

## Prep Standard - Chemical Standard Summary

**Order ID :** Q1334

**Test :** VOC-TRACE-SFAM

**Prepbatch ID :**

**Sequence ID/Qc Batch ID:** vv020725,VV021425,VV020625

**Standard ID :**

VP131767,VP132476,VP132692,VP132711,VP132819,VP132917,VP132918,VP132919,VP132920,VP132921,VP132922,VP132923,VP132930,VP132931,VP132932,VP133053,VP133054,VP133055,

**Chemical ID :**

V12993,V13178,V13238,V13391,V13440,V13587,V13604,V13809,V13845,V13858,V13917,V14081,V14154,V14224,V14308,V14352,V14454,V14554,V14605,V14607,V14610,V14611,V14624,V14627,V14726,V14753,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>
218	BFB, 25PPM	<a href="#">VP131767</a>	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>
3421	SOMO2.4 TRACE ICV 25 PPM	<a href="#">VP132476</a>	01/08/2025	02/22/2025	Semsettin Yesilyurt	None	None	Maresh Dadoda
								01/17/2025

**FROM** 0.06250ml of V12993 + 0.06250ml of V13178 + 0.06250ml of V13238 + 0.06250ml of V13587 + 0.06250ml of V13604 +  
0.06250ml of V13809 + 0.06250ml of V14224 + 0.25000ml of V13917 + 4.30000ml of V14627 = Final Quantity: 5.000 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>
1896	Trace internal standard 50 ppm	<a href="#">VP132692</a>	01/27/2025	03/01/2025	Semsettin Yesilyurt	None	None	Maresh Dadoda
								01/29/2025

**FROM** 0.20000ml of V14352 + 9.80000ml of V14624 = Final Quantity: 10.000 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>
1897	Trace surrogate mix 25 ppm	<a href="#">VP132711</a>	01/27/2025	03/01/2025	Semsettin Yesilyurt	None	None	Maresh Dadoda
								01/29/2025

**FROM** 0.50000ml of V14454 + 0.50000ml of V14611 + 1.50000ml of V14605 + 1.50000ml of V14607 + 1.50000ml of V14610 +  
4.50000ml of V14624 = Final Quantity: 10.000 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>
1721	SOM01.2 TRACE-Calibration Mix,25 PPM	<a href="#">VP132819</a>	01/30/2025	03/08/2025	Semsettin Yesilyurt	None	None	Maresh Dadoda
								02/06/2025

**FROM** 0.12500ml of V13440 + 0.12500ml of V13845 + 0.12500ml of V13858 + 0.12500ml of V14081 + 0.12500ml of V14308 + 0.12500ml of V14554 + 0.12500ml of V14753 + 0.50000ml of V14726 + 8.62500ml of V14624 = Final Quantity: 10.000 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>
1734	BFB TUNE SOM01.2 TRACE	<a href="#">VP132917</a>	02/06/2025	02/07/2025	Amit Patel	None	None	Maresh Dadoda
								02/14/2025

**FROM** 39.99990ml of W3112 + 0.00320ml of VP131767 = Final Quantity: 40.000 ml



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1722	0.5 PPB ICC SOM01.2 Trace	<a href="#">VP132918</a>	02/06/2025	02/07/2025	Amit Patel	None	None	Mahesh Dadoda 02/14/2025
<b><u>FROM</u></b> 39.99000ml of W3112 + 0.00080ml of VP132711 + 0.00080ml of VP132819 + 0.00400ml of VP132692 = Final Quantity: 40.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1723	1 PPB ICC SOM01.2 Trace	<a href="#">VP132919</a>	02/06/2025	02/07/2025	Amit Patel	None	None	Mahesh Dadoda 02/14/2025
<b><u>FROM</u></b> 39.99000ml of W3112 + 0.00160ml of VP132711 + 0.00160ml of VP132819 + 0.00400ml of VP132692 = Final Quantity: 40.000 ml								



## VOC STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1724	5 PPB ICC SOM01.2 Trace	<a href="#">VP132920</a>	02/06/2025	02/07/2025	Amit Patel	None	None	Mahesh Dadoda 02/14/2025
<u>FROM</u>	39.98000ml of W3112 + 0.00400ml of VP132692 + 0.00800ml of VP132711 + 0.00800ml of VP132819 = Final Quantity: 40.000 ml							

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1725	10 PPB ICC SOM01.2 Trace	<a href="#">VP132921</a>	02/06/2025	02/07/2025	Amit Patel	None	None	Mahesh Dadoda 02/14/2025
<u>FROM</u>	39.96000ml of W3112 + 0.00400ml of VP132692 + 0.01600ml of VP132711 + 0.01600ml of VP132819 = Final Quantity: 40.000 ml							

## VOC STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1726	20 PPB ICC SOM01.2 Trace	<a href="#">VP132922</a>	02/06/2025	02/07/2025	Amit Patel	None	None	<div>Mahesh Dadoda</div> <div>02/14/2025</div>

**FROM** 39.93000ml of W3112 + 0.00400ml of VP132692 + 0.03200ml of VP132711 + 0.03200ml of VP132819 = Final Quantity: 40.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3422	5 PPB ICV SOMO2.4 TRACE	<a href="#">VP132923</a>	02/06/2025	02/07/2025	Amit Patel	None	None	Mahesh Dadoda 02/14/2025

**FROM** 39.98000ml of W3112 + 0.00400ml of VP132692 + 0.00800ml of VP132476 + 0.00800ml of VP132711 = Final Quantity: 40.000 ml

## VOC STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1734	BFB TUNE SOM01.2 TRACE	<a href="#">VP132930</a>	02/07/2025	02/08/2025	Amit Patel	None	None	Maresh Dadoda
02/14/2025								

**FROM** 39.99990ml of W3112 + 0.00320ml of VP131767 = Final Quantity: 40.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1727	5 PPB CCC-CCV SOM01.2 Trace	<a href="#">VP132931</a>	02/07/2025	02/08/2025	Amit Patel	None	None	Maresh Dadoda
02/14/2025								

**FROM** 39.98000ml of W3112 + 0.00400ml of VP132692 + 0.00800ml of VP132711 + 0.00800ml of VP132819 = Final Quantity: 40.000 ml



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1727	5 PPB CCC-CCV SOM01.2 Trace	<a href="#">VP132932</a>	02/07/2025	02/08/2025	Amit Patel	None	None	Mahesh Dadoda 02/14/2025
<u>FROM</u>	39.98000ml of W3112 + 0.00400ml of VP132692 + 0.00800ml of VP132711 + 0.00800ml of VP132819 = Final Quantity: 40.000 ml							

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1734	BFB TUNE SOM01.2 TRACE	<a href="#">VP133053</a>	02/14/2025	02/15/2025	Amit Patel	None	None	Semsettin Yesilyurt 02/17/2025
<b><u>FROM</u></b> 39.99990ml of W3112 + 0.00320ml of VP131767 = Final Quantity: 40.000 ml								



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1727	5 PPB CCC-CCV SOM01.2 Trace	<a href="#">VP133054</a>	02/14/2025	02/15/2025	Amit Patel	None	None	Semsettin Yesilyurt 02/17/2025
<u>FROM</u>	39.98000ml of W3112 + 0.00400ml of VP132692 + 0.00800ml of VP132711 + 0.00800ml of VP132819 = Final Quantity: 40.000 ml							

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1727	5 PPB CCC-CCV SOM01.2 Trace	<a href="#">VP133055</a>	02/14/2025	02/15/2025	Amit Patel	None	None	Semsettin Yesilyurt 02/17/2025
<u>FROM</u> 39.98000ml of W3112 + 0.00400ml of VP132692 + 0.00800ml of VP132711 + 0.00800ml of VP132819 = 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 #
Absolute Standards, Inc.	31491 / 1,2,4-Trimethylbenzene 2000ppm	063022	04/14/2025	10/14/2024 / SAM	07/06/2022 / SAM	V12993

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	90319 / 1,3,5-Trimethylbenzene- 2000 ug/mL	063022	04/14/2025	10/14/2024 / SAM	07/06/2022 / SAM	V13178

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30492 / VOA Mix, OLC 03.2 VOA Mega Mix, 1mL, 2000ug/mL, P&TM	A0189417	03/03/2025	09/03/2024 / SAM	09/21/2022 / SAM	V13238

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	30429 / 1,2,3-Trichloropropane Standard, 2,000 ug/ml	A0188973	07/30/2025	01/30/2025 / SAM	01/23/2023 / SAM	V13440

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30429 / 1,2,3-Trichloropropane Standard, 2,000 ug/ml	A0194117	04/14/2025	10/14/2024 / SAM	02/06/2023 / SAM	V13587

## CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	90298 / Naphthalene, 2000 ug/ml	020223	07/08/2025	01/07/2025 / SAM	02/16/2023 / SAM	V13604

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	A0194279	10/31/2029	01/07/2025 / SAM	05/31/2023 / SAM	V13809

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	31491 / 1,2,4-Trimethylbenzene 2000ppm	040821	07/30/2025	01/30/2025 / SAM	06/22/2023 / SAM	V13845

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	90319 / 1,3,5-Trimethylbenzene- 2000 ug/mL	061923	07/30/2025	01/30/2025 / SAM	06/22/2023 / SAM	V13858

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	A0193887	04/14/2025	10/14/2024 / SAM	07/24/2023 / SAM	V13917

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	94159 / CLP SOM01.1 Volatiles	012323	07/30/2025	01/30/2025 / SAM	12/21/2023 / SAM	V14081

## 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.	94559 / 1,3,5-Trichlorobenzene, 2000 ug/mL, in methanol	121923	04/14/2025	10/14/2024 / SAM	02/29/2024 / SAM	V14224

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	90298 / Naphthalene, 2000 ug/ml	020123	07/30/2025	01/30/2025 / SAM	04/17/2024 / SAM	V14308

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30091 / VOA Mix, CLP method L/C Internal Std 2500ug/ml, PT&M, 1ml/ampul	A0209905	04/14/2025	10/14/2024 / SAM	05/03/2024 / SAM	V14352

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30624 / VOA Stock Standard, OLC 3.2 VOA non-ketone, deuterated monitoring compounds, 1mL, 500ug/mL, Methanol-d	A0211457	07/27/2025	01/27/2025 / SAM	08/15/2024 / SAM	V14454

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	94559 / 1,3,5-Trichlorobenzene, 2000 ug/mL, in methanol	051421	07/30/2025	01/30/2025 / SAM	10/09/2024 / SAM	V14554

## CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30625 / VOA Stock Std, OLC 3.2 VOA Ketone Deuterated Monitoring Compounds, 1mL, 500ug/mL, d2O		07/13/2025	01/13/2025 / SAM	11/18/2024 / SAM	V14605

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30625 / VOA Stock Std, OLC 3.2 VOA Ketone Deuterated Monitoring Compounds, 1mL, 500ug/mL, d2O		07/13/2025	01/13/2025 / SAM	11/18/2024 / SAM	V14607

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30625 / VOA Stock Std, OLC 3.2 VOA Ketone Deuterated Monitoring Compounds, 1mL, 500ug/mL, d2O	A0219189	06/12/2025	12/12/2024 / SAM	11/22/2024 / SAM	V14610

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30625 / VOA Stock Std, OLC 3.2 VOA Ketone Deuterated Monitoring Compounds, 1mL, 500ug/mL, d2O	A0219189	06/12/2025	12/12/2024 / SAM	11/22/2024 / SAM	V14611

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 #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	23I0762004	07/06/2025	01/06/2025 / SAM	11/26/2024 / SAM	V14627

## CHEMICAL RECEIPT LOG BOOK

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	07/30/2025	01/30/2025 / SAM	12/17/2024 / SAM	V14726

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	07/30/2025	01/30/2025 / SAM	12/17/2024 / SAM	V14753

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 <sub>3</sub> 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.: 23I0762004  
Manufactured Date: 2023-08-11  
Expiration Date: 2026-08-10  
Revision No.: 0

## Certificate of Analysis

Test	Specification	Result
Assay (CH <sub>3</sub> OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %
Residue after Evaporation	≤ 1.0 ppm	0.5 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



**Part Number:** 94159  
**Lot Number:** 012323  
**Description:** CLP SOM 01.1 Volatiles  
42 components  
Freezer (0 °C)  
Varied  
6UTB  
NIST Test ID#:  
Volume(s) shown below were combined and diluted to (mL):

**Solvent:** Methanol  
**Lot#** EP282-USQ1  
**Initial Conc. (µg/mL)** 2000.6  
**Final Conc. (µg/mL)** 2000.6  
**Uncertainty** 0.012  
**Balance Uncertainty** 5E-05  
**Pipette (mL)** 0.012  
**Flask Uncertainty**

