

### Prep Standard - Chemical Standard Summary

Order ID : Q1774

Test : VOCMS Group4

Prepbatch ID :

Sequence ID/Qc Batch ID: VN041125,

#### Standard ID :

VP131767, VP132035, VP132037, VP132101, VP133251, VP133342, VP133344, VP133346, VP133544, VP133546, VP13366, VP133643, VP133644, VP133645, VP133646, VP133647, VP133648, VP133649, VP133650,

#### Chemical ID :

V13391,V13449,V13582,V13822,V14127,V14154,V14180,V14195,V14423,V14431,V14435,V14501,V14502,V14523,V14524,V14580,V14614,V14615,V14624,V14630,V14631,V14632,V14633,V14719,V14720,V14726,V14744,V14753,V14794,V14804,V14805,V14805,V14842,V14883,V14896,V14897,V14898,V14899,V14900,V14901,W3112,



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

Recipe					riepareu			Supervised by
<u>ID</u>	NAME	<u>NO.</u>	Prep Date	<u>Date</u>	<u>By</u>	<u>ScaleID</u>	PipetteID	Mahesh Dadoda
1810	5	<u>VP132035</u>	12/10/2024	06/10/2025	Semsettin	None	None	
	Std(2-CVE)-800ppm				Yesilyurt			12/12/2024
<u>FROM</u>	1.00000ml of V14630 + 1.00000ml of Quantity: 50.000 ml	f V14631 + 1	1.00000ml of \	V14632 + 1.000	00ml of V1463	3 + 46.00000ml	of V14614 =	Final



Recipe ID 1812	NAME 8260 Working Std(2-CVE)-100ppm	<u>NO.</u> VP132037	Prep Date 12/10/2024	Expiration Date 06/10/2025	<u>Prepared</u> <u>By</u> Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 12/12/2024
<u>FROM</u>	0.25000ml of V14633 + 24.75000ml o	of V14614 =	= Final Quanti	ty: 25.000 ml				

<u>Recipe</u> <u>ID</u>	NAME	<u>NO.</u>	Prep Date	Expiration Date	<u>Prepared</u> <u>By</u>	<u>ScaleID</u>	<u>PipetteID</u>	Supervised By
1817	8260 Working Std(2-CVE)-SS, 800ppm	<u>VP132101</u>	12/12/2024	06/10/2025	Semsettin Yesilyurt	None	None	Mahesh Dadoda 12/19/2024
FROM	0.80000ml of V13582 + 9.20000ml of	fV14614 =	Final Quantity	/: 10.000 ml				



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



Recipe ID 180	NAME 8260 Working STD (Acrolein)-First source, 100PPM	<u>NO.</u> VP133344	Prep Date 03/18/2025	Expiration Date 04/17/2025	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/20/2025
<u>FROM</u>	17.50000ml of V14883 + 2.50000ml o	of VP13334	2 = Final Qua	antity: 20.000 n	nl			

<u>Recipe</u> <u>ID</u>	NAME	<u>NO.</u>	<u>Prep Date</u>	Expiration Date	<u>Prepared</u> <u>By</u>	<u>ScaleID</u>	<u>PipettelD</u>	<u>Supervised By</u> Mahesh Dadoda
263	8260 Working STD (Acrolein)-Second source,	<u>VP133346</u>	03/18/2025	04/15/2025	Semsettin Yesilyurt	None	None	03/20/2025
<u>FROM</u>	800PPM 0.60000ml of V14901 + 1.00000ml of	f V14900 + 8	3.40000ml of <sup>v</sup>	V14883 = Fina	l Quantity: 10.0	00 ml		



Recipe ID 257	NAME 8260 Calibration Working STD Mix-First source, 160PPM	<u>NO.</u> VP133544	Prep Date 04/01/2025	Expiration Date 05/10/2025	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 04/03/2025
FROM	0.40000ml of V14842 + 1.00000ml of 1.00000ml of V14523 + 1.00000ml of 1.00000ml of V14804 + 1.00000ml of Quantity: 25.000 ml	f V14524 +	1.00000ml of	V14726 + 1.000	000ml of V1474	4 + 1.00000ml o	of V14753 +	Final

<u>Recipe</u> <u>ID</u> 245	NAME 8260 Calibration Working STD Mix-First source, 20PPM	<u>NO.</u> VP133546	Prep Date 04/01/2025	Expiration Date 05/10/2025	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 04/03/2025
FROM	17.50000ml of V14615 + 2.50000ml of	of VP13354	4 = Final Qua	antity: 20.000 n	nl			



Recipe ID 259	NAME 8260 Calibration Working STD Mix-Second source, 160PPM	<u>NO.</u> VP133608	Prep Date 04/04/2025	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 04/07/2025
FROM	0.16000ml of V13449 + 0.80000ml o 0.80000ml of V14794 + 1.60000ml o					of V14423 +	

<u>Recipe</u> <u>ID</u>	NAME	<u>NO.</u>	Prep Date	Expiration Date	<u>Prepared</u> <u>By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u> Mahesh Dadoda
589	BFB TUNE CHECK	<u>VP133643</u>	04/11/2025	04/12/2025	John Carlone	None	None	
								04/15/2025
FROM	39.98400ml of W3112 + 0.01600ml o	f VP131767	= Final Quar	ntity: 40.000 m	I			



<u>Recipe</u> <u>ID</u> 645	NAME 20 PPB CCC, 624	<u>NO.</u> VP133644	Prep Date 04/11/2025		Prepared By John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 04/15/2025
FROM	39.97000ml of W3112 + 0.00500ml o VP133251 = Final Quantity: 40.000		5 + 0.00500ml	of VP133342 +	- 0.00500ml of \	/P133544 + 0.0	0800ml of	
Recipe				Expiration	Prepared			Supervised By

<b>Recipe</b>				Expiration	Prepared			Supervised By
ID	NAME	<u>NO.</u>	Prep Date	<u>Date</u>	<u>By</u>	<u>ScaleID</u>	PipettelD	Mahesh Dadoda
637	5 PPB ICC, 624	<u>VP133645</u>	04/11/2025	04/12/2025	John Carlone	None	None	
								04/15/2025
FROM	39.96200ml of W3112 + 0.00800ml o	f VP133251	+ 0.01000ml	of VP132037 +	+ 0.01000ml of \	/P133344 + 0.0	1000ml of	
	VP133546 = Final Quantity: 40.000	ml						



<u>Recipe</u> <u>ID</u> 639	NAME 20 PPB ICC, 624	<u>NO.</u> VP133646	<u>Prep Date</u> 04/11/2025	Expiration Date 04/12/2025	Prepared By John Carlone	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 04/15/2025
FROM	39.97000ml of W3112 + 0.00500ml o VP133251 = Final Quantity: 40.000			of VP133342 +	• 0.00500ml of \	/P133544 + 0.0	0800ml of	
Recipe				Expiration	Prepared			Supervised By

<b>Recipe</b>				Expiration	Prepared			Supervised By
ID	NAME	<u>NO.</u>	Prep Date	<u>Date</u>	<u>By</u>	<u>ScaleID</u>	PipetteID	Mahesh Dadoda
640	50 PPB ICC, 624	<u>VP133647</u>	04/11/2025	04/12/2025	John Carlone	None	None	
								04/15/2025
FROM	39.95450ml of W3112 + 0.00800ml o	f VP133251	+ 0.01250ml	of VP132035 +	- 0.01250ml of \	/P133342 + 0.0	1250ml of	
	VP133544 = Final Quantity: 40.000	ml						



Recipe ID 642	NAME 100 PPB ICC, 624	<u>NO.</u> VP133648	<u>Prep Date</u> 04/11/2025		Prepared By John Carlone	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 04/15/2025
FROM	39.91700ml of W3112 + 0.00800ml o VP133544 = Final Quantity: 40.000		+ 0.02500ml	of VP132035 +	- 0.02500ml of \	/P133342 + 0.0	2500ml of	

Recipe				Expiration	<b>Prepared</b>			Supervised By
ID	NAME	<u>NO.</u>	Prep Date	<u>Date</u>	<u>By</u>	<u>ScaleID</u>	PipettelD	Mahesh Dadoda
643	150 PPB ICC, 624	VP133649	04/11/2025	04/12/2025	John Carlone	None	None	
								04/15/2025
FROM	39.87950ml of W3112 + 0.00800ml o VP133544  = Final Quantity: 40.000		+ 0.03750ml	of VP132035 -	⊦ 0.03750ml of \	/P133342 + 0.0	13750ml of	



Recipe ID 644	NAME 20 PPB ICV, 624	<u>NO.</u> VP133650	Prep Date 04/11/2025	Expiration Date 04/12/2025	Prepared By John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 04/15/2025
FROM	39.97000ml of W3112 + 0.00500ml o VP133251 = Final Quantity: 40.000		+ 0.00500ml	of VP133346 +	- 0.00500ml of \	/P133608 + 0.0	0800ml of	



### CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30067 / BFB tuneing solution	A0191805	11/22/2025	11/22/2024 / SAM	01/13/2023 / SAM	V13391
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30470 / VOA Stock Solution, tert-butanol std, 1mL, P&TM	A0191703	06/02/2025	12/02/2024 / SAM	01/23/2023 / SAM	V13449
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95318 / 2-Chloroethyl Vinyl Ether (Min = 5)	111722	11/17/2025	12/12/2024 / SAM	01/30/2023 / SAM	V13582
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	A0197644	09/30/2025	03/31/2025 / SAM	05/31/2023 / SAM	V13822
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)	011624	09/30/2025	03/31/2025 / SAM	01/17/2024 / SAM	V14127
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)	021524	09/30/2025	03/31/2025 / SAM	02/20/2024 / SAM	V14180
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	A0200785	09/30/2025	03/31/2025 / SAM	02/28/2024 / SAM	V14195
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	A0205013	06/30/2025	03/31/2025 / SAM	08/15/2024 / SAM	V14423
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	09/20/2025	03/20/2025 / SAM	08/15/2024 / SAM	V14431
Supplior	ItomCodo / ItomNamo	Lot #	Expiration	Date Opened /	Received Date /	Chemtech

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	09/20/2025	03/20/2025 / SAM	08/15/2024 / SAM	V14435

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	09/20/2025	03/20/2025 / SAM	09/17/2024 / SAM	V14501



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	09/20/2025	03/20/2025 / SAM	09/17/2024 / SAM	V14502
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	09/20/2025	03/20/2025 / SAM	09/18/2024 / SAM	V14523
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	09/20/2025	03/20/2025 / SAM	09/18/2024 / SAM	V14524
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #

Supplier	ItemCode / ItemName	Lot #	Date	Opened By	Received By	Lot #
Restek	555584 / Custom Standard, CLP VOA SurrogateStd [CS 5179-4]	A0219012	01/02/2026	01/02/2025 / SAM	11/18/2024 / SAM	V14580

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	22L0562016	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)	22L0562016	09/19/2025	03/19/2025 / SAM	11/26/2024 / SAM	V14615



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

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	09/20/2025	03/20/2025 / SAM	12/17/2024 / SAM	V14719



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	09/20/2025	03/20/2025 / SAM	12/17/2024 / SAM	V14720
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml	A02110618	07/30/2025	01/30/2025 / SAM	12/17/2024 / SAM	V14726
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30042 / VOA Mix,500 series method 502.2 Calibration Std #1 gases, 2000uq/ml, PTM, 1ml	A0216826	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	07/30/2025	01/30/2025 / SAM	12/17/2024 / SAM	V14753
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555408 / Custom Standard, Vinyl Acetate Standard w/ Grav [CS 5066-6] TWO SEPARATE LOTS	A0220563	09/30/2025	03/31/2025 / SAM	01/08/2025 / SAM	V14794
			Expiration	Date Opened /	Received Date /	Chemtech
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Opened By	Received By	Lot #



### CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555408 / Custom Standard, Vinyl Acetate Standard w/ Grav [CS 5066-6] TWO SEPARATE LOTS	A0220471	09/20/2025	03/20/2025 / SAM	01/08/2025 / SAM	V14805
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30470 / VOA Stock Solution, tert-butanol std, 1mL, P&TM	A0217535	08/27/2025	02/27/2025 / SAM	01/21/2025 / SAM	V14842
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	22L0562016	10/25/2025	02/19/2025 / Jaswal	04/22/2024 / Jaswal	V14883
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555583 / Custom Standard, CLP VOA Internal Std [CS 5179-3]	A0223136	03/12/2026	03/12/2025 / SAM	03/12/2025 / SAM	V14885
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	031725	04/17/2025	03/18/2025 / SAM	03/18/2025 / SAM	V14896
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	031725	04/17/2025	03/18/2025 / SAM	03/18/2025 / SAM	V14897



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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	031525	04/15/2025	03/18/2025 / SAM	03/18/2025 / SAM	V14900

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	031525	04/15/2025	03/18/2025 / SAM	03/18/2025 / SAM	V14901

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
Titrable 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

fermetrikel.

