

Prep Standard - Chemical Standard Summary

Order ID : Q1522

Test : VOCMS Group4

Prepbatch ID :

Sequence ID/Qc Batch ID: VN031025,

Standard ID :

VP131746,VP131767,VP132035,VP132096,VP133036,VP133174,VP133178,VP133238,VP133239,VP133240,

Chemical ID :

V13391,V13457,V13460,V13465,V13466,V13706,V14154,V14175,V14176,V14289,V14433,V14439,V14521,V14522,V14613,V14614,V14624,V14630,V14631,V14632,V14633,V14722,V14723,V14724,V14744,V14754,V14809,V14814,V14842,V14872,V14873,V14874,V14875,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 | VP131746 | 11/22/2024 | 05/18/2025 | Semsettin Yesilyurt | None | None | Maresh Dadoda |
| | | | | | | | | 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 | VP131767 | 11/22/2024 | 05/18/2025 | Semsettin Yesilyurt | None | None | Maresh Dadoda |
| | | | | | | | | 11/27/2024 |

FROM 0.50000ml of V13391 + 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> |
|------------------|-----------------------------------|--------------------------|------------------|------------------------|------------------------|----------------|------------------|--|
| 1810 | 8260 Working Std(2-CVE)-800ppm | VP132035 | 12/10/2024 | 06/10/2025 | Semsettin Yesilyurt | None | None | <div>Mahesh Dadoda</div> <div>12/12/2024</div> |

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 | VP132096 | 12/12/2024 | 06/10/2025 | Semsettin Yesilyurt | None | None | <div>Mahesh Dadoda</div> <div>12/19/2024</div> |

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> |
|------------------|---|--------------------------|------------------|------------------------|---------------------|----------------|------------------|----------------------|
| 51 | 8260 Working STD (Acrolein) -first source, 800PPM | VP133036 | 02/14/2025 | 03/13/2025 | Semsettin Yesilyurt | None | None | Maresh Dadoda |
| | | | | | | | | 02/18/2025 |

FROM 1.00000ml of V14872 + 1.00000ml of V14873 + 1.00000ml of V14874 + 1.00000ml of V14875 + 21.00000ml of V14624 = 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> |
|------------------|------------------------|--------------------------|------------------|------------------------|---------------------|----------------|------------------|----------------------|
| 617 | 8260 Surrogate, 400PPM | VP133174 | 02/27/2025 | 08/27/2025 | Semsettin Yesilyurt | None | None | Maresh Dadoda |
| | | | | | | | | 03/04/2025 |

FROM 0.40000ml of V13706 + 24.60000ml 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> |
|------------------|--|--------------------------|------------------|------------------------|------------------------|----------------|------------------|---------------------------------|
| 257 | 8260 Calibration Working STD Mix-First source, 160PPM | VP133178 | 02/27/2025 | 03/31/2025 | Semsettin Yesilyurt | None | None | Maresh Dadoda 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

| <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 | VP133238 | 03/10/2025 | 03/11/2025 | John Carlone | None | None | Romaben Patel 03/11/2025 |

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

[illegible]

| <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 | VP133240 | 03/10/2025 | 03/11/2025 | John Carlone | None | None | Romaben Patel 03/11/2025 |
| <u>FROM</u> 39.94450ml of W3112 + 0.00500ml of VP132096 + 0.00500ml of VP133174 + 0.00800ml of VP131746 + 0.01250ml of VP132035 + 0.01250ml of VP133036 + 0.01250ml of VP133178 = 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 tuneing solution | A0191805 | 11/22/2025 | 11/22/2024 / SAM | 01/13/2023 / SAM | V13391 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 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 # |
|------------------|--|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA9077-02 / Methanol, Purge/Trap (cs=6x1L) | 23I0762004 | 07/13/2025 | 01/13/2025 / SAM | 11/26/2024 / SAM | V14624 |

| 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 |

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 | V14631 |

| 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 |

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

| 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 # |
|--------------------------|-------------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 021325 | 03/13/2025 | 02/14/2025 / SAM | 02/14/2025 / SAM | V14872 |

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) | 021325 | 03/13/2025 | 02/14/2025 / SAM | 02/14/2025 / SAM | V14873 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|-------------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 021325 | 03/13/2025 | 02/14/2025 / SAM | 02/14/2025 / SAM | V14874 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|-------------------------------|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | 91980 / Acrolin Std (Min = 5) | 021325 | 03/13/2025 | 02/14/2025 / SAM | 02/14/2025 / SAM | V14875 |

| 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.: 23I0762004
Manufactured Date: 2023-08-11
Expiration Date: 2026-08-10
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|---|---------------|----------|
| Assay (CH ₃ OH) (by GC, corrected for water) | ≥ 99.9 % | 100.0 % |
| Residue after Evaporation | ≤ 1.0 ppm | 0.5 ppm |
| Titration Acid (μeq/g) | ≤ 0.3 | 0.2 |
| Titration Base (μeq/g) | ≤ 0.10 | 0.01 |
| Water (by KF, coulometric) | ≤ 0.08 % | < 0.01 % |
| Volatile Organic Trace Analysis – Below EPA 8260B CRQL | Conforms | Conforms |

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

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

Ken Koehnlein
Sr. Manager, Quality Assurance

Methanol
ULTRA RESI-ANALYZED
For Purge and Trap Analysis



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

Certificate of Analysis

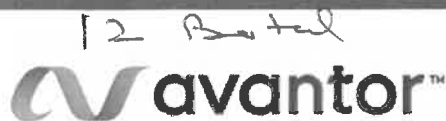
| Test | Specification | Result |
|---|---------------|----------|
| Assay (CH ₃ OH) (by GC, corrected for water) | ≥ 99.9 % | 100.0 % |
| Residue after Evaporation | ≤ 1.0 ppm | 0.2 ppm |
| Titration Acid (μeq/g) | ≤ 0.3 | 0.2 |
| Titration Base (μeq/g) | ≤ 0.10 | 0.03 |
| Water (by KF, coulometric) | ≤ 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



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 ₃ 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



Certified Reference Material CRM

5 J14



CERTIFIED WEIGHT REPORT

Part Number: 91980
Lot Number: 021325
Description: Acrolein

Expiration Date: 031325
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 5000
NIST Test ID#: 6UTB

Solvent(s): Lot#
Water 072324Q

✓ 14872 to
✓ 14876

5E-05 Balance Uncertainty
0.001 Flask Uncertainty

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

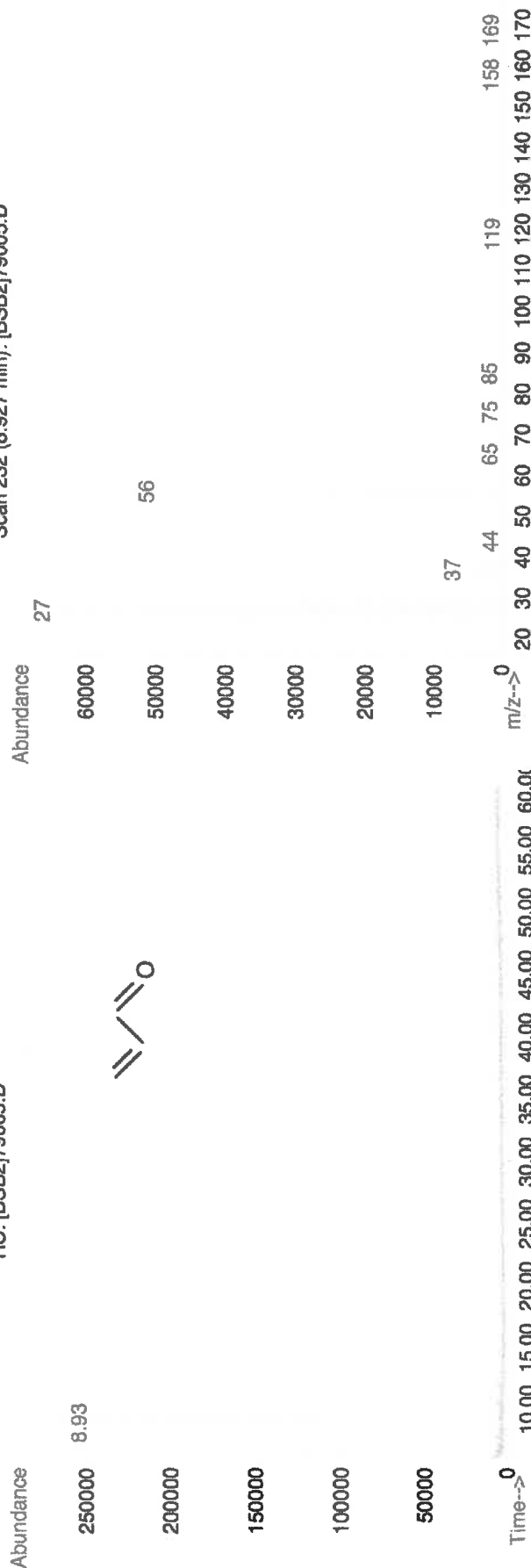
| | | | |
|----------------|-----------------|--------|------|
| Formulated By: | Anthony Mahoney | 021325 | DATE |
| Reviewed By: | Pedro L. Rentas | 021325 | DATE |

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

1. Acrolein 5 103755V10F 5000 0.05166 0.05178 5011.8 52.6 107-02-8 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.

TIC: [BSB2]79005.D



• 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 Rossotto Dr. Hamden CT, 06514 | Emergency Telephone International | 1-352-323-3500 |
| | | Date Prepared/Revised | January 1, 2024 |

Section II - Hazards Identification

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



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, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Wash with soap and water. Consult a physician.
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
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.
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
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 | 100°C | Specific Gravity (H2O = 1) | 1 |
| Vapor Pressure (mm Hg) | | Melting Point | |

| | | | | |
|-------------------------|--|---------------------|---|-----|
| Vapor Density (AIR = 1) | | NA | Evaporation rate (Butyl Acetate = 1) | 0°C |
| Solubility in Water | | Completely miscible | | |
| 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)
Not dangerous goods
Proper shipping name: Water

IATA
Not dangerous goods
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 users 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.



