

Prep Standard - Chemical Standard Summary

Order ID : Q1488

Test : TCLP VOA

Prepbatch ID :

Sequence ID/Qc Batch ID: VX030625,

Standard ID :

VP131746,VP131767,VP132035,VP132096,VP133036,VP133174,VP133178,VP133226,VP133227,VP133228,

Chemical ID :

V13391,V13457,V13460,V13465,V13466,V13706,V14154,V14175,V14176,V14289,V14433,V14439,V14521,V14522,V14613,V14614,V14624,V14630,V14631,V14632,V14633,V14722,V14723,V14724,V14744,V14754,V14809,V14814,V14842,V14872,V14872,V14873,V14874,V14875,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 ¹	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								



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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 d	of V14754 +	Final

Recipe				Expiration	Prepared			Supervised By
<u>ID</u>	NAME	<u>NO.</u>	Prep Date	<u>Date</u>	<u>By</u>	<u>ScaleID</u>	PipetteID	Mahesh Dadoda
589	BFB TUNE CHECK	<u>VP133226</u>	03/06/2025	03/07/2025	John Carlone	None	None	
								03/11/2025
FROM	39.98400ml of W3112 + 0.01600ml o	f VP131767	′ = Final Qua	ntity: 40.000 m	I			



<u>Recipe</u> <u>ID</u> 620	NAME 50 PPB CCC, 8260-Water	<u>NO.</u> VP133227	Prep Date 03/06/2025	Prepared By John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/11/2025
FROM	39.94450ml of W3112 + 0.00500ml o VP132035 + 0.01250ml of VP133036					1250ml of	

Recipe ID 620	NAME 50 PPB CCC, 8260-Water	<u>NO.</u> VP133228	Prep Date 03/06/2025	Expiration Date 03/07/2025	Prepared By John Carlone	<u>ScaleID</u> None	PipettelD None	Supervised By Mahesh Dadoda 03/11/2025
FROM	39.94450ml of W3112 + 0.00500ml o VP132035 + 0.01250ml of VP133036						1250ml of	



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 #



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



Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95319 / Revised Additions Mix (Min = 5)	091724	07/10/2025	01/10/2025 / SAM	09/18/2024 / SAM	V14521
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95319 / Revised Additions Mix (Min = 5)	091724	07/10/2025	01/10/2025 / SAM	09/18/2024 / SAM	V14522
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	22L0562016	08/27/2025	02/27/2025 / SAM	11/26/2024 / SAM	V14613
			Expiration	Dete Oriened (Bacaivad Data /	Chamtach

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

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
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ 2-Chloroethyl vinyl ether	120524	06/10/2025	12/10/2024 / SAM	12/06/2024 / SAM	V14632
		-			1	
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ 2-Chloroethyl vinyl ether	120524	06/10/2025	12/10/2024 / SAM	12/06/2024 / SAM	V14633
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml	A02110618	07/10/2025	01/10/2025 / SAM	12/17/2024 / SAM	V14722
			Expiration	Deta Orana di (Received Date /	Chemtech

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	A02110618	07/10/2025	01/10/2025 / SAM	12/17/2024 / SAM	V14723
	ketones 5000uq/ml, PTM, 1ml					

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	A0220471	07/10/2025	01/10/2025 / SAM	01/08/2025 / SAM	V14809
Supplier	LOTS 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 #
Restek	30470 / VOA Stock Solution, tert-butanol std, 1mL, P&TM	A0217535	08/27/2025	02/27/2025 / SAM	01/21/2025 / SAM	V14842
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	021325	03/13/2025	02/14/2025 / SAM	02/14/2025 / SAM	V14872



Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	021325	03/13/2025	02/14/2025 / SAM	02/14/2025 / SAM	V14873
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	021325	03/13/2025	02/14/2025 / SAM	02/14/2025 / SAM	V14874
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	021325	03/13/2025	02/14/2025 / SAM	02/14/2025 / SAM	V14875
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	DIW / DI Water	Daily Lab-Certified	07/03/2029	07/03/2024 / 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)	≤ 0.10	0.01
Water (by KF, coulometric)	≤ 0.08 %	< 0.01 %
Volatile Organic Trace Analysis – Below EPA 8260B CRQL	Conforms	Conforms

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

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

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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				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 Compound Rw# Number	ID#: ned and dilu RM#	6U1B Jted to (mL): Lot Number	10.0 Nominal Conc (ug/mL)		 5E-05 Balance Uncertainty 0.001 Flask Uncertainty Purity Uncertainty (%) Purity 	ny Target Weight(g)	Actual Weight(g)	Actual Conc (µg/ml.	Expanded By Expanded Actual Uncertainty (Conc (ug/mt.) (+/-) (ug/mt.)	ଳା	 Pedro L. Herntas SDS information (Solvent Safety Info. On Attached pg.) CAS# OSHA PEL (TWA) LDE 		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 film 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					
250000 ^{8.93}		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>5 119 150 150 160 170 100 110 120 130 140 150 160 170</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	 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 	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	 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated. Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above). Standards after openling annule, should be stored with caps tight and under appropriate laboratory conditions. 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). 	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.	W II CAL STANDARD DISSOLVED IN W 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	7162-182-203-2972 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

ΑN 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		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 Compound Rw# Number	ID#: ned and dilu RM#	6U1B Jted to (mL): Lot Number	10.0 Nominal Conc (ug/mL)		 5E-05 Balance Uncertainty 0.001 Flask Uncertainty Purity Uncertainty (%) Purity 	ny Target Weight(g)	Actual Weight(g)	Actual Conc (µg/ml.	Expanded By Expanded Actual Uncertainty (Conc (ug/mt.) (+/-) (ug/mt.)	ଳା	 Pedro L. Herntas SDS information (Solvent Safety Info. On Attached pg.) CAS# OSHA PEL (TWA) LDE 		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 film 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.	increase in Annouse		Scan	332 (8.927	Scan 232 (8.927 min): [BSB2]79005.D	179005.D	Crons the	
Abundance						Abundance	27	3					
250000 ^{8.93}		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	 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 	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	 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated. Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above). Standards after openling annule, should be stored with caps tight and under appropriate laboratory conditions. 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). 	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.	W II CAL STANDARD DISSOLVED IN W 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	7162-182-203-2972 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

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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

