

## Prep Standard - Chemical Standard Summary

Order ID : Q1502

Test : VOCMS Group1

Prepbatch ID :

Sequence ID/Qc Batch ID: VX031125,vx031925,

### Standard ID :

VP131746,VP131767,VP132035,VP132096,VP133036,VP133174,VP133178,VP133244,VP133245,VP133246,VP1332 51,VP133342,VP133390,VP133391,VP133392,

### **Chemical ID :**

V13391,V13457,V13460,V13465,V13466,V13706,V14154,V14175,V14176,V14289,V14433,V14439,V14521,V14522,V14580,V14613,V14614,V14624,V14630,V14631,V14632,V14633,V14722,V14723,V14724,V14744,V14754,V14809,V14814,V14842,V14872,V14872,V14873,V14875,V14883,V14885,V14896,V14897,V14898,V14899,W3112,



Recipe ID 247	NAME 8260 Internal Standard, 250PPM	<u>NO.</u> VP131746	Prep Date 11/22/2024	Expiration Date 05/18/2025	<u>Prepared</u> <u>By</u> Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 11/23/2024
FROM	0.50000ml of V14289 + 49.50000ml	I of V14154 =	Final Quanti	ty: 50.000 ml	-			

<u>Recipe</u> <u>ID</u> 218	<u>NAME</u> BFB, 25PPM	<u>NO.</u> VP131767	<u>Prep Date</u> 11/22/2024	Expiration Date 05/18/2025	<u>Prepared</u> <u>By</u> Semsettin Yesilyurt	<u>ScaleID</u> None	PipettelD None	Supervised By Mahesh Dadoda 11/27/2024
FROM	0.50000ml of V13391 + 49.50000ml o	of V14154 =	= Final Quanti	ty: 50.000 ml				



Recipe ID 1810	NAME 8260 Working Std(2-CVE)-800ppm	<u>NO.</u> VP132035	Prep Date 12/10/2024	Expiration Date 06/10/2025	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 12/12/2024
FROM	1.00000ml of V14630 + 1.00000ml of Quantity: 50.000 ml	F V14631 + -	1.00000ml of Y	V14632 + 1.000	000ml of V1463	3 + 46.00000ml	of V14614 =	Final

<u>Recipe</u> <u>ID</u>	NAME	<u>NO.</u>	Prep Date		<u>Prepared</u> <u>By</u>	ScaleID	PipettelD	<u>Supervised By</u> Mahesh Dadoda	
719	8260 Working STD (BCM)-First source, 400PPM	<u>VP132096</u>	12/12/2024	06/10/2025	Semsettin Yesilyurt	None	None	12/19/2024	
<u>FROM</u>	1.00000ml of V13465 + 1.00000ml of Quantity: 25.000 ml	V13466 + 1	1.50000ml of <sup>1</sup>	V13457 + 1.50(	000ml of V1346	0 + 20.00000ml	of V14614 =	Final	



Recipe ID 51	NAME 8260 Working STD (Acrolein) -first source, 800PPM	<u>NO.</u> VP133036	Prep Date 02/14/2025		Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 02/18/2025
FROM	1.00000ml of V14872 + 1.00000ml o Quantity: 25.000 ml	f V14873 + 1	1.00000ml of '	V14874 + 1.000	000ml of V1487	5 + 21.00000ml	of V14624 =	Final

Recipe		NO	Bron Doto	Expiration	Prepared	SeelalD	DimettelD	Supervised By
ID	NAME	<u>NO.</u>	Prep Date	<u>Date</u>	<u>By</u>	<u>ScaleID</u>	PipetteID	Mahesh Dadoda
617	8260 Surrogate, 400PPM	<u>VP133174</u>	02/27/2025	08/27/2025	Semsettin	None	None	
					Yesilyurt			03/04/2025
FROM	0.40000ml of V13706 + 24.60000ml	of V14613 =	= Final Quanti	ty: 25.000 ml				
L								



Recipe ID 257	NAME 8260 Calibration Working STD Mix-First source, 160PPM	<u>NO.</u> VP133178	Prep Date 02/27/2025	Expiration Date 03/31/2025	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/04/2025
FROM	0.40000ml of V14842 + 1.00000ml o 1.00000ml of V14521 + 1.00000ml o 1.00000ml of V14809 + 1.00000ml o Quantity: 25.000 ml	f V14522 +	1.00000ml of	V14724 + 1.000	000ml of V1474	4 + 1.00000ml o	of V14754 +	Final

<u>Recipe</u> <u>ID</u> 589	NAME BFB TUNE CHECK	<u>NO.</u> VP133244	Prep Date 03/11/2025	Expiration Date 03/12/2025	Prepared By John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Romaben Patel 03/11/2025
FROM	39.98400ml of W3112 + 0.01600ml o	l f VP131767	I ′ = Final Qua	ntity: 40.000 m	1			03/11/2023



Recipe ID 620	NAME 50 PPB CCC, 8260-Water	<u>NO.</u> VP133245	Prep Date 03/11/2025	Prepared By John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Romaben Patel 03/11/2025
FROM	39.94450ml of W3112 + 0.00500ml o VP132035 + 0.01250ml of VP133036					1250ml of	

<u>Recipe</u> <u>ID</u> 620	NAME 50 PPB CCC, 8260-Water	<u>NO.</u> VP133246	Prep Date 03/11/2025	Expiration Date 03/12/2025	Prepared By John Carlone	<u>ScaleID</u> None	PipettelD None	Supervised By Romaben Patel 03/11/2025
FROM	39.94450ml of W3112 + 0.00500ml o VP132035 + 0.01250ml of VP133036						1250ml of	



<u>Recipe</u> <u>ID</u> 466	NAME 624 Internal Standard and Surrogate Mix, 150PPM	<u>NO.</u> VP133251	Prep Date 03/12/2025	Expiration Date 07/02/2025	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipettelD None	Supervised By Mahesh Dadoda 03/21/2025
FROM	0.15000ml of V14580 + 0.15000ml of	f V14885 + 2	24.75000ml oʻ	f V14624  = Fin	al Quantity: 25.	000 ml		
Recipe				Expiration	Prepared			Supervised By
<u>ID</u> 51	NAME 8260 Working STD (Acrolein) -first source, 800PPM	<u>NO.</u> VP133342	Prep Date 03/18/2025	<u>Date</u> 04/17/2025	<u>By</u> Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Mahesh Dadoda 03/20/2025



03/21/2025

# VOC STANDARD PREPARATION LOG

Recipe ID 589 FROM	<b>NAME</b> BFB TUNE CHECK 39.98400ml of W3112 + 0.01600ml o	<u>NO.</u> <u>VP133390</u> f VP131767	Prep Date 03/19/2025 ' = Final Qua	Expiration Date 03/20/2025	Prepared By John Carlone	<u>ScaleID</u> None	PipettelD None	Supervised By Mahesh Dadoda 03/21/2025
Recipe ID 645	<u>NAME</u> 20 РРВ ССС, 624	<u>NO.</u> VP133391	Prep Date 03/19/2025	Expiration Date 03/20/2025	Prepared By John Carlone	<u>ScaleID</u> None	PipettelD None	<u>Supervised By</u> Mahesh Dadoda

FROM

39.97000ml of W3112 + 0.00500ml of VP132035 + 0.00500ml of VP133178 + 0.00500ml of VP133342 + 0.00800ml of VP133251 = Final Quantity: 40.000 ml



Recipe ID 645	NAME 20 PPB CCC, 624	<u>NO.</u> VP133392	Prep Date 03/19/2025	Expiration Date 03/20/2025	Prepared By John Carlone	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 03/21/2025
FROM	39.97000ml of W3112 + 0.00500ml c VP133251 = Final Quantity: 40.000		+ 0.00500ml	of VP133178 +	- 0.00500ml of \	/P133342 + 0.0	0800ml of	



# CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30067 / BFB tuneing solution	A0191805	11/22/2025	11/22/2024 / SAM	01/13/2023 / SAM	V13391
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul	A0193071	06/12/2025	12/12/2024 / SAM	01/27/2023 / SAM	V13457
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul	A0193071	06/12/2025	12/12/2024 / SAM	01/27/2023 / SAM	V13460
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul	A0193071	06/12/2025	12/12/2024 / SAM	01/27/2023 / SAM	V13465
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul	A0193071	06/12/2025	12/12/2024 / SAM	01/27/2023 / SAM	V13466
			Expiration	Date Opened /	Received Date /	Chemtech
Supplier	ItemCode / ItemName	Lot #	Date	Opened By	Received Bate /	Lot #



# CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	22L0562016	05/18/2025	11/18/2024 / pedro	02/06/2024 / SAM	V14154
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95317 / Universal VOA Mega Mix (Min order = 5)	021624	07/10/2025	01/10/2025 / SAM	02/20/2024 / SAM	V14175
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95317 / Universal VOA Mega Mix (Min order = 5)	021624	07/10/2025	01/10/2025 / SAM	02/20/2024 / SAM	V14176

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555581 / Custom Standard, 8260 Internal Std [CS 5179-1]	A0210184	11/22/2025	11/22/2024 / SAM	04/15/2024 / SAM	V14289

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30489 / VOA Mix, 8260B Acetates Mix, P&TM, 1mL	A0209618	07/10/2025	01/10/2025 / SAM	08/15/2024 / SAM	V14433

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30489 / VOA Mix, 8260B Acetates Mix, P&TM, 1mL	A0209618	07/10/2025	01/10/2025 / SAM	08/15/2024 / SAM	V14439



## CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95319 / Revised Additions Mix (Min = 5)	091724	07/10/2025	01/10/2025 / SAM	09/18/2024 / SAM	V14521
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95319 / Revised Additions Mix (Min = 5)	091724	07/10/2025	01/10/2025 / SAM	09/18/2024 / SAM	V14522
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555584 / Custom Standard, CLP VOA SurrogateStd [CS 5179-4]	A0219012	01/02/2026	01/02/2025 / SAM	11/18/2024 / SAM	V14580
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	22L0562016	08/27/2025	02/27/2025 / SAM	11/26/2024 / SAM	V14613
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	22L0562016	06/10/2025	12/10/2024 / SAM	11/26/2024 / SAM	V14614
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	2310762004	07/13/2025	01/13/2025 / SAM	11/26/2024 / SAM	V14624



## CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ 2-Chloroethyl vinyl ether	120524	06/10/2025	12/10/2024 / SAM	12/06/2024 / SAM	V14630
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ 2-Chloroethyl vinyl ether	120524	06/10/2025	12/10/2024 / SAM	12/06/2024 / SAM	V14631
			Expiration	Date Opened /	Received Date /	Chemtech
Supplier	ItemCode / ItemName	Lot #	Date	Opened By	Received By	Lot #
Absolute Standards, Inc.	/ 2-Chloroethyl vinyl ether	120524	06/10/2025	12/10/2024 / SAM	12/06/2024 / SAM	V14632
Supplier	ItemCode / ItemName	Lot #	Expiration	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ 2-Chloroethyl vinyl ether	120524	06/10/2025	12/10/2024 / SAM	12/06/2024 / SAM	V14633
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #

Supplier	ItemCode / ItemName	LOT #	Date	Opened By	Received By	Lot #
Restek	30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml	A02110618	07/10/2025	01/10/2025 / SAM	12/17/2024 / SAM	V14722

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml	A02110618	07/10/2025	01/10/2025 / SAM	12/17/2024 / SAM	V14723



# 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	07/10/2025	01/10/2025 / SAM	12/17/2024 / SAM	V14724
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30042 / VOA Mix,500 series method 502.2 Calibration Std #1 gases, 2000uq/ml, PTM, 1ml	A0216826	08/27/2025	02/27/2025 / SAM	12/17/2024 / SAM	V14744
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30042 / VOA Mix,500 series method 502.2 Calibration Std #1 gases, 2000uq/ml, PTM, 1ml	A0216826	05/31/2031	01/10/2025 / SAM	12/17/2024 / SAM	V14754
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555408 / Custom Standard, Vinyl Acetate Standard w/ Grav [CS 5066-6] TWO SEPARATE LOTS	A0220471	07/10/2025	01/10/2025 / SAM	01/08/2025 / SAM	V14809
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555408 / Custom Standard, Vinyl Acetate Standard w/ Grav [CS 5066-6] TWO SEPARATE LOTS	A0220471	07/10/2025	01/10/2025 / SAM	01/08/2025 / SAM	V14814
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
		A0217535	08/27/2025	02/27/2025 /	01/21/2025 /	



# CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	021325	03/13/2025	02/14/2025 / SAM	02/14/2025 / SAM	V14872
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	021325	03/13/2025	02/14/2025 / SAM	02/14/2025 / SAM	V14873
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	021325	03/13/2025	02/14/2025 / SAM	02/14/2025 / SAM	V14874

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	22L0562016	10/25/2025	02/19/2025 / Jaswal	04/22/2024 / Jaswal	V14883

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555583 / Custom Standard, CLP VOA Internal Std [CS 5179-3]	A0223136	03/12/2026	03/12/2025 / SAM	03/12/2025 / SAM	V14885



## CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	031725	04/17/2025	03/18/2025 / SAM	03/18/2025 / SAM	V14896
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	031725	04/17/2025	03/18/2025 / SAM	03/18/2025 / SAM	V14897
Supplier	ItemCode / ItemName	Lot #	Expiration	Date Opened /	Received Date /	Chemtech

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

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

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

Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis





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

# Certificate of Analysis

Test	Specification	Result
Assay (CH3OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %
Residue after Evaporation	≤ 1.0 ppm	0.5 ppm
Titrable Acid (µeq/g)	≤ 0.3	0.2
Titrablė Base (µeq/g)	≤ <b>0.10</b>	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

fermetrikel.

Ken Koehnlein Sr. Manager, Quality Assurance Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis



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

# **Certificate of Analysis**

Test	Specification	Result
Assay (CH3OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %
Residue after Evaporation	≤ 1.0 ppm	0.2 ppm
Titrable Acid (µeq/g)	≤ 0.3	0.2
Titrable Base (µeq/g)	≤ 0.10	0.03
Water (by KF, coulometric)	≤ 0.08 %	< 0.01 %
Volatile Organic Trace Analysis – Below EPA 8260B CRQL	Conforms	Conforms

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

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

James Techie

Jamie Ethier Vice President Global Quality Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis



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

# **Certificate of Analysis**

Test	Specification	Result
Assay (CH3OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %
Residue after Evaporation	≤ 1.0 ppm	0.2 ppm
Titrable Acid (µeq/g)	≤ 0.3	0.2
Titrable Base (µeq/g)	≤ 0.10	0.03
Water (by KF, coulometric)	≤ 0.08 %	< 0.01 %
Volatile Organic Trace Analysis – Below EPA 8260B CRQL	Conforms	Conforms

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

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

James Techie

Jamie Ethier Vice President Global Quality

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com				J	Sertified I	Certified Reference Material CRM テッ・イ	Material	CRM				ANAB I: AR-153 https://Ab	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	ber: ber: tion:	91980 021325 Acrolein			2	Vater 07	2 14 Lott	t x	Formulated By:	ind By:	Anthony Markoney	03	1325 DATE
Expiration Date: Recommended Storage: Nominal Concentration (µg/mL):	ate: age: nL):	031325 Refrigerate (4 °C) 5000	(4 °C)	a L		トロナフ	T co	1.0		Je .	4 Herto	20	325
NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (mL): Lot <b>Compound</b> Rw# Number	ID#: ned and dilu RM#	6U1B Jted to (mL): Lot Number	10.0 Nominal Conc (ug/mL)		<ul> <li>5E-05 Balance Uncertainty</li> <li>0.001 Flask Uncertainty</li> <li>Purity Uncertainty</li> <li>(%) Purity</li> </ul>	ny Target Weight(g)	Actual Weight(g)	Actual Conc (µg/ml.	Expanded By Expanded Actual Uncertainty ( Conc (ug/mt.) (+/-) (ug/mt.)	ଳା	<ul> <li>Pedro L. Herntas</li> <li>SDS information</li> <li>(Solvent Safety Info. On Attached pg.)</li> <li>CAS# OSHA PEL (TWA) LDE</li> </ul>		DATE
1.         5         103755V10F         5000         97         0.5         0.05166         0.05178         5011.8         52.6         107-02-8         0.1 ppm         c           Method: GC0NSD-1. Detector: Mass Selective Detector (Sean mode). Columni Vocol (60m X 0.25mm ID X 1.5mm flln thickness). Over Profile: Temp. 1 = 35°C (Time 1 = 10min). Temp. 2=20°C (Time 2 = 8.75 min)	5 ss Selective De	103755V10F etector (Scan mode	5000 ie). Columni: Voc	97 201 (60m X ()	0.5 1.25mm ID X 1.	0.05166 Sym film thickness	0.05178	5011.8 e: Temp. 1 = 3	52.6 35°C (Time 1 =	107-02-8 10min.), Temp.	0.1 ppm 2=200°C (Time 2 = 8.7	orl-rat 46mg/kg	<u> </u>
Long term storage is not recommended. Please contact our technical department if further information is required. To TIC: IBSB2179005.D	Inded. Please contact our techn TIC: [BSB2]79005.D	ract our technical	department if furt	ther informat	ion is required.	internet in Annapas		Scan	332 (8.927	Scan 232 (8.927 min): [BSB2]79005.D	179005.D	(roots the	
Abundance						Abundance	27	3					
<b>250000</b> <sup>8.93</sup>		1	2			6000	6						
200000		/	0//			50000	6	56	(5				
150000						40000	6						
						30000	6						
100000						2000	<u> </u>						
50000						10000		37					
Time>0 10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00 50.00 55.00	25.00 30.	00 35.00 4	0.00 45.00	50.00	55.00 60.0(	0 <z )(<="" td="" ш=""><td>20 30</td><td>44 40 50 (</td><td>65 75 8 60 70 80</td><td>öo</td><td>5 119 150 150 160 170 100 110 120 130 140 150 160 170</td><td>158 169 0 150 160 170</td><td></td></z>	20 30	44 40 50 (	65 75 8 60 70 80	öo	5 119 150 150 160 170 100 110 120 130 140 150 160 170	158 169 0 150 160 170	
	The certified v Standards are Standards are All Standards, Uncertainty R NIST Technic	<ul> <li>The certified value is the concentration calculated from gravimetric Standards are prepared gravimetrically using balances that are call standards are certified (++) 0.5% of the stated value, unless otherwis All Standards, after topening annule, should be stored with caps dg Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wash</li> </ul>	mtration calcula metrically using 1% of the stated mpule, should be r, B.N. and Kuya S. Government F	ted from gri balances tha value, unles s stored with th, C.E., "Gi Yrinting Offi	avimetric and it are calibrate s otherwise sta o caps tight and utdelines for E- ce, Washingto	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).</li> <li>Standards after openling annule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>All Standards, after openling annule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluation and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	urements unless aceable to NIS late laboratory pressing the Ur	s otherwise st T (see above). conditions. ucertainty of 1	ated. NIST Measure	ement Result,"			

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1 of 1

Part # 91980 Lot # 021325

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ection VIII. EXPOSURE CON	CONTROLS/PERSONAL PROTECT	NO	
recautions for safe handling torage Conditions	Use ventilation Keep away from s	Avoid inhalation of vapour or mist. ources of ignition. No smoking. Prevent the build up of electr dry and well-ventilated place. Containers which are opened m e.	
BONA DNILUANAH .IIV noitoe	AD STORAGE		
igi Precautions Pr Pr	ignition. Vapours accumulate to form exp Prevent further leakage or spillage if safe		
ection VI. ACCIDENTAL REL	RELEASE MEASURES		
uitable extinguishing media rotective equipment for fire lazardous Decomposition product	Wear self contained breathing app	foam, dry chemical or carbon dioxide. varatus for fire fighting if necessary.	
Section V. FIREFIGHTING ME	SARUSAAM		
eneral advice Contact W	Consult a physician. Show this safety dat If inhaled, move person into fresh air. If n Wash with soap and water. Consult a ph	a sheet to the doctor in attendance.Move to safe area. 5 breathing, give artificial respiration. Consult a physician. /sician. at least 15 minutes and consult a physician.	
USAENDED USE: REFERENC USAEM IV. FIRST AID MEASU			
Section III - Composition Components (Specific Chemics Vater	mical Identity; Common المهود))	CAS#: 7732-18-5	(lɕnoiîqo) % 79 <
9302,332 If on skin, we Signal Word:	entilated area n, wash with soap and water ford: DANGER	H315 Causes skin and eye irritatic P280 Use gloves, eye protection/f P305,351,338 If in eyes, remove contacts,	
	GHS Classification in acco	rdance with 29 CFR 1910 (OSHA HCS)	
section II - Hazards Identifica	ification		
A Anufacturer's Name A Address 4.	<b>W II CAL STANDARD DISSOLVED IN W</b> ABSOLUTE STANDARDS INC 44 Rossotto Dr. Hamden CT, 06514	ATER Emergency Telephone USA & CANADA Emergency Telephone International Date Prepared\Pevised	1-362-535-5053 1-352-323-3500 1-362-535-5053
section I Product and Compa	noitsoititnebl ynsqm		
	Safety Data Sheet (SDS)	GHS/OSHB Compliant	
Absolute Standards Inc.		smden, CT 06518-0585 PO Box 5585	7102-183-203-2972 723-203-2922

Melting Point

Specific Gravity (H2O = 1)

100°C

mqq 008 :AWT

Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

F

Eye protection.