Certified Reference Material CRM

5 J14



CERTIFIED WEIGHT REPORT

Part Number:
Lot Number:
Description:

91980
021325
Acrolein

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):
NIST Test ID#:

031325
Refrigerate (4 °C)
5000
6UTB

Solvent(s):
Water

Lot#
072324Q

✓ 14872 to
✓ 14876

5E-05 Balance Uncertainty
0.001 Flask Uncertainty

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

10.0

5E-05 Balance Uncertainty

0.001 Flask Uncertainty

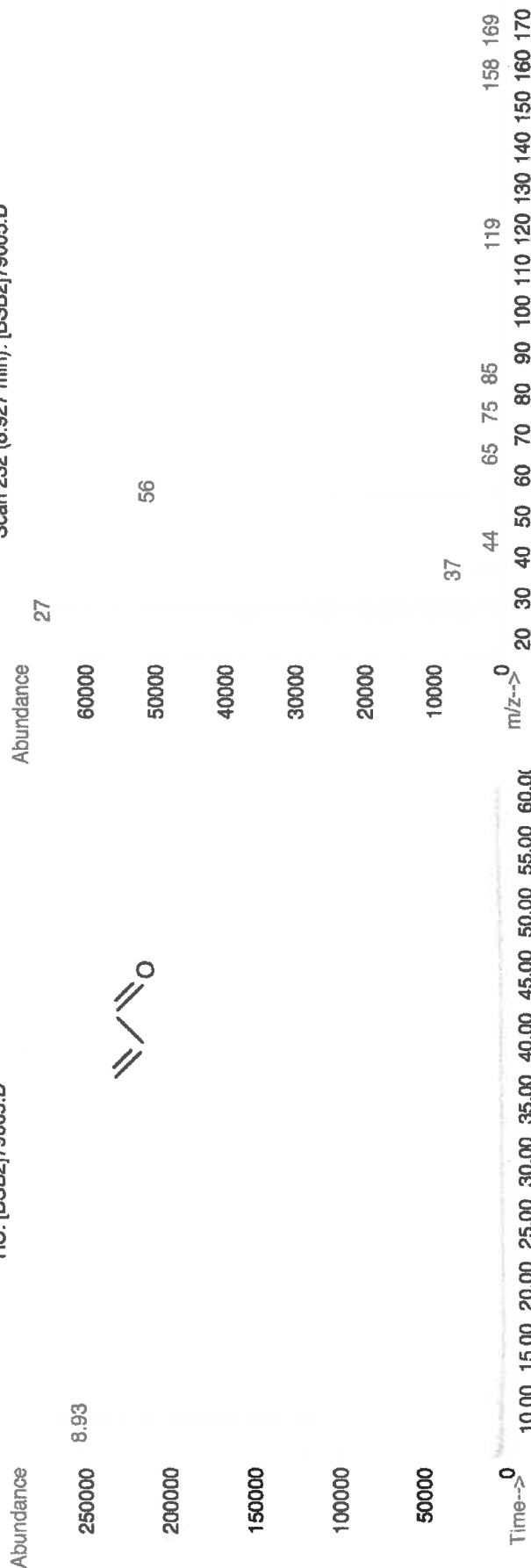
| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (±) (µg/mL) | CAS# | OSHA PEL (TWA) | LDSO |
|----------|-----|------------|----------------------|------------|-------------|------------------|------------------|---------------------|----------------------------------|------|----------------|------|
|----------|-----|------------|----------------------|------------|-------------|------------------|------------------|---------------------|----------------------------------|------|----------------|------|

1. Acrolein 5 10375SV10F 5000 97 0.5 0.05166 0.05178 5011.8 52.6 107-02-8 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 Renteria. 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.

TIC: [BSB2]79005.D

Scan 232 (8.927 min): [BSB2]79005.D



• 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 Rossotto Dr. Hamden CT, 06514 | Emergency Telephone International | 1-352-323-3500 |
| | | Date Prepared/Revised | January 1, 2024 |

Section II - Hazards Identification

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

Signal Word: DANGER



See Certified Weight Report For Other Analytes Present At Trace Quantities.
INTENDED USE: REFERENCE MATERIAL

Section IV. FIRST AID MEASURES

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

Section V. FIREFIGHTING MEASURES

Suitable extinguishing media
Protective equipment for fire
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Wear self contained breathing apparatus for fire fighting if necessary.
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.
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
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 | 100°C | Specific Gravity (H2O = 1) | 1 |
| Vapor Pressure (mm Hg) | | Melting Point | |

| | | | | |
|-------------------------|--|--|---|-----|
| Vapor Density (AIR = 1) | | NA | Evaporation rate (Butyl Acetate = 1) | 0°C |
| Solubility in Water | | NA | | |
| Appearance and Odor | | CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL 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)
Not dangerous goods
Proper shipping name: Water

IATA
Not dangerous goods
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 users 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.



Certified Reference Material CRM

5 J14



CERTIFIED WEIGHT REPORT

Part Number: 91980
Lot Number: 021325
Description: Acrolein

Expiration Date: 031325
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 5000
NIST Test ID#: 6UTB

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

5E-05 Balance Uncertainty
0.001 Flask Uncertainty

Solvent(s): Lot#
Water 072324Q

✓ 14872 to
✓ 14876

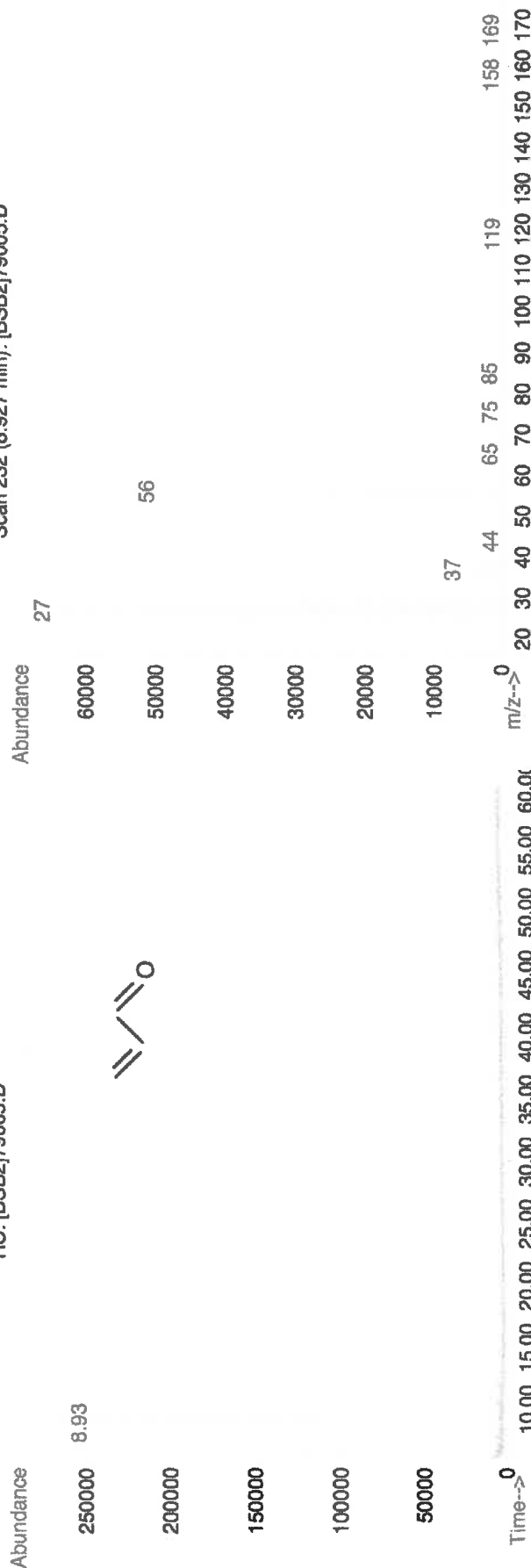
| | | | |
|----------------|-----------------|--------|------|
| Formulated By: | Anthony Mahoney | 021325 | DATE |
| Reviewed By: | Pedro L. Rentas | 021325 | DATE |

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

| | | | | | | | | | | |
|-------------|---|------------|------|---------|---------|--------|------|----------|---------|-----------------|
| 1. Acrolein | 5 | 103755V10F | 5000 | 0.05166 | 0.05178 | 5011.8 | 52.6 | 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.

TIC: [BSB2]79005.D



• 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 Rossotto Dr. Hamden CT, 06514 | Emergency Telephone International | 1-352-323-3500 |
| | | Date Prepared/Revised | January 1, 2024 |

Section II - Hazards Identification

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



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.
Storage Conditions
Use ventilation. Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. 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
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 | 100°C | Specific Gravity (H2O = 1) | 1 |
| Vapor Pressure (mm Hg) | | Melting Point | |

| | | | | |
|-------------------------|--|---------------------|---|-----|
| Vapor Density (AIR = 1) | | NA | Evaporation rate (Butyl Acetate = 1) | 0°C |
| Solubility in Water | | Completely miscible | | |
| 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)
Not dangerous goods
Proper shipping name: Water

IATA
Not dangerous goods
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 users 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.



Certified Reference Material CRM

5 J14



CERTIFIED WEIGHT REPORT

Part Number: 91980
Lot Number: 021325
Description: Acrolein

Expiration Date: 031325
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 5000
NIST Test ID#: 6UTB

