

## Prep Standard - Chemical Standard Summary

**Order ID :** Q1557  
**Test :** VOCMS Group1

**Prepbatch ID :**  
**Sequence ID/Qc Batch ID:** vx031825,

**Standard ID :**  
VP131746,VP131767,VP132035,VP132096,VP133174,VP133178,VP133342,VP133349,VP133350,VP133351,

**Chemical ID :**  
V13391,V13457,V13460,V13465,V13466,V13706,V14154,V14175,V14176,V14289,V14433,V14439,V14521,V14522,V14613,V14614,V14630,V14631,V14632,V14633,V14722,V14723,V14724,V14744,V14754,V14809,V14814,V14842,V14883,V14896,V14897,V14898,V14899,W3112,

### VOC STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u>                    | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u>  | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|------------------|--------------------------------|--------------------------|------------------|------------------------|---------------------|----------------|------------------|-----------------------------|
| 247              | 8260 Internal Standard, 250PPM | <a href="#">VP131746</a> | 11/22/2024       | 05/18/2025             | Semsettin Yesilyurt | None           | None             | Maresh Dadoda<br>11/23/2024 |

**FROM** 0.50000ml of V14289 + 49.50000ml of V14154 = Final Quantity: 50.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u>  | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|------------------|-------------|--------------------------|------------------|------------------------|---------------------|----------------|------------------|-----------------------------|
| 218              | BFB, 25PPM  | <a href="#">VP131767</a> | 11/22/2024       | 05/18/2025             | Semsettin Yesilyurt | None           | None             | Maresh Dadoda<br>11/27/2024 |

**FROM** 0.50000ml of V13391 + 49.50000ml of V14154 = Final Quantity: 50.000 ml

### VOC STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u>                    | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u>  | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|------------------|--------------------------------|--------------------------|------------------|------------------------|---------------------|----------------|------------------|-----------------------------|
| 1810             | 8260 Working Std(2-CVE)-800ppm | <a href="#">VP132035</a> | 12/10/2024       | 06/10/2025             | Semsettin Yesilyurt | None           | None             | Maresh Dadoda<br>12/12/2024 |

**FROM** 1.00000ml of V14630 + 1.00000ml of V14631 + 1.00000ml of V14632 + 1.00000ml of V14633 + 46.00000ml of V14614 = Final  
Quantity: 50.000 ml

| <u>Recipe ID</u> | <u>NAME</u>                                 | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u>  | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|------------------|---|--------------------------|------------------|------------------------|---------------------|----------------|------------------|-----------------------------|
| 719              | 8260 Working STD (BCM)-First source, 400PPM | <a href="#">VP132096</a> | 12/12/2024       | 06/10/2025             | Semsettin Yesilyurt | None           | None             | Maresh Dadoda<br>12/19/2024 |

**FROM** 1.00000ml of V13465 + 1.00000ml of V13466 + 1.50000ml of V13457 + 1.50000ml of V13460 + 20.00000ml of V14614 = Final  
Quantity: 25.000 ml

### VOC STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u>            | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u>  | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|------------------|------------------------|--------------------------|------------------|------------------------|---------------------|----------------|------------------|-----------------------------|
| 617              | 8260 Surrogate, 400PPM | <a href="#">VP133174</a> | 02/27/2025       | 08/27/2025             | Semsettin Yesilyurt | None           | None             | Maresh Dadoda<br>03/04/2025 |

**FROM** 0.40000ml of V13706 + 24.60000ml of V14613 = Final Quantity: 25.000 ml

| <u>Recipe ID</u> | <u>NAME</u>   | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u>  | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|------------------|---|--------------------------|------------------|------------------------|---------------------|----------------|------------------|-----------------------------|
| 257              | 8260 Calibration Working STD Mix-First source, 160PPM | <a href="#">VP133178</a> | 02/27/2025       | 03/31/2025             | Semsettin Yesilyurt | None           | None             | Maresh Dadoda<br>03/04/2025 |

**FROM** 0.40000ml of V14842 + 1.00000ml of V14175 + 1.00000ml of V14176 + 1.00000ml of V14433 + 1.00000ml of V14439 + 1.00000ml of V14521 + 1.00000ml of V14522 + 1.00000ml of V14724 + 1.00000ml of V14744 + 1.00000ml of V14754 + 1.00000ml of V14809 + 1.00000ml of V14814 + 1.50000ml of V14722 + 1.50000ml of V14723 + 10.60000ml of V14613 = Final Quantity: 25.000 ml

### VOC STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u>                                       | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u>  | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|------------------|---|--------------------------|------------------|------------------------|---------------------|----------------|------------------|-----------------------------|
| 51               | 8260 Working STD (Acrolein) -first source, 800PPM | <a href="#">VP133342</a> | 03/18/2025       | 04/17/2025             | Semsettin Yesilyurt | None           | None             | Maresh Dadoda<br>03/20/2025 |

**FROM** 1.00000ml of V14896 + 1.00000ml of V14897 + 1.00000ml of V14898 + 1.00000ml of V14899 + 21.00000ml of V14883 = Final Quantity: 25.000 ml

| <u>Recipe ID</u> | <u>NAME</u>    | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|------------------|----------------|--------------------------|------------------|------------------------|--------------------|----------------|------------------|-----------------------------|
| 589              | BFB TUNE CHECK | <a href="#">VP133349</a> | 03/18/2025       | 03/19/2025             | John Carlone       | None           | None             | Maresh Dadoda<br>03/20/2025 |

**FROM** 39.98400ml of W3112 + 0.01600ml of VP131767 = Final Quantity: 40.000 ml

### VOC STANDARD PREPARATION LOG

| <u>Recipe ID</u>  | <u>NAME</u>            | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|---|------------------------|--------------------------|------------------|------------------------|--------------------|----------------|------------------|-----------------------------|
| 620   | 50 PPB CCC, 8260-Water | <a href="#">VP133350</a> | 03/18/2025       | 03/19/2025             | John Carlone       | None           | None             | Maresh Dadoda<br>03/20/2025 |
| <b>FROM</b> 39.94450ml of W3112 + 0.00500ml of VP132096 + 0.00500ml of VP133174 + 0.00800ml of VP131746 + 0.01250ml of VP132035 + 0.01250ml of VP133178 + 0.01250ml of VP133342 = Final Quantity: 40.000 ml |                        |                          |                  |                        |                    |                |                  |                             |

| <u>Recipe ID</u>  | <u>NAME</u>            | <u>NO.</u>               | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u>        |
|---|------------------------|--------------------------|------------------|------------------------|--------------------|----------------|------------------|-----------------------------|
| 620   | 50 PPB CCC, 8260-Water | <a href="#">VP133351</a> | 03/18/2025       | 03/19/2025             | John Carlone       | None           | None             | Maresh Dadoda<br>03/20/2025 |
| <b>FROM</b> 39.94450ml of W3112 + 0.00500ml of VP132096 + 0.00500ml of VP133174 + 0.00800ml of VP131746 + 0.01250ml of VP132035 + 0.01250ml of VP133178 + 0.01250ml of VP133342 = Final Quantity: 40.000 ml |                        |                          |                  |                        |                    |                |                  |                             |

### CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName         | Lot #    | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|-----------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek   | 30067 / BFB tuning 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   | 30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul | A0193071 | 06/12/2025      | 12/12/2024 / SAM        | 01/27/2023 / SAM            | V13457         |

| 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 | A0193071 | 06/12/2025      | 12/12/2024 / SAM        | 01/27/2023 / SAM            | V13460         |

| 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 | A0193071 | 06/12/2025      | 12/12/2024 / SAM        | 01/27/2023 / SAM            | V13465         |

| 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 | A0193071 | 06/12/2025      | 12/12/2024 / SAM        | 01/27/2023 / SAM            | V13466         |

| 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] | A0196865 | 02/27/2026      | 02/27/2025 / SAM        | 04/12/2023 / SAM            | V13706         |

### CHEMICAL RECEIPT LOG BOOK

| 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) | 22L0562016 | 05/18/2025      | 11/18/2024 / pedro      | 02/06/2024 / SAM            | V14154         |

| 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 | 07/10/2025      | 01/10/2025 / SAM        | 02/20/2024 / SAM            | V14175         |

| 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 | 07/10/2025      | 01/10/2025 / SAM        | 02/20/2024 / SAM            | V14176         |

| 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 | 11/22/2025      | 11/22/2024 / SAM        | 04/15/2024 / SAM            | V14289         |

| 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 | 07/10/2025      | 01/10/2025 / SAM        | 08/15/2024 / SAM            | V14433         |

| 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 | 07/10/2025      | 01/10/2025 / SAM        | 08/15/2024 / SAM            | V14439         |



### 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 | 07/10/2025      | 01/10/2025 / SAM        | 09/18/2024 / SAM            | V14521         |

| 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 | 07/10/2025      | 01/10/2025 / SAM        | 09/18/2024 / SAM            | V14522         |

| 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) | 22L0562016 | 08/27/2025      | 02/27/2025 / SAM        | 11/26/2024 / SAM            | V14613         |

| 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) | 22L0562016 | 06/10/2025      | 12/10/2024 / SAM        | 11/26/2024 / SAM            | V14614         |

| Supplier                 | ItemCode / ItemName         | Lot #  | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|-----------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | / 2-Chloroethyl vinyl ether | 120524 | 06/10/2025      | 12/10/2024 / SAM        | 12/06/2024 / SAM            | V14630         |

| Supplier                 | ItemCode / ItemName         | Lot #  | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|-----------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | / 2-Chloroethyl vinyl ether | 120524 | 06/10/2025      | 12/10/2024 / SAM        | 12/06/2024 / SAM            | V14631         |

### 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 | 06/10/2025      | 12/10/2024 / SAM        | 12/06/2024 / SAM            | V14632         |

| Supplier                 | ItemCode / ItemName         | Lot #  | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|-----------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | / 2-Chloroethyl vinyl ether | 120524 | 06/10/2025      | 12/10/2024 / SAM        | 12/06/2024 / SAM            | V14633         |

| 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 | 07/10/2025      | 01/10/2025 / SAM        | 12/17/2024 / SAM            | V14722         |

| 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 | 07/10/2025      | 01/10/2025 / SAM        | 12/17/2024 / SAM            | V14723         |

| 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 | 07/10/2025      | 01/10/2025 / SAM        | 12/17/2024 / SAM            | V14724         |

| 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 | 08/27/2025      | 02/27/2025 / SAM        | 12/17/2024 / SAM            | V14744         |

### 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 | 05/31/2031      | 01/10/2025 / SAM        | 12/17/2024 / SAM            | V14754         |

| 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 | A0220471 | 07/10/2025      | 01/10/2025 / SAM        | 01/08/2025 / SAM            | V14809         |

LOTS

| 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 | A0220471 | 07/10/2025      | 01/10/2025 / SAM        | 01/08/2025 / SAM            | V14814         |

LOTS

| 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 | 08/27/2025      | 02/27/2025 / SAM        | 01/21/2025 / SAM            | V14842         |

| 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) | 22L0562016 | 10/25/2025      | 02/19/2025 / Jaswal     | 04/22/2024 / Jaswal         | V14883         |

| Supplier                 | ItemCode / ItemName           | Lot #  | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|-------------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 031725 | 04/17/2025      | 03/18/2025 / SAM        | 03/18/2025 / SAM            | V14896         |

### CHEMICAL RECEIPT LOG BOOK

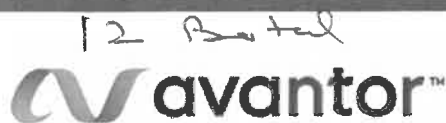
| Supplier                 | ItemCode / ItemName           | Lot #  | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|-------------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 031725 | 04/17/2025      | 03/18/2025 / SAM        | 03/18/2025 / SAM            | V14897         |

| Supplier                 | ItemCode / ItemName           | Lot #  | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|-------------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 031725 | 04/17/2025      | 03/18/2025 / SAM        | 03/18/2025 / SAM            | V14898         |

| Supplier                 | ItemCode / ItemName           | Lot #  | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|-------------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 031725 | 04/17/2025      | 03/18/2025 / SAM        | 03/18/2025 / SAM            | V14899         |

| 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 / lwona      | 07/03/2024 / lwona          | W3112          |

Methanol  
ULTRA RESI-ANALYZED  
For Purge and Trap Analysis



Material No.: 9077-02  
Batch No.: 22L0562016  
Manufactured Date: 2022-10-26  
Expiration Date: 2025-10-25  
Revision No.: 0

## Certificate of Analysis

| Test  | Specification | Result   |
|---|---------------|----------|
| Assay (CH <sub>3</sub> OH) (by GC, corrected for water) | ≥ 99.9 %      | 100.0 %  |
| Residue after Evaporation                               | ≤ 1.0 ppm     | 0.2 ppm  |
| Titration Acid (µeq/g)                                  | ≤ 0.3         | 0.2      |
| Titration 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

Jamie Ethier  
Vice President Global Quality



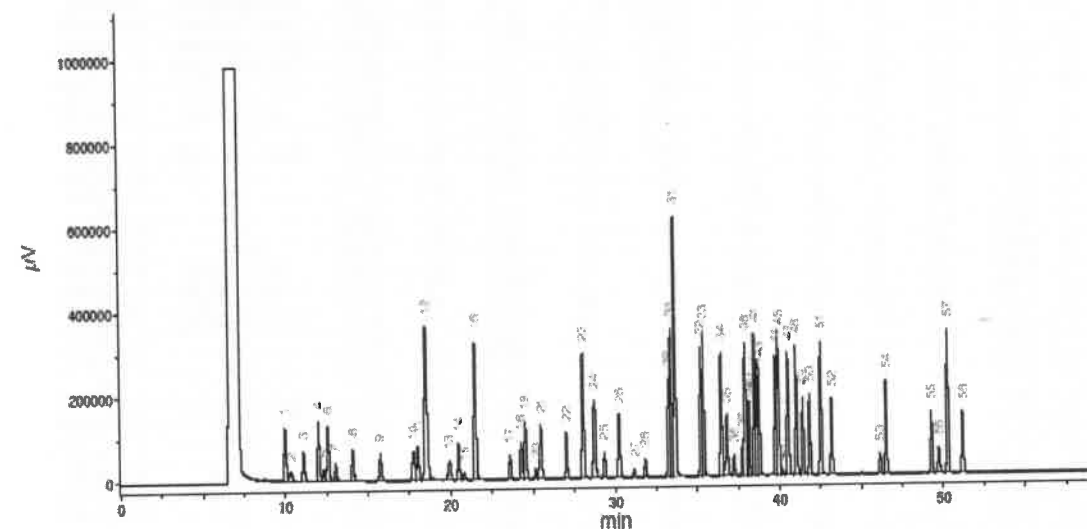


Run 16, "P95317 L021624 [2000µg/mL in MeOH]"

