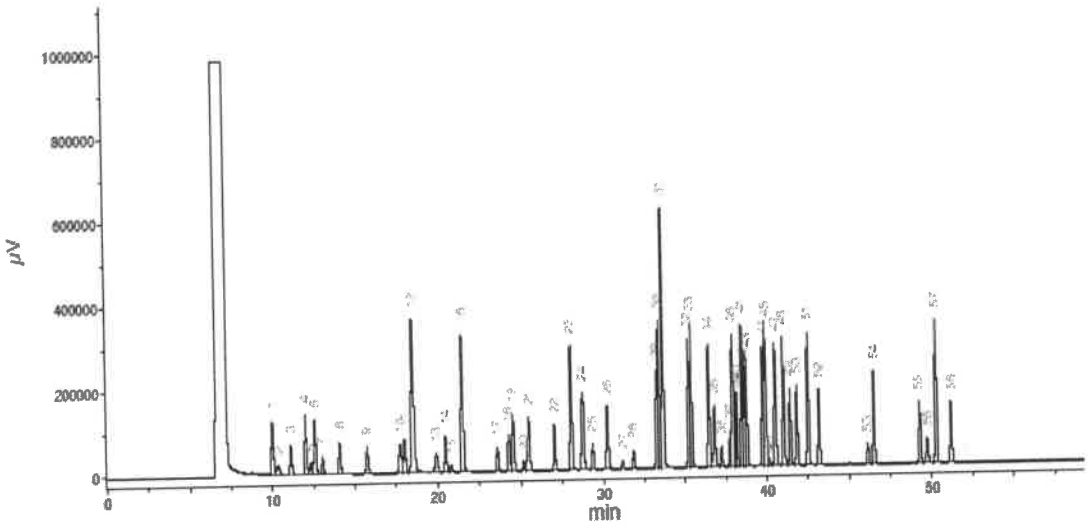
- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

## Run 16, "P95317 L021624 (2000µg/mL in MeOH)"

Run Length: 60.00 min, 35998 points at 10 points/second.
Created: Sat, Feb 17, 2024 at 8:56:46 AM.
Sampled: Sequence "021624-GC5M1", Method "GC5-M1".
Analyzed using Method "GC5-M1".

### Comments

GC5-M1 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min.,
Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min.
Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.),
Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C.
FID Signal = Edaq Channel 1
Standard injection = 0.5µL, Range=3




| Peak # | Name | FID RT (min.) |
|---|---|---|
| 1 | Ether | 9.97 |
| 2 | 1,1,2-Trichloro-1,2,3-trifluoroethane | 10.33 |
| 3 | 1,1-Dichloroethene | 11.10 |
| 4 | Acetonitrile | 12.00 |
| 5 | Iodomethane | 12.31 |
| 6 | Allyl chloride | 12.56 |
| 7 | Carbon disulfide/Methylene chloride | 13.04 |
| 8 | trans-1,2-Dichloroethene | 14.07 |
| 9 | 1,1-Dichloroethane | 15.74 |
| 10 | 2,2-Dichloropropane | 17.74 |
| 11 | cis-1,2-Dichloroethene | 18.00 |
| 12 | Methacrylonitrile/Methyl acrylate/Chloroform | 18.49 |
| 13 | Isobutanol/1,1,1-Trichloroethane | 18.91 |
| 14 | 1,1-Dichloropropene | 20.46 |
| 15 | Carbon tetrachloride | 20.79 |
| 16 | Benzene/1,2-Dichloroethane | 21.48 |
| 17 | Trichloroethene | 23.86 |
| 18 | 1,2-Dichloropropane | 24.26 |
| 19 | Methyl methacrylate | 24.62 |
| 20 | Bromodichloromethane | 25.13 |
| 21 | Dibromomethane/2-Nitropropane | 25.46 |
| 22 | cis-1,3-Dichloropropene | 27.07 |
| 23 | Toluene | 28.09 |
| 24 | Ethyl methacrylate/trans-1,3-Dichloropropene | 28.73 |
| 25 | 1,1,2-Trichloroethane | 29.34 |
| 26 | Tetrachloroethane/1,3-Dichloropropane | 30.34 |
| 27 | Dibromochloromethane | 31.16 |
| 28 | 1,2-Dibromoethane | 31.84 |
| 29 | Chlorobenzene | 33.26 |
| 30 | Ethylbenzene/1,1,1,2-Tetrachloroethane | 33.40 |
| 31 | m-Xylene/p-Xylene | 33.85 |
| 32 | o-Xylene | 35.33 |
| 33 | Styrene | 35.50 |
| 34 | Isopropylbenzene/Bromoform | 35.48 |
| 35 | cis-1,4-Dichloro-2-butene | 36.80 |
| 36 | 1,1,2,2-Tetrachloroethane | 37.23 |
| 37 | 1,2,3-Trichloropropane | 37.77 |
| 38 | n-Propylbenzene | 37.92 |
| 39 | trans-1,4-Dichloro-2-butene | 38.05 |
| 40 | Bromobenzene | 38.14 |
| 41 | 1,3,5-Trimethylbenzene | 38.50 |
| 42 | 2-Chlorotoluene | 38.62 |
| 43 | 4-Chlorotoluene | 38.77 |
| 44 | tert-Butylbenzene | 39.76 |
| 45 | 1,2,4-Trimethylbenzene | 39.91 |
| 46 | Pentachloroethane | 40.17 |
| 47 | sec-Butylbenzene | 40.52 |
| 48 | p-Isopropyltoluene | 41.02 |
| 49 | 1,3-Dichlorobenzene | 41.42 |
| 50 | 1,4-Dichlorobenzene | 41.63 |
| 51 | n-Butylbenzene | 42.02 |
| 52 | 1,2-Dichlorobenzene | 42.18 |
| 53 | 1,2-Dibromo-3-chloropropane | 46.12 |
| 54 | Nitrobenzene | 46.58 |
| 55 | 1,2,4-Trichlorobenzene | 49.26 |
| 56 | Hexachlorobutadiene | 49.72 |
| 57 | Naphthalene | 50.46 |
| 58 | 1,2,3-Trichlorobenzene | 51.16 |

**Absolute Standards Inc.**

PO Box 5585
Hamden, CT 06518-0585

Phone: 203-281-2917
FAX: 203-281-2922

**Safety Data Sheet (SDS)** GHS/OSHA Compliant

## Section I Product and Company Identification

**IDENTITY** **ANALYTICAL STANDARD DISSOLVED IN METHANOL**

| | | | |
|---|---|---|---|
| Manufacturer's Name | ABSOLUTE STANDARDS INC | Emergency Telephone USA & CANADA | **1-800-535-5053** |
| Address | 44 Rossotto Dr. | Emergency Telephone International | **1-352-323-3500** |
| | Hamden CT, 06514 | Date Prepared/Revised | January 1, 2024 |

## Section II - Hazards Identification

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

| | | | |
|---|---|---|---|
| **H225** | **Highly Flammable Liquid and Vapor** | **H301, 311, 331** | **Toxic if swallowed, skin contact, inhaled** |
| **H370** | **Cause damage to organs** | **H351** | **Suspected of causing cancer** |
| **P271** | **Use in ventilated area** | **P280** | **Use gloves, eye protection/face sheild** |
| **P302,332** | **If on skin, wash with soap and water** | **P305,351,338** | **If in eyes, remove contacts, rinse with water** |

**Signal Word: DANGER**

## Section III - Composition

| Components (Specific Chemical Identity; Common Name(s)) | | | % (optional) |
|---|---|---|---|
| Methanol | METHYL ALCOHOL | CAS#: 67-56-1 | > 97 |

**See Certified Weight Report For Other Analytes Present At Trace Quantities.**

**INTENDED USE: REFERENCE MATERIAL**

## Section IV. FIRST AID MEASURES

| | |
|---|---|
| **General advice** | Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. |
| **If inhaled** | If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| **In case of skin contact** | Wash with soap and water. Consult a physician. |
| **In case of eye contact** | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. |
| **If swallowed** | Do NOT induce vomiting. Rinse mouth with water. Consult a physician. |

## Section V. FIREFIGHTING MEASURES

| | |
|---|---|
| **Flammability** | Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking. |
| **Suitable extinguishing media** | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| **Protective equipment for fire** | Wear self contained breathing apparatus for fire fighting if necessary. |

## Section VI. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions | Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations. |
| Environmental precautions | Prevent further leakage or spillage if safe to do so. Do not let product enter drains. |
| Clean up | Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). |

## Section VII. HANDLING AND STORAGE

| | |
|---|---|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. |
| Storage Conditions | Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. |

## Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Methanol 67-56-1 TWA 200 ppm
Skin notation TWA 200 ppm
Potential for skin absorption , ingestion and inhalation.
Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.
Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

## Section IX - Physical/Chemical Characteristics

| | | | |
|---|---|---|---|
| Boiling Point | 65°C | Specific Gravity (H2O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |

Solubility in Water COMPLETE

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

## Section X. STABILITY AND REACTIVITY

Chemical stability Stable under recommended storage conditions.
Possibility of hazardous reactions Vapours may form explosive mixture with air.
Conditions to avoid Heat, flames, sparks, extreme temperature and sunlight.
Materials to avoid Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
Hazardous decomposition products formed under fire conditions. - Carbon oxides

## Section XI. TOXICOLOGICAL INFORMATION

LD50 Oral - rat - 5,628 mg/kg
LC50 Inhalation - rat - 4 h - 64000 ppm
LD50 Dermal - rabbit - 15,800 mg/kg
Toxic if absorbed through skin. Causes skin irritation.
Eye damage/eye irritation
Toxic if inhaled. Causes respiratory tract irritation.
Toxic if swallowed.

## Section XII. ECOLOGICAL INFORMATION FOR REPORTABLE QUANTITY OF 5000 lbs.

| | |
|---|---|
| LC50 | 15,400 mg/l - 96 h |
| EC50 | 24,500.00 mg/l - 48 h |
| EC100 | 10,000.00 mg/l - 24 h |

## Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

## Section XIV. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

IATA
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

## Section XV. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## Section XVI. Misc. INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by trained personnel, or supervised by a person trained in chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

**Absolute Standards, Inc.**
800-368-1131
www.absolutestandards.com

***Certified Reference Material CRM***

Rec 09/16/24 2 Vials

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

## CERTIFIED WEIGHT REPORT

**Part Number:** 91980
Lot Number: 091424
Description: Acrolein

Expiration Date: 101424
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 5000
NIST Test ID#: 6UTB

**Solvent(s):** **Lot#**
Water 072324Q

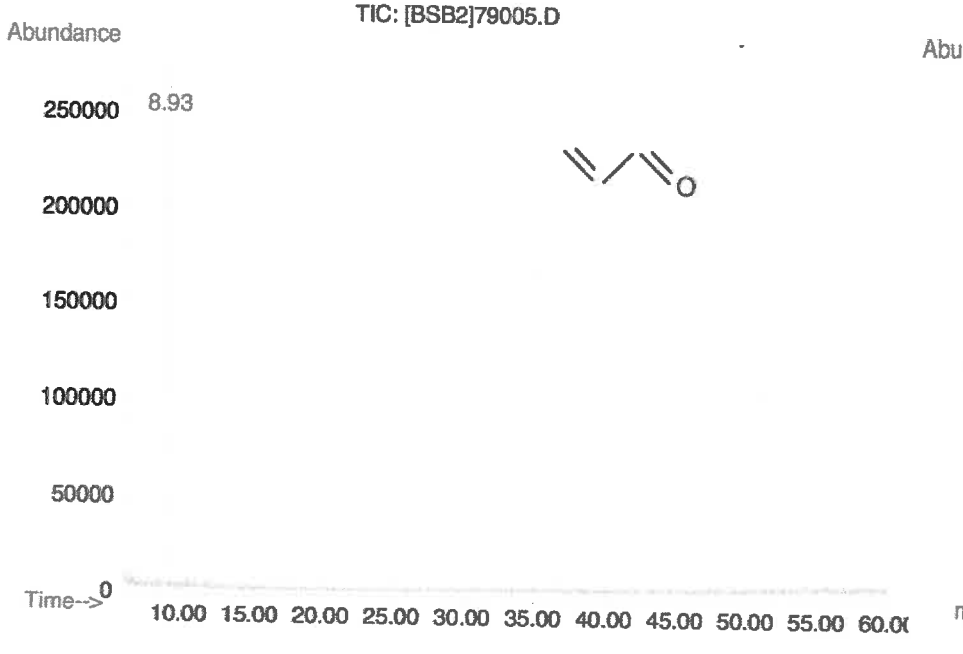
5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 10.0 0.001 Flask Uncertainty

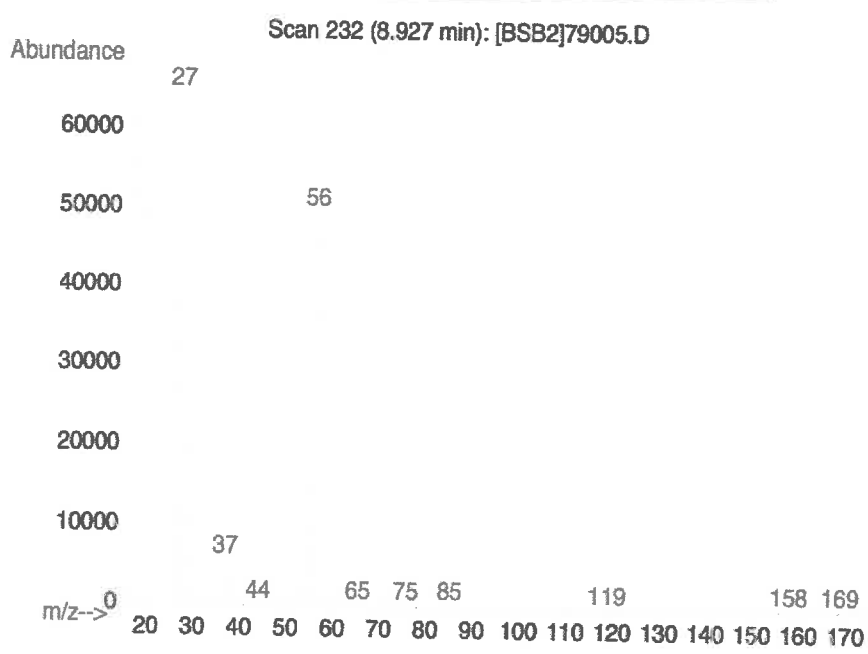
Justin Dippold 091424
Formulated By: Justin Dippold DATE

Pedro Rentas 091424
Reviewed By: Pedro L. Rentas DATE

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Acrolein | 5 | 103755V10F | 5000 | 97 | 0.5 | 0.05166 | 0.05175 | 5008.9 | 52.5 | 107-02-8 | 0.1 ppm | orl-rat 46mg/kg |

**Method:** GC6MSD-1. **Detector:** Mass Selective Detector (Scan mode). **Column:** Vocol (60m X 0.25mm ID X 1.5µm film thickness). **Oven Profile:** Temp. 1 = 35°C (Time 1 = 10min.), Temp. 2=200°C ( Time 2 = 8.75 min.), Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. **Analyst:** Pedro Rentas. **NOTE:** Due to the instability of acrolein in solution, all solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.

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- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
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**Absolute Standards, Inc.**
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## CERTIFIED WEIGHT REPORT

**Part Number:** 91980
Lot Number: 091424
Description: Acrolein

Expiration Date: 101424
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 5000
NIST Test ID#: 6UTB

**Solvent(s):** **Lot#**
Water 072324Q

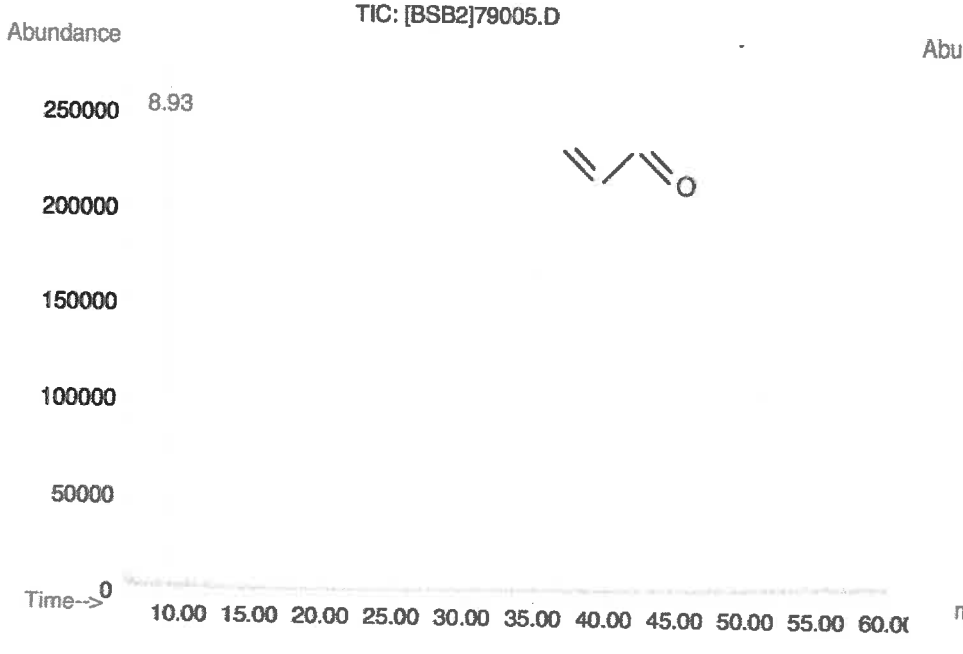
5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 10.0 0.001 Flask Uncertainty

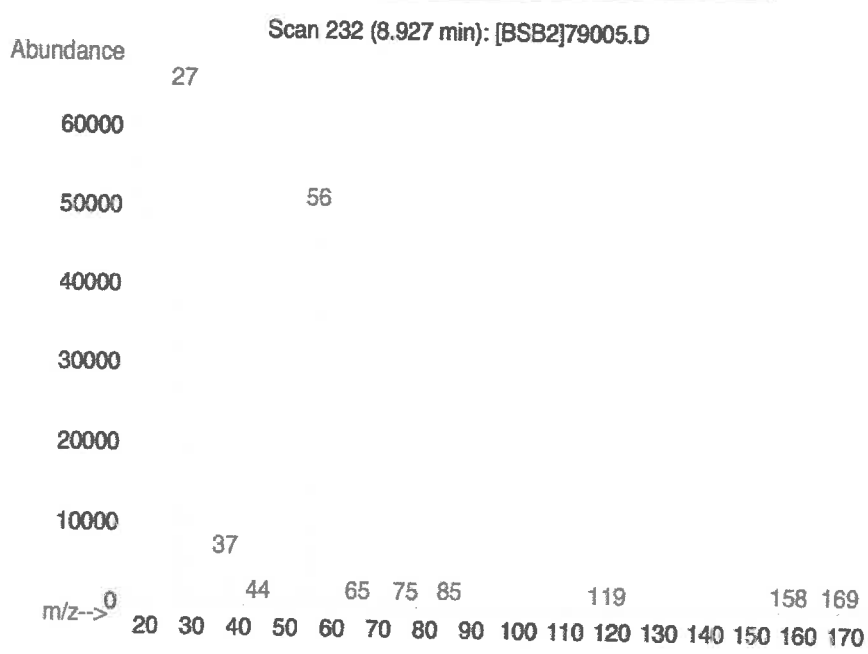
Justin Dippold 091424
Formulated By: Justin Dippold DATE

Pedro Rentas 091424
Reviewed By: Pedro L. Rentas DATE

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Acrolein | 5 | 103755V10F | 5000 | 97 | 0.5 | 0.05166 | 0.05175 | 5008.9 | 52.5 | 107-02-8 | 0.1 ppm | orl-rat 46mg/kg |

**Method:** GC6MSD-1. **Detector:** Mass Selective Detector (Scan mode). **Column:** Vocol (60m X 0.25mm ID X 1.5µm film thickness). **Oven Profile:** Temp. 1 = 35°C (Time 1 = 10min.), Temp. 2=200°C ( Time 2 = 8.75 min.), Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. **Analyst:** Pedro Rentas. **NOTE:** Due to the instability of acrolein in solution, all solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.