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

5E-05 Balance Uncertainty
0.001 Flask Uncertainty

Solvent(s): Lot#
Water 072324Q

✓ 14872 to
✓ 14876

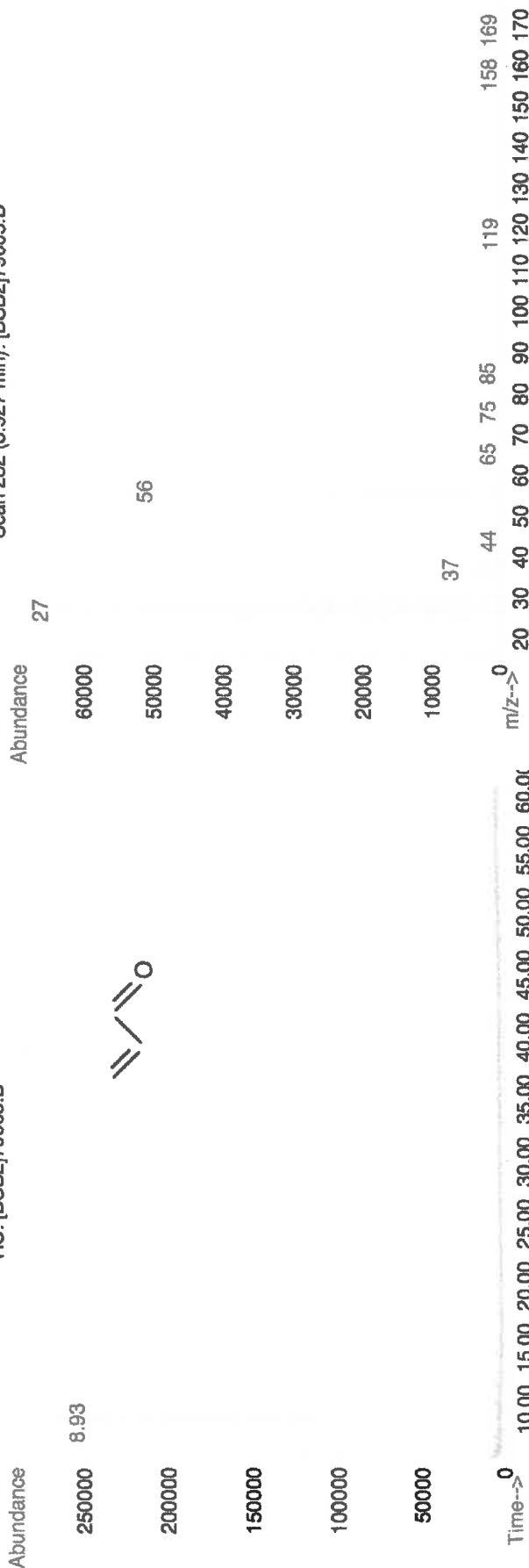
| | | | |
|----------------|-----------------|--------|------|
| Formulated By: | Anthony Mahoney | 021325 | DATE |
| Reviewed By: | Pedro L. Rentas | 021325 | DATE |

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

| | | | | | | | | | | |
|-------------|---|------------|------|---------|---------|--------|------|----------|---------|-----------------|
| 1. Acrolein | 5 | 103755V10F | 5000 | 0.05166 | 0.05178 | 5011.8 | 52.6 | 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.

TIC: [BSB2]79005.D



• 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 Rossotto Dr. Hamden CT, 06514 | Emergency Telephone International | 1-352-323-3500 |
| | | Date Prepared/Revised | January 1, 2024 |

Section II - Hazards Identification

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

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

INTENDED USE: REFERENCE MATERIAL

Section IV. FIRST AID MEASURES

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

Section V. FIREFIGHTING MEASURES

Suitable extinguishing media
Protective equipment for fire
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Wear self contained breathing apparatus for fire fighting if necessary.
Carbon oxides

Section VI. ACCIDENTAL RELEASE MEASURES

Personal precautions
Environmental precautions
Clean up
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations.
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
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
Storage Conditions
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.
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
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 | 100°C |
| Specific Gravity (H2O = 1) | |
| Melting Point | 1 |

Vapor Pressure (mm Hg)

| | | | | |
|-------------------------|--|---------------------|---|-----|
| Vapor Density (AIR = 1) | | NA | Evaporation rate (Butyl Acetate = 1) | 0°C |
| Solubility in Water | | Completely miscible | | |
| 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)
Not dangerous goods
Proper shipping name: Water

IATA
Not dangerous goods
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 users 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.



CERTIFIED WEIGHT REPORT

Part Number: **95317**
Lot Number: **021624**
Description: **Universal VOA Megamix**
69 components
Expiration Date: 021627
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 2000
NIST Test ID#: 8UTB

Solvent(s): **Methanol**
Lot#: **EG359-USQ12**

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

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

| Compound | (RM#) | Lot | Di. | Initial | Initial | Nominal | Purity | Purity | Uncertainty | Target | Actual | Actual | Expanded | SDS Information | | |
|----------------------------------|--------|-------------|-----------|--------------|---------------|---------|-------------|--------------|-------------|-----------|--------------|---------------|----------|--|-------------------------------|-------------------|
| | | | | | | | | | | | | | | (Solvent Safety Info. On Attached pg.) | | |
| | | | | | | | | | | | | | | CAS# | OSHA PEL (TWA) | LD50 |
| Part Number | Number | Factor | Vol. (mL) | Conc.(µg/mL) | Conc. (µg/mL) | (%) | Uncertainty | Pipette (mL) | Weight(g) | Weight(g) | Conc (µg/mL) | (+/-) (µg/mL) | | | | |
| Acetonitrile | (0324) | 021644 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20020 | 2001.3 | 8.1 | 75-05-8 | 40 ppm (70mg/m3/8H) | or-rat 2400mg/kg |
| Allyl chloride (3-Chloropropene) | (0325) | 102396 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 107-05-1 | 1 ppm (3mg/m3/8H) | or-rat 700mg/kg |
| Carbon disulfide | (0060) | MKCR8581 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20023 | 2001.6 | 8.1 | 75-15-0 | 4 ppm (12mg/m3) (skin) | or-rat 1200mg/kg |
| cis-1,4-Dichloro-2-butene | (1196) | 14718EF | NA | NA | NA | 2000 | 95 | 0.2 | NA | 0.21058 | 0.21069 | 2001.1 | 8.5 | 1476-11-5 | N/A | N/A |
| trans-1,4-Dichloro-2-butene | (0486) | MKBP6041V | NA | NA | NA | 2000 | 96.5 | 0.2 | NA | 0.20731 | 0.20748 | 2001.7 | 8.4 | 110-57-6 | N/A | N/A |
| Diethyl ether | (0153) | IK18CA5000K | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 60-29-7 | N/A | N/A |
| Ethyl methacrylate | (0381) | 06126PK | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20230 | 2002.3 | 8.2 | 97-63-2 | N/A | or-rat 14800mg/kg |
| Iodomethane | (0489) | 5HBF8718V | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20121 | 2001.5 | 8.2 | 74-88-4 | 5 ppm (28mg/m3/8H) (skin) | or-rat 70mg/kg |
| 2-Methyl-1-propanol | (0445) | 15241EB | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20120 | 2001.4 | 8.1 | 78-83-1 | 50 ppm (150mg/m3/8H) | or-rat 3480mg/kg |
| Methacrylonitrile | (0442) | 00427ET | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 126-98-7 | 1 ppm (3mg/m3/8H) (skin) | or-rat 1200mg/kg |
| Methyl acrylate | (1075) | SHBK0679 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 96-33-3 | 10 ppm (35mg/m3/8H) (skin) | or-rat 277mg/kg |
| Methyl methacrylate | (0404) | MKBW5137V | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20041 | 2001.6 | 8.1 | 80-62-6 | 100 ppm (410mg/m3/8H) | or-rat 7872mg/kg |
| Nitrobenzene | (0228) | 01213TV | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20220 | 2001.3 | 8.2 | 98-95-3 | 1 ppm (5mg/m3/8H) (skin) | or-rat 700mg/kg |
| 2-Nitropropane | (0461) | 14002JK | NA | NA | NA | 2000 | 97.3 | 0.2 | NA | 0.20560 | 0.20577 | 2001.6 | 8.3 | 79-46-9 | 10 ppm (35mg/m3/8H) | or-rat 720mg/kg |
| Pentachloroethane | (0450) | HGA01 | NA | NA | NA | 2000 | 98 | 0.2 | NA | 0.20413 | 0.20430 | 2001.6 | 8.3 | 76-01-7 | N/A | N/A |
| 1,1,2-Trichlorotrifluoroethane | (0474) | 18930 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20225 | 2001.8 | 8.2 | 76-13-1 | 1000 ppm (7800mg/m3/8H) | or-rat 43g/kg |
| Bromodichloromethane | 35171 | 101623 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-27-4 | N/A | or-rat 918mg/kg |
| Dibromochloromethane | 35171 | 101623 | 0.05 | 5.00 | 40002.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 124-48-1 | N/A | or-rat 846mg/kg |
| cis-1,2-Dichloroethane | 35171 | 101623 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 156-59-2 | N/A | N/A |
| trans-1,2-Dichloroethane | 35171 | 101623 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 156-60-5 | N/A | or-rat 1235mg/kg |
| Methylene chloride | 35171 | 101623 | 0.05 | 5.00 | 40002.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-09-2 | 500 ppm | or-rat 820mg/kg |
| 1,1-Dichloroethene | 32251 | 102023 | 0.10 | 10.00 | 20001.6 | 2000 | NA | NA | 0.042 | NA | NA | 1999.7 | 20.4 | 75-35-4 | 1 ppm (4mg/m3/8H) | or-rat 200mg/kg |
| Bromoform | 95321 | 020724 | 0.10 | 10.00 | 20003.2 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-25-2 | 0.5 ppm (5mg/m3) (skin) | or-rat 930mg/kg |
| Carbon tetrachloride | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 56-23-5 | 2 ppm (12.6mg/m3/8H) | or-rat 2350mg/kg |
| Chloroform | 95321 | 020724 | 0.10 | 10.00 | 20024.0 | 2000 | NA | NA | 0.042 | NA | NA | 2001.9 | 20.5 | 67-66-3 | 50 ppm (240mg/m3) (CL) | or-rat 900mg/kg |
| Dibromomethane | 95321 | 020724 | 0.10 | 10.00 | 20002.9 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 74-85-3 | N/A | or-rat 105mg/kg |
| 1,1-Dichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-34-3 | 100 ppm | or-rat 725mg/kg |
| 2,2-Dichloropropane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 594-20-7 | N/A | N/A |
| Tetrachloroethane | 95321 | 020724 | 0.10 | 10.00 | 20201.1 | 2000 | NA | NA | 0.042 | NA | NA | 2019.6 | 20.8 | 127-18-4 | 25 ppm (170mg/m3/8H) (floral) | or-rat 2629mg/kg |
| 1,1,1-Trichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.0 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 71-55-6 | 350 ppm (1900mg/m3/8H) | or-rat 10300mg/kg |
| 1,2-Dibromo-3-chloropropane | 35161 | 112322 | 0.05 | 5.00 | 40016.5 | 2000 | NA | NA | 0.017 | NA | NA | 2000.3 | 22.9 | 96-12-6 | 0.001 ppm | or-rat 170mg/kg |
| 1,2-Dibromomethane | 35161 | 112322 | 0.05 | 5.00 | 40024.8 | 2000 | NA | NA | 0.017 | NA | NA | 2000.7 | 22.9 | 106-93-4 | 20 ppm (8H) | or-rat 108mg/kg |
| 1,2-Dichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40018.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 22.9 | 107-08-2 | 50 ppm (8H) | or-rat 870mg/kg |
| 1,2-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40051.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.2 | 22.9 | 78-57-5 | 75 ppm (350mg/m3/8H) | or-rat 1947mg/kg |
| 1,3-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40005.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 142-28-9 | N/A | un-rat 3600mg/kg |
| 1,1-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40012.1 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 29.7 | 563-56-6 | N/A | N/A |
| cis-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40010.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.0 | 23.0 | 10061-01-5 | N/A | N/A |
| trans-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40017.8 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 23.0 | 10061-02-6 | N/A | N/A |
| Hexachloro-1,3-butadiene | 35161 | 112322 | 0.05 | 5.00 | 40021.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.6 | 29.7 | 87-68-3 | 0.02 ppm (0.24mg/m3/8H) | or-rat 82mg/kg |
| 1,1,1,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40011.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 22.9 | 630-20-6 | N/A | or-rat 670mg/kg |
| 1,1,2,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 79-34-5 | 5 ppm (35mg/m3/8H) (skin) | or-rat 800mg/kg |
| 1,1,2-Trichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40006.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 23.0 | 79-00-5 | 10 ppm (46mg/m3/8H) (skin) | or-rat 836mg/kg |
| 2,3-Trichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 2000.9 | 22.9 | 79-01-6 | 50 ppm (270mg/m3/8H) | or-rat 2400mg/kg |
| Benzene | 35162 | 050823 | 0.05 | 5.00 | 40005.0 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 96-18-4 | 10 ppm (50mg/m3/8H) | or-rat 149.6mg/kg |
| Bromobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 104-51-8 | 1 ppm | or-rat 4694mg/kg |
| n-Butyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 108-88-1 | N/A | or-rat 2699mg/kg |
| Ethyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 104-51-8 | N/A | N/A |
| Isopropyl toluene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-41-4 | 100 ppm (435mg/m3/8H) | or-rat >2000mg/kg |
| Naphthalene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 99-87-8 | N/A | or-rat 4750mg/kg |
| Tyrene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 91-20-3 | 10 ppm (50mg/m3/8H) | or-rat 490mg/kg |
| Toluene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-42-5 | 100 ppm | or-rat 5000mg/kg |
| 2,3-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 106-88-3 | 200 ppm | or-rat 5000mg/kg |
| 2,4-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 87-61-6 | N/A | or-rat 1390mg/kg |
| 2,4-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40001.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 120-82-1 | 5 ppm (CL) (40mg/m3) | or-rat 750mg/kg |
| 3,5-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 95-63-6 | N/A | or-rat 5g/kg |
| Xylene | 35162 | 050823 | 0.05 | 5.00 | 40006.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 106-67-8 | N/A | or-rat 5000mg/kg |
| tert-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40001.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 98-06-6 | 100 ppm (435mg/m3/8H) | or-rat 5g/kg |
| sec-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 135-98-8 | N/A | N/A |
| Chlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 95-49-8 | 75 ppm (350mg/m3/8H) | or-rat 2240mg/kg |
| Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40003.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 108-90-7 | 50 ppm (250mg/m3/8H) | or-rat 2290mg/kg |
| Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40003.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 106-43-4 | N/A | or-rat 3900mg/kg |
| 2-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 95-50-1 | 50 ppm (300mg/m3) (CL) | or-rat 500mg/kg |
| 3-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 541-73-1 | N/A | |
| 4-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 96-50-1 | 50 ppm (300mg/m3) (CL) | or-rat 500mg/kg |
| propylbenzene | 35163 | 101923 | 0.05 | 5.00 | 40000.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 106-46-7 | 75 ppm (450mg/m3/8H) | |