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



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

# **Certificate of Analysis**

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

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

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

James Techie

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



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

# **Certificate of Analysis**

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

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

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

James Techie

Jamie Ethier Vice President Global Quality

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	5	ТЯ Q2M (.nim) 37.51 (39714)	9msN	- Project		V GI wwas	COX 009710	oon adding	usr	Mothod CCE		:	- 0000005	
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	nement Result."	story conditions. g the Uncertainty of NIST Measu	guissengx3 but	de rabau bas tá gaitealav3 roi	red with caps tig .E., "Guidelines	ule, should be sto	ter opening ampurents approximation, B	.B. Standards, al incertainty Refe	∩• ∀•		2683		- 000000+	
		s unless otherwise stated. a NIST (see above).		gisw ditw batan	ites that are calib		inconivers boseq	rand are sbrebuet	S *	0.6158	1C: 3i		ansbrudA	
	gx/gm80+8 ten-ho	¥/N	488-53-3	7.8	0.1002	0.21522	0.21511	2.0	63	5000	F09A	167	eneznedivntemarteT-4,6,5,1	<b>ព</b>
	gylgm0281 ten-ho	(H8/Em/gm062) mqq 02	6-66-601	40'3	9.70001	1.00200	1.00125	5.0	6'66	10000	OEE8H8HS	380	[etrahydrofuran	10. 1
	ph/pmec ter-ho	V/N	107-12-0	6.18	8.70002	2.02150	17020.5	S.0	66	S0000	1395468	348	elininoiqor	<b>J</b> '6
	px/ph tsr-ho	AN	1634-04-4	5.8	2002.0	75205.0	0.20207	0.2	66	S000	21880	509	Methyl tert-butyl ether (MTBE)	8° V
	orl-mus 2250mg/kg	¥/N	108-87-2	8.2	2002.3	0.20230	0.20207	0.2	66	5000	A661058HS	1627	Methylcyclohexane	Ψ.Z
	6x/6w026+ 6d6-µo	(nbls)(H8/Em/gm01) mqq 1	1-27-78	S.8	4.100S	0.20221	0.20207	0.2	66	5000	12604HBV	661		- '9
	phypm0072 sum-ho	(nbis)(H8/Em/gm09) mqq 85	1-16-621	162.5	0.70004	4.04213	4.04142	0.2	66	40000	O3863KE	ELE	ensxoiG-4,1	6. 1
	gx/gm0748 ten-ho	(H8/Em/gm001S) mgg 008	108-50-3	S.8	\$005.0	0.20227	0.20207	0.2	66	5000	XMS1400	<b>L</b> 86	Di-isopropyl ether (DIPE)	J '*
	phoneorsi ten-ho	(H8/Em/gm0201) mgg 00E	110-85-7	S.8	2001.5	0.20222	0.20207	0.2	66	S000	58930	1053	Cyclohexane	
	orl-rat 2670mg/kg	A/N	E-69-601	1.8	8.200S	0.20035	0.20007	0.2	66'66	5000	<b>MKCM5711</b>	1072	1-Chlorobutane	5 1
	gx/gm 87 161-ho	A\N	1-61-701	40.6	⊅.≱0001	08010.1	36010.1	<b>S.</b> 0	66	10000	4718CK	۷	Acrylonitrile	
	CSC1	(AWT) LEY AH20	#SVO	(ˈjɯ/ð//) (-/+)	(Jm/gu) Jnoj	(g))trigieW	(g)trigieW	Purity	(96)	(Jm/gu) conc	Number	#WX	punodwog	5
	(-bd pət	<b>SDS Information</b> 5 Safety Info. On Attach	navlo2)	Expanded Uncertainty	<b>Actual</b>	<b>Actual</b>	<b>J9Q16T</b>	Uncertainty	Purity	<b>Isnimol</b>	Γοί			
	6				1			vraistread Uncertainty		0.001	:(Jm) of bet	nlip pu	Weight(s) shown below were combined a	¥
	429110 3TAQ	Pedro L. Rentas	:4:	Beviewed F			ελ	nianee Uncertain	9 <b>6-9</b> 9		beinsV 8TU3		Nominal Concentration (µg/mL): NIST Test ID#:	
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	429110	hav hunder	ert.							xiM anoit	ibbA besiveA		Description:	
		170	10			SU-174H3	Methanol				011624		Lot Number:	
	l					#107	Solvent(s):				61636		FIED WEIGHT REPORT	1112
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	itheO 6£31-AA tps://Absolutes					00000000	15				~	2	absolutestandards.com	
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Hexachloroethane

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minutes. Analysis performed by Candice Warren.

200°C, Detector Temp. = 220°C. Solvent Delay: 8

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www.absolutestandards.com

**Certified Reference Material CRM** 



ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com

CER	TIFIED WEIGHT REPORT									Øshussiteh.	8.45						
	Part Number: Lot Number:									Solvent(s): Methenol	Lolf EG359-USQ	12			and the second	in the hur	
			ai VOA Megami	20											. Jn		021524
			ponents											Formulate	ed By:	Mario Luis	DATE
	Expiration Date: Recommended Storage:		10 903												1		
	Nominal Concentration (ug/mL):		(0.0)												Jed.	to pleator	021524
	NIST Test ID#:				5E-05	Balance Uncertain	nty							Reviewed	By:	Pedro L. Rentas	DATE
	Weight(s) shown below were combined a	and dilute	ed to (mL):	100.0	0.021	Flash Uncertainty	1									0100 Information	
					1-101-1	12221	Nominal	the side of	Purity	Uncertainty	Target	Actual	Actual	Expanded Uncertainty	(Solve	SDS Information Int Safety Info. On Attach	ed pg.)
	Compound	(RM#) Part Numb	Lot or Number	Dil. Factor	Initial Viol. (ml.)	Conc.(ug/mL)		Purity (%)	Uncertainty		Weight(g)	Weight(g)	Conc (ug/mL)			OSHA PEL (TWA)	L050
	Compound																
1.	Acetonitrie	(0324)	021644	NA	NA	NA	2000	99.99	0.2	NA	0.20007	0.20022	2001.5	8.1	75-05-8	40 ppm (70mg/m3/8H)	orf-rat 2450mg/kg
2,	Allyl chloride (3-Chloropropene)	(0325)	102396	NA	NA	NA	2000	99	0.2	NA	0.20207	0.20222	2001.5	8.2	107-05-1 75-15-0	1 ppm (3mg/m3/8H) 4 ppm (12mg/m3) (skin)	orl-ret 700mg/kg orl-ret 1200mg/kg
3.	Carbon disulphide	(0060) (1196)	MKCR8561 14718EF	NA	NA	NA	2000	99.99 95	0.2	NA	0.20007	0.21060	2001.3	8.5	1478-11-5	N/A	N/A
4.	cis-1,4-Dichloro-2-butene trans-1,4-Dichloro-2-butene	(0486)	MKBP6041V	NA	NA	NA	2000	96.5	0.2	NA	0.20731	0.20734	2000.3	8.4	110-57-6	NA	N/A
6.	Diethyl other	(0153)	IK1BCAS0000	NA	NA	NA	2000	99.9	0.2	NA	0.20025	0.20042	2001.7	8.1	80-29-7	NA	N/A
7.	Ethyl methacrylate	(0381)	06126PX	NA	NA	NA	2000	99	0.2	NA	0.20207	0.20231	2002.4	8.2	97-63-2	N/A	orl-rat 14800mg/kg
8.	lodomethane	(0489)	SHBF8718V	NA	NA	NA	2000	99.5	0.2	NA NA	0.20106	0.20118	2001.2 2001.4	8.1	74-88-4 78-83-1	5 ppm(26mg/m3/6H)(skin) 50 ppm (150mg/m3/6H)	orl-rat 75mg/kg orl-rat 2460mg/kg
9.	2-Methyl-1-propanol	(0445)	15241EB	NA	NA	NA	2000	99.5 99	0.2	NA	0.20108	0.20209	2000.2	8.2	126-98-7	1 ppm (3mg/m3/8H)(sidn)	orl-rat 120mg/kg
10. 11.	Methacrylonitrile Methyl acrylate	(0442) (1075)	00427ET SHBK0679	NA	NA	NA	2000	99.9	0.2	NA	0.20025	0.20042	2001.7	8.1	95-33-3	10 ppm(35mg/m3/8H)(sidn)	ord-net 277mg/kg
12.	Methyl methacrylate	(0404)	MKBW5137V	NA	NA	NA	2000	99.9	0.2	NA	0.20025	0.20030	2000.5	8.1	80-62-6	100 ppm (410mg/m3/8H)	orl-rat 7872mg/kg
13.	Nitrobenzene	(0228)	01213TV	NA	NA	NA	2000	89	0.2	NA	0.20207	0.20230	2002.3	8.2	98-95-3	1 ppm (Smg/m3/8H)(skin)	ori-tal 750mg/kg
14.	2-Nitropropane	(0461)	14002JX	NA	NA	NA	2000	97.3	0.2	NA NA	0.20560	0.20670	2001.0	8.3	79-46-9 76-01-7	10 ppm (35mg/m3/8H) N/A	orl-rat 720mg/kg N/A
15.	Pentachloroethane	(0450) (0474)	HGA01 18930	NA	NA	NA	2000	98	0.2	NA	0.20207	0.20210	2000.3	8.2	78-13-1	1000 ppm (7600mg/m3/6H)	orl-rat 43g/kg
16. 17.	1,1,2-Trichlorotrilluoroethane Bromodichloromethane	35171	101623	0.05	6.00	40001.7	2000	NA	NA	0.017	NA	NA	1999.6	22.9	75-27-4	NA	orl-rat 916mg/kg
18.	Dibromochloromethane	35171	101623	0.05	5.00	40002.1	2000	NA	NA	0.017	NA	NA	1999.6	23.0	124-48-1	N/A	orl-rat 648mg/kg
19.	cie-1,2-Dichloroethene	35171	101623	0.05	5.00	40003.1	2000	NA	NA	0.017	NA	NA	1999.7	22.9	156-59-2	N/A	N/A
20.	trans-1,2-Dichlorosthene	35171	101623	0.05	5.00	40002.4	2000	NA	NA	0.017	NA	NA	1999.6	23.0	156-60-5	N/A 500 mm	orl-rat 1235mg/kg orl-rat 820mg/kg
21.	Methylene chloride	35171	101823	0.05	5.00	40002.8	2000	NA NA	NA	0.017	NA	NA	1999.6	20.4	75-09-2 75-35-4	500 ppm 1 ppm (4mg/m3/8H)	ori-rat 200mg/kg
22. 23.	1,1-Dichloroethene Bromoferm	32251 95321	102023	0.10	10.00	20001.6 20003.2	2000	NA	NA	0.042	NA	NA	1999.8	20.5	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-ret 933mg/kg
24.	Carbon tetrachloride	95321	020724	0.10	10.00	20003.4	2000	NA	NA	0.042	NA	NA	1909.B	20.4	56-23-6	2 ppm (12.6mg/m3/8H)	ori-rat 2350mg/kg
25.	Chloroform	95321	020724	0.10	10.00	20024.0	2000	NA	NA	0.042	NA	NA	2001.9	20.5	67-66-3	50 ppm (240mg/m3) (CL)	phpm809 tar-ho
26.	Dibromomethane	95321	020724	0.10	10.00	20002.9	2000	NA	NA	0.042	NA	NA	1990.8	20.5	74-95-3	N/A	orl-rat 106mg/kg
27.	1,1-Dichioroethane	95321	020724	0.10	10.00	20003.4	2000	NA NA	NA	0.042	NA	NA	1999.8	20.5	75-34-3	100 ppm N/A	orl-rat 725mg/kg N/A
	2,2-Dichloropropane	95321 95321	020724	0.10	10.00	20003.4	2000	NA	NA	0.042	NA	NA	2019.6	20.6	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-tet 2629mg/kg
29. 30.	Tetrachloroethene 1,1,1-Trichloroethane	95321	020724	0.10	10.00	20003.0	2000	NA	NA	0.042	NA	NA	1999.8	20.5	71-55-6	360 ppm (1900mg/m3/6H)	orl-rat 10300mg/kg
	1,2-Dibromo-3-chiloropropane	35161	112322	0.05	5.00	40016.5	2000	NA	NA	0.017	NA	NA	2000.3	22.9	96-12-8	0.001 ppm	orl-rat 170mg/kg
32.	1,2-Dibromoethane	36161	112322	0.05	5.00	40024.8	2000	NA	NA	0.017	NA	NA	2000.7	22.9	108-83-4	20 ppm (8H)	orf-nit 108mg/kg
	1,2-Dichloroethane	35161	112322	0.05	5.00	40018.0	2000	NA NA	NA	0.017	NA	NA	2000.4 2002.0	22.9	107-08-2 78-87-5	50 ppm (8H) 75 ppm (350mg/m3/8H)	ori-rat 670mg/kg ori-rat 1947mg/kg
	1,2-Dichloropropane	35161 35161	112322	0.05	5.00	40051.0	2000	NA	NA	0.017	NA	NA	1999.8	22.9	142-28-9	N/A	Unr-mus 3600mg/kg
	1,3-Dichloropropane 1,1-Dichloropropene	35161	112322	0.05	5.00	40012.1	2000	NA	NA	0.017	NA	NA	2000.1	29.7	583-58-6	NA	NA
	cis-1,3-Dichloropropene	35161	112322	0.05	5.00	40010.0	2000	NA	NA	0.017	NA	NA	2000.0	23.0	10061-01-5	N/A	N/A
38.	trane-1,3-Dichloropropene	35161	112322	0.05	5.00	40017.6	2000	NA	NA	0.017	NA	NA	2000.4	23.0	10061-02-6	N/A	N/A orl-rat 82mg/kg
39.	Hexachloro-1,3-butadiene	35161	112322	0.05	5.00	40021.9	2000	NA	NA	0.017	NA	NA	2000.6	29.7 22.9	87-68-3 630-20-6	0.02 ppm (0.24mg/m3/8H) N/A	cri-rat 670mg/kg
40.	1,1,2-Tetrachioroethane	35161 35161	112322	0.05	5.00	40011.9	2000	NA	NA	0.017	NA	NA	1999.9	22.9	79-34-5	5 ppm (35mg/m3/9H)(skin)	orl-rat 800mg/kg
	1.1.2-Trichloroethane	35161	112322	0.05	5.00	40008.6	2000	NA	NA	0.017	NA	NA	1999.8	23.0	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
43.	Trichlorosthene	35161	112322	0.05	5.00	40029.0	2000	NA	NA	0.017	NA	NA	2000.9	22.9	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
44.	1,2,3-Trichloropropane	35161	112322	0.05	5.00	40007.5	2000	NA	NA	0.017	NA	NA	1999.9	22.9	96-18-4 71-43-2	10 ppm (60mg/m3/8H)	orl-rat 149.0mg/kg orl-rat 4894mg/kg
45.	Benzene	35162	050823	0.05	5.00	40005.0	2000	NA	NA	0.017	NA	NA	1999.7	22.9	108-86-1	1 ppm N/A	ori-rat 2009mg/kg
46.	Bromobenzene n-Butyl benzene	35162 35162	050823	0.05	5.00	40006.9	2000	NA	NA	0.017	NA	NA	1999.7	22.9	104-51-8	N/A	N/A
	Ethyl benzene	35162	050823	0.05	5.00	40004.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	100-41-4	100 ppm (435mg/m3/8H)	orl-rat>2000mg/kg
	p-isopropyl toluene	35162	050823	0.05	5.00	40005.8	2000	NA	NA	0.017	NA	NA	1999.8	22.9	99-87-8	NA	orl-rat 4750mg/kg
50.	Naphihalene	35162	050823	0.05	6,00	40006.2	2000	NA	NA	0.017	NA	NA NA	1999.8	22.9	91-20-3 100-42-5	10 ppm (50mg/m3/8H) 100 ppm	orl-rat 490mg/kg orl-rat 5000mg/kg
	Styrene	35162	050823	0.05	5.00	40004.8 40006.2	2000	NA	NA	0.017	NA	NA	1999.8	22.9	108-68-3	200 ppm	orl-rat 5000mg/kg
	Toluene 1,2,3-Trichlorobenzene	35162 35162	050823	0.05	5.00	40008.2	2000	NA	NA	0.017	NA	NA	1999.7	22.9	87-61-6	NA	ipr-mus 1390mg/kg
	1,2,4-Trichiorobenzene	35162	050823	0.05	5.00	40006.8	2000	NA	NA	0.017	NA	NA	1999.8	22.9	120-62-1	5 ppm (CL) (40mg/m3)	ori-nat 756mg/kg
1.2.4	1,2,4-Trimethylbenzene	35162	050823	0.05	5.00	40001.6	2000	NA	NA	0.017	NA	NA	1999.6	23.0	95-63-6	NA	ori-rat 5g/kg
	1,3,5-Trimethylbenzene	35162	050B23	0.05	5.00	40006.7	2000	NA	NA	0.017	NA	NA	1999.8 1999.8	22.9	108-67-8	N/A 100 ppm (435mg/m3/8H)	orl-rat 5000mg/kg orl-rat 5g/kg
	m-Xylene	35162	050823	0.05	5.00	40005.8	2000	NA	NA	0.017	NA	NA	1999.6	22.9	98-06-6	N/A	N/A
	tert-Butyl benzene sec-Butyl benzene	35163 35163	101923	0.05	5.00	40001.2	2000	NA	NA	0.017	NA	NA	1999.6	22.9	135-98-8	N/A	ort-rat 2240mg/kg
	Chlorobanzene	35163	101923	0.05	5.00	40003.8	2000	NA	NA	0.017	NA	NA	1999.7	22.9	108-90-7	75 ppm (350mg/m3/8H)	ori-rat 2290mg/kg
	2-Chiorololuene	35163	101923	0.05	5.00	40000.3	2000	NA	NA	0.017	NA	NA	1999.5	22.9	95-49-8	60 ppm (250mg/m3/84-6)	ort-rat 3900mg/kg
	4-Chlorotoluene	35163	101923	0.05	5.00	40003.3	2000	NA	NA	0.017	NA	NA	1999.7	22.9	106-43-4 95-50-1	N/A 50 ppm (300mg/m3) (CL)	orl-rat 2100mg/kg orl-rat 500mg/kg
	1,2-Dichlorobenzene	35163	101923	0.05	5.00	40003.8	2000	NA	NA	0.017	NA	NA	1999.7 1999.6	22.9	541-78-1	SUppm (Scompma) (CL) N/A	ipr-mus 1062mg/kg
	1,3-Dichlorobenzene 1,4-Dichlorobenzene	35163 35163	101923	0.05	5.00	40001.8	2000	NA	NA	0.017	NA	NA	1999.6	22.9	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 600mg/kg
	Isopropylbenzene	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
	n-Propylbenzene	35163	101923	0.05	5.00	40003.4	2000	NA	NA	0.017	NA	NA	1999.7	23.0	109-65-1	N/A	ort-rat 6040mg/kg
68.	o-Xylena	35163	101923	0.05	5.00	40040.8	2000	NA	NA	0.017	NA	NA	2001.5	23.0	95-47-6	100 ppm (435mg/m3/6H)	pr-mus 1384mg/kg orl-net 5g/kg
69.	p-Xylene	35163	101923	0.05	5.00	40000.8	2000	NA	NA	0.017	NA	NA	1999.5	22.9	108-42-3	100 ppm (435mg/m3/8H)	Million