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## CERTIFIED WEIGHT REPORT

**Part Number:** 91980
Lot Number: 091424
Description: Acrolein

Expiration Date: 101424
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 5000
NIST Test ID#: 6UTB

**Solvent(s):** **Lot#**
Water 072324Q

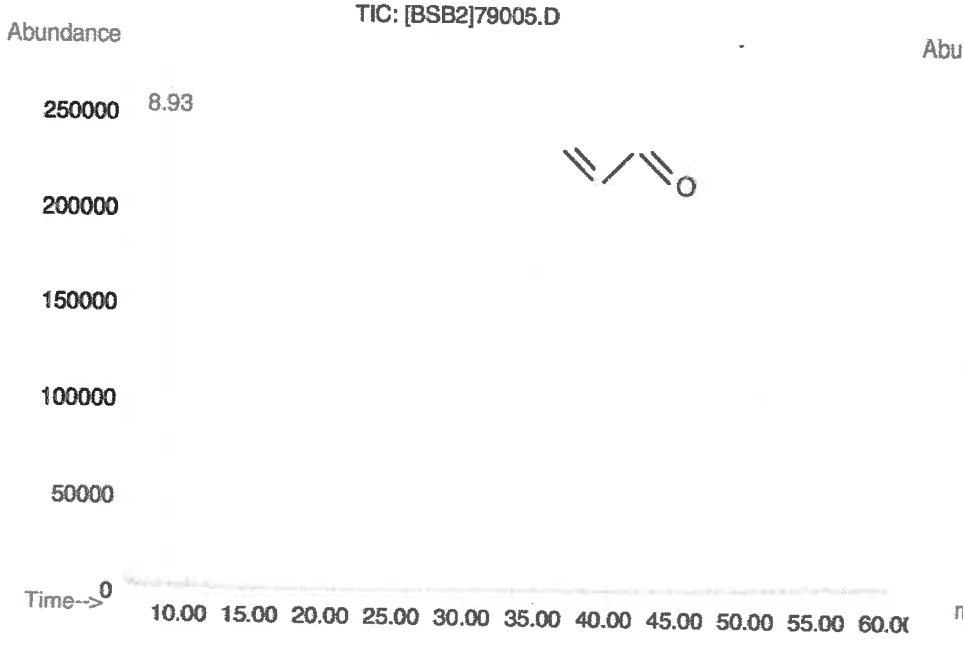
5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 10.0 0.001 Flask Uncertainty

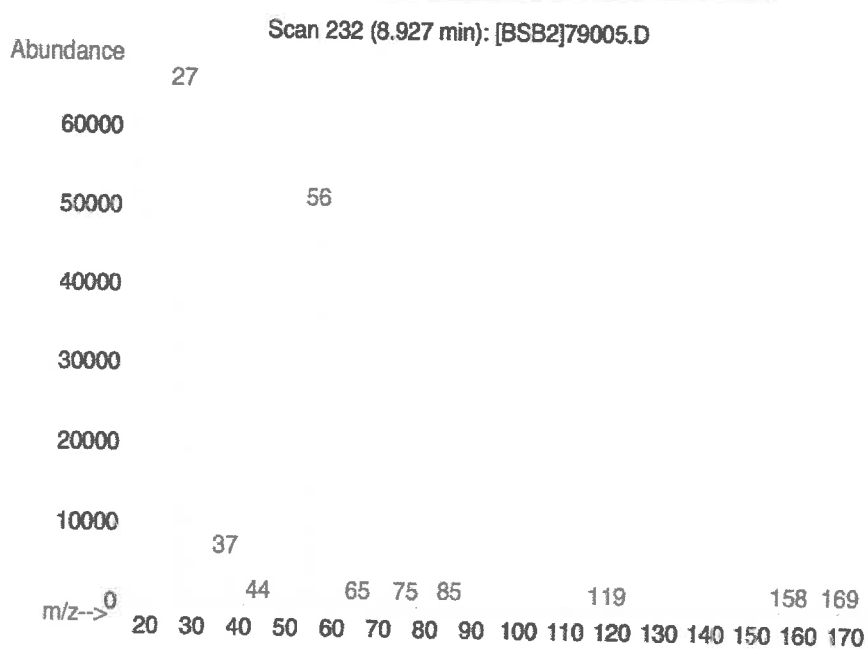
Justin Dippold 091424
Formulated By: Justin Dippold DATE

Pedro Rentas 091424
Reviewed By: Pedro L. Rentas DATE

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Acrolein | 5 | 103755V10F | 5000 | 97 | 0.5 | 0.05166 | 0.05175 | 5008.9 | 52.5 | 107-02-8 | 0.1 ppm | orl-rat 46mg/kg |

**Method:** GC6MSD-1. **Detector:** Mass Selective Detector (Scan mode). **Column:** Vocol (60m X 0.25mm ID X 1.5µm film thickness). **Oven Profile:** Temp. 1 = 35°C (Time 1 = 10min.), Temp. 2=200°C ( Time 2 = 8.75 min.), Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. **Analyst:** Pedro Rentas. **NOTE:** Due to the instability of acrolein in solution, all solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.

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Rec 09/16/24 2 Vials

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## CERTIFIED WEIGHT REPORT

**Part Number:** 91980
Lot Number: 091424
Description: Acrolein

Expiration Date: 101424
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 5000
NIST Test ID#: 6UTB

**Solvent(s):** **Lot#**
Water 072324Q

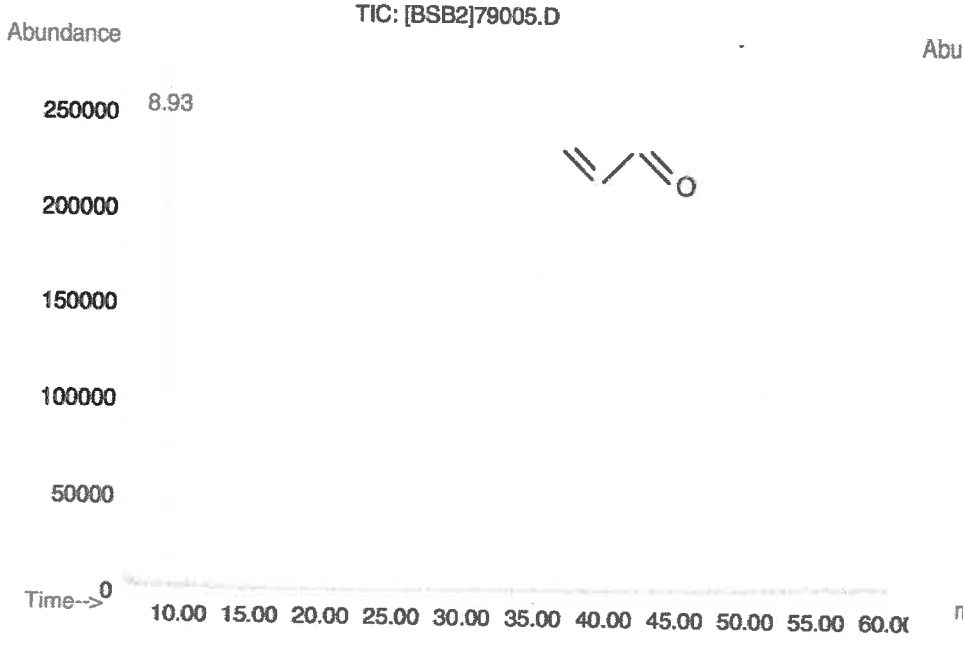
5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 10.0 0.001 Flask Uncertainty

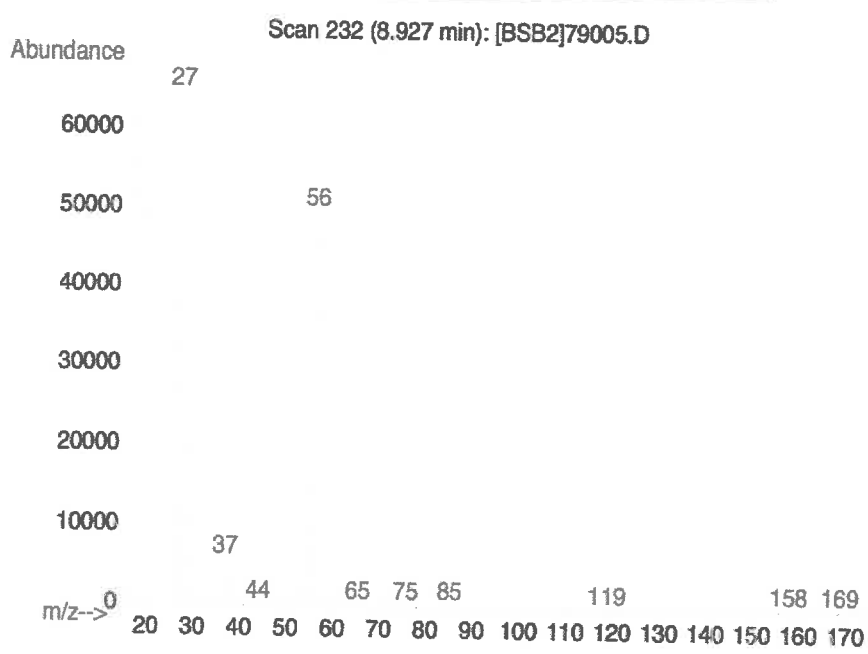
Justin Dippold 091424
Formulated By: Justin Dippold DATE

Pedro Rentas 091424
Reviewed By: Pedro L. Rentas DATE

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Acrolein | 5 | 103755V10F | 5000 | 97 | 0.5 | 0.05166 | 0.05175 | 5008.9 | 52.5 | 107-02-8 | 0.1 ppm | orl-rat 46mg/kg |

**Method:** GC6MSD-1. **Detector:** Mass Selective Detector (Scan mode). **Column:** Vocol (60m X 0.25mm ID X 1.5µm film thickness). **Oven Profile:** Temp. 1 = 35°C (Time 1 = 10min.), Temp. 2=200°C ( Time 2 = 8.75 min.), Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. **Analyst:** Pedro Rentas. **NOTE:** Due to the instability of acrolein in solution, all solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.

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***Certified Reference Material CRM***

Rec 12/6/24
20 vial

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

## CERTIFIED WEIGHT REPORT

**Part Number:** 95318
**Lot Number:** 120524
**Description:** 2-Chloroethyl vinyl ether

**Expiration Date:** 120527
**Recommended Storage:** Refrigerate (4 °C)
**Nominal Concentration (µg/mL):** 10000
**NIST Test ID#:** 6UTB

**Solvent(s):** Methanol **Lot#** EJ143-US

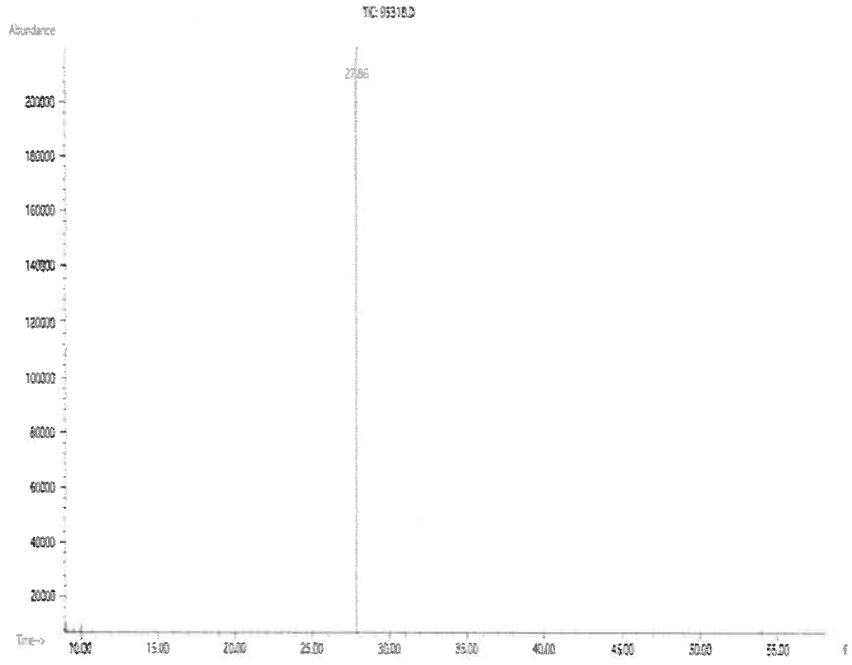
V14630 to V14649

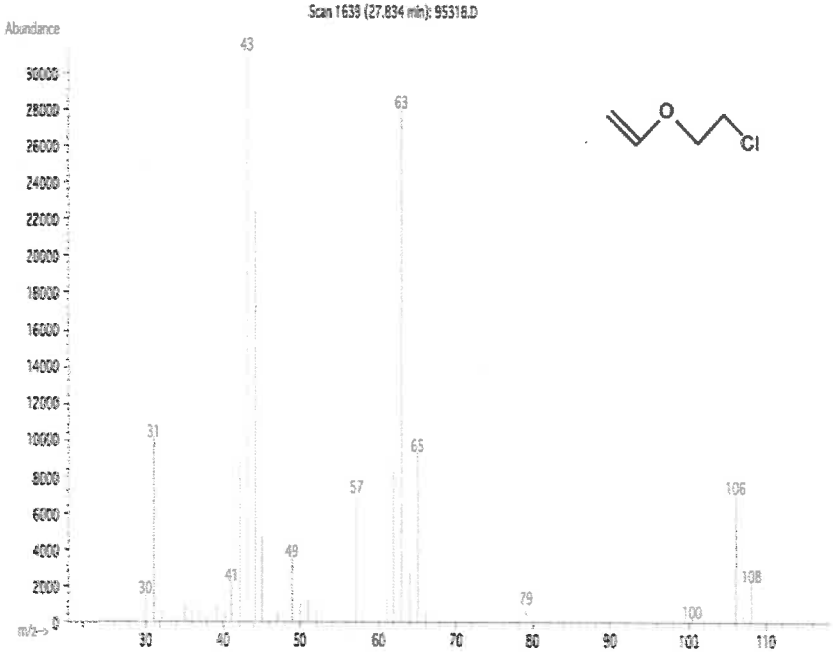
5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 50.0 0.001 Flask Uncertainty

| Formulated By: | Prashant Chauhan | 120524 DATE |
|---|---|---|
| Reviewed By: | Pedro L. Rentas | 120524 DATE |

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight (g) | Actual Weight (g) | Actual Conc(µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. 2-Chloroethyl vinyl ether | 74 | MKCD0033 | 10000 | 99 | 0.2 | 0.50536 | 0.50550 | 10002.9 | 40.5 | 110-75-8 | N/A | ori-rat 250mg/kg |

**Method:** GC6MSD-1.M. **Detector:** MSD. **Column:** (60m X 0.25mm X 1.5 µm). **Oven Profile:** Temp 1 = 35°C (Time 1=10min.), Temp 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min., Injector B Temp.= 200°C, Detector B Temp. = 220°C. **Analyst:** Candice Warren.







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Absolute Standards Inc.