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 | 17.24 |
| 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-Dichloropropane | 24.38 |
| 19 | Methyl methacrylate | 24.52 |
| 20 | Bromochloromethane | 25.13 |
| 21 | Dibromomethane/2-Hitropropane | 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-Dibromomethane | 31.84 |
| 29 | Chlorobenzene | 33.26 |
| 30 | Ethylbenzene/1,1,1,2-Tetrachloroethane | 33.40 |
| 31 | m-Xylene/p-Xylene | 33.66 |
| 32 | o-Xylene | 35.22 |
| 33 | Styrene | 35.39 |
| 34 | Isopropylbenzene/Bromoforn | 36.18 |
| 35 | cis-1,4-Dichloro-3-butene | 36.48 |
| 36 | 1,1,2,2-Tetrachloroethane | 37.23 |
| 37 | 1,2,3-Trichloropropane | 37.77 |
| 38 | n-Propylbenzene | 37.93 |
| 39 | trans-1,4-Dichloro-3-butene | 38.05 |
| 40 | Bromobenzene | 38.14 |
| 41 | 1,3,5-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 | Pentachloroethane | 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 | 1-800-535-5053 |
| Address | 44 Rossotto Dr. Hamden CT, 06514 | Emergency Telephone International | 1-352-323-3500 |
| | | Date Prepared/Revised | January 1, 2023 |

Section II - Hazards Identification

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

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



Signal Word: DANGER

Section III - Composition

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

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

INTENDED USE: REFERENCE MATERIAL

Section IV. FIRST AID MEASURES

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

Section V. FIREFIGHTING MEASURES

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

Section VI. ACCIDENTAL RELEASE MEASURES

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

Section VII. HANDLING AND STORAGE

| | |
|-------------------------------|--|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. |
| Storage Conditions | Use ventilation. Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. 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 ₂ O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |
| Solubility in Water | COMPLETE | | |
| Appearance and Odor | CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR. | | |

Section X. STABILITY AND REACTIVITY

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

Section XI. TOXICOLOGICAL INFORMATION

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

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

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

Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Section XIV. TRANSPORT INFORMATION

| | |
|--|--|
| DOT (US) | 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.



CERTIFIED WEIGHT REPORT

Part Number: **95317**
Lot Number: **021624**
Description: **Universal VOA Megamix**
69 components
Expiration Date: 021627
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 2000
NIST Test ID#: 8UTB