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., Hydrogen(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-1,2,2-trifluoroethane        | 10.33         |
| 3      | 1,1-Dichloroethane                           | 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-Dichloroethane                     | 14.07         |
| 9      | 1,1-Dichloroethane                           | 15.74         |
| 10     | 2,2-Dichloropropane                          | 17.74         |
| 11     | cis-1,2-Dichloroethane                       | 18.00         |
| 12     | Methacrylonitrile/methyl acrylate/Chloroform | 18.46         |
| 13     | Isobutane/1,1,1-Trichloroethane              | 19.01         |
| 14     | 1,1-Dichloropropane                          | 20.46         |
| 15     | Carbon tetrachloride                         | 20.79         |
| 16     | Benzene/1,2-Dichloroethane                   | 21.49         |
| 17     | Trichloroethane                              | 23.58         |
| 18     | 1,2-Dibromopropane                           | 24.28         |
| 19     | Methyl methacrylate                          | 24.52         |
| 20     | Bromochloromethane                           | 25.13         |
| 21     | Dibromomethane/2-Hydropropane                | 25.46         |
| 22     | cis-1,3-Dichloropropane                      | 27.02         |
| 23     | Toluene                                      | 28.05         |
| 24     | Ethyl methacrylate/trans-1,3-Dichloropropane | 28.73         |
| 25     | 1,1,2-Trichloroethane                        | 29.34         |
| 26     | Tetrachloroethene/1,3-Dichloropropane        | 30.24         |
| 27     | Dibromochloromethane                         | 31.16         |
| 28     | 1,2-Dibromochloroethane                      | 31.84         |
| 29     | Chlorobenzene                                | 33.26         |
| 30     | Ethylbenzene/1,1,1,2-Tetrachloroethane       | 33.40         |
| 31     | m-Xylene/p-Xylene                            | 33.86         |
| 32     | o-Xylene                                     | 35.22         |
| 33     | Styrene                                      | 35.39         |
| 34     | Isopropylbenzene/Bromoforn                   | 36.18         |
| 35     | cis-1,4-Dichloro-3-butene                    | 36.80         |
| 36     | 1,1,2,2-Tetrachloroethane                    | 37.23         |
| 37     | 1,2,3-Trichloropropane                       | 37.77         |
| 38     | n-Propylbenzene                              | 37.97         |
| 39     | trans-1,4-Dichloro-3-butene                  | 38.05         |
| 40     | Bromobenzene                                 | 38.14         |
| 41     | 1,2,3-Trimethylbenzene                       | 38.80         |
| 42     | 2-Chlorotoluene                              | 38.82         |
| 43     | 4-Chlorotoluene                              | 38.77         |
| 44     | tert-Butylbenzene                            | 39.74         |
| 45     | 1,2,4-Trimethylbenzene                       | 39.91         |
| 46     | Pentachlorobenzene                           | 40.17         |
| 47     | sec-Butylbenzene                             | 40.52         |
| 48     | p-Isopropyltoluene                           | 41.02         |
| 49     | 1,3-Dichlorobenzene                          | 41.42         |
| 50     | 1,4-Dichlorobenzene                          | 41.83         |
| 51     | n-Butylbenzene                               | 42.53         |
| 52     | 1,2-Dichlorobenzene                          | 43.18         |
| 53     | 1,2-Dibromo-3-chloropropane                  | 46.12         |
| 54     | Nitrobenzene                                 | 46.46         |
| 55     | 1,2,4-Trichlorobenzene                       | 49.26         |
| 56     | Hexachlorobutadiene                          | 49.72         |
| 57     | Naphthalene                                  | 50.26         |
| 58     | 1,2,3-Trichlorobenzene                       | 51.16         |

**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  | <b>1-800-535-5053</b> |
| Address             | 44 Rossotto Dr.<br>Hamden CT, 06514 | Emergency Telephone International | <b>1-352-323-3500</b> |
|                     |                                     | Date Prepared/Revised             | January 1, 2023       |

**Section II - Hazards Identification****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

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

**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**

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

**Section V. FIREFIGHTING MEASURES**

|                                      |   |
|--------------------------------------|---|
| <b>Flammability</b>                  | 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. |
| <b>Suitable extinguishing media</b>  | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.  |
| <b>Protective equipment for fire</b> | Wear self contained breathing apparatus for fire fighting if necessary.   |

**Section VI. ACCIDENTAL RELEASE MEASURES**

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

**Section VII. HANDLING AND STORAGE**

|                                      |   |
|--------------------------------------|---|
| <b>Precautions for safe handling</b> | 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. |
| <b>Storage Conditions</b>            | 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 (H <sub>2</sub> O = 1) | 0.79  |
| Vapor Pressure (mm Hg)  | 96  | Melting Point                           | -98°C |
| Vapor Density (AIR = 1) | 1.11  | Evaporation rate<br>(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)                                   | IATA                                       |
| UN number: 1230 Class: 3 Packing group: II | UN number: 1230 Class: 3 Packing group: II |
| Proper shipping name: Methanol             | 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.





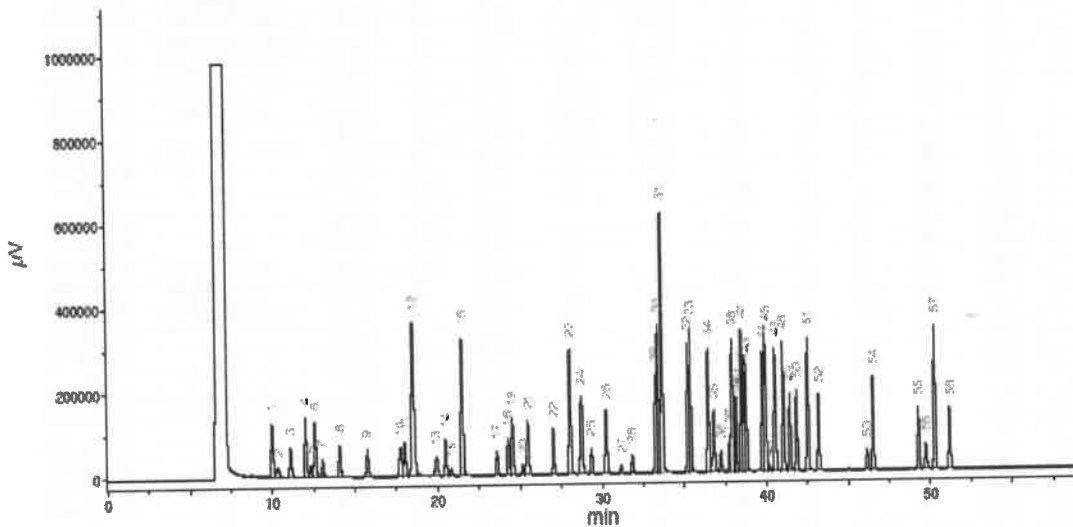
Run 16, "P95317 L021624 [2000µg/mL in MeOH]"

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., Hydrogen(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-1,2,2-trifluoroethane        | 10.33         |
| 3      | 1,1-Dichloroethane                           | 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-Dichloroethane                     | 14.07         |
| 9      | 1,1-Dichloroethane                           | 15.74         |
| 10     | 2,2-Dichloropropane                          | 17.74         |
| 11     | cis-1,2-Dichloroethane                       | 18.00         |
| 12     | Methacrylonitrile/Methyl acrylate/Chloroform | 18.46         |
| 13     | Isobutane/1,1,1-Trichloroethane              | 19.01         |
| 14     | 1,1-Dichloropropane                          | 20.46         |
| 15     | Carbon tetrachloride                         | 20.79         |
| 16     | Benzene/1,2-Dichloroethane                   | 21.49         |
| 17     | Trichloroethane                              | 23.58         |
| 18     | 1,2-Dibromopropane                           | 24.28         |
| 19     | Methyl methacrylate                          | 24.52         |
| 20     | Bromochloromethane                           | 25.13         |
| 21     | Dibromomethane/2-Fluoropropane               | 25.46         |
| 22     | cis-1,3-Dichloropropane                      | 27.02         |
| 23     | Toluene                                      | 28.05         |
| 24     | Ethyl methacrylate/trans-1,3-Dichloropropane | 28.73         |
| 25     | 1,1,2-Trichloroethane                        | 29.34         |
| 26     | Tetrachloroethene/1,3-Dichloropropane        | 30.24         |
| 27     | Dibromochloromethane                         | 31.16         |
| 28     | 1,2-Dibromodichloroethane                    | 31.84         |
| 29     | Chlorobenzene                                | 33.26         |
| 30     | Ethylbenzene/1,1,1,2-Tetrachloroethane       | 33.40         |
| 31     | m-Xylene/p-Xylene                            | 33.86         |
| 32     | o-Xylene                                     | 35.22         |
| 33     | Styrene                                      | 35.39         |
| 34     | Isopropylbenzene/Bromoforn                   | 36.18         |
| 35     | cis-1,4-Dichloro-3-butene                    | 36.80         |
| 36     | 1,1,2,2-Tetrachloroethane                    | 37.23         |
| 37     | 1,2,3-Trichloropropane                       | 37.77         |
| 38     | n-Propylbenzene                              | 37.97         |
| 39     | trans-1,4-Dichloro-3-butene                  | 38.05         |
| 40     | Bromobenzene                                 | 38.14         |
| 41     | 1,2,3-Trimethylbenzene                       | 38.80         |
| 42     | 2-Chlorotoluene                              | 38.82         |
| 43     | 4-Chlorotoluene                              | 38.77         |
| 44     | tert-Butylbenzene                            | 39.74         |
| 45     | 1,2,4-Trimethylbenzene                       | 39.91         |
| 46     | Pentachlorobenzene                           | 40.17         |
| 47     | sec-Butylbenzene                             | 40.52         |
| 48     | p-Isopropyltoluene                           | 41.02         |
| 49     | 1,3-Dichlorobenzene                          | 41.42         |
| 50     | 1,4-Dichlorobenzene                          | 41.83         |
| 51     | n-Butylbenzene                               | 42.53         |
| 52     | 1,2-Dichlorobenzene                          | 43.18         |
| 53     | 1,2-Dibromo-3-chloropropane                  | 44.12         |
| 54     | Nitrobenzene                                 | 46.46         |
| 55     | 1,2,4-Trichlorobenzene                       | 49.26         |
| 56     | Hexachlorobutadiene                          | 49.72         |
| 57     | Naphthalene                                  | 50.26         |
| 58     | 1,2,3-Trichlorobenzene                       | 51.16         |



**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  | <b>1-800-535-5053</b> |
| Address             | 44 Rossotto Dr.<br>Hamden CT, 06514 | Emergency Telephone International | <b>1-352-323-3500</b> |
|                     |                                     | Date Prepared/Revised             | January 1, 2023       |

**Section II - Hazards Identification****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

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

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**

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

**Section V. FIREFIGHTING MEASURES**

|                                      |   |
|--------------------------------------|---|
| <b>Flammability</b>                  | 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. |
| <b>Suitable extinguishing media</b>  | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.  |
| <b>Protective equipment for fire</b> | Wear self contained breathing apparatus for fire fighting if necessary.   |

**Section VI. ACCIDENTAL RELEASE MEASURES**

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

**Section VII. HANDLING AND STORAGE**

|                                      |   |
|--------------------------------------|---|
| <b>Precautions for safe handling</b> | 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. |
| <b>Storage Conditions</b>            | 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 (H <sub>2</sub> O = 1) | 0.79  |
| Vapor Pressure (mm Hg)  | 96  | Melting Point                           | -98°C |
| Vapor Density (AIR = 1) | 1.11  | Evaporation rate<br>(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)                                   | IATA                                       |
| UN number: 1230 Class: 3 Packing group: II | UN number: 1230 Class: 3 Packing group: II |
| Proper shipping name: Methanol             | 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.



See 03/18/24



**CERTIFIED WEIGHT REPORT**

Part Number: **91980**  
Lot Number: **031725**  
Description: **Acrolein**

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

V14895 to V14899

|                        |                 |        |
|------------------------|-----------------|--------|
| <i>Lawrence Barry</i>  |                 | 031725 |
| Formulated By:         | Lawrence Barry  | DATE   |
| <i>Pedro L. Rentas</i> |                 | 031725 |
| Reviewed By:           | Pedro L. Rentas | DATE   |

Expiration Date: 041725  
Recommended Storage: Refrigerate (4 °C)  
Nominal Concentration (µg/mL): 5000  
NIST Test ID#: 6UTB

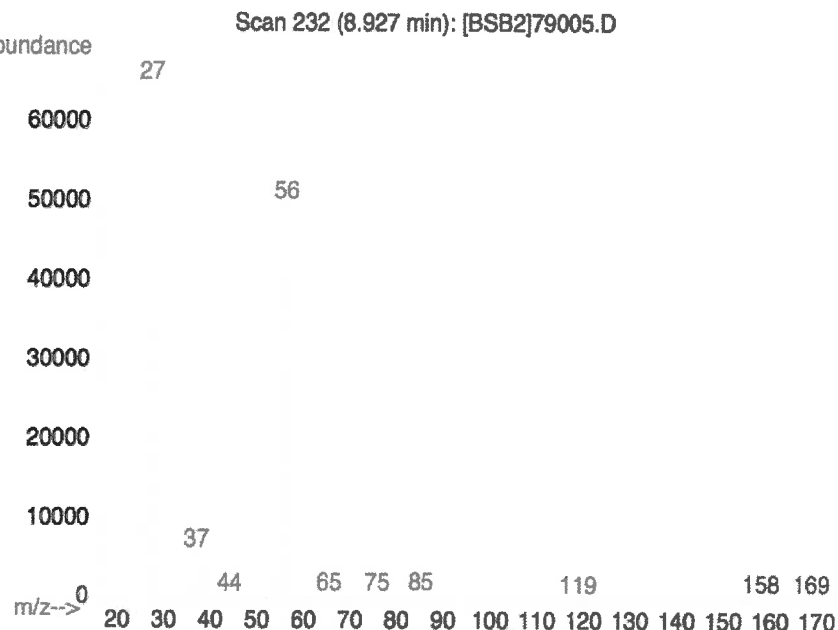
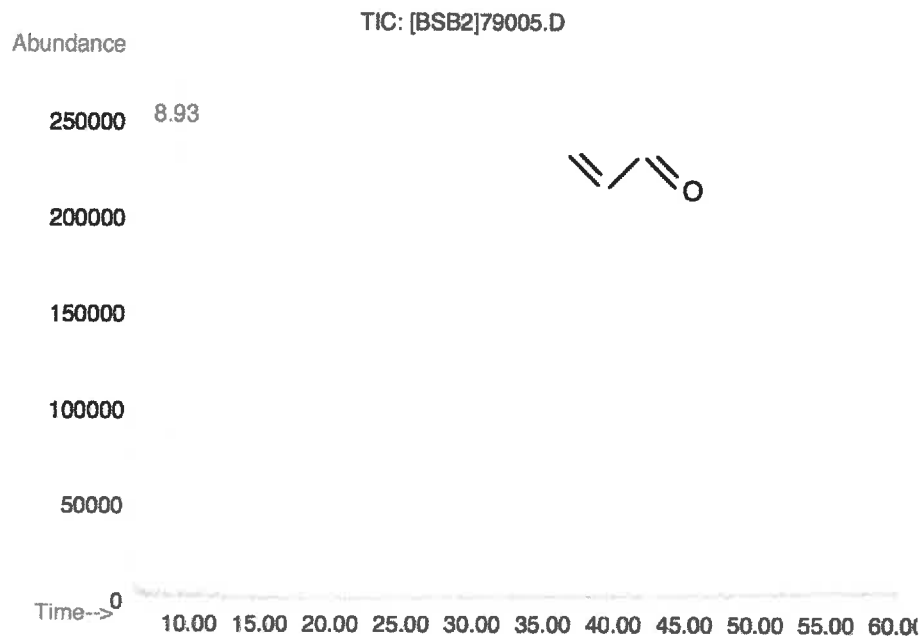
5E-05 Balance Uncertainty  
0.001 Flask Uncertainty

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

Expanded SDS Information  
(Solvent Safety Info. On Attached pg.)

| 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) | CAS#     | OSHA PEL (TWA) | LDSO            |
|-------------|-----|------------|----------------------|------------|--------------------|------------------|------------------|---------------------|------------------------------------|----------|----------------|-----------------|
| 1. Acrolein | 5   | 103755V10F | 5000                 | 97         | 0.5                | 0.05166          | 0.05170          | 5004.1              | 52.5                               | 107-02-8 | 0.1 ppm        | ori-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 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).