PO Box 5585
Hamden, CT 06518-0585

Phone: 203-281-2917
FAX: 203-281-2922

**Safety Data Sheet (SDS)** GHS/OSHA Compliant

## Section I Product and Company Identification

**IDENTITY** **ANALYTICAL STANDARD DISSOLVED IN METHANOL**

| | | | |
|---|---|---|---|
| Manufacturer's Name | ABSOLUTE STANDARDS INC | Emergency Telephone USA & CANADA | **1-800-535-5053** |
| Address | 44 Rossotto Dr.<br>Hamden CT, 06514 | Emergency Telephone International<br>Date Prepared/Revised | **1-352-323-3500**<br>January 1, 2024 |

## Section II - Hazards Identification

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

| | | | |
|---|---|---|---|
| **H225** | **Highly Flammable Liquid and Vapor** | **H301, 311, 331** | **Toxic if swallowed, skin contact, inhaled** |
| **H370** | **Cause damage to organs** | **H351** | **Suspected of causing cancer** |
| **P271** | **Use in ventilated area** | **P280** | **Use gloves, eye protection/face sheild** |
| **P302,332** | **If on skin, wash with soap and water** | **P305,351,338** | **If in eyes, remove contacts, rinse with water** |

**Signal Word: DANGER**

## Section III - Composition

| Components (Specific Chemical Identity; Common Name(s)) | | | % (optional) |
|---|---|---|---|
| Methanol | METHYL ALCOHOL | CAS#: 67-56-1 | > 97 |

**See Certified Weight Report For Other Analytes Present At Trace Quantities.**

**INTENDED USE: REFERENCE MATERIAL**

## Section IV. FIRST AID MEASURES

| | |
|---|---|
| **General advice** | Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. |
| **If inhaled** | If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| **In case of skin contact** | Wash with soap and water. Consult a physician. |
| **In case of eye contact** | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. |
| **If swallowed** | Do NOT induce vomiting. Rinse mouth with water. Consult a physician. |

## Section V. FIREFIGHTING MEASURES

| | |
|---|---|
| **Flammability** | Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking. |
| **Suitable extinguishing media** | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| **Protective equipment for fire** | Wear self contained breathing apparatus for fire fighting if necessary. |

## Section VI. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions | Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations. |
| Environmental precautions | Prevent further leakage or spillage if safe to do so. Do not let product enter drains. |
| Clean up | Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). |

## Section VII. HANDLING AND STORAGE

| | |
|---|---|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.<br>Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. |
| Storage Conditions | Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. |

## Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Methanol 67-56-1 TWA 200 ppm
Skin notation TWA 200 ppm
Potential for skin absorption , ingestion and inhalation.
Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.
Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

## Section IX - Physical/Chemical Characteristics

| | | | |
|---|---|---|---|
| Boiling Point | 65°C | Specific Gravity (H2O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |

Solubility in Water COMPLETE

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

## Section X. STABILITY AND REACTIVITY

Chemical stability — Stable under recommended storage conditions.
Possibility of hazardous reactions — Vapours may form explosive mixture with air.
Conditions to avoid — Heat, flames, sparks, extreme temperature and sunlight.
Materials to avoid — Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
Hazardous decomposition products formed under fire conditions. - Carbon oxides

## Section XI. TOXICOLOGICAL INFORMATION

LD50 Oral - rat - 5,628 mg/kg
LC50 Inhalation - rat - 4 h - 64000 ppm
LD50 Dermal - rabbit - 15,800 mg/kg
Toxic if absorbed through skin. Causes skin irritation.
Eye damage/eye irritation
Toxic if inhaled. Causes respiratory tract irritation.
Toxic if swallowed.

## Section XII. ECOLOGICAL INFORMATION FOR REPORTABLE QUANTITY OF 5000 lbs.

| | |
|---|---|
| LC50 | 15,400 mg/l - 96 h |
| EC50 | 24,500.00 mg/l - 48 h |
| EC100 | 10,000.00 mg/l - 24 h |

## Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

## Section XIV. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

IATA
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

## Section XV. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## Section XVI. Misc. INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by trained personnel, or supervised by a person trained in chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

**Absolute Standards, Inc.**
800-368-1131
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***Certified Reference Material CRM***

Rec 12/6/24
20 vial

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

## CERTIFIED WEIGHT REPORT

**Part Number:** 95318
**Lot Number:** 120524
**Description:** 2-Chloroethyl vinyl ether

**Expiration Date:** 120527
**Recommended Storage:** Refrigerate (4 °C)
**Nominal Concentration (µg/mL):** 10000
**NIST Test ID#:** 6UTB

**Solvent(s):** Methanol **Lot#** EJ143-US

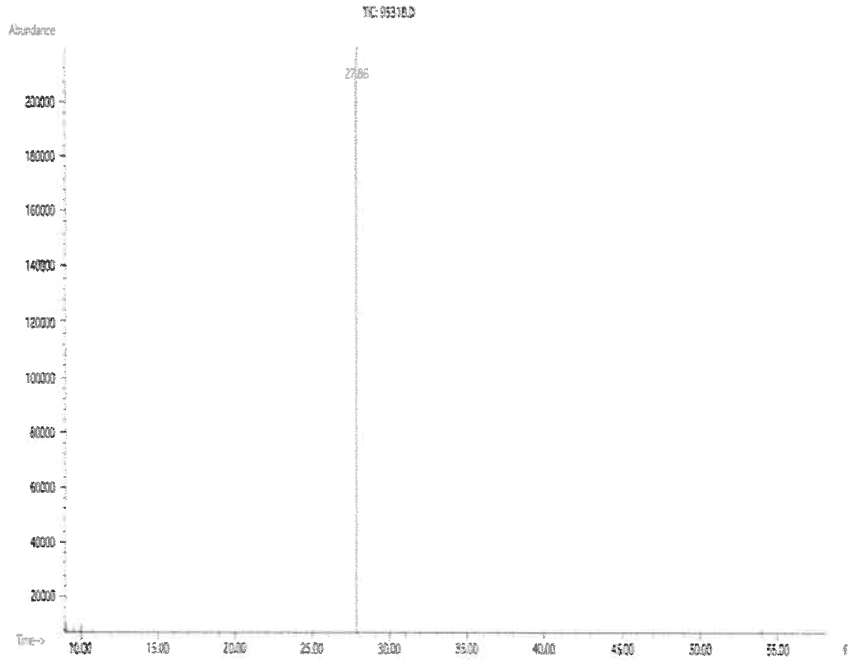
V14630 to V14649

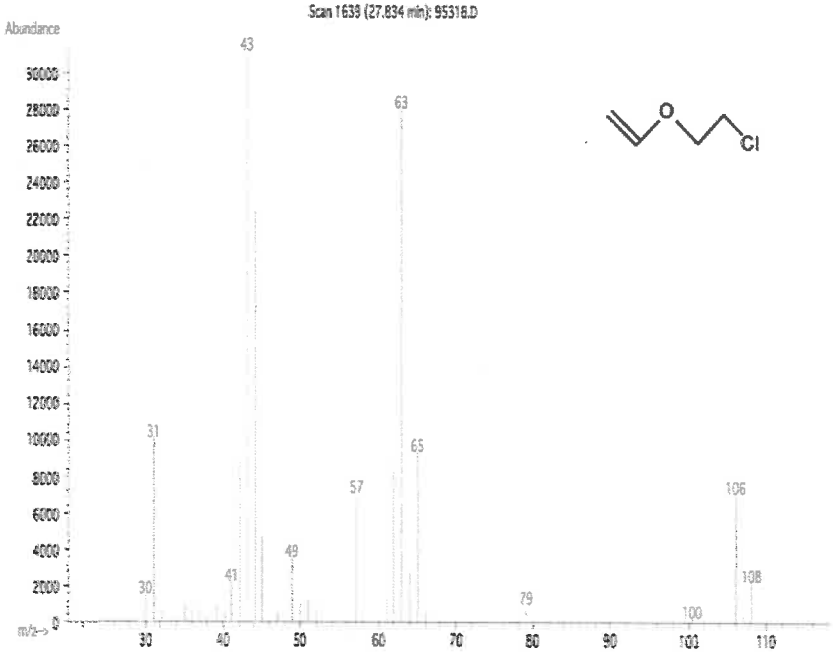
5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 50.0 0.001 Flask Uncertainty

| Formulated By: | Prashant Chauhan | 120524 DATE |
|---|---|---|
| Reviewed By: | Pedro L. Rentas | 120524 DATE |

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight (g) | Actual Weight (g) | Actual Conc(µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. 2-Chloroethyl vinyl ether | 74 | MKCD0033 | 10000 | 99 | 0.2 | 0.50536 | 0.50550 | 10002.9 | 40.5 | 110-75-8 | N/A | ori-rat 250mg/kg |

**Method:** GC6MSD-1.M. **Detector:** MSD. **Column:** (60m X 0.25mm X 1.5 µm). **Oven Profile:** Temp 1 = 35°C (Time 1=10min.), Temp 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min., Injector B Temp.= 200°C, Detector B Temp. = 220°C. **Analyst:** Candice Warren.







- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

Absolute Standards Inc.

PO Box 5585
Hamden, CT 06518-0585

Phone: 203-281-2917
FAX: 203-281-2922

**Safety Data Sheet (SDS)** GHS/OSHA Compliant

## Section I Product and Company Identification

**IDENTITY** **ANALYTICAL STANDARD DISSOLVED IN METHANOL**

| | | | |
|---|---|---|---|
| Manufacturer's Name | ABSOLUTE STANDARDS INC | Emergency Telephone USA & CANADA | **1-800-535-5053** |
| Address | 44 Rossotto Dr.<br>Hamden CT, 06514 | Emergency Telephone International<br>Date Prepared/Revised | **1-352-323-3500**<br>January 1, 2024 |

## Section II - Hazards Identification

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

| | | | |
|---|---|---|---|
| **H225** | **Highly Flammable Liquid and Vapor** | **H301, 311, 331** | **Toxic if swallowed, skin contact, inhaled** |
| **H370** | **Cause damage to organs** | **H351** | **Suspected of causing cancer** |
| **P271** | **Use in ventilated area** | **P280** | **Use gloves, eye protection/face sheild** |
| **P302,332** | **If on skin, wash with soap and water** | **P305,351,338** | **If in eyes, remove contacts, rinse with water** |

**Signal Word: DANGER**

## Section III - Composition

| Components (Specific Chemical Identity; Common Name(s)) | | | % (optional) |
|---|---|---|---|
| Methanol | METHYL ALCOHOL | CAS#: 67-56-1 | > 97 |

**See Certified Weight Report For Other Analytes Present At Trace Quantities.**

**INTENDED USE: REFERENCE MATERIAL**

## Section IV. FIRST AID MEASURES

| | |
|---|---|
| **General advice** | Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. |
| **If inhaled** | If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| **In case of skin contact** | Wash with soap and water. Consult a physician. |
| **In case of eye contact** | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. |
| **If swallowed** | Do NOT induce vomiting. Rinse mouth with water. Consult a physician. |

## Section V. FIREFIGHTING MEASURES

| | |
|---|---|
| **Flammability** | Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking. |
| **Suitable extinguishing media** | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| **Protective equipment for fire** | Wear self contained breathing apparatus for fire fighting if necessary. |

## Section VI. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions | Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations. |
| Environmental precautions | Prevent further leakage or spillage if safe to do so. Do not let product enter drains. |
| Clean up | Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). |

## Section VII. HANDLING AND STORAGE

| | |
|---|---|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.<br>Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. |
| Storage Conditions | Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. |

## Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Methanol 67-56-1 TWA 200 ppm
Skin notation TWA 200 ppm
Potential for skin absorption , ingestion and inhalation.
Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.
Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

## Section IX - Physical/Chemical Characteristics

| | | | |
|---|---|---|---|
| Boiling Point | 65°C | Specific Gravity (H2O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |

Solubility in Water COMPLETE

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

## Section X. STABILITY AND REACTIVITY

Chemical stability — Stable under recommended storage conditions.
Possibility of hazardous reactions — Vapours may form explosive mixture with air.
Conditions to avoid — Heat, flames, sparks, extreme temperature and sunlight.
Materials to avoid — Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
Hazardous decomposition products formed under fire conditions. - Carbon oxides

## Section XI. TOXICOLOGICAL INFORMATION

LD50 Oral - rat - 5,628 mg/kg
LC50 Inhalation - rat - 4 h - 64000 ppm
LD50 Dermal - rabbit - 15,800 mg/kg
Toxic if absorbed through skin. Causes skin irritation.
Eye damage/eye irritation
Toxic if inhaled. Causes respiratory tract irritation.
Toxic if swallowed.

## Section XII. ECOLOGICAL INFORMATION FOR REPORTABLE QUANTITY OF 5000 lbs.

| | |
|---|---|
| LC50 | 15,400 mg/l - 96 h |
| EC50 | 24,500.00 mg/l - 48 h |
| EC100 | 10,000.00 mg/l - 24 h |

## Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

## Section XIV. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

IATA
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

## Section XV. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## Section XVI. Misc. INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by trained personnel, or supervised by a person trained in chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

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## CERTIFIED WEIGHT REPORT

**Part Number:** 95318
**Lot Number:** 120524
**Description:** 2-Chloroethyl vinyl ether

**Expiration Date:** 120527
**Recommended Storage:** Refrigerate (4 °C)
**Nominal Concentration (µg/mL):** 10000
**NIST Test ID#:** 6UTB

**Solvent(s):** Methanol **Lot#** EJ143-US

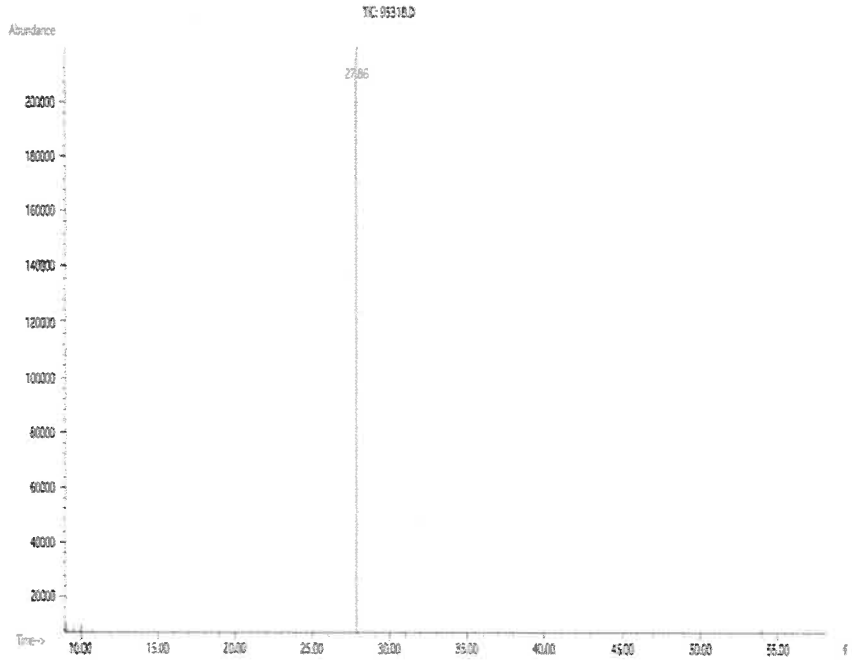
V14630 to V14649

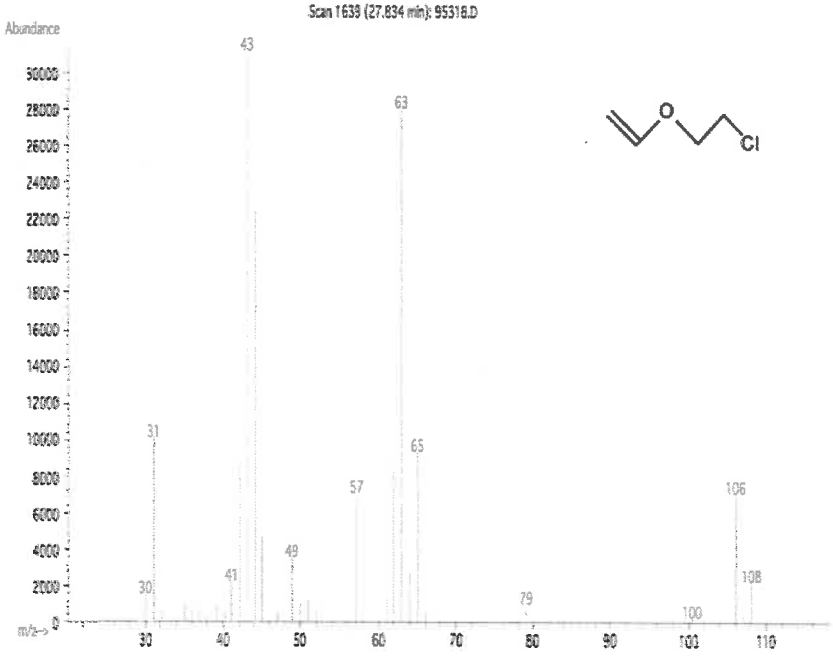
5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 50.0 0.001 Flask Uncertainty

| Formulated By: | Prashant Chauhan | 120524 DATE |
|---|---|---|
| Reviewed By: | Pedro L. Rentas | 120524 DATE |

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight (g) | Actual Weight (g) | Actual Conc(µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. 2-Chloroethyl vinyl ether | 74 | MKCD0033 | 10000 | 99 | 0.2 | 0.50536 | 0.50550 | 10002.9 | 40.5 | 110-75-8 | N/A | ori-rat 250mg/kg |

**Method:** GC6MSD-1.M. **Detector:** MSD. **Column:** (60m X 0.25mm X 1.5 µm). **Oven Profile:** Temp 1 = 35°C (Time 1=10min.), Temp 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min., Injector B Temp.= 200°C, Detector B Temp. = 220°C. **Analyst:** Candice Warren.







- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

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Phone: 203-281-2917
FAX: 203-281-2922

**Safety Data Sheet (SDS)** GHS/OSHA Compliant

## Section I Product and Company Identification

**IDENTITY** **ANALYTICAL STANDARD DISSOLVED IN METHANOL**

| | | | |
|---|---|---|---|
| Manufacturer's Name | ABSOLUTE STANDARDS INC | Emergency Telephone USA & CANADA | **1-800-535-5053** |
| Address | 44 Rossotto Dr.<br>Hamden CT, 06514 | Emergency Telephone International<br>Date Prepared/Revised | **1-352-323-3500**<br>January 1, 2024 |

## Section II - Hazards Identification

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

| | | | |
|---|---|---|---|
| **H225** | **Highly Flammable Liquid and Vapor** | **H301, 311, 331** | **Toxic if swallowed, skin contact, inhaled** |
| **H370** | **Cause damage to organs** | **H351** | **Suspected of causing cancer** |
| **P271** | **Use in ventilated area** | **P280** | **Use gloves, eye protection/face sheild** |
| **P302,332** | **If on skin, wash with soap and water** | **P305,351,338** | **If in eyes, remove contacts, rinse with water** |

**Signal Word: DANGER**

## Section III - Composition

| Components (Specific Chemical Identity; Common Name(s)) | | | % (optional) |
|---|---|---|---|
| Methanol | METHYL ALCOHOL | CAS#: 67-56-1 | > 97 |

**See Certified Weight Report For Other Analytes Present At Trace Quantities.**

**INTENDED USE: REFERENCE MATERIAL**

## Section IV. FIRST AID MEASURES

| | |
|---|---|
| **General advice** | Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. |
| **If inhaled** | If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| **In case of skin contact** | Wash with soap and water. Consult a physician. |
| **In case of eye contact** | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. |
| **If swallowed** | Do NOT induce vomiting. Rinse mouth with water. Consult a physician. |

## Section V. FIREFIGHTING MEASURES

| | |
|---|---|
| **Flammability** | Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking. |
| **Suitable extinguishing media** | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| **Protective equipment for fire** | Wear self contained breathing apparatus for fire fighting if necessary. |

## Section VI. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions | Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations. |
| Environmental precautions | Prevent further leakage or spillage if safe to do so. Do not let product enter drains. |
| Clean up | Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). |

## Section VII. HANDLING AND STORAGE

| | |
|---|---|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.<br>Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. |
| Storage Conditions | Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. |

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Methanol 67-56-1 TWA 200 ppm
Skin notation TWA 200 ppm
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## Section IX - Physical/Chemical Characteristics

| | | | |
|---|---|---|---|
| Boiling Point | 65°C | Specific Gravity (H2O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |

Solubility in Water COMPLETE

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

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Chemical stability — Stable under recommended storage conditions.
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Materials to avoid — Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
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Eye damage/eye irritation
Toxic if inhaled. Causes respiratory tract irritation.
Toxic if swallowed.

## Section XII. ECOLOGICAL INFORMATION FOR REPORTABLE QUANTITY OF 5000 lbs.

| | |
|---|---|
| LC50 | 15,400 mg/l - 96 h |
| EC50 | 24,500.00 mg/l - 48 h |
| EC100 | 10,000.00 mg/l - 24 h |

## Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

## Section XIV. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

IATA
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

## Section XV. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## Section XVI. Misc. INFORMATION

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***Certified Reference Material CRM***

Rec 12/6/24
20 vial

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## CERTIFIED WEIGHT REPORT

**Part Number:** 95318
**Lot Number:** 120524
**Description:** 2-Chloroethyl vinyl ether

**Expiration Date:** 120527
**Recommended Storage:** Refrigerate (4 °C)
**Nominal Concentration (µg/mL):** 10000
**NIST Test ID#:** 6UTB

**Solvent(s):** Methanol **Lot#** EJ143-US

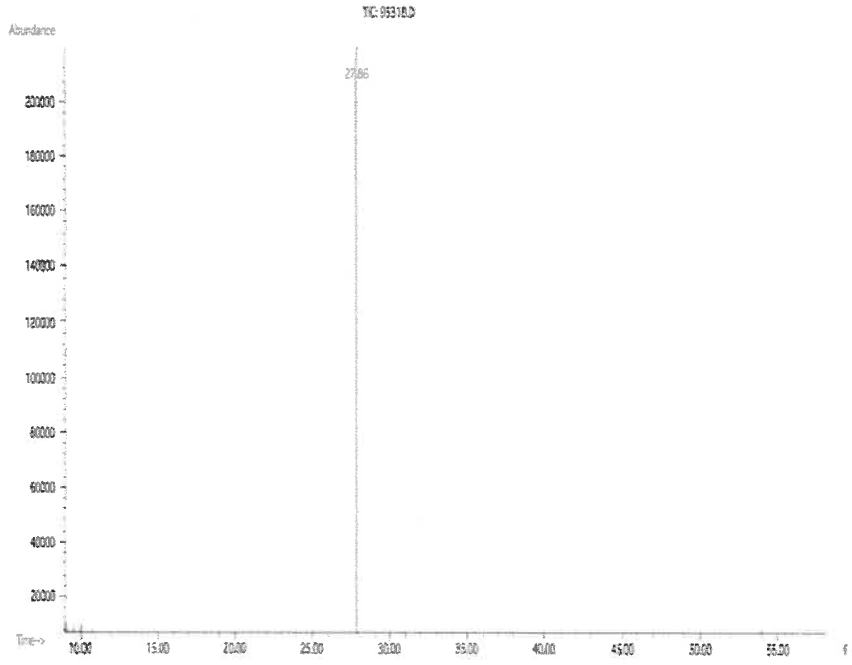
V14630 to V14649

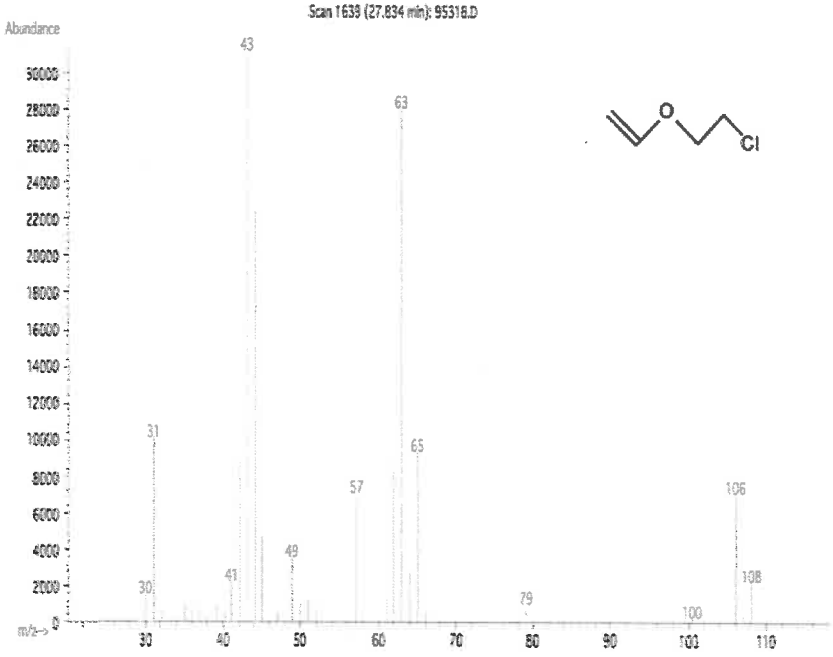
5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 50.0 0.001 Flask Uncertainty

| Formulated By: | Prashant Chauhan | 120524 DATE |
|---|---|---|
| Reviewed By: | Pedro L. Rentas | 120524 DATE |

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight (g) | Actual Weight (g) | Actual Conc(µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. 2-Chloroethyl vinyl ether | 74 | MKCD0033 | 10000 | 99 | 0.2 | 0.50536 | 0.50550 | 10002.9 | 40.5 | 110-75-8 | N/A | ori-rat 250mg/kg |

**Method:** GC6MSD-1.M. **Detector:** MSD. **Column:** (60m X 0.25mm X 1.5 µm). **Oven Profile:** Temp 1 = 35°C (Time 1=10min.), Temp 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min., Injector B Temp.= 200°C, Detector B Temp. = 220°C. **Analyst:** Candice Warren.







- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

Absolute Standards Inc.

PO Box 5585
Hamden, CT 06518-0585

Phone: 203-281-2917
FAX: 203-281-2922

**Safety Data Sheet (SDS)** GHS/OSHA Compliant

## Section I Product and Company Identification

**IDENTITY** **ANALYTICAL STANDARD DISSOLVED IN METHANOL**

| | | | |
|---|---|---|---|
| Manufacturer's Name | ABSOLUTE STANDARDS INC | Emergency Telephone USA & CANADA | **1-800-535-5053** |
| Address | 44 Rossotto Dr.<br>Hamden CT, 06514 | Emergency Telephone International<br>Date Prepared/Revised | **1-352-323-3500**<br>January 1, 2024 |

## Section II - Hazards Identification

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

| | | | |
|---|---|---|---|
| **H225** | **Highly Flammable Liquid and Vapor** | **H301, 311, 331** | **Toxic if swallowed, skin contact, inhaled** |
| **H370** | **Cause damage to organs** | **H351** | **Suspected of causing cancer** |
| **P271** | **Use in ventilated area** | **P280** | **Use gloves, eye protection/face sheild** |
| **P302,332** | **If on skin, wash with soap and water** | **P305,351,338** | **If in eyes, remove contacts, rinse with water** |

**Signal Word: DANGER**

## Section III - Composition

| Components (Specific Chemical Identity; Common Name(s)) | | | % (optional) |
|---|---|---|---|
| Methanol | METHYL ALCOHOL | CAS#: 67-56-1 | > 97 |

**See Certified Weight Report For Other Analytes Present At Trace Quantities.**

**INTENDED USE: REFERENCE MATERIAL**

## Section IV. FIRST AID MEASURES

| | |
|---|---|
| **General advice** | Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. |
| **If inhaled** | If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| **In case of skin contact** | Wash with soap and water. Consult a physician. |
| **In case of eye contact** | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. |
| **If swallowed** | Do NOT induce vomiting. Rinse mouth with water. Consult a physician. |

## Section V. FIREFIGHTING MEASURES

| | |
|---|---|
| **Flammability** | Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking. |
| **Suitable extinguishing media** | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| **Protective equipment for fire** | Wear self contained breathing apparatus for fire fighting if necessary. |

## Section VI. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions | Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations. |
| Environmental precautions | Prevent further leakage or spillage if safe to do so. Do not let product enter drains. |
| Clean up | Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). |

## Section VII. HANDLING AND STORAGE

| | |
|---|---|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.<br>Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. |
| Storage Conditions | Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. |

## Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Methanol 67-56-1 TWA 200 ppm
Skin notation TWA 200 ppm
Potential for skin absorption , ingestion and inhalation.
Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.
Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

## Section IX - Physical/Chemical Characteristics

| | | | |
|---|---|---|---|
| Boiling Point | 65°C | Specific Gravity (H2O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |

Solubility in Water COMPLETE

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

## Section X. STABILITY AND REACTIVITY

Chemical stability — Stable under recommended storage conditions.
Possibility of hazardous reactions — Vapours may form explosive mixture with air.
Conditions to avoid — Heat, flames, sparks, extreme temperature and sunlight.
Materials to avoid — Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
Hazardous decomposition products formed under fire conditions. - Carbon oxides

## Section XI. TOXICOLOGICAL INFORMATION

LD50 Oral - rat - 5,628 mg/kg
LC50 Inhalation - rat - 4 h - 64000 ppm
LD50 Dermal - rabbit - 15,800 mg/kg
Toxic if absorbed through skin. Causes skin irritation.
Eye damage/eye irritation
Toxic if inhaled. Causes respiratory tract irritation.
Toxic if swallowed.

## Section XII. ECOLOGICAL INFORMATION FOR REPORTABLE QUANTITY OF 5000 lbs.

| | |
|---|---|
| LC50 | 15,400 mg/l - 96 h |
| EC50 | 24,500.00 mg/l - 48 h |
| EC100 | 10,000.00 mg/l - 24 h |

## Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

## Section XIV. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

IATA
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol

## Section XV. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## Section XVI. Misc. INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by trained personnel, or supervised by a person trained in chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

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110 Benner Circle
Bellefonte, PA 16823-8812
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CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

*chromatographic plus*

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ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01

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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. :** 30067 **Lot No.:** A0191805

**Description :** 4-Bromofluorobenzene Standard

4-Bromofluorobenzene Standard 2,500µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** November 30, 2027 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | 1-Bromo-4-fluorobenzene (BFB) | 460-00-4 | 184975 | 99% | 2,483.9 µg/mL | +/- 139.5488 |

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

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

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

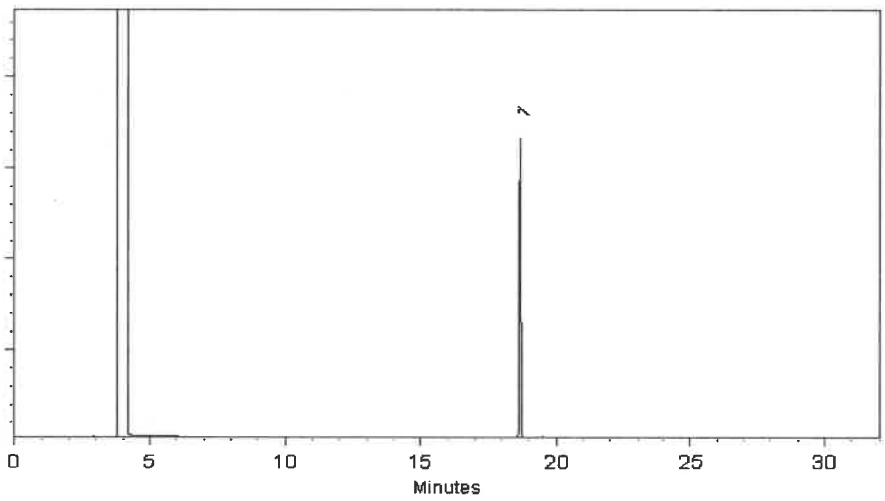
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Alicia Leathers - Operation Technician I **Date Mixed:** 17-Nov-2022 **Balance Serial #** B251644995

Jennifer Pollino - Operations Tech III - ARM QC **Date Passed:** 21-Nov-2022

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

## General Certified Reference Material Notes

### Expiration Notes:

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

### Purity Notes:

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

### Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified 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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**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. :** 30006 **Lot No.:** A0200785

**Description :** VOA Calibration Mix #1

VOA Calibration Mix #1 5,000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul

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

**Expiration Date :** November 30, 2026 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Acetone | 67-64-1 | SHBP8774 | 99% | 5,018.5 µg/mL | +/- 173.4162 |
| 2 | 2-Butanone (MEK) | 78-93-3 | SHBL5543 | 99% | 5,016.0 µg/mL | +/- 173.3298 |
| 3 | 4-Methyl-2-pentanone (MIBK) | 108-10-1 | SHBP4724 | 99% | 5,010.7 µg/mL | +/- 173.1455 |
| 4 | 2-Hexanone | 591-78-6 | MKCQ6663 | 99% | 5,015.0 µg/mL | +/- 173.2952 |

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

**Solvent:** P&T Methanol/Water (90:10)
**CAS #** 67-56-1/7732-18-5
**Purity** 99%

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

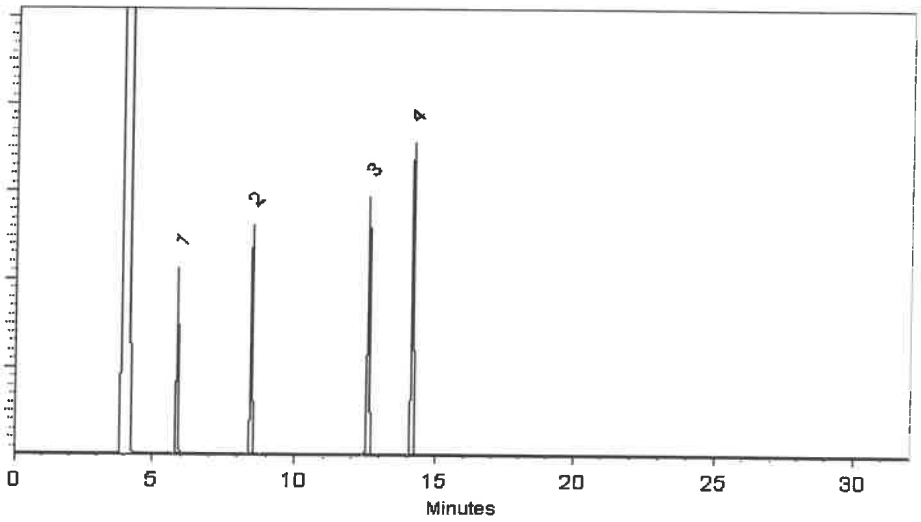
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Laith Clemente - Operations Technician I

**Date Mixed:** 09-Aug-2023 **Balance Serial #** B707717271

Marlina Cowan – Operations Tech II ARM QC

**Date Passed:** 16-Aug-2023

**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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*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. :** 30006 **Lot No.:** A0200785

**Description :** VOA Calibration Mix #1

VOA Calibration Mix #1 5,000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul

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

**Expiration Date :** November 30, 2026 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Acetone | 67-64-1 | SHBP8774 | 99% | 5,018.5 µg/mL | +/- 173.4162 |
| 2 | 2-Butanone (MEK) | 78-93-3 | SHBL5543 | 99% | 5,016.0 µg/mL | +/- 173.3298 |
| 3 | 4-Methyl-2-pentanone (MIBK) | 108-10-1 | SHBP4724 | 99% | 5,010.7 µg/mL | +/- 173.1455 |
| 4 | 2-Hexanone | 591-78-6 | MKCQ6663 | 99% | 5,015.0 µg/mL | +/- 173.2952 |

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

**Solvent:** P&T Methanol/Water (90:10)
**CAS #** 67-56-1/7732-18-5
**Purity** 99%

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

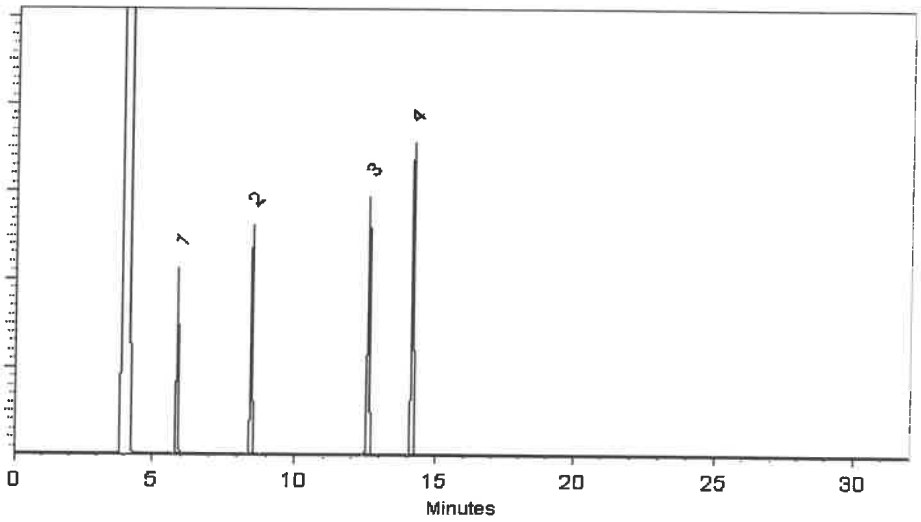
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Laith Clemente - Operations Technician I

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Marlina Cowan – Operations Tech II ARM QC

**Date Passed:** 16-Aug-2023

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

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- Purity values are rounded to the nearest whole number.