Vapor Pressure (mm Hg)

Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS

CAS#: 7732-18-5

Boiling Point

Vater

Eye irritation Causes skin irritation. LD50 Dermal - Guinea pig ΨN ΑN LC50 Inhalation - Rat LD50 Oral - Rat ΑN Section XI. TOXICOLOGICAL INFORMATION Hazardous decomposition products - No data available biove of elensieM ΑN Conditions to avoid ΨN

ΨN Possibility of hazardous reactions Stable under recommended storage conditions. Chemical stability

### Section X. STABILITY AND REACTIVITY

CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR. Appearance and Odor

			Completely miscible	Solubility in Water
AN	(F = etate = 1)	ΨN		
	Evaporation rate			<pre>(t = AIA) (tisned rods)</pre>
2.0		WNI.		

aldiosim vlatalomo? ateW ni vtilidulo2			
	ΑN	(Butyl Acetate = 1)	ΨN
(t = AIA) viened rodsv		Evaporation rate	
	AN		0°C

Section XII. ECOLOGICAL INFORMATION

**NOITAMROANI TROGENART .VIX noitoe2** Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water

Not dangerous goods

(SU) TOA

EC60

09DT

Proper shipping name: Water Not dangerous goods ATAI

## Section XV. REGULATORY INFORMATION

Section XIII. DISPOSAL CONSIDERATIONS

ΨN ΑN

ASARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### Section XVI. Misc. INFORMATION

you have any questions, please call Technical Service at 1-203-281-2917 for assistance. APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Material Safety Data Sheet. If including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/funces. Exposure to this product may have serious adverse health effects. 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, see,) 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 see, and Celobing. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clobing trained in chemical intended and the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clobing

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com				J	Sertified I	Certified Reference Material CRM テッ・イ	Material	CRM				ANAB I: AR-153 https://Ab	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	ber: ber: tion:	91980 021325 Acrolein			2	Vater 07	2 14 Lott	t x	Formulated By:	ind By:	Anthony Markoney	03	1325 DATE
Expiration Date: Recommended Storage: Nominal Concentration (µg/mL):	ate: age: nL):	031325 Refrigerate (4 °C) 5000	(4 °C)	a L E		トロナフ	T co	1.0		Je .	4 Herto	20	325
NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (mL): Lot <b>Compound</b> Rw# Number	ID#: ned and dilu RM#	6U1B Jted to (mL): Lot Number	10.0 Nominal Conc (ug/mL)		<ul> <li>5E-05 Balance Uncertainty</li> <li>0.001 Flask Uncertainty</li> <li>Purity Uncertainty</li> <li>(%) Purity</li> </ul>	ny Target Weight(g)	Actual Weight(g)	Actual Conc (µg/ml.	Expanded By Expanded Actual Uncertainty ( Conc (ug/mt.) (+/-) (ug/mt.)	ଳା	<ul> <li>Pedro L. Herntas</li> <li>SDS information</li> <li>(Solvent Safety Info. On Attached pg.)</li> <li>CAS# OSHA PEL (TWA) LDE</li> </ul>		DATE
1.         5         103755V10F         5000         97         0.5         0.05166         0.05178         5011.8         52.6         107-02-8         0.1 ppm         c           Method: GC0NSD-1. Detector: Mass Selective Detector (Sean mode). Columni Vocol (60m X 0.25mm ID X 1.5mm flln thickness). Over Profile: Temp. 1 = 35°C (Time 1 = 10min). Temp. 2=20°C (Time 2 = 8.75 min)	5 ss Selective De	103755V10F etector (Scan mode	5000 ie). Columni Voc	97 201 (60m X ()	0.5 1.25mm ID X 1.	0.05166 Sym film thickness	0.05178	5011.8 e: Temp. 1 = 3	52.6 35°C (Time 1 =	107-02-8 10min.), Temp.	0.1 ppm 2=200°C (Time 2 = 8.7	orl-rat 46mg/kg	<u> </u>
Long term storage is not recommended. Please contact our technical department if further information is required. To TIC: IBSB2179005.D	Inded. Please contact our techn TIC: [BSB2]79005.D	ract our technical	department if furt	ther informat	ion is required.	internet in Annapas		Scan	332 (8.927	Scan 232 (8.927 min): [BSB2]79005.D	179005.D	(rooter top	
Abundance						Abundance	27	3					
<b>250000</b> <sup>8.93</sup>		1	2			6000	6						
200000		/	0//			50000	6	56	(5				
150000						40000	6						
						30000	6						
100000						2000	<u> </u>						
50000						10000		37					
Time>0 10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00 50.00 55.00	25.00 30.	00 35.00 4	0.00 45.00	50.00	55.00 60.0(	0 <z )(<="" td="" ш=""><td>20 30</td><td>44 40 50 (</td><td>65 75 8 60 70 80</td><td>öo</td><td>5 119 150 150 160 170 100 110 120 130 140 150 160 170</td><td>158 169 0 150 160 170</td><td></td></z>	20 30	44 40 50 (	65 75 8 60 70 80	öo	5 119 150 150 160 170 100 110 120 130 140 150 160 170	158 169 0 150 160 170	
	The certified v Standards are Standards are All Standards, Uncertainty R NIST Technic	<ul> <li>The certified value is the concentration calculated from gravimetric Standards are prepared gravimetrically using balances that are call standards are certified (++) 0.5% of the stated value, unless otherwis All Standards, after topening annule, should be stored with caps dg Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wash</li> </ul>	mtration calcula metrically using 1% of the stated mpule, should be r, B.N. and Kuya S. Government F	ted from gri balances tha value, unles s stored with th, C.E., "Gi Yrinting Offi	avimetric and it are calibrate s otherwise sta o caps tight and utdelines for E- ce, Washingto	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).</li> <li>Standards after openling annule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>All Standards, after openling annule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluation and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	urements unless aceable to NIS late laboratory pressing the Ur	s otherwise st T (see above). conditions. ucertainty of 1	ated. NIST Measure	ement Result,"			

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1 of 1

Part # 91980 Lot # 021325

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ection VIII. EXPOSURE CON	CONTROLS/PERSONAL PROTECT	NO	
recautions for safe handling torage Conditions	Use ventilation Keep away from s	Avoid inhalation of vapour or mist. ources of ignition. No smoking. Prevent the build up of electr dry and well-ventilated place. Containers which are opened m e.	
BONA DNILUANAH .IIV noitoe	AD STORAGE		
igi Precautions Pr Pr	ignition. Vapours accumulate to form exp Prevent further leakage or spillage if safe		
ection VI. ACCIDENTAL REL	RELEASE MEASURES		
uitable extinguishing media rotective equipment for fire lazardous Decomposition product	Wear self contained breathing app	foam, dry chemical or carbon dioxide. varatus for fire fighting if necessary.	
Section V. FIREFIGHTING ME	SARUSAAM		
eneral advice Contact W	Consult a physician. Show this safety dat If inhaled, move person into fresh air. If n Wash with soap and water. Consult a ph	a sheet to the doctor in attendance.Move to safe area. 5 breathing, give artificial respiration. Consult a physician. /sician. at least 15 minutes and consult a physician.	
USAENDED USE: REFERENC USAEM IV. FIRST AID MEASU			
Section III - Composition Components (Specific Chemics Vater	mical Identity; Common المهود))	CAS#: 7732-18-5	(lɕnoiîqo) % 79 <
9302,332 If on skin, we Signal Word:	entilated area n, wash with soap and water ford: DANGER	H315 Causes skin and eye irritatic P280 Use gloves, eye protection/f P305,351,338 If in eyes, remove contacts,	
	GHS Classification in acco	rdance with 29 CFR 1910 (OSHA HCS)	
section II - Hazards Identifica	ification		
A Anufacturer's Name A Address 4.	<b>W II CAL STANDARD DISSOLVED IN W</b> ABSOLUTE STANDARDS INC 44 Rossotto Dr. Hamden CT, 06514	ATER Emergency Telephone USA & CANADA Emergency Telephone International Date Prepared\Pevised	1-362-535-5053 1-352-323-3500 1-362-535-5053
section I Product and Compa	noitsoititnebl ynsqm		
	Safety Data Sheet (SDS)	GHS/OSHB Compliant	
Absolute Standards Inc.		smden, CT 06518-0585 PO Box 5585	7102-183-203-2972 723-203-2922

Melting Point

Specific Gravity (H2O = 1)

100°C

mqq 008 :AWT

Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

F

Eye protection.

Vapor Pressure (mm Hg)

Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS

CAS#: 7732-18-5

Boiling Point

Vater

Eye irritation Causes skin irritation. LD50 Dermal - Guinea pig ΨN ΑN LC50 Inhalation - Rat LD50 Oral - Rat ΑN Section XI. TOXICOLOGICAL INFORMATION Hazardous decomposition products - No data available biove of elensieM ΑN Conditions to avoid ΨN

ΨN Possibility of hazardous reactions Stable under recommended storage conditions. Chemical stability

### Section X. STABILITY AND REACTIVITY

CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR. Appearance and Odor

			Completely miscible	Solubility in Water
AN	(F = etate = 1)	ΨN		
	Evaporation rate			<pre>(t = AIA) (tisned rods)</pre>
2.0		WNI.		

aldiosim vlatalomo? ateW ni vtilidulo2			
	ΑN	(Butyl Acetate = 1)	ΨN
(t = AIA) viened rodsv		Evaporation rate	
	AN		0°C

Section XII. ECOLOGICAL INFORMATION

**NOITAMROANI TROGENART .VIX noitoe2** Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water

Not dangerous goods

(SU) TOA

EC60

09DT

Proper shipping name: Water Not dangerous goods ATAI

## Section XV. REGULATORY INFORMATION

Section XIII. DISPOSAL CONSIDERATIONS

ΨN ΑN

ASARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### Section XVI. Misc. INFORMATION

you have any questions, please call Technical Service at 1-203-281-2917 for assistance. APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Material Safety Data Sheet. If including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/funces. Exposure to this product may have serious adverse health effects. 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, see,) 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 see, and Celobing. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clobing trained in chemical intended and the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clobing

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com				G	Sertified I	Certified Reference Material CRM テッ・イ	Material	CRM				ANAB I: AR-153 https://Ab	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	ber: ber: tion:	91980 021325 Acrolein			2	Vater 07	2 14 Lott	t x	Formulated By:	ind By:	Anthony Markoney	03	1325 DATE
Expiration Date: Recommended Storage: Nominal Concentration (µg/mL):	ate: age: nL):	031325 Refrigerate (4 °C) 5000	(4 °C)	a L E		トロナフ	T co	1.0		Je .	4 Herto	20	325
NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (mL): Lot <b>Compound</b> Rw# Number	ID#: ned and dilu RM#	6U1B Jted to (mL): Lot Number	10.0 Nominal Conc (ug/mL)		<ul> <li>5E-05 Balance Uncertainty</li> <li>0.001 Flask Uncertainty</li> <li>Purity Uncertainty</li> <li>(%) Purity</li> </ul>	ny Target Weight(g)	Actual Weight(g)	Actual Conc (µg/ml.	Expanded By Expanded Actual Uncertainty ( Conc (ug/mt.) (+/-) (ug/mt.)	ଳା	<ul> <li>Pedro L. Herntas</li> <li>SDS information</li> <li>(Solvent Safety Info. On Attached pg.)</li> <li>CAS# OSHA PEL (TWA) LDE</li> </ul>		DATE
1.         5         103755V10F         5000         97         0.5         0.05166         0.05178         5011.8         52.6         107-02-8         0.1 ppm         c           Method: GC0NSD-1. Detector: Mass Selective Detector (Sean mode). Columni Vocol (60m X 0.25mm ID X 1.5mm flln thickness). Over Profile: Temp. 1 = 35°C (Time 1 = 10min). Temp. 2=20°C (Time 2 = 8.75 min)	5 ss Selective De	103755V10F etector (Scan mode	5000 ie). Columni: Voc	97 201 (60m X ()	0.5 1.25mm ID X 1.	0.05166 Sym film thickness	0.05178	5011.8 e: Temp. 1 = 3	52.6 35°C (Time 1 =	107-02-8 10min.), Temp.	0.1 ppm 2=200°C (Time 2 = 8.7	orl-rat 46mg/kg	<u> </u>
Long term storage is not recommended. Please contact our technical department if further information is required. To TIC: IBSB2179005.D	Inded. Please contact our techn TIC: [BSB2]79005.D	ract our technical	department if furt	ther informat	ion is required.	internet in Annapas		Scan	332 (8.927	Scan 232 (8.927 min): [BSB2]79005.D	179005.D	(rooter top	
Abundance						Abundance	27	3					
<b>250000</b> <sup>8.93</sup>		1	2			6000	6						
200000		/	0//			50000	6	56	(5				
150000						40000	6						
						30000	6						
100000						2000	<u> </u>						
50000						10000		37					
Time>0 10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00 50.00 55.00	25.00 30.	00 35.00 4	0.00 45.00	50.00	55.00 60.0(	0 <z )(<="" td="" ш=""><td>20 30</td><td>44 40 50 (</td><td>65 75 8 60 70 80</td><td>öo</td><td>5 119 150 150 160 170 150 160 170</td><td>158 169 0 150 160 170</td><td></td></z>	20 30	44 40 50 (	65 75 8 60 70 80	öo	5 119 150 150 160 170 150 160 170	158 169 0 150 160 170	
	The certified v Standards are Standards are All Standards, Uncertainty R NIST Technic	<ul> <li>The certified value is the concentration calculated from gravimetric Standards are prepared gravimetrically using balances that are call standards are certified (++) 0.5% of the stated value, unless otherwis All Standards, after topening annule, should be stored with caps dg Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wash</li> </ul>	mtration calcula metrically using 1% of the stated mpule, should be r, B.N. and Kuys S. Government F	ted from gri balances tha value, unles s stored with th, C.E., "Gi Yrinting Offi	avimetric and it are calibrate s otherwise sta o caps tight and uidelines for E- ce, Washingto	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).</li> <li>Standards after openling annule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluation and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	urements unless aceable to NIS late laboratory pressing the Ur	s otherwise st T (see above). conditions. ucertainty of 1	ated. NIST Measure	ement Result,"			

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1 of 1

Part # 91980 Lot # 021325

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ection VIII. EXPOSURE CON	CONTROLS/PERSONAL PROTECT	NO	
recautions for safe handling torage Conditions	Use ventilation Keep away from s	Avoid inhalation of vapour or mist. ources of ignition. No smoking. Prevent the build up of electr dry and well-ventilated place. Containers which are opened m e.	
BONA DNILUANAH .IIV noitoe	AD STORAGE		
igi Precautions Pr Pr	ignition. Vapours accumulate to form exp Prevent further leakage or spillage if safe		
ection VI. ACCIDENTAL REL	RELEASE MEASURES		
uitable extinguishing media rotective equipment for fire lazardous Decomposition product	Wear self contained breathing app	foam, dry chemical or carbon dioxide. varatus for fire fighting if necessary.	
Section V. FIREFIGHTING ME	SARUSAAM		
eneral advice Contact W	Consult a physician. Show this safety dat If inhaled, move person into fresh air. If n Wash with soap and water. Consult a ph	a sheet to the doctor in attendance.Move to safe area. 5 breathing, give artificial respiration. Consult a physician. /sician. at least 15 minutes and consult a physician.	
USAENDED USE: REFERENC USAEM IV. FIRST AID MEASU			
Section III - Composition Components (Specific Chemics Vater	mical Identity; Common المهود))	CAS#: 7732-18-5	(lɕnoiîqo) % 79 <
9302,332 If on skin, we Signal Word:	entilated area n, wash with soap and water ford: DANGER	H315 Causes skin and eye irritatic P280 Use gloves, eye protection/f P305,351,338 If in eyes, remove contacts,	
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A Anufacturer's Name A Address 4.	<b>W II CAL STANDARD DISSOLVED IN W</b> ABSOLUTE STANDARDS INC 44 Rossotto Dr. Hamden CT, 06514	ATER Emergency Telephone USA & CANADA Emergency Telephone International Date Prepared\Pevised	1-362-535-5053 1-352-323-3500 1-362-535-5053
section I Product and Compa	noitsoititnebl ynsqm		
	Safety Data Sheet (SDS)	GHS/OSHB Compliant	
Absolute Standards Inc.		smden, CT 06518-0585 PO Box 5585	7102-183-203-2972 723-203-2922

Melting Point

Specific Gravity (H2O = 1)

100°C

mqq 008 :AWT

Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

F

Eye protection.

Vapor Pressure (mm Hg)

Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS

CAS#: 7732-18-5

Boiling Point

Vater

Eye irritation Causes skin irritation. LD50 Dermal - Guinea pig ΨN ΑN LC50 Inhalation - Rat LD50 Oral - Rat ΑN Section XI. TOXICOLOGICAL INFORMATION Hazardous decomposition products - No data available biove of elensieM ΑN Conditions to avoid ΨN

ΨN Possibility of hazardous reactions Stable under recommended storage conditions. Chemical stability

### Section X. STABILITY AND REACTIVITY

CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR. Appearance and Odor

			Completely miscible	Solubility in Water
AN	(F = etate = 1)	ΨN		
	Evaporation rate			<pre>(t = AIA) (tisned rods)</pre>
2.0		WNI.		

aldiosim vlatalomo? ateW ni vtilidulo2			
	ΑN	(Butyl Acetate = 1)	ΨN
(t = AIA) viened rodsv		Evaporation rate	
	AN		0°C

Section XII. ECOLOGICAL INFORMATION

**NOITAMROANI TROGENART .VIX noitoe2** Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water

Not dangerous goods

(SU) TOA

EC60

09DT

Proper shipping name: Water Not dangerous goods ATAI

## Section XV. REGULATORY INFORMATION

Section XIII. DISPOSAL CONSIDERATIONS

ΨN ΑN

ASARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### Section XVI. Misc. INFORMATION

you have any questions, please call Technical Service at 1-203-281-2917 for assistance. APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Material Safety Data Sheet. If including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/funces. Exposure to this product may have serious adverse health effects. 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, see,) 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 see, and Celobing. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clobing trained in chemical intended and the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clobing

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com				J	Sertified I	Certified Reference Material CRM テッ・イ	Material	CRM				ANAB I: AR-153 https://Ab	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	ber: ber: tion:	91980 021325 Acrolein			2	Vater 07	2 14 Lott	t x	Formulated By:	ind By:	Anthony Markoney	03	1325 DATE
Expiration Date: Recommended Storage: Nominal Concentration (µg/mL):	ate: age: nL):	031325 Refrigerate (4 °C) 5000	(4 °C)	a L E		トロナフ	T co	1.0		Je .	4 Herto	20	325
NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (mL): Lot <b>Compound</b> Rw# Number	ID#: ned and dilu RM#	6U1B Jted to (mL): Lot Number	10.0 Nominal Conc (ug/mL)		<ul> <li>5E-05 Balance Uncertainty</li> <li>0.001 Flask Uncertainty</li> <li>Purity Uncertainty</li> <li>(%) Purity</li> </ul>	ny Target Weight(g)	Actual Weight(g)	Actual Conc (µg/ml.	Expanded By Expanded Actual Uncertainty ( Conc (ug/mt.) (+/-) (ug/mt.)	ଳା	<ul> <li>Pedro L. Herntas</li> <li>SDS information</li> <li>(Solvent Safety Info. On Attached pg.)</li> <li>CAS# OSHA PEL (TWA) LDE</li> </ul>		DATE
1.         5         103755V10F         5000         97         0.5         0.05166         0.05178         5011.8         52.6         107-02-8         0.1 ppm         c           Method: GC0NSD-1. Detector: Mass Selective Detector (Sean mode). Columni Vocol (60m X 0.25mm ID X 1.5mm flln thickness). Over Profile: Temp. 1 = 35°C (Time 1 = 10min). Temp. 2=20°C (Time 2 = 8.75 min)	5 ss Selective De	103755V10F etector (Scan mode	5000 ie). Columni: Voc	97 201 (60m X ()	0.5 1.25mm ID X 1.	0.05166 Sym film thickness	0.05178	5011.8 e: Temp. 1 = 3	52.6 35°C (Time 1 =	107-02-8 10min.), Temp.	0.1 ppm 2=200°C (Time 2 = 8.7	orl-rat 46mg/kg	<u> </u>
Long term storage is not recommended. Please contact our technical department if further information is required. To TIC: IBSB2179005.D	Inded. Please contact our techn TIC: [BSB2]79005.D	ract our technical	department if furt	ther informat	ion is required.	internet in Annapas		Scan	332 (8.927	Scan 232 (8.927 min): [BSB2]79005.D	179005.D	(roots the	
Abundance						Abundance	27	3					
<b>250000</b> <sup>8.93</sup>		1	2			6000	6						
200000		/	0//			50000	6	56	(0				
150000						40000	6						
						30000	6						
100000						2000	<u> </u>						
50000						10000		37					
Time>0 10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00 50.00 55.00	25.00 30.	00 35.00 4	0.00 45.00	50.00	55.00 60.0(	0 <z )(<="" td="" ш=""><td>20 30</td><td>44 40 50 (</td><td>65 75 8 60 70 80</td><td>öo</td><td>5 119 150 150 160 170 150 160 170</td><td>158 169 0 150 160 170</td><td></td></z>	20 30	44 40 50 (	65 75 8 60 70 80	öo	5 119 150 150 160 170 150 160 170	158 169 0 150 160 170	
	The certified v Standards are Standards are All Standards, Uncertainty R NIST Technic	<ul> <li>The certified value is the concentration calculated from gravimetric Standards are prepared gravimetrically using balances that are call standards are certified (++) 0.5% of the stated value, unless otherwis All Standards, after topening annule, should be stored with caps dg Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wash</li> </ul>	mtration calcula metrically using 1% of the stated mpule, should be r, B.N. and Kuya S. Government F	ted from gri balances tha value, unles s stored with th, C.E., "Gi Yrinting Offi	avimetric and it are calibrate s otherwise sta o caps tight and utdelines for E- ce, Washingto	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).</li> <li>Standards after openling annule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluation and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	urements unless aceable to NIS late laboratory pressing the Ur	s otherwise st T (see above). conditions. ucertainty of 1	ated. NIST Measure	ement Result,"			

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1 of 1

Part # 91980 Lot # 021325

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ection VIII. EXPOSURE CON	CONTROLS/PERSONAL PROTECT	NO	
recautions for safe handling torage Conditions	Use ventilation Keep away from s	Avoid inhalation of vapour or mist. ources of ignition. No smoking. Prevent the build a dry and well-ventilated place. Containers which are e.	
ection VII. HANDLING AND S	<b>BDAROTS ON</b>		
ingi nvironmental precautions Pre	ignition. Vapours accumulate to form exp Prevent further leakage or spillage if safe		
Section VI. ACCIDENTAL REL	RELEASE MEASURES		
uitable extinguishing media rotective equipment for fire azardous Decomposition producti	Wear self contained breathing app	້າຈາກ, dry chemical or carbon dioxide. ນລາອໂບຣ ໂດເ ກີເຕ ກິ່ງກໍ່ເກເງ if necessary.	
ection V. FIREFIGHTING ME	SARUSAAM 6		
eneral advice Co inhaled fi inhaled fi in v case of skin contact Wa v case of eye contact Rin	Consult a physician. Show this safety dat If inhaled, move person into fresh air. If n Wash with soap and water. Consult a ph	at least 15 minutes and consult a physician.	
VTENDED USE: REFERENCI UCATION IV. FIRST AID MEASU			
section III - Composition Components (Specific Chemica Vater	amical Identity; Common Name(s))	CAS#: 7732-18-5	(Isnoitqo) % 79 <
:broW Isngis	Aord: DANGER	P305,351,338 If in eyes, remove c	
	n, wash with soap and water entilated area Di wash with soap and water	rdance with 29 CFR 1910 (OSHA HCS) H315 Causes skin and ey P280 Use gloves, eye pro	
section II - Hazards Identificat	ification		
Aanufacturer's Name AE Adress Address	<b>W ICAL STANDARD DISSOLVED IN W</b> SBSOLUTE STANDARDS INC 44 Rossotto Dr. Hamden CT, 06514	ATER Emergency Telephone USA & CANAD Emergency Telephone International Date Prepared/Revised	<b>ז-360-535-5053</b> <b>ז-352-323-3500</b> לפחטפוץ ז, 2024
section I Product and Compa	mpany identification		
	Safety Data Sheet (SDS)	GHS/OSHB Compliant	
Absolute Standards Inc.		PO Box 5585 amden, CT 06518-0585	7102-183-803 :snor9 2292-183-803 :XA7

Melting Point

Specific Gravity (H2O = 1)

100°C

mqq 008 :AWT

Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

F

Eye protection.