Safety Data Sheet (SDS) GHS/OSHA Compliant

**Section I Product and Company Identification**

**IDENTITY ANALYTICAL STANDARD DISSOLVED IN WATER**  
 Manufacturer's Name ABSOLUTE STANDARDS INC Emergency Telephone USA & CANADA **1-800-535-5053**  
 Address 44 Rossetto Dr. Emergency Telephone International **1-352-323-3500**  
 Hamden CT, 06514 Date Prepared/Revised January 1, 2025

**Section II - Hazards Identification**

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**  
**P271 Use in ventilated area H315 Causes skin and eye irritation.**  
**P302,332 If on skin, wash with soap and water P280 Use gloves, eye protection/face shield**  
**P305,351,338 If in eyes, remove contacts, rinse with water**



Signal Word: **DANGER**

**Section III - Composition**

Components (Specific Chemical Identity; Common Name(s)) Water CAS#: 7732-18-5 % (optional) > 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**

**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.  
**Hazardous Decomposition products** Carbon oxides

**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**

Water CAS#: 7732-18-5 TWA: 500 ppm  
**Personal protective equipment** Respiratory protection Handie 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          | 100°C | Specific Gravity (H2O = 1) | 1 |
| Vapor Pressure (mm Hg) |       | Melting Point              |   |

|                         |  |   |     |
|-------------------------|--|---|-----|
| Vapor Density (AIR = 1) | NA   | Evaporation rate<br>(Butyl Acetate = 1) | 0°C |
| Solubility in Water     | Completely miscible                                |   | NA  |
| Appearance and Odor     | CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR. |   |     |

**Section X. STABILITY AND REACTIVITY**

Chemical stability Stable under recommended storage conditions.  
 Possibility of hazardous reactions NA  
 Conditions to avoid NA  
 Materials to avoid NA  
 Hazardous decomposition products - No data available

**Section XI. TOXICOLOGICAL INFORMATION**

LD50 Oral - Rat NA  
 LC50 Inhalation - Rat NA  
 LD50 Dermal - Guinea pig NA  
 Causes skin irritation.  
 Eye irritation

**Section XII. ECOLOGICAL INFORMATION**

LC50 NA  
 EC50 NA

**Section XIII. DISPOSAL CONSIDERATIONS**

Dispose with normal Laboratory Solvent Waste.

**Section XIV. TRANSPORT INFORMATION**

DOT (US) IATA  
 Not dangerous goods Not dangerous goods  
 Proper shipping name: Water Proper shipping name: Water

**Section XV. REGULATORY INFORMATION**

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 Material Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.





See 03/18/24



**CERTIFIED WEIGHT REPORT**

Part Number: **91980**  
Lot Number: **031725**  
Description: **Acrolein**

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

5 vial  
V14895 to  
V14899

|                        |                 |        |
|------------------------|-----------------|--------|
| <i>Lawrence Barry</i>  |                 | 031725 |
| Formulated By:         | Lawrence Barry  | DATE   |
| <i>Pedro L. Rentas</i> |                 | 031725 |
| Reviewed By:           | Pedro L. Rentas | DATE   |

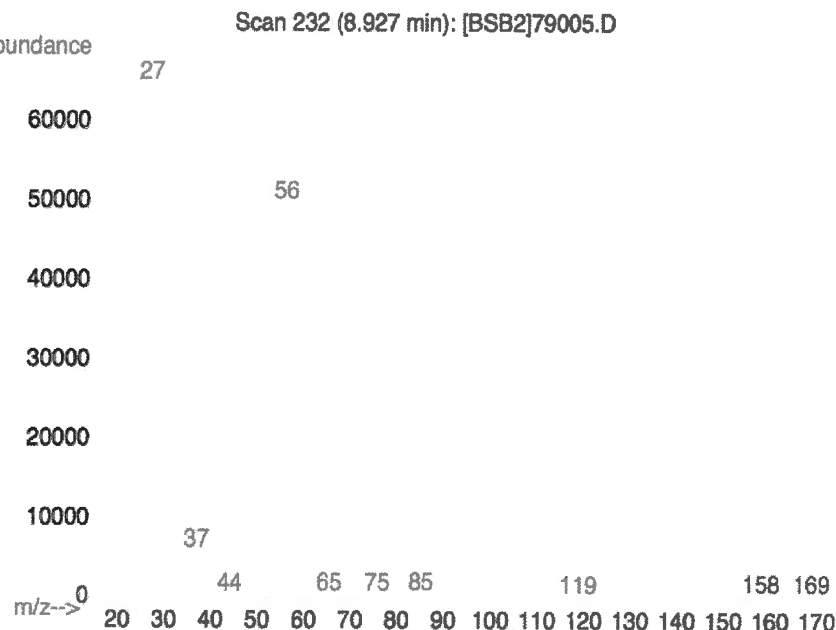
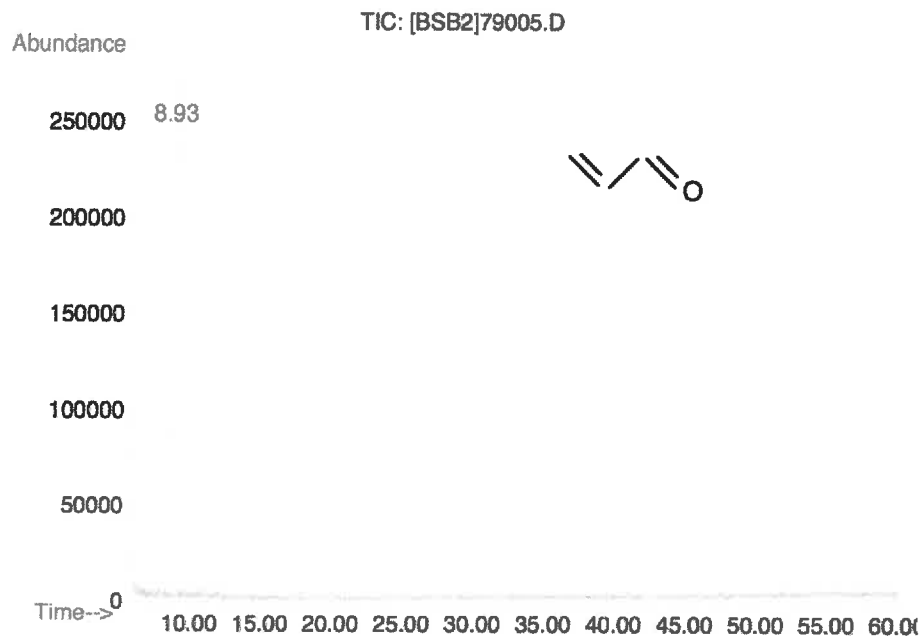
Expiration Date: **041725**  
Recommended Storage: **Refrigerate (4 °C)**  
Nominal Concentration (µg/mL): **5000**  
NIST Test ID#: **6UTB**

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

**Expanded SDS Information**  
(Solvent Safety Info. On Attached pg.)  
CAS# OSHA PEL (TWA) LD50

| 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) | CAS#     | OSHA PEL (TWA) | LD50            |
|-------------|-----|------------|----------------------|------------|--------------------|------------------|------------------|---------------------|------------------------------------|----------|----------------|-----------------|
| 1. Acrolein | 5   | 103755V10F | 5000                 | 97         | 0.5                | 0.05166          | 0.05170          | 5004.1              | 52.5                               | 107-02-8 | 0.1 ppm        | ori-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 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).

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

**Section I Product and Company Identification**

**IDENTITY ANALYTICAL STANDARD DISSOLVED IN WATER**  
 Manufacturer's Name ABSOLUTE STANDARDS INC Emergency Telephone USA & CANADA **1-800-535-5053**  
 Address 44 Rossetto Dr. Emergency Telephone International **1-352-323-3500**  
 Hamden CT, 06514 Date Prepared/Revised January 1, 2025

**Section II - Hazards Identification**

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**  
**P271 Use in ventilated area H315 Causes skin and eye irritation.**  
**P302,332 If on skin, wash with soap and water P280 Use gloves, eye protection/face shield**  
**P305,351,338 If in eyes, remove contacts, rinse with water**



Signal Word: **DANGER**

**Section III - Composition**

Components (Specific Chemical Identity; Common Name(s)) Water CAS#: 7732-18-5 % (optional) > 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**

**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.  
**Hazardous Decomposition products** Carbon oxides

**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**

Water CAS#: 7732-18-5 TWA: 500 ppm  
**Personal protective equipment** Respiratory protection Handie 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          | 100°C | Specific Gravity (H2O = 1) | 1 |
| Vapor Pressure (mm Hg) |       | Melting Point              |   |

|                         |  |   |     |
|-------------------------|--|---|-----|
| Vapor Density (AIR = 1) | NA   | Evaporation rate<br>(Butyl Acetate = 1) | 0°C |
| Solubility in Water     | Completely miscible                                |   | NA  |
| Appearance and Odor     | CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR. |   |     |

**Section X. STABILITY AND REACTIVITY**

Chemical stability Stable under recommended storage conditions.  
 Possibility of hazardous reactions NA  
 Conditions to avoid NA  
 Materials to avoid NA  
 Hazardous decomposition products - No data available

**Section XI. TOXICOLOGICAL INFORMATION**

LD50 Oral - Rat NA  
 LC50 Inhalation - Rat NA  
 LD50 Dermal - Guinea pig NA  
 Causes skin irritation.  
 Eye irritation

**Section XII. ECOLOGICAL INFORMATION**

LC50 NA  
 EC50 NA

**Section XIII. DISPOSAL CONSIDERATIONS**

Dispose with normal Laboratory Solvent Waste.

**Section XIV. TRANSPORT INFORMATION**

DOT (US) IATA  
 Not dangerous goods Not dangerous goods  
 Proper shipping name: Water Proper shipping name: Water

**Section XV. REGULATORY INFORMATION**

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 Material Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.



See 03/18/24



**CERTIFIED WEIGHT REPORT**

Part Number: **91980**  
Lot Number: **031725**  
Description: **Acrolein**

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

V14895 to V14899

|                        |                 |        |
|------------------------|-----------------|--------|
| <i>Lawrence Barry</i>  |                 | 031725 |
| Formulated By:         | Lawrence Barry  | DATE   |
| <i>Pedro L. Rentas</i> |                 | 031725 |
| Reviewed By:           | Pedro L. Rentas | DATE   |

Expiration Date: 041725  
Recommended Storage: Refrigerate (4 °C)  
Nominal Concentration (µg/mL): 5000  
NIST Test ID#: 6UTB

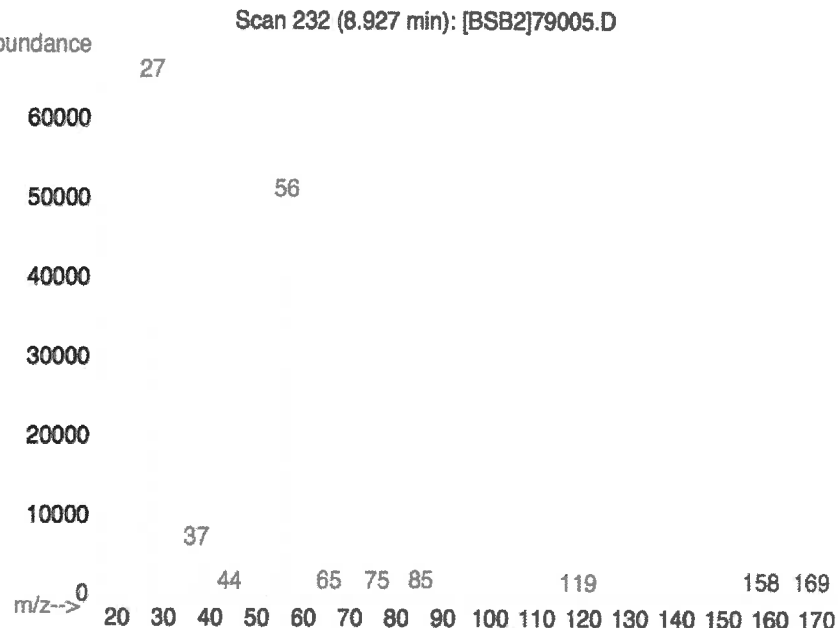
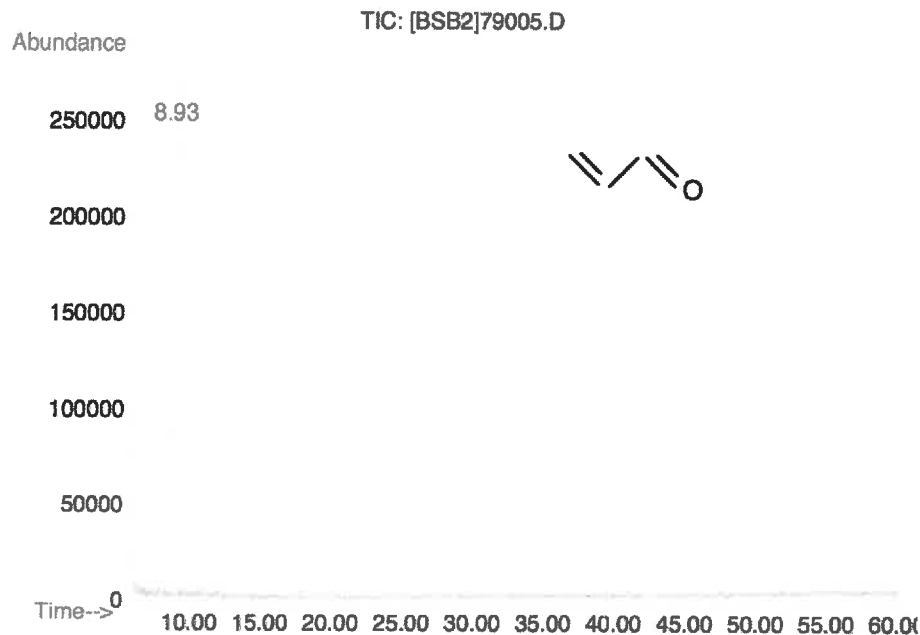
5E-05 Balance Uncertainty  
0.001 Flask Uncertainty

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

Expanded SDS Information  
(Solvent Safety Info. On Attached pg.)

| 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) | CAS#     | OSHA PEL (TWA) | LDSO            |
|-------------|-----|------------|----------------------|------------|--------------------|------------------|------------------|---------------------|------------------------------------|----------|----------------|-----------------|
| 1. Acrolein | 5   | 103755V10F | 5000                 | 97         | 0.5                | 0.05166          | 0.05170          | 5004.1              | 52.5                               | 107-02-8 | 0.1 ppm        | ori-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 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).