## Certified Uncertainty Value Notes:

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- 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:

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## Handling Notes:

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**Description :** VOA Calibration Mix #1

VOA Calibration Mix #1 5,000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul

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

**Expiration Date :** November 30, 2026 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

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

**Solvent:** P&T Methanol/Water (90:10)
**CAS #** 67-56-1/7732-18-5
**Purity** 99%

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

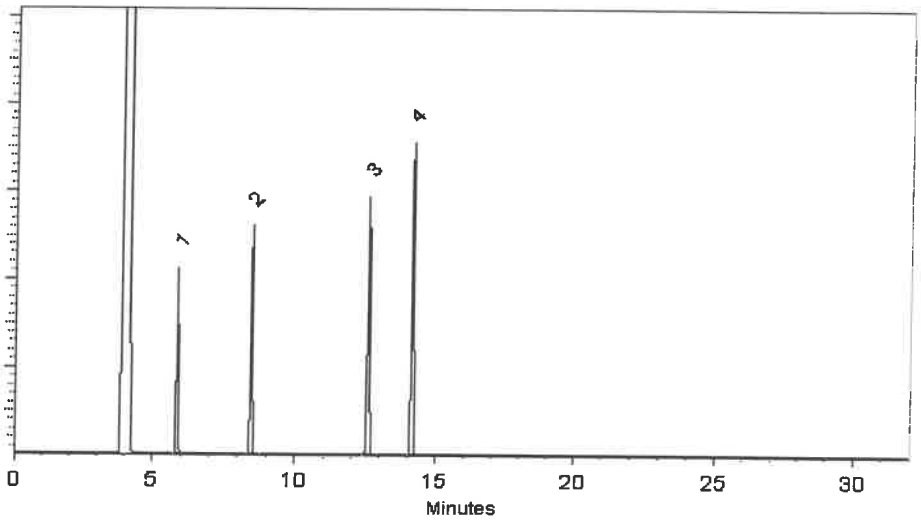
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Laith Clemente - Operations Technician I

**Date Mixed:** 09-Aug-2023 **Balance Serial #** B707717271

Marlina Cowan – Operations Tech II ARM QC

**Date Passed:** 16-Aug-2023

**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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**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. :** 30489 **Lot No.:** A0209618

**Description :** 8260B Acetates Mix

8260B Acetates Mix 2,000 µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** September 30, 2025 **Storage:** -20°C or colder

**Handling:** This product is photosensitive. **Ship:** On Ice

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Methyl acetate | 79-20-9 | SHBP3100 | 99% | 2,019.3 µg/mL | +/- 69.7974 |
| 2 | Vinyl acetate | 108-05-4 | RP231030CTH | 98% | 2,016.8 µg/mL | +/- 69.7112 |
| 3 | Ethyl acetate | 141-78-6 | SHBQ9682 | 99% | 2,010.7 µg/mL | +/- 69.4979 |
| 4 | Isopropyl acetate | 108-21-4 | BCCG7069 | 99% | 2,016.0 µg/mL | +/- 69.6822 |
| 5 | Propyl acetate | 109-60-4 | P8XLN | 99% | 2,008.0 µg/mL | +/- 69.4057 |
| 6 | Butyl acetate | 123-86-4 | SHBP6314 | 99% | 2,007.3 µg/mL | +/- 69.3826 |
| 7 | Amyl acetate | 628-63-7 | 41325/1 | 97% | 2,004.7 µg/mL | +/- 69.2905 |

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

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

**Tech Tips:**

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods . Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this

reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

## Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

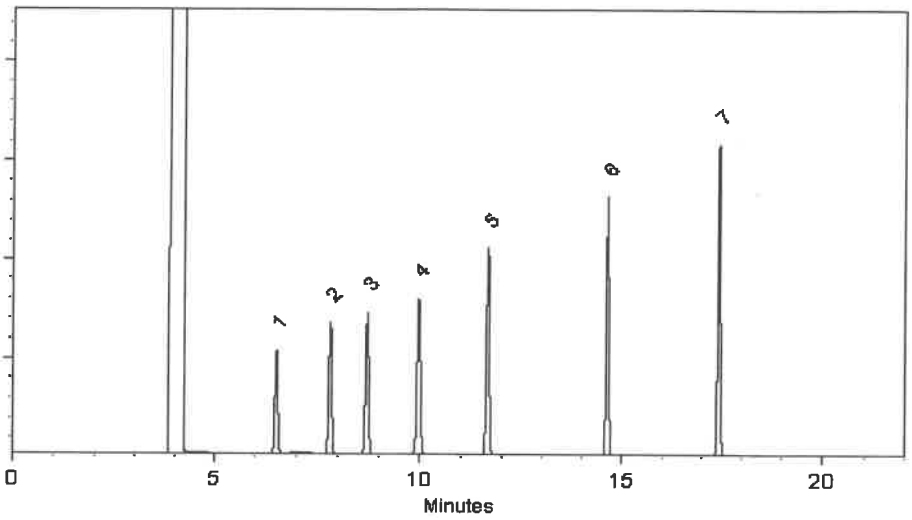
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Sam Moodler - Operations Tech I

**Date Mixed:** 28-Mar-2024 **Balance Serial #** B707717271

Dillan Murphy - Operations Technician I

**Date Passed:** 01-Apr-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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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. :** 30489 **Lot No.:** A0209618

**Description :** 8260B Acetates Mix

8260B Acetates Mix 2,000 µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** September 30, 2025 **Storage:** -20°C or colder

**Handling:** This product is photosensitive. **Ship:** On Ice

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Methyl acetate | 79-20-9 | SHBP3100 | 99% | 2,019.3 µg/mL | +/- 69.7974 |
| 2 | Vinyl acetate | 108-05-4 | RP231030CTH | 98% | 2,016.8 µg/mL | +/- 69.7112 |
| 3 | Ethyl acetate | 141-78-6 | SHBQ9682 | 99% | 2,010.7 µg/mL | +/- 69.4979 |
| 4 | Isopropyl acetate | 108-21-4 | BCCG7069 | 99% | 2,016.0 µg/mL | +/- 69.6822 |
| 5 | Propyl acetate | 109-60-4 | P8XLN | 99% | 2,008.0 µg/mL | +/- 69.4057 |
| 6 | Butyl acetate | 123-86-4 | SHBP6314 | 99% | 2,007.3 µg/mL | +/- 69.3826 |
| 7 | Amyl acetate | 628-63-7 | 41325/1 | 97% | 2,004.7 µg/mL | +/- 69.2905 |

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

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

**Tech Tips:**

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods . Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this

reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

## Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

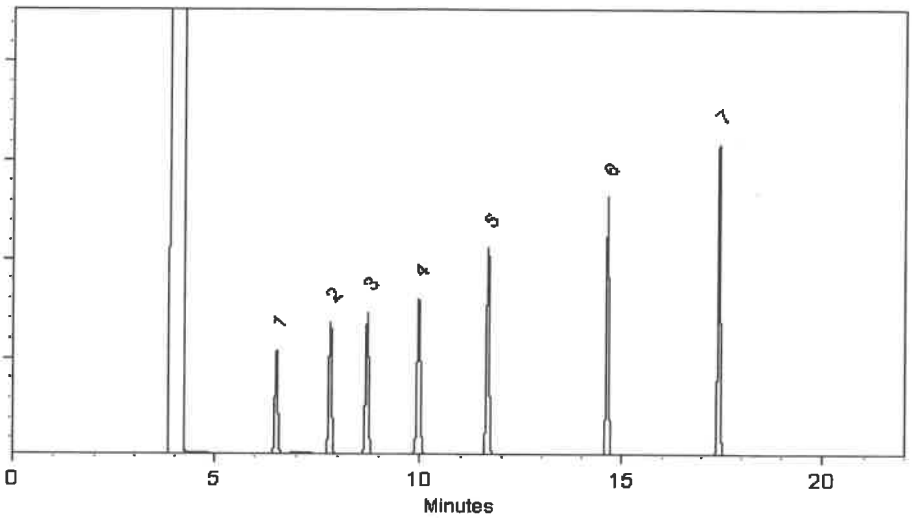
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Sam Moodler - Operations Tech I

**Date Mixed:** 28-Mar-2024 **Balance Serial #** B707717271

Dillan Murphy - Operations Technician I

**Date Passed:** 01-Apr-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:

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  $k$ 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:

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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

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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. :** 555581 **Lot No.:** A0210184

**Description :** Custom 8260 Internal Standard Mix

Custom 8260 Internal Standard Mix 25,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** April 30, 2027 **Storage:** 10°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | 1,4-Dichlorobenzene-d4 | 3855-82-1 | PR-30447 | 99% | 25,212.0 µg/mL | +/- 1,427.8857 |
| 2 | 1,4-Difluorobenzene | 540-36-3 | MKCS8657 | 99% | 25,220.0 µg/mL | +/- 1,428.3388 |
| 3 | Chlorobenzene-d5 | 3114-55-4 | PR-31132 | 99% | 25,116.0 µg/mL | +/- 1,422.4487 |
| 4 | Pentafluorobenzene | 363-72-4 | MKCR9383 | 99% | 25,180.0 µg/mL | +/- 1,426.0734 |

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

John Friedline - Operations Technician I

**Date Mixed:** 11-Apr-2024 **Balance:** 1127510105

REVIEWED

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:

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- 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:

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

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

**Catalog No. :** 30006 **Lot No.:** A0210618

**Description :** VOA Calibration Mix #1

VOA Calibration Mix #1 5,000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul

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

**Expiration Date :** July 31, 2027 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Acetone | 67-64-1 | SHBQ8504 | 99% | 5,014.8 µg/mL | +/- 173.2883 |
| 2 | 2-Butanone (MEK) | 78-93-3 | SHBQ4704 | 99% | 5,012.4 µg/mL | +/- 173.2054 |
| 3 | 4-Methyl-2-pentanone (MIBK) | 108-10-1 | SHBP9200 | 99% | 5,011.6 µg/mL | +/- 173.1777 |
| 4 | 2-Hexanone | 591-78-6 | MKCQ6663 | 99% | 5,013.0 µg/mL | +/- 173.2261 |

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

**Solvent:** P&T Methanol/Water (90:10)
**CAS #** 67-56-1/7732-18-5
**Purity** 99%

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

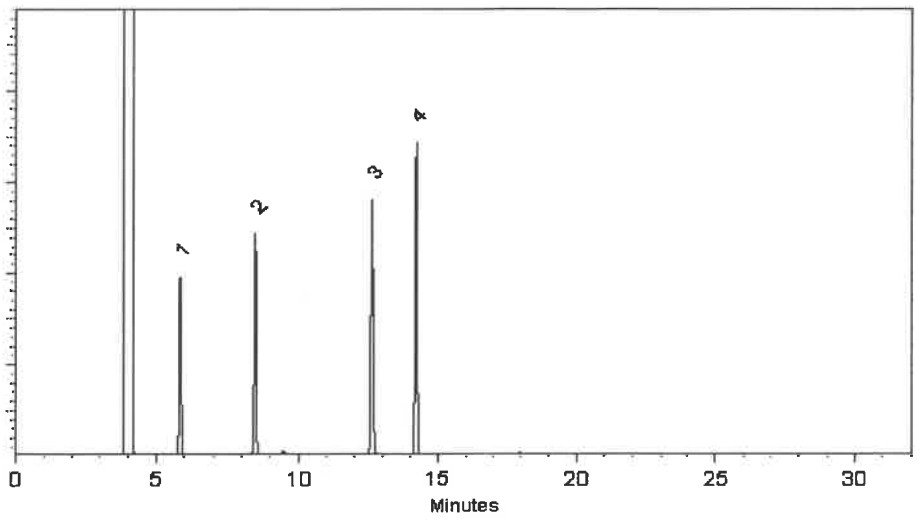
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Dakota Parson - Operations Technician I

**Date Mixed:** 22-Apr-2024 **Balance Serial #** B707717271

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 24-Apr-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.
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- 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:

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  $k$ 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:

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

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

**Catalog No. :** 30006 **Lot No.:** A0210618

**Description :** VOA Calibration Mix #1

VOA Calibration Mix #1 5,000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul

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

**Expiration Date :** July 31, 2027 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Acetone | 67-64-1 | SHBQ8504 | 99% | 5,014.8 µg/mL | +/- 173.2883 |
| 2 | 2-Butanone (MEK) | 78-93-3 | SHBQ4704 | 99% | 5,012.4 µg/mL | +/- 173.2054 |
| 3 | 4-Methyl-2-pentanone (MIBK) | 108-10-1 | SHBP9200 | 99% | 5,011.6 µg/mL | +/- 173.1777 |
| 4 | 2-Hexanone | 591-78-6 | MKCQ6663 | 99% | 5,013.0 µg/mL | +/- 173.2261 |

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

**Solvent:** P&T Methanol/Water (90:10)
**CAS #** 67-56-1/7732-18-5
**Purity** 99%

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

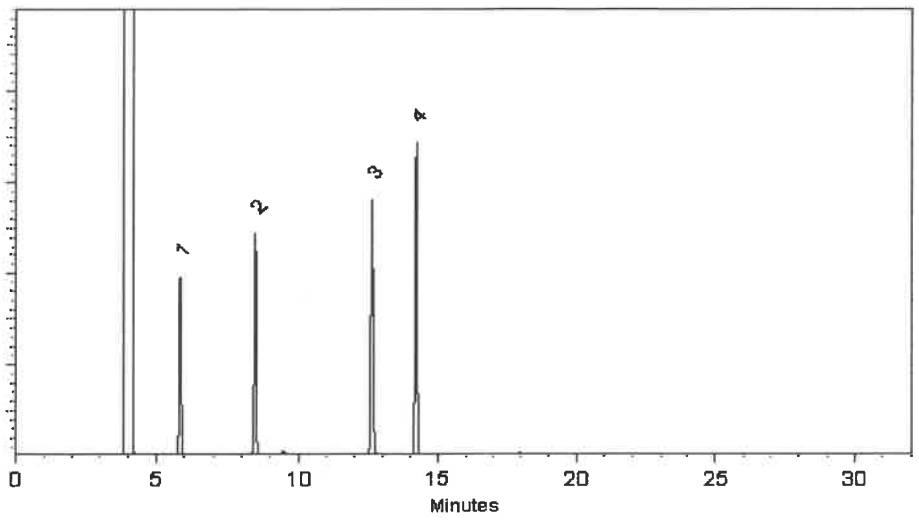
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Dakota Parson - Operations Technician I

**Date Mixed:** 22-Apr-2024 **Balance Serial #** B707717271

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 24-Apr-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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30 Yrs

# Certificate of Analysis

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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. :** 30006 **Lot No.:** A0210618

**Description :** VOA Calibration Mix #1

VOA Calibration Mix #1 5,000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul

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

**Expiration Date :** July 31, 2027 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Acetone | 67-64-1 | SHBQ8504 | 99% | 5,014.8 µg/mL | +/- 173.2883 |
| 2 | 2-Butanone (MEK) | 78-93-3 | SHBQ4704 | 99% | 5,012.4 µg/mL | +/- 173.2054 |
| 3 | 4-Methyl-2-pentanone (MIBK) | 108-10-1 | SHBP9200 | 99% | 5,011.6 µg/mL | +/- 173.1777 |
| 4 | 2-Hexanone | 591-78-6 | MKCQ6663 | 99% | 5,013.0 µg/mL | +/- 173.2261 |

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

**Solvent:** P&T Methanol/Water (90:10)
**CAS #** 67-56-1/7732-18-5
**Purity** 99%

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

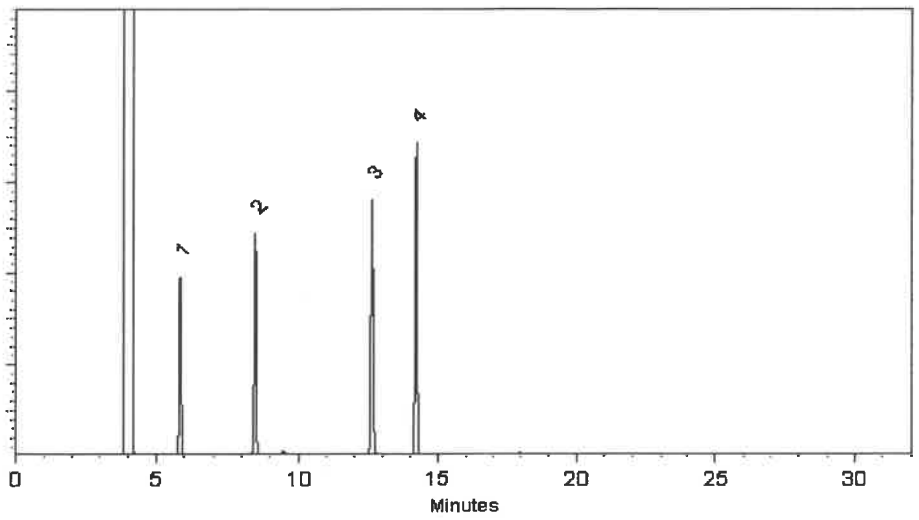
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 ml/min