Vapor Pressure (mm Hg)

Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS

CAS#: 7732-18-5

Boiling Point

Vater

Eye irritation Causes skin irritation. LD50 Dermal - Guinea pig ΨN ΑN LC50 Inhalation - Rat LD50 Oral - Rat ΑN Section XI. TOXICOLOGICAL INFORMATION Hazardous decomposition products - No data available biove of elensieM ΑN Conditions to avoid ΨN

ΨN Possibility of hazardous reactions Stable under recommended storage conditions. Chemical stability

### Section X. STABILITY AND REACTIVITY

CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR. Appearance and Odor

			Completely miscible	Solubility in Water
AN	(f = etate = 1)	ΨN		
	Evaporation rate			<pre>(f = AIA) (AIA roughly (AIA = 1)</pre>
2.0		₩NI	•	

aldiosim vlatalomo? ateW ni vtilidulo2			
	ΑN	(Butyl Acetate = 1)	ΨN
(t = AIA) viened rodsv		Evaporation rate	
	AN		0°C

Section XII. ECOLOGICAL INFORMATION

**NOITAMROANI TROGENART .VIX noitoe2** Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water

Not dangerous goods

(SU) TOA

EC60

09DT

Proper shipping name: Water Not dangerous goods ATAI

## Section XV. REGULATORY INFORMATION

Section XIII. DISPOSAL CONSIDERATIONS

ΨN ΑN

ASARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### Section XVI. Misc. INFORMATION

you have any questions, please call Technical Service at 1-203-281-2917 for assistance. APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Material Safety Data Sheet. If including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/funces. Exposure to this product may have serious adverse health effects. 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, see,) 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 see, and Celobing. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clobing trained in chemical intended and the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clobing



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-**Certified Reference Material CRM**  ¢,



CEF	TIFIED WEIGHT REPORT		_														
		er: 02162	4	-						Solvent(s): Methanol	EG359-US	Q12			0	GHI	
	Expiration Dat	69 con	sal VOA Meg mponents											Formula	ated By:	Preshant Chaufer	021624 DATE
	Recommended Storag Nominal Concentration (µg/mt	e: Freezer													4	1. A	
	NIST Test ID	#: BUTB				5 Balance Unce								Review		Pedro L. Rentas	021624 DATE
	Weight(a) shown below were combine		. ,	100.	0 0.02	Flask Uncerta	daty							Expande	nd	SDS information	
	Compound	(RM#) Pert Numb	Lot Xer Number	Di). Facto	initial ar Vol. (mi	initial L) Conc.(ug/mi	Nominal	Purity L) (%)	Purity Uncertainty	Uncontainty y Pipetts (mL)	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL	Uncertain	rty (Sol	vent Safety Info. On Atta OSHA PEL (TWA)	
1. 2.	Acetonitrie	(0324)	021644	NA		NA	2000	99.99	0.2	NA	0.20007	0.20020	2001.3	8.1	75-05-8	40 ppm (70mg/m3/8H)	ori-rat 2460mg/kg
3.	Allyl chloride (3-Chloropropene) Carbon disulphide	(0325) (0060)	102396 MKCR858	NA 11 NA	NA	NA NA	2000	99.99	0.2	NA	0.20207	0.20221	2001.4 2001.6	8.2 8.1	107-05-1	1 ppm (3mg/m3/8H)	orl-rat 700mg/kg
4,	cis-1,4-Dichloro-2-butene	(1198)	14718EF		NA	NA	2000	95	0.2	NA	0.21058	0.21069	2001.1	B,5	1478-11-5	4 ppm (12mg/m3) (skin) 5 N/A	ori-rat 1200mg/kg N/A
6.	trans-1,4-Dichloro-2-butene Diethyl ether	(0486) (0153)			NA	NA	2000	96.5	0.2	NA	0.20731	0.20748	2001.7	8.4	110-57-6	N/A	N/A
7.		(0381)	06126PX	NA	NA	NA	2000	99	0.2	NA	0.20025	0.20240	2001.5	8.1	80-29-7 97-63-2	N/A N/A	NA
8. 9.	lodomethane	(0489)			NA	NA	2000	99.5	0.2	NA	0.20106	0.20121	2001.5	8.2	74-88-4	5 ppm(28mp/m3/8H)(sidn	orl-rat 14800mg/kg i) orl-rat 76mg/kg
8. 10.	2-Methyl-1-propanol Methacrylonitrile	(0445)	15241EB 00427ET	NA	NA	NA	2000	99.5	0.2	NA	0.20106	0.20120	2001.4	8.1	78-83-1	60 ppm (150mg/m3/8H)	ori-rat 2460mg/kg
11.	Methyl acrylate	(1075)	SHBI00679		NA	NA	2000	99 99.9	0.2	NA NA	0.20207	0.20221	2001.4	8.2	126-98-7	1 ppm (3mg/m3/8H)(skin)	
	Methyl methacrylate	(0404)	MKBW5137	V NA	NA	NA	2000	99.9	0.2	NA	0.20025	0.20040	2001.5	8.1	96-33-3 80-62-6	10 ppm(35mg/m3/8H)(sidn 100 ppm (410mg/m3/8H)	ori-ret 277mg/kg ori-ret 7872mg/kg
	Nitrobenzene 2-Nitropropane	(0228)	01213TV	NA	NA	NA	2000	99	0.2	NA	0.20207	0.20220	2001.3	8.2	98-95-3	1 ppm (5mg/m3/8H)(skin)	
	Peniachioroethane	(0461) (0450)	14002JX HGA01	NA	NA	NA NA	2000	97.3 98	0.2	NA	0.20560	0.20577	2001.6	6.3	79-46-9	10 ppm (35mg/m3/8H)	orl-rat 720mg/kg
16.	1,1,2-Trichlorotrificoroethane	(0474)	18930	NA	NA	NA	2000	99	0.2	NA NA	0.20413	0.20430	2001.8	8.3	76-01-7	NEA	N/A
	Bromodichloromethane	35171	101623	0.05	5.00	40001.7	2000	NA	NA	0.017	NA	NA	1999.6	22.9	75-27-4	1000 ppm (7600mg/m3/8H N/A	orl-rat 43g/kg orl-rat 916mg/kg
	Dibromochloromethane cis-1,2-Dichloroethene	35171	101623	0.05	6.00	40002.1	2000	NA	NA	0.017	NA	NA	1999.6	23.0	124-48-1	N/A	orl-rat 648mg/kg
	trans-1,2-Dichloroethone	35171	101623	0.05	5.00	40003,1 40002,4	2000	NA NA	NA	0.017	NA	NA	1999.7	22.9	158-59-2	N/A	N/A
	Methylene chloride	35171	101623	0.05	5.00	40002.8	2000	NA	NA	0.017	NA	NA	1999.6	23.0	156-60-5	500 ppm	ort-rat 1235mg/kg
	1,1-Dichloroethene	32251	102023	0.10	10.00	20001.8	2000	NA	NA	0.042	NA	NA	1009.7	20,4	75-35-4	1 ppm (4mg/m3/8H)	ori-rat 820mg/kg ori-rat 200mg/kg
	Bromotorm Carbon tetrachloride	95321	020724	0.10	10.00	20003.2	2000	NA	NA	0.042	NA	NA	1999.8	20.5	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
	Chloroform	85321	020724	0.10	10.00	20003.4 20024.0	2000	NA	NA	0.042	NA	NA	1999.8	20.4	58-23-5	2 ppm (12.6mg/m3/8H)	ori-rat 2350mg/kg
	Dibromomethane	95321	020724	0.10	10.00	20002.9	2000	NA	NA	0.042	NA	NA	2001.9	20.5	67-68-3 74-95-3	50 ppm (240mp/m3) (CL) N/A	orl-rat 908mg/kg orl-rat 106mg/kg
	1,1-Dichloroethane	95321	020724	0,10	10.00	20003.4	2000	NA	NA	0.042	NA	NA	1999.8	20.5	75-34-3	100 ppm	orl-rat 725mg/kg
	2,2-Dichloropropane Tetrachloroethene	95321 95321	020724	0.10	10.00	20003.4 20201.1	2000	NA	NA	0.042	NA	NA	1999.8	20.4	594-20-7	N/A	N/A
_	1,1,1-Trichloroethane	95321	020724	0.10	10.00	20003.0	2000	NA	NA	0.042	NA	NA	2019.6	20.6	127-18-4 71-55-6	25 ppm (170mg/m3/8H)(final	
	1,2-Dibromo-3-chioropropane	35161	112322	0.05	5.00	40016.5	2000	NA	NA	0.017	NA	NA	2000.3	20.0	96-12-8	350 ppm (1900mg/m3/8H) 0.001 ppm	orl-rat 10300mg/kg orl-rat 170mg/kg
	I,2-Dibromoethane	35161 35161	112322	0.05	5.00	40024.8	2000	NA	NA	0.017	NA	NA	2000.7	22.9	106-93-4	20 ppm (8H)	orf-rat 108mg/kg
	,2-Dichloropropana	35161	112322	0.08	5.00	40018.0 40051.0	2000	NA	NA	0.017	NA NA	NA	2000.4	22.9	107-08-2	50 ppm (8H)	orl-rat 670mg/kg
	,3-Dichloropropane	35161	112322	0.05	5.00	40005.9	2000	NA	NA	0.017	NA	NA	2002.0	22.9	78-87-5	75 ppm (350mg/m3/8H) N/A	orl-rat 1947mg/kg Unr-mus 3600mg/kg
	1-Dichloropropene	35161	112322	0.05	5.00	40012.1	2000	NA	NA	0.017	NA	NA	2000.1	29.7	563-58-6	N/A	N/A
_	ia-1,3-Dichioropropene rans-1,3-Dichioropropene	35161 35161	112322	0.05	5.00 5.00	40010.0	2000	NA NA	NA	0.017	NA	NA	2000.0	23.0	10061-01-5	N/A	N/A
	lexachloro-1,3-butadiene	35181	112322	0.05	5.00	40021.9	2000	NA	NA	0.017	NA	NA	2000.4 2000.6	23.0 29.7	10061-02-8 87-68-3	N/A	N/A
	1,1,2-Tetrachloroethane	35161	112322	0.05	5.00	40011.9	2000	NA	NA	0.017	NA	NA	2000.0	22.9	630-20-6	0.02 ppm (0.24mg/m3/8H) N/A	ori-rat 62mg/kg ori-rat 670mg/kg
	,1,2,2-Tetrachioroethane ,1,2-Tetrachioroethane	35161 35161	112322	0.05	5.00	40007.5	2000	NA	NA	0.017	NA	NA	1999.9	22.9	79-34-5	5 ppm (35mg/m3/9H)(aldri)	gAgm008 tsr-Ito
	richloroethene	35161	112322	0.05	5.00 5.00	40006.6	2000	NA	NA	0.017	NA NA	NA	1999.8	23.0	79-00-5	10 ppm (46mg/m3/8H)(skin)	ori-rat 636mg/kg
44. 1	,2,3-Trichloropropane	35181	112322	0.05	5.00	40007.5	2000	NA	NA	0.017	NA	NA	2000.9	22.9	79-01-6 96-18-4	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
	enzene	36162	050823	0.05	5.00	40005.0	2000	NA	NA	0.017	NA	NA	1999.7	22.9	71-43-2	10 ppm (60mg/m3/8H) 1 ppm	orl-rat 149.6mg/kg orl-rat 4894mg/kg
	romobenzene Butvi benzene	35162 35162	050823	0.05	5.00	40005.9	2000	NA	NA	0.017	NA	NA	1999.8	22.9	108-86-1	N/A	orl-rat 2699mg/kg
48. E	thyi benzene	35162	050823	0.05	5.00	40003.8	2000	NA	NA	0.017	NA	NA	1999.7 1999.7	22.9	104-51-8	N/A	N/A
49. P	in the second se	35162	050823	0.05	5.00	40005.8	2000	NA	NA	0.017	NA	NA	1999.8	22.9	99-87-6	100 ppm (435mg/m3/8H) N/A	orl-rat >2000mg/kg orl-rat 4750mg/kg
50. N 51. 5	aphthalene	35162	050823	0.05	5.00	40006.2	2000	NA	NA	0.017	NA	NA	1999.8	22.9	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
52. Tt		35162 35162	050823	0.05	5.00	40004.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	100-42-5	100 ppm	orl-rat 5000mg/kg
	2,3-Trichlorobenzene	35162	050823	0.05		40003.1	2000	NA	NA	0.017	NA NA	NA	1999.8	22.9	108-88-3 87-61-6	200 ppm N/A	orl-rat 5000mg/kg
	2,4-Trichlorobenzene	35162	050823	0.05		40006.8	2000	NA	NA	0.017	NA	NA	1999.8	22.9	120-82-1	5 ppm (CL) (40mg/m3)	lpr-mus 1390mg/kg off-rat 750mg/kg
	2,4-Trimethylbenzene 3,5-Trimethylbenzene	35162	050823	0.05		40001.8	2000	NA	NA	0.017	NA	NA	1999.6	23.0	95-63-6	N/A	ort-rat 5g/kg
	-Xylene	35162	050823	_		40008.7 40005.8	2000	NA NA	NA	0.017	NA	NA	1999.0	22.9	108-67-8	N/A	orl-rat 5000mg/kg
58. 1e	rt-Butyl benzene	35163	101923			40001.2	2000	NA	NA	0.017	NA	NA	1999.8 1999.6	22.9	108-38-3 98-06-6	100 ppm (435mg/m3/8H) N/A	orl-rat 5g/kg N/A
j9. se		35163	101923			40002.4	2000	NA	NA	0.017	NA	NA	1999.6	22.9	135-98-8	N/A	ori-rat 2240mg/kg
			101923			40003.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	108-90-7	75 ppm (350mg/m3/8H)	orl-rail 2290mg/kg
80. Čř	Chiorotoluena	00100				40000.3	2000	NA	NA	0.017	NA	NA NA	1999.5 1999.7	22.9	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
80. Cr 81. 24		35163	101923					NA	NA	0.017	NA	NA	1999.7	22.9	106-43-4	N/A	orl-rat 2100mg/kg orl-rat 500mg/kg
80. Cr 61. 24 62. 44 63. 1.	Chicrotoluene 2-Dichicrobenzene	35163	101923	0.05	5.00	40003.8	2000			0.017	F-W/W	PUN			95-50-1	50 ppps (300mm/m/h) //** 1	
80. Cr 81. 24 82. 44 83. 1.1 84. 1.3	Chlorototuene 2-Dichlorobenzene 3-Dichlorobenzene	35163 35163	101923 101923	0.05	5.00	40001.7	2000	NA	NA	0.017	NA	NA	1999.6	23.0	95-50-1 541-73-1	50 ppm (300mp/m3) (CL) N/A	ipr-mus 1062mg/kg
BO.         Cr           B1.         2-4           B2.         4-4           B3.         1.3           B4.         1.3           B5.         1.4	Chlorotoluene 2-Dichlorobenzene 3-Dichlorobenzene 1-Dichlorobenzone	35163 35163 35163	101923 101923 101923	0.05 0.05 0.05	5.00 5.00	40001.7 40001.8	2000 2000	NA NA	NA NA	0.017 0.017	NA NA	NA NA	1999.6 1999.6	23.0 22.9	541-73-1 106-46-7	N/A 76 ppm (450mg/m3/8H)	ipr-mus 1062mg/kg orl-rat 500mg/kg
BO.         Cr           81.         24           82.         44           83.         1.1           84.         1.3           85.         1.4           86.         1sc	Chlorototuens 2-Dichlorobenzene 3-Dichlorobenzene Dichlorobenzene spropylibenzene	35163 35163 35163 35163	101923 101923 101923 101923	0.05 0.05 0.05 0.05	5.00 5.00 5.00	40001.7	2000 2000 2000	NA NA NA	NA NA NA	0.017 0.017 0.017	NA NA NA	NA NA NA	1999.6 1999.6 1999.5	23.0 22.9 22.9	541-73-1 106-48-7 98-82-8	N/A 76 ppm (450mg/m3/8H) 50 ppm (245mg/m3/8H)	ori-rat 500mg/kg ori-rat 500mg/kg
60. Cr 61. 2-4 62. 4-4 63. 1,1 64. 1,2 64. 1,2 64. 1,2 66. 150 67. n-1 66. 0-)	Chlorotoluene 2-Dichlorobenzene 3-Dichlorobenzene 1-Dichlorobenzene progylibenzene ?rogylibenzene Kylene	35163 35163 35163 35163 35163 35163 35163	101923 101923 101923 101923 101923	0.05 0.05 0.05 0.05 0.05	5.00 5.00 5.00 5.00	40001.7 40001.8 40000.8	2000 2000	NA NA	NA NA	0.017 0.017	NA NA	NA NA	1999.6 1999.6	23.0 22.9	541-73-1 106-46-7	N/A 76 ppm (450mg/m3/8H)	ipr-mus 1062mg/kg orl-rat 500mg/kg

The certified value is the concentration exclusion of the gravimetric and volumetric measurements unless otherwise stated,
 Standards are perpared gravimetrically using balances their are calibration with weights traceable to NEST (see above),
 Standards are certified (<) 0.5% of the stated value, usion otherwise stated,
 Ad Standards, full and the stated value, usion otherwise stated,
 Ad Standards, full empirically using anyote, should be stored with complete light and under appropriate theoretically candillions.
 Uncertainty Reference: Taylor, R.N. and Kuyat, C.E., "Calciolines for Evaluating and Expressing the Uncertainty of NIST Measurement Resolt,"
 NIST Technical Note 1297, U.S. Government Printing Office, Washington, UC, (1994).

Certified Reference Material CRM

10



 contac.)
 0,077

 10.33
 0,077

 10.34
 0,077

 10.35
 11.36

 12.361
 12.361

 12.351
 13.64

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 44.42
 14.42

 44.42
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 44.53
 14.42

 44.54
 14.42

Run 16, "P95317 L021624 [2000µg/mL in MeOH]" Faher 1,1,2-Trichtoro-1,2,2-tr Run Length: 60.00 min, 35998 points at 10 points/second. Created: Sat, Feb 17, 2024 at 8:56:46 AM. Sampled: Sequence "021624-GC5M1", Method "GC5-M1". 1,1-Dichiorosthane Acetonitrile Iodomethane Allyi chloride Carbon disullide/Nathylene ( trans-1,2-Dicklonethene 1.1-Dicklonethane 2,2-Dicklonethane Analyzed using Method "GC5-M1". 2,2:0:0kileropropana cis-1,2:0ciliarosthane Mathacrytonityle/Methyl ecry Isobutane/1,1,1-Trictikoredit 1,1-0ciliaropropana Carbon tetrachioride Bernsen(1,2:0kinarostnana 1,2:0kinarosthana 1,2:0kinarosthana Bichmontetkana/3:Nikropana Comments Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min., Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air (make-up)=230mL/min. Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.), Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C. GC5-M1 Analysis by Candice Warren amethane/2-Nik Dibrom Distriminanti anti Anteoproje els 1,3-Dickiorpetin Distene Ethyl methacryfels/trans-1,3-D 1,1,2-Trichloroethene Tetrachiorpethene/1,3-Dickior FID Signal = Edaq Channel 1 Standard injection = 0.5µL, Range=3 Dibromochioromethe 1,2-Dibromoethene 1,2-Directmeethene
 Chorobarrene
 L,2,2-Titterioreabhare
 L,2,2-Titterioreabhare
 Torson-2-budene
 Eronobarrene
 foresen
 Artificiation-2-budene
 Eronobarrene 1000000 800000 600000 N 400000 Nitrobenzane 1,2,4-Trichkorobenzan Hexachiorobutadiima Naphchalena 1,2,3-Trichkorobenken \$2 200000 50 20 30 10 min

Absolute Standards Inc.