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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 Compound Rw# Number	ID#: ned and dilu RM#	6U1B Jted to (mL): Lot Number	10.0 Nominal Conc (ug/mL)		 5E-05 Balance Uncertainty 0.001 Flask Uncertainty Purity Uncertainty (%) Purity 	ny Target Weight(g)	Actual Weight(g)	Actual Conc (µg/ml.	Expanded By Expanded Actual Uncertainty (Conc (ug/mt.) (+/-) (ug/mt.)	ଳା	 Pedro L. Herntas SDS information (Solvent Safety Info. On Attached pg.) CAS# OSHA PEL (TWA) LDE 		DATE
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Abundance						Abundance	27	3					
250000 ^{8.93}		1	2			6000	6						
200000		/	0//			50000	6	56	(0				
150000						40000	6						
						30000	6						
100000						2000	<u> </u>						
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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	
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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 u dry and well-ventilated place. Containers which are e.	
ection VII. HANDLING AND S	BDAROTS ON		
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	້າຈະຫາ, dry chemical or carbon dioxide. ກລາອັນຣ ໂດເ ກົເe ກິ່ງກໍ່ເກ່າງ 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 UCATAID MEASU USABM IN FIRST AID MEASU			
section III - Composition Components (Specific Chemica Vater	amical Identity; Common Name(s))	CAS#: 7732-18-5	(optional) % > 97
:broW Isngis	Aord: DANGER	P305,351,338 If in eyes, remove co	
	n, wash with soap and water entilated area Di wash with soap and water	vrdance 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	W ICAL STANDARD DISSOLVED IN W SBSOLUTE STANDARDS INC 44 Rossotto Dr. Hamden CT, 06514	ATER Emergency Telephone USA & CANAD. Emergency Telephone International Date Prepared/Revised	<mark>1-362-535-5053</mark> 1-362-5353-3500 1924
section I Product and Compa	mpany identification		
	Safety Data Sheet (SDS)	GHS/OSHA Compliant	
Absolute Standards Inc.		smden, CT 06518-0585 PO Box 5585	7102-183-203 :204 2262-183-203 :XA3

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

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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

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

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

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Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com				5	Sertified I	Certified Reference Material CRM テッ・イ	Material	CRM				ANAB I AR-15: https://At	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	ber: tion:	91980 021325 Acrolein			2	Vater 07	2 14 Lott	t x	Formulated By:	ind By:	Anthony Markoney	03	021325 DATE
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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	tact our technical	department if furt	ther informat	ion is required.	more in Amages		Scan	232 (8.927	Scan 232 (8.927 min): [BSB2]79005.D	179005.D	(contraction)	
Abundance						Abundance	27	3					
250000 8.93		1				6000	6						
200000		/	0			50000	6	56	(6				
150000						40000	6						
						30000	6						
100000						2000	<u> </u>						
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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="" w=""><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	
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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 u dry and well-ventilated place. Containers which are e.	
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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	້າຈະຫາ, dry chemical or carbon dioxide. ກລາອັນຣ ໂດເ ກົເe ກິ່ງກໍ່ເກ່າງ 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	(optional) % > 97
:broW Isngis	Aord: DANGER	P305,351,338 If in eyes, remove co	
	GHS Classification in acco entilated area n, wash with soap and water	vrdance 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	W ICAL STANDARD DISSOLVED IN W SBSOLUTE STANDARDS INC 44 Rossotto Dr. Hamden CT, 06514	ATER Emergency Telephone USA & CANAD. Emergency Telephone International Date Prepared/Revised	<mark>1-362-535-5053</mark> 1-362-5353-3500 1924
section I Product and Compa	mpany identification		
	Safety Data Sheet (SDS)	GHS/OSHA Compliant	
Absolute Standards Inc.		smden, CT 06518-0585 PO Box 5585	7102-183-203 :204 2262-183-203 :XA3