**Inj. Vol**
1µl

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Dakota Parson - Operations Technician I

**Date Mixed:** 22-Apr-2024 **Balance Serial #** B707717271

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 24-Apr-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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Dec: 12/09/24

# Certificate of Analysis

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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. :** 30225 **Lot No.:** A0214960

**Description :** Bromochloromethane Standard

Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul

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

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

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Bromochloromethane | 74-97-5 | SYN240416CTH | 99% | 2,012.0 µg/mL | +/- 113.0519 |

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

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

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

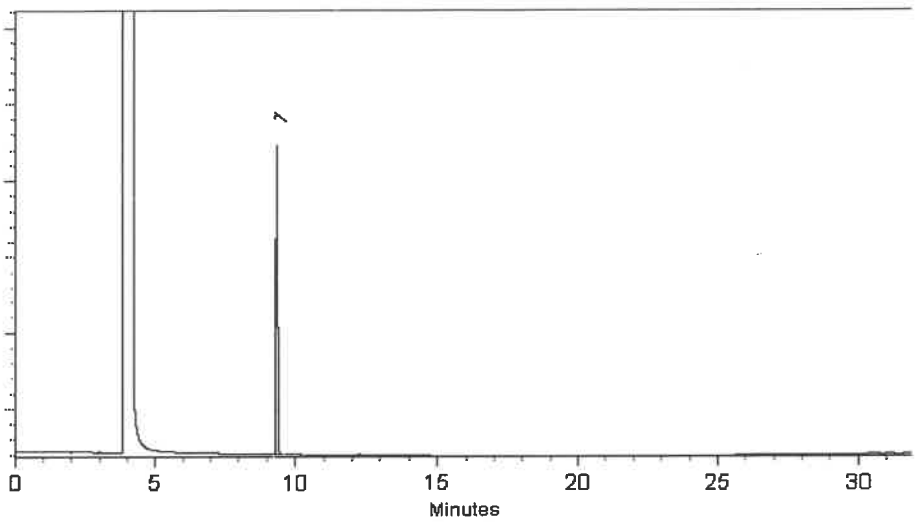
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 ml/min

**Inj. Vol**
1µl

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Stacey Wanner - Operations Technician I

**Date Mixed:** 08-Aug-2024 **Balance Serial #** 1127510105

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 14-Aug-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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Dec: 12/09/24

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

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

**Catalog No. :** 30225 **Lot No.:** A0214960

**Description :** Bromochloromethane Standard

Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul

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

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

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Bromochloromethane | 74-97-5 | SYN240416CTH | 99% | 2,012.0 µg/mL | +/- 113.0519 |

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

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

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

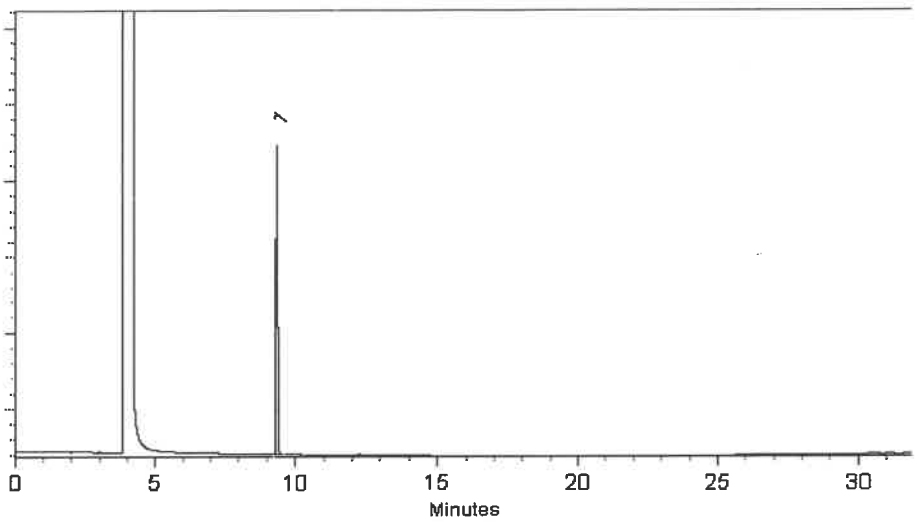
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 ml/min

**Inj. Vol**
1µl

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Stacey Wanner - Operations Technician I

**Date Mixed:** 08-Aug-2024 **Balance Serial #** 1127510105

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 14-Aug-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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**Catalog No. :** 30225 **Lot No.:** A0214960

**Description :** Bromochloromethane Standard

Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul

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

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

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Bromochloromethane | 74-97-5 | SYN240416CTH | 99% | 2,012.0 µg/mL | +/- 113.0519 |

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

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

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

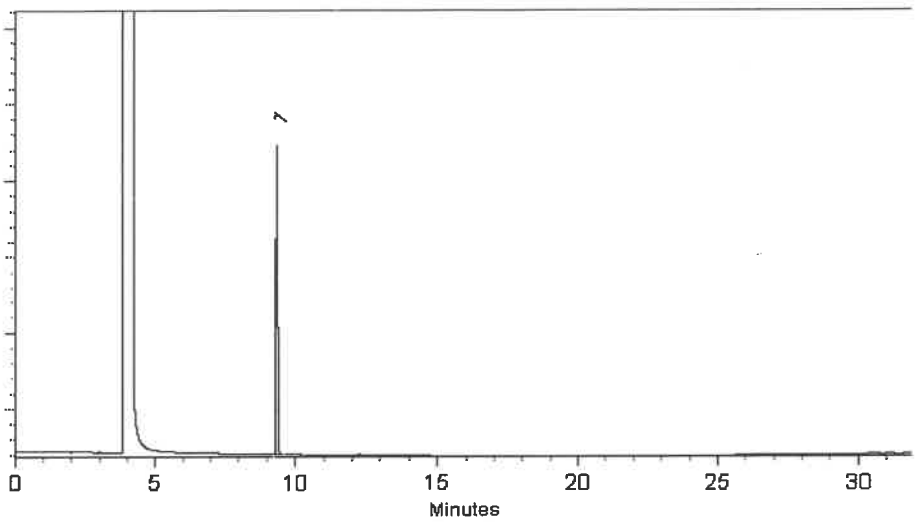
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 ml/min

**Inj. Vol**
1µl

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Stacey Wanner - Operations Technician I

**Date Mixed:** 08-Aug-2024 **Balance Serial #** 1127510105

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 14-Aug-2024

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

## General Certified Reference Material Notes

### Expiration Notes:

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10 vial.

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Dec: 12/09/24

# Certificate of Analysis

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

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**Catalog No. :** 30225 **Lot No.:** A0214960

**Description :** Bromochloromethane Standard

Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul

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

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

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Bromochloromethane | 74-97-5 | SYN240416CTH | 99% | 2,012.0 µg/mL | +/- 113.0519 |

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

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

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

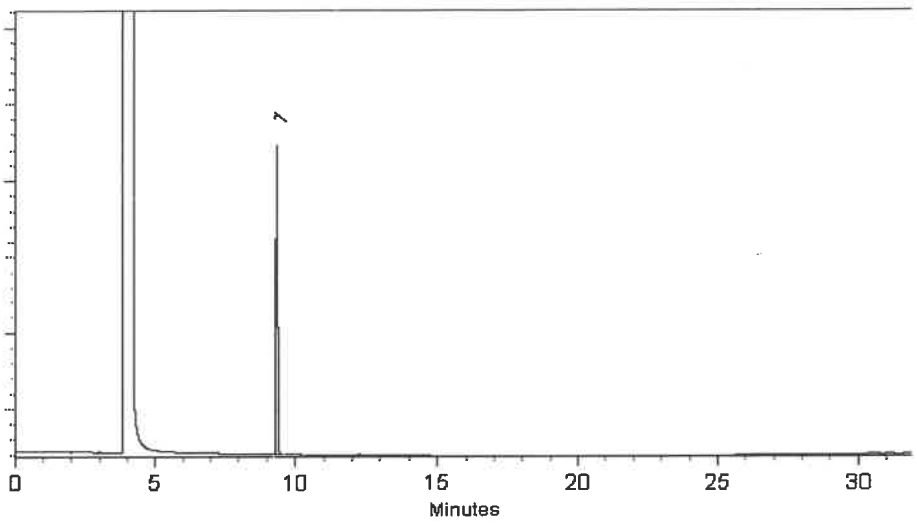
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 ml/min

**Inj. Vol**
1µl

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Stacey Wanner - Operations Technician I

**Date Mixed:** 08-Aug-2024 **Balance Serial #** 1127510105

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 14-Aug-2024

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

## General Certified Reference Material Notes

### Expiration Notes:

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- 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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Rec 12/17/24

CERTIFIED REFERENCE MATERIAL

30 Vial

# Certificate of Analysis

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V14727 to
V14756

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Certificate #3222.01

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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. :** 30042 **Lot No.:** A0216826

**Description :** 502.2 Calibration Mix #1

502.2 Calibration Mix #1 2,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** May 31, 2031 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane (CFC-12) | 75-71-8 | 00022922 | 99% | 2,000.9 µg/mL | +/- 112.4144 |
| 2 | Chloromethane (methyl chloride) | 74-87-3 | 00022694 | 99% | 2,000.7 µg/mL | +/- 112.3998 |
| 3 | Vinyl chloride | 75-01-4 | 00015559 | 99% | 2,000.3 µg/mL | +/- 112.3779 |
| 4 | Bromomethane (methyl bromide) | 74-83-9 | 00017022 | 99% | 2,001.8 µg/mL | +/- 112.4650 |
| 5 | Chloroethane (ethyl chloride) | 75-00-3 | 107-401039114-1 | 99% | 2,000.1 µg/mL | +/- 112.3700 |
| 6 | Trichlorofluoromethane (CFC-11) | 75-69-4 | MKCJ8658 | 99% | 2,000.7 µg/mL | +/- 112.3992 |

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

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

# Quality Confirmation Test

**Column:**
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

**Carrier Gas:**
helium-constant flow 2.0 mL/min.

**Temp. Program:**
40°C (hold 6 min.) to 100°C
@ 6°C/min.

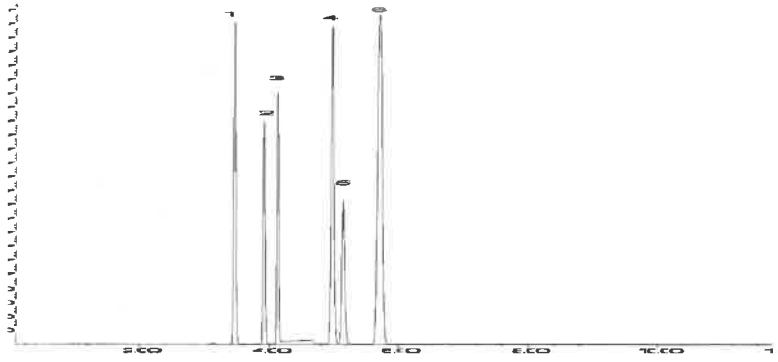
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
MSD

**Split Vent:**
Split ratio 10:1

**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.

Tom Suckar - Mix Technician

**Date Mixed:** 23-Sep-2024 **Balance Serial #** B707717271

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 04-Oct-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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**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. :** 30042 **Lot No.:** A0216826

**Description :** 502.2 Calibration Mix #1

502.2 Calibration Mix #1 2,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** May 31, 2031 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane (CFC-12) | 75-71-8 | 00022922 | 99% | 2,000.9 µg/mL | +/- 112.4144 |
| 2 | Chloromethane (methyl chloride) | 74-87-3 | 00022694 | 99% | 2,000.7 µg/mL | +/- 112.3998 |
| 3 | Vinyl chloride | 75-01-4 | 00015559 | 99% | 2,000.3 µg/mL | +/- 112.3779 |
| 4 | Bromomethane (methyl bromide) | 74-83-9 | 00017022 | 99% | 2,001.8 µg/mL | +/- 112.4650 |
| 5 | Chloroethane (ethyl chloride) | 75-00-3 | 107-401039114-1 | 99% | 2,000.1 µg/mL | +/- 112.3700 |
| 6 | Trichlorofluoromethane (CFC-11) | 75-69-4 | MKCJ8658 | 99% | 2,000.7 µg/mL | +/- 112.3992 |

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

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

# Quality Confirmation Test

**Column:**
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

**Carrier Gas:**
helium-constant flow 2.0 mL/min.

**Temp. Program:**
40°C (hold 6 min.) to 100°C
@ 6°C/min.

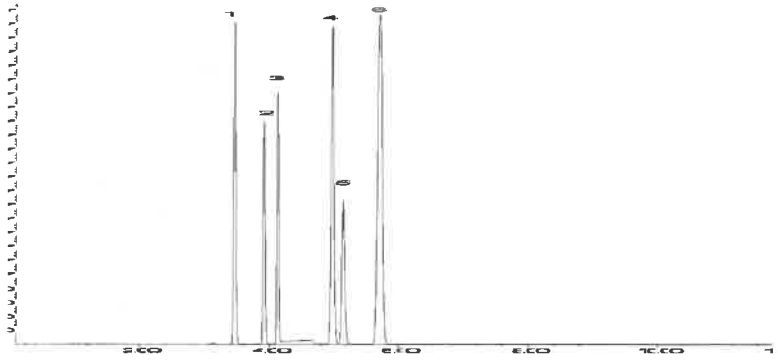
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
MSD

**Split Vent:**
Split ratio 10:1

**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.

Tom Suckar - Mix Technician

**Date Mixed:** 23-Sep-2024 **Balance Serial #** B707717271

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 04-Oct-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:

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  $k$ 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:

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**Catalog No. :** 30042 **Lot No.:** A0216826

**Description :** 502.2 Calibration Mix #1

502.2 Calibration Mix #1 2,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** May 31, 2031 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane (CFC-12) | 75-71-8 | 00022922 | 99% | 2,000.9 µg/mL | +/- 112.4144 |
| 2 | Chloromethane (methyl chloride) | 74-87-3 | 00022694 | 99% | 2,000.7 µg/mL | +/- 112.3998 |
| 3 | Vinyl chloride | 75-01-4 | 00015559 | 99% | 2,000.3 µg/mL | +/- 112.3779 |
| 4 | Bromomethane (methyl bromide) | 74-83-9 | 00017022 | 99% | 2,001.8 µg/mL | +/- 112.4650 |
| 5 | Chloroethane (ethyl chloride) | 75-00-3 | 107-401039114-1 | 99% | 2,000.1 µg/mL | +/- 112.3700 |
| 6 | Trichlorofluoromethane (CFC-11) | 75-69-4 | MKCJ8658 | 99% | 2,000.7 µg/mL | +/- 112.3992 |

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

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

# Quality Confirmation Test

**Column:**
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

**Carrier Gas:**
helium-constant flow 2.0 mL/min.

**Temp. Program:**
40°C (hold 6 min.) to 100°C
@ 6°C/min.

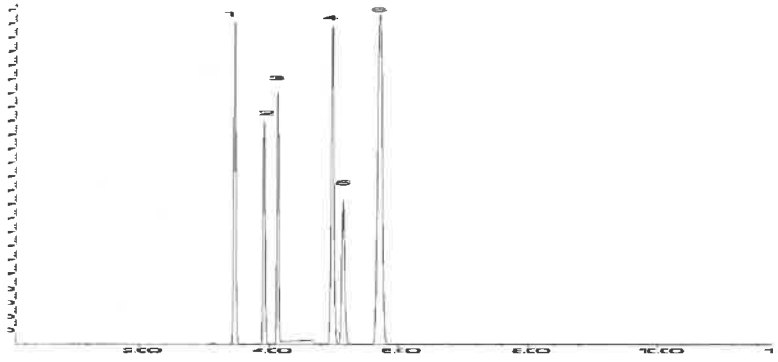
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
MSD

**Split Vent:**
Split ratio 10:1

**Inj. Vol**
1µl



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Tom Suckar - Mix Technician

**Date Mixed:** 23-Sep-2024 **Balance Serial #** B707717271

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 04-Oct-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:

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- 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.