Solvent(s): **Methanol**
Lot#: **EG359-USQ12**

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

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

| Compound | (RM#) | Lot | Di. | Initial | Initial | Nominal | Purity | Purity | Uncertainty | Target | Actual | Actual | Expanded | SDS Information | | | |
|----------------------------------|--------|-------------|------|---------|---------|---------|--------|--------|-------------|---------|---------|--------|----------|--|------------------------------|-------------------|-----------|
| | | | | | | | | | | | | | | (Solvent Safety Info. On Attached pg.) | | | |
| | | | | | | | | | | | | | | Part Number | Number | Factor | Vol. (mL) |
| Acetonitrile | (0324) | 021644 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20020 | 2001.3 | 8.1 | 75-05-8 | 40 ppm (70mg/m3/8H) | or-rat 2400mg/kg | |
| Allyl chloride (3-Chloropropene) | (0325) | 102396 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 107-05-1 | 1 ppm (3mg/m3/8H) | or-rat 700mg/kg | |
| Carbon disulfide | (0060) | MKCR8581 | NA | NA | NA | 2000 | 99.99 | 0.2 | NA | 0.20007 | 0.20023 | 2001.6 | 8.1 | 75-15-0 | 4 ppm (12mg/m3) (skin) | or-rat 1200mg/kg | |
| cis-1,4-Dichloro-2-butene | (1196) | 14718EF | NA | NA | NA | 2000 | 95 | 0.2 | NA | 0.21058 | 0.21069 | 2001.1 | 8.5 | 1476-11-5 | N/A | N/A | |
| trans-1,4-Dichloro-2-butene | (0486) | MKBP6041V | NA | NA | NA | 2000 | 96.5 | 0.2 | NA | 0.20731 | 0.20748 | 2001.7 | 8.4 | 110-57-6 | N/A | N/A | |
| Diethyl ether | (0153) | IK18CA5000K | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 60-29-7 | N/A | N/A | |
| Ethyl methacrylate | (0381) | 06126PK | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20230 | 2002.3 | 8.2 | 97-63-2 | N/A | or-rat 14800mg/kg | |
| Iodomethane | (0489) | 5HBF8718V | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20121 | 2001.5 | 8.2 | 74-88-4 | 5 ppm (28mg/m3/8H) (skin) | or-rat 70mg/kg | |
| 2-Methyl-1-propanol | (0445) | 15241EB | NA | NA | NA | 2000 | 99.5 | 0.2 | NA | 0.20106 | 0.20120 | 2001.4 | 8.1 | 78-83-1 | 50 ppm (150mg/m3/8H) | or-rat 3480mg/kg | |
| Methacrylonitrile | (0442) | 00427ET | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20221 | 2001.4 | 8.2 | 126-98-7 | 1 ppm (3mg/m3/8H) (skin) | or-rat 1200mg/kg | |
| Methyl acrylate | (1075) | SHBK0679 | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20040 | 2001.5 | 8.1 | 96-33-3 | 10 ppm (35mg/m3/8H) (skin) | or-rat 277mg/kg | |
| Methyl methacrylate | (0404) | MKBW5137V | NA | NA | NA | 2000 | 99.9 | 0.2 | NA | 0.20025 | 0.20041 | 2001.6 | 8.1 | 80-62-6 | 100 ppm (410mg/m3/8H) | or-rat 7872mg/kg | |
| Nitrobenzene | (0228) | 01213TV | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20220 | 2001.3 | 8.2 | 98-95-3 | 1 ppm (5mg/m3/8H) (skin) | or-rat 700mg/kg | |
| 2-Nitropropane | (0461) | 14002JK | NA | NA | NA | 2000 | 97.3 | 0.2 | NA | 0.20560 | 0.20577 | 2001.6 | 8.3 | 79-46-9 | 10 ppm (35mg/m3/8H) | or-rat 720mg/kg | |
| Pentachloroethane | (0450) | HGA01 | NA | NA | NA | 2000 | 98 | 0.2 | NA | 0.20413 | 0.20430 | 2001.6 | 8.3 | 76-01-7 | N/A | N/A | |
| 1,1,2-Trichlorotrifluoroethane | (0474) | 18930 | NA | NA | NA | 2000 | 99 | 0.2 | NA | 0.20207 | 0.20225 | 2001.8 | 8.2 | 76-13-1 | 1000 ppm (7800mg/m3/8H) | or-rat 43g/kg | |
| Bromodichloromethane | 35171 | 101623 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-27-4 | N/A | or-rat 910mg/kg | |
| Dibromochloromethane | 35171 | 101623 | 0.05 | 5.00 | 40002.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 124-48-1 | N/A | or-rat 840mg/kg | |
| cis-1,2-Dichloroethane | 35171 | 101623 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 156-59-2 | N/A | N/A | |
| trans-1,2-Dichloroethane | 35171 | 101623 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 23.0 | 156-60-5 | N/A | or-rat 1235mg/kg | |
| Methylene chloride | 35171 | 101623 | 0.05 | 5.00 | 40002.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 75-09-2 | 500 ppm | or-rat 820mg/kg | |
| 1,1-Dichloroethene | 32251 | 102023 | 0.10 | 10.00 | 20001.6 | 2000 | NA | NA | 0.042 | NA | NA | 1999.7 | 20.4 | 75-35-4 | 1 ppm (4mg/m3/8H) | or-rat 200mg/kg | |
| Bromoform | 95321 | 020724 | 0.10 | 10.00 | 20003.2 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-25-2 | 0.5 ppm (5mg/m3) (skin) | or-rat 930mg/kg | |
| Carbon tetrachloride | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 56-23-5 | 2 ppm (12.6mg/m3/8H) | or-rat 2350mg/kg | |
| Chloroform | 95321 | 020724 | 0.10 | 10.00 | 20024.0 | 2000 | NA | NA | 0.042 | NA | NA | 2001.9 | 20.5 | 67-68-3 | 50 ppm (240mg/m3) (CL) | or-rat 900mg/kg | |
| Dibromomethane | 95321 | 020724 | 0.10 | 10.00 | 20002.9 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 74-95-3 | N/A | or-rat 105mg/kg | |
| 1,1-Dichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 75-34-3 | 100 ppm | or-rat 725mg/kg | |
| 2,2-Dichloropropane | 95321 | 020724 | 0.10 | 10.00 | 20003.4 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.4 | 594-20-7 | N/A | N/A | |
| Tetrachloroethane | 95321 | 020724 | 0.10 | 10.00 | 20201.1 | 2000 | NA | NA | 0.042 | NA | NA | 2019.6 | 20.8 | 127-18-4 | 25 ppm (170mg/m3/8H) (final) | or-rat 2629mg/kg | |
| 1,1,1-Trichloroethane | 95321 | 020724 | 0.10 | 10.00 | 20003.0 | 2000 | NA | NA | 0.042 | NA | NA | 1999.8 | 20.5 | 71-55-6 | 350 ppm (1900mg/m3/8H) | or-rat 10300mg/kg | |
| 1,2-Dibromo-3-chloropropane | 35161 | 112322 | 0.05 | 5.00 | 40016.5 | 2000 | NA | NA | 0.017 | NA | NA | 2000.3 | 22.9 | 96-12-6 | 0.001 ppm | or-rat 170mg/kg | |
| 1,2-Dibromomethane | 35161 | 112322 | 0.05 | 5.00 | 40024.8 | 2000 | NA | NA | 0.017 | NA | NA | 2000.7 | 22.9 | 106-93-4 | 20 ppm (8H) | or-rat 108mg/kg | |
| 1,2-Dichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40018.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 22.9 | 107-08-2 | 50 ppm (8H) | or-rat 870mg/kg | |
| 1,2-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40051.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.2 | 22.9 | 78-57-5 | 75 ppm (350mg/m3/8H) | or-rat 1947mg/kg | |
| 1,3-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40005.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 142-28-9 | N/A | un-rat 3600mg/kg | |
| 1,1-Dichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40012.1 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 29.7 | 563-56-6 | N/A | N/A | |
| cis-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40010.0 | 2000 | NA | NA | 0.017 | NA | NA | 2000.0 | 23.0 | 10061-01-5 | N/A | N/A | |
| trans-1,3-Dichloropropene | 35161 | 112322 | 0.05 | 5.00 | 40017.8 | 2000 | NA | NA | 0.017 | NA | NA | 2000.4 | 23.0 | 10061-02-6 | N/A | N/A | |
| Hexachloro-1,3-butadiene | 35161 | 112322 | 0.05 | 5.00 | 40021.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.6 | 29.7 | 87-68-3 | 0.02 ppm (0.24mg/m3/8H) | or-rat 82mg/kg | |
| 1,1,1,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40011.9 | 2000 | NA | NA | 0.017 | NA | NA | 2000.1 | 22.9 | 630-20-6 | N/A | or-rat 670mg/kg | |
| 1,1,2,2-Tetrachloroethane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 79-34-5 | 5 ppm (35mg/m3/8H) (skin) | or-rat 800mg/kg | |
| 1,1,2-Trichloroethane | 35161 | 112322 | 0.05 | 5.00 | 40006.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 23.0 | 79-00-5 | 10 ppm (46mg/m3/8H) (skin) | or-rat 836mg/kg | |
| 2,3-Trichloropropane | 35161 | 112322 | 0.05 | 5.00 | 40007.5 | 2000 | NA | NA | 0.017 | NA | NA | 2000.9 | 22.9 | 79-01-6 | 50 ppm (270mg/m3/8H) | or-rat 2400mg/kg | |
| Benzene | 35162 | 050823 | 0.05 | 5.00 | 40005.0 | 2000 | NA | NA | 0.017 | NA | NA | 1999.9 | 22.9 | 96-18-4 | 10 ppm (50mg/m3/8H) | or-rat 149.6mg/kg | |
| Bromobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.9 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 104-51-8 | 1 ppm | or-rat 4694mg/kg | |
| n-Butyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 108-98-1 | N/A | or-rat 2699mg/kg | |
| Ethyl benzene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 104-51-8 | N/A | N/A | |
| Isopropyl toluene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-41-4 | 100 ppm (435mg/m3/8H) | or-rat >2000mg/kg | |
| Naphthalene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 99-87-8 | N/A | or-rat 4750mg/kg | |
| Styrene | 35162 | 050823 | 0.05 | 5.00 | 40004.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 91-20-3 | 10 ppm (50mg/m3/8H) | or-rat 490mg/kg | |
| Toluene | 35162 | 050823 | 0.05 | 5.00 | 40006.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 100-42-5 | 100 ppm | or-rat 5000mg/kg | |
| 2,3-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40003.1 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 108-98-3 | 200 ppm | or-rat 5000mg/kg | |
| 2,4-Trichlorobenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 87-61-6 | N/A | or-rat 1390mg/kg | |
| 2,4,6-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40001.6 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 120-82-1 | 5 ppm (CL) (40mg/m3) | or-rat 750mg/kg | |
| 3,5-Trimethylbenzene | 35162 | 050823 | 0.05 | 5.00 | 40006.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 95-63-6 | N/A | or-rat 5g/kg | |
| Xylene | 35162 | 050823 | 0.05 | 5.00 | 40005.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.8 | 22.9 | 106-67-8 | N/A | or-rat 5000mg/kg | |
| tert-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40001.2 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 98-06-6 | 100 ppm (435mg/m3/8H) | or-rat 5g/kg | |
| sec-Butyl benzene | 35163 | 101923 | 0.05 | 5.00 | 40002.4 | 2000 | NA | NA | 0.017 | NA | NA | 1999.6 | 22.9 | 135-98-8 | N/A | N/A | |
| Chlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 95-49-8 | 75 ppm (350mg/m3/8H) | or-rat 2240mg/kg | |
| Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40003.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 108-90-7 | 75 ppm (350mg/m3/8H) | or-rat 2290mg/kg | |
| Chlorotoluene | 35163 | 101923 | 0.05 | 5.00 | 40003.3 | 2000 | NA | NA | 0.017 | NA | NA | 1999.5 | 22.9 | 95-49-8 | 50 ppm (250mg/m3/8H) | or-rat 3900mg/kg | |
| 2-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40003.8 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 106-43-4 | N/A | or-rat 2100mg/kg | |
| 3-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.7 | 2000 | NA | NA | 0.017 | NA | NA | 1999.7 | 22.9 | 95-50-1 | 50 ppm (300mg/m3) (CL) | or-rat 500mg/kg | |
| 4-Dichlorobenzene | 35163 | 101923 | 0.05 | 5.00 | 40001.7 | 2 | | | | | | | | | | | |

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 | 17.24 |
| 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-Dichloropropane | 24.38 |
| 19 | Methyl methacrylate | 24.52 |
| 20 | Bromochloromethane | 25.13 |
| 21 | Dibromomethane/2-Hitroprene | 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-Dibromomethane | 31.84 |
| 29 | Chlorobenzene | 33.26 |
| 30 | Ethylbenzene/1,1,1,2-Tetrachloroethane | 33.40 |
| 31 | m-Xylene/p-Xylene | 33.66 |
| 32 | o-Xylene | 35.22 |
| 33 | Styrene | 35.39 |
| 34 | Isopropylbenzene/Bromofonn | 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 | 37.93 |
| 39 | trans-1,4-Dichloro-3-butene | 38.05 |
| 40 | Bromobenzene | 38.14 |
| 41 | 1,3,5-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 | Pentachloroethane | 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 | 1-800-535-5053 |
| Address | 44 Rossotto Dr. Hamden CT, 06514 | Emergency Telephone International | 1-352-323-3500 |
| | | Date Prepared/Revised | January 1, 2023 |

Section II - Hazards Identification

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

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



Signal Word: DANGER

Section III - Composition

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

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

INTENDED USE: REFERENCE MATERIAL

Section IV. FIRST AID MEASURES

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

Section V. FIREFIGHTING MEASURES

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

Section VI. ACCIDENTAL RELEASE MEASURES

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

Section VII. HANDLING AND STORAGE

| | |
|-------------------------------|--|
| Precautions for safe handling | Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. |
| Storage Conditions | Use ventilation. Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. 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 ₂ O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |
| Solubility in Water | COMPLETE | | |
| Appearance and Odor | CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR. | | |

Section X. STABILITY AND REACTIVITY

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

Section XI. TOXICOLOGICAL INFORMATION

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

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

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

Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Section XIV. TRANSPORT INFORMATION

| | |
|--|--|
| DOT (US) | 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.