Cite carrillo value is the concenterwise celetated from gravitatorie and volumetrie measurements unless otherwise similal.
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Run 17, "P95317 L021	i24 I2000µg/mL in MeOHI"	Peak 2	Name
HARIERS I ADDIE POPI	ma moodeline er endante	3	Ether 1,1,2-Trichloro-1,2,2-Inlibiorpethana
		3	1,1-Dichloroethene
Dum Longila: 00.00 min. 2	5000 nainte at 10 nainte canand	*	Acetonitrile
Hun Lengin. 60.00 min, 3	5998 points at 10 points/second. 44 at 10:04:27 AM.	5	Indomethane
Created: Sat. Feb 17, 20	4 at 10:04:27 AM.	6	Allyi shloride
Compled: Companes *02	624-GC5M1", Method "GC5-M1".	7	Carbon disulfide/Mathylone chloride
		8	trans-1,Z-Dichloroethens
Analyzed using Method "	GC5-M1".	9	1,1-Dichlorosthane
		10	2,2-Dichloropropane
		11	63-1,2-Dichloroethene
Comments		12	Hethecrylonitrile/Hethyl acrylate/Chloroft
		13	Isobutanol/1,1,1-Trichloroethane
GC5-M1 Analysis by Car	dice Warren	14	1,1-Dichisropropene
		15	Carison tetrachloride
CONTRACTO 260-A0001 IC	5 meter X 0.53mm X 3.0µm film thickness	16	Benzene/1,2-Dichloroethane
Flow rates Total flow=29	DmL/min., Helium (carrier)=10mL/min., nin., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min. *C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.),	17	Trictionoethene
Linking (makes and _ 16ml	the demonstration with Aland Imin Airfrantes with Oldent Imin	18	1,2-Dichloropropaite
rienum(make-up)=romu	ин., пуслден(таке-up)≔илт.лпп., Ан(таке-up)=∠элтслип.	19	Hsinyi methacrylate
Oven Profile: Termo 1=3	"C (Time 1=10 min ) Termo 2=200"C (Time 2=8.75 min )	20	Bromodichioremethene
The Allerty Total		21	Dibromomethane/2-Nitropropane
Hate = 4 G/min., 10tal ru	time=60 min. Injector temp.=200°C, FID Temp.=200°C.	22	cis-1,3-Dichioropropone
FID Signal = Edaq Chanr		23	Toluane
		24	Ethyl methecrylete/trans-1,3-Dickloropro;
Standard injection = $0.5\mu$	_, Hange=3	25	1,1,2-Trichloroethane
		26	Tetrachioraethene/1,3-Dichloropropene
× ×		27	Dibromochionomethane
1		28	1,2-Dipromoethane
		19	Chiorobenzene
4000000		30	Ethylbonzene/1,1,1,2-Retrachlonoethane
1000000-		31	m-Nytene/p-Xylene
1		32	e-Xviene
		33	Styrene
1 1		34	isopropylbeneene/Bromoform
		35	cis-1,4-Dichloro-2-butene
800000-		36	1,1,2,2-Tetrachioroethene
over v		37	1,2,3-Intchloropropane
		38	n-Propy/benzene
		39	trans-1,4-Dichloro-2-butane
( I	in the second	-40	Breinobenzene
		-42	1,3,5-Trimethyibeneene
600000-		42	2-Chiorotoluene
		43	4-Childrotoluene
3		44	tert-Bodylbenzene
		45	1,2,4-Trimethylbenzene
	2 77	46	Perstachioroethene
110/00/00	D	42	sec-Butylbenzens
400000-		48	p-laopropyko/uene
		49	1.3-Dichierobenzene
		\$0	L.4-Dichlorobenzone
1		51	n-Butylbenzene
		52	1,2-Dichlorobenzana
		53	1,2-Oloromo+3-chloropropens
200000-		54	Nitrobencene
		55	1,2.4-Trictionsbenzesve
		rsiek.	Hexactivorobutaciana
1 1		57	Naphthalene
	N TRU, J & AU, APU, AND I DAYARS, UL II ALAMII BIAMANA A TAUA	58	1,2,3-michtonobenzene
	LA MALE IL THE AND LAND A LIVE IL A HILL IL HALINI HOUNDAN OF LAND		
0			
0	10 20 30 40 50		
	min		
	845885		