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30 Vial

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ACCREDITED
ISO/IEC 17025 Accredited
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Certificate #3222.02

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

**Catalog No. :** 30042 **Lot No.:** A0216826

**Description :** 502.2 Calibration Mix #1

502.2 Calibration Mix #1 2,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** May 31, 2031 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane (CFC-12) | 75-71-8 | 00022922 | 99% | 2,000.9 µg/mL | +/- 112.4144 |
| 2 | Chloromethane (methyl chloride) | 74-87-3 | 00022694 | 99% | 2,000.7 µg/mL | +/- 112.3998 |
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| 4 | Bromomethane (methyl bromide) | 74-83-9 | 00017022 | 99% | 2,001.8 µg/mL | +/- 112.4650 |
| 5 | Chloroethane (ethyl chloride) | 75-00-3 | 107-401039114-1 | 99% | 2,000.1 µg/mL | +/- 112.3700 |
| 6 | Trichlorofluoromethane (CFC-11) | 75-69-4 | MKCJ8658 | 99% | 2,000.7 µg/mL | +/- 112.3992 |

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

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

# Quality Confirmation Test

**Column:**
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

**Carrier Gas:**
helium-constant flow 2.0 mL/min.

**Temp. Program:**
40°C (hold 6 min.) to 100°C
@ 6°C/min.

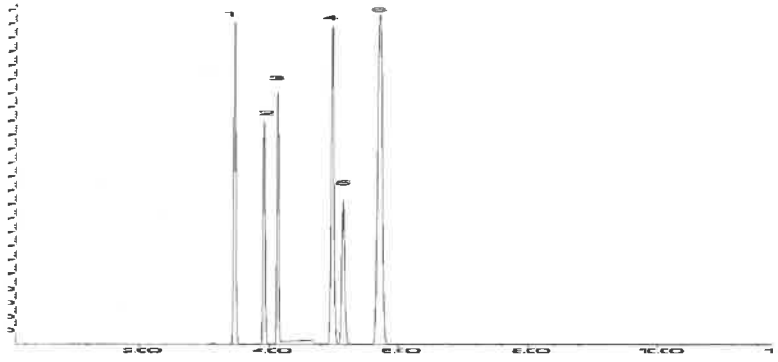
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
MSD

**Split Vent:**
Split ratio 10:1

**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.

Tom Suckar - Mix Technician

**Date Mixed:** 23-Sep-2024 **Balance Serial #** B707717271

Jennifer Pollino - Operations Tech III - ARM QC

**Date Passed:** 04-Oct-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:

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  $k$ 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:

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***chromatographic plus***

J14842 to 14846

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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. :** 30470 **Lot No.:** A0217535

**Description :** tert-Butanol Standard

tert-Butanol Std 50,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** October 31, 2027 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | tert-Butanol (TBA) | 75-65-0 | SHBQ8002-1 | 99% | 50,007.5 µg/mL | +/- 717.6137 |

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

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

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

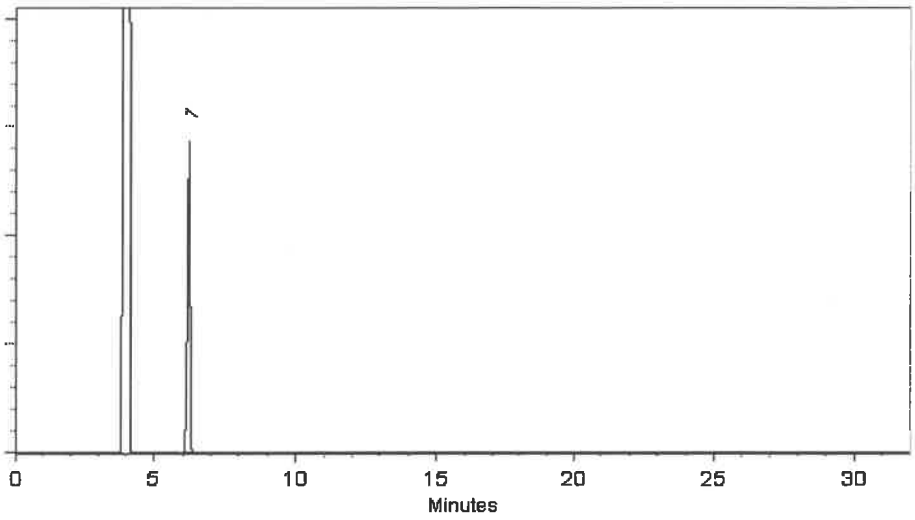
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Aaron Enyart - Operations Tech I

**Date Mixed:** 07-Oct-2024 **Balance Serial #** B251644995

Brittany Federinko - Operations Tech I

**Date Passed:** 09-Oct-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.

RESTEK

110 Benner Circle
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CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

***chromatographic plus***

J14842 to 14846

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. :** 30470 **Lot No.:** A0217535

**Description :** tert-Butanol Standard

tert-Butanol Std 50,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** October 31, 2027 **Storage:** 0°C or colder

**Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | tert-Butanol (TBA) | 75-65-0 | SHBQ8002-1 | 99% | 50,007.5 µg/mL | +/- 717.6137 |

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

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

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

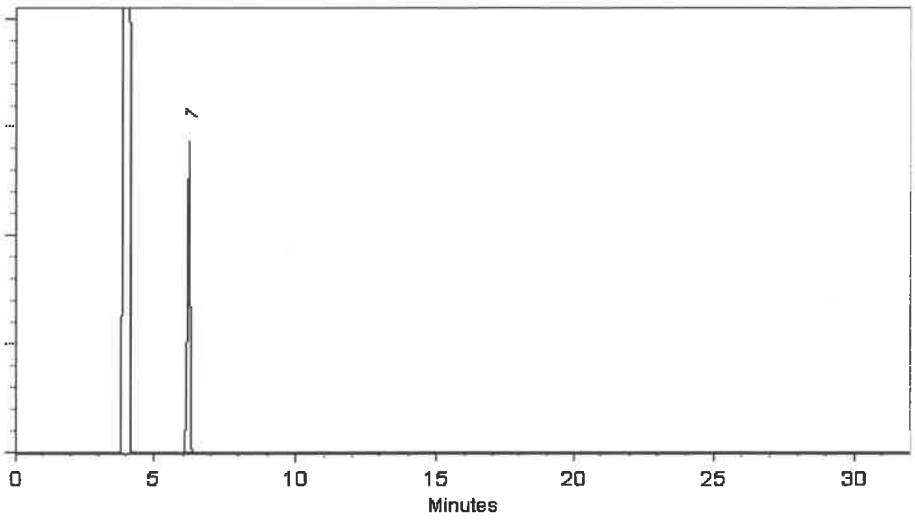
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 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.

Aaron Enyart - Operations Tech I

**Date Mixed:** 07-Oct-2024 **Balance Serial #** B251644995

Brittany Federinko - Operations Tech I

**Date Passed:** 09-Oct-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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Zoviy Rec 01/08/21

CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

*chromatographic*

V14803 - V14822

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. :** 555408-SL **Lot No.:** A0220471

**Description :** Custom Vinyl Acetate Standard

Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** June 30, 2026 **Storage:** -20°C or colder

**Handling:** This product is photosensitive. **Ship:** On Ice

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Vinyl acetate | 108-05-4 | RD240423RSR | 99% | 8,066.0 µg/mL | +/- 278.7979 |

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

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

**Tech Tips:**

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods . Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

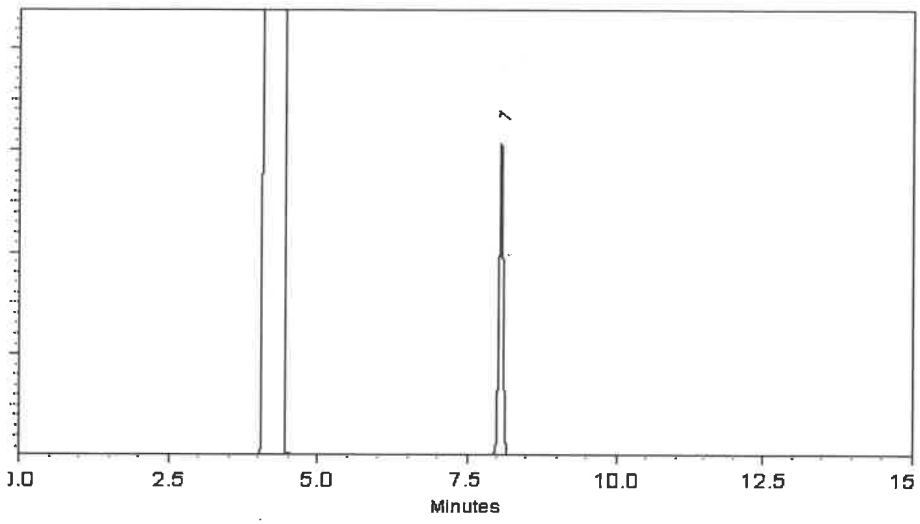
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 ml/min

**Inj. Vol**
1µl

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Ethan Winiarski - Operations Tech I

**Date Mixed:** 24-Dec-2024 **Balance Serial #** 1127510105

Dillan Murphy - Operations Technician I

**Date Passed:** 02-Jan-2025

REVIEWED

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.
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- 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:

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- 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:

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CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

*chromatographic*

V14803 - V14822

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.**

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**Catalog No. :** 555408-SL **Lot No.:** A0220471

**Description :** Custom Vinyl Acetate Standard

Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** June 30, 2026 **Storage:** -20°C or colder

**Handling:** This product is photosensitive. **Ship:** On Ice

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Vinyl acetate | 108-05-4 | RD240423RSR | 99% | 8,066.0 µg/mL | +/- 278.7979 |

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

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

**Tech Tips:**

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods . Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

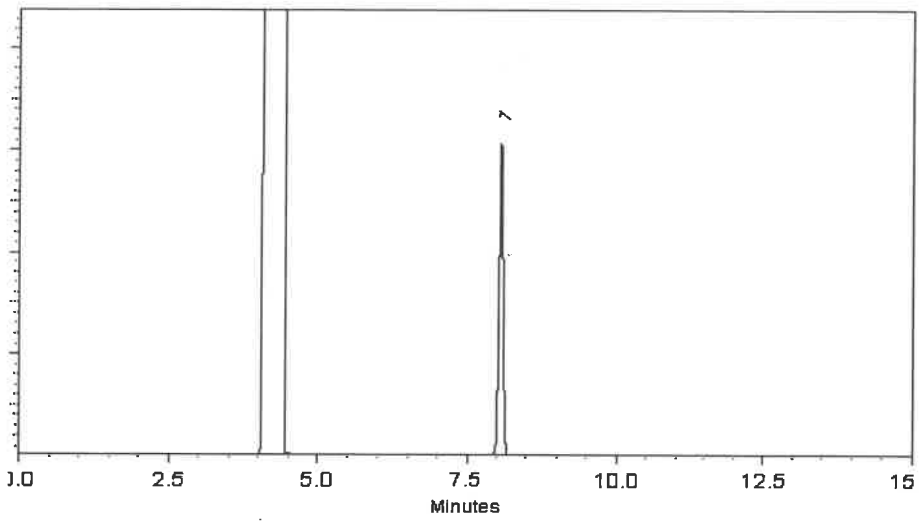
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 ml/min

**Inj. Vol**
1µl

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Ethan Winiarski - Operations Tech I

**Date Mixed:** 24-Dec-2024 **Balance Serial #** 1127510105

Dillan Murphy - Operations Technician I

**Date Passed:** 02-Jan-2025

REVIEWED

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:

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## Manufacturing Notes:

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Zoviy Rec 01/08/21

CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

*chromatographic*

V14803 - V14822

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.**

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**Catalog No. :** 555408-SL **Lot No.:** A0220471

**Description :** Custom Vinyl Acetate Standard

Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** June 30, 2026 **Storage:** -20°C or colder

**Handling:** This product is photosensitive. **Ship:** On Ice

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Vinyl acetate | 108-05-4 | RD240423RSR | 99% | 8,066.0 µg/mL | +/- 278.7979 |

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

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

**Tech Tips:**

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# Quality Confirmation Test

**Column:**
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

**Carrier Gas:**
hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
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@ 8°C/min. (hold 5 min.)

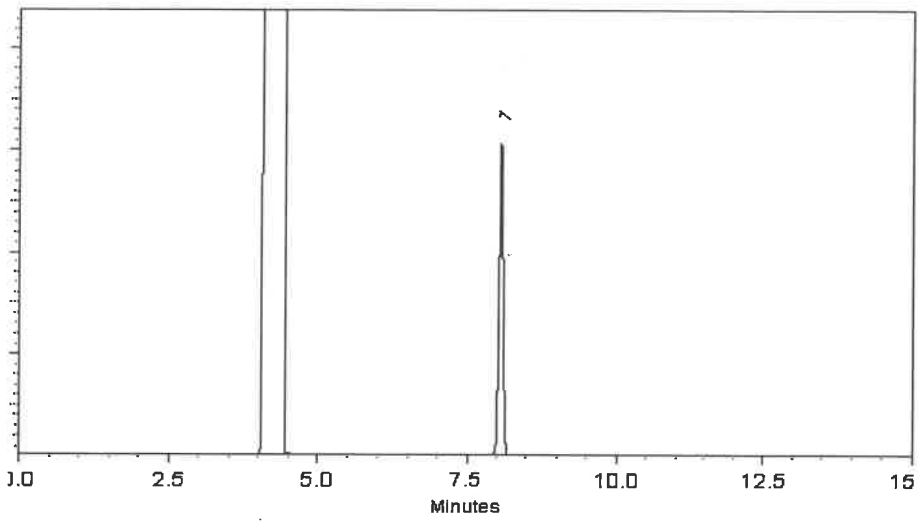
**Inj. Temp:**
200°C

**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 ml/min

**Inj. Vol**
1µl

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Ethan Winiarski - Operations Tech I

**Date Mixed:** 24-Dec-2024 **Balance Serial #** 1127510105

Dillan Murphy - Operations Technician I

**Date Passed:** 02-Jan-2025

REVIEWED

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.
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## Purity Notes:

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## Handling Notes:

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CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

*chromatographic*

V14803 - V14822

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.**

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**Catalog No. :** 555408-SL **Lot No.:** A0220471

**Description :** Custom Vinyl Acetate Standard

Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** June 30, 2026 **Storage:** -20°C or colder

**Handling:** This product is photosensitive. **Ship:** On Ice

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Vinyl acetate | 108-05-4 | RD240423RSR | 99% | 8,066.0 µg/mL | +/- 278.7979 |

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

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

**Tech Tips:**

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**Column:**
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hydrogen-constant pressure 11.0 psi.

**Temp. Program:**
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

**Inj. Temp:**
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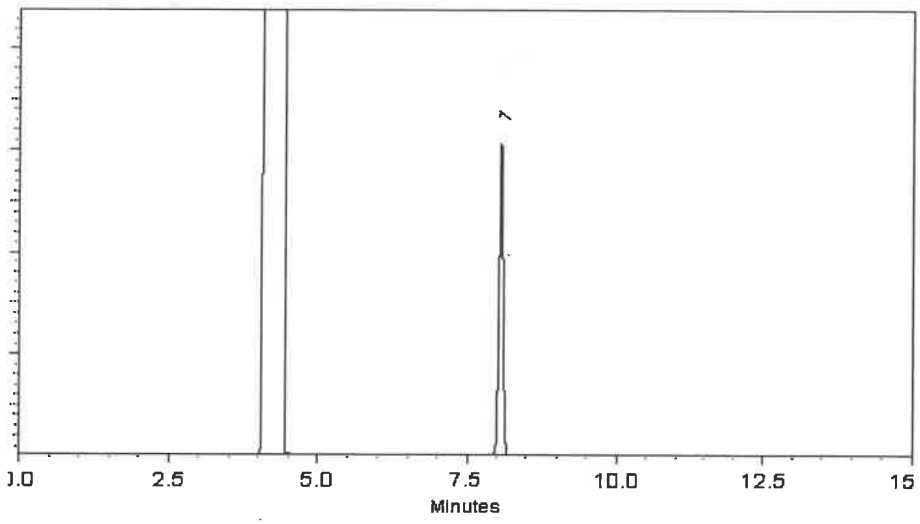
**Det. Temp:**
250°C

**Det. Type:**
FID

**Split Vent:**
40 ml/min

**Inj. Vol**
1µl

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Ethan Winiarski - Operations Tech I

**Date Mixed:** 24-Dec-2024 **Balance Serial #** 1127510105

Dillan Murphy - Operations Technician I

**Date Passed:** 02-Jan-2025

REVIEWED

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

# General Certified Reference Material Notes

## Expiration Notes:

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

www.restek.com

10 vial

# CERTIFIED REFERENCE MATERIAL

Lee 03/31/25

# Certificate of Analysis

***gravimetric***

V14904 to V14913

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. :** 555582 **Lot No.:** A0223904

**Description :** Custom 8260A/B Surrogate Mix

Custom 8260A/B Surrogate Mix 25,000µg/mL, P&T Methanol, 1mL/ampul

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

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

**Ship:** Ambient

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | 1,2-Dichloroethane-d4 | 17060-07-0 | PR-33313 | 99% | 25,108.0 µg/mL | +/- 1,421.9957 |
| 2 | 1-Bromo-4-fluorobenzene (BFB) | 460-00-4 | 0000268853 | 99% | 25,108.0 µg/mL | +/- 1,421.9957 |
| 3 | Dibromofluoromethane | 1868-53-7 | VENKAT02 | 99% | 25,232.0 µg/mL | +/- 1,429.0184 |
| 4 | Toluene-d8 | 2037-26-5 | PR-34141 | 99% | 25,156.0 µg/mL | +/- 1,424.7141 |

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

Brittany Federinko - Operations Tech I

**Date Mixed:** 27-Mar-2025 **Balance:** B251644995

**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.

Methanol
ULTRA RESI-ANALYZED
For Purge and Trap Analysis

Rec 05/09/25

avantor™ | J.T.Baker®

V 14921 to
V 14938

Material No.: 9077-02
Batch No.: 24G0262002
Manufactured Date: 2024-05-14
Expiration Date: 2027-05-14
Revision No.: 0

# Certificate of Analysis

| Test | Specification | Result |
|---|---|---|
| Assay ($CH_3OH$) (by GC, corrected for water) | ≥ 99.9 % | 100.0 % |
| Residue after Evaporation | ≤ 1.0 ppm | 0.3 ppm |
| Titrable Acid (µeq/g) | ≤ 0.3 | 0.3 |
| Titrable Base (µeq/g) | ≤ 0.10 | 0.03 |
| Water (by KF, coulometric) | ≤ 0.08 % | < 0.01 % |
| Volatile Organic Trace Analysis - Below EPA 8260B CRQL | Conforms | Conforms |

For Laboratory,Research,or Manufacturing Use
Performance Tested for Use in EPA Methods
500 Series for Drinking Water
600 Series for Wastewater
846 for Solid Waste

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

JCroak

Jamie Croak
Director Quality Operations, Bioscience Production

Methanol
ULTRA RESI-ANALYZED
For Purge and Trap Analysis

Rec 05/09/25

avantor™ | J.T.Baker®

V 14921 to
V 14938

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Performance Tested for Use in EPA Methods
500 Series for Drinking Water
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Country of Origin: USA
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JCroak

Jamie Croak
Director Quality Operations, Bioscience Production

Rec 05/19/25

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CERTIFIED REFERENCE MATERIAL
2 x Vial

# Certificate of Analysis

***chromatographic plus***

VJ14951 to VJ14970

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. :** 30489 **Lot No.:** A0222076

**Description :** 8260B Acetates Mix

8260B Acetates Mix 2,000 µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** August 31, 2026 **Storage:** -20°C or colder

**Handling:** This product is photosensitive. **Ship:** On Ice

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---|---|---|---|---|---|---|
| 1 | Methyl acetate | 79-20-9 | SHBR1889 | 99% | 2,004.0 µg/mL | +/- 69.2674 |
| 2 | Vinyl acetate | 108-05-4 | RD240423RSR | 99% | 2,010.0 µg/mL | +/- 69.4748 |
| 3 | Ethyl acetate | 141-78-6 | SHBS3323 | 99% | 2,019.3 µg/mL | +/- 69.7974 |
| 4 | Isopropyl acetate | 108-21-4 | BCCG7069 | 99% | 2,008.0 µg/mL | +/- 69.4057 |
| 5 | Propyl acetate | 109-60-4 | P8XLN | 99% | 2,008.0 µg/mL | +/- 69.4057 |
| 6 | Butyl acetate | 123-86-4 | SHBR2024 | 99% | 2,008.0 µg/mL | +/- 69.4057 |
| 7 | Amyl acetate | 628-63-7 | BCBT7442 | 99% | 2,006.7 µg/mL | +/- 69.3596 |

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

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

**Tech Tips:**

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods . Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this

Rec 05/19/25

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CERTIFIED REFERENCE MATERIAL
2 x Vial

# Certificate of Analysis

***chromatographic plus***

VJ14951 to VJ14970

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.**

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**Catalog No. :** 30489 **Lot No.:** A0222076

**Description :** 8260B Acetates Mix

8260B Acetates Mix 2,000 µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** August 31, 2026 **Storage:** -20°C or colder

**Handling:** This product is photosensitive. **Ship:** On Ice

CERTIFIED VALUES

| 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.