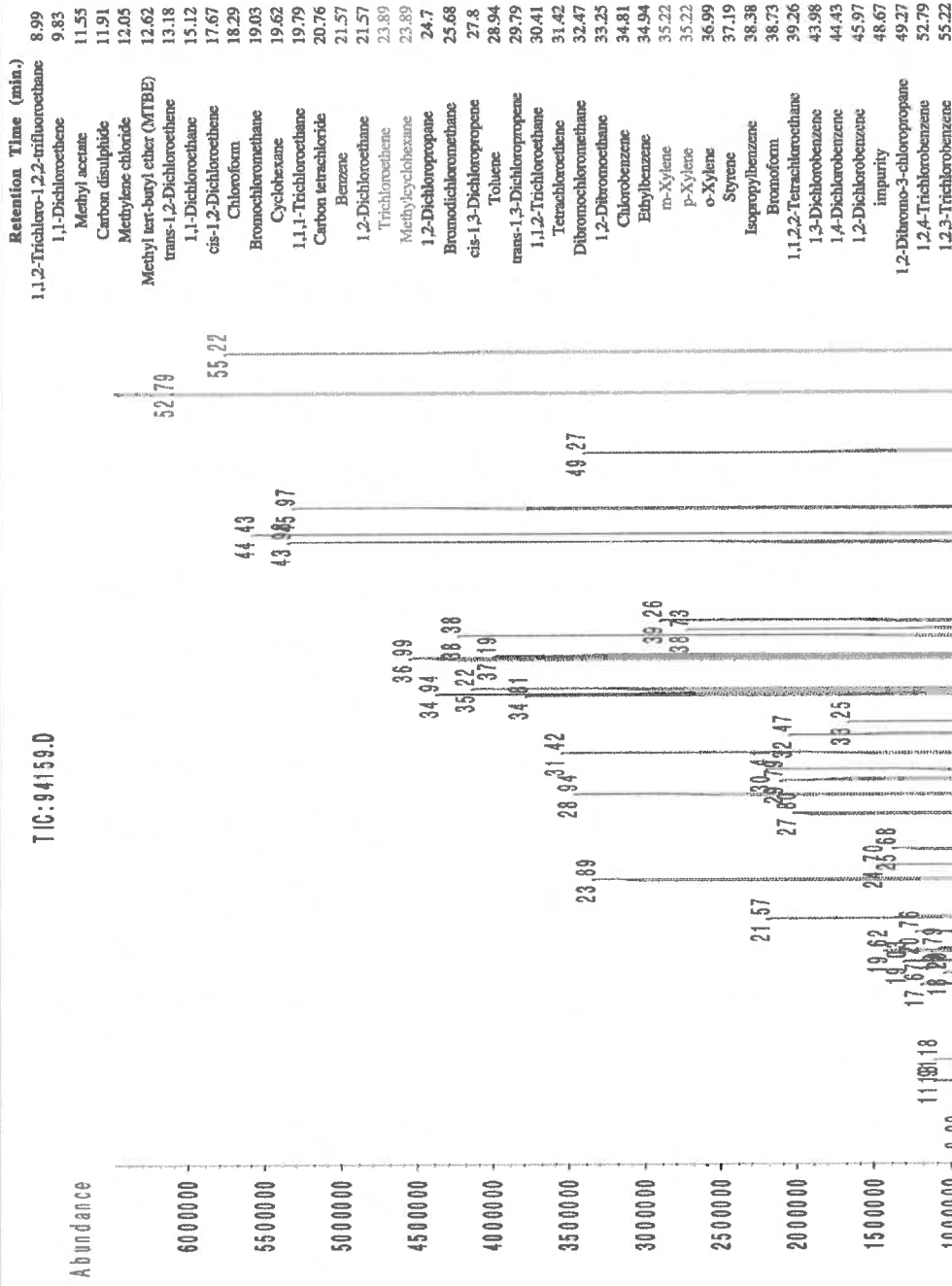
**Formulated By:** Preshant Chauhan  
**Reviewed By:** Pedro L. Renuas  
**DATE** 012323  
**DATE** 012323

Compound	Part Number	Lot Number	Dil. Factor	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (±) (µg/mL)	SDS Information	
							(Solvent Safety Info. On Attached pg.)	LD50
1. Benzene	93831	060616	0.10	10.00	0.042	2000.6	18.7	71-43-2 1 ppm or-rat 4884mg/kg
2. Toluene	93831	060616	0.10	10.00	0.042	2000.6	18.7	108-88-3 200 ppm or-rat 5000mg/kg
3. Ethyl Benzene	93831	060616	0.10	10.00	0.042	2000.6	18.7	100-41-4 100 ppm (435mg/m3/8H) or-rat 5000mg/kg
4. o-Xylene	93831	060616	0.10	10.00	0.042	2000.6	18.7	95-47-8 100 ppm (435mg/m3/8H) or-rat 5000mg/kg
5. m-Xylene	93831	060616	0.10	10.00	0.042	2000.6	18.7	100-91-3 100 ppm (435mg/m3/8H) or-rat 5000mg/kg
6. p-Xylene	93831	060616	0.10	10.00	0.042	2000.6	18.7	100-91-3 100 ppm (435mg/m3/8H) or-rat 5000mg/kg
7. Bromochloromethane	35171	100220	0.05	5.00	0.017	40018.8	15.9	75-27-4 N/A or-rat 816mg/kg
8. Dibromochloromethane	35171	100220	0.05	5.00	0.017	40018.8	15.9	124-48-1 N/A or-rat 816mg/kg
9. cis-1,2-Dichloroethane	35171	100220	0.05	5.00	0.017	40018.8	15.9	156-59-2 N/A or-rat 816mg/kg
10. trans-1,2-Dichloroethane	35171	100220	0.05	5.00	0.017	40018.8	15.9	156-60-5 N/A or-rat 816mg/kg
11. Methylene chloride	35171	100220	0.05	5.00	0.017	40018.8	15.9	75-27-4 N/A or-rat 816mg/kg
12. 1,1-Dichloroethane	32251	031821	0.10	10.00	0.042	2000.6	18.7	75-35-4 500 ppm or-rat 1235mg/kg
13. Bromochloromethane	94170	010616	0.10	10.00	0.042	2000.6	18.7	74-97-5 200 ppm (1050mg/m3/8H) or-rat 200mg/kg
14. Bromoform	94170	010616	0.10	10.00	0.042	2000.6	18.7	75-25-2 0.5 ppm (5mg/m3) or-rat 833mg/kg
15. Carbon tetrachloride	94170	010616	0.10	10.00	0.042	2000.6	18.7	56-23-5 2 ppm (12.5mg/m3/8H) or-rat 2350mg/kg
16. Chloroform	94170	010616	0.10	10.00	0.042	2000.6	18.7	67-66-3 50 ppm (240mg/m3) (CL) or-rat 908mg/kg
17. 1,1-Dichloroethane	94170	010616	0.10	10.00	0.042	2000.6	18.7	75-34-3 100 ppm or-rat 755mg/kg
18. Tetrachloroethane	94170	010616	0.10	10.00	0.042	2000.6	18.7	127-18-4 25 ppm (170mg/m3/8H) (final) or-rat 2630mg/kg
19. 1,1,1-Trichloroethane	94171	010616	0.10	10.00	0.042	20015.3	18.7	71-55-6 350 ppm (1900mg/m3/8H) or-rat 10000mg/kg
20. 1,2-Dibromo-3-chloropropane	94171	010616	0.10	10.00	0.042	20015.3	18.7	96-12-8 0.001 ppm or-rat 170mg/kg
21. 1,2-Dibromoethane	94171	010616	0.10	10.00	0.042	20015.3	18.7	106-93-4 20 ppm (8H) or-rat 108mg/kg
22. 1,2-Dichloroethane	94171	010616	0.10	10.00	0.042	20006.4	18.7	107-06-2 50 ppm (8H) or-rat 670mg/kg
23. 1,2-Dichloropropane	94171	010616	0.10	10.00	0.042	20006.4	18.7	78-57-5 75 ppm (350mg/m3/8H) or-rat 1947mg/kg
24. cis-1,3-Dichloropropane	94171	010616	0.10	10.00	0.042	20011.4	18.7	10081-01-5 N/A or-rat 800mg/kg
25. trans-1,3-Dichloropropane	94171	010616	0.10	10.00	0.042	20011.4	18.7	10081-02-8 N/A or-rat 800mg/kg
26. 1,1,2-Trichloroethane	94171	010616	0.10	10.00	0.042	20014.3	18.7	79-34-5 5 ppm (35mg/m3/8H) (skin) or-rat 800mg/kg
27. Trichloroethane	94171	010616	0.10	10.00	0.042	20024.9	18.7	79-00-5 10 ppm (45mg/m3/8H) (skin) or-rat 800mg/kg
28. Chlorobenzene	97783	091118	0.10	10.00	0.042	20012.9	18.7	79-01-6 50 ppm (270mg/m3/8H) or-rat 2402mg/kg
29. 1,2-Dichlorobenzene	97783	091118	0.10	10.00	0.042	20002.9	18.7	95-50-1 50 ppm (300mg/m3) (CL) or-rat 2290mg/kg
30. 1,3-Dichlorobenzene	97783	091118	0.10	10.00	0.042	20003.7	18.7	541-73-1 N/A or-rat 500mg/kg
31. 1,4-Dichlorobenzene	97783	091118	0.10	10.00	0.042	20003.7	18.7	541-73-1 N/A or-rat 500mg/kg
32. Styrene	32381	052120	0.10	10.00	0.042	20041.4	18.7	100-42-5 100 ppm or-rat 5000mg/kg
33. Carbon disulfide	94173	010716	0.10	10.00	0.042	20001.9	18.7	75-15-0 4 ppm (12mg/m3) (skin) or-rat 1200mg/kg
34. Cyclohexane	94173	010716	0.10	10.00	0.042	20002.0	18.7	110-82-7 300 ppm (1050mg/m3/8H) or-rat 12705mg/kg
35. Methyl acetate	94173	010716	0.10	10.00	0.042	20002.4	18.7	79-20-8 200 ppm (810mg/m3/8H) or-rat 3705mg/kg
36. Methylcyclohexane	94173	010716	0.10	10.00	0.042	20001.7	18.7	108-87-2 N/A or-rat 2550mg/kg
40. Methyl tert-butyl ether (MTBE)	94173	010716	0.10	10.00	0.042	20001.2	18.7	1634-04-4 N/A or-rat 43g/kg
42. 1,1,2-Trichloro-1,2,2-trifluoroethane	94173	010716	0.10	10.00	0.042	20001.9	18.7	76-13-1 1000 ppm (7600mg/m3/8H) or-rat 43g/kg

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



Method: GC6MSD1, Detector: Mass Selective Detector, Column: Vocol (50m 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: Gina McLane.





## CERTIFIED WEIGHT REPORT

Part Number: **90298**  
 Lot Number: **020123**  
 Description: **Naphthalene**

Solvent(s):  
 Methanol

Lot#  
 EF282-US

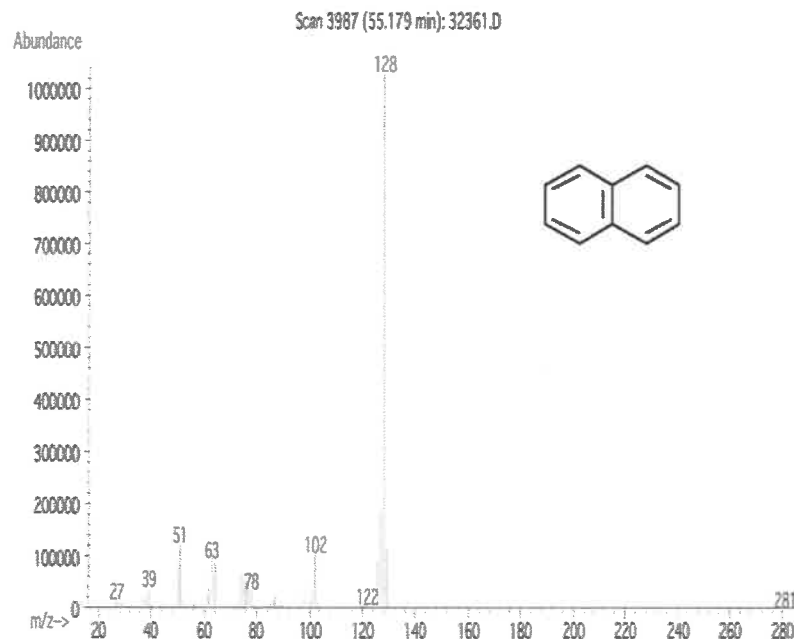
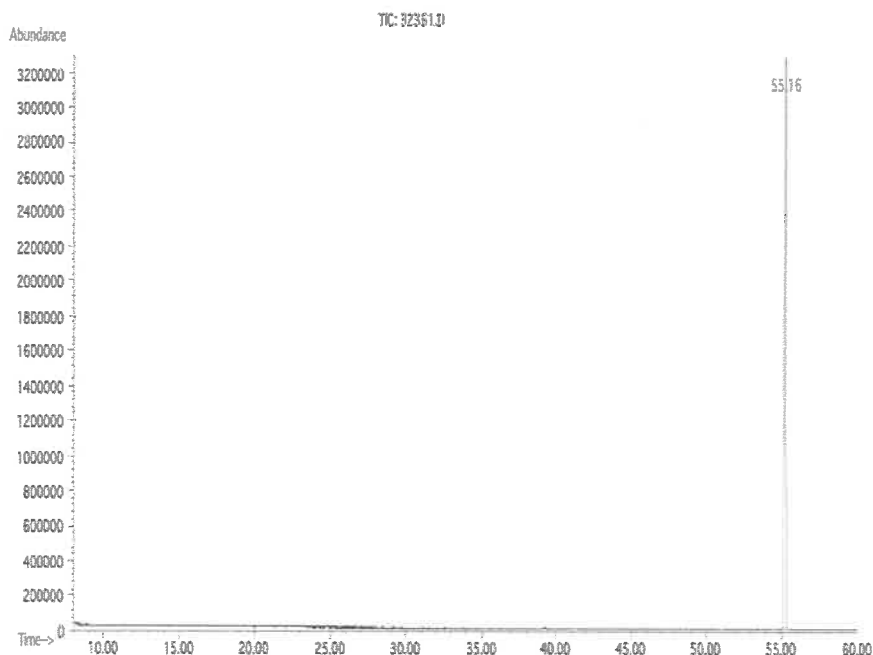
		020123
Formulated By:	Justin Dippold	DATE
		020123
Reviewed By:	Pedro L. Rentas	DATE