Absolute Standards, Inc. 800-368-1131

www.absolutestandards.com



**Certified Reference Material CRM** Ree 03/17/24 \$

CERTIFIED WEIGHT REPORT Parl Number: 95317 Bolvent(s): Lot# Lot Number: 021624 Mathanol EG359-USQ12 Description: Universal VOA Megamix hant 69 components 021624 Formulated By: Prashant Chauhan Expiration Date: 021627 DATE Decor mended Storage: Freezer (0 °C) Nominal Concentration (ug/mL): 2000 Alente dia NIST Test ID#: BUTB 021624 5E-05 Balance Uncertainty Reviewed By Weight(s) shown below were combined and diluted to (mL): Pedro L. Rentas DATE 100.0 0.021 Flask Docentaion Expanded SDS Information (RM#) DI. Initial Initial Nominal Purity Purity Target Actual Actual Uncertainty (Solvent Safety Info. On Attached pg.) Compound Part Nom Numb Factor Vol. (mL) Gonc.(ug/mL) Conc (µg/mL) (95) Uncertainty Pipetra (mL) Weight(g) Weight(g) Conc (ug/mL) (+/-) (ug/mL) CAS# OSHA PEL (TWA) LD30 1. Acetonitria (0324) 021544 NA NA 2000 99.99 0.2 NA 0.20007 0.20020 Allyl chloride (3-Chloropropene) 2001.3 75-05-8 40 ppm (70mg/m3/8H) (0325) 102396 NA ori-rat 2460mg/kg NA NA 2000 2000 99 0.2 NA 0.20207 3 Carbon disulphide 0.20221 2001.4 8.2 107-05-1 orl-rat 700mg/kg (0060) MKCB8561 NA NA NA 1 ppm (3mg/m3/8H) 99.99 0.2 NA 0.20007 0.20023 2001.6 cis-1,4-Dichtoro-2-butene 8.1 75-15-0 4 ppm (\$2mg/m3) (sidn 14718EF (1196)NA NA NA orl-rat 1200mg/kg 2000 95 0.2 NA 0.21058 0.21069 2001.1 8.5 1478-11-5 Irans-1,4-Dichloro-2-butene N/A MKBP8041V NA NA NA 2000 96.5 0.2 NA 0.2073 6. **Diethyl ether** 0.20746 2001.7 8.4 (0153) IK18CAS0000 110-57-6 NA NA NP N/A N/A 2000 99.9 0.2 NA 0.20025 0.20040 2001.5 7 Ethyl methacrylate 8.1 60-29-7 (0381) N/A 06126PX N/A NA NA NA 2000 0.2 Ø NA 0.20207 0.20230 2002.3 8.2 97-63-2 lodomethane N/A ori-rat 14800mg/kg (0489)SHBF8718V NA NA NA 2000 99.5 0.2 NA 0.20106 9. 2-Methyl-1-propanol 0.20121 2001.5 8.2 74-88-5 ppm(28mg/m3/6H)(skin) orl-rat 76mg/kg (0445) 16241EB NA NA NA 2000 99.5 0.2 NA 0.20108 0.20120 10. Methacrylonil/lie 2001.4 (0442) 8.1 78-83-1 60 ppm (150mg/m3/8H) 00427ET orl-rat 2460mg/kg NA NA NA 2000 99 0.2 Methyl acrylate NA 11. 0.20207 0.20221 2001.4 8.2 128-98-1 (1075) SHEK0679 1 ppm (3mg/m3/8H)(akin) NA NA orl-rat 120mg/kg NA 2000 99.9 0.2 NA 0.20025 0.20040 96-33-3 12. Methyl methacrylate 2001.5 8.1 10 ppm(35mg/m3/8H)(sidn) (0404) MKEW5137V NA orf-rat 277mg/kg NA NA 5000 99.9 0.2 NA 0.20026 0.20041 2001.8 13. Nitrobenzene (0228 8.1 80-62-6 100 ppm (410mg/m3/8H 01213TV ori-rat 7872mg/kg NA NA NA 2000 0.2 NA 2-Nilropropane 0.20207 0.20220 14. 2001.3 8.2 98-95-3 orl-rat 780mg/kg 10481 14002JX MA NA 1 ppm (5mg/m3/8H)(ekin) NA 2000 97.3 0.2 NA 0.20560 15. Pentachloroethane 0.20577 2001.6 8.3 70-46-0 10 ppm (35mg/m3/8H) (0450) HGA01 NA orl-ret 720mg/kg NA NA 2000 98 0.2 NA 0.20413 0.20430 2001.6 18. 1,1,2-Trichlorstriftuoroethane 8.3 78-01-7 (0474) 18930 N/A NA NA NA N/A 2000 99 0.2 NA 17. Bromodichioromethane 0.20207 0.20225 2001.6 8,2 76-13-1 1000 ppm (7600mg/m3/8H) 35171 101623 0.05 5.90 ori-rat 43g/kg 40001.1 2000 NA NA 0.017 NA 18. Dibromochloromethane NA 1999.6 22.9 75-27-4 N/A 35171 101623 0.05 ori-rat 916mg/kg 5.00 40002. 2000 NA NA 0.017 NA NA 1999.6 19. cis-1,2-Dichloroethene 35171 23.0 124-48-1 N/A orl-rat 848mg/kg 101823 0.05 5.00 40003.1 2000 NA NA 0.017 20. NA NA 1999.7 22.9 156-59-2 trans-1\_2-Dichloroethen 35171 101623 0.05 N/A N/A 5.00 2000 40002.4 NA MA 0.017 NA NA Methylane chlorida 21 1999.6 23.0 158-60-5 N/A ort-rat 1235mg/kg 35171 101623 0.05 5.00 40002.8 2000 NA NA 0.017 NA NA 1999.6 22 1,1-Dichloroethene 22.9 75-09-2 32251 500 ppn ori-rat 820mg/kg 102023 0.10 10.00 20001.6 2000 NA NA 0.042 NA NA 23 Bromotorm 1999.1 20.4 75-35-4 95321 020724 0.10 1 ppm (4mg/m3/8H) orl-rat 200mg/kg 10.00 20003.2 2000 NA NA 0.042 NA NA 24. 1999.8 20.5 78-25-2 Carbon tetrachioride 0.5 ppm (5mg/m3) (skin) 95321 020724 0.10 10.00 20003.4 orl-rat 933mg/kg 2000 NA NA 0.042 NA 25 NA 1999.8 Chioroform 20.4 56-23-5 2 ppm (12.6mg/m3/8 95321 ort-rat 2350mg/kg 020724 0.10 10.00 20024.0 2000 NA NA 0.042 NA NA 67-68-3 26. Dibromomethane 2001.9 20.5 60 ppm (240mg/m3) (CL) orl-ret 908mg/kg 95321 020724 0.10 10.00 20002.9 2000 NA NA 0.042 NA NA 74-95-3 27. 1.1-Dichloroethane 1999.8 20.5 95321 020724 0.10 N/A orl-rat 108mg/kg 10.00 20003.4 2000 NA NA 0.042 NA NA 2,2-Dichloropropane 1999.8 28. 9532 020724 20.5 75-34-3 100 ppm orl-rat 725mg/kg 0.10 10.00 20003.4 2000 NA NA 0.042 29 NA NA 1999.8 20.4 594-20-7 Tetrachloroethene N/A 85321 020724 0.10 BI/A 10.00 20201.1 2000 NA NA 0.042 NA 30. NA 2019.6 20.8 127-18-4 25 ppm (170mg/m3/6H)(final) ort-rat 2629mg/kg 1,1,1-Trichloroethane 0.10 95321 020724 10.00 20003.0 2000 NA NA 0.042 NA NA 31 1.2-Dibromo-3-chloroproparie 1999.8 20.5 71-55-8 35161 112322 350 ppm (1900mg/m3/8H) orl-rat 10300mg/kg 0.05 5.00 40016.5 2000 NA NA 0.017 NA NA 2000.3 32. 1.2-Dibromoethane 22.9 96-12-8 orl-rat 170mg/kg 35161 0.001 ppm 112322 0.05 5.00 40024.8 2000 NA NA 0.017 NA 33. 1,2-Dichlorcethane NA 2000.7 22.9 108-93-4 20 ppm (8H) orl-rat 108mg/kg 36161 112322 0.05 5.00 40018.0 2000 NA NA 0.017 NA NA 34. 1,2-Dichloropropane 2000.4 22.9 107-08-2 35161 50 ppm (8H 112322 orl-rat 670mg/kg 0.05 5.00 40051,0 2000 NA NA 0.017 NA NA 2002.0 22.9 35 1.3-Dichloropropane 78-87-5 orl-rat 1947mg/kg 35161 75 ppm (350mg/m3/8H) 112322 0.05 5.00 40005.9 2000 NA NA 0.017 NA NA 38. 1999.8 22.9 1.1-Dichlaropropene 142-28-9 NA 35161 unr-mus 3600mp/kg 112322 0.05 5.00 40012. 2000 NA NA 0.017 NA 37. cis-1,3-Dichloropropena NA 2000.1 29.7 35181 112322 563-58-6 N/A NFA 0.05 5.00 40010.0 2000 NA N 0.017 NA NA 2000.0 23.0 38. trans-1,3-Dichloropropene 10081-01-5 36161 112322 0.05 N/A N/A 5.00 40017.6 2000 NA MA 0.017 NA NA 39. Hexachloro-1,3-butadiene 2000.4 23.0 10061-02-6 NVA 35161 112322 0.05 5.00 N/A 40021.0 2000 NA 40. NA 0.017 NA NA 2000.6 0.02 ppm (0.24mg/m3/8 1,1,1,2-Tetrachloroethane 29.7 87-68-3 35161 orl-rat 82mg/kg 112322 0.05 5.00 40011.9 2000 NA NA 0.017 41. 1,1,2,2-Tetrachloroethane NA NA 2000.1 22.9 630-20-6 35161 N/A 112322 0.05 5.00 40007.5 orl-rat 670mg/kg 2000 NA NA 0.017 N/ NA 42. 1.1.2-Trichloroethane 1999.9 22.9 79-34-5 5 ppm (35mg/m3/9H)(skin) 35161 112322 0.05 5.00 40006.6 ori-rat 800mg/kg 2000 NA NA 0.017 NA NA 43. Trichloroethene 1999.8 23.0 79-00-5 10 ppm (45mg/m3/8H)(skin) 3516 orl-rat 836mg/kg 112322 0.05 5.00 40029.0 2000 NA NA 0.017 44. 1,2,3-Trichioropropane NA NA 2000.B 22.9 79-01-6 orl-mus 2402mg/kg 35161 112322 50 ppm (270mg/m3/8H) 0.05 5.00 40007.5 2000 NA NA 0.017 NA NA 45. Banzens 1999.9 22.9 96-18-4 10 ppm (60mg/m 35162 050823 0.05 5.00 40005.0 orl-ret 149.8mg/kg 2000 NA NA 0.017 NA NA 46. Bromobenzene 1999.7 22.9 71-43-2 3516 050823 1 000 orl-rat 4894mg/kg 0.05 5.00 40006.9 2000 NA NA 0.017 47. NA n-Butyl benzene NA 1999.8 22.9 108-86-1 ori-rat 2000mg/kg 35162 050823 0.0 5.00 40003.8 N/A 2000 NA NA 0.017 NA NA 48. Ethyl benzene 1999.7 22.9 104-51-8 N/A 36162 050823 0.08 5.00 40004.8 2000 NA NA N/A 0.017 NA NA 49. p-hopropyl toluene 1999.7 22.9 100 ppm (435mg/m3/8H) 100-41-4 35162 050823 pringing005< tar-ho 0.05 5.00 40005.8 2000 NA NA 0.017 50. Naphthalene NA NA 1999.8 22.9 99-87-6 orl-rat 4750mg/kg 35162 050823 40008.2 **N/A** 0.08 5.00 2000 NA NA 0.017 NA NA 51. Styrene 1999.8 22.9 91-20-3 m (Sümg/m 35162 050823 0.05 5.00 40004.8 orl-rat 490mg/kg 2000 NA NA 0.017 NA NA 1999. 22.9 52. Toluene 100-42-5 050823 100 ppm 35162 orl-rat 5000mg/kg 0.05 5.00 40006.2 2000 NA NA 0.017 53. 1,2,3-Trichlorobenzene NA NA 1999.8 22.9 108-88-3 35162 050823 200 ppm orl-rat 5000mg/kg 0.08 5.00 40003.1 2000 NA NA 0.017 NA NA 54. 1.2.4-Trichlorobenzane 1999.7 22.9 87-61-6 35162 050823 0.05 5.00 40006.6 NA pr-mus 1300mg/kg 2000 NA 0.017 NA NA 1999.8 22.3 56. 120-82-1 1.2.4-Trimetintbenzene 5 ppm (CL) (40mg/m3) orl-rat 756mg/kg 35162 050823 0.05 5.00 40001.8 2000 NA NA 0.017 NA 56. 1.3,5-Tranethylbenzene NA 1999.6 23.0 95-63-6 orl-rat 5g/kg 35162 050923 0.05 5.00 40006. N/A 2000 NA NA 0.017 NA NA 57. m-Xylene 1999.8 22.9 108-87-8 N/A 5.00 35162 050823 0.05 40005.8 2000 NA orl-rat 5000mg/kg 58. tert-Butyl benzene NA 0.017 NA NA 1999.6 22,9 108-38-3 100 ppm (435mg/m3/8H) 35163 101923 orl-rat 5g/kg 0.05 5.00 40001.2 2000 NA NA 0.017 NA 69 sec-Butyl benzene NA 1999.6 22.9 98-06-6 35163 101923 N/A N/A 0.05 5.00 40002.4 2000 NA NA 0.017 NA NA 1999.6 60. Chlorobenzene 22.9 135-98-8 N/A orl-rat 2240mg/kg 36163 101923 0.05 5.00 40003 6 NA 2000 NA 0.017 NA NA 61. 2-Chlorotoluene 1999.7 22.9 108-90-7 3516 101923 75 ppm (350mp/m3/8H) orl-rat 2290mg/kg 0.05 5.00 40000.3 2000 NA NA 0.017 NA 62. 4-Chlorotoluene NA 1999.5 22.9 95-49-8 60 ppm (250mg/m3/8H) orl-rat 3900mg/kg 35163 101923 0.05 5.00 40003.3 2000 NA NA 0.017 NA NA 1099.7 63. 1.2-Dichlorobenzene 22.9 106-43-4 N/A 35163 101923 0.05 5.00 40003.8 orl-rat 2100mg/kg 2000 N/ NA 64. 1,3-Dichlorobenzene 0.017 NA NA 1999.7 22.9 95-50-1 50 ppm (300mg/m3) (CL) 3516 101923 orl-rat 500mg/kg 0.05 5.00 40001.7 2000 NA NA 0.017 NA 65. 1,4-Dichlorobenzene NA 1999.6 23.0 541-73-1 N/A ipr-mus 1062mg/kg 35163 101923 0.05 5.00 40001.8 2000 NA NA 0.017 NA NA 1999.6 66. isopropylbenzene 22.9 106-48-7 75 ppm (450mg/m3/8F ori-rat 500mg/kg 35163 101923 0.05 5.00 40000.6 2000 NA NA 0.017 NA NA 1999.5 22.9 67. n-Propybenzene 98-82-8 35163 101923 50 ppm (245mg/m3/8H) orl-rat 1400mg/kg 0.05 5.00 40003.4 2000 NA NA 0.017 NA NA 1999.7 23.0 o-Xylen 103-65-N/A 36163 101923 orl-rat 6040mg/kg 0.05 5.00 40040.8 2000 NA NA 0.017 NA NA 2001.5 69. p-Xylene 23.0 95-47-6 100 ppm (435mg/m3/8H) lpr-mus 1364mg/kg 35183 101923 0.05

NA

NA

2000

5.00

40000.8

• The certified value is the constituting calculated from gravitantic and valumetric measurements unless either vide spinor.
• Standards are prepared gravitanticially using holeness that are calibrated with weights traceable to NSY (see abov).
• Standards are certified (+1) AN<sup>6</sup> of the stands or video, using a diversity and under appropriate informatory conditions.
• All Standards are performed and the stored with either standard and under appropriate informatory conditions.
• All Standards, after opening ampete, should be stored with either for Standards are perpending the Uncertainty Reference Taylor, B.N. and Kayan, C.E., "Galatienes for Standards are perpending the Uncertainty and Standards are stored with either for Standards, and Expressing the Uncertainty and Standards are stored with either the standards, and the stored with either for Standards, and Expressing the Uncertainty Result.
NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

0.017

NA

NA

1999.5

22.9

108-42-3

68.

100 ppm (435mg/m3/8H)

orl-rat 5g/kg



Certified Reference Material CRM



FID RT Run 16, "P95317 L021624 (2000µg/mL in MeOH)" (min.) 9,97 20,33 Peak i EENN Ester 1,1,2-136chloro+1,2,3-chifid 5,3-Dichloroethene Acesonattia Sodomethane Alsyschloride 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". 5., 100 12, 31 12, 30 12, 40 12, 5 Indemethane Ashr chrone Cashon disuffidagifeghylane chloric trans. J.p. 2-chorderane 2,2-suscharanoodine 2,3-suscharanoodine 4estaacrymentickiesuly acrystal J. - Dubtemptopeane Cashon Starkersine 2,2-outbemptopeane Cashon Starkersine 2,2-outbemptopeane Cashon Starkersine 2,2-outbemptopeane Cashon Starkersine 2,2-outbemptopeane 2,2-outbemptopeane 2,2-outbemptopeane 2,2-outbemptopeane 2,2-outbemptopeane Diperentemptopeane Diperentemptopeane Cashon Analyzed using Method "GC5-M1". 10 11 12 13 14 15 19 19 20 21 22 23 24 25 Comments GC5-M1 Analysis by Candice Warren Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min., Air(make-up)=230mL/min., Helium(make-up)=10mL/min., Air(make-up)=230mL/min., Helium(make-up)=10mL/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. Laurentalinaaria markingi kitoophanania Laurentalinaaria markingi kitoophanania Liji, 2-initoihoosetimin Liji, 2-initoihoosetimin Liji, 2-initoihoosetimin Liji, 2-initoihoosetimin Charabaguan Charab FID Signal = Edag Channel 1 Standard injection = 0.5µL, Range=3 2 2 7 2 2 2 3 2 3 2 4 5 6 7 8 9 0 0 1 2 2 3 4 4 9 1 6 7 8 9 0 2 3 2 2 5 5 5 5 7 8 1000000 300000 600000 N 400000 Nacrobenzerie kschonenzenw 5,2,4-7michlonobensene Hexechlonobusadierne Kaphilisalene 200000 1.2.3-Trichtorobensen 0 50 30 48 20