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

ΑN 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	1	

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



www.absolutestandards.com

-**Certified Reference Material CRM** ¢,



	TIFIED WEIGHT REPORT		_														
		er: 02162	4	-						Solvent(s): Methenoi	Lot# EG359-USC	212			0	ati	
	Expiration Da	69 con	sal VOA Megi mponents											Formula	ated By:	Preshant Chaufen	021624 DATE
	Recommended Storag Nominal Concentration (µg/m)	e: Freezer													4	2. A	
	NIST Test IC	#: BUTB				5 Balance Unce								Reviewa		Pedro L. Rentas	021624 DATE
	Weight(a) shown below were combine			100.	0 0.02	Flask Uniterta	inty							Expander	d	SDS information	
	Compound	(RM#) Pert Numb	Lot Xer Number	Di). Facto	initial r Vol. (mi	initial L) Conc.(ug/ml.	Nominal Conc (µg/mi	Purity L) (%)	Purity Uncertainty	Uncertainty Pipette (mL)	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Uncertain		vent Safety info. On Atta OSHA PEL (TWA)	iched pg.) LD50
	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	(1196)	14718EF		NA	NA	2000	95	0.2	NA	0.21058	0.21069	2001.0	B.5	1478-11-5	4 ppm (12mg/m3) (skin) NVA	ori-rat 1200mg/kg N/A
	trans-1,4-Dichloro-2-butene Diethyl ether	(0486) (0153)			NA	NA	2000	96.5 99.9	0.2	NA	0.20731	0.20748	2001.7	8.4	110-57-6	N/A	NA
7.	Ethyl methacrylate	(0381)	06126PX	NA	NA	NA	2000	99	0.2	NA	0.20025	0.20230	2001.5	8.1	80-29-7 97-63-2	N/A N/A	N/A
	lodomethane	(0489)			NA	NA	2000	99.5	0.2	NA	0.20106	0.20121	2001.5	8.2	74-68-4	5 ppm(28mg/m3/8H)(side	orl-rat 14600mg/kg orl-rat 76mg/kg
	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)	orl-rat 2460mg/kg
	Methyl acrylate	(1075)	SHBI00679		NA	NA	2000	99	0.2	NA NA	0.20207	0.20221	2001.4	8.2	126-98-7	1 ppm (3mg/m3/8H)(skin)	orl-rat 120mg/kg
	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)(skin 100 ppm (410mg/m3/8H)	orl-ret 277mg/kg orl-ret 7872mg/kg
	Nitrobenzene 2-Nilropropane	(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)(ekin)	orl-rat 780mg/kg
	Penlachloroethane	(0461) (0450)	14002JX HGA01	NA	NA NA	NA NA	2000	97.3 98	0.2	NA	0.20560	0.20577	2001.6	8.3	79-46-9	10 ppm (35mg/m3/6H)	orl-rat 720mg/kg
16.	1,1,2-Trichlorotrificoroethane	(0474)	18930	NA	NA	NA	2000	98	0.2	NA NA	0.20413	0.20430	2001.8	8.3 8.2	76-01-7	N/A	N/A
	Bromodichioromethane	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/m3/6H) N/A	ori-rat 43g/kg ori-rat 916mg/kg
	Dibromochioromethane	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-Dichloroethene	35171	101623	0.05	5.00	40003.1 40002.4	2000	NA	NA	0.017	NA	NA	1999.7	22.9	158-59-2	WA	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-rai 1235mg/kg
	1,1-Dichloroethene	32251	102023	0.10	10,00	20001.6	2000	NA	NA	0.042	NA	NA	1009.7	20.4	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 820mg/kg orl-rat 200mg/kg
	Bromoform 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 (5mp/m3) (sidn)	orl-rat 933mg/kg
	Chloroform	85321	020724	0.10	10.00	20003.4 20024.0	2000	NA NA	NA	0.042	NA	NA	1999.8	20.4	58-23-5	2 ppm (12.6mg/m3/8H)	orl-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 (240mphn3) (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 Refrachloroethene	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	NA
_	,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	
	2-Dibromo-3-chioropropane	35161	112322	0.05	5.00	40016.5	2000	NA	NA	0.017	NA	NA	2000.3	22.9	96-12-8	350 ppm (1900mg/m3/8H) 0.001 ppm	orl-rat 10300mg/kg orl-rat 170mg/kg
	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 106mg/kg
	,2-Dichloropropane	35161	112322	0.08	5.00	40018.0 40051.0	2000	NA	NA	0.017	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	ori-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
_	is-1,3-Dichioropropene ans-1,3-Dichioropropene	35161 35161	112322	0.05	5.00	40010.0	2000	NA	NA	0.017	NA	NA	2000.0	23.0	10061-01-5	N/A	N/A
	exachloro-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	35161 35161	112322 112322	0.05	5.00 5.00	40007.5	2000	NA	NA	0.017	NA	NA	1999.9	22.9	79-34-5	5 ppm (35mg/m3/9H)(aldri)	orl-rat 800mg/kg
	richloroethene	35161	112322	0.05	5.00	40006.6	2000	NA NA	NA	0.017	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	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	ori-rat 149.6mg/kg ori-rat 4694mg/kg
	rómobenzene Butyl benzene	35162 35162	050823	0.05	5.00	40005.9	2000	NA	NA	0.017	NA	NA	1999.8	22.9	108-88-1	N/A	orl-rat 2599mg/kg
48. E	hyi 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	inder op 1 induite	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. <u>N</u> 51. 51	aphthalene	35162	050823	0.05		40006.2	2000	NA	NA	0.017	NA	NA	1099.8	22.9	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
52. To		35162 35162	050823	0.05		40004.8 40006.2	2008	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	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	1999.6	22.9	120-82-1	5 ppm (CL) (40mg/m3)	lor-mus 1390mg/kg ori-rat 759mg/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	orl-rat 5g/kg
	Xylene	35162	050823	_		40008.7 40005.8	2000	NA	NA	0.017	NA	NA	1999.0	22.9	106-67-8	N/A	orl-rat 5000mg/kg
	t-Butyl benzene	35163	101923	0.05	5.00	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 Korobenzene	35163	101923			40002.4	2000	NA	NA	0.017	NA	NA	1999.6	22.9	135-98-8	N/A	ori-rat 2240mg/kg
	Chlorotoluene					40003.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	108-90-7	75 ppm (350mg/m3/8H)	orl-rai 2290mg/kg
	Chiorotoluene	35163				40000.3	2000	NA	NA	0.017	NA	NA NA	1999.5 1999.7	22.9	95-49-8 106-43-4	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
A	-Dichicrobenzene		101923	0.05	5.00	40003.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	95-50-1	N/A 50 ppm (300mg/m3) (CL)	orl-rat 2100mg/kg orl-rat 500mg/kg
	Dichlorobenzene					40001.7	2000	NA	NA	0.017	NA	NA	1999.6	23.0	541-73-1	N/A	pr-mus 1062mg/kg
34. 1,3	-Dichlomhonzona					40001.8	2000	NA	NA	0.017	NA	NA	1999.6	000	400 40 0		
34. <u>1,3</u> 35. <u>1,4</u>	-Dichlorobenzene propylbenzene													22.9	106-48-7	76 ppm (450mg/m3/8H)	ori-rat 500mg/kg
34. <u>1,3</u> 35. <u>1,4</u> 36. <u>1so</u> 37. <u>n-F</u>	propylbenzene Propylbenzene	35163	101923	0.05	5.00	40000.8	2000	NA	NA	0.017	NA	NA	1999.5	22.9	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
34. <u>1,3</u> 35. <u>1,4</u> 36. <u>1</u> 50	propylbenzene Propylbenzene Sylene	35163 35163 35163	101923 101923 101923	0.05 0.05 0.05	5.00 4 5.00 4 5.00 4	40000.8	2000	NA	NA NA								

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.)
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 0,077

 10.34
 0,077

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 12.361
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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 Bichmontethana/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 antiparty Anticophote ets 1, 3-Dicklorapena Douene Ethyl methacryfele/trans-1,3-D 1, t, 2-Trichloroethene Tigtrachloroethene/1,3-Dicklord FID Signal = Edaq Channel 1 Standard injection = 0.5µL, Range=3 Dibromochioromethe 1,2-Dibromoethene 1,2-Directmeethene
 Chorobarrene
 L,2,2-Titteriorobarbine
 L,2,2-Titteriorobarbine
 Torsophisame
 trans-1,A-Oldistare-2-budene
 Senonbarrene
 trans-1,A-Oldistare-4 1000000 800000 тика, а, иластоно-3-сти Висопольтана Висопольтана Висопольтана 2.-Спартовона частана статана 1.3.-Статана висоборудателя разводателя соборудателя разводателя соборудателя во соборудателя во соборудателя соборудателя во соборудателя во соборудателя Саранато - 3-спороду Саранато - 3-спороду Саранато - 5-спорособотала соборудателя собору соборудателя собор 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