Expiration Date: 020128  
 Recommended Storage: Refrigerate (4 °C)  
 Nominal Concentration (µg/mL): 2000  
 NIST Test ID#: 6UTB  
 Volume(s) shown below were combined and diluted to (mL): 100.0

5E-05 Balance Uncertainty  
 0.012 Flask Uncertainty

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.)		
									CAS#	OSHA PEL (TWA)	LD50
1. Naphthalene	32361	011623	0.10	10.00	0.042	20000.3	1999.9	18.7	91-20-3	10 ppm (50mg/m3/8H)	ori-rat 490mg/kg

Method: GC6MSD-1. Detector: MSD (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: 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).



**CERTIFIED WEIGHT REPORT**

Part Number: **90298**  
Lot Number: **020223**  
Description: **Naphthalene**

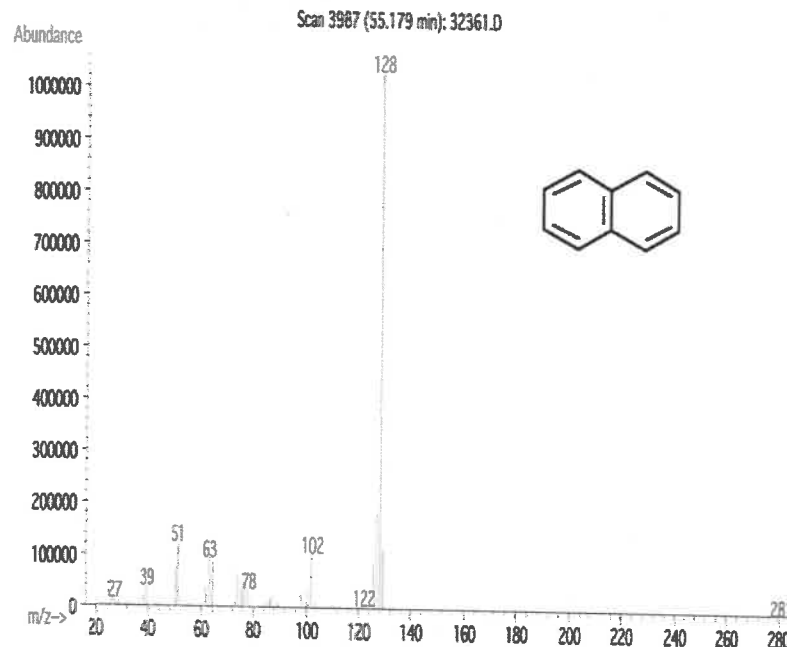
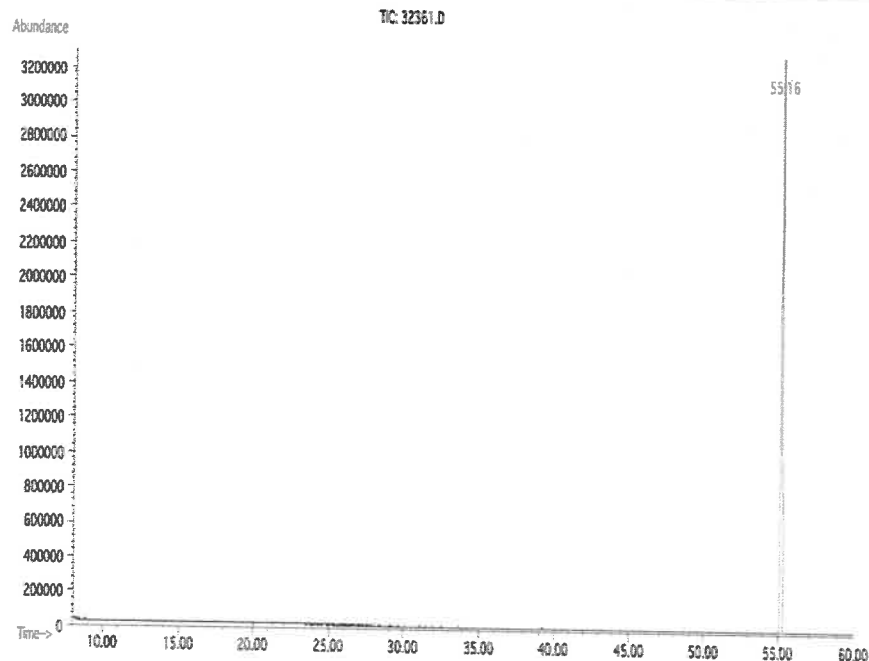
Solvent(s):  
Methanol  
Lot#: **EF282-US**

		020223
Formulated By:	Prashant Chauhan	DATE
		020223
Reviewed By:	Pedro L. Rentas	DATE

Expiration Date: **020228**  
Recommended Storage: **Refrigerate (4 °C)**  
Nominal Concentration (µg/mL): **2000**  
NIST Test ID#: **6UTB**  
Volume(s) shown below were combined and diluted to (mL): **100.0**  
5E-05 Balance Uncertainty  
0.012 Flask Uncertainty

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.)		
									CAS#	OSHA PEL (TWA)	LD50
1. Naphthalene	32361	011623	0.10	10.00	0.042	20000.3	1999.9	18.7	91-20-3	10 ppm (50mg/m3/8H)	ori-rat 490mg/kg

Method: GC6MSD-1. Detector: MSD (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: 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).



## Certified Reference Material CRM



## CERTIFIED WEIGHT REPORT

## Part Number:

31491

## Lot Number:

040821

## Description:

1,2,4-Trimethylbenzene

## Solvent(s):

Methanol

## Lot#

DY186-US

## Expiration Date:

040826

## Recommended Storage:

Refrigerate (4 °C)

## Nominal Concentration (µg/mL):

2000

## NIST Test ID#:

6UTB

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

50.0

5E-05 Balance Uncertainty

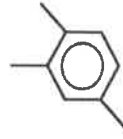
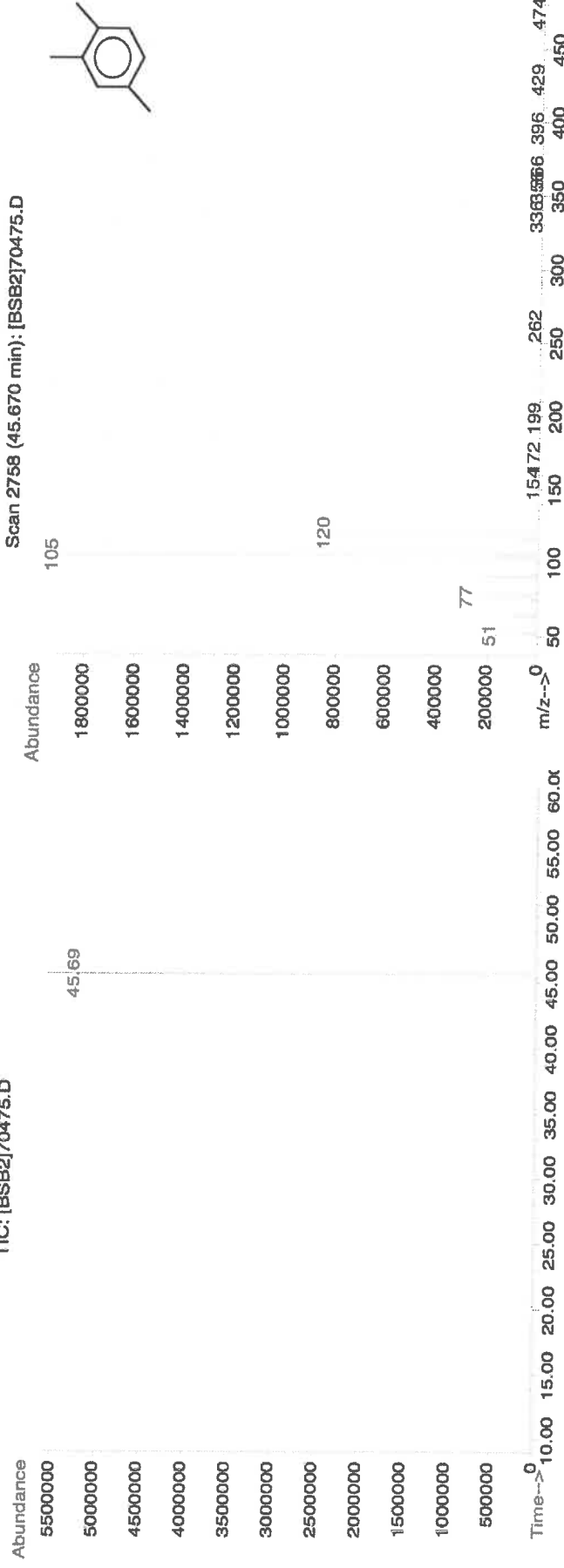
0.057 Flask Uncertainty

Formulated By:	Prashant Chauhan	040821	DATE
Reviewed By:	Pedro L. Rentas	040821	DATE

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information		
										(Solvent Safety Info. On Attached pg.)	CAS#	LD50
1. 1,2,4-Trimethylbenzene	475	WXB03778V	2000	98.8	0.2	0.10127	0.10140	2002.5	9.5	95-63-6	N/A	or-rat 5g/kg

Method GC6MSD-1: Column: Vocol (60m X 0.25mm ID X 1.5µm film thickness). Temp. 1 = 35°C (10min.), Temp. 2 = 200°C (8.75 min.), Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. Analysis performed by Candice Warren.

TIC: [BSB2]70475.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).