Safety Data Sheet (SDS) GHS/OSHA Compliant

**Section I Product and Company Identification**

**IDENTITY ANALYTICAL STANDARD DISSOLVED IN WATER**

|                     |                                     |                                   |                       |
|---------------------|-------------------------------------|-----------------------------------|-----------------------|
| Manufacturer's Name | ABSOLUTE STANDARDS INC              | Emergency Telephone USA & CANADA  | <b>1-800-535-5053</b> |
| Address             | 44 Rossotto Dr.<br>Hamden CT, 06514 | Emergency Telephone International | <b>1-352-323-3500</b> |
|                     |                                     | Date Prepared/Revised             | January 1, 2025       |

**Section II - Hazards Identification**

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

|                 |   |                     |  |
|-----------------|---|---------------------|--|
| <b>P271</b>     | <b>Use in ventilated area</b>               | <b>H315</b>         | <b>Causes skin and eye irritation.</b>               |
| <b>P302,332</b> | <b>If on skin, wash with soap and water</b> | <b>P280</b>         | <b>Use gloves, eye protection/face shield</b>        |
|                 |   | <b>P305,351,338</b> | <b>If in eyes, remove contacts, rinse with water</b> |



Signal Word: **DANGER**

**Section III - Composition**

|   |                 |              |
|---|-----------------|--------------|
| Components (Specific Chemical Identity; Common Name(s)) |                 | % (optional) |
| Water   | CAS#: 7732-18-5 | > 97         |

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

**INTENDED USE: REFERENCE MATERIAL**

**Section IV. FIRST AID MEASURES**

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

**Section V. FIREFIGHTING MEASURES**

|   |  |
|---|--|
| <b>Suitable extinguishing media</b>     | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| <b>Protective equipment for fire</b>    | Wear self contained breathing apparatus for fire fighting if necessary.  |
| <b>Hazardous Decomposition products</b> | Carbon oxides  |

**Section VI. ACCIDENTAL RELEASE MEASURES**

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

**Section VII. HANDLING AND STORAGE**

|                                      |  |
|--------------------------------------|--|
| <b>Precautions for safe handling</b> | 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. |
| <b>Storage Conditions</b>            | 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**

|   |   |              |
|---|---|--------------|
| Water   | CAS#: 7732-18-5   | TWA: 500 ppm |
| <b>Personal protective equipment</b>  | Respiratory protection Handie 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          | 100°C | Specific Gravity (H2O = 1) | 1 |
| Vapor Pressure (mm Hg) |       | Melting Point              |   |

|                         |  |   |     |
|-------------------------|--|---|-----|
| Vapor Density (AIR = 1) | NA   | Evaporation rate<br>(Butyl Acetate = 1) | 0°C |
| Solubility in Water     | Completely miscible                                |   | NA  |
| Appearance and Odor     | CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR. |   |     |

**Section X. STABILITY AND REACTIVITY**

Chemical stability Stable under recommended storage conditions.  
 Possibility of hazardous reactions NA  
 Conditions to avoid NA  
 Materials to avoid NA  
 Hazardous decomposition products - No data available

**Section XI. TOXICOLOGICAL INFORMATION**

LD50 Oral - Rat NA  
 LC50 Inhalation - Rat NA  
 LD50 Dermal - Guinea pig NA  
 Causes skin irritation.  
 Eye irritation

**Section XII. ECOLOGICAL INFORMATION**

LC50 NA  
 EC50 NA

**Section XIII. DISPOSAL CONSIDERATIONS**

Dispose with normal Laboratory Solvent Waste.

**Section XIV. TRANSPORT INFORMATION**

DOT (US) IATA  
 Not dangerous goods Not dangerous goods  
 Proper shipping name: Water Proper shipping name: Water

**Section XV. REGULATORY INFORMATION**

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 Material Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.



See 03/18/24



**CERTIFIED WEIGHT REPORT**

Part Number: **91980**  
Lot Number: **031725**  
Description: **Acrolein**

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

V14895 to V14899

|                        |                 |        |
|------------------------|-----------------|--------|
| <i>Lawrence Barry</i>  |                 | 031725 |
| Formulated By:         | Lawrence Barry  | DATE   |
| <i>Pedro L. Rentas</i> |                 | 031725 |
| Reviewed By:           | Pedro L. Rentas | DATE   |

Expiration Date: 041725  
Recommended Storage: Refrigerate (4 °C)  
Nominal Concentration (µg/mL): 5000  
NIST Test ID#: 6UTB

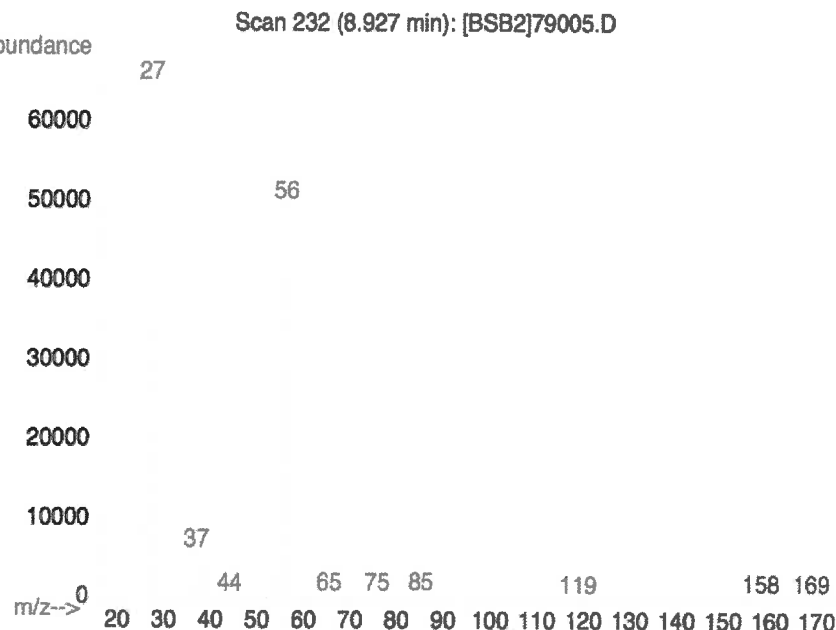
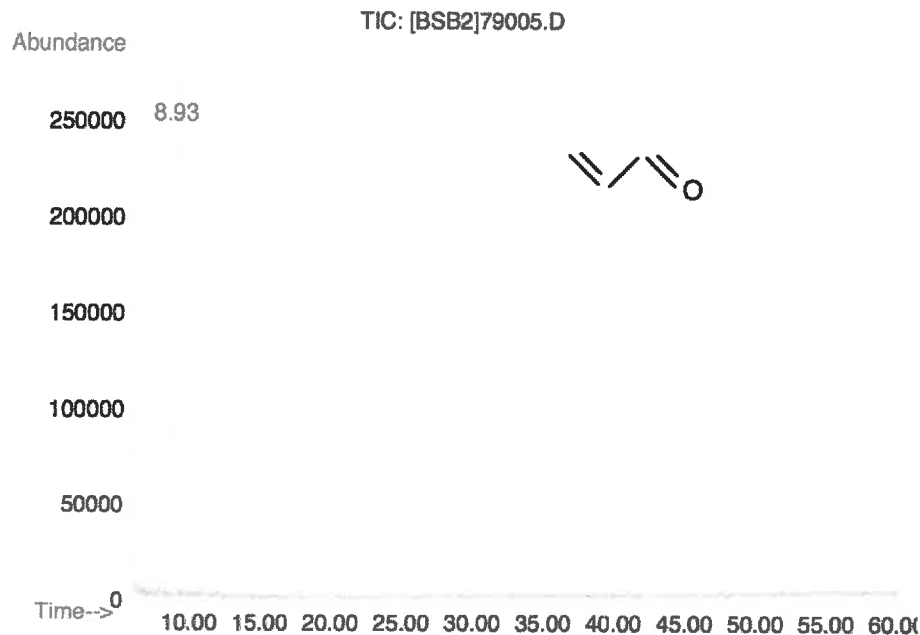
5E-05 Balance Uncertainty  
0.001 Flask Uncertainty

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

Expanded SDS Information  
(Solvent Safety Info. On Attached pg.)  
Uncertainty (+/-) (µg/mL) CAS# OSHA PEL (TWA) LD50

| 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) | CAS#     | OSHA PEL (TWA) | LD50            |
|-------------|-----|------------|----------------------|------------|--------------------|------------------|------------------|---------------------|------------------------------------|----------|----------------|-----------------|
| 1. Acrolein | 5   | 103755V10F | 5000                 | 97         | 0.5                | 0.05166          | 0.05170          | 5004.1              | 52.5                               | 107-02-8 | 0.1 ppm        | ori-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 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).

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

**Section I Product and Company Identification**

**IDENTITY ANALYTICAL STANDARD DISSOLVED IN WATER**

|                     |                                     |                                   |                       |
|---------------------|-------------------------------------|-----------------------------------|-----------------------|
| Manufacturer's Name | ABSOLUTE STANDARDS INC              | Emergency Telephone USA & CANADA  | <b>1-800-535-5053</b> |
| Address             | 44 Rossotto Dr.<br>Hamden CT, 06514 | Emergency Telephone International | <b>1-352-323-3500</b> |
|                     |                                     | Date Prepared/Revised             | January 1, 2025       |

**Section II - Hazards Identification**

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

|                 |   |                     |  |
|-----------------|---|---------------------|--|
| <b>P271</b>     | <b>Use in ventilated area</b>               | <b>H315</b>         | <b>Causes skin and eye irritation.</b>               |
| <b>P302,332</b> | <b>If on skin, wash with soap and water</b> | <b>P280</b>         | <b>Use gloves, eye protection/face shield</b>        |
|                 |   | <b>P305,351,338</b> | <b>If in eyes, remove contacts, rinse with water</b> |



Signal Word: **DANGER**

**Section III - Composition**

|   |                 |              |
|---|-----------------|--------------|
| Components (Specific Chemical Identity; Common Name(s)) |                 | % (optional) |
| Water   | CAS#: 7732-18-5 | > 97         |

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

**INTENDED USE: REFERENCE MATERIAL**

**Section IV. FIRST AID MEASURES**

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

**Section V. FIREFIGHTING MEASURES**

|   |  |
|---|--|
| <b>Suitable extinguishing media</b>     | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| <b>Protective equipment for fire</b>    | Wear self contained breathing apparatus for fire fighting if necessary.  |
| <b>Hazardous Decomposition products</b> | Carbon oxides  |

**Section VI. ACCIDENTAL RELEASE MEASURES**

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

**Section VII. HANDLING AND STORAGE**

|                                      |  |
|--------------------------------------|--|
| <b>Precautions for safe handling</b> | 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. |
| <b>Storage Conditions</b>            | 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**

|   |   |              |
|---|---|--------------|
| Water   | CAS#: 7732-18-5   | TWA: 500 ppm |
| <b>Personal protective equipment</b>  | Respiratory protection Handie 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          | 100°C | Specific Gravity (H2O = 1) | 1 |
| Vapor Pressure (mm Hg) |       | Melting Point              |   |



|                         |  |   |     |
|-------------------------|--|---|-----|
| Vapor Density (AIR = 1) | NA   | Evaporation rate<br>(Butyl Acetate = 1) | 0°C |
| Solubility in Water     | Completely miscible                                |   | NA  |
| Appearance and Odor     | CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR. |   |     |

**Section X. STABILITY AND REACTIVITY**

Chemical stability Stable under recommended storage conditions.  
 Possibility of hazardous reactions NA  
 Conditions to avoid NA  
 Materials to avoid NA  
 Hazardous decomposition products - No data available

**Section XI. TOXICOLOGICAL INFORMATION**

LD50 Oral - Rat NA  
 LC50 Inhalation - Rat NA  
 LD50 Dermal - Guinea pig NA  
 Causes skin irritation.  
 Eye irritation

**Section XII. ECOLOGICAL INFORMATION**

LC50 NA  
 EC50 NA

**Section XIII. DISPOSAL CONSIDERATIONS**

Dispose with normal Laboratory Solvent Waste.

**Section XIV. TRANSPORT INFORMATION**

DOT (US) IATA  
 Not dangerous goods Not dangerous goods  
 Proper shipping name: Water Proper shipping name: Water

**Section XV. REGULATORY INFORMATION**

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 Material Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.