Address Section II - Hazards Identif H225 Highly Flan H370 Cause dam P271 Use In vent P302,332 If on skin, v Components (Specific Chemi Methanol	GHS Classification In accor nmable Liquid and Vapor age to organs	Emergency Tele Date Prepared/ dance with 29 CF		er ace sheild
Section II - Hazards Identif 1225 Highly Flan 1370 Cause dam 2271 Use In vent 2302,332 If on skin, v Components (Specific Chemi 1425 August 2000 200	Hamden CT, 06514 ication GHS Classification In accor age to organs ilated area vash with soap and water Signal Word: DANGER	Date Prepared// dance with 29 CF H301, 311, 331 H351 P280	Revised R 1910 (OSHA HCS) Toxic if swallowed, skin con Suspected of causing cance Use gloves, eye protection/f	January 1, 2023 tact, inhaled er ace sheild
H370 Cause dam P271 Use In vent P302,332 If on skin, v Components (Specific Chemi Vethanol	ication GHS Classification In accor age to organs ilated area vash with soap and water Signal Word: DANGER	dance with 29 CF H301, 311, 331 H351 P280	R 1910 (OSHA HCS) Toxic if swallowed, skin con Suspected of causing cance Use gloves, eye protection/f	tact, inhaled r ace sheild
H225 Highly Flan H370 Cause dam P271 Use In vent P302,332 If on skin, v Components (Specific Chemi Methanol	GHS Classification In accor nmable Liquid and Vapor age to organs ilated area vash with soap and water Signal Word: DANGER	H301, 311, 331 H351 P280	Toxic if swallowed, skin con Suspected of causing cance Use gloves, eye protection/f	er ace sheild
H370 Cause dam P271 Use In vent P302,332 If on skin, v Components (Specific Chemi Alethanol	nmable Liquid and Vapor age to organs ilated area vash with soap and water Signal Word: DANGER	H301, 311, 331 H351 P280	Toxic if swallowed, skin con Suspected of causing cance Use gloves, eye protection/f	er ace sheild
H370 Cause dam P271 Use In vent P302,332 If on skin, v Components (Specific Chemi Methanol	age to organs ilated area vash with soap and water Signal Word: DANGER	H351 P280	Suspected of causing cance Use gloves, eye protection/f	er ace sheild
P271 Use In vent P302,332 If on skin, v Section III - Composition Components (Specific Chemi Methanol	ilated area vash with soap and water Signal Word: DANGER	P280	Use gloves, eye protection/f	ace sheild
Section III - Composition Components (Specific Chemi Methanol	Signal Word: DANGER		If in eyes, remove contacts,	rinse with water
Components (Specific Chemi Methanol				
Components (Specific Chemi Methanol	ical Identity; Common Name(s))			
Methanol	ical Identity; Common Name(s))			
		0101 07 50 1		% (optional)
	METHYL ALCOHOL	CAS#: 67-56-1		> 97
See Certified Weight Re	port For Other Analytes Pre	esent At Trace	Quantities.	
NTENDED USE: REFEREN	ICE MATERIAL			
Section IV. FIRST AID MEAS	SURES			
General advice (Consult a physician. Show this safety data	a chaot to the destart		
f inhaled	f inhaled, move person into fresh air. If no	a sneet to the doctor i ot breathing, give artifi	n attendance. Move to sate area.	
n case of skin contact V	Vash with soap and water. Consult a phy	ysician.		
n case of eye contact R f swallowed	Rinse thoroughly with plenty of water for a	at least 15 minutes and	d consult a physician.	
Swallowed	to NOT induce vomiting. Rinse mouth with	th water. Consult a ph	ysician.	
Section V. FIREFIGHTING M	EASURES			
lammability	Flammable in the presence of a sour heat/sparks/open flame/hot surface.	ce of ignition when the No smoking	e temperature is above the flash point	. Keep away from
Suitable extinguishing media	Use water spray, alcohol-resistant for	am, dry chemical or ca	arbon dioxide.	
rotective equipment for fire	Wear self contained breathing appara	atus for fire fighting if r	necessary.	
Section VI. ACCIDENTAL RE	LEASE MEASURES			
Personal precautions	lear respiratory protection. Avoid breathin	ng vapors, mist or gas	. Ensure adequate ventilation. Remov	e all sources of
ig	nition. Vapours accumulate to form explo	osive concentrations.		
lean up Ci	revent further leakage or spillage if safe t ontain spillage, and then collect and plac	to do so. Do not let pro e in container for disp	oduct enter drains. Iosal according to local regulations (ac	a section 12)
ection VII. HANDLING AND				
recautions for safe handling	Avoid contact with skin and eyes. Avo Use ventilation Keep away from source	oid inhalation of vapou	r or mist. oking. Prevent the build up of electron	tatio choree
torage Conditions	Keep container tightly closed in a dry and kept upright to prevent leakage.	and well-ventilated pla	ace. Containers which are opened mu	st be carefully resealed
ection VIII. EXPOSURE CO	NTROLS/PERSONAL PROTECTI	ION		
lethanol 67-56-1 TWA 200 kin notation TWA 200 ppm otential for skin absorption , ingesti	on and inhalation.			
ersonal protective equipment Re	espiratory protection Handle with gloves thing. Wash hands thoroughly after hand	s. Gloves must be insp	pected prior to use. Eye protection.	