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

**Tech Tips:**

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods . Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this

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*Certified Reference Material CRM*

Rec 09/16/25 5 vial

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https://Absolutestandards.com

CERTIFIED WEIGHT REPORT

| | |
|---|---|
| **Part Number:** | 91980 |
| Lot Number: | 091525 |
| Description: | Acrolein |
| Expiration Date: | 101525 |
| Recommended Storage: | Refrigerate (2°C to 8°C) |
| Nominal Concentration (µg/mL): | 5000 |
| NIST Test ID#: | 6UTB |

**Solvent(s):** **Lot#**
Water 041725Q

V15064 to V15068

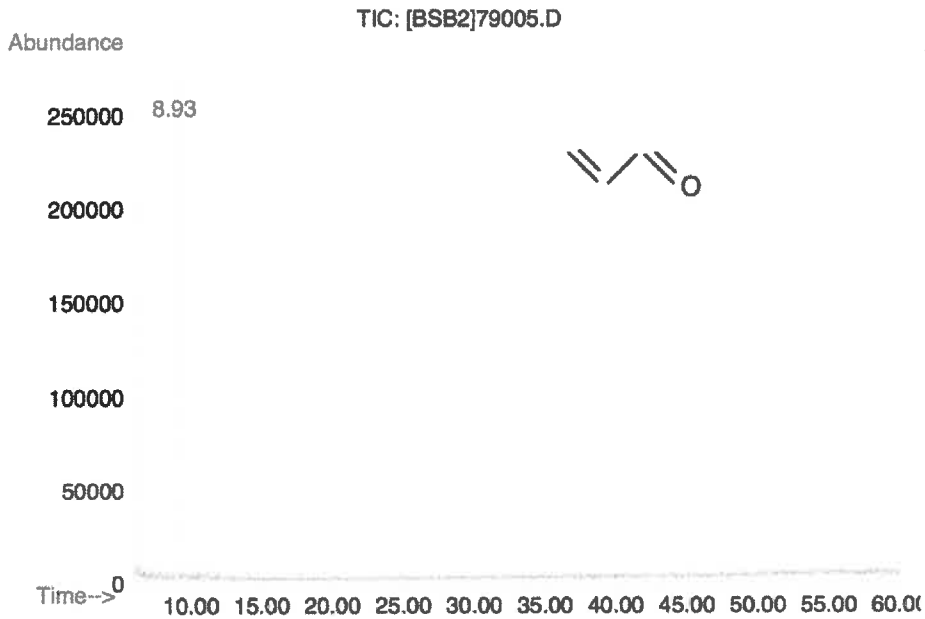
5E-05 Balance Uncertainty

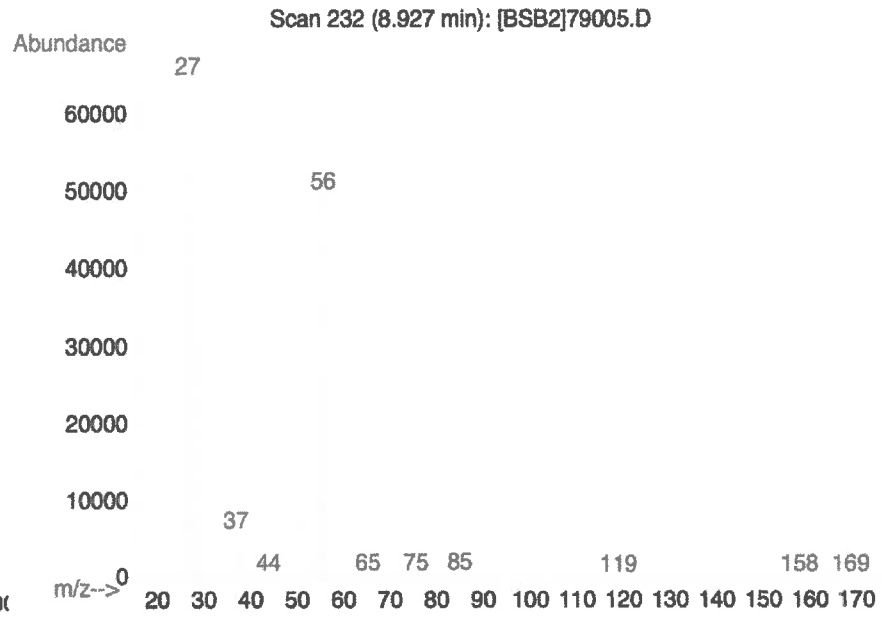
Weight(s) shown below were combined and diluted to (mL): 10.0 0.001 Flask Uncertainty

| | |
|---|---|
| 091525 | |
| Formulated By: Anthony Mahoney | DATE |
| 091525 | |
| Reviewed By: Pedro L. Rentas | DATE |

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Acrolein | 5 | 103755V10F | 5000 | 97 | 0.5 | 0.05166 | 0.05176 | 5009.9 | 52.6 | 107-02-8 | 0.1 ppm | orl-rat 46mg/kg |

**Method:** GC6MSD-1. **Detector:** Mass Selective Detector (Scan mode). **Column:** Vocol (60m X 0.25mm ID X 1.5µm film thickness). **Oven Profile:** Temp. 1 = 35°C (Time 1 = 10min.), Temp. 2=200°C ( Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. **Analyst:** Pedro Rentas. **NOTE:** Due to the instability of acrolein in solution, all solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.




- **The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.**
- **Standards are prepared gravimetrically using balances that are calibrated by an ISO 17025 certified organization with weights traceable through NIST to the SI kilogram (see above).**
- **Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.**
- **All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.**
- **Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).**

**Rev 1.0, 2/25/2025**

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*Certified Reference Material CRM*

Rec 09/16/25 5 vial

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AR-1539 Certificate Number
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CERTIFIED WEIGHT REPORT

| | |
|---|---|
| **Part Number:** | 91980 |
| Lot Number: | 091525 |
| Description: | Acrolein |
| Expiration Date: | 101525 |
| Recommended Storage: | Refrigerate (2°C to 8°C) |
| Nominal Concentration (µg/mL): | 5000 |
| NIST Test ID#: | 6UTB |

**Solvent(s):** **Lot#**
Water 041725Q

V15064 to V15068

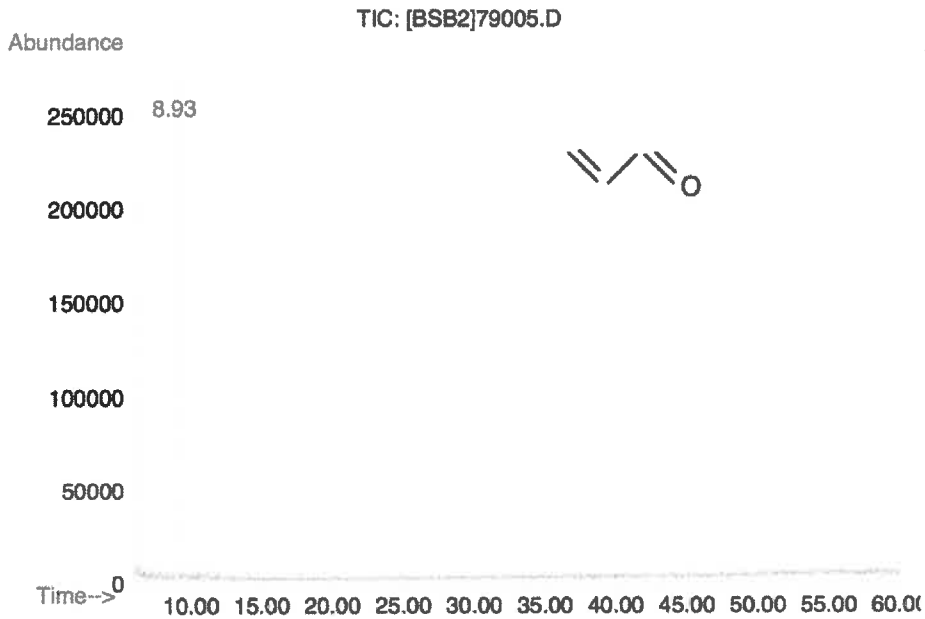
5E-05 Balance Uncertainty

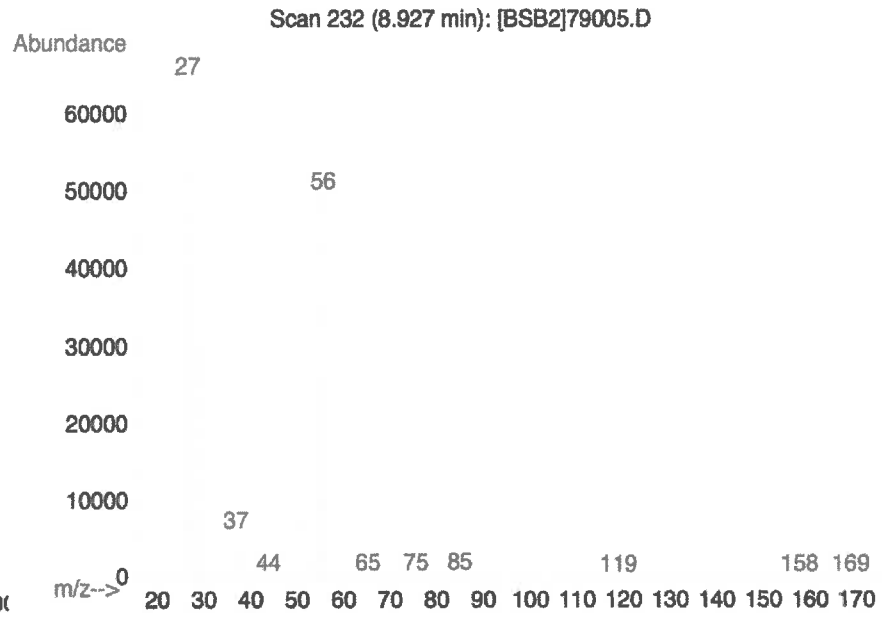
Weight(s) shown below were combined and diluted to (mL): 10.0 0.001 Flask Uncertainty

| | |
|---|---|
| 091525 | |
| Formulated By: Anthony Mahoney | DATE |
| 091525 | |
| Reviewed By: Pedro L. Rentas | DATE |

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Acrolein | 5 | 103755V10F | 5000 | 97 | 0.5 | 0.05166 | 0.05176 | 5009.9 | 52.6 | 107-02-8 | 0.1 ppm | orl-rat 46mg/kg |

**Method:** GC6MSD-1. **Detector:** Mass Selective Detector (Scan mode). **Column:** Vocol (60m X 0.25mm ID X 1.5µm film thickness). **Oven Profile:** Temp. 1 = 35°C (Time 1 = 10min.), Temp. 2=200°C ( Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. **Analyst:** Pedro Rentas. **NOTE:** Due to the instability of acrolein in solution, all solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.




- **The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.**
- **Standards are prepared gravimetrically using balances that are calibrated by an ISO 17025 certified organization with weights traceable through NIST to the SI kilogram (see above).**
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**Rev 1.0, 2/25/2025**

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*Certified Reference Material CRM*

Rec 09/16/25 5 vial

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AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT

| | |
|---|---|
| **Part Number:** | 91980 |
| Lot Number: | 091525 |
| Description: | Acrolein |
| Expiration Date: | 101525 |
| Recommended Storage: | Refrigerate (2°C to 8°C) |
| Nominal Concentration (µg/mL): | 5000 |
| NIST Test ID#: | 6UTB |

**Solvent(s):** **Lot#**
Water 041725Q

V15064 to V15068

5E-05 Balance Uncertainty

Weight(s) shown below were combined and diluted to (mL): 10.0 0.001 Flask Uncertainty

| | |
|---|---|
| 091525 | |
| Formulated By: Anthony Mahoney | DATE |
| 091525 | |
| Reviewed By: Pedro L. Rentas | DATE |

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Acrolein | 5 | 103755V10F | 5000 | 97 | 0.5 | 0.05166 | 0.05176 | 5009.9 | 52.6 | 107-02-8 | 0.1 ppm | orl-rat 46mg/kg |

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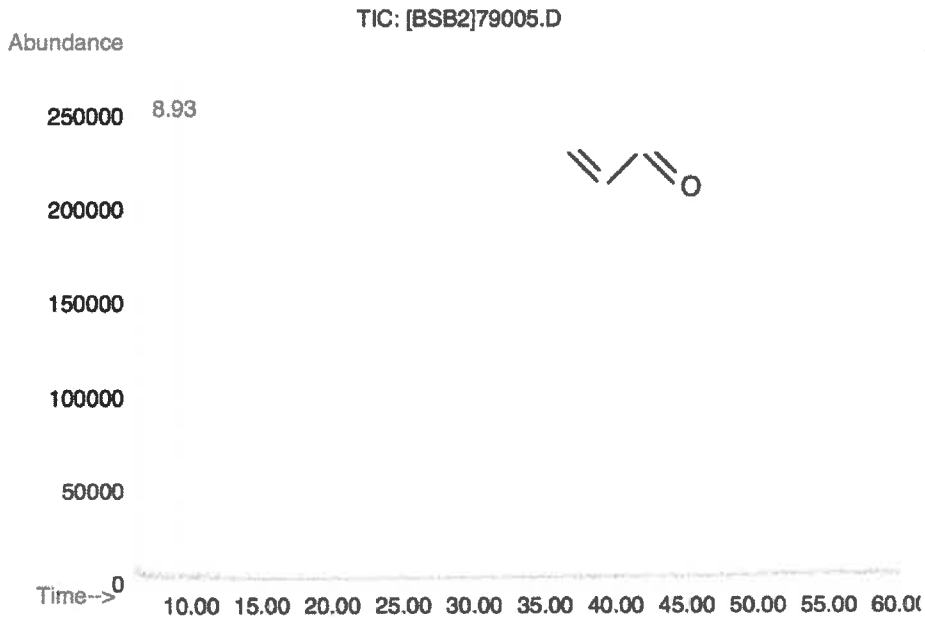


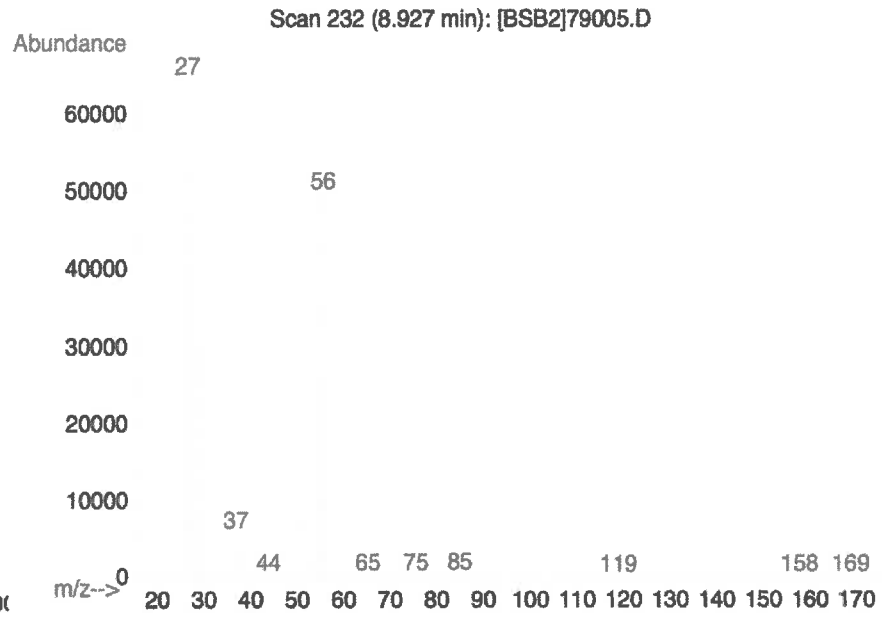


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**Rev 1.0, 2/25/2025**