*Rec 09/17/24*

*2 vials*



**CERTIFIED WEIGHT REPORT**

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

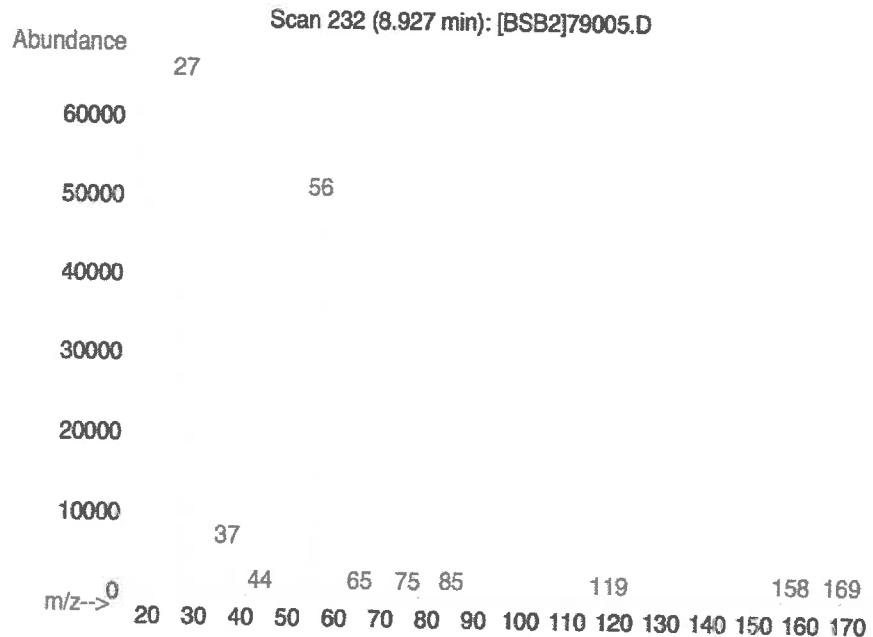
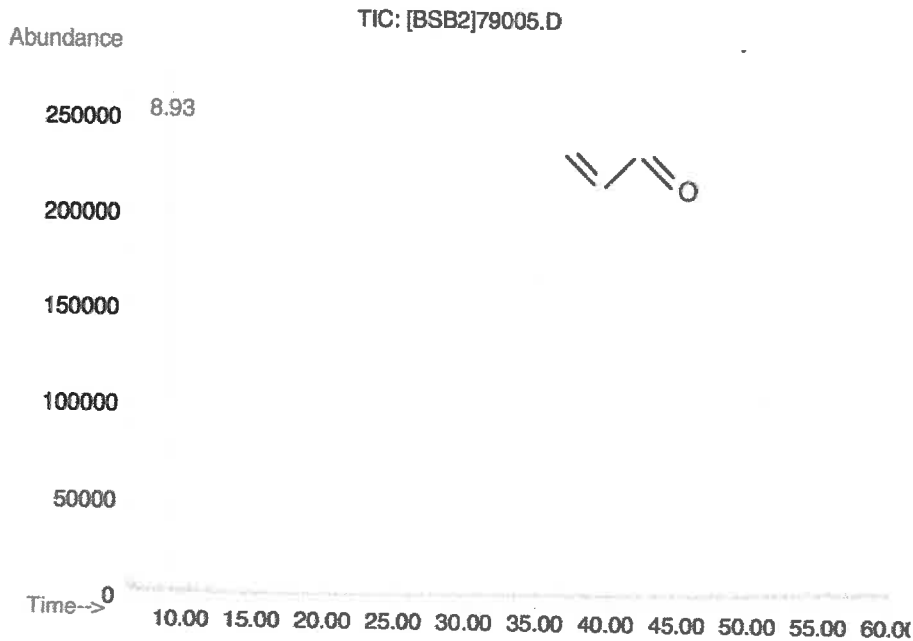
**Solvent(s):** Water  
**Lot#** 072324Q

|                        |                 |
|------------------------|-----------------|
| <i>Justin Dippold</i>  |                 |
| Formulated By:         | Justin Dippold  |
|                        | 091424 DATE     |
| <i>Pedro L. Rentas</i> |                 |
| Reviewed By:           | Pedro L. Rentas |
|                        | 091424 DATE     |

**Expiration Date:** 101424  
**Recommended Storage:** Refrigerate (4 °C)  
**Nominal Concentration (µg/mL):** 5000  
**NIST Test ID#:** 6UTB  
5E-05 Balance Uncertainty  
Weight(s) shown below were combined and diluted to (mL): 10.0 0.001 Flask Uncertainty

| 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        | or-rat 46mg/kg |

Method: GCMSD-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 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).



*Rec 09/17/24*

*2 vials*



**CERTIFIED WEIGHT REPORT**

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

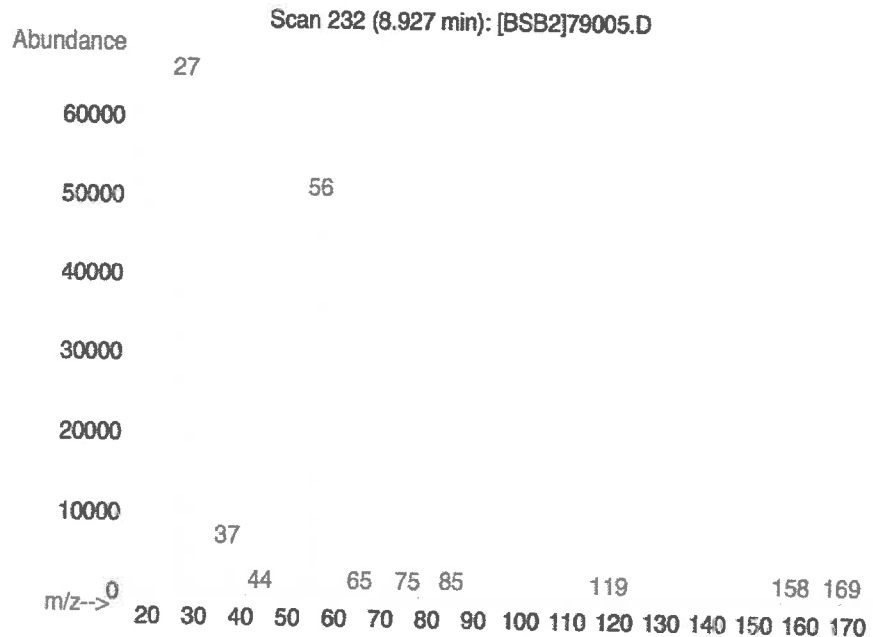
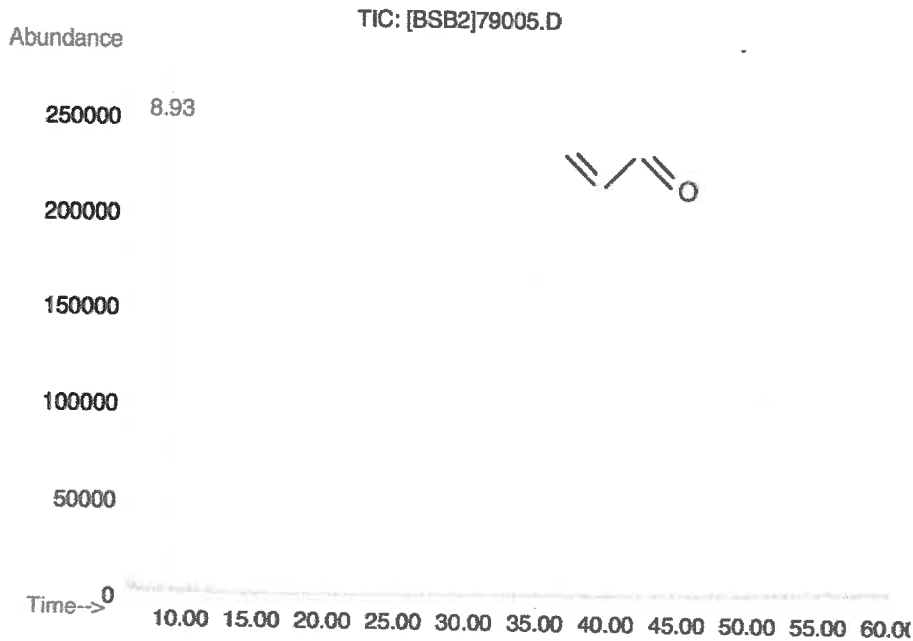
**Solvent(s):** Water  
**Lot#** 072324Q

|                        |                 |
|------------------------|-----------------|
| <i>Justin Dippold</i>  |                 |
| Formulated By:         | Justin Dippold  |
|                        | 091424 DATE     |
| <i>Pedro L. Rentas</i> |                 |
| Reviewed By:           | Pedro L. Rentas |
|                        | 091424 DATE     |

**Expiration Date:** 101424  
**Recommended Storage:** Refrigerate (4 °C)  
**Nominal Concentration (µg/mL):** 5000  
**NIST Test ID#:** 6UTB  
5E-05 Balance Uncertainty  
Weight(s) shown below were combined and diluted to (mL): 10.0 0.001 Flask Uncertainty

| 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        | or-rat 46mg/kg |

Method: GCMSD-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 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).



*See 1216124  
20 vial*



**CERTIFIED WEIGHT REPORT**

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

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

*V14630 to  
V14649*

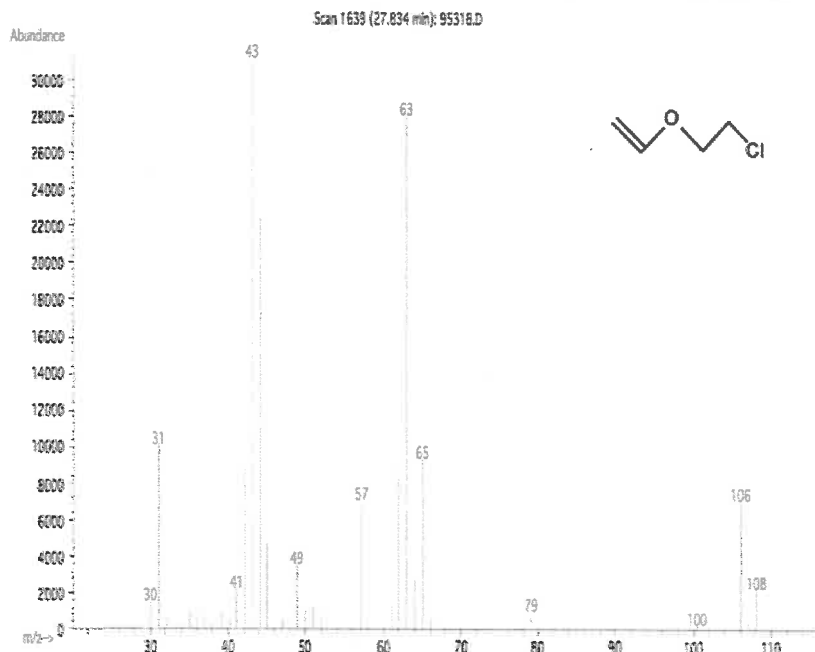
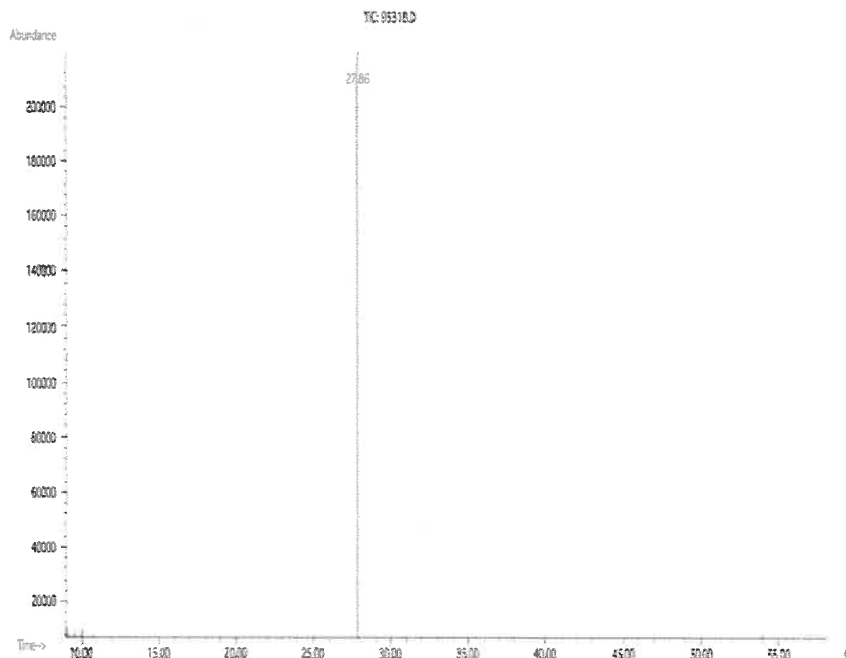
|                         |                  |        |
|-------------------------|------------------|--------|
| <i>Prashant Chauhan</i> |                  | 120524 |
| <b>Formulated By:</b>   | Prashant Chauhan | DATE   |
| <i>Pedro L. Rentas</i>  |                  | 120524 |
| <b>Reviewed By:</b>     | Pedro L. Rentas  | DATE   |

**Expiration Date:** 120527  
**Recommended Storage:** Refrigerate (4 °C)  
**Nominal Concentration (µg/mL):** 10000  
**NIST Test ID#:** 6UTB  
**Weight(s) shown below were combined and diluted to (mL):** 50.0

5E-05 Balance Uncertainty  
0.001 Flask Uncertainty

| 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 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).

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

**Section I Product and Company Identification**

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

**Section II - Hazards Identification**

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

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



**Signal Word: DANGER**

**Section III - Composition**

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

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

**INTENDED USE: REFERENCE MATERIAL**

**Section IV. FIRST AID MEASURES**

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

**Section V. FIREFIGHTING MEASURES**

|                                      |   |
|--------------------------------------|---|
| <b>Flammability</b>                  | 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. |
| <b>Suitable extinguishing media</b>  | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.  |
| <b>Protective equipment for fire</b> | Wear self contained breathing apparatus for fire fighting if necessary.   |

**Section VI. ACCIDENTAL RELEASE MEASURES**

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

**Section VII. HANDLING AND STORAGE**

|                                      |  |
|--------------------------------------|--|
| <b>Precautions for safe handling</b> | 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. |
| <b>Storage Conditions</b>            | 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 (H <sub>2</sub> O = 1) | 0.79  |
| Vapor Pressure (mm Hg)  | 96  | Melting Point                           | -98°C |
| Vapor Density (AIR = 1) | 1.11  | Evaporation rate<br>(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)                                   | IATA                                       |
| UN number: 1230 Class: 3 Packing group: II | UN number: 1230 Class: 3 Packing group: II |
| Proper shipping name: Methanol             | 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.