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** ¢,



	TIFIED WEIGHT REPORT		_														
		er: 02162	4	-						Solvent(s): Methenoi	Lot# EG359-USC	212			0	ati	
	Expiration Da	69 con	sal VOA Megi mponents											Formula	ated By:	Preshant Chaufen	021624 DATE
	Recommended Storag Nominal Concentration (µg/m)	e: Freezer													4	2. A	
	NIST Test IC	#: BUTB				5 Balance Unce								Reviewa		Pedro L. Rentas	021624 DATE
	Weight(a) shown below were combine			100.	0 0.02	Flask Unterta	inty							Expander	d	SDS information	
	Compound	(RM#) Pert Numb	Lot Xer Number	Di). Facto	initial r Vol. (mi	initial L) Conc.(ug/ml.	Nominal Conc (µg/mi	Purity L) (%)	Purity Uncertainty	Uncertainty Pipette (mL)	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Uncertain		vent Safety info. On Atta OSHA PEL (TWA)	iched pg.) LD50
	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	(1196)	14718EF		NA	NA	2000	95	0.2	NA	0.21058	0.21069	2001.0	B.5	1478-11-5	4 ppm (12mg/m3) (skin) NVA	ori-rat 1200mg/kg N/A
	trans-1,4-Dichloro-2-butene Diethyl ether	(0486) (0153)			NA	NA	2000	96.5 99.9	0.2	NA	0.20731	0.20748	2001.7	8.4	110-57-6	N/A	NA
7.	Ethyl methacrylate	(0381)	06126PX	NA	NA	NA	2000	99	0.2	NA	0.20025	0.20230	2001.5	8.1	80-29-7 97-63-2	N/A N/A	N/A
	lodomethane	(0489)			NA	NA	2000	99.5	0.2	NA	0.20106	0.20121	2001.5	8.2	74-68-4	5 ppm(28mg/m3/8H)(side	orl-rat 14600mg/kg orl-rat 76mg/kg
	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)	orl-rat 2460mg/kg
	Methyl acrylate	(1075)	SHBI00679		NA	NA	2000	99	0.2	NA NA	0.20207	0.20221	2001.4	8.2	126-98-7	1 ppm (3mg/m3/8H)(skin)	orl-rat 120mg/kg
	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)(skin 100 ppm (410mg/m3/8H)	orl-ret 277mg/kg orl-ret 7872mg/kg
	Nitrobenzene 2-Nilropropane	(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)(ekin)	orl-rat 780mg/kg
	Penlachloroethane	(0461) (0450)	14002JX HGA01	NA	NA	NA NA	2000	97.3 98	0.2	NA	0.20560	0.20577	2001.6	8.3	79-46-9	10 ppm (35mg/m3/6H)	orl-rat 720mg/kg
16.	1,1,2-Trichlorotrificoroethane	(0474)	18930	NA	NA	NA	2000	98	0.2	NA NA	0.20413	0.20430	2001.8	8.3 8.2	76-01-7	N/A	N/A
	Bromodichioromethane	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/m3/6H) N/A	ori-rat 43g/kg ori-rat 916mg/kg
	Dibromochioromethane	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-Dichloroethene	35171	101623	0.05	5.00	40003.1 40002.4	2000	NA	NA	0.017	NA	NA	1999.7	22.9	158-59-2	WA	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-rai 1235mg/kg
	1,1-Dichloroethene	32251	102023	0.10	10,00	20001.6	2000	NA	NA	0.042	NA	NA	1009.7	20.4	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 820mg/kg orl-rat 200mg/kg
	Bromoform 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 (5mp/m3) (sidn)	orl-rat 933mg/kg
	Chloroform	85321	020724	0.10	10.00	20003.4 20024.0	2000	NA NA	NA	0.042	NA	NA	1999.8	20.4	58-23-5	2 ppm (12.6mg/m3/8H)	orl-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 (240mphn3) (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 Refrachloroethene	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	NA
_	,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	
	2-Dibromo-3-chioropropane	35161	112322	0.05	5.00	40016.5	2000	NA	NA	0.017	NA	NA	2000.3	22.9	96-12-8	350 ppm (1900mg/m3/8H) 0.001 ppm	orl-rat 10300mg/kg orl-rat 170mg/kg
	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 106mg/kg
	,2-Dichloropropane	35161	112322	0.08	5.00	40018.0 40051.0	2000	NA	NA	0.017	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	ori-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
_	is-1,3-Dichioropropene ans-1,3-Dichioropropene	35161 35161	112322	0.05	5.00	40010.0	2000	NA	NA	0.017	NA	NA	2000.0	23.0	10061-01-5	N/A	N/A
	exachloro-1,3-butadiene	35181	112322	0.05	5.00	40021.9	2000	NA	NA	0.017	NA	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	35161 35161	112322 112322	0.05	5.00 5.00	40007.5	2000	NA	NA	0.017	NA	NA	1999.9	22.9	79-34-5	5 ppm (35mg/m3/9H)(aldri)	orl-rat 800mg/kg
	richloroethene	35161	112322	0.05	5.00	40006.6	2000	NA NA	NA	0.017	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	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	ori-rat 149.6mg/kg ori-rat 4694mg/kg
	rómobenzene Butyl benzene	35162 35162	050823	0.05	5.00	40005.9	2000	NA	NA	0.017	NA	NA	1999.8	22.9	108-88-1	N/A	orl-rat 2599mg/kg
48. E	hyi 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	inder op 1 induite	35162	050823	0.05	5.00	40005.8	2000	NA	NA	0.017	NA	NA	1999.8	22.9	100-41-4	100 ppm (435mg/m3/8H) N/A	orl-rat >2000mg/kg orl-rat 4750mg/kg
50. <u>N</u> 51. 51	aphthalene	35162	050823	0.05		40006.2	2000	NA	NA	0.017	NA	NA	1099.8	22.9	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
52. To		35162 35162	050823	0.05		40004.8 40006.2	2008	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	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	1999.6	22.9	120-82-1	5 ppm (CL) (40mg/m3)	lor-mus 1390mg/kg ori-rat 759mg/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	orl-rat 5g/kg
	Xylene	35162	050823	_		40008.7 40005.8	2000	NA	NA	0.017	NA	NA	1999.0	22.9	106-67-8	N/A	orl-rat 5000mg/kg
	t-Butyl benzene	35163	101923	0.05	5.00	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 Korobenzene	35163	101923			40002.4	2000	NA	NA	0.017	NA	NA	1999.6	22.9	135-98-8	N/A	ori-rat 2240mg/kg
	Chlorotoluene					40003.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	108-90-7	75 ppm (350mg/m3/8H)	orl-rai 2290mg/kg
	Chiorotoluene	35163				40000.3	2000	NA	NA	0.017	NA	NA NA	1999.5 1999.7	22.9	95-49-8 106-43-4	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
A	-Dichicrobenzene		101923	0.05	5.00	40003.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	95-50-1	N/A 50 ppm (300mg/m3) (CL)	orl-rat 2100mg/kg orl-rat 500mg/kg
	Dichlorobenzene					40001.7	2000	NA	NA	0.017	NA	NA	1999.6	23.0	541-73-1	N/A	pr-mus 1062mg/kg
34. 1,3	-Dichlomhonzona					40001.8	2000	NA	NA	0.017	NA	NA	1999.6	000	400 40 0		
34. <u>1,3</u> 35. <u>1,4</u>	-Dichlorobenzene propylbenzene													22.9	106-48-7	76 ppm (450mg/m3/8H)	ori-rat 500mg/kg
34. <u>1,3</u> 35. <u>1,4</u> 36. <u>1so</u> 37. <u>n-F</u>	propylbenzene Propylbenzene	35163	101923	0.05	5.00	40000.8	2000	NA	NA	0.017	NA	NA	1999.5	22.9	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
34. <u>1,3</u> 35. <u>1,4</u> 36. <u>1</u> 50	propylbenzene Propylbenzene Sylene	35163 35163 35163	101923 101923 101923	0.05 0.05 0.05	5.00 4 5.00 4 5.00 4	40000.8	2000	NA	NA NA								