Certified Reference Material CRM



Dec 09/17/24

CERTIFIED WEIGHT REPORT

Part Number:

91980

Lot Number:

091424

Description:

Acrolein

Solvent(s):

Water

Lot#

072324Q

Expiration Date:

101424

Recommended Storage:

Refrigerate (4 °C)

5000

6UTB

NIST Test ID#:

5E-05

Balance Uncertainty

0.001

Flask Uncertainty

10.0

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

RM#

5

103755V10F

5000

97

0.5

0.05186

0.05175

5008.9

52.5

107-02-8

0.1 ppm

ori-rat 46mg/kg

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

LD50

Formulated By: Justin Dippold

DATE 091424

Reviewed By: Pedro L. Rentas

DATE 091424

Expanded

Uncertainty

Conc (µg/mL)

Actual

Weight(g)

Target

Weight(g)

Purity

Uncertainty

Purity

Nominal

Conc (µg/mL)

Lot

Number

RM#

5

103755V10F

5000

97

0.5

0.05186

0.05175

5008.9

52.5

107-02-8

0.1 ppm

ori-rat 46mg/kg

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

LD50

Formulated By: Justin Dippold

DATE 091424

Reviewed By: Pedro L. Rentas

DATE 091424

Expanded

Uncertainty

Conc (µg/mL)

Actual

Weight(g)

Target

Weight(g)

Purity

Uncertainty

Purity

Nominal

Conc (µg/mL)

Lot

Number

RM#

5

103755V10F

5000

97

0.5

0.05186

0.05175

5008.9

52.5

107-02-8

0.1 ppm

ori-rat 46mg/kg

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

LD50

Formulated By: Justin Dippold

DATE 091424

Reviewed By: Pedro L. Rentas

DATE 091424

Expanded

Uncertainty

Conc (µg/mL)

Actual

Weight(g)

Target

Weight(g)

Purity

Uncertainty

Purity

Nominal

Conc (µg/mL)

Lot

Number

RM#

5

103755V10F

5000

97

0.5

0.05186

0.05175

5008.9

52.5

107-02-8

0.1 ppm

ori-rat 46mg/kg

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

LD50

Formulated By: Justin Dippold

DATE 091424

Reviewed By: Pedro L. Rentas

DATE 091424

Expanded

Uncertainty

Conc (µg/mL)

Actual

Weight(g)

Target

Weight(g)

Purity

Uncertainty

Purity

Nominal

Conc (µg/mL)

Lot

Number

RM#

5

103755V10F

5000

97

0.5

0.05186

0.05175

5008.9

52.5

107-02-8

0.1 ppm

ori-rat 46mg/kg

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

LD50

Formulated By: Justin Dippold

DATE 091424

Reviewed By: Pedro L. Rentas

DATE 091424

Expanded

Uncertainty

Conc (µg/mL)

Actual

Weight(g)

Target

Weight(g)

Purity

Uncertainty

Purity

Nominal

Conc (µg/mL)

Lot

Number

RM#

5

103755V10F

5000

97

0.5

0.05186

0.05175

5008.9

52.5

107-02-8

0.1 ppm

ori-rat 46mg/kg

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

LD50

Formulated By: Justin Dippold

DATE 091424

Reviewed By: Pedro L. Rentas

DATE 091424

Expanded

Uncertainty

Conc (µg/mL)

Actual

Weight(g)

Target

Weight(g)

Purity

Uncertainty

Purity

Nominal

Conc (µg/mL)

Lot

Number

RM#

5

103755V10F

5000

97

0.5

0.05186

0.05175

5008.9

52.5

107-02-8

0.1 ppm

ori-rat 46mg/kg

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

LD50

Formulated By: Justin Dippold

DATE 091424

Reviewed By: Pedro L. Rentas

DATE 091424

Expanded

Uncertainty

Conc (µg/mL)

Actual

Weight(g)

Target

Weight(g)

Purity

Uncertainty

Purity

Nominal

Conc (µg/mL)

Lot

Number

RM#

5

103755V10F

5000

97

0.5

0.05186

0.05175

5008.9

52.5

107-02-8

0.1 ppm

ori-rat 46mg/kg

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

LD50

Formulated By: Justin Dippold

DATE 091424

Reviewed By: Pedro L. Rentas

DATE 091424

Expanded

Uncertainty

Conc (µg/mL)

Actual

Weight(g)

Target

Weight(g)

Purity

Uncertainty

Purity

Nominal

Conc (µg/mL)

Lot

Number

RM#

5

103755V10F

5000

97

0.5

0.05186

0.05175

5008.9

52.5

107-02-8

0.1 ppm

ori-rat 46mg/kg

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

LD50

Formulated By: Justin Dippold

DATE 091424

Reviewed By: Pedro L. Rentas

DATE 091424

Expanded

Uncertainty

Conc (µg/mL)

Actual

Weight(g)

Target

Weight(g)

Purity

Uncertainty

Purity

Nominal

Conc (µg/mL)

Lot

Number

RM#

5

103755V10F



See 1216124
20 vial

CERTIFIED WEIGHT REPORT

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

Solvent(s): Lot#
Methanol EJ143-US

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

✓ 14630 to
✓ 14649

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

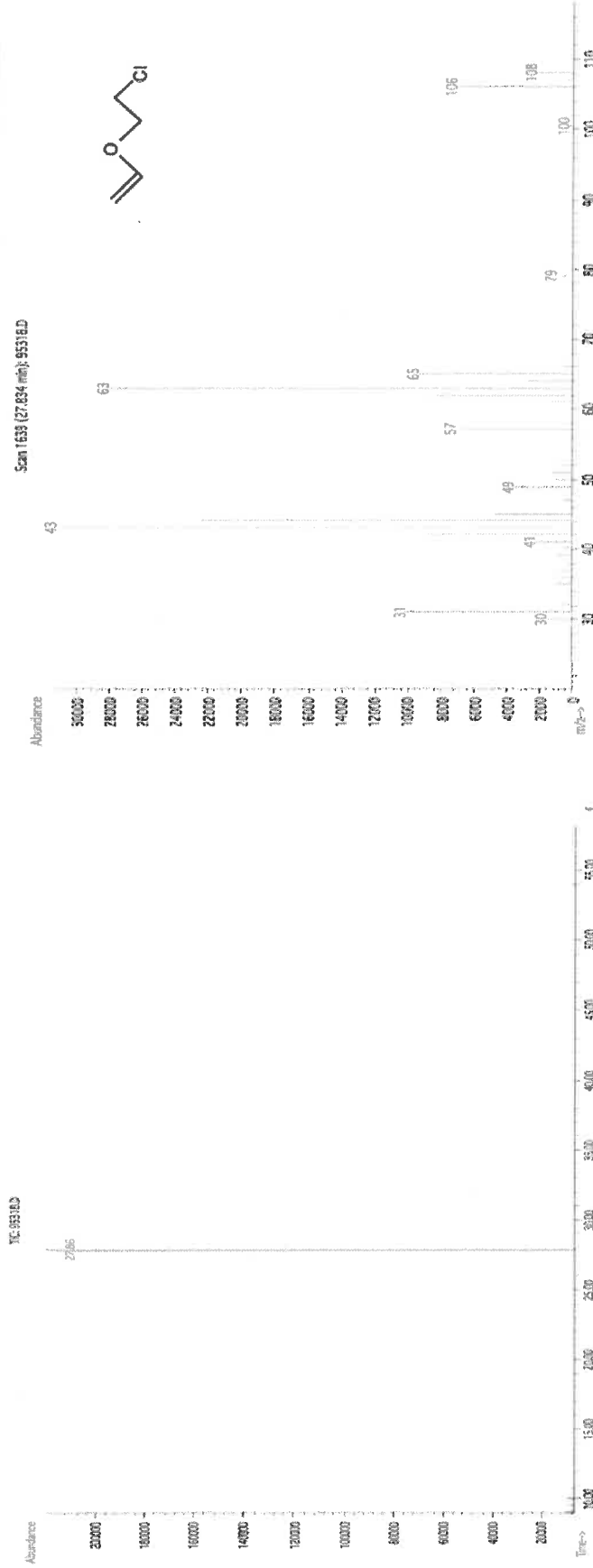
5E-05 Balance Uncertainty
0.001 Flask Uncertainty

Expanded Uncertainty (Solvent Safety Info. On Attached pg.)
Uncertainty (±) (µg/mL) CAS# OSHA PEL (TWA) LDSO

SDS Information

| 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. 2-Chloroethyl vinyl ether | 74 | MKCD0033 | 10000 | 99 | 0.2 | 0.50536 | 0.50550 | 10002.9 | 40.5 | 110-75-8 | N/A | or-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

IDENTITY ANALYTICAL STANDARD DISSOLVED IN METHANOL

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

Section II - Hazards Identification

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

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



Signal Word: DANGER

Section III - Composition

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

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

INTENDED USE: REFERENCE MATERIAL

Section IV. FIRST AID MEASURES

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

Section V. FIREFIGHTING MEASURES

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

Section VI. ACCIDENTAL RELEASE MEASURES

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

Section VII. HANDLING AND STORAGE

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

Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Section IX - Physical/Chemical Characteristics

| | | | |
|-------------------------|---|---|-------|
| Boiling Point | 65°C | Specific Gravity (H ₂ O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |
| Solubility in Water | COMPLETE | | |
| Appearance and Odor | CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR. | | |

Section X. STABILITY AND REACTIVITY

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

Section XI. TOXICOLOGICAL INFORMATION

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

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

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

Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Section XIV. TRANSPORT INFORMATION

| | |
|--|--|
| DOT (US) | 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.