*See 1216124  
20 vial*



**CERTIFIED WEIGHT REPORT**

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

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

*V14630 to  
V14649*

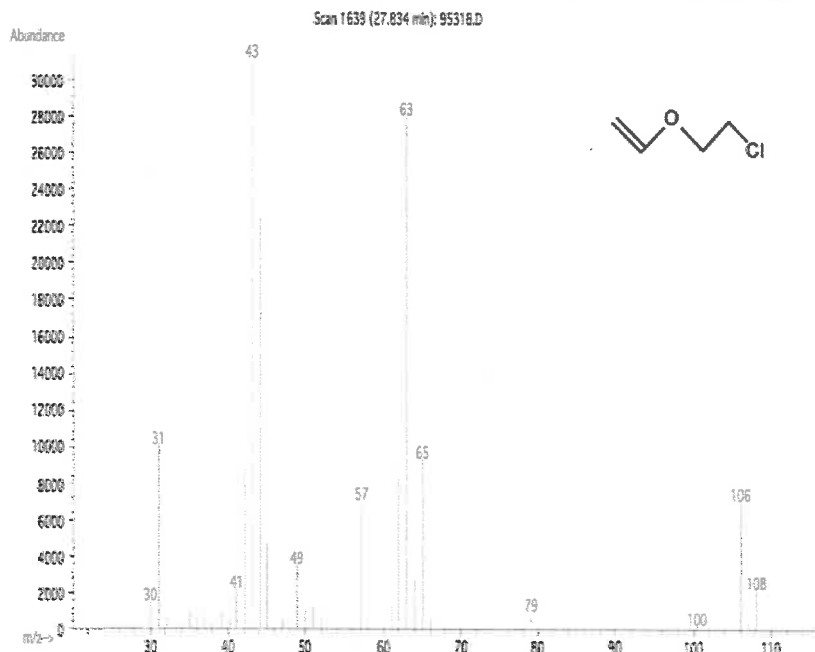
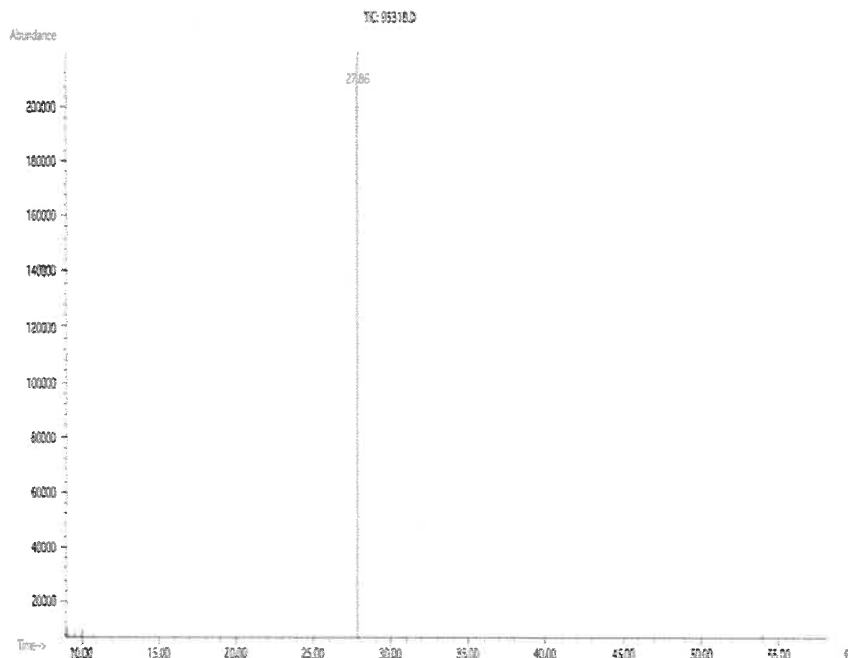
|                         |                  |        |
|-------------------------|------------------|--------|
| <i>Prashant Chauhan</i> |                  | 120524 |
| <b>Formulated By:</b>   | Prashant Chauhan | DATE   |
| <i>Pedro L. Rentas</i>  |                  | 120524 |
| <b>Reviewed By:</b>     | Pedro L. Rentas  | DATE   |

**Expiration Date:** 120527  
**Recommended Storage:** Refrigerate (4 °C)  
**Nominal Concentration (µg/mL):** 10000  
**NIST Test ID#:** 6UTB  
**Weight(s) shown below were combined and diluted to (mL):** 50.0

5E-05 Balance Uncertainty  
0.001 Flask Uncertainty

| 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 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).

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

**Section I Product and Company Identification**

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

**Section II - Hazards Identification**

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

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



**Signal Word: DANGER**

**Section III - Composition**

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

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

**INTENDED USE: REFERENCE MATERIAL**

**Section IV. FIRST AID MEASURES**

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

**Section V. FIREFIGHTING MEASURES**

|                                      |   |
|--------------------------------------|---|
| <b>Flammability</b>                  | 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. |
| <b>Suitable extinguishing media</b>  | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.  |
| <b>Protective equipment for fire</b> | Wear self contained breathing apparatus for fire fighting if necessary.   |

**Section VI. ACCIDENTAL RELEASE MEASURES**

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

**Section VII. HANDLING AND STORAGE**

|                                      |  |
|--------------------------------------|--|
| <b>Precautions for safe handling</b> | 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. |
| <b>Storage Conditions</b>            | 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**

|   |   |
|---|---|
| <b>Methanol</b>   | 67-56-1 TWA 200 ppm   |
| <b>Skin notation</b>  | TWA 200 ppm   |
| Potential for skin absorption, ingestion and inhalation.                                      |   |
| <b>Personal protective equipment</b>  | 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 (H <sub>2</sub> O = 1) | 0.79  |
| Vapor Pressure (mm Hg)  | 96  | Melting Point                           | -98°C |
| Vapor Density (AIR = 1) | 1.11  | Evaporation rate<br>(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)                                   | IATA                                       |
| UN number: 1230 Class: 3 Packing group: II | UN number: 1230 Class: 3 Packing group: II |
| Proper shipping name: Methanol             | 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.



*See 1216124  
20 vial*



**CERTIFIED WEIGHT REPORT**

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

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

*V14630 to  
V14649*

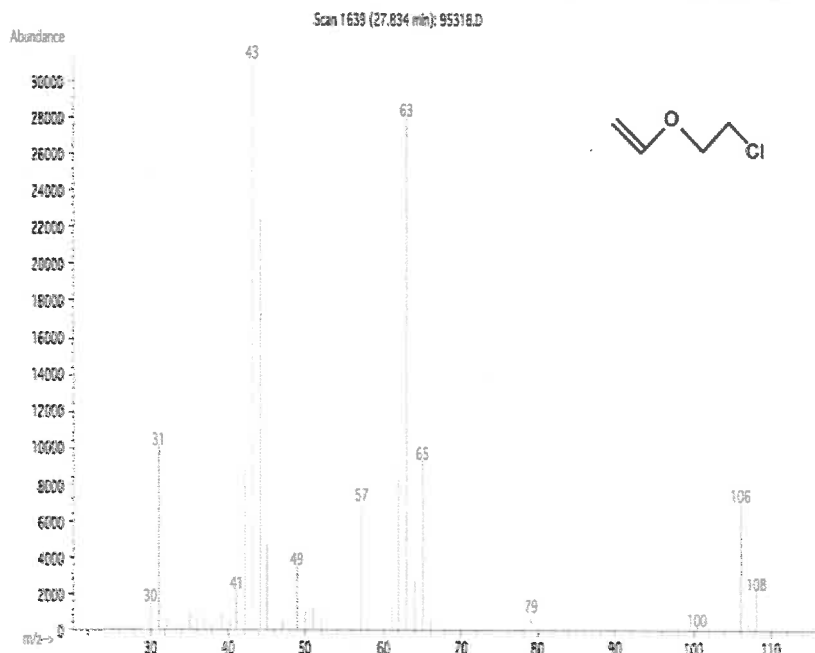
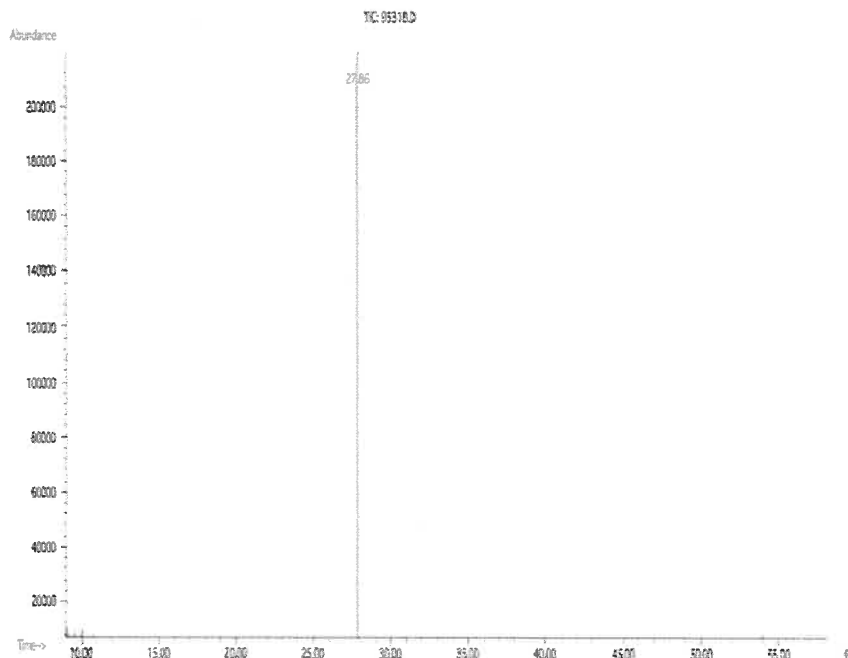
|                         |                  |        |
|-------------------------|------------------|--------|
| <i>Prashant Chauhan</i> |                  | 120524 |
| <b>Formulated By:</b>   | Prashant Chauhan | DATE   |
| <i>Pedro L. Rentas</i>  |                  | 120524 |
| <b>Reviewed By:</b>     | Pedro L. Rentas  | DATE   |

**Expiration Date:** 120527  
**Recommended Storage:** Refrigerate (4 °C)  
**Nominal Concentration (µg/mL):** 10000  
**NIST Test ID#:** 6UTB  
**Weight(s) shown below were combined and diluted to (mL):** 50.0

5E-05 Balance Uncertainty  
0.001 Flask Uncertainty

| 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 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).

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

**Section I Product and Company Identification**

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

**Section II - Hazards Identification**

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

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



**Signal Word: DANGER**

**Section III - Composition**

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

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

**INTENDED USE: REFERENCE MATERIAL**

**Section IV. FIRST AID MEASURES**

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

**Section V. FIREFIGHTING MEASURES**

|                                      |   |
|--------------------------------------|---|
| <b>Flammability</b>                  | 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. |
| <b>Suitable extinguishing media</b>  | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.  |
| <b>Protective equipment for fire</b> | Wear self contained breathing apparatus for fire fighting if necessary.   |

**Section VI. ACCIDENTAL RELEASE MEASURES**

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

**Section VII. HANDLING AND STORAGE**

|                                      |  |
|--------------------------------------|--|
| <b>Precautions for safe handling</b> | 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. |
| <b>Storage Conditions</b>            | 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.                                      |   |
| <b>Personal protective equipment</b>  | 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 (H <sub>2</sub> O = 1) | 0.79  |
| Vapor Pressure (mm Hg)  | 96  | Melting Point                           | -98°C |
| Vapor Density (AIR = 1) | 1.11  | Evaporation rate<br>(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)                                   | IATA                                       |
| UN number: 1230 Class: 3 Packing group: II | UN number: 1230 Class: 3 Packing group: II |
| Proper shipping name: Methanol             | 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.



*See 1216124  
20 vial*



**CERTIFIED WEIGHT REPORT**

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

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

*V14630 to  
V14649*

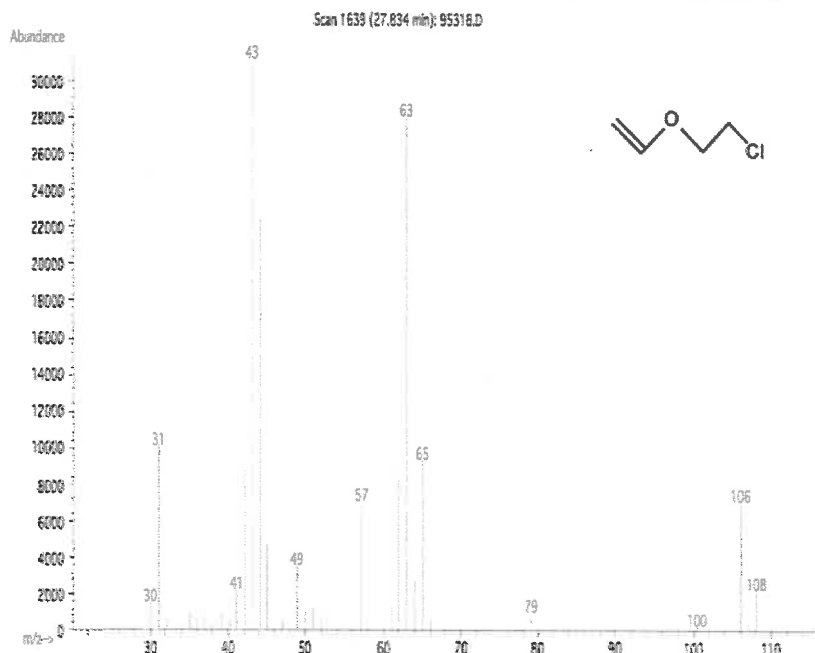
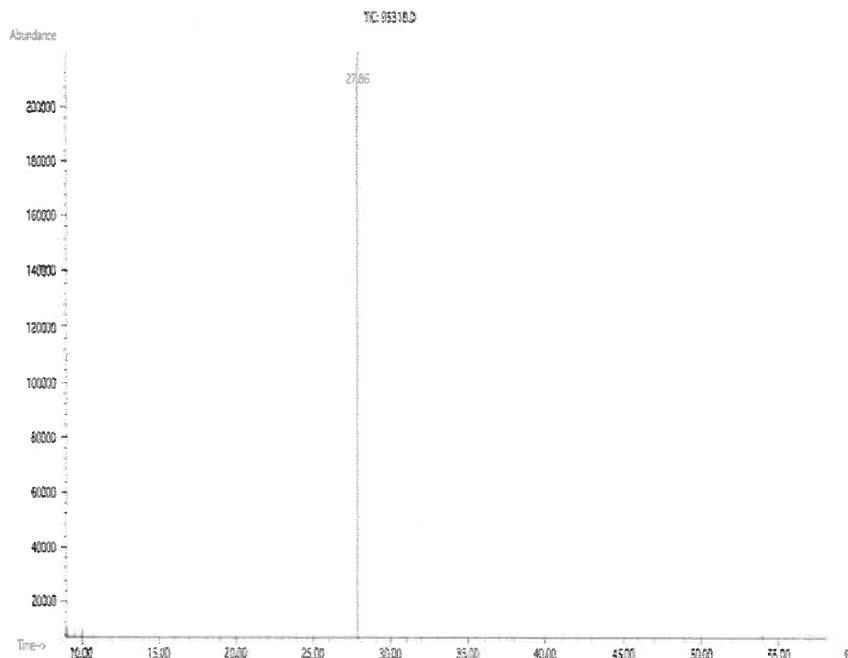
|                         |                  |        |
|-------------------------|------------------|--------|
| <i>Prashant Chauhan</i> |                  | 120524 |
| <b>Formulated By:</b>   | Prashant Chauhan | DATE   |
| <i>Pedro L. Rentas</i>  |                  | 120524 |
| <b>Reviewed By:</b>     | Pedro L. Rentas  | DATE   |

Expiration Date: 120527  
Recommended Storage: Refrigerate (4 °C)  
Nominal Concentration (µg/mL): 10000  
NIST Test ID#: 6UTB  
Weight(s) shown below were combined and diluted to (mL): 50.0

5E-05 Balance Uncertainty  
0.001 Flask Uncertainty

| 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 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).