min

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

Section I Product and (	Company Identification			
Manufacturer's Name Address	TICAL STANDARD DISSOLVED IN M ABSOLUTE STANDARDS INC 44 Rossotto Dr.	Emergency Tele	ephone USA & CANADA	1-800-535-5053
Section II - Hazards Ide	Hamden CT, 06514	Date Prepared/	Revised	<b>1-352-323-3500</b> January 1, 2024
4005	GHS Classification in accord	dance with 29 CF	R 1910 (OSHA HCS)	
P271 Cause d	ilammable Liquid and Vapor amage to organs entilated area n, wash with soap and water Signal Word: DANGER	H301, 311, 331 H351 P280 P305,351,338	Toxic if swallowed, skin cont Suspected of causing cance Use gloves, eye protection/fa If in eyes, remove contacts, r	r Ice sheild
Section III - Composition				
Provide a second se				
methanor	emical Identity; Common Name(s)) METHYL ALCOHOL	CAS#: 67-56-1		% (optional) > 97
See Certified Weight	Report For Other Analytes Pre-	sent At Trace (	Quantities.	
Section IV. FIRST AID ME	ASURES			
General advice If inhaled In case of skin contact In case of eye contact If swallowed	Consult a physician. Show this safety data If inhaled, move person into fresh air. If not Wash with soap and water. Consult a phys Rinse thoroughly with plenty of water for at Do NOT induce vomiting. Rinse mouth with	i breatning, give artific sician.	cial respiration. Consult a physician.	
Section V. FIREFIGHTING	MEASURES			
Flammability Suitable extinguishing media Protective equipment for fire	Flammable in the presence of a source heat/sparks/open flame/hot surface. N Use water spray, alcohol-resistant foar Wear self contained breathing apparate	no antoking.	name attactule	Keep away from
Section VI. ACCIDENTAL				
Personal precautions Environmental precautions Clean up	Wear respiratory protection. Avoid breathing ignition. Vapours accumulate to form explosi Prevent further leakage or spillage if safe to Contain spillage, and then collect and place	do so. Do not lot pro-	du al material.	
Section VII. HANDLING AN				
Precautions for safe handling Storage Conditions	Avoid contact with skin and eyes. Avoid Use ventilation Keep away from source	s of ignition No omo	king Descent the task of a second	tic charge
	and kept upright to prevent leakage.	to wen-ventilated plac	e. Containers which are opened must	be carefully resealed
Section VIII. EXPOSURE C	ONTROLS/PERSONAL PROTECTIO	N		
Methanol     67-56-1 TWA 3       Skin notation     TWA 200 ppm       Potential for skin absorption , inge       Personal protective equipment       Woid contact with skin, eyes and other		Gloves must be inspe	cted prior to use. Eye protection.	
Section IX - Physical/Chem				

Absolute Standards Inc.	Har	mden, CT 06518-0585	FAX: 203-201-2322
-iling Doint		Specific Gravity (H2O = 1)	0.79
Boiling Point	65°C	Melting Point	-98°C
/apor Pressure (mm Hg)			
/apor Density (AIR = 1)	1.11	(Butyl Acetate = 1)	4.6

PO Box 5585

Solubility in Water

Appearance and Odor

F

CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

## Section X. STABILITY AND REACTIVITY

COMPLETE

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 MARCHANTABILITY OR ITS FTNESS 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.

Phone: 203-281-2917

FAX: 203-281-2922

Absolute Standards, Inc. 800-368-1131

www.absolutestandards.com



**Certified Reference Material CRM** Ree 03/17/24 \$

CERTIFIED WEIGHT REPORT Parl Number: 95317 Bolvent(s): Lot# Lot Number: 021624 Mathanol EG359-USQ12 Description: Universal VOA Megamix hant 69 components 021624 Formulated By: Prashant Chauhan Expiration Date: 021627 DATE Decor mended Storage: Freezer (0 °C) Nominal Concentration (ug/mL): 2000 Alente dia NIST Test ID#: BUTB 021624 5E-05 Balance Uncertainty Reviewed By Weight(s) shown below were combined and diluted to (mL): Pedro L. Rentas DATE 100.0 0.021 Flask Docentaion Expanded SDS Information (RM#) DI. Initial Initial Nominal Purity Purity Target Actual Actual Uncertainty (Solvent Safety Info. On Attached pg.) Compound Part Nom Numb Factor Vol. (mL) Gonc.(ug/mL) Conc (µg/mL) (95) Uncertainty Pipetra (mL) Weight(g) Weight(g) Conc (ug/mL) (+/-) (ug/mL) CAS# OSHA PEL (TWA) LD30 1. Acetonitria (0324) 021544 NA NA 2000 99.99 0.2 NA 0.20007 0.20020 Allyl chloride (3-Chloropropene) 2001.3 75-05-8 40 ppm (70mg/m3/8H) (0325) 102396 NA ori-rat 2460mg/kg NA NA 2000 2000 99 0.2 NA 0.20207 3 Carbon disulphide 0.20221 2001.4 8.2 107-05-1 orl-rat 700mg/kg (0060) MKCB8561 NA NA NA 1 ppm (3mg/m3/8H) 99.99 0.2 NA 0.20007 0.20023 2001.6 cis-1,4-Dichtoro-2-butene 8.1 75-15-0 4 ppm (\$2mg/m3) (sidn 14718EF (1196)NA NA NA orl-rat 1200mg/kg 2000 95 0.2 NA 0.21058 0.21069 2001.1 8.5 1478-11-5 Irans-1,4-Dichloro-2-butene N/A MKBP8041V NA NA NA 2000 96.5 0.2 NA 0.2073 6. **Diethyl ether** 0.20746 2001.7 8.4 (0153) IK18CAS0000 110-57-6 NA NA NP N/A N/A 2000 99.9 0.2 NA 0.20025 0.20040 2001.5 7 Ethyl methacrylate 8.1 60-29-7 (0381) N/A 06126PX N/A NA NA NA 2000 0.2 Ø NA 0.20207 0.20230 2002.3 8.2 97-63-2 lodomethane N/A ori-rat 14800mg/kg (0489)SHBF8718V NA NA NA 2000 99.5 0.2 NA 0.20106 9. 2-Methyl-1-propanol 0.20121 2001.5 8.2 74-88-5 ppm(28mg/m3/6H)(skin) orl-rat 76mg/kg (0445) 16241EB NA NA NA 2000 99.5 0.2 NA 0.20108 0.20120 10. Methacrylonil/lie 2001.4 (0442) 8.1 78-83-1 60 ppm (150mg/m3/8H) 00427ET orl-rat 2460mg/kg NA NA NA 2000 99 0.2 Methyl acrylate NA 11. 0.20207 0.20221 2001.4 8.2 128-98-1 (1075)SHEK0679 1 ppm (3mg/m3/8H)(akin) NA NA orl-rat 120mg/kg NA 2000 99.9 0.2 NA 0.20025 0.20040 96-33-3 12. Methyl methacrylate 2001.5 8.1 10 ppm(35mg/m3/8H)(sidn) (0404) MKEW5137V NA orf-rat 277mg/kg NA NA 5000 99.9 0.2 NA 0.20026 0.20041 2001.8 13. Nitrobenzene (0228 8.1 80-62-6 100 ppm (410mg/m3/8H 01213TV ori-rat 7872mg/kg NA NA NA 2000 0.2 NA 2-Nilropropane 0.20207 0.20220 14. 2001.3 8.2 98-95-3 orl-rat 780mg/kg 10481 14002JX MA NA 1 ppm (5mg/m3/8H)(ekin) NA 2000 97.3 0.2 NA 0.20560 15. Pentachloroethane 0.20577 2001.6 8.3 70-46-0 10 ppm (35mg/m3/8H) (0450) HGA01 NA orl-ret 720mg/kg NA NA 2000 98 0.2 NA 0.20413 0.20430 2001.6 18. 1,1,2-Trichlorstriftuoroethane 8.3 78-01-7 (0474) 18930 N/A NA NA NA N/A 2000 99 0.2 NA 17. Bromodichioromethane 0.20207 0.20225 2001.6 8,2 76-13-1 1000 ppm (7600mg/m3/8H) 35171 101623 0.05 5.90 ori-rat 43g/kg 40001.1 2000 NA NA 0.017 NA 18. Dibromochloromethane NA 1999.6 22.9 75-27-4 N/A 35171 101623 0.05 ori-rat 916mg/kg 5.00 40002. 2000 NA NA 0.017 NA NA 1999.6 19. cis-1,2-Dichloroethene 35171 23.0 124-48-1 N/A orl-rat 848mg/kg 101823 0.05 5.00 40003.1 2000 NA NA 0.017 20. NA NA 1999.7 22.9 156-59-2 trans-1\_2-Dichloroethen 35171 101623 0.05 N/A N/A 5.00 2000 40002.4 NA MA 0.017 NA NA Methylane chlorida 21 1999.6 23.0 158-60-5 N/A ort-rat 1235mg/kg 35171 101623 0.05 5.00 40002.8 2000 NA NA 0.017 NA NA 1999.6 22 1,1-Dichloroethene 22.9 75-09-2 32251 500 ppn ori-rat 820mg/kg 102023 0.10 10.00 20001.6 2000 NA NA 0.042 NA NA 23 Bromotorm 1999.1 20.4 75-35-4 95321 020724 0.10 1 ppm (4mg/m3/8H) orl-rat 200mg/kg 10.00 20003.2 2000 NA NA 0.042 NA NA 24. 1999.8 20.5 78-25-2 Carbon tetrachioride 0.5 ppm (5mg/m3) (skin) 95321 020724 0.10 10.00 20003.4 orl-rat 933mg/kg 2000 NA NA 0.042 NA 25 NA 1999.8 Chioroform 20.4 56-23-5 2 ppm (12.6mg/m3/8 95321 ort-rat 2350mg/kg 020724 0.10 10.00 20024.0 2000 NA NA 0.042 NA NA 67-68-3 26. Dibromomethane 2001.9 20.5 60 ppm (240mg/m3) (CL) orl-ret 908mg/kg 95321 020724 0.10 10.00 20002.9 2000 NA NA 0.042 NA NA 74-95-3 27. 1.1-Dichloroethane 1999.8 20.5 95321 020724 0.10 N/A orl-rat 108mg/kg 10.00 20003.4 2000 NA NA 0.042 NA NA 2,2-Dichloropropane 1999.8 28. 9532 020724 20.5 75-34-3 100 ppm orl-rat 725mg/kg 0.10 10.00 20003.4 2000 NA NA 0.042 29 NA NA 1999.8 20.4 594-20-7 Tetrachloroethene N/A 85321 020724 0.10 BI/A 10.00 20201.1 2000 NA NA 0.042 NA 30. NA 2019.6 20.8 127-18-4 25 ppm (170mg/m3/6H)(final) ort-rat 2629mg/kg 1,1,1-Trichloroethane 0.10 95321 020724 10.00 20003.0 2000 NA NA 0.042 NA NA 31 1.2-Dibromo-3-chloroproparie 1999.8 20.5 71-55-8 35161 112322 350 ppm (1900mg/m3/8H) orl-rat 10300mg/kg 0.05 5.00 40016.5 2000 NA NA 0.017 NA NA 2000.3 32. 1.2-Dibromoethane 22.9 96-12-8 orl-rat 170mg/kg 35161 0.001 ppm 112322 0.05 5.00 40024.8 2000 NA NA 0.017 NA 33. 1,2-Dichlorcethane NA 2000.7 22.9 108-93-4 20 ppm (8H) orl-rat 108mg/kg 36161 112322 0.05 5.00 40018.0 2000 NA NA 0.017 NA NA 34. 1,2-Dichloropropane 2000.4 22.9 107-08-2 35161 50 ppm (8H 112322 orl-rat 670mg/kg 0.05 5.00 40051,0 2000 NA NA 0.017 NA NA 2002.0 22.9 35 1.3-Dichloropropane 78-87-5 orl-rat 1947mg/kg 35161 75 ppm (350mg/m3/8H) 112322 0.05 5.00 40005.9 2000 NA NA 0.017 NA NA 38. 1999.8 22.9 1.1-Dichlaropropene 142-28-9 NA 35161 unr-mus 3600mp/kg 112322 0.05 5.00 40012. 2000 NA NA 0.017 NA 37. cis-1,3-Dichloropropena NA 2000.1 29.7 35181 112322 563-58-6 N/A NFA 0.05 5.00 40010.0 2000 NA N 0.017 NA NA 2000.0 23.0 38. trans-1,3-Dichloropropene 10081-01-5 36161 112322 0.05 N/A N/A 5.00 40017.6 2000 NA MA 0.017 NA NA 39. Hexachloro-1,3-butadiene 2000.4 23.0 10061-02-6 NVA 35161 112322 0.05 5.00 N/A 40021.0 2000 NA 40. NA 0.017 NA NA 2000.6 0.02 ppm (0.24mg/m3/8 1,1,1,2-Tetrachloroethane 29.7 87-68-3 35161 orl-rat 82mg/kg 112322 0.05 5.00 40011.9 2000 NA NA 0.017 41. 1,1,2,2-Tetrachloroethane NA NA 2000.1 22.9 630-20-6 35161 N/A 112322 0.05 5.00 40007.5 orl-rat 670mg/kg 2000 NA NA 0.017 N/ NA 42. 1.1.2-Trichloroethane 1999.9 22.9 79-34-5 5 ppm (35mg/m3/9H)(skin) 35161 112322 0.05 5.00 40006.6 ori-rat 800mg/kg 2000 NA NA 0.017 NA NA 43. Trichloroethene 1999.8 23.0 79-00-5 10 ppm (45mg/m3/8H)(skin) 3516 orl-rat 836mg/kg 112322 0.05 5.00 40029.0 2000 NA NA 0.017 44. 1,2,3-Trichioropropane NA NA 2000.B 22.9 79-01-6 orl-mus 2402mg/kg 35161 112322 50 ppm (270mg/m3/8H) 0.05 5.00 40007.5 2000 NA NA 0.017 NA NA 45. Banzens 1999.9 22.9 96-18-4 10 ppm (60mg/m 35162 050823 0.05 5.00 40005.0 orl-ret 149.8mg/kg 2000 NA NA 0.017 NA NA 46. Bromobenzene 1999.7 22.9 71-43-2 3516 050823 1 000 orl-rat 4894mg/kg 0.05 5.00 40006.9 2000 NA NA 0.017 47. NA n-Butyl benzene NA 1999.8 22.9 108-86-1 ori-rat 2009mg/kg 35162 050823 0.0 5.00 40003.8 N/A 2000 NA NA 0.017 NA NA 48. Ethyl benzene 1999.7 22.9 104-51-8 N/A 36162 050823 0.08 5.00 40004.8 2000 NA NA N/A 0.017 NA NA 49. p-hopropyl toluene 1999.7 22.9 100 ppm (435mg/m3/8H) 100-41-4 35162 050823 pringing005< tar-ho 0.05 5.00 40005.8 2000 NA NA 0.017 50. Naphthalene NA NA 1999.8 22.9 99-87-6 orl-rat 4750mg/kg 35162 050823 40008.2 **N/A** 0.08 5.00 2000 NA NA 0.017 NA NA 51. Styrene 1999.8 22.9 91-20-3 m (Sümg/m 35162 050823 0.05 5.00 40004.8 orl-rat 490mg/kg 2000 NA NA 0.017 NA NA 1999. 22.9 52. Toluene 100-42-5 050823 100 ppm 35162 orl-rat 5000mg/kg 0.05 5.00 40006.2 2000 NA NA 0.017 53. 1,2,3-Trichlorobenzene NA NA 1999.8 22.9 108-88-3 35162 050823 200 ppm orl-rat 5000mg/kg 0.08 5.00 40003.1 2000 NA NA 0.017 NA NA 54. 1.2.4-Trichlorobenzane 1999.7 22.9 87-61-6 35162 050823 0.05 5.00 40006.6 NA pr-mus 1300mg/kg 2000 NA 0.017 NA NA 1999.8 22.3 56. 120-82-1 1.2.4-Trimetintbenzene 5 ppm (CL) (40mg/m3) orl-rat 756mg/kg 35162 050823 0.05 5.00 40001.8 2000 NA NA 0.017 NA 56. 1.3,5-Tranethylbenzene NA 1999.6 23.0 95-63-6 orl-rat 5g/kg 35162 050923 0.05 5.00 40006. N/A 2000 NA NA 0.017 NA NA 57. m-Xylene 1999.8 22.9 108-87-8 N/A 5.00 35162 050823 0.05 40005.8 2000 NA orl-rat 5000mg/kg 58. tert-Butyl benzene NA 0.017 NA NA 1999.6 22,9 108-38-3 100 ppm (435mg/m3/8H) 35163 101923 orl-rat 5g/kg 0.05 5.00 40001.2 2000 NA NA 0.017 NA 69 sec-Butyl benzene NA 1999.6 22.9 98-06-6 35163 101923 N/A N/A 0.05 5.00 40002.4 2000 NA NA 0.017 NA NA 1999.6 60. Chlorobenzene 22.9 135-98-8 N/A orl-rat 2240mg/kg 36163 101923 0.05 5.00 40003 6 NA 2000 NA 0.017 NA NA 61. 2-Chlorotoluene 1999.7 22.9 108-90-7 3516 101923 75 ppm (350mp/m3/8H) orl-rat 2290mg/kg 0.05 5.00 40000.3 2000 NA NA 0.017 NA 62. 4-Chlorotoluene NA 1999.5 22.9 95-49-8 60 ppm (250mg/m3/8H) orl-rat 3900mg/kg 35163 101923 0.05 5.00 40003.3 2000 NA NA 0.017 NA NA 1099.7 63. 1.2-Dichlorobenzene 22.9 106-43-4 N/A 35163 101923 0.05 5.00 40003.8 orl-rat 2100mg/kg 2000 N/ NA 64. 1,3-Dichlorobenzene 0.017 NA NA 1999.7 22.9 95-50-1 50 ppm (300mg/m3) (CL) 3516 101923 orl-rat 500mg/kg 0.05 5.00 40001.7 2000 NA NA 0.017 NA 65. 1,4-Dichlorobenzene NA 1999.6 23.0 541-73-1 N/A ipr-mus 1062mg/kg 35163 101923 0.05 5.00 40001.8 2000 NA NA 0.017 NA NA 1999.6 66. isopropylbenzene 22.9 106-48-7 75 ppm (450mg/m3/8F ori-rat 500mg/kg 35163 101923 0.05 5.00 40000.8 2000 NA NA 0.017 NA NA 1999.5 22.9 67. n-Propybenzene 98-82-8 35163 101923 50 ppm (245mg/m3/8H) orl-rat 1400mg/kg 0.05 5.00 40003.4 2000 NA NA 0.017 NA NA 1999.7 23.0 o-Xylen 103-65-N/A 36163 101923 orl-rat 6040mg/kg 0.05 5.00 40040.8 2000 NA NA 0.017 NA NA 2001.5 69. p-Xylene 23.0 95-47-6 100 ppm (435mg/m3/8H) lpr-mus 1364mg/kg 35183 101923 0.05