# Safety Data Sheet (SDS) GHS/OSHA Compliant

# Section I Product and Company Identification

Manufacturer's Name	ABSOLUTE STANDARDS INC		ephone USA & CANADA	1-800-535-5053
Address	44 Rossotto Dr. Hamden CT, 06514	Emergency Tele	phone International	1-352-323-3500
Section II - Hazards Ider		Date Prepared/	Hevised	January 1, 2023
	GHS Classification In accor			
H225 Highly Fi H370 Cause da	lammable Liquid and Vapor amage to organs	H301, 311, 331	Toxic if swallowed, skin con	tact, inhaled
P271 Use in ve	entilated area	H351 P280	Suspected of causing cance Use gloves, eye protection/	er er sheild
P302,332 If on skir	n, wash with soap and water	P305,351,338	If in eyes, remove contacts,	rinse with water
	Signal Word: DANGER			
Section III - Composition	1			
Components (Specific Che Methanol	emical Identity; Common Name(s))	010# 07 50 1		% (optional)
vietriarior	METHYL ALCOHOL	CAS#: 67-56-1		> 97
See Certified Weight	Report For Other Analytes Pre	esent At Trace	Quantities.	
NTENDED USE: REFER				
Section IV. FIRST AID ME	ASURES			
General advice	Consult a physician. Show this safety data	a sheet to the doctor i	n attendance Move to sefe area	
finhaled	If inhaled, move person into fresh air. If no	ot breathing, give artifi	cial respiration. Consult a physician.	
n case of skin contact	Wash with soap and water. Consult a phy	/sician.		
n case of eye contact f swallowed	Rinse thoroughly with plenty of water for a Do NOT induce vomiting. Rinse mouth with	at least 15 minutes and	d consult a physician.	
		in water. Consult a pri	ysiciali.	
Section V. FIREFIGHTING	MEASURES			
lammability	Flammable in the presence of a sour	ce of ignition when the No smoking.	e temperature is above the flash point	. Keep away from
lammability uitable extinguishing media	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for	No smoking. am, dry chemical or ca	arbon dioxide.	. Keep away from
lammability	Flammable in the presence of a sour heat/sparks/open flame/hot surface.	No smoking. am, dry chemical or ca	arbon dioxide.	. Keep away from
lammability uitable extinguishing media	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara	No smoking. am, dry chemical or ca	arbon dioxide.	. Keep away from
lammability uitable extinguishing media rotective equipment for fire	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathing	No smoking. am, dry chemical or ca atus for fire fighting if r	arbon dioxide. necessary.	
lammability uitable extinguishing media rotective equipment for fire section VI. ACCIDENTAL ersonal precautions	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas sive concentrations.	arbon dioxide. necessary. . Ensure adequate ventilation. Remov	
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathing	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. o do so. Do not let pro	arbon dioxide. hecessary. . Ensure adequate ventilation. Remov	ve all sources of
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. o do so. Do not let pro	arbon dioxide. hecessary. . Ensure adequate ventilation. Remov	re all sources of
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appare <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b>	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- te in container for disp	arbon dioxide. hecessary. . Ensure adequate ventilation. Remov oduct enter drains. osal according to local regulations (so	re all sources of
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AP recautions for safe handling	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe to Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from source	No smoking. am, dry chemical or ca atus for fire fighting if r atus for fire fighting if r or vapors, mist or gas psive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING A	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appare <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo	No smoking. am, dry chemical or ca atus for fire fighting if r atus for fire fighting if r or vapors, mist or gas psive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire ecction VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AI recautions for safe handling orage Conditions	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from sourc Keep container tightly closed in a dry	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo and well-ventilated pla	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire eection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AI recautions for safe handling orage Conditions ection VIII. EXPOSURE C	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe to Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from source Keep container tightly closed in a dry and kept upright to prevent leakage.	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo and well-ventilated pla	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire eection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AI recautions for safe handling orage Conditions ection VIII. EXPOSURE C	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from sourc Keep container tightly closed in a dry and kept upright to prevent leakage.	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo and well-ventilated pla	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AI recautions for safe handling orage Conditions ection VIII. EXPOSURE C ethanol 67-56-1 TVVA in notation TVVA 200 ppn tential for skin absorption , inge	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from sourc Keep container tightly closed in a dry and kept upright to prevent leakage. <b>CONTROLS/PERSONAL PROTECTI</b>	No smoking. am, dry chemical or ca atus for fire fighting if r atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour es of ignition. No smo and well-ventilated pla	arbon dioxide. hecessary.	re all sources of se section 13).

Section IX - Physical/Chemical Characteristics

### PO Box 5585 Hamden, CT 06518-0585

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 Possibility of hazardous reactions Conditions to avoid Materials to avoid Hazardous decomposition products for

Stable under recommended storage conditions. Vapours may form explosive mixture with air. Heat, flames, sparks, extreme temperature and sunlight.

void Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids

Hazardous decomposition products formed under fire conditions. - Carbon oxides

# Section XI. TOXICOLOGICAL INFORMATION

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

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

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

### Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

# Section XIV. TRANSPORT INFORMATION

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

# Section XV. REGULATORY INFORMATION

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

# Section XVI. Misc. INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by trained personnel, or supervised by a person trained in chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes. Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC 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.



www.absolutestandards.com

-**Certified Reference Material CRM**  ¢,



CEF	TIFIED WEIGHT REPORT																
		er: 02162	4	-						Solvent(s): Methanoi	EG359-US	Q12			0	GHI	
	Expiration Da	69 con	sal VOA Meg nponents											Formula	ated By:	Preshant Chaufer	021624 DATE
	Recommended Storag Nominal Concentration (µg/m)	e: Freezer													4	2. A.	
	NIST Test IC	#: BUTB				5 Balance Unce								Review		Pedro L. Rentas	021624 DATE
	Weight(a) shown below were combine			100.	0 0.02	1 Flask Uncerta	daty							Expande	rd	SDS information	
	Compound	(RM#) Pert Numb	Lot er Number	Di). Facto	Initial r Vol. (m	initial L) Conc.(ug/mi	Nominal	Purity L) (%)	Purity Uncertainty	Uncortainty y Pipette (mL)	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL	Uncertain	rty (Sol	vent Safety Info. On Atta OSHA PEL (TWA)	
1. 2.	Acetonitrile	(0324)	021644	NA		NA	2000	99.99	0.2	NA	0.20007	0.20020	2001.3	8.1	75-05-8	40 ppm (70mg/m3/8H)	ori-rat 2460mg/kg
3.	Allyl chloride (3-Chloropropene) Carbon disulphide	(0325) (0060)	102396 MKCR858	NA 11 NA	NA	NA NA	2000	99.99	0.2	NA	0.20207	0.20221	2001.4 2001.6	8.2 8.1	107-05-1 75-15-0	1 ppm (3mg/m3/8H)	orl-rat 700mg/kg
4,	cis-1,4-Dichloro-2-butene	(1198)	14718EF		NA	NA	2000	95	0.2	NA	0.21058	0.21069	2001.1	B,5	1478-11-5	4 ppm (12mg/m3) (skin) 5 N/A	ori-rat 1200mg/kg N/A
6.	trans-1,4-Dichloro-2-butene Diethyl ether	(0486) (0153)	MKBP6041 K18CAS00		NA	NA	2000	96.5	0.2	NA	0.20731	0.20748	2001.7	8.4	110-57-6	N/A	N/A
7.		(0381)	06126PX	NA	NA	NA	2000	99	0.2	NA	0.20025	0.20240	2001.5	8.1	80-29-7 97-63-2	N/A N/A	NA
8. 9.	lodomethane	(0489)	SH8F8718		NA	NA	2000	99.5	0.2	NA	0.20106	0.20121	2001.5	8.2	74-88-4	5 ppm(28mp/m3/8H)(sidn	orl-rat 14800mg/kg i) orl-rat 76mg/kg
10.	2-Methyl-1-propanol Methacrylonitrile	(0445)	15241EB 00427ET	NA	NA	NA NA	2000	99.5	0.2	NA	0.20106	0.20120	2001.4	8.1	78-83-1	60 ppm (150mg/m3/8H)	orl-rat 2460mg/kg
11.	Methyl acrylate	(1075)	SHBK0679		NA	NA	2000	99 99.9	0.2	NA NA	0.20207	0.20221	2001.4	8.2	126-98-7 96-33-3	1 ppm (3mg/m3/8H)(skin)	
	Methyl methacrylate	(0404)	MKBW5137		NA	NA	2000	99.9	0.2	NA	0.20025	0.20041	2001.6	8.1	80-62-6	10 ppm(35mg/m3/8H)(sidn 100 ppm (410mg/m3/8H)	ori-ret 277mg/kg ori-ret 7872mg/kg
	Nitrobenzene 2-Nitropropane	(0228) (0461)	01213TV 14002JX	NA	NA	NA	2000	99	0.2	NA	0.20207	0.20220	2001.3	8.2	98-95-3	1 ppm (5mg/m3/8H)(akin)	
	Peniactiloroethane	(0450)	HGA01	NA	NA	NA NA	2000	97.3 98	0.2	NA NA	0.20560	0.20577	2001.6	6.3	79-46-9	10 ppm (35mg/m3/6H)	orl-rat 720mg/kg
	1,1,2-Trichlorotrifiuoroethane	(0474)	18930	NA	NA	NA	2000	88	0.2	NA	0.20413	0.20430	2001.8	8.3	76-01-7 78-13-1	N/A 1000 ppm (7500mg/m3/8H	N/A orl-rat 43g/kg
	Bromodichioromethane	35171	101623	0.05	5.00	40001.7	2000	NA	NA	0.017	NA	NA	1999.6	22.9	75-27-4	N/A	orf-rat 43g/kg
	Dibromochloromethane cis-1,2-Dichloroethene	35171	101623	0.05	6.00	40002.1	2000	NA	NA	0.017	NA	NA	1999.6	23.0	124-48-1	NA	orl-rat 648mg/kg
	trans-1,2-Dichloroethone	35171	101623	0.05	5.00	40003.1 40002.4	2000	NA	NA	0.017	NA	NA	1999.7	22.9	158-59-2	N/A	N/A
	Methylene chloride	35171	101623	0.05	5.00	40002.8	2000	NA	NA	0.017	NA	NA	1999.6	23.0	156-60-5	500 ppm	ort-rat 1235mg/kg
	1,1-Dichloroethene	32251	102023	0.10	10,00	20001.8	2000	NA	NA	0.042	NA	NA	1009.7	20,4	75-35-4	1 ppm (4mg/m3/8H)	ori-rat 820mg/kg ori-rat 200mg/kg
	Bromotorm Carbon tetrachloride	95321	020724	0.10	10.00	20003.2	2000	NA	NA	0.042	NA	NA	1999.8	20.5	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
	Chloroform	85321	020724	0.10	10.00	20003.4 20024.0	2000	NA	NA	0.042	NA	NA	1999.8	20.4	58-23-5	2 ppm (12.6mg/m3/8H)	ori-rat 2350mg/kg
	Dibromomethane	95321	020724	0.10	10.00	20002.9	2000	NA	NA	0.042	NA	NA	2001.9	20.5	67-66-3 74-95-3	50 ppm (240mp/m3) (CL) N/A	orf-ret 908mg/kg
	1,1-Dichloroethane	95321	020724	0.10	10.00	20003.4	2000	NA	NA	0.042	NA	NA	1999.8	20.5	75-34-3	100 ppm	orl-rat 106mg/kg orl-rat 725mg/kg
	2,2-Dichloropropane Tetrachloroethene	95321 95321	020724	0.10	10.00	20003.4 20201.1	2000	NA	NA	0.042	NA	NA	1999.8	20.4	594-20-7	N/A	N/A
-	1,1,1-Trichloroethane	95321	020724	0.10	10.00	20201.1	2000	NA	NA	0.042	NA	NA	2019.6	20.6	127-18-4 71-55-6	25 ppm (170mg/m3/8H)(final	
	2-Dibromo-3-chloropropane	35161	112322	0.05	5.00	40016.5	2000	NA	NA	0.017	NA	NA	2000.3	20.0	96-12-8	350 ppm (1900mg/m3/8H) 0.001 ppm	orl-rat 10300mg/kg orl-rat 170mg/kg
	I,2-Dibromoethane	35161 35161	112322	0.05	5.00	40024.8	2000	NA	NA	0.017	NA	NA	2000.7	22.9	108-93-4	20 ppm (8H)	orf-rat 108mg/kg
	,2-Dichloropropane	35161	112322	0.08	5.00	40018.0 40051.0	2000	NA	NA	0.017	NA NA	NA	2000.4	22.9	107-08-2	50 ppm (8H)	orl-rat 670mg/kg
	,3-Dichloropropane	35161	112322	0.05	5.00	40005.9	2000	NA	NA	0.017	NA	NA	2002.0	22.9	78-87-5	75 ppm (350mg/m3/8H) N/A	orl-rat 1947mg/kg Unr-muli 3600mg/kg
	.1-Dichloropropene	35161	112322	0.05	5.00	40012.1	2000	NA	NA	0.017	NA	NA	2000.1	29.7	563-58-6	N/A	N/A
_	ia-1,3-Dichloropropene rans-1,3-Dichloropropene	35161 35161	112322	0.05	5.00	40010.0	2000	NA NA	NA	0.017	NA	NA	2000.0	23.0	10061-01-5	N/A	N/A
	lexachloro-1,3-butadiene	35181	112322	0.05	5.00	40021.9	2000	NA	NA	0.017	NA	NA	2000.4 2000.6	23.0 29.7	10061-02-8 87-68-3	N/A	N/A
	1,1,2-Tetrachloroethane	35161	112322	0.05	5.00	40011.9	2000	NA	NA	0.017	NA	NA	2000.0	22.9	630-20-6	0.02 ppm (0.24mg/m3/8H) N/A	ori-rat 62mg/kg ori-rat 670mg/kg
	,1,2,2-Tetrachloroethane ,1,2-Trichloroethane	35161 35161	112322	0.05	5.00	40007.5	2000	NA	NA	0.017	NA	NA	1999.9	22.9	79-34-5	5 ppm (35mg/m3/9H)(eldn)	gAgm008 tsr-ho
	richloroethene	35161	112322	0.05	5.00 5.00	40006.6	2000	NA	NA	0.017	NA NA	NA	1999.8	23.0	79-00-5	10 ppm (46mg/m3/8H)(skin)	orl-rat 636mg/kg
44. 1	,2,3-Trichloropropane	35181	112322	0.05	5.00	40007.5	2000	NA	NA	0.017	NA	NA	2000.9	22.9	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
	enzene	36162	050823	0.05	5.00	40005.0	2000	NA	NA	0.017	NA	NA	1999.7	22.9	71-43-2	10 ppm (60mg/m3/8H) 1 ppm	orl-rat 149.6mg/kg orl-rat 4894mg/kg
	romobenzene Butvi benzene	35162 35162	050823	0.05	5.00	40005.9	2000	NA	NA	0.017	NA	NA	1999.8	22.9	108-86-1	N/A	orl-rat 2000mg/kg
48. E	thyi benzene	35162	050823	0.05	5.00	40003.8 40004.8	2000	NA	NA	0.017	NA	NA	1999.7 1999.7	22.9	104-51-8	N/A	N/A
49. P	isopropyl toluene	35162	050823	0.05	5.00	40005.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	100-41-4	100 ppm (435mg/m3/8H) N/A	orl-rat >2000mg/kg orl-rat 4750mg/kg
50. N 51. 5	aphthalene	35162	050823	0.05	5.00	40006.2	2000	NA	NA	0.017	NA	NA	1999.8	22.9	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
52. To		35162 35162	050823	0.05	5.00	40004.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	100-42-5	100 ppm	orl-rat 5000mg/kg
53. 1	2,3-Trichlorobenzene	35162	050823	0.05		40003.1	2000	NA	NA	0.017	NA NA	NA	1999.8	22.9	108-88-3 87-61-6	200 ppm	orl-rat 5000mg/kg
	2,4-Trichlorobenzene	35162	050823	0.05	5.00	40006.8	2000	NA	NA	0.017	NA	NA	1999.8	22.9	120-82-1	N/A 5 ppm (CL) (40mg/m3)	lpr-mus 1390mg/kg off-rat 750mg/kg
	2,4-Trimethylbenzene 3,5-Trimethylbenzene	35162	050823			40001.8	2000	NA	NA	0.017	NA	NA	1999.6	23.0	95-63-6	N/A	ori-rat 5g/kg
	-Xylane	35162	050823	0.05		40006.7 40005.8	2000	NA NA	NA	0.017	NA	NA	1999.0	22.9	108-67-8	N/A	orl-rat 5000mg/kg
58. 1e	rt-Butyl benzene	35163	101923			40001.2	2000	NA	NA	0.017	NA	NA	1999.8 1999.6	22.9	108-38-3 98-06-6	100 ppm (435mg/m3/8H) N/A	orl-rat 5g/kg N/A
	c-Butyl benzene Norobenzene	35163	101923			40002.4	2000	NA	NA	0.017	NA	NA	1999.6	22.9	135-98-8	N/A	ori-rat 2240mg/kg
	PROFESSION CONTRACTOR OF CONTRACTOR		101923			40003.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	108-90-7	75 ppm (350mg/m3/8H)	orl-rail 2290mg/kg
60. Či			101020			40000.3	2000	NA	NA	0.017	NA	NA NA	1999.5 1999.7	22.9	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
60. Cr 61. 2-	Chiorotoluene Chiorotoluene	35163	101923	0.05					NA				1999.7		106-43-4	N/A	orl-ret 2100mg/kg
60. Cr 61. 2-4 62. 4-4 63. 1,1	Chlorotoluene Chlorotoluene 2-Dichlorobenzene	35163 35163	101923	0.05		40003.8	2000	NA	THPIC .	0.017	NA	NA		22.9	95-50-1	50 ppps (300mm/m/h) //** 1	
60. Cr 61. 24 62. 44 63. 1. 64. 1.	Chlorotoluene Chlorotoluene 2-Dichlorobenzene 3-Dichlorobenzene	35163 35163 35163	101923 101923	0.05	5.00 5.00	40001.7	2000	NA	NA	0.017	NA	NA	1999.6	22.9 23.0	95-50-1 541-73-1	50 ppm (300mp/m3) (CL) N/A	orl-rat 500mg/kg lpr-mus 1062mg/kg
60. Cr 61. 2-4 62. 4-4 63. 1.1 64. 1.1 65. 1.4	Chlorotoluene Chlorotoluene 2-Dichlorobenzene 3-Dichlorobenzene 1-Dichlorobenzene	35163 35163 35163 35163	101923 101923 101923	0.05 0.05 0.05	5.00 5.00 5.00	40001.7 40001.8	2000 2000	NA NA	NA NA	0.017 0.017	NA NA	NA NA	1999.6 1999.6	23.0 22.9	541-73-1 106-48-7	N/A 76 ppm (450mg/m3/8H)	ipr-mus 1062mg/kg orl-rat 500mg/kg
60. Cr 61. 2-4 62. 4-4 63. 1.1 64. 1.1 65. 1.4 66. 1sc	Chlorotoluene Chlorotoluene 2-Dichlorobenzene 3-Dichlorobenzene 1-Dichlorobenzene apropy/benzene	35163 35163 35163 35163 35163	101923 101923 101923 101923	0.05 0.05 0.05 0.05	5.00 5.00 5.00 5.00	40001.7	2000 2000 2000	NA NA NA	NA NA NA	0.017 0.017 0.017	NA NA NA	NA NA NA	1999.6 1999.6 1999.5	23.0 22.9 22.9	541-73-1 106-48-7 98-82-8	N/A 76 ppm (450mg/m3/8H) 50 ppm (245mg/m3/8H)	ori-rat 500mg/kg ori-rat 500mg/kg
60. Cr 61. 2-4 62. 4-4 63. 1.1 64. 1.1 65. 1.4 66. 1sc	Chiorotoluene Chiorotoluene 2-Dichiorobenzene 3-Dichiorobenzene 1-Dichiorobenzene 8-ropytbenzene ?ropytbenzene Kylene	35163 35163 35163 35163 35163 35163 35163	101923 101923 101923 101923 101923 101923 101923	0.05 0.05 0.08 0.05 0.05 0.05	5.00 5.00 5.00 5.00 5.00 5.00 5.00	40001.7 40001.8 40000.8	2000 2000	NA NA	NA NA	0.017 0.017	NA NA	NA NA	1999.6 1999.6	23.0 22.9	541-73-1 106-48-7	N/A 76 ppm (450mg/m3/8H)	ipr-mus 1062mg/kg orl-rat 500mg/kg

The certified value is the concentration exclusion of the gravimetric and volumetric measurements unless otherwise stated,
 Standards are perpared gravimetrically using balances their are calibration with weights traceable to NEST (see above),
 Standards are certified (<) 0.5% of the stated value, usion otherwise stated,
 Ad Standards, full and the stated value, usion otherwise stated,
 Ad Standards, full empirically using anyote, should be stored with complete light and under appropriate theoretically candillions.
 Uncertainty Reference: Taylor, R.N. and Kuyat, C.E., "Calciolines for Evaluating and Expressing the Uncertainty of NIST Measurement Resolt,"
 NIST Technical Note 1297, U.S. Government Printing Office, Washington, UC, (1994).

Certified Reference Material CRM

10



 contac.)
 0,077

 10.33
 0,077

 10.34
 0,077

 10.35
 11.36

 12.361
 12.361

 12.351
 13.64

 14.07
 13.64

 14.07
 12.354

 14.07
 12.34

 12.354
 12.54

 12.354
 12.54

 12.358
 12.53

 13.46
 12.358

 13.16
 33.160

 33.160
 13.34

 33.160
 12.77

 33.160
 12.79

 33.460
 12.79

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 33.460
 12.79

 34.68
 12.79

 36.62
 12.79

 36.62
 12.79

 36.62
 12.79

 37.98
 14.42

 44.43
 46.42

 44.42
 14.42

 44.42
 14.42

 44.53
 14.42

 44.54
 14.42

Run 16, "P95317 L021624 [2000µg/mL in MeOH]" Faher 1,1,2-Trichtoro-1,2,2-tr Run Length: 60.00 min, 35998 points at 10 points/second. Created: Sat, Feb 17, 2024 at 8:56:46 AM. Sampled: Sequence "021624-GC5M1", Method "GC5-M1". 1,1-Dichiorosthane Acetonitrile Iodomethane Allyi chloride Carbon disullide/Nathylene ( trans-1,2-Dicklonethene 1.1-Dicklonethane 2,2-Dicklonethane Analyzed using Method "GC5-M1". 2,2:0:0kileropropana cis-1,2:0ciliarosthane Mathacrytonityle/Methyl ecry Isobutane/1,1,1-Trictikoredit 1,1-0ciliaropropana Carbon tetrachioride Bernsen(1,2:0kinarostnana 1,2:0kinarosthana 1,2:0kinarosthana Bichmontetkana/3:Nikropana Comments Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min., Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air (make-up)=230mL/min. Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.), Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C. GC5-M1 Analysis by Candice Warren amethane/2-Nik Dibrom Distriminanti anti Anteoproje els 1,3-Dickiorpetin Distene Ethyl methacryfels/trans-1,3-D 1,1,2-Trichloroethene Tetrachiorpethene/1,3-Dickior FID Signal = Edaq Channel 1 Standard injection = 0.5µL, Range=3 Dibromochioromethe 1,2-Dibromoethene 1,2-Directmeethene
 Chorobarrene
 L,2,2-Titterioreabhare
 L,2,2-Titterioreabhare
 Torson-2-budene
 Eronobarrene
 foresen
 Artificiation-2-budene
 Eronobarrene 1000000 800000 600000 N 400000 Nitrobenzane 1,2,4-Trichkorobenzan Hexachiorobutadiima Naphchalena 1,2,3-Trichkorobenken \$2 200000 50 20 30 10 min

Absolute Standards Inc.