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

**Section I Product and Company Identification**

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

**Section II - Hazards Identification**

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

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



**Signal Word: DANGER**

**Section III - Composition**

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

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

**INTENDED USE: REFERENCE MATERIAL**

**Section IV. FIRST AID MEASURES**

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

**Section V. FIREFIGHTING MEASURES**

|                                      |   |
|--------------------------------------|---|
| <b>Flammability</b>                  | 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. |
| <b>Suitable extinguishing media</b>  | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.  |
| <b>Protective equipment for fire</b> | Wear self contained breathing apparatus for fire fighting if necessary.   |

**Section VI. ACCIDENTAL RELEASE MEASURES**

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

**Section VII. HANDLING AND STORAGE**

|                                      |  |
|--------------------------------------|--|
| <b>Precautions for safe handling</b> | 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. |
| <b>Storage Conditions</b>            | 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**

|   |   |
|---|---|
| <b>Methanol</b>   | 67-56-1 TWA 200 ppm   |
| <b>Skin notation</b>  | TWA 200 ppm   |
| Potential for skin absorption, ingestion and inhalation.                                      |   |
| <b>Personal protective equipment</b>  | 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 (H <sub>2</sub> O = 1) | 0.79  |
| Vapor Pressure (mm Hg)  | 96  | Melting Point                           | -98°C |
| Vapor Density (AIR = 1) | 1.11  | Evaporation rate<br>(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)                                   | IATA                                       |
| UN number: 1230 Class: 3 Packing group: II | UN number: 1230 Class: 3 Packing group: II |
| Proper shipping name: Methanol             | 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 REFERENCE MATERIAL

Certificate of Analysis  
*chromatographic plus*



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

**Catalog No. :** 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:**

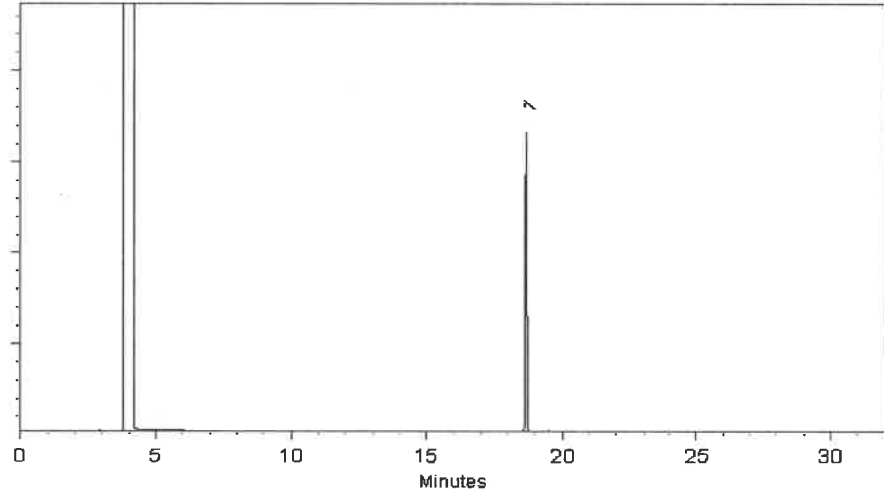
FID

**Split Vent:**

40 ml/min

**Inj. Vol**


1µl



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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:

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- 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:

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

$k$  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*



**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.:** A0193071  
**Description :** Bromochloromethane Standard  
Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul  
**Container Size :** 2 mL **Pkg Amt:** > 1 mL  
**Expiration Date :** December 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             | Bromochloromethane | 74-97-5 | 00008541 | 99%    | 2,018.0 µg/mL               | +/- 113.3890                           |

\* 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:**

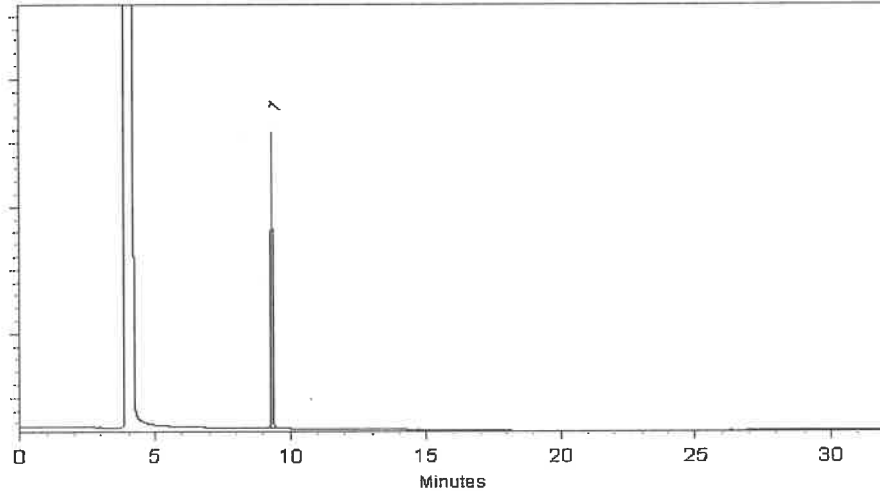
FID

**Split Vent:**

40 ml/min

**Inj. Vol**

1µl



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Tom Suckar - Mix Technician

Date Mixed: 29-Dec-2022      Balance Serial #      B707717271

Christie Mills - Operations Tech II - ARM QC

Date Passed: 03-Jan-2023

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

## General Certified Reference Material Notes

### Expiration Notes:

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### Manufacturing Notes:

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Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul  
**Container Size :** 2 mL **Pkg Amt:** > 1 mL  
**Expiration Date :** December 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             | Bromochloromethane | 74-97-5 | 00008541 | 99%    | 2,018.0 µg/mL               | +/- 113.3890                           |

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**Solvent:** P&T Methanol  
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200°C

**Det. Temp:**

250°C

**Det. Type:**

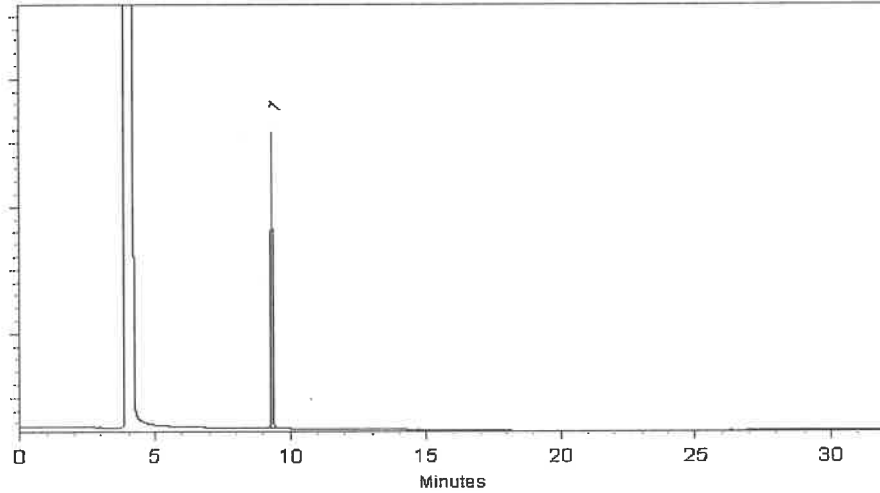
FID

**Split Vent:**

40 ml/min

**Inj. Vol**

1µl



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Tom Suckar - Mix Technician

Date Mixed: 29-Dec-2022

Balance Serial # B707717271

Christie Mills - Operations Tech II - ARM QC

Date Passed: 03-Jan-2023

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

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**Description :** Bromochloromethane Standard  
Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul  
**Container Size :** 2 mL **Pkg Amt:** > 1 mL  
**Expiration Date :** December 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) |
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| 1             | Bromochloromethane | 74-97-5 | 00008541 | 99%    | 2,018.0 µg/mL               | +/- 113.3890                           |

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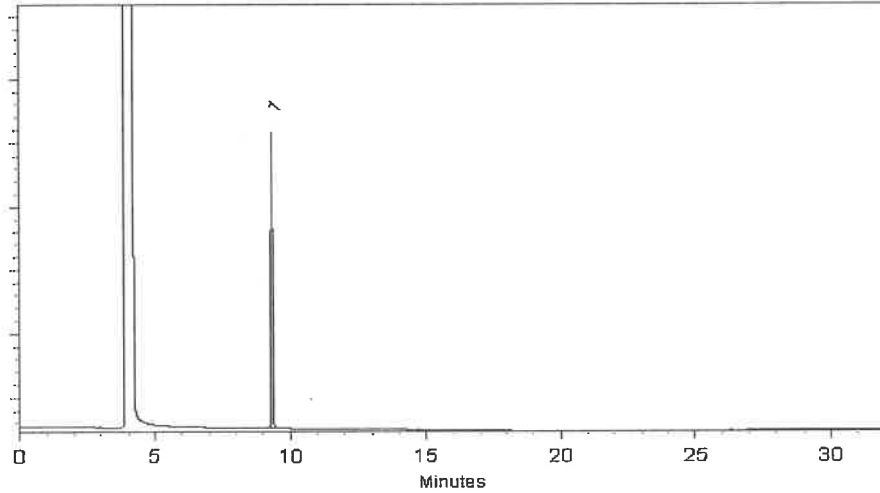
FID

**Split Vent:**

40 ml/min

**Inj. Vol**

1µl



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Tom Sucka - Mix Technician

Date Mixed: 29-Dec-2022

Balance Serial # B707717271

Christie Mills - Operations Tech II - ARM QC

Date Passed: 03-Jan-2023

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

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

CERTIFIED VALUES

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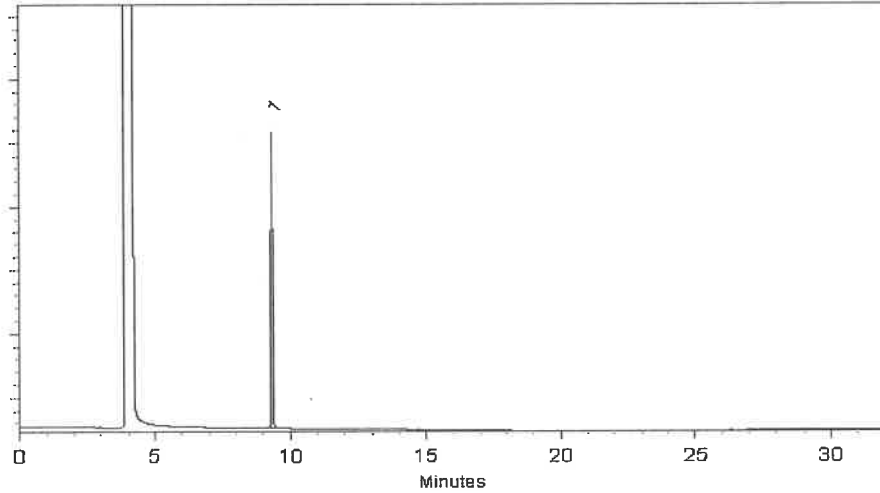
FID

**Split Vent:**

40 ml/min

**Inj. Vol**

1µl



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Tom Sucka - Mix Technician

Date Mixed: 29-Dec-2022

Balance Serial # B707717271

Christie Mills - Operations Tech II - ARM QC

Date Passed: 03-Jan-2023

Manufactured under Restek's ISO 9001:2015  
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### 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:

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

$k$  is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

### Manufacturing Notes:

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

### Handling Notes:

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



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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis  
 gravimetric



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.: A0196865  
 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 : April 30, 2026 Storage: 10°C or colder  
 Ship: Ambient

CERTIFIED VALUES

| Component # | Compound                      | CAS #      | Lot #    | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty <sup>*</sup> (95% C.L.; K=2) |
|-------------|-------------------------------|------------|----------|--------|-----------------------------|---|
| 1           | 1,2-Dichloroethane-d4         | 17060-07-0 | PR-32845 | 99%    | 25,036.0 µg/mL              | +/- 1,417.9179                                    |
| 2           | 1-Bromo-4-fluorobenzene (BFB) | 460-00-4   | 184975   | 99%    | 25,132.0 µg/mL              | +/- 1,423.3549                                    |
| 3           | Dibromofluoromethane          | 1868-53-7  | 022013   | 99%    | 25,040.0 µg/mL              | +/- 1,418.1445                                    |
| 4           | Toluene-d8                    | 2037-26-5  | PR-33397 | 99%    | 25,028.0 µg/mL              | +/- 1,417.4648                                    |

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

Russ Bookhamer - Operations Technician I

Date Mixed: 11-Apr-2023

Balance: 1127510105

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:

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

*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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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:**

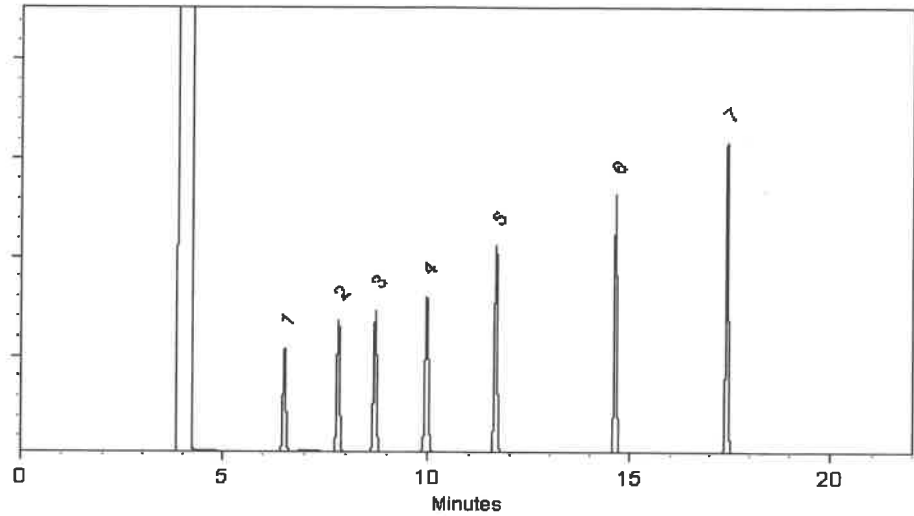
FID

**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*  
Sam Moodler - Operations Tech I

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

*Dylan Murphy*  
Dylan 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.
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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:

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### Handling Notes:

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CERTIFIED REFERENCE MATERIAL

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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:**

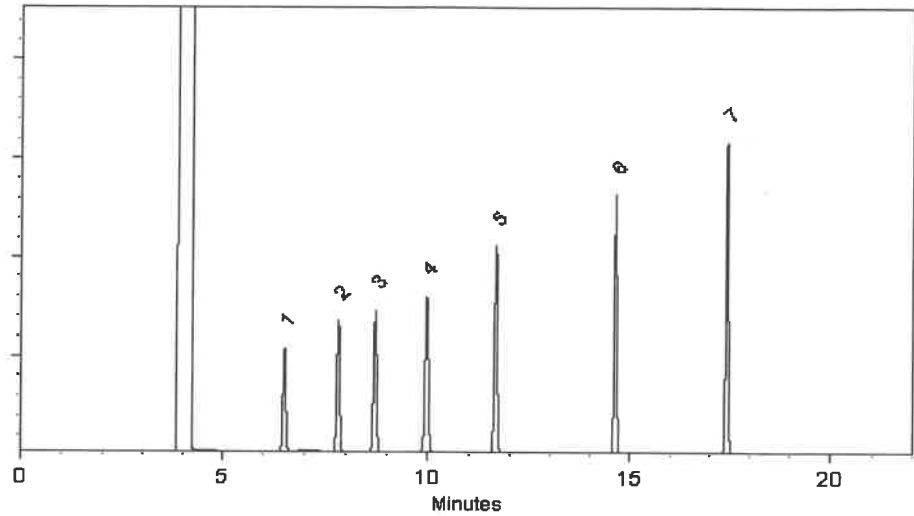
FID

**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*

Sam Moodler - Operations Tech I

Date Mixed: 28-Mar-2024

Balance Serial # B707717271

*Dylan Murphy*

Dylan 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/ $\mu$ ECD, 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.
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### 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  
 gravimetric