**CERTIFIED WEIGHT REPORT**

**Part Number:** 94559  
**Lot Number:** 051421  
**Description:** 1,3,5-Trichlorobenzene

**Solvent(s):** Methanol **Lot#** DY186-US

**Expiration Date:** 051426  
**Recommended Storage:** Refrigerate (4 °C)  
**Nominal Concentration (µg/mL):** 2000  
**NIST Test ID#:** 6UTB  
**Weight(s) shown below were combined and diluted to (mL):** 100.0  
**SE-05 Balance Uncertainty** 0.012 **Flask Uncertainty**

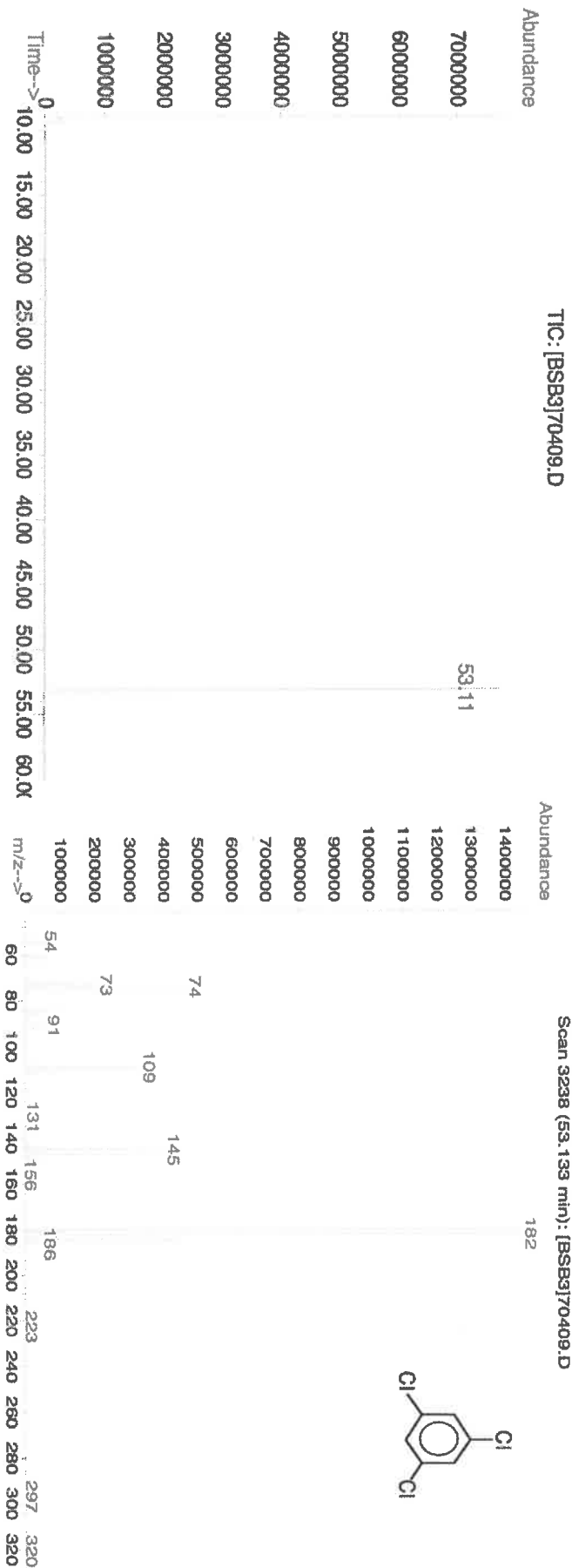
		051421
<b>Formulated By:</b>	Benson Chan	DATE
<b>Reviewed By:</b>		051421
	Pedro L. Renteria	DATE

**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 (Solvent Safety Info. On Attached pg.)	CAS#	OSHA PEL (TWA)	LD50
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1. 1,3,5-Trichlorobenzene	409	STBH8643	2000	99.9	0.2	0.20021	0.20084	2006.3	8.1	108-70-3	N/A	or: rat 800mg/kg
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**Method GC6MSD-1:** Column: Vocol (60m X 0.25mm ID X 1.5µm film thickness). Temp. 1=35°C (10min.), Temp. 2=200°C (8.75 min.), Rate=4°C/min., Injector Temp=200°C, Detector Temp=220°C. Analysis performed by Candice Warren.





## 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 Rossetto 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 <sub>2</sub> 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



## CERTIFIED WEIGHT REPORT

Part Number:  
Lot Number:  
Description:

90319  
061923  
1,3,5-Trimethylbenzene  
[Mesitylene]

Solvent: Lot#  
Methanol EF282-US

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

061928  
Refrigerate (4 °C)  
2000  
6UTB

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

50.0

5E-05 Balance Uncertainty  
0.001 Flask Uncertainty

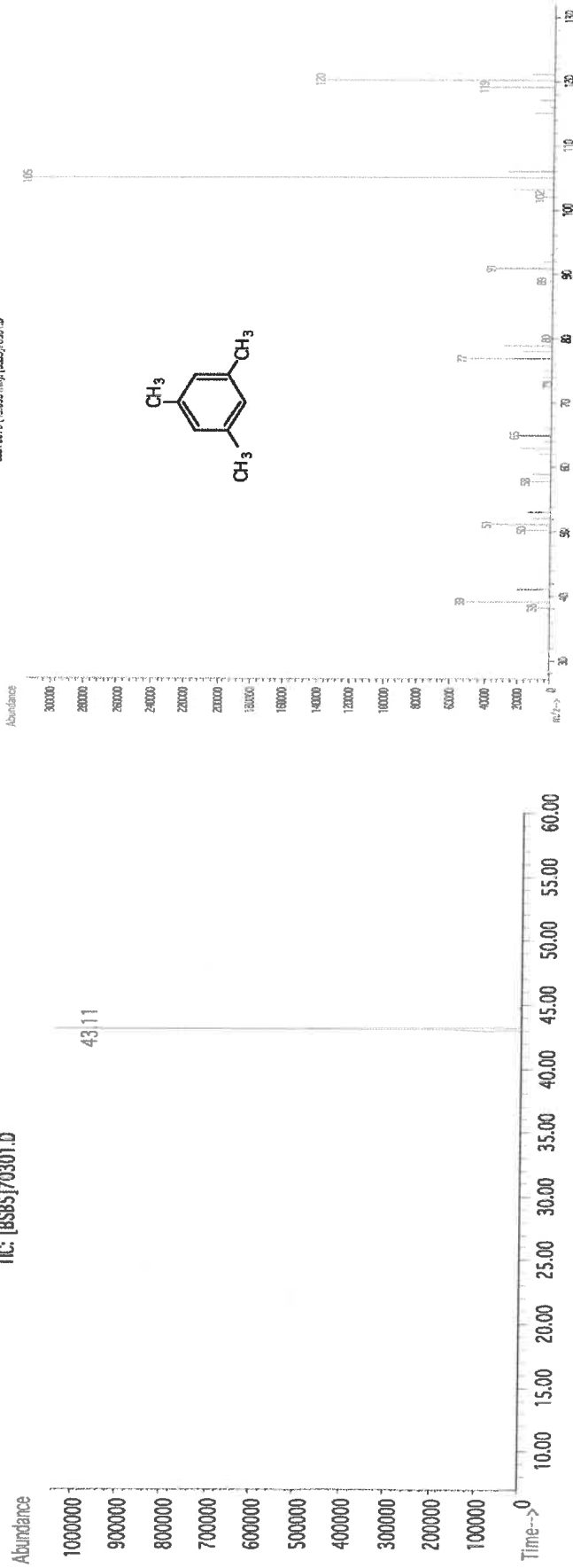
Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity (%)	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Uncertainty (+/-) (µg/mL)	Expanded Uncertainty (Solvent Safety Info. On Attached pg.)	CAS#	OSHA PEL (TWA)	LD50
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1. 1,3,5-Trimethylbenzene 301 TOOFF-IC 2000 97 0.2 0.10315 0.10341 2004.9 8.5 108-67-8 N/A orl-rat 5000mg/kg

Method GC/MSD-1: Column: Vocol 60m X 0.25mm ID X 1.5µm film thickness). Temp. 1 = 35°C (10min.), Temp. 2 = 200°C (8.75 min.), Rate = 4°C/min., Injector Temp = 200°C, Detector Temp. = 220°C. Analysis performed by Candice Warren.

TIC: [BS85]70301.D

Scan 3075 (43.095 min): [BS85]70301.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).



6 V12978-983



**CERTIFIED WEIGHT REPORT**

Part Number: **90319**  
Lot Number: **063022**  
Description: **1,3,5-Trimethylbenzene**

Solvent: **Methanol**  
Lot#: **EC592-US**

Expiration Date: **063027**  
Recommended Storage: **Refrigerate (4 °C)**  
Nominal Concentration (µg/mL): **2000**

V12978-983

NIST Test ID#: **6UTB**

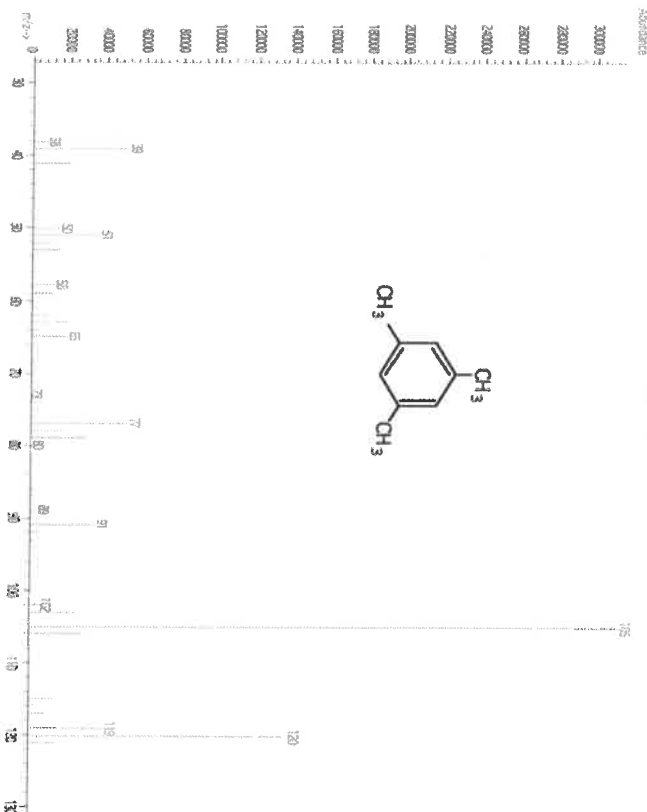
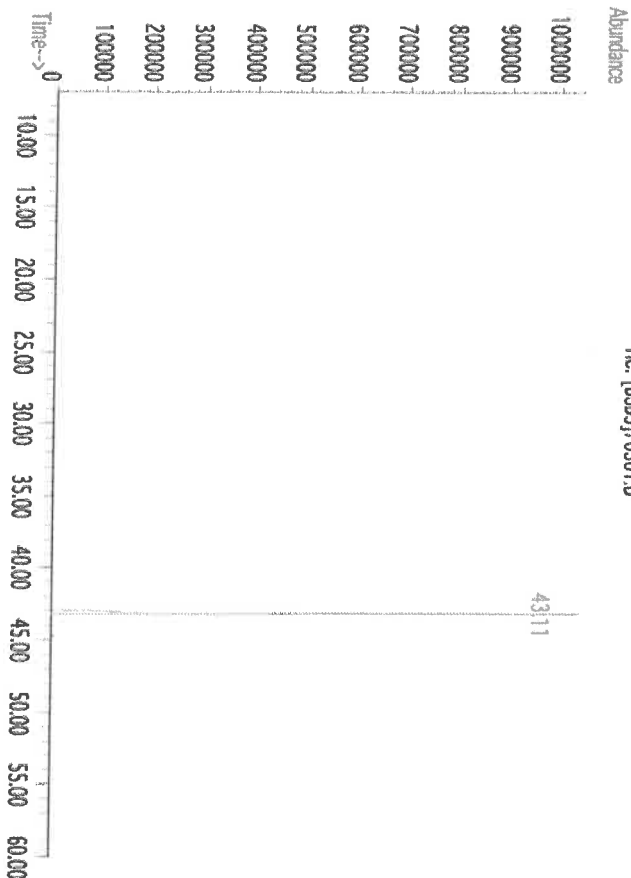
Weight(s) shown below were combined and diluted to (mL):

SE-05 Balance Uncertainty  
0.0003 Flask Uncertainty

Formulated By:	Gabriel Holland	063022
Reviewed By:	Pedro L. Rentes	063022
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
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1. 1,3,5-Trimethylbenzene 301 8780.01-13 2000 99.5 0.2 0.06033 0.06070 2012.1 8.7 108-67-8 N/A or-1st 5000mg/kg  
Method GC6MSD-1: Column: Vocol 60m X 0.25mm ID X 1.5µm film thickness. Temp. 1 = 35°C (10min.), Temp. 2 = 200°C (8.75 min.), Rate = 4°C/min., Injector Temp = 200°C, Detector Temp. = 220°C. Analysis performed by 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 in 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 Results," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT

Part Number:  
Lot Number:  
Description:

94559  
121923  
1,3,5-Trichlorobenzene

Solvent(s):  
Methanol

Lot#  
EH485-US

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

121928  
Refrigerate (4 °C)  
2000  
6UTB

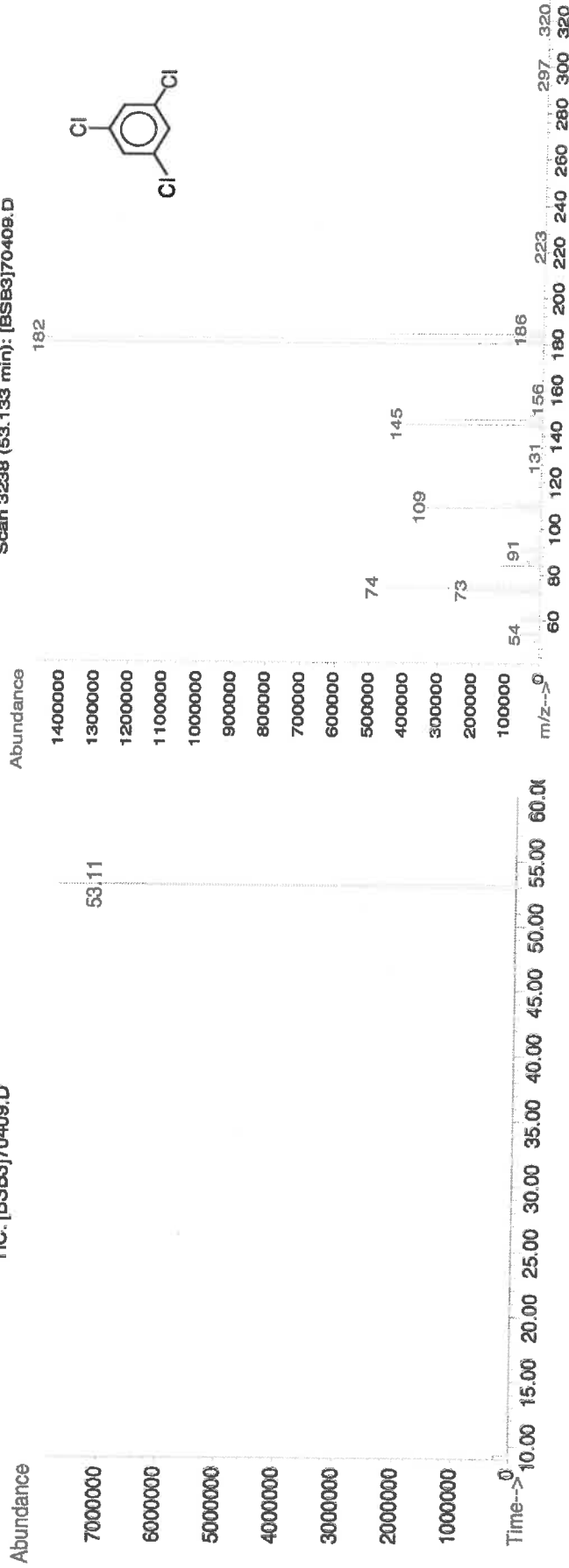
Weight(s) shown below were combined and diluted to (mL):  
5E-05 Balance Uncertainty  
0.021 Flask Uncertainty

100.0

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.)	LD50
1. 1,3,5-Trichlorobenzene	409	STBH8643	2000	99.9	0.2	0.20025	0.20059	2003.4	8.1	108-70-3	N/A

Method GCxMSD-1: Column: Vocol (60m X 0.25mm ID X 1.5µm film thickness). Temp. 1=35°C (10min.), Temp. 2=200°C (8.75 min.), Rate=4°C/min., Injector Temp.=200°C, Detector Temp.=220°C. Analysis performed by Candice Warren.

TIC: [BSB3]70409.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 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, 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:	CAS#:	LD50 Oral - Rat	OSHA PEL	% (optional)
Methanol	67-56-1	2,769 mg/kg	200 ppm	> 99

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

INTENDED USE: REFERENCE MATERIAL

## Section IV. FIRST AID MEASURES

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

## Section V. FIREFIGHTING MEASURES

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

## Section VI. ACCIDENTAL RELEASE MEASURES

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

## Section VII. HANDLING AND STORAGE

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

## Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

## Section IX - Physical/Chemical Characteristics

Boiling Point	65°C	Specific Gravity (H2O = 1)	0.79
Vapor Pressure (mm Hg)	96	Melting Point	-98°C
Vapor Density (AIR = 1)	1.11	Evaporation rate (Butyl Acetate = 1)	4.6
Solubility in Water	COMPLETE		
Appearance and Odor	CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.		

**Section X. STABILITY AND REACTIVITY**

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

**Section XI. TOXICOLOGICAL INFORMATION**

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

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

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

**Section XIII. DISPOSAL CONSIDERATIONS**

Dispose with normal Laboratory Solvent Waste.

**Section XIV. TRANSPORT INFORMATION**

DOT (US)	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

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

www.restek.com

## Certificate of Analysis



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

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

Catalog No. : 30429 Lot No.: A0188973  
Description : 1,2,3-Trichloropropane Standard  
1,2,3-Trichloropropane 2000µg/mL, P&T Methanol, 1mL/ampul  
Container Size : 2 mL Pkg Amt: > 1 mL  
Expiration Date : August 31, 2027 Storage: 0°C or colder  
Ship: Ambient

### CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	1,2,3-Trichloropropane	2,000.0 µg/mL	+/-	11.7371	µg/mL Gravimetric
	CAS # 96-18-4 (Lot 332900)		+/-	112.1494	µg/mL Unstressed
	Purity 99%		+/-	114.7730	µg/mL Stressed

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

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

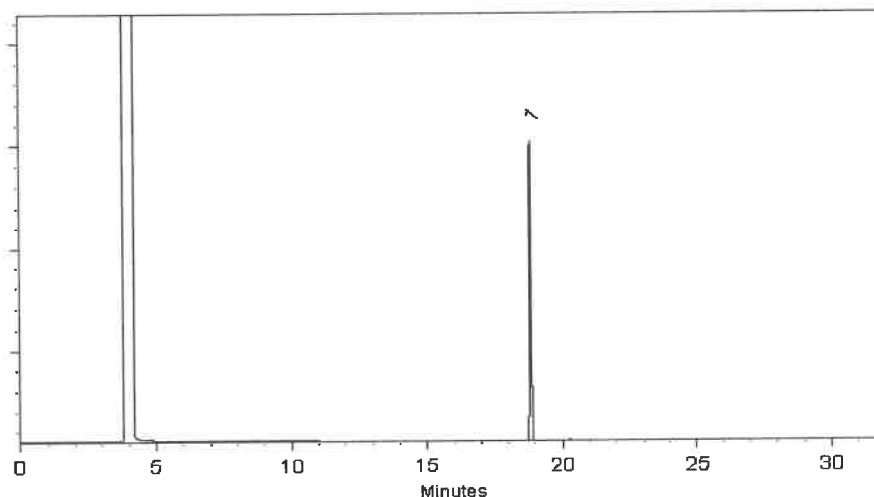
**Carrier Gas:**  
hydrogen-constant pressure 11.0 psi.

**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



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.

  
Daniel Wasson - Operations Tech I

Date Mixed: 24-Aug-2022      Balance: 1127510105

  
Christie Mills - Operations Tech II - ARM QC

Date Passed: 29-Aug-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/ $\mu$ ECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

### Certified Uncertainty Value Notes:

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

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

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

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at [www.restek.com/Contact-Us](http://www.restek.com/Contact-Us) for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer) -20°C or colder (Deep Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at [www.restek.com/Contact-Us](http://www.restek.com/Contact-Us).
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules 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 ampules. 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.





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

www.restek.com

## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis



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

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

**Catalog No. :** 30492 **Lot No.:** A0189417

**Description :** OLC 03.2 VOA Mega Mix  
OLC 03.2 VOA Mega Mix 1,000-2,000µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** September 30, 2025 **Storage:** 0°C or colder

**Ship:** Ambient

### CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	1,1,2-Trichlorotrifluoroethane (CFC-113) CAS # 76-13-1 (Lot 00016133) Purity 99%	2,007.0 µg/mL	+/- 11.7782 µg/mL +/- 121.1018 µg/mL +/- 121.3893 µg/mL	Gravimetric Unstressed Stressed
2	1,1-dichloroethene CAS # 75-35-4 (Lot SHBG8609V) Purity 99%	2,010.7 µg/mL	+/- 15.5022 µg/mL +/- 121.7394 µg/mL +/- 122.0264 µg/mL	Gravimetric Unstressed Stressed
3	Methyl acetate CAS # 79-20-9 (Lot SHBM1320) Purity 99%	2,012.5 µg/mL	+/- 11.8105 µg/mL +/- 121.4337 µg/mL +/- 121.7219 µg/mL	Gravimetric Unstressed Stressed
4	Methylene chloride (dichloromethane) CAS # 75-09-2 (Lot SHBP1417) Purity 99%	2,010.6 µg/mL	+/- 15.5019 µg/mL +/- 121.7364 µg/mL +/- 122.0234 µg/mL	Gravimetric Unstressed Stressed
5	Carbon disulfide CAS # 75-15-0 (Lot N28F701) Purity 99%	2,016.0 µg/mL	+/- 11.8310 µg/mL +/- 121.6448 µg/mL +/- 121.9336 µg/mL	Gravimetric Unstressed Stressed
6	Methyl-tert-butyl ether ( MTBE ) CAS # 1634-04-4 (Lot SHBN6497) Purity 99%	2,012.0 µg/mL	+/- 11.8075 µg/mL +/- 121.4035 µg/mL +/- 121.6917 µg/mL	Gravimetric Unstressed Stressed
7	trans-1,2-Dichloroethene CAS # 156-60-5 (Lot MKBH9850V) Purity 99%	2,013.3 µg/mL	+/- 15.5227 µg/mL +/- 121.8999 µg/mL +/- 122.1873 µg/mL	Gravimetric Unstressed Stressed

8	1,1-Dichloroethane CAS # 75-34-3 Purity 99%	(Lot 760200)	2,013.4	µg/mL	+/- +/- +/-	15.5229 121.9014 122.1888	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	cis-1,2-Dichloroethene CAS # 156-59-2 Purity 99%	(Lot MKCP7830)	2,009.0	µg/mL	+/- +/- +/-	11.7899 121.2225 121.5102	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
10	chloroform CAS # 67-66-3 Purity 99%	(Lot SHBN8469)	2,012.3	µg/mL	+/- +/- +/-	15.5146 121.8363 122.1235	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
11	Bromochloromethane CAS # 74-97-5 Purity 99%	(Lot 00008541)	2,019.0	µg/mL	+/- +/- +/-	11.8486 121.8259 122.1150	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
12	1,1,1-trichloroethane CAS # 71-55-6 Purity 99%	(Lot RD220215)	2,012.5	µg/mL	+/- +/- +/-	15.5163 121.8499 122.1372	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
13	Cyclohexane CAS # 110-82-7 Purity 99%	(Lot EA003-US)	2,009.5	µg/mL	+/- +/- +/-	11.7929 121.2526 121.5405	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
14	carbon tetrachloride CAS # 56-23-5 Purity 99%	(Lot SHBL8097)	2,012.3	µg/mL	+/- +/- +/-	15.5146 121.8363 122.1235	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
15	1,2-Dichloroethane CAS # 107-06-2 Purity 99%	(Lot MKCN9758)	2,016.3	µg/mL	+/- +/- +/-	15.5454 122.0785 122.3663	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
16	Benzene CAS # 71-43-2 Purity 99%	(Lot MKCM9242)	2,018.0	µg/mL	+/- +/- +/-	11.8428 121.7655 122.0546	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
17	Trichloroethene CAS # 79-01-6 Purity 99%	(Lot SHBL5816)	2,009.0	µg/mL	+/- +/- +/-	15.4891 121.6365 121.9233	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
18	Methylcyclohexane CAS # 108-87-2 Purity 99%	(Lot SHBN1699)	2,009.5	µg/mL	+/- +/- +/-	11.7929 121.2526 121.5405	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
19	1,2-Dichloropropane CAS # 78-87-5 Purity 99%	(Lot BCBR0882V)	2,016.1	µg/mL	+/- +/- +/-	15.5439 122.0664 122.3541	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
20	bromodichloromethane CAS # 75-27-4 Purity 99%	(Lot MKCM7156)	2,011.4	µg/mL	+/- +/- +/-	15.5074 121.7803 122.0674	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
21	cis-1,3-Dichloropropene CAS # 10061-01-5 Purity 99%	(Lot RD220311)	2,011.3	µg/mL	+/- +/- +/-	15.5073 121.7788 122.0659	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
22	Toluene CAS # 108-88-3 Purity 99%	(Lot MKCQ2779)	2,014.0	µg/mL	+/- +/- +/-	11.8193 121.5242 121.8126	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
23	trans-1,3-Dichloropropene CAS # 10061-02-6 Purity 98%	(Lot RD220228A)	2,014.7	µg/mL	+/- +/- +/-	15.5331 121.9821 122.2697	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