# Safety Data Sheet (SDS) GHS/OSHA Compliant

# Section I Product and Company Identification

Manufacturer's Name	ABSOLUTE STANDARDS INC		ephone USA & CANADA	1-800-535-5053
Address	44 Rossotto Dr. Hamden CT, 06514	Emergency Tele	phone International	1-352-323-3500
Section II - Hazards Ider		Date Prepared/	Hevised	January 1, 2023
	GHS Classification In accor			
H225 Highly Fi H370 Cause da	lammable Liquid and Vapor amage to organs	H301, 311, 331	Toxic if swallowed, skin con	tact, inhaled
P271 Use in ve	entilated area	H351 P280	Suspected of causing cance Use gloves, eye protection/	er er sheild
P302,332 If on skir	n, wash with soap and water	P305,351,338	If in eyes, remove contacts,	rinse with water
	Signal Word: DANGER			
Section III - Composition	1			
Components (Specific Che Methanol	emical Identity; Common Name(s))	010# 07 50 1		% (optional)
vietriarior	METHYL ALCOHOL	CAS#: 67-56-1		> 97
See Certified Weight	Report For Other Analytes Pre	esent At Trace	Quantities.	
NTENDED USE: REFER				
Section IV. FIRST AID ME	ASURES			
General advice	Consult a physician. Show this safety data	a sheet to the doctor i	n attendance Move to sefe area	
finhaled	If inhaled, move person into fresh air. If no	ot breathing, give artifi	cial respiration. Consult a physician.	
n case of skin contact	Wash with soap and water. Consult a phy	/sician.		
n case of eye contact f swallowed	Rinse thoroughly with plenty of water for a Do NOT induce vomiting. Rinse mouth with	at least 15 minutes and	d consult a physician.	
		in water. Consult a pri	ysiciali.	
Section V. FIREFIGHTING	MEASURES			
lammability	Flammable in the presence of a sour	ce of ignition when the No smoking.	e temperature is above the flash point	. Keep away from
lammability uitable extinguishing media	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for	No smoking. am, dry chemical or ca	arbon dioxide.	. Keep away from
lammability	Flammable in the presence of a sour heat/sparks/open flame/hot surface.	No smoking. am, dry chemical or ca	arbon dioxide.	. Keep away from
lammability uitable extinguishing media	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara	No smoking. am, dry chemical or ca	arbon dioxide.	. Keep away from
lammability uitable extinguishing media rotective equipment for fire	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathing	No smoking. am, dry chemical or ca atus for fire fighting if r	arbon dioxide. necessary.	
lammability uitable extinguishing media rotective equipment for fire section VI. ACCIDENTAL ersonal precautions	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas sive concentrations.	arbon dioxide. necessary. . Ensure adequate ventilation. Remov	
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathing	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. o do so. Do not let pro	arbon dioxide. hecessary. . Ensure adequate ventilation. Remov	ve all sources of
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. o do so. Do not let pro	arbon dioxide. hecessary. . Ensure adequate ventilation. Remov	re all sources of
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appare <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b>	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- te in container for disp	arbon dioxide. hecessary. . Ensure adequate ventilation. Remov oduct enter drains. osal according to local regulations (so	re all sources of
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AP recautions for safe handling	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe to Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from source	No smoking. am, dry chemical or ca atus for fire fighting if r atus for fire fighting if r or vapors, mist or gas psive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING A	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appare <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo	No smoking. am, dry chemical or ca atus for fire fighting if r atus for fire fighting if r or vapors, mist or gas psive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AI recautions for safe handling orage Conditions	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from sourc Keep container tightly closed in a dry	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo and well-ventilated pla	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire eection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AI recautions for safe handling orage Conditions ection VIII. EXPOSURE C	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe to Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from source Keep container tightly closed in a dry and kept upright to prevent leakage.	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo and well-ventilated pla	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire eection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AI recautions for safe handling orage Conditions ection VIII. EXPOSURE C	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from sourc Keep container tightly closed in a dry and kept upright to prevent leakage.	No smoking. am, dry chemical or ca atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour ces of ignition. No smo and well-ventilated pla	arbon dioxide. hecessary. . Ensure adequate ventilation. Remove oduct enter drains. osal according to local regulations (se or or mist.	re all sources of se section 13).
lammability uitable extinguishing media rotective equipment for fire ection VI. ACCIDENTAL ersonal precautions nvironmental precautions lean up ection VII. HANDLING AI recautions for safe handling orage Conditions ection VIII. EXPOSURE C ethanol 67-56-1 TVVA in notation TVVA 200 ppn tential for skin absorption , inge	Flammable in the presence of a sourn heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appara <b>RELEASE MEASURES</b> Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe t Contain spillage, and then collect and plac <b>ND STORAGE</b> Avoid contact with skin and eyes. Avo Use ventilation Keep away from sourc Keep container tightly closed in a dry and kept upright to prevent leakage. <b>CONTROLS/PERSONAL PROTECTI</b>	No smoking. am, dry chemical or ca atus for fire fighting if r atus for fire fighting if r ng vapors, mist or gas usive concentrations. to do so. Do not let pro- e in container for disp id inhalation of vapour es of ignition. No smo and well-ventilated pla	arbon dioxide. hecessary.	re all sources of se section 13).

Section IX - Physical/Chemical Characteristics

### PO Box 5585 Hamden, CT 06518-0585

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 Possibility of hazardous reactions Conditions to avoid Materials to avoid Hazardous decomposition products for

Stable under recommended storage conditions. Vapours may form explosive mixture with air. Heat, flames, sparks, extreme temperature and sunlight.

void Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids

Hazardous decomposition products formed under fire conditions. - Carbon oxides

# Section XI. TOXICOLOGICAL INFORMATION

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

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

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

### Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

# Section XIV. TRANSPORT INFORMATION

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

# Section XV. REGULATORY INFORMATION

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

# Section XVI. Misc. INFORMATION

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

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certifie 200	iffied Re	Certified Reference Material CRM ンセニー つろ (1 色 / とり	aterial C 「 こ	MA.				ANAE AR-1 https:///	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com	scredited Number ards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	91980 031725 Acrolein			Sol	Solvent(s): Water 07	Lot# 0723240		7	an	Con Con		031725	
Expiration Date: 041725 Recommended Storage: Refrigerate Nominal Concentration (µg/mL): 5000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to fml ):	041725 Refrigerate (4 °C) 5000 6UTB Iuted to (ml.)	(C) 10 0	5E-05 Balance Uncertainty 0.001 Enable Forecondition	Balance Uncertainty		1890		Formulated by:	sy:	Lawrence Barry		DATE 031725 DATE	
Compound		Nominat Conc (ug/mL)			Target / Weight(g) W	Actual Weight(g) Co	Actual (	Expanded Uncertainty (+/-) (µg/mL)	(Solvent S cAs#	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) LDS	on Attached pg.) ) LD50	0	
1. Acrolein       5       1037555V10F       5000       97       0.5       0.05166       0.05170       5004.1       52.5       107-02-8       0.1 ppm       0         Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode). Column: Vocol (60n X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35% (Time 1 = 10min.), Temp. 2=20% C (Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200% Detector Temp. = 220% C. Analyst: Pedro Renas. NOTE: Due to the instability of acrolein in solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.	103755V10F Detector (Scan mode). r Temp. = 220°C. Ana itact our technical dep	5000 Column: Voco lyst: Pedro Re rrment if furth	97 0 1 (60m X 0.25mm stas. NOTE: Due er information is	0.5 0.0 nm ID X 1.5µm the to the instabil is required.	0.05166 0. In thickness). C	0.05170 ). Oven Profile: T	<b>5004.1</b> emp.1 = 35°C	<b>52.5</b> (Time 1 = 10 <sup>n</sup> lein, and any di	107-02-8 min.), Temp. 2= lifutions thereof	0.1 ppm 200°C ( Time 2 = 8.7 , should be used imm	orl-rat 46mg/kg 5 min.) coliately	By/Bus	
Abundance	2]79005.D			At	Abundance	27	Scan 232	. (8.927 mi	Scan 232 (8.927 min): [BSB2]79005.D	79005.D			
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100000					30000								
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Time>0 10.00 15.00 20.00 25.00 30.00	00 35.00 40.00	45.00	50.00 55.00	0.00	m/z>0 20	30 4(	4 6 50 60	65 75 85 70 80 \$	5 90 100 1	5 119 150 150 160 170 100 110 120 130 140 150 160 170	158 169 0 150 160 170	59 70	
<ul> <li>The certific</li> <li>Standards a</li> <li>Standards a</li> <li>All Standard</li> <li>Uncertainty</li> <li>NIST Techn</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimericing balances that are calibrated with weights traceable to NIST (see above).</li> <li>Scandards are careford (+/-) 0.5% of the stated values otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>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).</li> </ul>	tion calculate (cally using ba & the stared va le, should be s N. and Kuyat, overnment Pri	d from gravimet dances that are e ine, unless other tored with capa i C.E., "Guidelin initing Office, Wi	rzic and volum calibrated wit rwise stated. tight and und ues for Evalua schington, DC	etric measurem h weights tracea er appropriate h ing aud Expres	ents unless oth ble to NIST (s aboratory com ing the Uncer	terwise stated. ee above). ditions. tainty of NISI	Measuremen	ri Result,"				

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Part # 91980 Lot # 031725

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Absolute Standards Inc.

PO Box 5585

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General advice If inhaled In case of skin cont In case of eye conta If swallowed	If inhaled, move person into fresh air. If a p tast Wash with soap and water. Consult a p	at least 15 minutes and consult a physician.	
	SARURAAM DIA T		
	Weight Report For Other Analytes Pro BEFERENCE MATERIAL	sent At Trace Quantities.	
Components (Spe Water	ecific Chemical Identity; Common Name(s))	CAS#: 7732-18-5	(lsnoiiqo) % 79 <
moD - III noitoe2	noifieoqu		
P302,332	СНS Classification in acc Use in ventilated area If on skin, wash with soap and water Signal Word: DANGER	ordance with 29 CFR 1910 (OSHA HCS) H315 Causes skin and eye irritat P280 Use gloves, eye protection P305,351,338 If in eyes, remove contacts	ace sheild
Section II - Haza	ards Identification		
Address	44 Rossotto Dr. Hamden CT, 06514	Emergency Telephone International Date Prepared/Revised	<b>1-362-323-3600</b> 13025
IDENTITY Manufacturer's Na	ANALYTICAL STANDARD DISSOLVED IN V Same ABSOLUTE STANDARDS INC	ATER Emergency Telephone USA & CANADA	1-800-535-5053
Section I Produc	ct and Company Identification		
	Safety Data Sheet (SDS)	thsilgmoD AHSO/SHD	

# Section V. FIREFIGHTING MEASURES

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

# SERION VI. ACCIDENTAL RELEASE MEASURES

Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

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

# Section VII. HANDLING AND STORAGE

Storage Conditions
Precautions for safe handling
1

	L PROTECTION	ANO2A39/2JOATNO:	Section VIII. EXPOSURE C
	mqq 003 :AWT	CAS#: 7732-18-5	Water
Eye protection.	Handle with gloves. Gloves must be inspected prior to use.	Respiratory protection	Personal protective equipment

	SO	Section IX - PHYSICAL/CHEMICAL CHARACTERIST
$v_{\rm F} = 0c$		Boiling Point
L (1 = 02	100°C specific Gravity (H2	אווויס ד פווויס
	Melting Point	Vapor Pressure (mm Hg)

	NOITAMAOANI	Section XI. TOXICOLOGICAL
	eldsiss available	Hazardous decomposition products -
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	AN	Conditions to avoid
	AN	Possibility of hazardous reactions
	Stable under recommended atorage conditions.	Chemical stability
	ΥΠΥΤΟΑΞ	Section X. STABILITY AND R
	LEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR.	Appearance and Odor C
	sompletely miscible	Solubility in Water C
AN	(f = 9tst95A lytuB) AN	
	Evaporation rate	Vapor Density (AIR = 1)
0°C	AN	
FAX: 203-281-	Hamden, CT 06518-0585	
Phone: 203-281-	PO Box 5585	Absolute Standards Inc.

# Section

	NOITAMAOANI	Section XI. TOXICOLOGICAL
	eldelieve steb oV	Hazardous decomposition products - I
	AN	Materials to avoid
	AN	Conditions to avoid
	AN	Possibility of hazardous reactions
noitibnoo egerote bebnen	Stable under recomm	Chemical stability

	Causes skin irritation.
ΑN	LD50 Dermal - Guinea pig
ΨN	LC50 Inhalation - Rat
AN	LD50 Oral - Rat

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

Section XII. ECOLOGICAL INFORMATIO
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### ΨN EC20 ΨN LC50

# Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water Not dangerous goods

(SU) TOO

# Section XIV. TRANSPORT INFORMATION

Proper shipping name: Water	
Not dangerous goods	
ATAI	

# Section XV. REGULATORY INFORMATION

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

# Section XVI. Misc. INFORMATION

you have any questions, please call Technical Service at 1-203-281-2917 for assistance. PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Material Safety Data Sheet. If 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 OTHER WARRATTES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR This obtained any interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warm of all the potential dangers of use or interaction with other chemical may interaction with other substances. ABSOLUTE STANDARDS INC, warmants that the chemical may experiment and the label. ABSOLUTE STANDARDS INC DISCLAMS ANY including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/funces. Exposure to this product may have serious adverse health effects. 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 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. sec) and Global Harmonized System (GHS). This document is intended only as a guide to the sppropriate precautionary frame framework in the intended only as a guide to the sppropriate framework in the material burght with the previous of the United States of the states of the intended prevised by a geroon remaining of intendent and the prevised by a geroon remained in the intendent of the intendent states of the

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certifie 200	iffied Re	Certified Reference Material CRM ンセニー つろ (1 色 / とり	aterial C 「 こ	MA.				ANAE AR-1 https:///	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com	scredited Number ards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	91980 031725 Acrolein			Sol	Solvent(s): Water 07	Lot# 0723240		7	an	Con Con		031725	
Expiration Date: 041725 Recommended Storage: Refrigerate Nominal Concentration (µg/mL): 5000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to fml ):	041725 Refrigerate (4 °C) 5000 6UTB Iuted to (ml.)*	(C) 10 0	5E-05 Balance Uncertainty 0.001 Enable Forecondition	Balance Uncertainty		1890		Formulated by:	sy:	Lawrence Barry		DATE 031725 DATE	
Compound		Nominat Conc (ug/mL)			Target / Weight(g) W	Actual Weight(g) Co	Actual (	Expanded Uncertainty (+/-) (µg/mL)	(Solvent S cAs#	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) LDS	on Attached pg.) ) LD50	0	
1. Acrolein       5       1037555V10F       5000       97       0.5       0.05166       0.05170       5004.1       52.5       107-02-8       0.1 ppm       0         Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode). Column: Vocol (60n X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35% (Time 1 = 10min.), Temp. 2=20% C (Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200% Detector Temp. = 220% C. Analyst: Pedro Renas. NOTE: Due to the instability of acrolein in solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.	103755V10F Detector (Scan mode). r Temp. = 220°C. Ana itact our technical dep	5000 Column: Voco lyst: Pedro Re rrment if furth	97 0 1 (60m X 0.25mm stas. NOTE: Due er information is	0.5 0.0 nm ID X 1.5µm the to the instabil is required.	0.05166 0. In thickness). C	0.05170 ). Oven Profile: T	<b>5004.1</b> emp.1 = 35°C	<b>52.5</b> (Time 1 = 10 <sup>n</sup> lein, and any di	107-02-8 min.), Temp. 2= lifutions thereof	0.1 ppm 200°C ( Time 2 = 8.7 , should be used imm	orl-rat 46mg/kg 5 min.) coliately	By/Bus	
Abundance	2]79005.D			At	Abundance	27	Scan 232	. (8.927 mi	Scan 232 (8.927 min): [BSB2]79005.D	79005.D			
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<ul> <li>The certific</li> <li>Standards a</li> <li>Standards a</li> <li>All Standard</li> <li>Uncertainty</li> <li>NIST Techn</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimericing balances that are calibrated with weights traceable to NIST (see above).</li> <li>Scandards are careford (+/-) 0.5% of the stated values otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>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).</li> </ul>	tion calculate (cally using ba & the stared va le, should be s N. and Kuyat, overnment Pri	d from gravimet dances that are 4 the, unless other tored with capa 1 C.E., "Guidelin initing Office, Wi	rzic and volum calibrated wit rwise stated. tight and und ues for Evalua schington, DC	etric measurem h weights tracea er appropriate h iing aud Expres	ents unless oth ble to NIST (s aboratory com ing the Uncer	terwise stated. ee above). ditions. tainty of NISI	Measuremen	ri Result,"				

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Part # 91980 Lot # 031725

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Absolute Standards Inc.

PO Box 5585

7101-182-203 :5nor9

General advice If inhaled In case of skin cont In case of eye conta If swallowed	If inhaled, move person into fresh air. If a p tast Wash with soap and water. Consult a p	at least 15 minutes and consult a physician.	
	SERUSAEM DIA T		
	Weight Report For Other Analytes Pro BEFERENCE MATERIAL	sent At Trace Quantities.	
Components (Spe Water	ecific Chemical Identity; Common Name(s))	CAS#: 7732-18-5	(lsnoiiqo) % 79 <
moD - III noitoe2	noifieoqu		
P302,332	СНS Classification in acc Use in ventilated area If on skin, wash with soap and water Signal Word: DANGER	ordance with 29 CFR 1910 (OSHA HCS) H315 Causes skin and eye irritat P280 Use gloves, eye protection P305,351,338 If in eyes, remove contacts	ace sheild
Section II - Haza	ards Identification		
Address	44 Rossotto Dr. Hamden CT, 06514	Emergency Telephone International Date Prepared/Revised	<b>1-362-323-3600</b> 13025
IDENTITY Manufacturer's Na	ANALYTICAL STANDARD DISSOLVED IN V Same ABSOLUTE STANDARDS INC	ATER Emergency Telephone USA & CANADA	1-800-535-5053
Section I Produc	ct and Company Identification		
	Safety Data Sheet (SDS)	thsilgmoD AHSO/SHD	

# Section V. FIREFIGHTING MEASURES

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

# SERION VI. ACCIDENTAL RELEASE MEASURES

Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

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

# Section VII. HANDLING AND STORAGE

Storage Conditions
Precautions for safe handling
1

	L PROTECTION	ANO2A39/2JOATNO:	Section VIII. EXPOSURE C
	mqq 003 :AWT	CAS#: 7732-18-5	Water
Eye protection.	Handle with gloves. Gloves must be inspected prior to use.	Respiratory protection	Personal protective equipment

	SO	Section IX - PHYSICAL/CHEMICAL CHARACTERIST
$v_{\rm F} = 0c$		Boiling Point
L (1 = 02	100°C specific Gravity (H2	אווויס ד פווויס
	Melting Point	Vapor Pressure (mm Hg)

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	eldsiss available	Hazardous decomposition products -
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	AN	Conditions to avoid
	AN	Possibility of hazardous reactions
	Stable under recommended atorage conditions.	Chemical stability
	ΥΠΥΤΟΑΞ	Section X. STABILITY AND R
	LEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR.	Appearance and Odor C
	sompletely miscible	Solubility in Water C
AN	(f = 9tst95A lytuB) AN	
	Evaporation rate	Vapor Density (AIR = 1)
0°C	AN	
FAX: 203-281-	Hamden, CT 06518-0585	
Phone: 203-281-	PO Box 5585	Absolute Standards Inc.

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	NOITAMAOANI	Section XI. TOXICOLOGICAL
	eldelieve steb oV	Hazardous decomposition products - I
	AN	Materials to avoid
	AN	Conditions to avoid
	AN	Possibility of hazardous reactions
noitibnoo egerote bebnen	Stable under recomm	Chemical stability

	Causes skin irritation.
ΑN	LD50 Dermal - Guinea pig
ΨN	LC50 Inhalation - Rat
AN	LD50 Oral - Rat

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

Section XII. ECOLOGICAL INFORMATIO
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OITAMAORNI	ECOLOGICAL	Section XII.	