Dec 12/6/24
20 vial

CERTIFIED WEIGHT REPORT

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

Solvent(s): Lot#
Methanol EJ143-US

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):

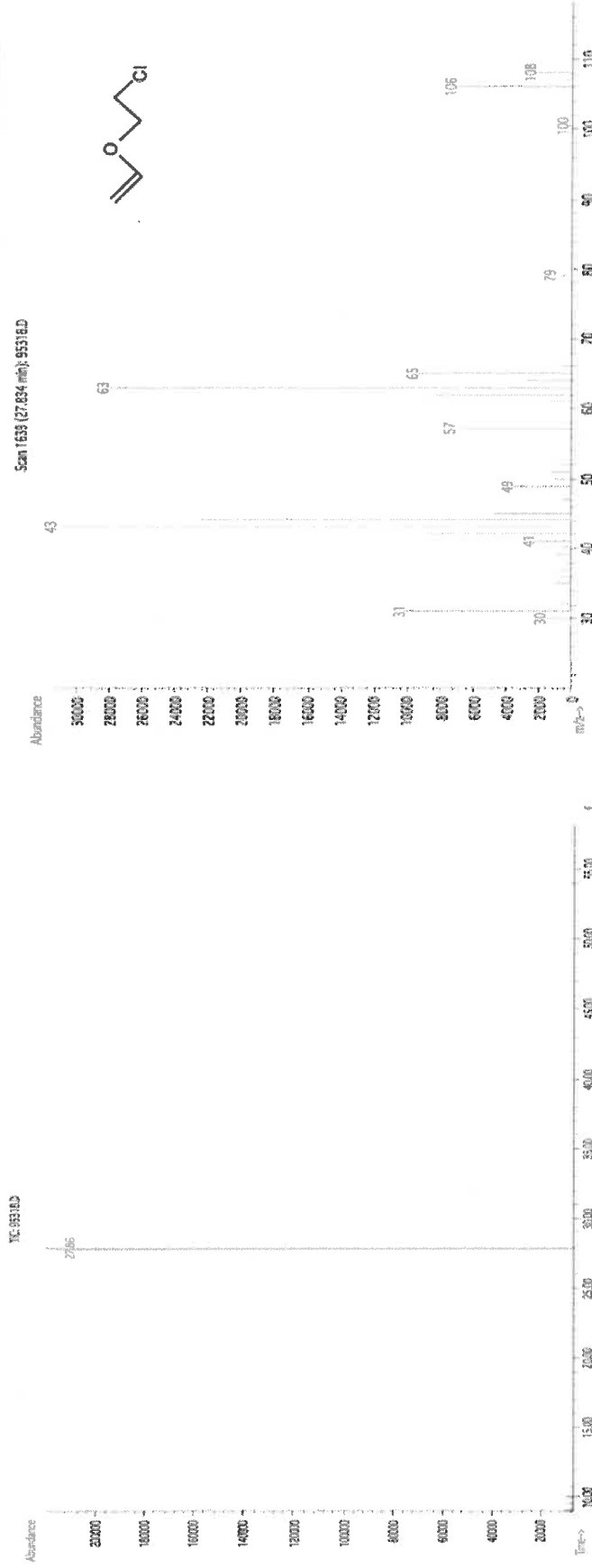
5E-05 Balance Uncertainty
0.001 Flask Uncertainty

Formulated By: Prashant Chauhan 120524
Reviewed By: Pedro L. Rentas 120524

Expanded Uncertainty (Solvent Safety Info. On Attached pg.)
Uncertainty (±) (µg/mL) CAS# OSHA PEL (TWA) LDSO

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight (g) | Actual Weight (g) | Actual Conc (µg/mL) | or-rat 250mg/kg |
|------------------------------|-----|------------|----------------------|------------|--------------------|-------------------|-------------------|---------------------|-----------------|
| 1. 2-Chloroethyl vinyl ether | 74 | MKCD0033 | 10000 | 99 | 0.2 | 0.50536 | 0.50550 | 10002.9 | N/A |

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

IDENTITY ANALYTICAL STANDARD DISSOLVED IN METHANOL

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

Section II - Hazards Identification

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

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



Signal Word: DANGER

Section III - Composition

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

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

INTENDED USE: REFERENCE MATERIAL

Section IV. FIRST AID MEASURES

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

Section V. FIREFIGHTING MEASURES

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

Section VI. ACCIDENTAL RELEASE MEASURES

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

Section VII. HANDLING AND STORAGE

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

Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Section IX - Physical/Chemical Characteristics

| | | | |
|-------------------------|---|---|-------|
| Boiling Point | 65°C | Specific Gravity (H ₂ O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |
| Solubility in Water | COMPLETE | | |
| Appearance and Odor | CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR. | | |

Section X. STABILITY AND REACTIVITY

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

Section XI. TOXICOLOGICAL INFORMATION

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

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

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

Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Section XIV. TRANSPORT INFORMATION

| | |
|--|--|
| DOT (US) | 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.



Dec 12/16/24
20 vial

CERTIFIED WEIGHT REPORT

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

Solvent(s): Lot#
Methanol EJ143-US

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):

5E-05 Balance Uncertainty
0.001 Flask Uncertainty

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

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight (g) | Actual Weight (g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information | |
|----------|-----|------------|----------------------|------------|--------------------|-------------------|-------------------|---------------------|------------------------------------|--|------|
| | | | | | | | | | | (Solvent Safety Info. On Attached pg.) | 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 | or-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

IDENTITY ANALYTICAL STANDARD DISSOLVED IN METHANOL

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

Section II - Hazards Identification

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

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



Signal Word: DANGER

Section III - Composition

| | | |
|---|----------------|--------------|
| Components (Specific Chemical Identity; Common Name(s)) | | % (optional) |
| Methanol | METHYL ALCOHOL | > 97 |

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

INTENDED USE: REFERENCE MATERIAL

Section IV. FIRST AID MEASURES

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

Section V. FIREFIGHTING MEASURES

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

Section VI. ACCIDENTAL RELEASE MEASURES

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

Section VII. HANDLING AND STORAGE

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

Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Section IX - Physical/Chemical Characteristics

| | | | |
|-------------------------|---|---|-------|
| Boiling Point | 65°C | Specific Gravity (H ₂ O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |
| Solubility in Water | COMPLETE | | |
| Appearance and Odor | CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR. | | |

Section X. STABILITY AND REACTIVITY

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

Section XI. TOXICOLOGICAL INFORMATION

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

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

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

Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Section XIV. TRANSPORT INFORMATION

| | |
|--|--|
| DOT (US) | 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.



Dec 12/16/24
20 vial

CERTIFIED WEIGHT REPORT

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

Solvent(s): Lot#
Methanol EJ143-US

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):

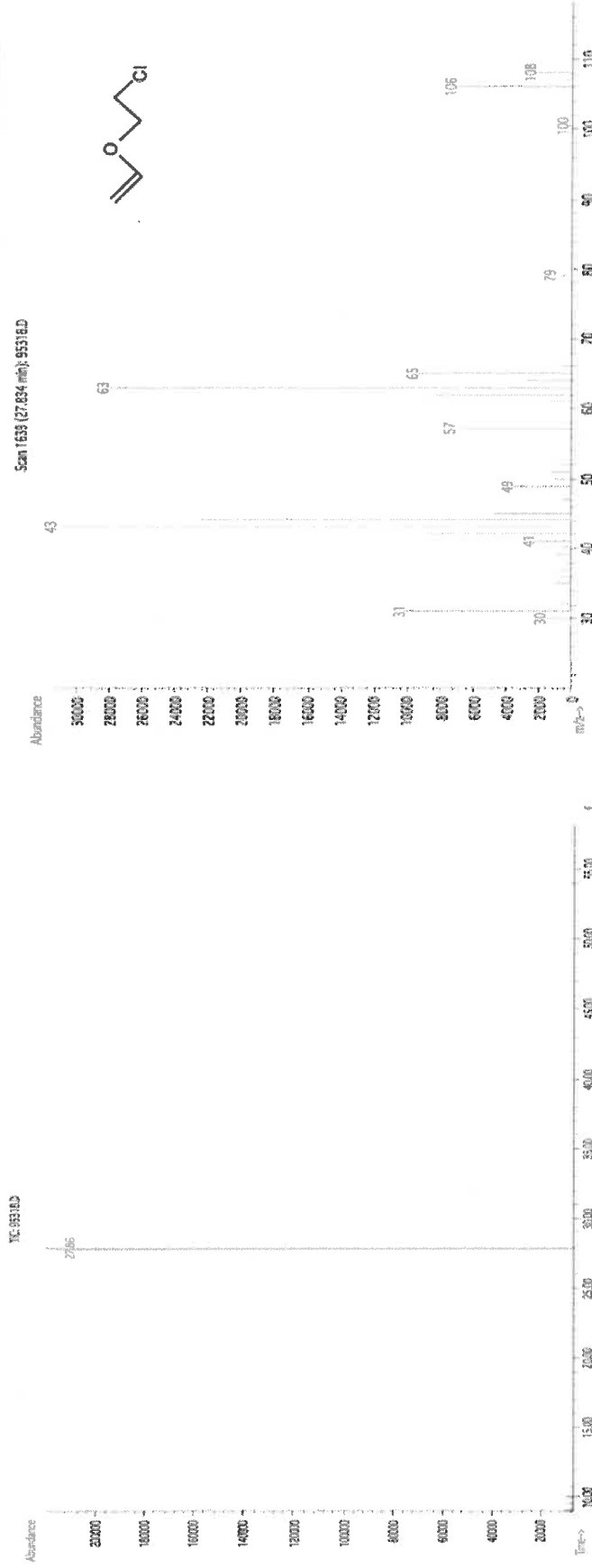
5E-05 Balance Uncertainty
0.001 Flask Uncertainty

Formulated By: Prashant Chauhan 120524
Reviewed By: Pedro L. Rentas 120524

| 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.) | 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 | or-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

IDENTITY ANALYTICAL STANDARD DISSOLVED IN METHANOL

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

Section II - Hazards Identification

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

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



Signal Word: DANGER

Section III - Composition

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

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

INTENDED USE: REFERENCE MATERIAL

Section IV. FIRST AID MEASURES

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

Section V. FIREFIGHTING MEASURES

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

Section VI. ACCIDENTAL RELEASE MEASURES

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

Section VII. HANDLING AND STORAGE

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

Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Section IX - Physical/Chemical Characteristics

| | | | |
|-------------------------|---|---|-------|
| Boiling Point | 65°C | Specific Gravity (H ₂ O = 1) | 0.79 |
| Vapor Pressure (mm Hg) | 96 | Melting Point | -98°C |
| Vapor Density (AIR = 1) | 1.11 | Evaporation rate (Butyl Acetate = 1) | 4.6 |
| Solubility in Water | COMPLETE | | |
| Appearance and Odor | CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR. | | |

Section X. STABILITY AND REACTIVITY

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

Section XI. TOXICOLOGICAL INFORMATION

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

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

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

Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Section XIV. TRANSPORT INFORMATION

| | |
|--|--|
| DOT (US) | 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.



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

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

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

Description : 4-Bromofluorobenzene Standard

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

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

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

Ship: Ambient

CERTIFIED VALUES

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

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

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

Quality Confirmation Test

Column:

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

Carrier Gas:

hydrogen-constant pressure 11.0 psi.

Temp. Program:

40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:

200°C

Det. Temp:

250°C

Det. Type:

FID

Split Vent:

40 ml/min

Inj. Vol

1µl



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


Alicia Leathers - Operation Technician I

Date Mixed: 17-Nov-2022

Balance Serial # B251644995


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 21-Nov-2022

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

General Certified Reference Material Notes

Expiration Notes:

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

Purity Notes:

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

Certified Uncertainty Value Notes:

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

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

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

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. : 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



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: 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:

- 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.