NA

NA

2000

5.00

40000.8

• The certified value is the constituting calculated from gravitantic and valumetric measurements unless either vide spinor.
• Standards are prepared gravitanticially using holeness that are calibrated with weights traceable to NSY (see abov).
• Standards are certified (+1) AN<sup>6</sup> of the stands or video, using a diversity and under appropriate informatory conditions.
• All Standards are performed and the stored with either standard and under appropriate informatory conditions.
• All Standards, after opening ampete, should be stored with either for Standards are perpending the Uncertainty Reference Taylor, B.N. and Kayan, C.E., "Galatienes for Standards are perpending the Uncertainty and Standards are stored with either for Standards, and Expressing the Uncertainty and Standards are stored with either the standards, and the stored with either for Standards, and Expressing the Uncertainty Result.
NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

0.017

NA

NA

1999.5

22.9

108-42-3

68.

100 ppm (435mg/m3/8H)

orl-rat 5g/kg



Certified Reference Material CRM



FID RT Run 16, "P95317 L021624 (2000µg/mL in MeOH)" (min.) 9,97 20,33 Peak i EENN Ester 1,1,2-136chloro+1,2,3-chifid 5,3-Dichloroethene Acesonattia Sodomethane Alsyschloride 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". 5., 100 12, 31 12, 30 12, 40 12, 5 Indemethane Ashr chrone Cashon disuffidagifeghylane chloric trans. J.p. 2-chorderane 2,2-suscharanoodine 2,3-suscharanoodine 4estaacrymentickiesuly acrystal J. - Dubtemptopeane Cashon Starkersine 2,2-outbemptopeane Cashon Starkersine 2,2-outbemptopeane Cashon Starkersine 2,2-outbemptopeane Cashon Starkersine 2,2-outbemptopeane 2,2-outbemptopeane 2,2-outbemptopeane 2,2-outbemptopeane 2,2-outbemptopeane Diperentemptopeane Diperentemptopeane Cashon Analyzed using Method "GC5-M1". 10 11 12 13 14 15 19 19 20 21 22 23 24 25 Comments GC5-M1 Analysis by Candice Warren Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min., Air(make-up)=230mL/min., Helium(make-up)=10mL/min., Air(make-up)=230mL/min., Helium(make-up)=10mL/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. Laurentalinaaria markingi kitoophanania Laurentalinaaria markingi kitoophanania Liji, 2-initoihoosetimin Liji, 2-initoihoosetimin Liji, 2-initoihoosetimin Liji, 2-initoihoosetimin Charabaguan Charab FID Signal = Edag Channel 1 Standard injection = 0.5µL, Range=3 2 2 7 2 2 2 3 2 3 2 4 5 6 7 8 9 0 0 1 2 2 3 4 4 9 1 6 7 8 9 0 2 3 2 2 5 5 5 5 7 8 1000000 300000 600000 N 400000 Nacrobenzerie kschonenzenw 5,2,4-7michlonobensene Hexechlonobusadierne Kaphilisalene 200000 1.2.3-Trichtorobensen 0 50 30 48 20

min

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

Section I Product and (	Company Identification			
Manufacturer's Name Address	TICAL STANDARD DISSOLVED IN M ABSOLUTE STANDARDS INC 44 Rossotto Dr.	Emergency Tele	ephone USA & CANADA	1-800-535-5053
Section II - Hazards Ide	Hamden CT, 06514	Date Prepared/	Revised	<b>1-352-323-3500</b> January 1, 2024
4005	GHS Classification in accord	dance with 29 CF	R 1910 (OSHA HCS)	
P271 Cause d	ilammable Liquid and Vapor amage to organs entilated area n, wash with soap and water Signal Word: DANGER	H301, 311, 331 H351 P280 P305,351,338	Toxic if swallowed, skin cont Suspected of causing cance Use gloves, eye protection/fa If in eyes, remove contacts, r	r Ice sheild
Section III - Composition				
Provide a second se				
methanor	emical Identity; Common Name(s)) METHYL ALCOHOL	CAS#: 67-56-1		% (optional) > 97
See Certified Weight	Report For Other Analytes Pre-	sent At Trace (	Quantities.	
Section IV. FIRST AID ME	ASURES			
General advice If inhaled In case of skin contact In case of eye contact If swallowed	Consult a physician. Show this safety data If inhaled, move person into fresh air. If not Wash with soap and water. Consult a phys Rinse thoroughly with plenty of water for at Do NOT induce vomiting. Rinse mouth with	i breatning, give artific sician.	cial respiration. Consult a physician.	
Section V. FIREFIGHTING	MEASURES			
Flammability Suitable extinguishing media Protective equipment for fire	Flammable in the presence of a source heat/sparks/open flame/hot surface. N Use water spray, alcohol-resistant foar Wear self contained breathing apparate	no antoking.	name attactule	Keep away from
Section VI. ACCIDENTAL				
Personal precautions Environmental precautions Clean up	Wear respiratory protection. Avoid breathing ignition. Vapours accumulate to form explosi Prevent further leakage or spillage if safe to Contain spillage, and then collect and place	do so. Do not lot pro-	du al material.	
Section VII. HANDLING AN				
Precautions for safe handling Storage Conditions	Avoid contact with skin and eyes. Avoid Use ventilation Keep away from source	s of ignition No omo	king Descent the task of a second	tic charge
	and kept upright to prevent leakage.	to wen-ventilated plac	e. Containers which are opened must	be carefully resealed
Section VIII. EXPOSURE C	ONTROLS/PERSONAL PROTECTIO	N		
Methanol     67-56-1 TWA 3       Skin notation     TWA 200 ppm       Potential for skin absorption , inge       Personal protective equipment       Woid contact with skin, eyes and other		Gloves must be inspe	cted prior to use. Eye protection.	
Section IX - Physical/Chem				

Absolute Standards Inc.	Har	mden, CT 06518-0585	FAX: 203-201-2322
-iling Doint		Specific Gravity (H2O = 1)	0.79
Boiling Point	65°C	Melting Point	-98°C
/apor Pressure (mm Hg)			
/apor Density (AIR = 1)	1.11	(Butyl Acetate = 1)	4.6

PO Box 5585

Solubility in Water

Appearance and Odor

F

CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

## Section X. STABILITY AND REACTIVITY

COMPLETE

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 MARCHANTABILITY OR ITS FTNESS 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.

Phone: 203-281-2917

FAX: 203-281-2922

Absolute 800-368-1131 www absolute	Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com		Ů	Certified Reference Material CRM	e Material CR	M			ANAB ISO 17 AR-1539 Cer	ANAB ISO 17034 Accredited AR-1539 Certificate Number
		•		il ee a	03/18/24	H			https://Absolute	https://Absolutestandards.com
CERTIFIED WI	CERTIFIED WEIGHT REPORT				Toro C					
	Part Number: Lot Number:	91980 031525		Solvent(s): Water	6		Can 1 -	the constant of the second		
	Description:	Acrolein			100		There		031525	
	Expiration Date:	041525		いたこう	14400-401	Formut	Formulated By:	Justin Dippold	DATE	
~	Recommended Storage: Nominal Concentration (µg/mL):	Refrigerate (4 °C) 5000	(4 °C)				feed to	Tente	031525	
Weiaht(s	NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (ml.):	6UTB d diluted to (mL):	5E-05 Ball	Balance Uncertainty Elselt Hummericky		Reviewed By		Pedro L. Rentas	DATE	
Compound		Lot	Purity			Expanded Actual Uncertainty		SDS Information (Solvent Safety Info. On Attached pg.)	ched pg.)	
1 Acrolein	line a sub-	HCOD325201 2		ruuy wagnugi A.E. A.AE166	A DE+20 E	Conc. (ug/mL) (+/-) (ug/mL)		OSHA PEL (TWA)	m20	
Me Rai	Method: GC6MSD-1. Detector: Mass Selective Detector (Sector Detector Commun. Vocal (600 X 0.25mm ID X 1.5µm flin thickness). Oven Profile: Teap. 1 = 35°C (Time 1 = 10min). Teap. 2=20°C (Time 2 = 8.75 min). Rate = 4°C (min, Jujector Teap. = 200°C. Analyst: Pedro Rents. NOTE: Due to the instability of archien in solution, all solutions of acrotein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.	tive Detector (Scan mov toctor Temp. = 220°C.	de). Column: Vocol (60m X 0.2: Analyst: Pedro Rentas. NOTE: 1 department if further information	$\frac{1}{12}$	ness). Oven Profile: Ten nein in solution, all solut	cmp. 1 = 35°C (Time 1) dutions of acrolein, and	= 10min.), Temp. 2= any dilutions thereof.		orr-rar 46mg/kg ely	
Abundance	TIC: [B:	TIC: [BSB2]79005.D		Abundance	Ę	Scan 232 (8.927 min): [BSB2]79005.D	7 min): [BSB2]	79005.D	1	
25000	8.93			60000	<b>00</b>					
		″	0////	50000	08	56				
00002										
150000				40000	8					
				30000	00					
100000				20000	00					
5000				10000	00 37					
Time.					9 4	65 7	75 85	119	158 169	
	10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00	30.00 35.00 4	50.00	55.00 60.01	20 30 40	50 60 70 8	80 90 100 1	80 90 100 110 120 130 140 150 160 170	50 160 170	
	<ul> <li>The cert</li> <li>Standar</li> <li>Standar</li> <li>All Shan</li> <li>Uncertai</li> <li>NIST 70</li> </ul>	tified value is the conc ds are propared gravi ds are certified $(+i, )$ 0, ds are certified $(+i, )$ 0, inty Reference: Tayla inty Reference: Tayl, U,	<ul> <li>The cartified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using basics that are calibrated with weights traceable to NIST (see above).</li> <li>Standards are prepared gravimetrically using basics that are calibrated with weights traceable to NIST (see above).</li> <li>Standards are prepared gravimetrically using basics, unless otherwise stated.</li> <li>All Shandards are reactived (+-) 0.5% of the stated value, unless otherwise stated.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyut, C.E., "Guidelines for Teal and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, D.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	imetric and volumetric me the calibrated with weight therwise stated. aps tight and under appro letimes for Evaluating and , Washington, DC, (1994).	and volumetric measurements unless otherwise stated. brated with weights traceable to NIST (see above). se stated. at and under appropriate laboratory conditions. for Evaluating and Expressing the Uncertainty of NIST ington, DC, (1994).	arwise stated. 2 above). islons. imty of NIST Measu	irement Result,"			
Part # 91980	) Lot # 031525			1 of 1	F			Printe	Printed: 3/17/2025, 4:38:32 PM	8:32 PM