24	1,1,2-Trichloroethane CAS # 79-00-5 Purity 99%	(Lot FGB01)	2,013.0 µg/mL	+/- 15.5200 +/- 121.8787 +/- 122.1660	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
25	Tetrachloroethene CAS # 127-18-4 Purity 99%	(Lot SHBJ7422)	2,012.0 µg/mL	+/- 15.5126 +/- 121.8212 +/- 122.1084	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
26	dibromochloromethane CAS # 124-48-1 Purity 99%	(Lot MKCM8659)	2,015.6 µg/mL	+/- 15.5404 +/- 122.0391 +/- 122.3268	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
27	1,2-Dibromoethane (EDB) CAS # 106-93-4 Purity 99%	(Lot BCCF5058)	2,007.5 µg/mL	+/- 11.7811 +/- 121.1320 +/- 121.4195	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
28	Chlorobenzene CAS # 108-90-7 Purity 99%	(Lot SHBL8110)	2,016.5 µg/mL	+/- 15.5468 +/- 122.0891 +/- 122.3769	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
29	Ethylbenzene CAS # 100-41-4 Purity 99%	(Lot SHBM4308)	2,012.0 µg/mL	+/- 11.8075 +/- 121.4035 +/- 121.6917	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
30	m-Xylene CAS # 108-38-3 Purity 99%	(Lot Q13G020)	1,008.5 µg/mL	+/- 5.9184 +/- 60.8526 +/- 60.9970	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
31	p-Xylene CAS # 106-42-3 Purity 99%	(Lot 10234437)	1,004.0 µg/mL	+/- 5.8920 +/- 60.5811 +/- 60.7249	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
32	o-Xylene CAS # 95-47-6 Purity 98%	(Lot SHBN5105)	2,006.6 µg/mL	+/- 11.7756 +/- 121.0746 +/- 121.3620	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
33	Styrene CAS # 100-42-5 Purity 99%	(Lot MKCQ3390)	2,008.0 µg/mL	+/- 11.7841 +/- 121.1621 +/- 121.4497	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
34	Isopropylbenzene (cumene) CAS # 98-82-8 Purity 99%	(Lot Z20D022)	2,015.0 µg/mL	+/- 11.8251 +/- 121.5845 +/- 121.8731	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
35	bromoform CAS # 75-25-2 Purity 98%	(Lot SHBK4455)	2,015.3 µg/mL	+/- 15.5377 +/- 122.0177 +/- 122.3054	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
36	1,1,2,2-Tetrachloroethane CAS # 79-34-5 Purity 99%	(Lot CFA4D)	2,011.9 µg/mL	+/- 15.5119 +/- 121.8151 +/- 122.1023	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
37	1,3-Dichlorobenzene CAS # 541-73-1 Purity 99%	(Lot BCCD5315)	2,016.2 µg/mL	+/- 15.5445 +/- 122.0709 +/- 122.3587	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
38	1,4-Dichlorobenzene CAS # 106-46-7 Purity 99%	(Lot MKBS4401V)	2,019.0 µg/mL	+/- 15.5660 +/- 122.2404 +/- 122.5286	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
39	1,2-Dichlorobenzene CAS # 95-50-1 Purity 99%	(Lot SHBN3835)	2,011.9 µg/mL	+/- 15.5113 +/- 121.8106 +/- 122.0977	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

40	1,2-Dibromo-3-chloropropane CAS # 96-12-8 Purity 97%	(Lot HBMVB)	2,016.6 µg/mL	+/- 11.8347 +/- 121.6829 +/- 121.9717	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
41	1,2,4-Trichlorobenzene CAS # 120-82-1 Purity 99%	(Lot SHBM0526)	2,012.5 µg/mL	+/- 11.8105 +/- 121.4337 +/- 121.7219	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
42	1,2,3-Trichlorobenzene CAS # 87-61-6 Purity 99%	(Lot MKBX7627V)	2,012.0 µg/mL	+/- 11.8075 +/- 121.4035 +/- 121.6917	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
<b>Solvent:</b> P&T Methanol CAS # 67-56-1 Purity 99%						

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

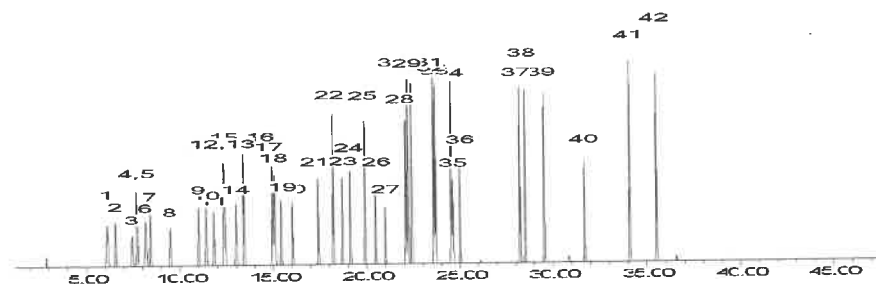
**Carrier Gas:**  
helium-constant pressure 30 psi

**Temp. Program:**  
40°C (hold 6 min.) to 240°C  
@ 6°C/min. (hold 10 min.)

**Inj. Temp:**  
200°C

**Det. Temp:**  
250°C

**Det. Type:**  
MSD



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: 09-Sep-2022 Balance: B707717271

  
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 14-Sep-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/ $\mu$ ECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

### Certified Uncertainty Value Notes:

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

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

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

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at [www.restek.com/Contact-Us](http://www.restek.com/Contact-Us) for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer) -20°C or colder (Deep Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at [www.restek.com/Contact-Us](http://www.restek.com/Contact-Us).
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules 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 ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.





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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

*chromatographic plus*



### 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:**

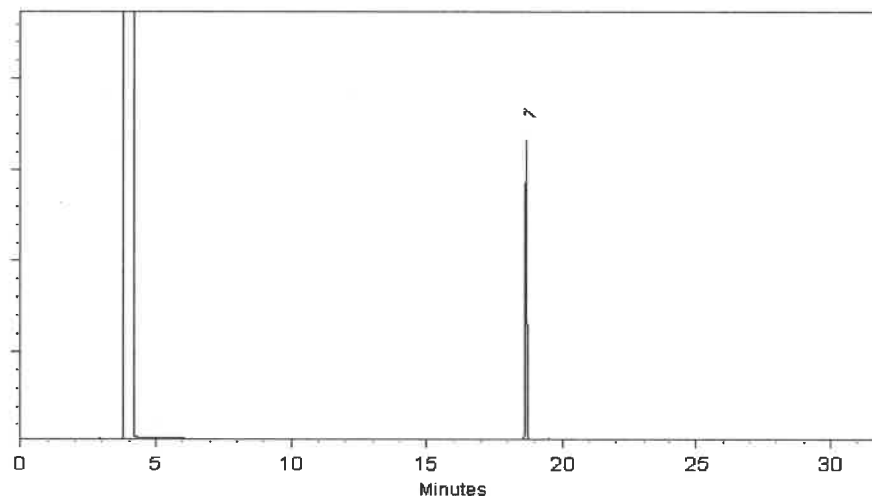
FID

**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.





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# 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. : 30006 Lot No.: A0193887  
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 : April 30, 2026 Storage: 0°C or colder  
Ship: Ambient

### CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Acetone	67-64-1	SHBP8774	99%	5,006.5 µg/mL	+/- 173.0015
2	2-Butanone (MEK)	78-93-3	SHBN9536	99%	5,008.5 µg/mL	+/- 173.0706
3	4-Methyl-2-pentanone (MIBK)	108-10-1	SHBP4724	99%	5,000.3 µg/mL	+/- 172.7884
4	2-Hexanone	591-78-6	MKCQ6663	99%	5,001.7 µg/mL	+/- 172.8345

\* 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:**

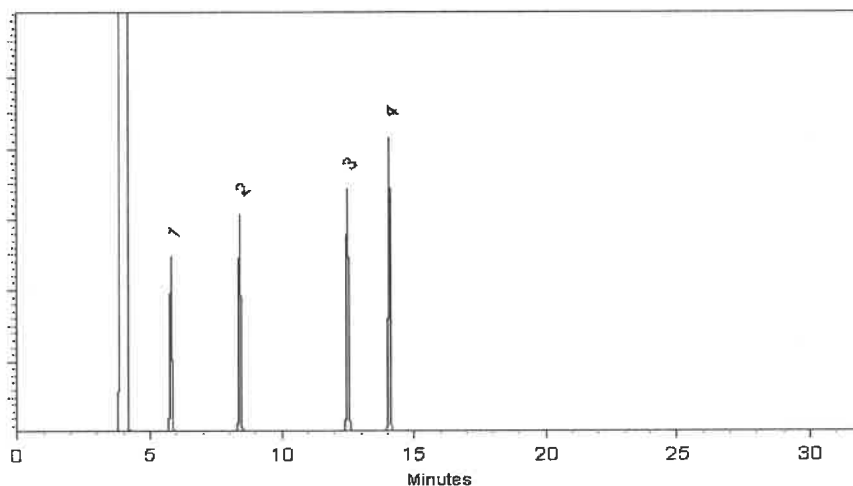
FID

**Split Vent:**

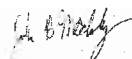
40 ml/min

**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.

  
Josh McCloskey - Operations Technician I

Date Mixed: 24-Jan-2023

Balance Serial # B707717271

  
Christie Mills - Operations Tech II - ARM QC

Date Passed: 27-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.





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# 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. :** 30429 **Lot No.:** A0194117  
**Description :** 1,2,3-Trichloropropane Standard  
1,2,3-Trichloropropane 2000µg/mL, P&T Methanol, 1mL/ampul  
**Container Size :** 2 mL **Pkg Amt:** > 1 mL  
**Expiration Date :** January 31, 2028 **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	1,2,3-Trichloropropane	96-18-4	BCBH8722V	99%	2,013.8 µg/mL	+/- 113.1502

\* 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:**

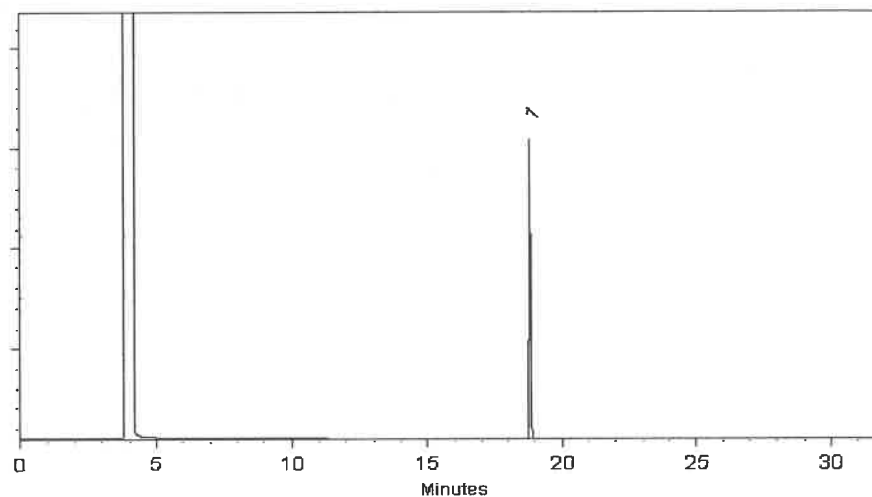
FID

**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.

  
Daniel Wasson - Operations Tech I

Date Mixed: 30-Jan-2023

Balance Serial # B707717271

  
Christie Mills - Operations Tech II - ARM QC

Date Passed: 02-Feb-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/ $\mu$ ECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

### Certified Uncertainty Value Notes:

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

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

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

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

### Manufacturing Notes:

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

### Handling Notes:

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





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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

chromatographic plus



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

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

**Catalog No. :** 30042 **Lot No.:** A0194279

**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 :** October 31, 2029 **Storage:** 0°C or colder

**Ship:** Ambient

### CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Dichlorodifluoromethane (CFC-12)	75-71-8	00012554	99%	2,001.5 µg/mL	+/- 112.7231
2	Chloromethane (methyl chloride)	74-87-3	SHBK6571	99%	2,001.2 µg/mL	+/- 112.5863
3	Vinyl chloride	75-01-4	00015559	99%	2,001.4 µg/mL	+/- 112.6561
4	Bromomethane (methyl bromide)	74-83-9	101604	99%	2,006.4 µg/mL	+/- 112.8262
5	Chloroethane (ethyl chloride)	75-00-3	107-401039114-1	99%	2,001.9 µg/mL	+/- 112.5897
6	Trichlorofluoromethane (CFC-11)	75-69-4	MKCL8411	99%	2,000.8 µg/mL	+/- 112.6473

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

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

## Quality Confirmation Test

**Column:**

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

**Carrier Gas:**

helium-constant flow 2.0 mL/min.

**Temp. Program:**

40°C (hold 6 min.) to 100°C  
@ 6°C/min.

**Inj. Temp:**

200°C

**Det. Temp:**

250°C

**Det. Type:**

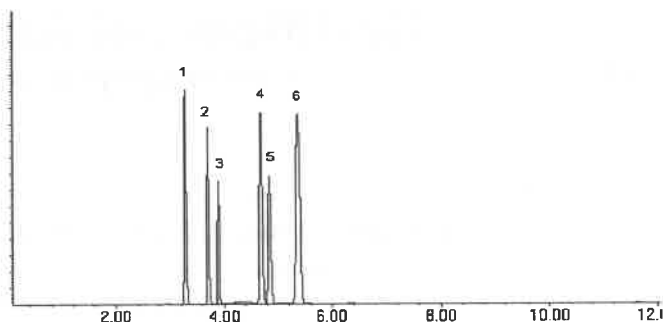
MSD

**Split Vent:**

Split ratio 10:1

**Inj. Vol**

1µl



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

  
Tom Suckar - Mix Technician

Date Mixed: 03-Feb-2023

Balance Serial # B707717271

  
Christie Mills - Operations Tech II - ARM QC

Date Passed: 07-Feb-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.