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



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

## General Certified Reference Material Notes

### Expiration Notes:

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- 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:

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Dec 12/17/24  
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*chromatographic plus*

V14697-to-14726



**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:**

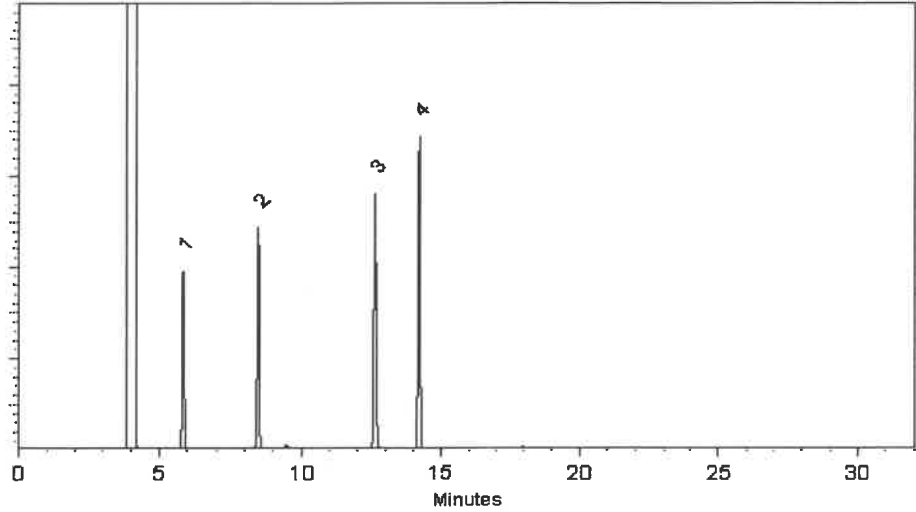
FID

**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/ $\mu$ ECD, 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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V14697-to-14726



**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:**

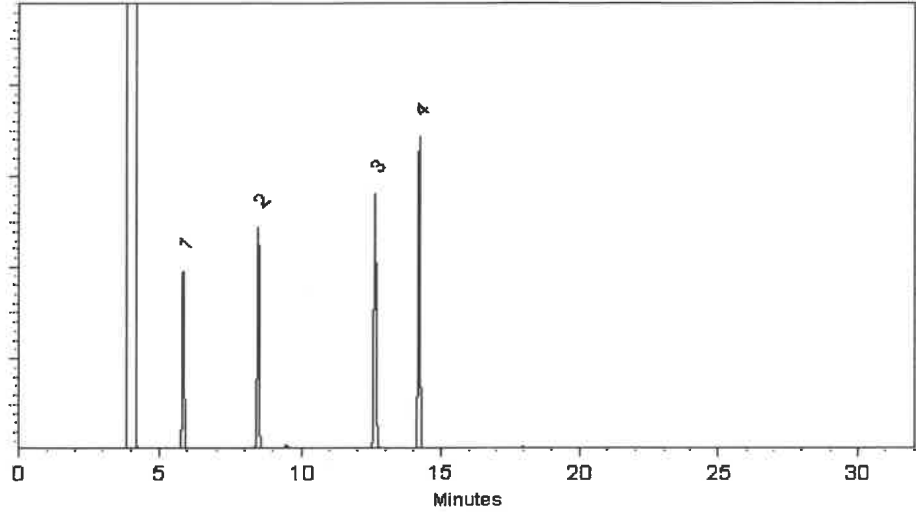
FID

**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:

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

*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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Dec 12/17/24  
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30 V14  
**Certificate of Analysis**  
*chromatographic plus*

V14697-to-14726



**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:**

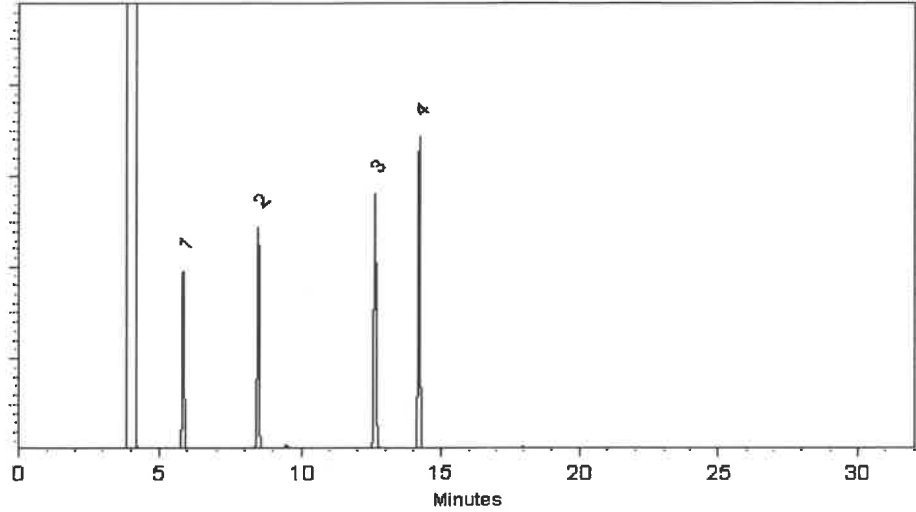
FID

**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:

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

*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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 30 ml

**Certificate of Analysis**  
*chromatographic plus*

V14727 to  
 V14756



**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:**

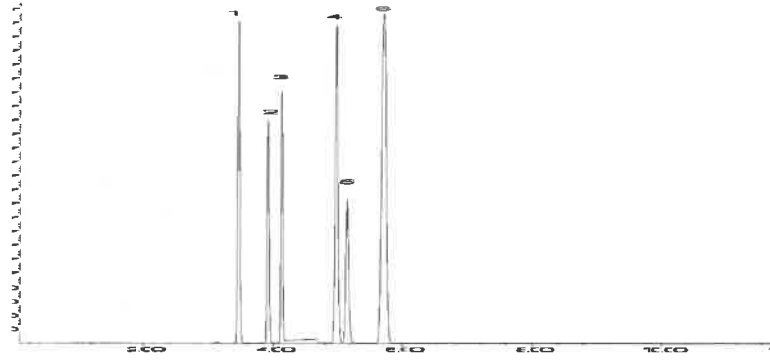
MSD

**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:

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

$k$  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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see 12/17/24  
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 30 ml

**Certificate of Analysis**  
*chromatographic plus*

V14727 to  
 V14756



**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:**

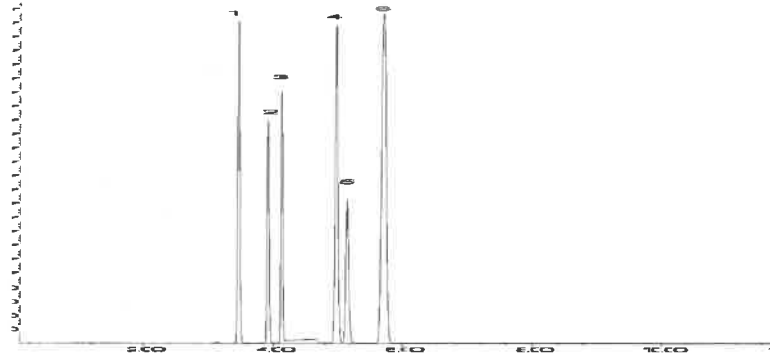
MSD

**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:

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

$k$  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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*chromatographic plus*

✓ 14842 to 14846



**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:**

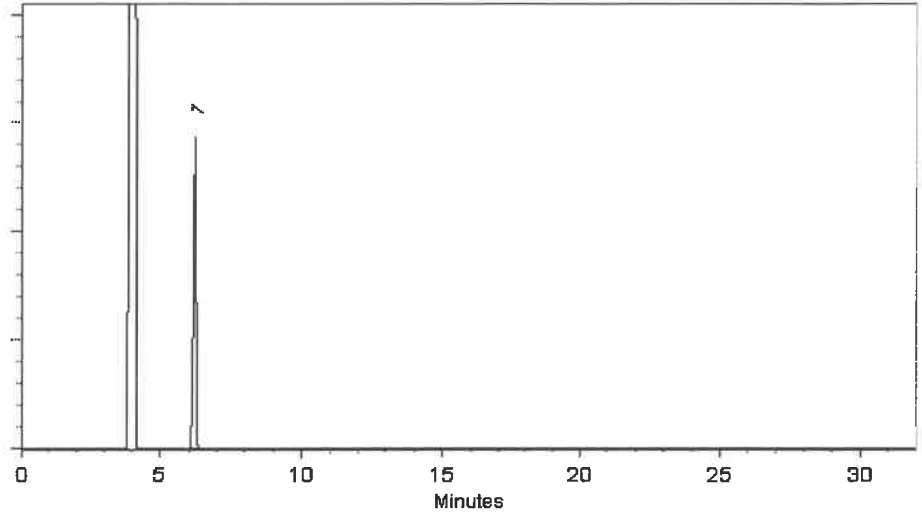
FID

**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.

*A. O. E.*

Aaron Enyart - Operations Tech I

Date Mixed: 07-Oct-2024

Balance Serial # B251644995

*Brittany Federinko*

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/ $\mu$ ECD, 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:

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

$k$  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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20 viny Dec 01/08/21  
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**Certificate of Analysis**  
*chromatographic*

V14803 - V14822



**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:**

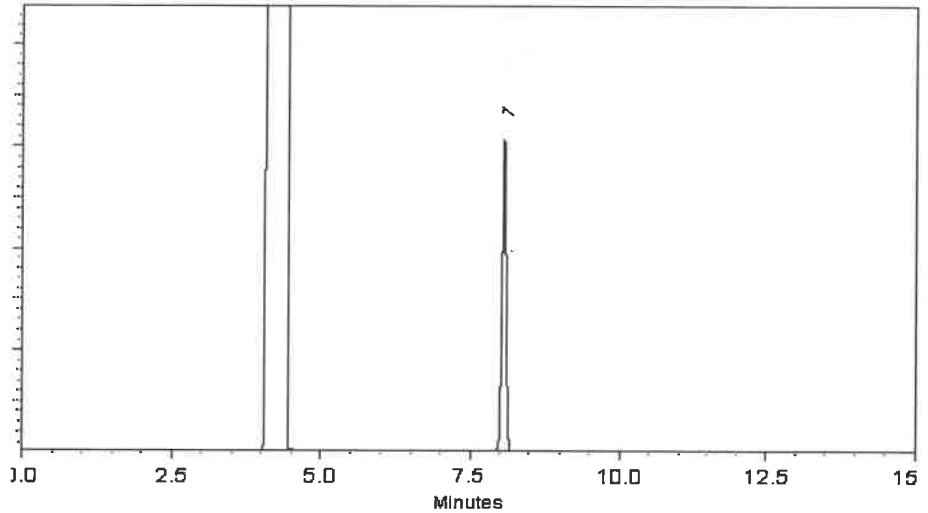
FID

**Split Vent:**

40 ml/min

**Inj. Vol**

1µl



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

Ethan Winiarski - Operations Tech I

Date Mixed: 24-Dec-2024

Balance Serial # 1127510105

Dillan Murphy - Operations Technician I

Date Passed: 02-Jan-2025

REVIEWED  
By Jennifer Patten at 7:12 am, Jan 05, 2025

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/ $\mu$ ECD, 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:

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

$k$  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.



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

www.restek.com

20 viny Dec 01/08/21  
**CERTIFIED REFERENCE MATERIAL**

**Certificate of Analysis**  
*chromatographic*

V14803 - V14822



**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%

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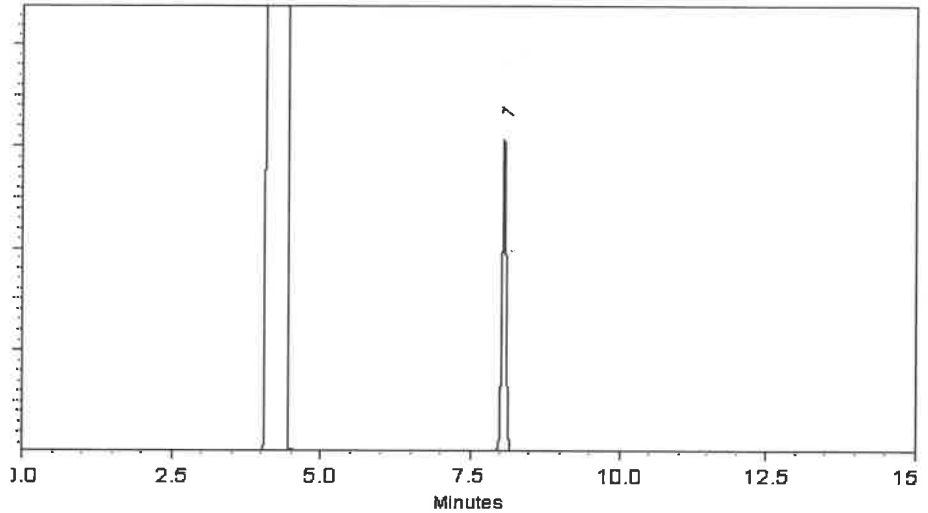
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Methanol  
ULTRA RESI-ANALYZED  
For Purge and Trap Analysis



Material No.: 9077-02  
Batch No.: 22L0562016  
Manufactured Date: 2022-10-26  
Expiration Date: 2025-10-25  
Revision No.: 0

## Certificate of Analysis

| Test  | Specification | Result   |
|---|---------------|----------|
| Assay (CH <sub>3</sub> OH) (by GC, corrected for water) | ≥ 99.9 %      | 100.0 %  |
| Residue after Evaporation                               | ≤ 1.0 ppm     | 0.2 ppm  |
| Titration Acid (µeq/g)                                  | ≤ 0.3         | 0.2      |
| Titration 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

Jamie Ethier  
Vice President Global Quality

Methanol  
ULTRA RESI-ANALYZED  
For Purge and Trap Analysis



V14883  
V14884

Material No.: 9077-02  
Batch No.: 22L0562016  
Manufactured Date: 2022-10-26  
Expiration Date: 2025-10-25  
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Country of Origin: USA  
Packaging Site: Phillipsburg Mfg Ctr & DC

  
Jamie Ethier  
Vice President Global Quality

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

Avantor Performance Materials, LLC

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