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.)
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 0,077

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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 Bichmontetkinana/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 Distrimining and Anterprese 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-1,A-Olditaren Torson-1,A-Olditaren Torson-1,A-Olditarene
 Torson-1,A-Olditarene 1000000 800000 чась 1, и обстоит-3-сти Висопольтана Висопольтана 2.-Спартовона и и и и и и и и и и и и сталовородите и и водушение и и водушение и и водушение и и водушение и воду и водушение и водушение и воду и 600000 N 400000 Nitrobenzane 1,2,4-Trichkorobenzan Hexachiorobutadiima Naphchalena 1,2,3-Trichkorobenker \$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 RELEASE MEASURES 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 RELEASE MEASURES 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 RELEASE MEASURES 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	re 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 RELEASE MEASURES 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 RELEASE MEASURES 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 ND STORAGE	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 RELEASE MEASURES 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 ND STORAGE 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 RELEASE MEASURES 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 ND STORAGE 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 RELEASE MEASURES 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 ND STORAGE 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 RELEASE MEASURES 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 ND STORAGE 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 RELEASE MEASURES 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 ND STORAGE 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 eection 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 RELEASE MEASURES 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 ND STORAGE 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. CONTROLS/PERSONAL PROTECTI	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. . Ensure adequate ventilation. Remov oduct enter drains. osal according to local regulations (so r or mist. oking. Prevent the build up of electros ace. Containers which are opened mu	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, 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	HT REPORI Part Number: Lot Number: Description:	91980 091424 Acrolein			Solve	Lots 072324			Justine	Harden K		
Nomi Weight(s) shc	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	L	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: Rate = 4 ^o 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) as. NOTE: Due to th	0.05166 X 1.5µm film thicknown in the context of acrol	0.05175 css). Oven Profile cia in solution, all	5008.9 le: Temp. 1 = 35°C. Il solutions of acrol	52.5 10 (Time 1 = 10min lein, 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	unotmation 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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50000					10000	0 37	~					
Time>0 10	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	0,000 m/z>0	20 30	44 65 7 40 50 60 70	80 80	119 100 110 120	130 140 150	158 169 160 170	
	 The certification Shandards: Shandards: All Shandards: Uncertainty NIST Tech 	 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated. Shandards are prepared gravimetrically using hadances that are calibrated with weights traceable to MIST (see above). Shandards are certified (++) 0.5% of the stated value, unless otherwise stated. All Shandards, after opening ampule, should be stored with eags tight stated. All Shandards, after opening ampule, should be stored with cass tight and under appropriate taboratory conditions. Uncertainty Reference: Taylor, B.N. and Kuyat, C.B., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994). 	ation calculated f rically using bala of the stated value ule, should be stor .N. and Kuyat, C.	rom gravimetric au nocs that are calibr e, unless otherwise: red with caps tight, E, "Guidelines for ing Office, Washing	d volumetric means aled with weights th stated. In under appropri- tind under appropri- tion, DC, (1994).	arements unless (aceable to NIST afe laboratory ex pressing the Une	otherwise stated. (see above), onditions. certainty of NIST)	Measurement R	esstafe ^a			

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1 of 1

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	HT REPORI Part Number: Lot Number: Description:	91980 091424 Acrolein			Solve	Lots 072324			Justine	Harden K		
Nomi Weight(s) shc	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	L	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: Rate = 4 ^o 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 context. NOTE: Due to the instability of acrolein in solutions of acrolein, and any dilutions thereaf, found the need immediation. 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) as. NOTE: Due to th	0.05166 X 1.5µm film thicknown in the context of acrol	0.05175 css). Oven Profile cia in solution, all	5008.9 le: Temp. 1 = 35°C. Il solutions of acrol	52.5 10 (Time 1 = 10min lein, 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	unotmation is requ	Abundance	φ	Scan 232	(8.927 min)	Scan 232 (8.927 min): [BSB2]79005.D	D.		
250000 8.93	33	·			6000	27 0						
200000		Ì	0////		5000	0	50					
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Time>0 10	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	0,00 m/z>0	20 30	44 65 7 40 50 60 70	80 80	119 100 110 120	130 140 150	158 169 1 160 170	
	 The certification Shandards: Shandards: All Shandards: Uncertainty NIST Tech 	 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated. Shandards are prepared gravimetrically using hadances that are calibrated with weights traceable to MIST (see above). Shandards are certified (++) 0.5% of the stated value, unless otherwise stated. All Shandards, after opening ampule, should be stored with eags tight stated. All Shandards, after opening ampule, should be stored with cass tight and under appropriate taboratory conditions. Uncertainty Reference: Taylor, B.N. and Kuyat, C.B., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994). 	ation calculated f rically using bala of the stated value ule, should be stor .N. and Kuyat, C.	rom gravimetric au nocs that are calibr e, unless otherwise: red with caps tight, E, "Guidelines for ing Office, Washing	d volumetric means aled with weights th stated. In under appropri- tind under appropri- tion, DC, (1994).	arements unless (aceable to NIST afe laboratory ex pressing the Une	otherwise stated. (see above), onditions. certainty of NIST)	Measurement R	esstafe ^a			

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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 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 μ 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 ort-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	
 The ce Stands Stands Stands All Sta Uncert NUST' 	 The certified value is the concentration calculated from gravimetria standards are prepend gravinetrically using balances that are cal smalards are precrifted (<i>H</i>-1) 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 	 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated. Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above). Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated. All Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated. All Standards, after opening ampule, should be stored with cass tight and under appropriate laboratory conditions. Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994). 	tated.). NIST Measurement Result,"

Contraction of the

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

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 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 μ 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 ort-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	
 The ce Stands Stands Stands All Sta Uncert NUST' 	 The certified value is the concentration calculated from gravimetria standards are prepend gravinetrically using balances that are cal smalards are precrifted (<i>H</i>-1) 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 	 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated. Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above). Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated. All Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated. All Standards, after opening ampule, should be stored with cass tight and under appropriate laboratory conditions. Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994). 	tated.). NIST Measurement Result,"

Contraction of the

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.