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

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

**Catalog No. :** 30091 **Lot No.:** A0209905

**Description :** L/C VOA Internal Standard Mix  
L/C Internal Std 2500µg/mL, P&T Methanol, 1mL/ampul

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

**Expiration Date :** March 31, 2029 **Storage:** 0°C or colder  
**Ship:** Ambient

### CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	1,4-Difluorobenzene	540-36-3	MKCS8657	99%	2,508.0 µg/mL	+/- 142.0596
2	Chlorobenzene-d5	3114-55-4	PR-31132	99%	2,512.0 µg/mL	+/- 142.2862
3	1,4-Dichlorobenzene-d4	3855-82-1	PR-30447	99%	2,512.0 µg/mL	+/- 142.2862

\* 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:**

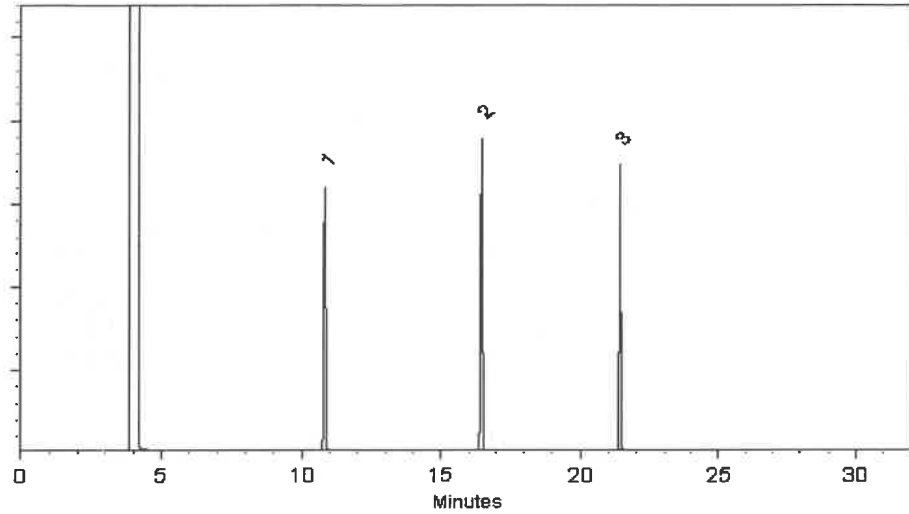
FID

**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.

Ethan Winiarski - Operations Tech I

Date Mixed: 05-Apr-2024

Balance Serial # 1127510105

Dillan Murphy - Operations Technician I

Date Passed: 08-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.



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Dec 12/17/24  
30 v. 4  
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# Certificate of Analysis

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✓ 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:**

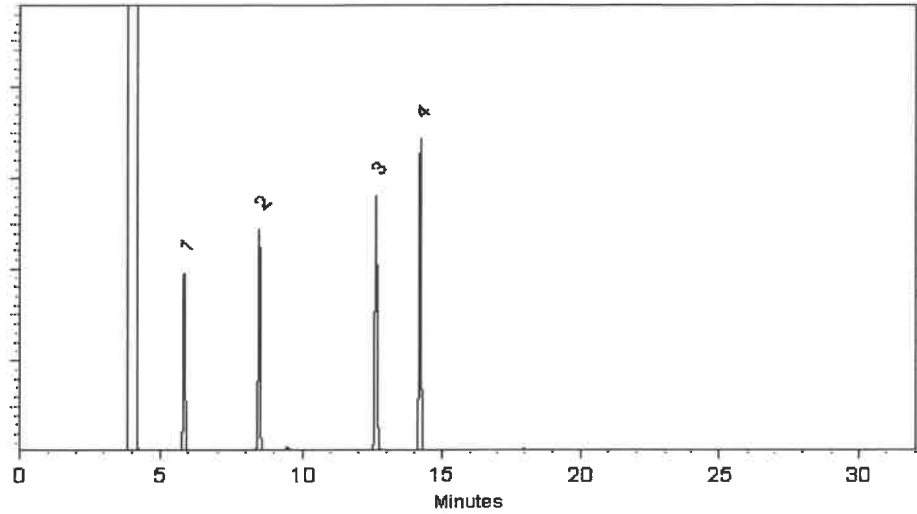
FID

**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:

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- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

### Certified Uncertainty Value Notes:

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

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

### Manufacturing Notes:

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

### Handling Notes:

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## CERTIFIED REFERENCE MATERIAL

# Certificate of Analysis

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

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

**Catalog No. :** 30624 **Lot No.:** A0211457

**Description :** SOM 01.1 VOA DMC Non-Ketones Standard

SOM 01.1 VOA DMC Non-Ketones Standard 500µg/mL, Methanol-OD, 1mL/ampul

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

**Expiration Date :** May 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	Vinyl Chloride-d3	6745-35-3	PR-26294	99%	515.3 µg/mL	+/- 42.5161
2	Chloroethane-d5	19199-91-8	PR-19060	99%	498.2 µg/mL	+/- 40.0866
3	1,1-Dichloroethylene-d2	22280-73-5	PR-21050	99%	503.0 µg/mL	+/- 28.2630
4	Chloroform-d	865-49-6	A0219685001	99%	503.0 µg/mL	+/- 28.2630
5	1,2-Dichloroethane-d4	17060-07-0	PR-33313	99%	503.0 µg/mL	+/- 28.2630
6	Benzene-d6	1076-43-3	PR-33510	99%	501.0 µg/mL	+/- 28.1506
7	1,2-Dichloropropane-d6	93952-08-0	Z-322	99%	503.0 µg/mL	+/- 28.2630
8	1,3-Dichloropropene-d4 (cis/ trans mixture) 58% cis Isomer; 42% trans Isomer	202656-23-3	Z-181	99%	504.0 µg/mL	+/- 28.3192
9	Toluene-d8	2037-26-5	PR-34141	99%	503.0 µg/mL	+/- 28.2630
10	1,1,2,2-Tetrachloroethane-d2	33685-54-0	F465P1	99%	502.0 µg/mL	+/- 28.2068
11	1,2-Dichlorobenzene-d4	2199-69-1	PR-32597	99%	503.0 µg/mL	+/- 28.2630

**Solvent:** Methanol-OD  
**CAS #** 1455-13-6  
**Purity** 99%

## Quality Confirmation Test

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

**Carrier Gas:**  
helium-constant pressure 30 psi

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

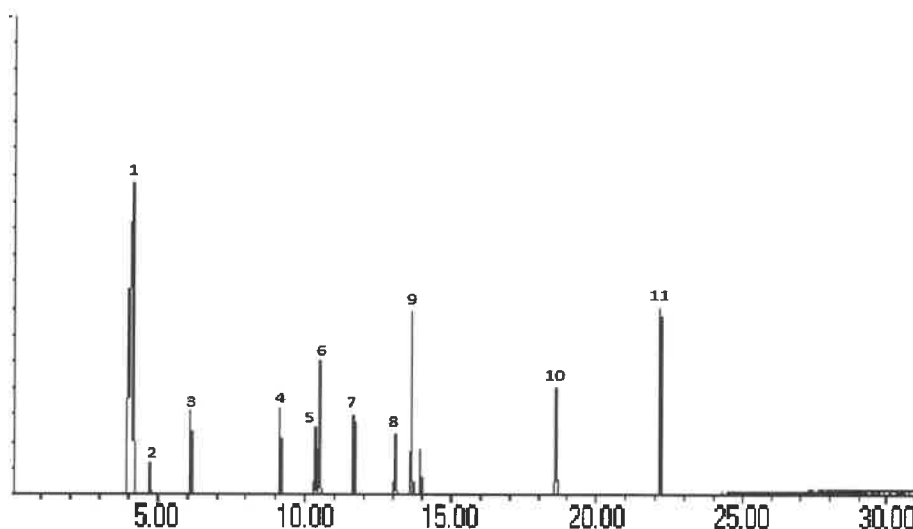
**Inj. Temp:**  
200°C

**Det. Temp:**  
250°C

**Det. Type:**  
MSD

**Split Vent:**  
25.0 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 Suckal - Mix Technician

**Date Mixed:** 15-May-2024 **Balance Serial #** 1128342314

  
Dillan Murphy - Operations Technician I

**Date Passed:** 17-May-2024

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

## General Certified Reference Material Notes

### Expiration Notes:

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

### Purity Notes:

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

### Certified Uncertainty Value Notes:

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

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

### Manufacturing Notes:

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

### Handling Notes:

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

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

**Catalog No. :** 30625 **Lot No.:** A0216280

**Description :** OLC 3.2 VOA Deuterated Monitoring Compounds

OLC 3.2 VOA Ketone Deuterated Monitoring Compounds 500µg/mL, Deuterium Oxide, 1mL/ampul

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

**Expiration Date :** March 31, 2026 **Storage:** 10°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	2-Butanone-d5	24313-50-6	M-276	99%	504.0 µg/mL	+/- 17.5357
2	2-Hexanone-d5	4840-82-8	GH-242	99%	502.0 µg/mL	+/- 17.4661

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

**Solvent:** Deuterium oxide  
**CAS #** 7789-20-0  
**Purity** 99%

# Quality Confirmation Test

**Column:**

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

**Carrier Gas:**

hydrogen-constant pressure 11.0 psi.

**Temp. Program:**

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

**Inj. Temp:**

200°C

**Det. Temp:**

250°C

**Det. Type:**

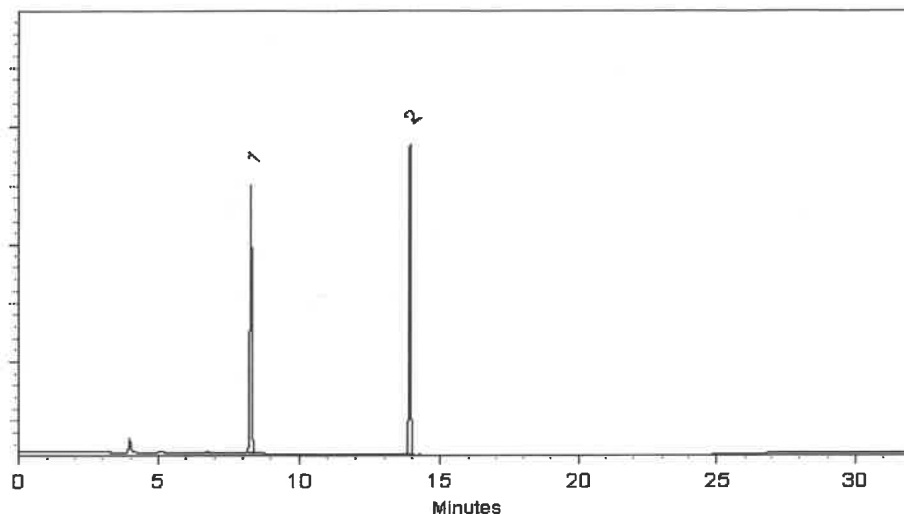
FID

**Split Vent:**

40 ml/min

**Inj. Vol**

1µl



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Richard Zimmerman - Operations Tech I

Date Mixed: 10-Sep-2024

Balance Serial # B251644995

  
Dillan Murphy - Operations Technician I

Date Passed: 12-Sep-2024

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

## General Certified Reference Material Notes

### Expiration Notes:

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

### Purity Notes:

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

### Certified Uncertainty Value Notes:

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

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

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

### Manufacturing Notes:

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

### Handling Notes:

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# Certificate of Analysis

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

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**Catalog No. :** 30625 **Lot No.:** A0216280

**Description :** OLC 3.2 VOA Deuterated Monitoring Compounds

OLC 3.2 VOA Ketone Deuterated Monitoring Compounds 500µg/mL, Deuterium Oxide, 1mL/ampul

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

**Expiration Date :** March 31, 2026 **Storage:** 10°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	2-Butanone-d5	24313-50-6	M-276	99%	504.0 µg/mL	+/- 17.5357
2	2-Hexanone-d5	4840-82-8	GH-242	99%	502.0 µg/mL	+/- 17.4661

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

**Solvent:** Deuterium oxide  
**CAS #** 7789-20-0  
**Purity** 99%

# Quality Confirmation Test

**Column:**

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

**Carrier Gas:**

hydrogen-constant pressure 11.0 psi.