### ΨN EC20 ΨN LC50

# Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water Not dangerous goods

(SU) TOO

# Section XIV. TRANSPORT INFORMATION

Proper shipping name: Water	
Not dangerous goods	
ATAI	

# Section XV. REGULATORY INFORMATION

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

# Section XVI. Misc. INFORMATION

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Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certifie 200	iffied Re	Certified Reference Material CRM ンセニー つろ (1 色 / 2 リ	aterial C 「 こ	MA.				ANAE AR-1 https:///	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com	scredited Number ards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	91980 031725 Acrolein			Sol	Solvent(s): Water 07	Lot# 0723240		7	an	Con Con		031725	
Expiration Date: 041725 Recommended Storage: Refrigerate Nominal Concentration (µg/mL): 5000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to fml ):	041725 Refrigerate (4 °C) 5000 6UTB Iuted to (ml.).	(C) 10 0	5E-05 Balance Uncertainty 0.001 Enable Forecondition	Balance Uncertainty		1890		Formulated by:	sy:	Lawrence Barry		DATE 031725 DATE	
Compound		Nominat Conc (ug/mL)			Target / Weight(g) W	Actual Weight(g) Co	Actual (	Expanded Uncertainty (+/-) (µg/mL)	(Solvent S cAs#	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) LDS	on Attached pg.) ) LD50	0	
1. Acrolein       5       1037555V10F       5000       97       0.5       0.05166       0.05170       5004.1       52.5       107-02-8       0.1 ppm       0         Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode). Column: Vocol (60n X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35% (Time 1 = 10min.), Temp. 2=20% C (Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200% C betector Temp. = 220% C Analyst: Pedro Renas. NOTE: Due to the instability of acrolein in solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.	103755V10F Detector (Scan mode). r Temp. = 220°C. Ana itact our technical dep	5000 Column: Voco lyst: Pedro Re rrment if furth	97 0 1 (60m X 0.25mm stas. NOTE: Due er information is	0.5 0.0 nm ID X 1.5µm the to the instabil is required.	0.05166 0. In thickness). C	0.05170 ). Oven Profile: T	<b>5004.1</b> emp.1 = 35°C	<b>52.5</b> (Time 1 = 10 <sup>n</sup> lein, and any di	107-02-8 min.), Temp. 2= lifutions thereof	0.1 ppm 200°C ( Time 2 = 8.7 , should be used imm	orl-rat 46mg/kg 5 min.) coliately	By/Bus	
Abundance	2]79005.D			At	Abundance	27	Scan 232	. (8.927 mi	Scan 232 (8.927 min): [BSB2]79005.D	79005.D			
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<ul> <li>The certific</li> <li>Standards a</li> <li>Standards a</li> <li>All Standard</li> <li>Uncertainty</li> <li>NIST Techn</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimericing balances that are calibrated with weights traceable to NIST (see above).</li> <li>Scandards are careford (+/-) 0.5% of the stated values otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>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).</li> </ul>	tion calculate (cally using ba & the stared va le, should be s N. and Kuyat, overnment Pri	d from gravimet dances that are 4 the, unless other tored with capa 1 C.E., "Guidelin initing Office, Wi	rzic and volum calibrated wit rwise stated. tight and und ues for Evalua schington, DC	etric measurem h weights tracea er appropriate h iing aud Expres	ents unless oth ble to NIST (s aboratory com ing the Uncer	terwise stated. ee above). ditions. tainty of NISI	Measuremen	ri Result,"				

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1 of 1

Part # 91980 Lot # 031725

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Absolute Standards Inc.

PO Box 5585

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General advice If inhaled In case of skin cont In case of eye conta If swallowed	If inhaled, move person into fresh air. If a p tast Wash with soap and water. Consult a p	at least 15 minutes and consult a physician.	
	SARURAAM DIA T		
	Weight Report For Other Analytes Pro BEFERENCE MATERIAL	sent At Trace Quantities.	
Components (Spe Water	ecific Chemical Identity; Common Name(s))	CAS#: 7732-18-5	(lsnoiiqo) % 79 <
moD - III noitoe2	noifieoqu		
P302,332	СНS Classification in acc Use in ventilated area If on skin, wash with soap and water Signal Word: DANGER	ordance with 29 CFR 1910 (OSHA HCS) H315 Causes skin and eye irritat P280 Use gloves, eye protection P305,351,338 If in eyes, remove contacts	ace sheild
Section II - Haza	ards Identification		
Address	44 Rossotto Dr. Hamden CT, 06514	Emergency Telephone International Date Prepared/Revised	<b>1-362-323-3600</b> 13025
IDENTITY Manufacturer's Na	ANALYTICAL STANDARD DISSOLVED IN V Same ABSOLUTE STANDARDS INC	ATER Emergency Telephone USA & CANADA	1-800-535-5053
Section I Produc	ct and Company Identification		
	Safety Data Sheet (SDS)	thsilgmoD AHSO/SHD	

# Section V. FIREFIGHTING MEASURES

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

# SERION VI. ACCIDENTAL RELEASE MEASURES

Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

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

# Section VII. HANDLING AND STORAGE

Storage Conditions
Precautions for safe handling
1

	L PROTECTION	ANO2A39/2JOATNO:	Section VIII. EXPOSURE C
	mqq 003 :AWT	CAS#: 7732-18-5	Water
Eye protection.	Handle with gloves. Gloves must be inspected prior to use.	Respiratory protection	Personal protective equipment

	SO	Section IX - PHYSICAL/CHEMICAL CHARACTERIST
$v_{\rm F} = 0c$		Boiling Point
L (1 = 02	100°C specific Gravity (H2	אווויס ד פווויס
	Melting Point	Vapor Pressure (mm Hg)

	NOITAMAOANI	Section XI. TOXICOLOGICAL
	eldsiss available	Hazardous decomposition products -
	AN	biove of algorithms biove biove of algorithms biove biological biological biological biological biological biove b
	AN	Conditions to avoid
	AN	Possibility of hazardous reactions
	Stable under recommended atorage conditions.	Chemical stability
	ΥΠΥΤΟΑΞ	Section X. STABILITY AND R
	LEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR.	Appearance and Odor C
	sompletely miscible	Solubility in Water C
AN	(f = 9tst95A lytuB) AN	
	Evaporation rate	Vapor Density (AIR = 1)
0°C	AN	
FAX: 203-281-	Hamden, CT 06518-0585	
Phone: 203-281-	PO Box 5585	Absolute Standards Inc.

# Section

	NOITAMAOANI	Section XI. TOXICOLOGICAL
	eldelieve steb oV	Hazardous decomposition products - I
	AN	Materials to avoid
	AN	Conditions to avoid
	AN	Possibility of hazardous reactions
noitibnoo egerote bebnen	Stable under recomm	Chemical stability

	Causes skin irritation.
ΑN	LD50 Dermal - Guinea pig
ΨN	LC50 Inhalation - Rat
AN	LD50 Oral - Rat

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

Section XII. ECOLOGICAL INFORMATIO
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OITAMAORNI	ECOLOGICAL	Section XII.	

### ΨN EC20 ΨN LC50

# Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water Not dangerous goods

(SU) TOO

# Section XIV. TRANSPORT INFORMATION

Proper shipping name: Water	
Not dangerous goods	
ATAI	

# Section XV. REGULATORY INFORMATION

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

# Section XVI. Misc. INFORMATION

you have any questions, please call Technical Service at 1-203-281-2917 for assistance. PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Material Safety Data Sheet. If 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 OTHER WARRATTES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR This obtained any interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warm of all the potential dangers of use or interaction with other chemical may interaction with other substances. ABSOLUTE STANDARDS INC, warmants that the chemical may experiment and the label. ABSOLUTE STANDARDS INC DISCLAMS ANY including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/funces. Exposure to this product may have serious adverse health effects. 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 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. sec) and Global Harmonized System (GHS). This document is intended only as a guide to the sppropriate precautionary frame framework in the intended only as a guide to the sppropriate framework in the material burght with the previous of the United States of the states of the intended prevised by a geroon remaining of intendent and the prevised by a geroon remained in the intendent of the intendent states of the

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certifie 200	iffied Re	Certified Reference Material CRM ンセニー つろ (1 色 / 2 リ	aterial C 「 こ	MA.				ANAE AR-1 https:///	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com	scredited Number ards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	91980 031725 Acrolein			Sol	Solvent(s): Water 07	Lot# 0723240		7	an	Con Con		031725	
Expiration Date: 041725 Recommended Storage: Refrigerate Nominal Concentration (µg/mL): 5000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to fml ):	041725 Refrigerate (4 °C) 5000 6UTB Iuted to (ml.)	(C) 10 0	5E-05 Balance Uncertainty 0.001 Enable Forecondition	Balance Uncertainty		1890		Formulated by:	sy:	Lawrence Barry		DATE 031725 DATE	
Compound		Nominat Conc (ug/mL)			Target / Weight(g) W	Actual Weight(g) Co	Actual (	Expanded Uncertainty (+/-) (µg/mL)	(Solvent S cAs#	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) LDS	on Attached pg.) ) LD50	0	
1. Acrolein       5       1037555V10F       5000       97       0.5       0.05166       0.05170       5004.1       52.5       107-02-8       0.1 ppm       0         Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode). Column: Vocol (60n X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35% (Time 1 = 10min.), Temp. 2=20% C (Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200% Detector Temp. = 220% C. Analyst: Pedro Renas. NOTE: Due to the instability of acrolein in solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.	103755V10F Detector (Scan mode). r Temp. = 220°C. Ana itact our technical dep	5000 Column: Voco lyst: Pedro Re rrment if furth	97 0 1 (60m X 0.25mm stas. NOTE: Due er information is	0.5 0.0 nm ID X 1.5µm the to the instabil is required.	0.05166 0. In thickness). C	0.05170 ). Oven Profile: T	<b>5004.1</b> emp.1 = 35°C	<b>52.5</b> (Time 1 = 10 <sup>n</sup> lein, and any di	107-02-8 min.), Temp. 2= lifutions thereof	0.1 ppm 200°C ( Time 2 = 8.7 , should be used imm	orl-rat 46mg/kg 5 min.) coliately	By/Bus	
Abundance	2]79005.D			At	Abundance	27	Scan 232	. (8.927 mi	Scan 232 (8.927 min): [BSB2]79005.D	79005.D			
<b>250000</b> 8.93					60000	a ven							
200000	ì	°////			5000		50						
150000					40000								
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Time>0 10.00 15.00 20.00 25.00 30.00	00 35.00 40.00	45.00	50.00 55.00	0.00	m/z>0 20	30 4(	4 6 50 60	65 75 85 70 80 \$	5 90 100 1	5 119 158 169 90 100 110 120 130 140 150 160 170	158 169 0 150 160 170	59 70	
<ul> <li>The certific</li> <li>Standards a</li> <li>Standards a</li> <li>All Standard</li> <li>Uncertainty</li> <li>NIST Techn</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimericing balances that are calibrated with weights traceable to NIST (see above).</li> <li>Scandards are careford (+/-) 0.5% of the stated values otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>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).</li> </ul>	tion calculate (cally using ba & the stared va le, should be s N. and Kuyat, overnment Pri	d from gravimet dances that are 4 the, unless other tored with capa 1 C.E., "Guidelin initing Office, Wi	rzic and volum calibrated wit rwise stated. tight and und ues for Evalua schington, DC	etric measurem h weights tracea er appropriate h iing aud Expres	ents unless oth ble to NIST (s aboratory com ing the Uncer	terwise stated. ee above). ditions. tainty of NISI	Measuremen	ri Result,"				

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Part # 91980 Lot # 031725

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Absolute Standards Inc.

PO Box 5585

7101-182-203 :5nor9

General advice If inhaled In case of skin cont In case of eye conta If swallowed	If inhaled, move person into fresh air. If a p tast Wash with soap and water. Consult a p	at least 15 minutes and consult a physician.	
	SERUSAEM DIA T		
	Weight Report For Other Analytes Pro BEFERENCE MATERIAL	sent At Trace Quantities.	
Components (Spe Water	ecific Chemical Identity; Common Name(s))	CAS#: 7732-18-5	(lsnoiiqo) % 79 <
moD - III noitoe2	noifieoqu		
P302,332	СНS Classification in acc Use in ventilated area If on skin, wash with soap and water Signal Word: DANGER	ordance with 29 CFR 1910 (OSHA HCS) H315 Causes skin and eye irritat P280 Use gloves, eye protection P305,351,338 If in eyes, remove contacts	ace sheild
Section II - Haza	ards Identification		
Address	44 Rossotto Dr. Hamden CT, 06514	Emergency Telephone International Date Prepared/Revised	<b>1-362-323-3600</b> 13025
IDENTITY Manufacturer's Na	ANALYTICAL STANDARD DISSOLVED IN V Same ABSOLUTE STANDARDS INC	ATER Emergency Telephone USA & CANADA	1-800-535-5053
Section I Produc	ct and Company Identification		
	Safety Data Sheet (SDS)	thsilgmoD AHSO/SHD	

# Section V. FIREFIGHTING MEASURES

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

# SERION VI. ACCIDENTAL RELEASE MEASURES

Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product.

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

# Section VII. HANDLING AND STORAGE

Storage Conditions
Precautions for safe handling
1

	L PROTECTION	ANO2A39/2JOATNO:	Section VIII. EXPOSURE C
	mqq 003 :AWT	CAS#: 7732-18-5	Water
Eye protection.	Handle with gloves. Gloves must be inspected prior to use.	Respiratory protection	Personal protective equipment

Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS			
$v_{\rm F} = 0c$		Boiling Point	
L (1 = 02	100°C specific Gravity (H2	אווויס ד פווויס	
	Melting Point	Vapor Pressure (mm Hg)	

	NOITAMAOANI	Section XI. TOXICOLOGICAL
	eldsiss available	Hazardous decomposition products -
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	AN	Conditions to avoid
	AN	Possibility of hazardous reactions
	Stable under recommended atorage conditions.	Chemical stability
	ΥΠΥΤΟΑΞ	Section X. STABILITY AND R
Designce and Odor CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR.		
	sompletely miscible	Solubility in Water C
AN	(f = 9tst95A lytuB) AN	
	Evaporation rate	Vapor Density (AIR = 1)
0°C	AN	
FAX: 203-281-	Hamden, CT 06518-0585	
Phone: 203-281-	PO Box 5585	Absolute Standards Inc.

# Section

VOITAMBOANI JAC		Section XI. TOXICOLOGICAL
	eldelieve steb oV	Hazardous decomposition products - I
	AN	Materials to avoid
	AN	Conditions to avoid
	AN	Possibility of hazardous reactions
noitibnoo egerote bebnen	Stable under recomm	Chemical stability

	Causes skin irritation.
ΑN	LD50 Dermal - Guinea pig
ΨN	LC50 Inhalation - Rat
AN	LD50 Oral - Rat

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

Section XII. ECOLOGICAL INFORMATIO
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OITAMAORNI	ECOLOGICAL	Section XII.	

### ΨN EC20 ΨN LC50

# Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water Not dangerous goods

(SU) TOO

# Section XIV. TRANSPORT INFORMATION

Proper shipping name: Water	
Not dangerous goods	
ATAI	

# Section XV. REGULATORY INFORMATION

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

# Section XVI. Misc. INFORMATION

you have any questions, please call Technical Service at 1-203-281-2917 for assistance. PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Material Safety Data Sheet. If 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 OTHER WARRATTES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR This obtained any interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. cannot warm of all the potential dangers of use or interaction with other chemical may interaction with other substances. ABSOLUTE STANDARDS INC, warmants that the chemical may experiment and the label. ABSOLUTE STANDARDS INC DISCLAMS ANY including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/funces. Exposure to this product may have serious adverse health effects. 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 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. sec) and Global Harmonized System (GHS). This document is intended only as a guide to the sppropriate precautionary frame framework in the intended only as a guide to the sppropriate framework in the material burght with the previous of the United States of the states of the intended prevised by a geroon remaining of intendent and the prevised by a geroon remained in the intendent of the intendent states of the

Absolute Standards, 800-368-1131 www.absolutestandards.com	Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certified	Certified Reference Material CRM	e Material C	I CRM	2 119	to the second se	 	ANAB ISO 1 AR-1539 Ce https://Absolut	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT	Lot Number: Lot Number: Description:	91980 091424 Acrolein			Solve	Lots 072324			Justine	Harden K		
Nomine Weight(s) show	Expiration Date: 101424 Recommended Storage: Refrigerate Nominal Concentration ( <i>ug/mL</i> ): 5000 NIST Test ID#; 6UTB Weight(s) shown below were combined and diluted to (mL):	101424 Refrigerate (4 °C) 5000 6UTB d diluted to (mL):	10.0	5E-05 Balance Uncertainty 0.001 Flask Uncertainty	ertainty ainty			Formulated By:	N N	Justin Dippold	091424 DATE 091424 DATE	
Compound	. Ka	Lot RM# Number	Nominat Conc (µg/mL)	Purity Uncertainty (%) Purity	ty Target Weight(g)	Actual Weight(g)	Expanded Actual Uncertainty Conc (µg/mL) (+/-) (µg/mL)		Solvent Safety CAS# 0SH	SDS Information (Solvent Safety info. On Attached pg.) CAS# 05HA PEL (TWA) UDS	hed pg.) LDS0	
1. Acrolein Method: G Rate = 4°C Lone tern°	oil         5         103755V10F         5000         97         0.5         0.05166         0.05175         5008.9         52.5         107-02-8         0.1 ppm         o           Mathed         GC6MSD-1. Detector:         Mass Selective Detector (Scan mode). Columns: Vocol (60m X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35°C (Time 1 = 10min.). Temp. 2=20°C (Time 2 = 8.75 min.)         0           Lone term strater is not recommended for comment of the mode.         NOTE: Due to the instability of acrolein in solutions of acrolein. and any dilutions thereaf, femult have a immediated.         2=8.75 min.)	5 103755V10F we Detector (Scan mode) ector Temp. = 220°C. An	5000 ). Column: Vocol ( nalyst: Pedro Rent	97 0.5 (60m X 0.25mm ID ms. NOTTE: Due to ti	0.05166 X 1.5µm film thicknown in the context of acrol	0.05175 css). Oven Profile cita in solution, all	5008.9 le: Temp. 1 = 35°C. Il solutions of acrol	52.5 10 (Time 1 = 10min. tein, and any dilut	107-02-8 0 nin.), Temp. 2–200°C ( littions thereof, should	0.1 ppm (Time 2 = 8.75 min.) ( he need inversely	-La	
Abundance	TIC: [BS	TIC: [BSB2]79005.D	partners n sunner	untormation is requ	Abundance	φ	Scan 232	(8.927 min).	Scan 232 (8.927 min): [BSB2]79005.D	D.		
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10000					30000	0						
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	<ul> <li>The certification</li> <li>Shandards</li> <li>Shandards</li> <li>Shandards</li> <li>All Standards</li> <li>Uncertainty</li> <li>NIST Tech</li> </ul>	<ol> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Shandards are prepared gravimetrically using bacos that are existrated with weights traceable to NIST (see above).</li> <li>Shandards are certified (<i>++</i>) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with easy fand under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.R., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Rendt," NIST 7 echnical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ol>	ation calculated f rically using bala of the stated vaim ule, should be sto 'N. and Kuyat, C.	rum gravimetric an nocs that are calibr s, unless otherwise ved with caps tight. E., "Guidelines for ing Office, Washing	d volumetric means ated with weights th statted. Bud under appropri- tion, DC, (1994).	arcashie to NIST accashie to NIST ate laboratory or prossing the Uno	otherwise stated. (see above), onditions. tertainty of NIST )	Measurement Ro	ल्ह्यार्थन,"			

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Lot # 091424 Part # 91980

Absolute Standards, 800-368-1131 www.absolutestandards.com	Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certified	Certified Reference Material CRM	e Material C	I CRM	2 119	to the second se	 	ANAB ISO 1 AR-1539 Ce https://Absolut	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT	Lot Number: Lot Number: Description:	91980 091424 Acrolein			Solve	Lots 072324			Justine	Harden K		
Nomine Weight(s) show	Expiration Date: 101424 Recommended Storage: Refrigerate Nominal Concentration ( <i>ug/mL</i> ): 5000 NIST Test ID#; 6UTB Weight(s) shown below were combined and diluted to (mL):	101424 Refrigerate (4 °C) 5000 6UTB d diluted to (mL):	10.0	5E-05 Balance Uncertainty 0.001 Flask Uncertainty	ertainty ainty			Formulated By:	N N	Justin Dippold	091424 DATE 091424 DATE	
Compound	. Ka	Lot RM# Number	Nominat Conc (µg/mL)	Purity Uncertainty (%) Purity	ty Target Weight(g)	Actual Weight(g)	Expanded Actual Uncertainty Conc (µg/mL) (+/-) (µg/mL)		Solvent Safety CAS# 0SH	SDS Information (Solvent Safety info. On Attached pg.) CAS# 05HA PEL (TWA) UDS	hed pg.) LDS0	
1. Acrolein Method: G Rate = 4°C Lone tern°	oil         5         103755V10F         5000         97         0.5         0.05166         0.05175         5008.9         52.5         107-02-8         0.1 ppm         o           Mathed         GC6MSD-1. Detector:         Mass Selective Detector (Scan mode). Columns: Vocol (60m X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35°C (Time 1 = 10min.). Temp. 2=20°C (Time 2 = 8.75 min.)         0           Lone term strater is not recommended for comment of the mode.         NOTE: Due to the instability of acrolein in solutions of acrolein. and any dilutions thereaf, femult have a immediated.         2=8.75 min.)	5 103755V10F we Detector (Scan mode) ector Temp. = 220°C. An	5000 ). Column: Vocol ( nalyst: Pedro Rent	97 0.5 (60m X 0.25mm ID ms. NOTTE: Due to ti	0.05166 X 1.5µm film thicknown in the context of acrol	0.05175 css). Oven Profile cita in solution, all	5008.9 le: Temp. 1 = 35°C. Il solutions of acrol	52.5 10 (Time 1 = 10min. tein, and any dilut	107-02-8 0 nin.), Temp. 2–200°C ( littions thereof, should	0.1 ppm (Time 2 = 8.75 min.) ( he need inversely	-La	
Abundance	TIC: [BS	TIC: [BSB2]79005.D	partners n surber	untormation is requ	Abundance	φ	Scan 232	(8.927 min).	Scan 232 (8.927 min): [BSB2]79005.D	D.		
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10000					30000	0						
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20000					10000	37	~					
Time>0 10.0	10.00 15.00 20.00 25.00 30.00 35.00	30.00 35.00 40.	00 45.00 50	40.00 45.00 50.00 55.00 60.00	0<2/UL 10.0	20 30	44 65 7 40 50 60 70	5 80 80	119 100 110 120	130 140 150	158 169 1 160 170	
	<ul> <li>The certification</li> <li>Shandards</li> <li>Shandards</li> <li>Shandards</li> <li>All Standards</li> <li>Uncertainty</li> <li>NIST Tech</li> </ul>	<ol> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Shandards are prepared gravimetrically using bacos that are existrated with weights traceable to NIST (see above).</li> <li>Shandards are certified (<i>++</i>) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with easy fand under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.R., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Rendt," NIST 7 echnical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ol>	ation calculated f rically using bala of the stated vaim ule, should be sto 'N. and Kuyat, C.	rum gravimetric an nocs that are calibr s, unless otherwise ved with caps tight. E., "Guidelines for ing Office, Washing	d volumetric means ated with weights th statted. Bud under appropri- tion, DC, (1994).	arcashie to NIST accashie to NIST ate laboratory or prossing the Uno	otherwise stated. (see above), onditions. tertainty of NIST )	Measurement Ro	ल्ह्यार्थन,"			