Absolute 800-368-1131 www absolute	Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com		Ů	Certified Reference Material CRM	e Material CR	M			ANAB ISO 17 AR-1539 Cer	ANAB ISO 17034 Accredited AR-1539 Certificate Number
		•		il ee a	03/18/24	H			https://Absolute	https://Absolutestandards.com
CERTIFIED WI	CERTIFIED WEIGHT REPORT				Toro C					
	Part Number: Lot Number:	91980 031525		Solvent(s): Water	6		Can 1 -	the constant of the second		
	Description:	Acrolein			100		There		031525	
	Expiration Date:	041525		いたこう	14400-401	Formut	Formulated By:	Justin Dippold	DATE	
~	Recommended Storage: Nominal Concentration (µg/mL):	Refrigerate (4 °C) 5000	(4 °C)				feed to	Tente	031525	
Weiaht(s	NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (ml.):	6UTB d diluted to (mL):	5E-05 Ball	Balance Uncertainty Elselt Humminty		Reviewed By		Pedro L. Rentas	DATE	
Compound		Lot	Purity			Expanded Actual Uncertainty		SDS Information (Solvent Safety Info. On Attached pg.)	ched pg.)	
1 Acrolein	line a sub-	HCOD325201 2		ruuy wagnugi A.E. A.AE166	A DE+20 E	Conc. (ug/mL) (+/-) (ug/mL)		OSHA PEL (TWA)	m20	
Me Rai	Method: GC6MSD-1. Detector: Mass Selective Detector (Sector Detector Commun. Vocal (600 X 0.25mm ID X 1.5µm flin thickness). Oven Profile: Teap. 1 = 35°C (Time 1 = 10min). Teap. 2=20°C (Time 2 = 8.75 min). Rate = 4°C (min, Jujector Teap. = 200°C. Analyst: Pedro Rents. NOTE: Due to the instability of archien in solution, all solutions of acrotein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.	tive Detector (Scan mov toctor Temp. = 220°C.	de). Column: Vocol (60m X 0.2: Analyst: Pedro Rentas. NOTE: 1 department if further information	$\frac{1}{12}$	ness). Oven Profile: Ten nein in solution, all solut	cmp. 1 = 35°C (Time 1) dutions of acrolein, and	= 10min.), Temp. 2= any dilutions thereof.		orr-rar 46mg/kg ely	
Abundance	TIC: [B:	TIC: [BSB2]79005.D		Abundance	Ę	Scan 232 (8.927 min): [BSB2]79005.D	7 min): [BSB2]	79005.D	1	
25000	8.93			60000	<b>00</b>					
		″	0////	50000	08	56				
00002										
150000				40000	8					
				30000	00					
100000				20000	00					
5000				10000	00 37					
Time.					9	65 7	75 85	119	158 169	
	10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00	30.00 35.00 4	50.00	55.00 60.01	20 30 40	50 60 70 8	80 90 100 1	80 90 100 110 120 130 140 150 160 170	50 160 170	
	<ul> <li>The cert</li> <li>Standar</li> <li>Standar</li> <li>All Shan</li> <li>Uncertai</li> <li>NIST 70</li> </ul>	tified value is the conc ds are propared gravi ds are certified $(+i, )$ 0, ds are certified $(+i, )$ 0, inty Reference: Tayla inty Reference: Tayl, U,	<ul> <li>The cartified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using basics that are calibrated with weights traceable to NIST (see above).</li> <li>Standards are prepared gravimetrically using basics that are calibrated with weights traceable to NIST (see above).</li> <li>Standards are prepared gravimetrically using basics, unless otherwise stated.</li> <li>All Shandards are reactived (+-) 0.5% of the stated value, unless otherwise stated.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyut, C.E., "Guidelines for Teal and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, D.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	imetric and volumetric me the calibrated with weight therwise stated. aps tight and under appro letimes for Evaluating and , Washington, DC, (1994).	and volumetric measurements unless otherwise stated. brated with weights traceable to NIST (see above). se stated. at and under appropriate laboratory conditions. for Evaluating and Expressing the Uncertainty of NIST ington, DC, (1994).	arwise stated. 2 above). islons. imty of NIST Measu	irement Result,"			
Part # 91980	) Lot # 031525			1 of 1	F			Printe	Printed: 3/17/2025, 4:38:32 PM	8:32 PM

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certifie 200	tified Re	Certified Reference Material CRM ンピュー つろ (1 色 / とり	aterial C 「 こ	MA.				ANAE AR-1 https:///	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com	scredited Number ards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	91980 031725 Acrolein			NOS 2	Solvent(s): Water 07	Lot# 0723240		7	an	Con Con		031725	
Expiration Date: 041725 Recommended Storage: Refrigerate Nominal Concentration (µg/mL): 5000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to fml ):	041725 Refrigerate (4 °C) 5000 6UTB Iuted to (ml.)	(C) 10 0	5E-05 Balance Uncertainty 0.001 Enable Forecondition	Balance Uncertainty		1890		Formulated by:	sy:	Lawrence Barry		DATE 031725 DATE	
Compound		Nominat Conc (ug/mL)			Target / Weight(g) W	Actual Weight(g) Co	Actual (	Expanded Uncertainty (+/-) (µg/mL)	(Solvent S cAs#	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) LDS	on Attached pg.) ) LD50	0	
1. Acrolein       5       1037555V10F       5000       97       0.5       0.05166       0.05170       5004.1       52.5       107-02-8       0.1 ppm       0         Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode). Column: Vocol (60n X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35% (Time 1 = 10min.), Temp. 2=20% C (Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200% Detector Temp. = 220% C. Analyst: Pedro Renas. NOTE: Due to the instability of acrolein in solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.	103755V10F Detector (Scan mode). r Temp. = 220°C. Ana itact our technical dep	5000 Column: Voco lyst: Pedro Re rrment if furth	97 0 1 (60m X 0.25mm stas. NOTE: Due er information is	0.5 0.1 nm ID X 1.5µm the to the instabil is required.	0.05166 0. In thickness). C	0.05170 ). Oven Profile: T	<b>5004.1</b> emp.1 = 35°C	<b>52.5</b> (Time 1 = 10 <sup>n</sup> lein, and any di	107-02-8 min.), Temp. 2= lifutions thereof	0.1 ppm 200°C ( Time 2 = 8.7 , should be used imm	orl-rat 46mg/kg 5 min.) coliately	By/Bus	
Abundance	2]79005.D			At	Abundance	27	Scan 232	. (8.927 mi	Scan 232 (8.927 min): [BSB2]79005.D	79005.D			
<b>250000</b> 8.93					60000	a vela							
200000	ì	0////			5000		20						
150000					40000								
100000					30000								
					20000								
50000					10000	37							
Time>0 10.00 15.00 20.00 25.00 30.00	0.00 35.00 40.00	45.00	50.00 55.00	0.00	m/z>0 20	30 4(	4 6 50 60	65 75 85 70 80 \$	5 90 100 1	5 119 150 150 160 170 150 160 170	158 169 0 150 160 170	59	
<ul> <li>The certific</li> <li>Standards a</li> <li>Standards a</li> <li>All Standard</li> <li>Uncertainty</li> <li>NIST Techn</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimericing balances that are calibrated with weights traceable to NIST (see above).</li> <li>Scandards are careford (+/-) 0.5% of the stated values otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	tion calculate (cally using ba & the stared va le, should be s N. and Kuyat, overnment Pri	d from gravimet dances that are 4 the, unless other tored with capa 1 C.E., "Guidelin initing Office, Wi	tric and volum calibrated wit rwise stated. tight and und us for Evalua ashington, DC	etric measurem h weights tracea er appropriate h iing aud Expres	ents unless oth ble to NIST (s aboratory com ing the Uncer	terwise stated. ee above). ditions. tainty of NISI	Measuremen	ri Result,"				

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Part # 91980 Lot # 031725

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Absolute Standards Inc.

PO Box 5585

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

## Section V. FIREFIGHTING MEASURES

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

### SERION VI. ACCIDENTAL RELEASE MEASURES

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

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

### Section VII. HANDLING AND STORAGE

Storage Conditions
Precautions for safe handling
1

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

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

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

# Section

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

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

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

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

### Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water Not dangerous goods

(SU) TOO

## Section XIV. TRANSPORT INFORMATION

Proper shipping name: Water	
Not dangerous goods	
ATAI	

## Section XV. REGULATORY INFORMATION

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

### Section XVI. Misc. INFORMATION

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

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certifie 200	iffied Re	Certified Reference Material CRM ととと つろ (1 色 / とう	aterial C 「 こ	MA.				ANAE AR-1 https:///	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com	scredited Number ards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	91980 031725 Acrolein			Sol	Solvent(s): Water 07	Lot# 0723240		7	an	Con Con		031725	
Expiration Date: 041725 Recommended Storage: Refrigerate Nominal Concentration (µg/mL): 5000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to fml ):	041725 Refrigerate (4 °C) 5000 6UTB Iuted to (ml.)	(C) 10 0	5E-05 Balance Uncertainty 0.001 Enable Forecondition	Balance Uncertainty		1890		Formulated by:	sy:	Lawrence Barry		DATE 031725 DATE	
Compound		Nominat Conc (ug/mL)			Target / Weight(g) W	Actual Weight(g) Co	Actual (	Expanded Uncertainty (+/-) (µg/mL)	(Solvent S cAs#	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) LDS	on Attached pg.) ) LD50	0	
1. Acrolein       5       1037555V10F       5000       97       0.5       0.05166       0.05170       5004.1       52.5       107-02-8       0.1 ppm       0         Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode). Column: Vocol (60n X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35% (Time 1 = 10min.), Temp. 2=20% C (Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200% Detector Temp. = 220% C. Analyst: Pedro Renas. NOTE: Due to the instability of acrolein in solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.	103755V10F Detector (Scan mode). r Temp. = 220°C. Ana itact our technical dep	5000 Column: Voco lyst: Pedro Re rrment if furth	97 0 1 (60m X 0.25mm stas. NOTE: Due er information is	0.5 0.0 nm ID X 1.5µm the to the instabil is required.	0.05166 0. In thickness). C	0.05170 ). Oven Profile: T	<b>5004.1</b> emp.1 = 35°C	<b>52.5</b> (Time 1 = 10 <sup>n</sup> lein, and any di	107-02-8 min.), Temp. 2= lifutions thereof	0.1 ppm 200°C ( Time 2 = 8.7 , should be used imm	orl-rat 46mg/kg 5 min.) coliately	By/Bus	
Abundance	2]79005.D			At	Abundance	27	Scan 232	. (8.927 mi	Scan 232 (8.927 min): [BSB2]79005.D	79005.D			
<b>250000</b> 8.93					60000	a vela							
200000	ì	°////			5000		50						
150000					40000								
100000					30000								
					20000								
50000					10000	37							
Time>0 10.00 15.00 20.00 25.00 30.00	00 35.00 40.00	45.00	50.00 55.00	0.00	m/z>0 20	30 4(	4 6 50 60	65 75 85 70 80 \$	5 90 100 1	5 119 158 169 90 100 110 120 130 140 150 160 170	158 169 0 150 160 170	59 70	
<ul> <li>The certific</li> <li>Standards a</li> <li>Standards a</li> <li>All Standard</li> <li>Uncertainty</li> <li>NIST Techn</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimericing balances that are calibrated with weights traceable to NIST (see above).</li> <li>Scandards are careford (+/-) 0.5% of the stated values otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note (1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	tion calculate (cally using ba & the stared va le, should be s N. and Kuyat, overnment Pri	d from gravimet dances that are 4 the, unless other tored with capa 1 C.E., "Guidelin initing Office, We	rzic and volum calibrated wit rwise stated. tight and und ues for Evalua schington, DC	etric measurem h weights tracea er appropriate h iing aud Expres	ents unless oth ble to NIST (s aboratory com ing the Uncer	terwise stated. ee above). ditions. tainty of NISI	Measuremen	ri Result,"				

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Part # 91980 Lot # 031725

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Absolute Standards Inc.