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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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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

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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 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 μ 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 ort-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	
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GHS/OSHA Compliant

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Address	Hamden CT, 06514	Date Prepared/F		January 1, 2024
Section II - Hazards Identi				
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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.

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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 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

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

Section XVI. Misc. INFORMATION

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



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

www.restek.com

CERTIFIED REFERENCE MATERIAL



Certificate of Analysis

chromatographic plus



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.

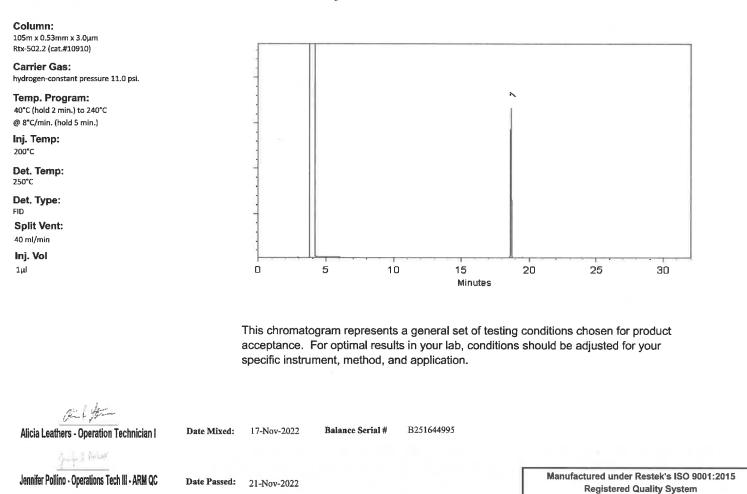
 Solvent:
 P&T Methanol

 CAS #
 67-56-1

 Purity
 99%



Quality Confirmation Test





Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

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

Purity Notes:

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

Certified Uncertainty Value Notes:

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

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

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

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

Manufacturing Notes:

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

Handling Notes:

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





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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





General Certified Reference Material Notes

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.
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- Purity values are rounded to the nearest whole number.

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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:

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



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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





General Certified Reference Material Notes

Expiration Notes:

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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:

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

CERTIFIED VALUES

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

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

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



Quality Confirmation Test





General Certified Reference Material Notes

Expiration Notes:

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Purity Notes:

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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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Manufacturing Notes:

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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Catalog No. :	30225	Lot No.:	<u>A0193071</u>		
Description :	Bromochloromethane Standard	d			
	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%







Expiration Notes:

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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:

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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

11-Apr-2023



Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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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**

Certificate #FM 80397

Expiration Notes:

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

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

Manufacturing Notes:

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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.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus





FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

Catalog No. :	30489	Lot No.:	A0209618	
Description :	8260B Acetates Mix			
	8260B Acetates Mix 2,000 µg/ml	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**

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,
Container Size :	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)	Expanded Uncertainty * (95% C.L.; K=2)	ty * K=2)
1	1,4-Dichlorobenzene-d4	3855-82-1 PR-30447	PR-30447	666	99% 25,212.0 μg/mL	+/- 1,427.8857	.8857
2	1,4-Difluorobenzene	540-36-3	MKCS8657	%66	99% 25,220.0 μg/mL	+/- 1,428.3388	.3388
ε	Chlorobenzene-d5	3114-55-4 PR-31132	PR-31132	%66	99% 25,116.0 μg/mL	+/- 1,422.4487	.4487
4	Pentafluorobenzene	363-72-4	MKCR9383	666	99% 25,180.0 μg/mL	+/- 1,426.0734	.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. Ili



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 $+ u_{shipping}^2$ 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	
Description :	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	
Description :	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	
Description :	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:

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

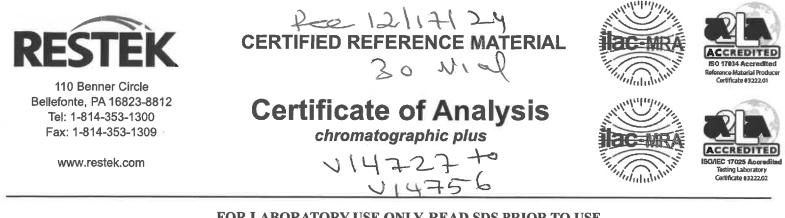
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

• 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				
Description :	502.2 Calibration Mix #1						
	502.2 Calibration Mix #1 2,000µg/mL, P&T Methanol, 1mL/ampul						
Container Size :	2 mL	Pkg Amt:	> 1 mL				
Expiration Date :	May 31, 2031	Storage:	0°C or colder				
		Ship:	Ambient				

CERTIFIED VALUES

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

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

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

Purity 99%

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

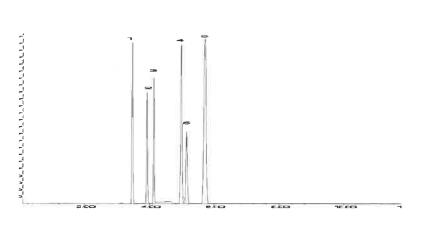
Det. Temp: 250°C

Det. Type:

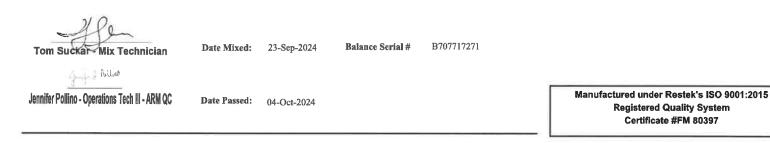
MSD Split Vent:

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:

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

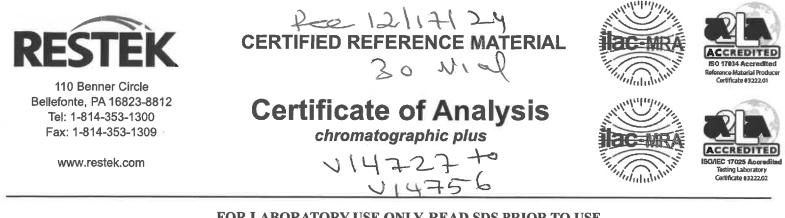
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

• 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.
- 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				
Description :	502.2 Calibration Mix #1						
	502.2 Calibration Mix #1 2,000µg/mL, P&T Methanol, 1mL/ampul						
Container Size :	2 mL	Pkg Amt:	> 1 mL				
Expiration Date :	May 31, 2031	Storage:	0°C or colder				
		Ship:	Ambient				