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1 of 1

Lot # 091424 Part # 91980

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com		Certified Reference Material CRM	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT     95318       Part Number:     95318       Lot Number:     120524       Description:     2-Chloroet       Expiration Date:     120527       Recommended Storage:     Refrigerat       Nominal Concentration ( <i>ug/mL</i> ):     10000       Neight(s) shown below were combined and diluted to (mL):     Under the tot (mL):	95318 120524 2-Chloroethyl vinyl ether 120527 Refrigerate (4 °C) 10000 6UTB 10000 6UTB 30.0 M# Lot Number Conc (vg/mt)	2.6.1 $1.1$ $2.6Solvent(s): LotsMethanol EJ143-US1.14.520 t^{2}1.14.520 t^{2}1.14$	Formulated By: Prashant Chaufuan 120524 Formulated By: Prashant Chaufuan DATE Formulated By: Prashant Chaufuan DATE Reviewed By: Pedro L. Rentas DATE Expanded SS Information Uncertainty (Solvent Safety Info. On Attached pg.) (++) (ug/mL) Case OstA PEL (TWA) LD50
1. 2-Chloroethyl vinyl ether 74 MKCD0033 10000 99 Method: GC6MSD-1.M. Detector: MSD. Column: (60m X 0.25mm X 1.5 $\mu$ m). Injector B Temp = 200°C, Detector B Temp. = 220°C. Analyst: Candice Warren.	74 MKCD0033 10000 . Column: (60m X 0.25mm X 1.5 np. = 220°C. Analyst: Candice W	2-Chloroethyl viryl ether 74 MKCD0033 10000 99 0.2 0.50536 0.50550 10002.9 40.5 110-75-8 NA 00 Method: GC6MSD-1 M. Detector: MSD. Column: (60m X 0.25mm X 1.5 µm). Oven Profile: Temp 1 = 35°C (Time 1=10min.), Temp 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min., Injector B Temp = 200°C, Detector B Temp = 220°C. Analyst: Candice Warren.	40.5         110-75-8         N/A         ori-rat 250mg/kg           ap 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min.,
Abordance 222000 160000 140000 100000 60000 60000 20000 100000 100000 100000 100000 100000 100000 15.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	MG 553162	Abordance 20005 20005 20005 20005 20005 16000 16000 16000 16000 200 200	
<ul> <li>The ce</li> <li>Shanda</li> <li>Shanda</li> <li>Shanda</li> <li>Shanda</li> <li>Uncert</li> <li>NLST</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetri standards are prepend gravinetrically using balances that are cal estandards are prefited (<i>H</i>.) 0.5% of the stated value, unless otherwa . All Standards, after opening ampule, should be stored with caps fig of Uncertainty Reference: Taylor, B.N. and Kuyat, C.B., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wasl</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calificated with weights traccable to NIST (see above).</li> <li>Standards are certified (++) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>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).</li> </ul>	asted. NIST Measurement Result,"

Constant Con

Safety Data Sheet (SDS)

GHS/OSHA Compliant

Section I Product and Co	mpany Identification			
	CAL STANDARD DISSOLVED IN ME			4 000 505 5050
Manufacturer's Name	ABSOLUTE STANDARDS INC		phone USA & CANADA	1-800-535-5053
Address	44 Rossotto Dr. Hamden CT, 06514	Date Prepared/F	phone International Revised	<b>1-352-323-3500</b> January 1, 2024
Section II - Hazards Identi				
	GHS Classification in accord	ance with 29 CF	R 1910 (OSHA HCS)	
H370 Cause dar P271 Use in ver	mmable Liquid and Vapor nage to organs ntilated area wash with soap and water Signal Word: DANGER		Toxic if swallowed, skin co Suspected of causing canc Use gloves, eye protection if in eyes, remove contacts	er fface sheild
Section III - Composition				
Components (Specific Cher Methanol	nical Identity; Common Name(s)) METHYL ALCOHOL	CAS#: 67-56-1		% (optional) > 97
See Certified Weight F	Report For Other Analytes Pre	esent At Trace	Quantities.	
Section IV. FIRST AID ME	ASURES			
If inhaled In case of skin contact In case of eye contact If swallowed	If inhaled, move person into fresh air. If no Wash with soap and water. Consult a phy Rinse thoroughly with plenty of water for a Do NOT induce vomiting. Rinse mouth wit	/sician. at least 15 minutes ar	d consult a physician.	
Section V. FIREFIGHTING	MEASURES			
Flammability Suitable extinguishing media Protective equipment for fire	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appare	No smoking. am, dry chemical or c	arbon dioxide.	int. Keep away from
Section VI. ACCIDENTAL	RELEASE MEASURES			
Personal precautions Environmental precautions Clean up	Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe Contain spillage, and then collect and place	osive concentrations. to do so. Do not let p	roduct enter drains.	
Section VII. HANDLING A	ND STORAGE			
Precautions for safe handling Storage Conditions	Avoid contact with skin and eyes. Ave Use ventilation Keep away from sour Keep container tightly closed in a dry and kept upright to prevent leakage.	ces of ignition. No si	noking. Prevent the build up of elec	
Section VIII. EXPOSURE (	CONTROLS/PERSONAL PROTECT	ION		
	m =		spected prior to use. Eye protect	ion.
Section IX - Physical/Che	mical Characteristics			

Boiling Point			Specific Gravity (H2O = 1)	
J. J		65°C		0.79
Vapor Pressure (mm Hg)			Melting Point	
		96		-98°C
Vapor Density (AIR = 1)		· · · · · · · · · · · · · · · · · · ·	Evaporation rate	
		1.11	(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 stabilityStable under recommended storage conditions.Possibility of hazardous reactionsVapours may form explosive mixture with air.Conditions to avoidHeat, flames, sparks, extreme temperature and sunlight.Materials to avoidAcid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, AcidsHazardous decomposition products formed under fire conditions. - Carbon oxides

# Section XI. TOXICOLOGICAL INFORMATION

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

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

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

### Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

# Section XIV. TRANSPORT INFORMATION

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

### Section XV. REGULATORY INFORMATION

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

### Section XVI. Misc. INFORMATION

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

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com		Certified Reference Material CRM	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT     95318       Part Number:     95318       Lot Number:     120524       Description:     2-Chloroet       Expiration Date:     120527       Recommended Storage:     Refrigerat       Nominal Concentration ( <i>ug/mL</i> ):     10000       Neight(s) shown below were combined and diluted to (mL):     Under the tot (mL):	95318 120524 2-Chloroethyl vinyl ether 120527 Refrigerate (4 °C) 10000 6UTB 10000 6UTB 30.0 M# Lot Number Conc (vg/mt)	2.6.1 $1.1$ $2.6Solvent(s): LotsMethanol EJ143-US1.14.520 t^{2}1.14.520 t^{2}1.14$	Formulated By: Prashant Chaufuan 120524 Formulated By: Prashant Chaufuan DATE Formulated By: Prashant Chaufuan DATE Reviewed By: Pedro L. Rentas DATE Expanded SS Information Uncertainty (Solvent Safety Info. On Attached pg.) (++) (ug/mL) Case OstA PEL (TWA) LD50
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Abordance 222000 160000 140000 100000 60000 60000 20000 100000 100000 100000 100000 100000 100000 15.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	MG 553162	Abordance 20005 20005 20005 20005 20005 16000 16000 16000 16000 200 200	
<ul> <li>The ce</li> <li>Shanda</li> <li>Shanda</li> <li>Shanda</li> <li>Shanda</li> <li>Uncert</li> <li>NLST</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetri standards are prepend gravinetrically using balances that are cal estandards are prefited (<i>H</i>.) 0.5% of the stated value, unless otherwa . All Standards, after opening ampule, should be stored with caps fig of Uncertainty Reference: Taylor, B.N. and Kuyat, C.B., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wasl</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calificated with weights traccable to NIST (see above).</li> <li>Standards are certified (++) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.</li> <li>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).</li> </ul>	asted. NIST Measurement Result,"

Constant Con

Safety Data Sheet (SDS)

GHS/OSHA Compliant

Section I Product and Co	mpany Identification			
	CAL STANDARD DISSOLVED IN ME			4 000 505 5050
Manufacturer's Name	ABSOLUTE STANDARDS INC		phone USA & CANADA	1-800-535-5053
Address	44 Rossotto Dr. Hamden CT, 06514	Date Prepared/F	phone International Revised	<b>1-352-323-3500</b> January 1, 2024
Section II - Hazards Identi				
	GHS Classification in accord	ance with 29 CF	R 1910 (OSHA HCS)	
H370 Cause dar P271 Use in ver	mmable Liquid and Vapor nage to organs ntilated area wash with soap and water Signal Word: DANGER		Toxic if swallowed, skin co Suspected of causing canc Use gloves, eye protection if in eyes, remove contacts	er fface sheild
Section III - Composition				
Components (Specific Cher Methanol	nical Identity; Common Name(s)) METHYL ALCOHOL	CAS#: 67-56-1		% (optional) > 97
See Certified Weight F	Report For Other Analytes Pre	esent At Trace	Quantities.	
Section IV. FIRST AID ME	ASURES			
If inhaled In case of skin contact In case of eye contact If swallowed	If inhaled, move person into fresh air. If no Wash with soap and water. Consult a phy Rinse thoroughly with plenty of water for a Do NOT induce vomiting. Rinse mouth wit	/sician. at least 15 minutes ar	d consult a physician.	
Section V. FIREFIGHTING	MEASURES			
Flammability Suitable extinguishing media Protective equipment for fire	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appare	No smoking. am, dry chemical or c	arbon dioxide.	int. Keep away from
Section VI. ACCIDENTAL	RELEASE MEASURES			
Personal precautions Environmental precautions Clean up	Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe Contain spillage, and then collect and place	osive concentrations. to do so. Do not let p	roduct enter drains.	
Section VII. HANDLING A	ND STORAGE			
Precautions for safe handling Storage Conditions	Avoid contact with skin and eyes. Ave Use ventilation Keep away from sour Keep container tightly closed in a dry and kept upright to prevent leakage.	ces of ignition. No si	noking. Prevent the build up of elec	
Section VIII. EXPOSURE (	CONTROLS/PERSONAL PROTECT	ION		
	m =		spected prior to use. Eye protect	ion.
Section IX - Physical/Che	mical Characteristics			

Boiling Point			Specific Gravity (H2O = 1)	
J. J		65°C		0.79
Vapor Pressure (mm Hg)			Melting Point	
		96		-98°C
Vapor Density (AIR = 1)		· · · · · · · · · · · · · · · · · · ·	Evaporation rate	
		1.11	(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 stabilityStable under recommended storage conditions.Possibility of hazardous reactionsVapours may form explosive mixture with air.Conditions to avoidHeat, flames, sparks, extreme temperature and sunlight.Materials to avoidAcid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, AcidsHazardous decomposition products formed under fire conditions. - Carbon oxides

# Section XI. TOXICOLOGICAL INFORMATION

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

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

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

### Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

# Section XIV. TRANSPORT INFORMATION

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

### Section XV. REGULATORY INFORMATION

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

### Section XVI. Misc. INFORMATION

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

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com		Certified Reference Material CRM	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT     95318       Part Number:     95318       Lot Number:     120524       Description:     2-Chloroet       Expiration Date:     120527       Recommended Storage:     Refrigerat       Nominal Concentration ( <i>ug/mL</i> ):     10000       Neight(s) shown below were combined and diluted to (mL):     Under the tot (mL):	95318 120524 2-Chloroethyl vinyl ether 120527 Refrigerate (4 °C) 10000 6UTB 10000 6UTB 30.0 M# Lot Number Conc (vg/mt)	2.6.1 $1.1$ $2.6Solvent(s): LotsMethanol EJ143-US1.14.520 t^{2}1.14.520 t^{2}1.14$	Formulated By: Prashant Chaufuan 120524 Formulated By: Prashant Chaufuan DATE Formulated By: Prashant Chaufuan DATE Reviewed By: Pedro L. Rentas DATE Expanded SS Information Uncertainty (Solvent Safety Info. On Attached pg.) (++) (ug/mL) Case OstA PEL (TWA) LD50
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Constant Con

Safety Data Sheet (SDS)

GHS/OSHA Compliant

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Section III - Composition				
Components (Specific Cher Methanol	nical Identity; Common Name(s)) METHYL ALCOHOL	CAS#: 67-56-1		% (optional) > 97
See Certified Weight F	Report For Other Analytes Pre	esent At Trace	Quantities.	
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Section V. FIREFIGHTING	MEASURES			
Flammability Suitable extinguishing media Protective equipment for fire	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appare	No smoking. am, dry chemical or c	arbon dioxide.	int. Keep away from
Section VI. ACCIDENTAL	RELEASE MEASURES			
Personal precautions Environmental precautions Clean up	Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe Contain spillage, and then collect and place	osive concentrations. to do so. Do not let p	roduct enter drains.	
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Section VIII. EXPOSURE (	CONTROLS/PERSONAL PROTECT	ION		
	m =		spected prior to use. Eye protect	ion.
Section IX - Physical/Che	mical Characteristics			

Boiling Point			Specific Gravity (H2O = 1)	
J. J		65°C		0.79
Vapor Pressure (mm Hg)			Melting Point	
		96		-98°C
Vapor Density (AIR = 1)			Evaporation rate	
		1.11	(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 stabilityStable under recommended storage conditions.Possibility of hazardous reactionsVapours may form explosive mixture with air.Conditions to avoidHeat, flames, sparks, extreme temperature and sunlight.Materials to avoidAcid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, AcidsHazardous decomposition products formed under fire conditions. - Carbon oxides

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

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

#### Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

## Section XIV. TRANSPORT INFORMATION

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

### Section XV. REGULATORY INFORMATION

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

#### Section XVI. Misc. INFORMATION

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

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com		Certified Reference Material CRM	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT     95318       Part Number:     95318       Lot Number:     120524       Description:     2-Chloroet       Expiration Date:     120527       Recommended Storage:     Refrigerat       Nominal Concentration ( <i>ug/mL</i> ):     10000       Neight(s) shown below were combined and diluted to (mL):     Uted to (mL):       Compound     RM#     Lot Number	95318 120524 2-Chloroethyl vinyl ether 120527 Refrigerate (4 °C) 10000 6UTB 10000 6UTB 30.0 M# Lot Number Conc (vg/mt)	2.6.1 $1.1$ $2.6Solvent(s): LotsMethanol EJ143-US1.14.520 t^{2}1.14.520 t^{2}1.14.5$	Formulated By: Prashant Chaufuan 120524 Formulated By: Prashant Chaufuan DATE Reviewed By: Pedro L. Rentas DATE Expanded SDS Information Uncertainty (Solvent Safety Info. On Attached pg.) (++) (ug/mL) Case OstA PEL (TWA) LD50
1. 2-Chloroethyl vinyl ether 74 MKCD0033 10000 99 Method: GC6MSD-1 M. Detector: MSD. Column: (60m X 0.25mm X 1.5 $\mu$ m). Injector B Temp = 200°C, Detector B Temp. = 220°C. Analyst: Candice Warren.	74 MKCD0033 10000 . Column: (60m X 0.25mm X 1.5 np. = 220°C. Analyst: Candice W	2-Chloroethyl viryl ether 74 MKCD0033 10000 99 0.2 0.50536 0.50550 10002.9 40.5 110-75-8 NA 00 Method: GC6MSD-1 M. Detector: MSD. Column: (60m X 0.25mm X 1.5 µm). Oven Profile: Temp 1 = 35°C (Time 1=10min.), Temp 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min., Injector B Temp = 200°C, Detector B Temp = 220°C. Analyst: Candice Warren.	40.5         110-75-8         N/A         ori-rat 250mg/kg           ap 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min.,
Abordance 222000 160000 140000 100000 60000 60000 20000 100000 100000 100000 100000 100000 100000 15.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	MG 553162	Abordance 20005 20005 20005 20005 20005 16000 16000 16000 16000 200 200	
<ul> <li>The ce</li> <li>Stands</li> <li>Stands</li> <li>Stands</li> <li>All Sta</li> <li>Uncert</li> <li>NUST'</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetria standards are prepend gravinetrically using balances that are cal smalards are precrifted (<i>H</i>.) 0.3% of the stated value, unless otherw . All Standards, after opening ampule, should be stored with caps fig of Uncertainty Reference: Taylor, B.N. and Kuyat, C.B., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wasl</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).</li> <li>Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with cass tight and under appropriate laboratory conditions.</li> <li>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).</li> </ul>	tated. ). NIST Measurement Result,"

Constant Con

Safety Data Sheet (SDS)

GHS/OSHA Compliant

Section I Product and Co	mpany Identification			
	CAL STANDARD DISSOLVED IN ME			4 000 525 5052
Manufacturer's Name	ABSOLUTE STANDARDS INC 44 Rossotto Dr.		phone USA & CANADA phone International	1-800-535-5053 1-352-323-3500
Address	Hamden CT, 06514	Date Prepared/F		January 1, 2024
Section II - Hazards Identi				
	GHS Classification in accord	ance with 29 CF	R 1910 (OSHA HCS)	
H370 Cause dar P271 Use in ver	mmable Liquid and Vapor nage to organs ntilated area wash with soap and water Signal Word: DANGER		Toxic if swallowed, skin co Suspected of causing canc Use gloves, eye protection if in eyes, remove contacts	er fface sheild
Section III - Composition	·			
Components (Specific Cher Methanol	nical Identity; Common Name(s)) METHYL ALCOHOL	CAS#: 67-56-1		% (optional) > 97
See Certified Weight F	Report For Other Analytes Pre	esent At Trace	Quantities.	
Section IV. FIRST AID ME	ASURES			
If inhaled In case of skin contact In case of eye contact If swallowed	If inhaled, move person into fresh air. If no Wash with soap and water. Consult a phy Rinse thoroughly with plenty of water for a Do NOT induce vomiting. Rinse mouth wit	/sician. at least 15 minutes ar	d consult a physician.	
Section V. FIREFIGHTING	MEASURES			
Flammability Suitable extinguishing media Protective equipment for fire	Flammable in the presence of a sour heat/sparks/open flame/hot surface. Use water spray, alcohol-resistant for Wear self contained breathing appare	No smoking. am, dry chemical or c	arbon dioxide.	int. Keep away from
Section VI. ACCIDENTAL	RELEASE MEASURES			
Personal precautions Environmental precautions Clean up	Wear respiratory protection. Avoid breathin ignition. Vapours accumulate to form explo Prevent further leakage or spillage if safe Contain spillage, and then collect and place	osive concentrations. to do so. Do not let p	roduct enter drains.	
Section VII. HANDLING A	ND STORAGE			
Precautions for safe handling Storage Conditions	Avoid contact with skin and eyes. Ave Use ventilation Keep away from sour Keep container tightly closed in a dry and kept upright to prevent leakage.	ces of ignition. No si	noking. Prevent the build up of elec	
Section VIII. EXPOSURE (	CONTROLS/PERSONAL PROTECT	ION		
	m =		spected prior to use. Eye protect	ion.
Section IX - Physical/Che	mical Characteristics			

Boiling Point			Specific Gravity (H2O = 1)	
J. J		65°C		0.79
Vapor Pressure (mm Hg)			Melting Point	
		96		-98°C
Vapor Density (AIR = 1)			Evaporation rate	
		1.11	(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 stabilityStable under recommended storage conditions.Possibility of hazardous reactionsVapours may form explosive mixture with air.Conditions to avoidHeat, flames, sparks, extreme temperature and sunlight.Materials to avoidAcid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, AcidsHazardous 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

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www.restek.com

# **CERTIFIED REFERENCE MATERIAL**



# **Certificate of Analysis**

chromatographic plus



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, 1mL/ampul	500μg/mL, P&T Methanol,
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.

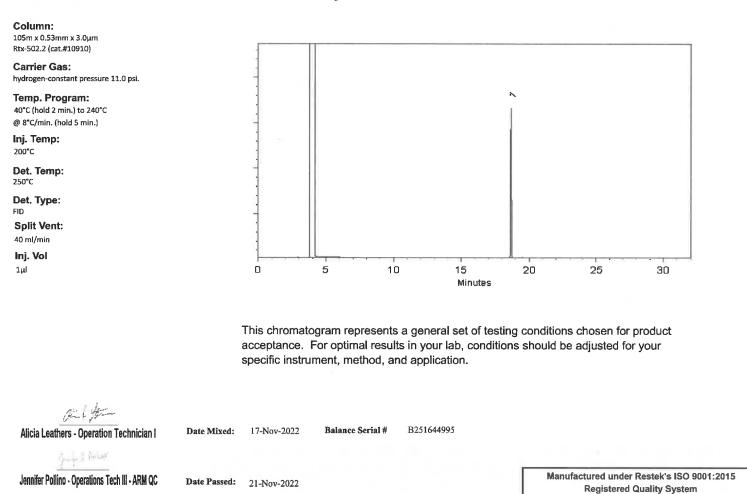
 Solvent:
 P&T Methanol

 CAS #
 67-56-1

 Purity
 99%



# **Quality Confirmation Test**





Certificate #FM 80397

# **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.

- 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.





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. :	<u>30225</u> Lot No.: <u>A0193071</u>					
Description :	Bromochloromethane Standard					
	Bromochloromethane 2000µg/m	L, P&T Methanol, 1mL	./ampul			
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	December 31, 2027	Storage:	0°C or colder			
		Ship:	Ambient			

# CERTIFIED VALUES

Elution Order	Compound	CAS# .	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Bromochloromethane	74-97-5	00008541	99%	2,018.0 µg/mL	+/- 113.3890

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

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



# **Quality Confirmation Test**





# **Expiration Notes:**

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# **Purity Notes:**

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  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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$U_{combined uncertainty} = k$	$u^{4} + u^{2} + u^{2}$	
COMPONING CHECKING	gravimetric homogeneity "storage stability "shipping stability	
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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.