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

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

Catalog No. : 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:

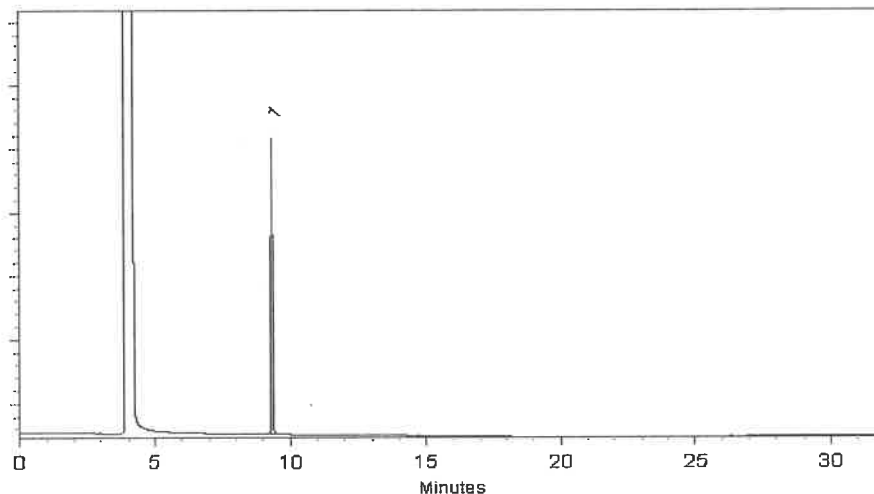
FID

Split Vent:

40 ml/min

Inj. Vol

1µl



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: 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:

- 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.



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

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

Catalog No. : 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



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: 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:

- 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.



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

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

Catalog No. : 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



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: 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:

- 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.



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

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

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 * (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:

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

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

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. : 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.
- 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

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. : 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

Dillon Murphy
Dillon Murphy - Operations Technician I

Date Passed: 01-Apr-2024

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

General Certified Reference Material Notes

Expiration Notes:

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

Purity Notes:

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

Certified Uncertainty Value Notes:

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

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

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

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: 11275.10105



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.



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

www.restek.com

Dec 12/17/24
30 v. 4
CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus

✓ 14697-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:

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

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

Dec 12/17/24
30 v. 4
CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus

✓ 14697-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:

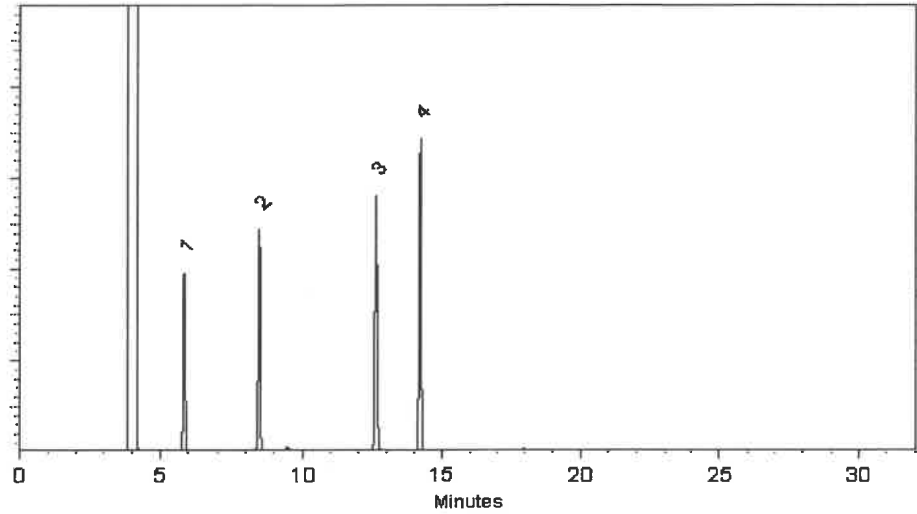
FID

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:

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

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

Dec 12/17/24
30 v. 4
CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus

✓ 14697-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:

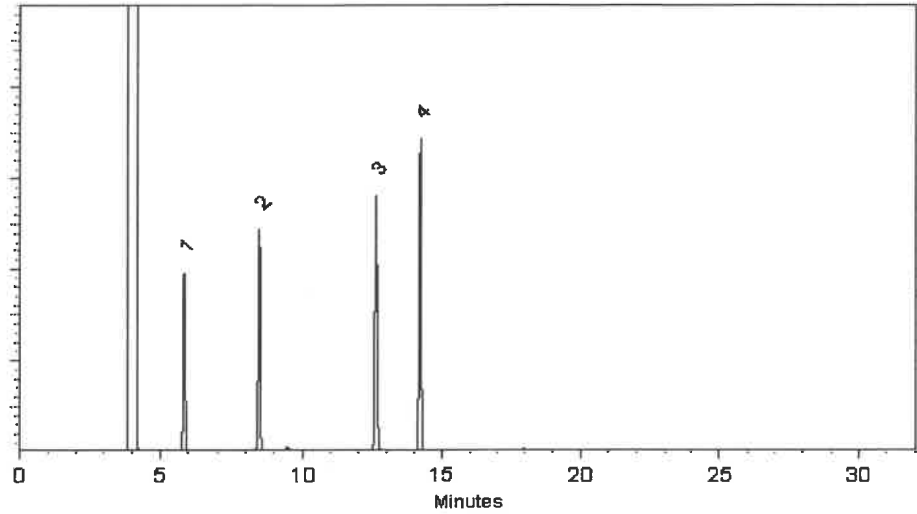
FID

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:

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

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

Rec 12/17/24
30 ml
CERTIFIED REFERENCE MATERIAL

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 Suckal - 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.



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

www.restek.com

Rec 12/17/24
30 ml
CERTIFIED REFERENCE MATERIAL

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 Suckal - 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.



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

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus

✓ 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:

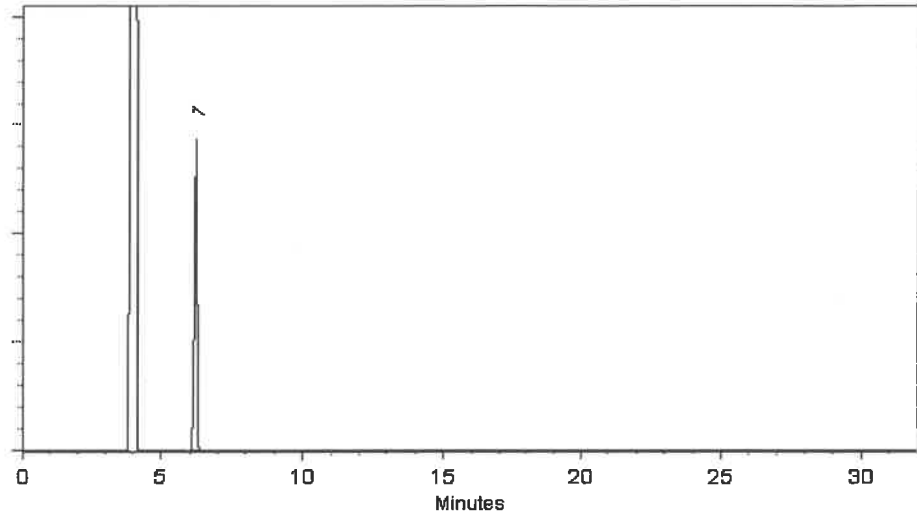
FID

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/ μ 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

2014 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%

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:

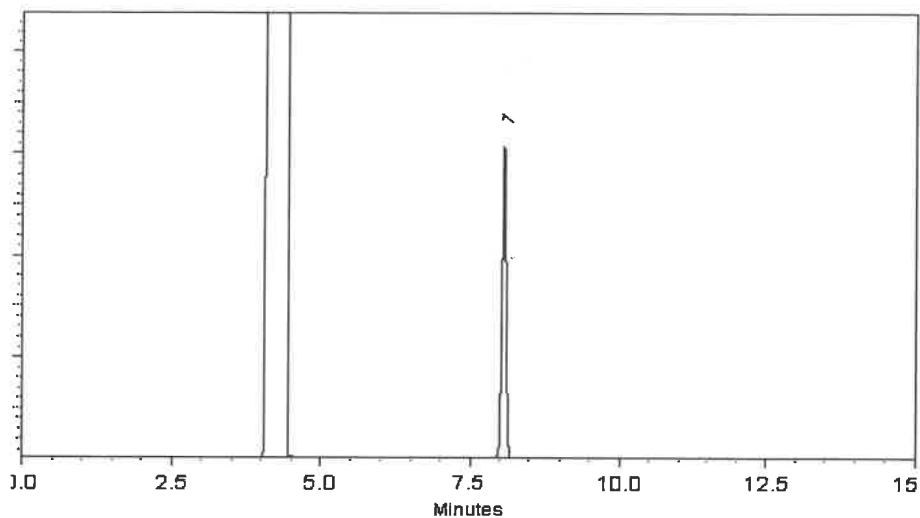
FID

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 Pollock 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/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.



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

www.restek.com

2014 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%

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:

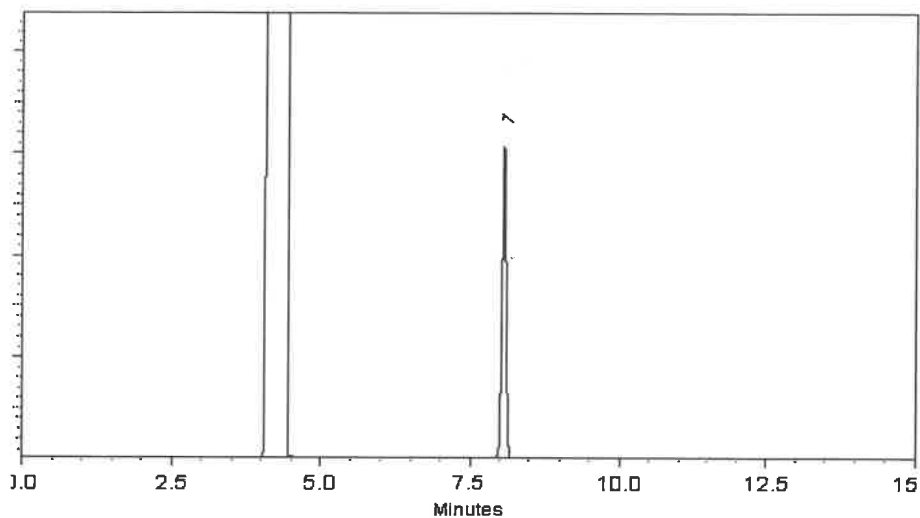
FID

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 Pollock 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/ μ 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.

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 ₃ 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