CERTIFIED VALUES

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

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

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

Purity 99%

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

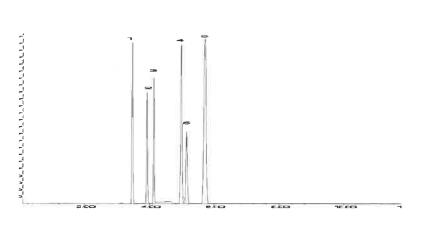
Det. Temp: 250°C

Det. Type:

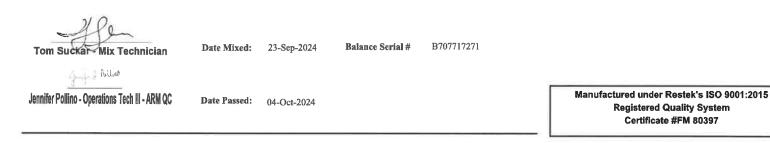
MSD Split Vent:

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.
- 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			
Description :	tert-Butanol Standard					
	tert-Butanol Std 50,000µg/mL, P&T Methanol, 1mL/ampul					
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	October 31, 2027	Storage:	0°C or colder			
		Ship:	Ambient			

CERTIFIED VALUES

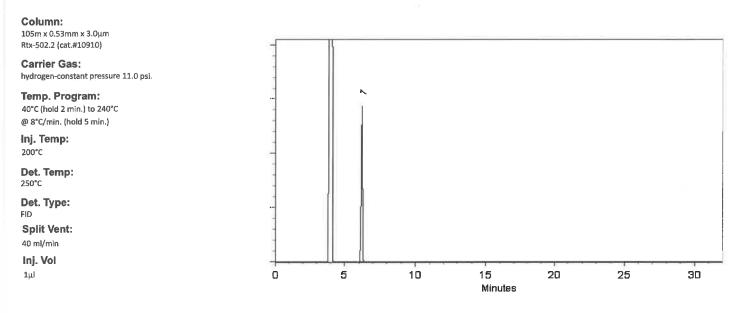
Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	tert-Butanol (TBA)	75-65-0	SHBQ8002-1	99%	50,007.5 μg/mL	+/- 717.6137

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

 Solvent:
 P&T Methanol

 CAS #
 67-56-1

 Purity
 99%



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

Suttan Jalua

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:

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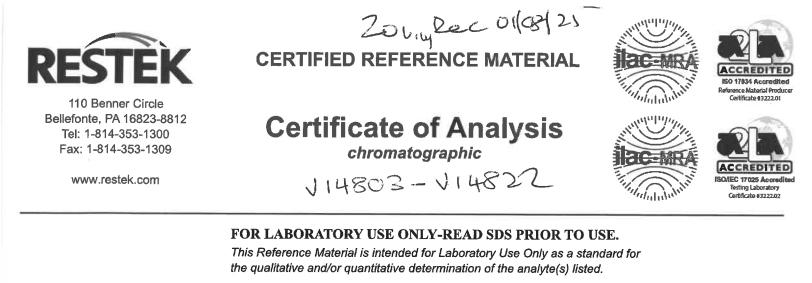
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- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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

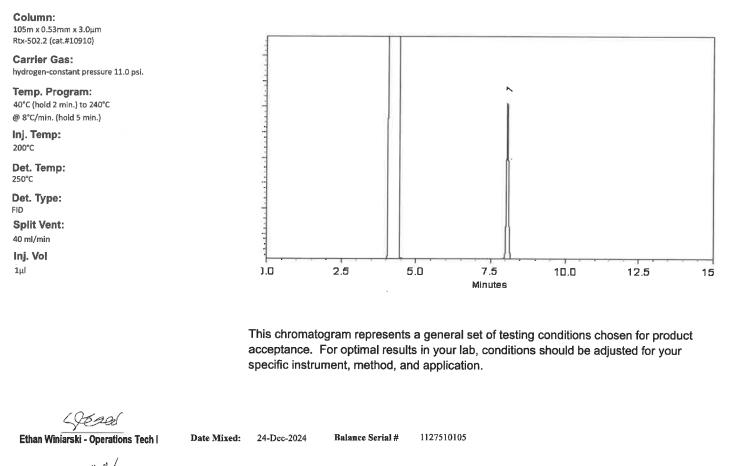
CERTIFIED VALUES

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

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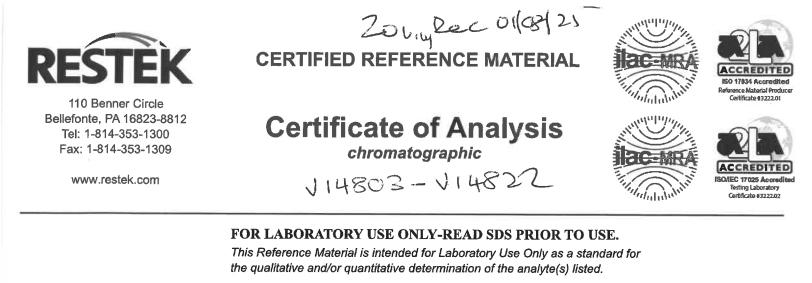
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Catalog No. :	555408-SL	Lot No.:	A0220471			
Description :	Custom Vinyl Acetate Standard					
	Custom Vinyl Acetate Standard 8	nyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/ampul				
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	June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

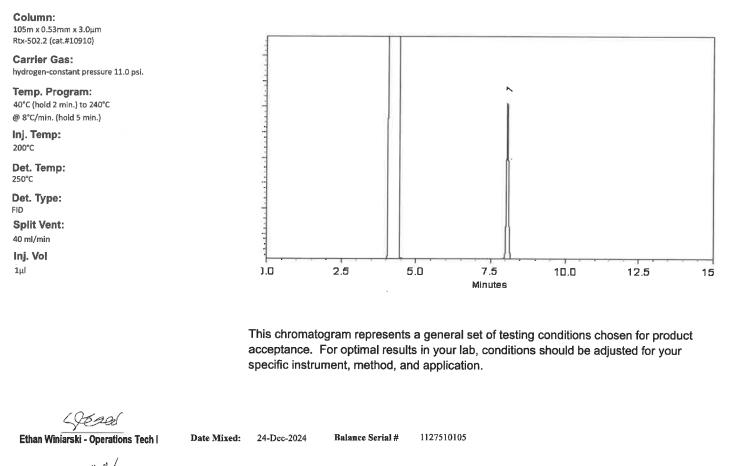
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Solvent: P&T Methanol CAS # 67-56-1 Purity 99%

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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)	≤ 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