- 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.





www.restek.com

# **CERTIFIED REFERENCE MATERIAL**

# **Certificate of Analysis**

chromatographic plus



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

Catalog No. :	<u>30225</u> Lot No.: <u>A0193071</u>					
Description :	Bromochloromethane Standard					
	Bromochloromethane 2000µg/m	L, P&T Methanol, 1mL	./ampul			
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	December 31, 2027	Storage:	0°C or colder			
		Ship:	Ambient			

# CERTIFIED VALUES

Elution Order	Compound	CAS# .	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Bromochloromethane	74-97-5	00008541	99%	2,018.0 µg/mL	+/- 113.3890

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

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



# **Quality Confirmation Test**





# **Expiration Notes:**

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  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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$U_{combined uncertainty} = k$	$u^{4} + u^{2} + u^{2}$	
COMPONING CHECKING	gravimetric homogeneity "storage stability "shipping stability	
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k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

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# Manufacturing Notes:

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

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www.restek.com

# **CERTIFIED REFERENCE MATERIAL**

# **Certificate of Analysis**

chromatographic plus



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Catalog No. :	30225	Lot No.: <u>A0193071</u>				
Description :	Bromochloromethane Standard					
	Bromochloromethane 2000µg/m	L, P&T Methanol, 1mL	./ampul			
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	December 31, 2027	Storage:	0°C or colder			
		Ship:	Ambient			

# CERTIFIED VALUES

Elution Order	Compound	CAS# .	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Bromochloromethane	74-97-5	00008541	99%	2,018.0 µg/mL	+/- 113.3890

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

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



# **Quality Confirmation Test**





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COMPONING CHECKING	gravimetric homogeneity "storage stability "shipping stability	
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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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chromatographic plus



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Expiration Date :	December 31, 2027	Storage:	0°C or colder			
		Ship:	Ambient			

# CERTIFIED VALUES

Elution Order	Compound	CAS# .	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Bromochloromethane	74-97-5	00008541	99%	2,018.0 µg/mL	+/- 113.3890

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

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



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COMPONING CHECKING	gravimetric homogeneity "storage stability "shipping stability	
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using NIST traceable weights, and/or dilutions with Class A glassware.

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- 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** 



ISO/IEC 17 025 Acared Testing Laboratory Certificate #3222.02

# **Certificate of Analysis**

gravimetric

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

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

Catalog No. :	555582	Lot No.:	<u>A0196865</u>
Description :	Custom 8260A/B Surrogate	Mix	
	Custom 8260A/B Surrogate I 1mL/ampul	Mix 25,000µg/mL, P&T M	ethanol,
Container Size :	2 mL	Pkg Amt:	> 1 mL
Expiration Date :	April 30, 2026	Storage:	10°C or colder
		Ship:	Ambient

# CERTIFIED VALUES

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

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

Darker 7. Bu

Date Mixed:

Balance: 1127510105

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

Russ Bookhamer - Operations Technician I

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11-Apr-2023



# **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.

- 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.





www.restek.com

# **CERTIFIED REFERENCE MATERIAL**

# **Certificate of Analysis**

chromatographic plus





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

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

Catalog No. :	30489	Lot No.:	A0209618	
Description :	8260B Acetates Mix			
	8260B Acetates Mix 2,000 µg/ml	L, P&T Methanol, 1mL	/ampul	
Container Size :	<u>2 mL</u>	Pkg Amt:	> 1 mL	
Expiration Date :	September 30, 2025	Storage:	-20°C or colder	
Handling:	This product is photosensitive.	Ship:	On Ice	_

## CERTIFIED VALUES

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

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

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

Tech Tips:

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

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

# **Quality Confirmation Test**

Column: 105m x 0.53mm x 3.0µm Rtx-502.2 (cat.#10910) **Carrier Gas:** hydrogen-constant pressure 11.0 psi. Temp. Program: ٩ 40°C (hold 2 min.) to 240°C @ 8°C/min. (hold 5 min.) Ø Inj. Temp: ÷-200°C Det. Temp: 0 250°C Det. Type: FID **Split Vent:** 40 ml/min Inj. Vol ٥ **1**µl 5 10 15 20 Minutes 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. Soumuer Moodler Sam Moodler - Operations Tech I Date Mixed: 28-Mar-2024 **Balance Serial #** B707717271 Tiller Hurthy **Dillan Murphy - Operations Technician I** Manufactured under Restek's ISO 9001:2015 Date Passed: 01-Apr-2024 **Registered Quality System** 

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Certificate #FM 80397

# **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.

- 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.



www.restek.com

# **CERTIFIED REFERENCE MATERIAL**

# **Certificate of Analysis**

chromatographic plus





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

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

Catalog No. :	30489	Lot No.:	A0209618	
<b>Description</b> :	8260B Acetates Mix			
	8260B Acetates Mix 2,000 µg/ml	L, P&T Methanol, 1mL	/ampul	
Container Size :	<u>2 mL</u>	Pkg Amt:	> 1 mL	
Expiration Date :	September 30, 2025	Storage:	-20°C or colder	
Handling:	This product is photosensitive.	Ship:	On Ice	_

## CERTIFIED VALUES

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

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

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

Tech Tips:

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

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

# **Quality Confirmation Test**

Column: 105m x 0.53mm x 3.0µm Rtx-502.2 (cat.#10910) **Carrier Gas:** hydrogen-constant pressure 11.0 psi. Temp. Program: ٩ 40°C (hold 2 min.) to 240°C @ 8°C/min. (hold 5 min.) Ø Inj. Temp: ÷-200°C Det. Temp: 0 250°C Det. Type: FID **Split Vent:** 40 ml/min Inj. Vol ٥ **1**µl 5 10 15 20 Minutes 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. Soumuer Moodler Sam Moodler - Operations Tech I Date Mixed: 28-Mar-2024 **Balance Serial #** B707717271 Tiller Hurthy **Dillan Murphy - Operations Technician I** Manufactured under Restek's ISO 9001:2015 Date Passed: 01-Apr-2024 **Registered Quality System** 

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Certificate #FM 80397

# **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.

- 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.



**CERTIFIED REFERENCE MATERIAL** 

**Certificate of Analysis** 

gravimetric





www.restek.com

# 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.

	נוים להמוומואם מנותיחו להמונומואם הבובוווווומוחיו חו נוום מומואבו(א) וואפחי	ui ui iile ailaiyie(s) iisieu.
Catalog No. :	555581 Lot No.: A0210184	84
Description :	Custom 8260 Internal Standard Mix	
	Custom 8260 Internal Standard Mix 25,000µg/mL, P&T Methanol, 1mL/ampul	0,
<b>Container Size :</b>	2 mL Pkg Amt: > 1 mL	
Expiration Date :	April 30, 2027 Storage: 10°C or colder	r colder

VALUES CERTIFIED

Ship: Ambient

Componen t#	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	) j	Expanded Uncertainty * (95% C.L.; K=2)	led nty * ; K=2)
1	1,4-Dichlorobenzene-d4	3855-82-1 PR-30447	PR-30447	66%	99% 25,212.0 μg/mL	μ	+/- 1,427.8857	7.8857
2	1,4-Difluorobenzene	540-36-3	MKCS8657	; %66	99% 25,220.0 μg/mL	nL	+/- 1,428.3388	8.3388
m	Chlorobenzene-d5	3114-55-4 PR-31132	PR-31132	%66	99% 25,116.0 μg/mL	ur	+/- 1,422.4487	2.4487
4	Pentafluorobenzene	363-72-4	MKCR9383	; %66	99% 25,180.0 μg/mL	nL	+/- 1,426.0734	6.0734
Solvent:	P&T Methanol CAS # 67-56-1 Purity 99%							

Manufactured under Restek's ISO 9001:2015 Registered Quality System Certificate #FM 80397 HAR SA MY WART IN COMPANYING TO 1127510105 Balance: 11-Apr-2024 Date Mixed: John Friedline - Operations Technician I Mr. J. Mi



# 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. .
- 4 Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. 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 i

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

$$U_{combined}$$
 uncertainty  $=k \sqrt{u_{s}^2}$  unstric  $+ u_{homogeneity}^2 + u_{storage}^2$  stability  $+ u_{s}^2$  hipping stability

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

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

- environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom 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 which includes complete instructions. .
  - If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved. .



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	
<b>Description</b> :	VOA Calibration Mix #1			
	VOA Calibration Mix #1 5,00 1mL/ampul	0µg/mL, P&T Methanol/W	/ater(90:10),	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	July 31, 2027	Storage:	0°C or colder	
	3	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%

-



#### **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.

- 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.



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	
<b>Description</b> :	VOA Calibration Mix #1			
	VOA Calibration Mix #1 5,00 1mL/ampul	0µg/mL, P&T Methanol/W	/ater(90:10),	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	July 31, 2027	Storage:	0°C or colder	
	3	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%

-



#### **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.

- 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.



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	
<b>Description</b> :	VOA Calibration Mix #1			
	VOA Calibration Mix #1 5,00 1mL/ampul	0µg/mL, P&T Methanol/W	/ater(90:10),	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	July 31, 2027	Storage:	0°C or colder	
	3	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%

-



#### **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:

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

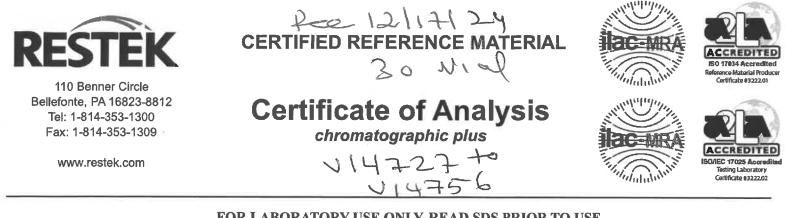
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

• 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.

- 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.



#### 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			
<b>Description</b> :	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%

\_\_\_\_\_

**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

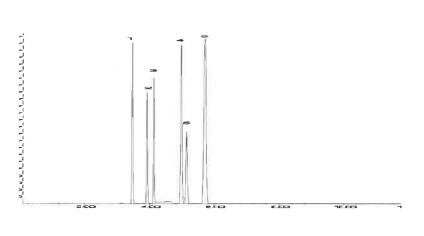
Det. Temp: 250°C

Det. Type:

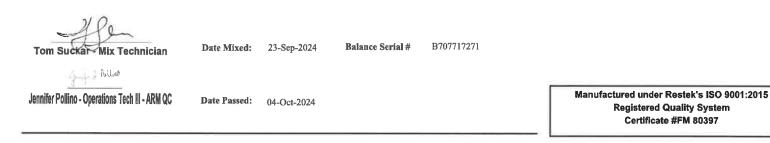
MSD Split Vent:

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.



#### **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:

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

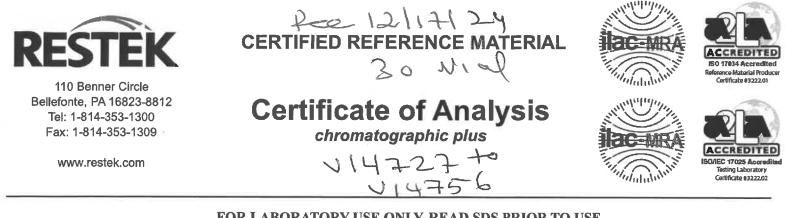
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

• 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.

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

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

Catalog No. :	30042	Lot No.:	A0216826			
<b>Description</b> :	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%

\_\_\_\_\_

**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

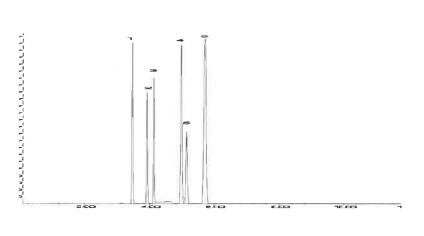
Det. Temp: 250°C

Det. Type:

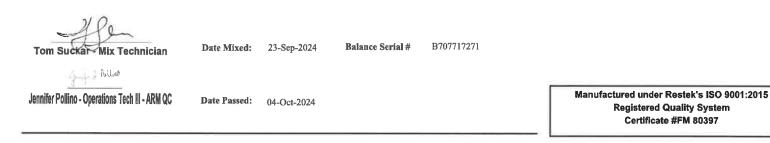
MSD Split Vent:

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.



#### **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.

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- 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.

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



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

www.restek.com

## **CERTIFIED REFERENCE MATERIAL**

# **Certificate of Analysis**

chromatographic plus





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

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

Catalog No. :	30470	Lot No.:	A0217535			
<b>Description</b> :	tert-Butanol Standard					
	tert-Butanol Std 50,000µg/mL, P&T Methanol, 1mL/ampul					
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	October 31, 2027	Storage:	0°C or colder			
		Ship:	Ambient			

#### CERTIFIED VALUES

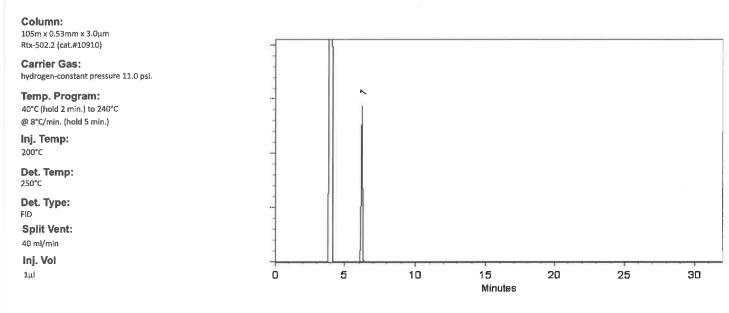
Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	tert-Butanol (TBA)	75-65-0	SHBQ8002-1	99%	50,007.5 μg/mL	+/- 717.6137

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

 Solvent:
 P&T Methanol

 CAS #
 67-56-1

 Purity
 99%



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.

WOLF Aaron Enyart - Operations Tech I

Date Mixed: 07-Oct-2024

**Balance Serial #** 

B251644995

Sittery Falend

Brittany Federinko - Operations Tech I

Date Passed: 09-Oct-2024 Manufactured under Restek's ISO 9001:2015 **Registered Quality System** Certificate #FM 80397

#### **Expiration Notes:**

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

#### **Purity Notes:**

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
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  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.

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

www.restek.com

### **CERTIFIED REFERENCE MATERIAL**





gravimetric



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

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

Catalog No. :	555584	Lot No.: A0219012				
<b>Description</b> :	Custom CLP VOA Surrogate Standard Mix					
	Custom CLP VOA Surrogate St 1mL/ampul	andard Mix 25,000µg/n	nL, P&T Methanol,			
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	November 30, 2027	Storage:	0°C or colder			
		Ship:	Ambient			

#### CERTIFIED VALUES

Componen t #	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty <i>*</i> (95% C.L.; K=2)
1	1,2-Dichloroethane-d4	17060-07-0	PR-33313	99%	25,228.0 μg/mL	+/- 1,428.7919
2	1-Bromo-4-fluorobenzene (BFB)	460-00-4	0000268853	99%	25,196.0 μg/mL	+/- 1,426.9795
3	Toluene-d8	2037-26-5	PR-34141	99%	25,228.0 μg/mL	+/- 1,428.7919
Solvent:	P&T Methanol					

CAS # 67-56-1 Purity 99%

Jess Hoy - Operations Tech I

Date Mixed: 12-Nov-2024

Nov-2024 Bala

Balance: 1127510105

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

\_\_\_\_\_\_

#### Expiration Notes:

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

#### **Purity Notes:**

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- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A
  correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the
  parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

#### **Certified Uncertainty Value Notes:**

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

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

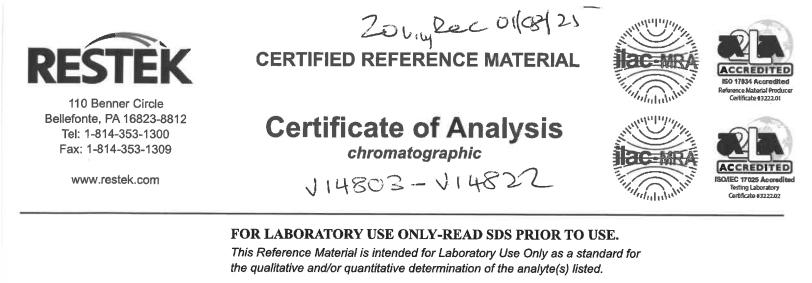
*k* is a coverage factor of 2, which gives a level of confidence of approximately 95%.

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

#### **Manufacturing Notes:**

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

- 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.



Catalog No. :	555408-SL	Lot No.:	A0220471	
Description :	Custom Vinyl Acetate Standard			
	Custom Vinyl Acetate Standard 8	3,000µg/mL, P&T Meth	nanol, 1mL/ampul	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	June 30, 2026	Storage:	-20°C or colder	
Handling:	This product is photosensitive.	Ship:	On Ice	

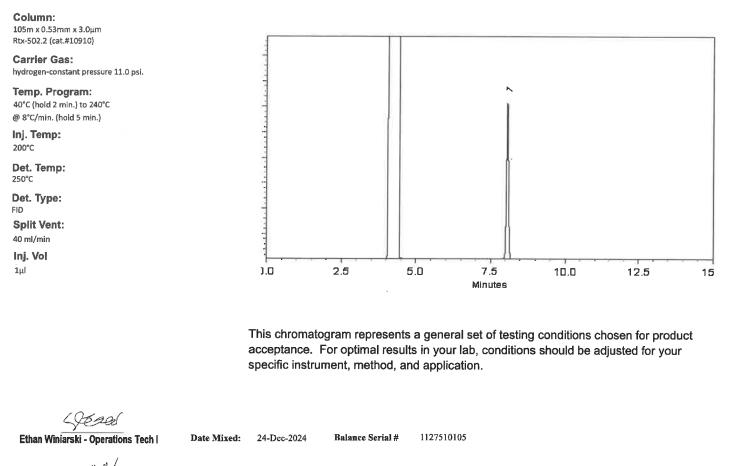
#### CERTIFIED VALUES

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

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

#### Tech Tips:

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



<u>بنائیہ</u> Dillan Murphy - Operations Technician I

02-Jan-2025

Date Passed:

REVIEWED By Janviller Polities at 7:12 um, Jan 63, 2025

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

#### **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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  parent compound in solution.
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#### **Certified Uncertainty Value Notes:**

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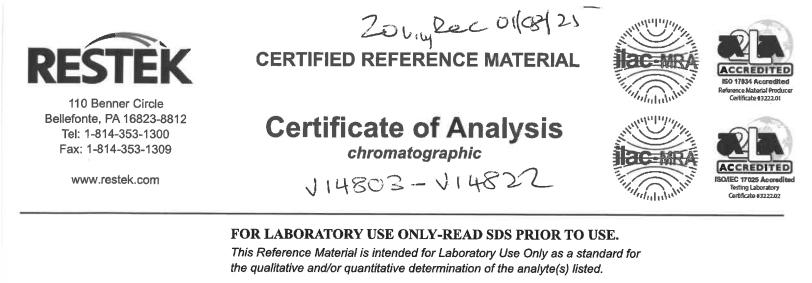
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

• 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:

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- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
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Catalog No. :	555408-SL	Lot No.:	A0220471	
Description :	Custom Vinyl Acetate Standard			
	Custom Vinyl Acetate Standard 8	3,000µg/mL, P&T Meth	nanol, 1mL/ampul	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	June 30, 2026	Storage:	-20°C or colder	
Handling:	This product is photosensitive.	Ship:	On Ice	

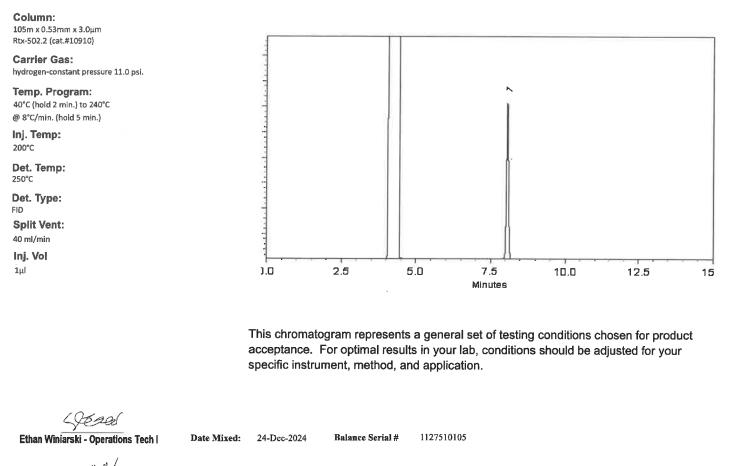
#### CERTIFIED VALUES

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

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

#### Tech Tips:

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



<u>بنائیہ</u> Dillan Murphy - Operations Technician I

02-Jan-2025

Date Passed:

REVIEWED By Janviller Polities at 7:12 um, Jan 63, 2025

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

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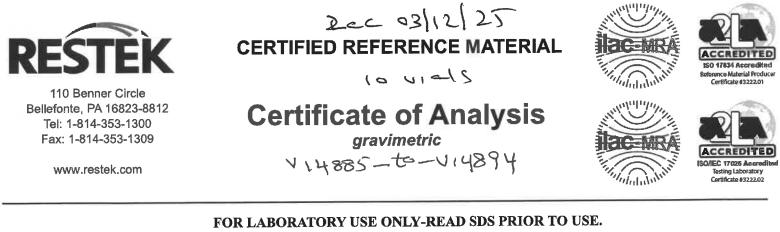
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

• 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.

- 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.



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. :	555583	Lot No.:	A0223136			
<b>Description</b> :	Custom CLP VOA Internal Standard Mix					
	Custom CLP VOA Internal St 1mL/ampul	andard Mix 25,000µg/mL,	P&T Methanol,			
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	March 31, 2028	Storage:	0°C or colder			
		Ship:	Ambient			

#### CERTIFIED VALUES

Componen t #	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	1,4-Difluorobenzene	540-36-3	MKCS8657	99%	25,024.0 μg/mL	+/- 1,417.2383
2	Bromochloromethane	74-97-5	S241017RSR	99%	25,060.0 μg/mL	+/- 1,419.2772
3	Chlorobenzene-d5	3114-55-4	PR-31132	99%	25,048.4 μg/mL	+/- 1,418.6202
Solvent:	P&T Methanol					

Penelope Riglin - Operations Tech I

CAS #

Purity

67-56-1

99%

Date Mixed: 10-N

10-Mar-2025

Balance: 1128342314

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

#### **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.

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Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis

Avantor



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 (CH3OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %
Residue after Evaporation	≤ 1.0 ppm	0.2 ppm
Titrable Acid (µeq/g)	≤ 0.3	0.2
Titrable Base (µeq/g)	≤ <b>0.</b> 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

James Techie

Jamie Ethier Vice President Global Quality

Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis





N14883 N14884

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

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Test	Specification	Result
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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

ames Techie

Jamie Ethier Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700 Avantor Performance Materials, LLC 100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone 610.386.1700 Page 1 of 1