**Temp. Program:**

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

**Inj. Temp:**

200°C

**Det. Temp:**

250°C

**Det. Type:**

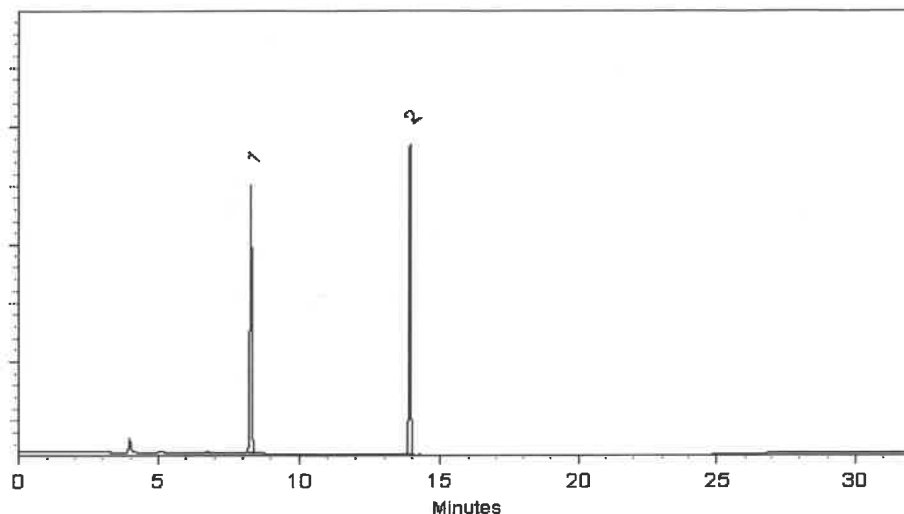
FID

**Split Vent:**

40 ml/min

**Inj. Vol**

1µl



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Richard Zimmerman - Operations Tech I

Date Mixed: 10-Sep-2024

Balance Serial # B251644995

  
Dillan Murphy - Operations Technician I

Date Passed: 12-Sep-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.
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Rec 12/17/24  
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30 ml  
**Certificate of Analysis**  
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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:**

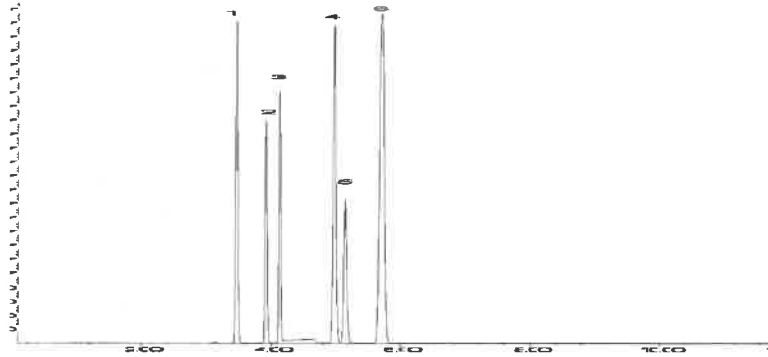
MSD

**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:

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- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

### Certified Uncertainty Value Notes:

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

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

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

### Manufacturing Notes:

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### Handling Notes:

- 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.



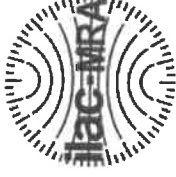
110 Benner Circle  
Bellefonte, PA 16823-8812  
Tel: 1-814-353-1300  
Fax: 1-814-353-1309

[www.restek.com](http://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. :** 30625 **Lot No.:** A0219189

**Description :** OLC 3.2 VOA Deuterated Monitoring Compounds

OLC 3.2 VOA Ketone Deuterated Monitoring Compounds 500µg/mL,  
Deuterium Oxide, 1mL/ampul

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

**Expiration Date :** May 31, 2026 **Storage:** 10°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	2-Butanone-d5	24313-50-6	HJ-279	99%	504.0 µg/mL	+/- 17.5357
2	2-Hexanone-d5	4840-82-8	I-500	99%	504.0 µg/mL	+/- 17.5357

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

**Solvent:** Deuterium oxide  
**CAS #** 7789-20-0  
**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:**

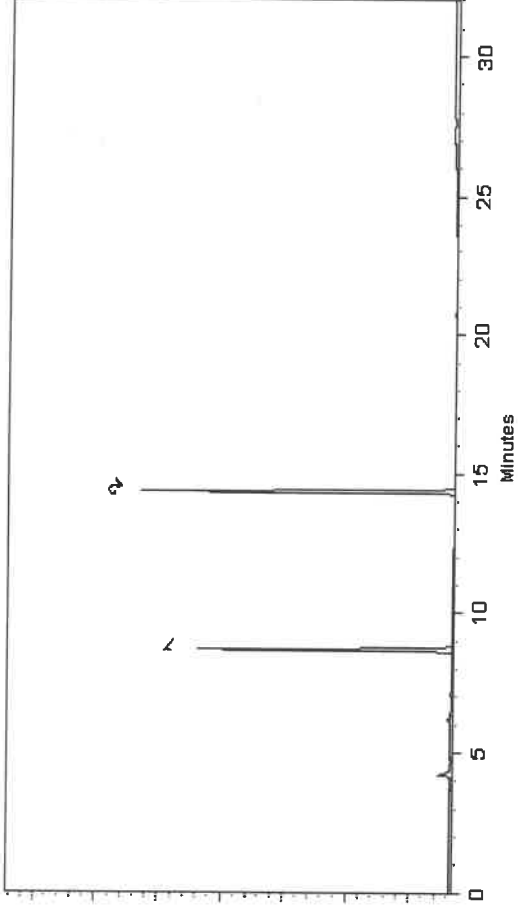
FID

**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.

*W O S*  
Aaron Enyart - Operations Tech I

Date Mixed: 15-Nov-2024 Balance Serial # B345965662

*Dylan Murphy*  
Dylan Murphy - Operations Technician I

Date Passed: 19-Nov-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.

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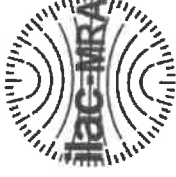
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**CERTIFIED REFERENCE MATERIAL**

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*chromatographic plus*



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

**Expiration Date :** May 31, 2026 **Storage:** 10°C or colder

**Ship:** Ambient

### CERTIFIED VALUES

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**Solvent:** Deuterium oxide  
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Rtx-502.2 (cat.#10910)

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hydrogen-constant pressure 11.0 psi.

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

**Inj. Temp:**

200°C

**Det. Temp:**

250°C

**Det. Type:**

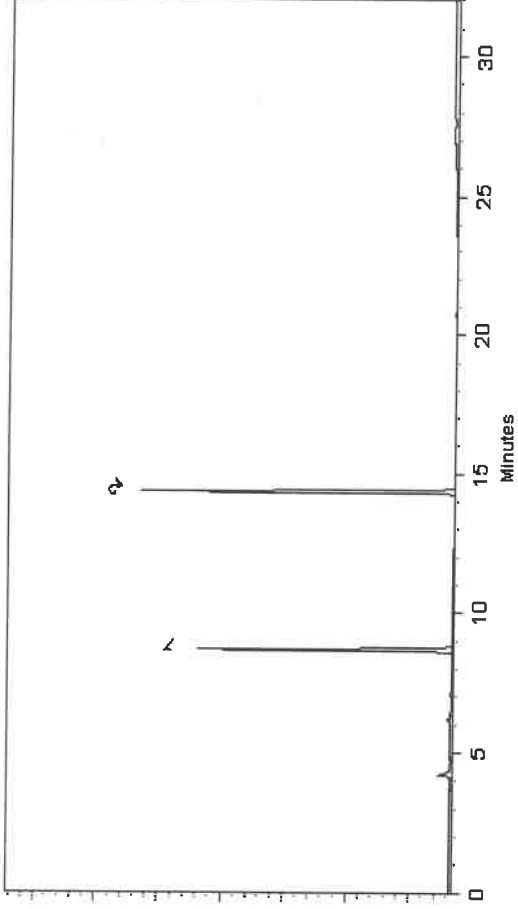
FID

**Split Vent:**

40 ml/min

**Inj. Vol**

1µl



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

*Aaron*  
**Aaron Enyart - Operations Tech I**

**Date Mixed:** 15-Nov-2024      **Balance Serial #** B345965662

*Dylan*  
**Dylan Murphy - Operations Technician I**

**Date Passed:** 19-Nov-2024

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

## General Certified Reference Material Notes

### Expiration Notes:

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

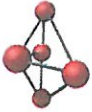
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

### Manufacturing Notes:

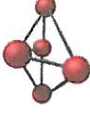
- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

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Certified Reference Material CRM



CERTIFIED WEIGHT REPORT

Part Number: 31491  
Lot Number: 063022  
Description: 1,2,4-Trimethylbenzene

Solvent(s): Lot#  
Methanol EC592-US

Expiration Date: 063027  
Recommended Storage: Refrigerate (4 °C)  
Nominal Concentration (µg/mL): 2000  
NIST Test ID#: 6UTB

Weight(s) shown below were combined and diluted to (mL): 50.0

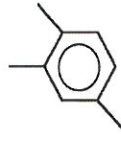
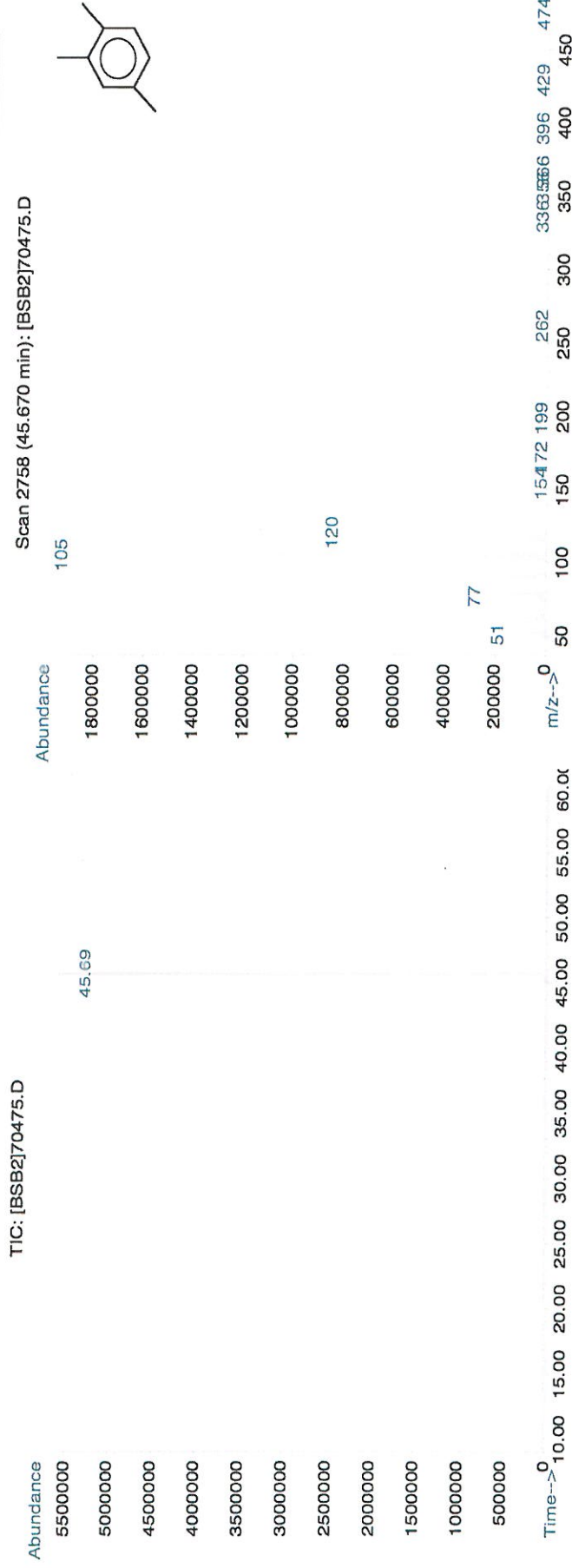
5E-05 Balance Uncertainty  
0.001 Flask Uncertainty

Formulated By:	Gabriel Holland	063022	DATE
Reviewed By:	Pedro L. Rentas	063022	DATE

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty	Target Weight(g)	Actual Weight(g)	Conc (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	CAS#	OSHA PEL (TWA)	LD50
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1. 1,2,4-Trimethylbenzene 475 WXC9778V 2000 98.8 0.2 0.10129 0.10187 2011.5 8.4 95-63-6 N/A orl-rat 5g/kg

Method GC6MSD-1: Column: Vocol (60m X 0.25mm ID X 1.5µm film thickness). Temp. 1 = 35°C (10min.), Temp. 2 = 200°C (8.75 min.), Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. Analysis performed by 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).

Methanol  
ULTRA RESI-ANALYZED  
For Purge and Trap Analysis



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

## Certificate of Analysis

Test	Specification	Result
Assay (CH <sub>3</sub> OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %
Residue after Evaporation	≤ 1.0 ppm	0.2 ppm
Titration Acid (μeq/g)	≤ 0.3	0.2
Titration Base (μeq/g)	≤ 0.10	0.03
Water (by KF, coulometric)	≤ 0.08 %	< 0.01 %
Volatile Organic Trace Analysis - Below EPA 8260B CRQL	Conforms	Conforms

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

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

Jamie Ethier  
Vice President Global Quality