PO Box 5585

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

## Section V. FIREFIGHTING MEASURES

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

### SERION VI. ACCIDENTAL RELEASE MEASURES

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

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

### Section VII. HANDLING AND STORAGE

Storage Conditions
Precautions for safe handling
1

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

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

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

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

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

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

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

### Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water Not dangerous goods

(SU) TOO

## Section XIV. TRANSPORT INFORMATION

Proper shipping name: Water	
Not dangerous goods	
ATAI	

## Section XV. REGULATORY INFORMATION

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

### Section XVI. Misc. INFORMATION

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

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certifie 200	iffied Re	Certified Reference Material CRM ととと つろ (1 色 / とう	aterial C 「 こ	MA.				ANAE AR-1 https:///	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com	scredited Number ards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	91980 031725 Acrolein			Sol	Solvent(s): Water 07	Lot# 0723240		7	an	Con Con		031725	
Expiration Date: 041725 Recommended Storage: Refrigerate Nominal Concentration (µg/mL): 5000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to fml ):	041725 Refrigerate (4 °C) 5000 6UTB Iuted to (ml.)	(C) 10 0	5E-05 Balance Uncertainty 0.001 Enable Forecondition	Balance Uncertainty		1890		Formulated by:	sy:	Lawrence Barry		DATE 031725 DATE	
Compound		Nominat Conc (ug/mL)			Target / Weight(g) W	Actual Weight(g) Co	Actual (	Expanded Uncertainty (+/-) (µg/mL)	(Solvent S cAs#	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) LDS	on Attached pg.) ) LD50	0	
1. Acrolein       5       1037555V10F       5000       97       0.5       0.05166       0.05170       5004.1       52.5       107-02-8       0.1 ppm       0         Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode). Column: Vocol (60n X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35% (Time 1 = 10min.), Temp. 2=20% C (Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200% Detector Temp. = 220% C. Analyst: Pedro Renas. NOTE: Due to the instability of acrolein in solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.	103755V10F Detector (Scan mode). r Temp. = 220°C. Ana itact our technical dep	5000 Column: Voco lyst: Pedro Re rrment if furth	97 0 1 (60m X 0.25mm stas. NOTE: Due er information is	0.5 0.0 nm ID X 1.5µm the to the instabil is required.	0.05166 0. In thickness). C	0.05170 ). Oven Profile: T	<b>5004.1</b> emp.1 = 35°C	<b>52.5</b> (Time 1 = 10 <sup>n</sup> lein, and any di	107-02-8 min.), Temp. 2= lifutions thereof	0.1 ppm 200°C ( Time 2 = 8.7 , should be used imm	orl-rat 46mg/kg 5 min.) coliately	By/Bus	
Abundance	2]79005.D			At	Abundance	27	Scan 232	. (8.927 mi	Scan 232 (8.927 min): [BSB2]79005.D	79005.D			
<b>250000</b> 8.93					60000	a ven							
200000	ì	°////			5000		50						
150000					40000								
100000					30000								
					20000								
50000					10000	37							
Time>0 10.00 15.00 20.00 25.00 30.00	00 35.00 40.00	45.00	50.00 55.00	0.00	m/z>0 20	30 4(	4 6 50 60	65 75 85 70 80 \$	5 90 100 1	5 119 158 169 90 100 110 120 130 140 150 160 170	158 169 0 150 160 170	59 70	
<ul> <li>The certific</li> <li>Standards a</li> <li>Standards a</li> <li>All Standard</li> <li>Uncertainty</li> <li>NIST Techn</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimericing balances that are calibrated with weights traceable to NIST (see above).</li> <li>Scandards are careford (+/-) 0.5% of the stated values otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note (1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	tion calculate (cally using ba & the stared va le, should be s N. and Kuyat, overnment Pri	d from gravimet dances that are 4 the, unless other tored with capa 1 C.E., "Guidelin initing Office, Wi	rzic and volum calibrated wit rwise stated. tight and und ues for Evalua schington, DC	etric measurem h weights tracea er appropriate h iing aud Expres	ents unless oth ble to NIST (s aboratory com ing the Uncer	terwise stated. ee above). ditions. tainty of NISI	Measuremen	ri Result,"				

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1 of 1

Part # 91980 Lot # 031725

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Absolute Standards Inc.

PO Box 5585

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

## Section V. FIREFIGHTING MEASURES

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

### SERION VI. ACCIDENTAL RELEASE MEASURES

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

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

### Section VII. HANDLING AND STORAGE

Storage Conditions
Precautions for safe handling
1

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

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

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

# Section

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

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

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

Section XII. ECOLOGICAL INFORMATIO
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OITAMAOHUI	ECOLOGICAL	Section XII.	

### ΨN EC20 ΨN LC50

### Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water Not dangerous goods

(SU) TOO

## Section XIV. TRANSPORT INFORMATION

Proper shipping name: Water	
Not dangerous goods	
ATAI	

## Section XV. REGULATORY INFORMATION

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

### Section XVI. Misc. INFORMATION

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

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CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	91980 031725 Acrolein			Sol	Solvent(s): Water 07	Lot# 0723240		7	an	Con Con		031725	
Expiration Date: 041725 Recommended Storage: Refrigerate Nominal Concentration (µg/mL): 5000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to fml ):	041725 Refrigerate (4 °C) 5000 6UTB Iuted to (ml.)	(C) 10 0	5E-05 Balance Uncertainty 0.001 Enable Forecondition	Balance Uncertainty		1890		Formulated by:	sy:	Lawrence Barry		DATE 031725 DATE	
Compound		Nominat Conc (ug/mL)			Target / Weight(g) W	Actual Weight(g) Co	Actual (	Expanded Uncertainty (+/-) (µg/mL)	(Solvent S cAs#	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) LDS	on Attached pg.) ) LD50	0	
1. Acrolein       5       1037555V10F       5000       97       0.5       0.05166       0.05170       5004.1       52.5       107-02-8       0.1 ppm       0         Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode). Column: Vocol (60n X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35% (Time 1 = 10min.), Temp. 2=20% C (Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp. = 200% C betector Temp. = 220% C Analyst: Pedro Renas. NOTE: Due to the instability of acrolein in solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required.       0.05170       5004.1       52.5       107-02-8       0.1 ppm       0	103755V10F Detector (Scan mode). r Temp. = 220°C. Ana itact our technical dep	5000 Column: Voco lyst: Pedro Re rrment if furth	97 0 1 (60m X 0.25mm stas. NOTE: Due er information is	0.5 0.0 nm ID X 1.5µm the to the instabil is required.	0.05166 0. In thickness). C	0.05170 ). Oven Profile: T	<b>5004.1</b> emp.1 = 35°C	<b>52.5</b> (Time 1 = 10 <sup>n</sup> lein, and any di	107-02-8 min.), Temp. 2= lifutions thereof	0.1 ppm 200°C ( Time 2 = 8.7 , should be used imm	orl-rat 46mg/kg 5 min.) coliately	By/Bus	
Abundance	2]79005.D			At	Abundance	27	Scan 232	. (8.927 mi	Scan 232 (8.927 min): [BSB2]79005.D	79005.D			
<b>250000</b> 8.93					60000	a ven							
200000	ì	°////			5000		50						
150000					40000								
100000					30000								
					20000								
50000					10000	37							
Time>0 10.00 15.00 20.00 25.00 30.00	00 35.00 40.00	45.00	50.00 55.00	0.00	m/z>0 20	30 4(	4 6 50 60	65 75 85 70 80 \$	5 90 100 1	5 119 158 169 90 100 110 120 130 140 150 160 170	158 169 0 150 160 170	59 70	
<ul> <li>The certific</li> <li>Standards a</li> <li>Standards a</li> <li>All Standard</li> <li>Uncertainty</li> <li>NIST Techn</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimericing balances that are calibrated with weights traceable to NIST (see above).</li> <li>Scandards are careford (+/-) 0.5% of the stated values otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>All Standards, after opening ampule, should be stored with caps fight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	tion calculate (cally using ba & the stared va le, should be s N. and Kuyat, overnment Pri	d from gravimet dances that are e ine, unless other tored with capa i C.E., "Guidelin initing Office, Wi	rzic and volum calibrated wit rwise stated. tight and und ues for Evalua schington, DC	etric measurem h weights tracea er appropriate h ing aud Expres	ents unless oth ble to NIST (s aboratory com ing the Uncer	terwise stated. ee above). ditions. tainty of NIS'I	Measuremen	ri Result,"				

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Part # 91980 Lot # 031725

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Absolute Standards Inc.

PO Box 5585

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

## Section V. FIREFIGHTING MEASURES

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

### SERION VI. ACCIDENTAL RELEASE MEASURES

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

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

### Section VII. HANDLING AND STORAGE

Storage Conditions
Precautions for safe handling
1

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

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

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

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

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

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

Section XII. ECOLOGICAL INFORMATIO
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OITAMAOHUI	ECOLOGICAL	Section XII.	

### ΨN EC20 ΨN LC50

### Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Proper shipping name: Water Not dangerous goods

(SU) TOO

## Section XIV. TRANSPORT INFORMATION

Proper shipping name: Water	
Not dangerous goods	
ATAI	

## Section XV. REGULATORY INFORMATION

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

### Section XVI. Misc. INFORMATION

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

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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 <sup>o</sup> 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						
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15000					40000	0						
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	
	<ul> <li>The certification</li> <li>Shandards:</li> <li>Shandards:</li> <li>All Shandards:</li> <li>Uncertainty</li> <li>NIST Tech</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Shandards are prepared gravimetrically using hadances that are calibrated with weights traceable to MIST (see above).</li> <li>Shandards are certified (++) 0.5% of the stated value, unless otherwise stated.</li> <li>All Shandards, after opening ampule, should be stored with eags tight stated.</li> <li>All Shandards, after opening ampule, should be stored with cass tight and under appropriate taboratory conditions.</li> <li>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).</li> </ul>	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 i aceable to NIST afe laboratory ex pressing the Une	otherwise stated. (see above), onditions. certainty of NIST )	Measurement R	esstafe <sup>a</sup>			

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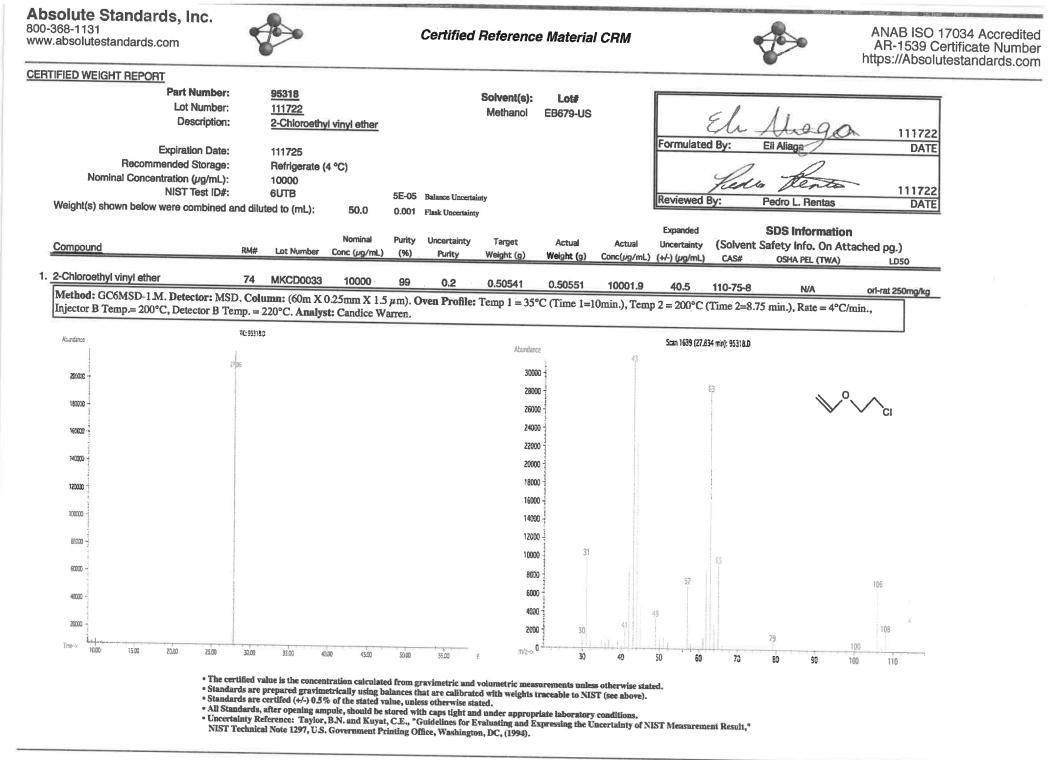
Lot # 091424 Part # 91980

Absolute Standards, 800-368-1131 www.absolutestandards.com	Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com			Certified	Certified Reference Material CRM	e Material C	I CRM	2 119	to the second se	 	ANAB ISO 1 AR-1539 Ce https://Absolut	ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com
CERTIFIED WEIGHT REPORT	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 <sup>o</sup> 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.		
250000 8.93	33	·			6000	27 0						
200000		Ì	0////		5000	0	50					
15000					40000	0						
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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	0,000 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	
	<ul> <li>The certification</li> <li>Shandards:</li> <li>Shandards:</li> <li>All Shandards:</li> <li>Uncertainty</li> <li>NIST Tech</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Shandards are prepared gravimetrically using hadances that are calibrated with weights traceable to MIST (see above).</li> <li>Shandards are certified (++) 0.5% of the stated value, unless otherwise stated.</li> <li>All Shandards, after opening ampule, should be stored with eags tight stated.</li> <li>All Shandards, after opening ampule, should be stored with cass tight and under appropriate taboratory conditions.</li> <li>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).</li> </ul>	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 <sup>a</sup>			

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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 $\mu$ m). Injector B Temp = 200°C, Detector B Temp. = 220°C. Analyst: Candice Warren.	74 MKCD0033 10000 . Column: (60m X 0.25mm X 1.5 np. = 220°C. Analyst: Candice W	2-Chloroethyl viryl ether 74 MKCD0033 10000 99 0.2 0.50536 0.50550 10002.9 40.5 110-75-8 NA 00 Method: GC6MSD-1 M. Detector: MSD. Column: (60m X 0.25mm X 1.5 µm). Oven Profile: Temp 1 = 35°C (Time 1=10min.), Temp 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min., Injector B Temp = 200°C, Detector B Temp = 220°C. Analyst: Candice Warren.	40.5         110-75-8         N/A         ort-rat 250mg/kg           ap 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min.,
Abordance 222000 160000 140000 100000 60000 60000 60000 100000 15.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00	MG 553162	Abordance 20005 20005 20005 20005 20005 16000 16000 16000 16000 200 200	
<ul> <li>The ce</li> <li>Stands</li> <li>Stands</li> <li>Stands</li> <li>All Sta</li> <li>Uncert</li> <li>NUST'</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetri 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</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).</li> <li>Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with cass tight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	tated. ). NIST Measurement Result,"

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 combined and diluted to (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
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Abordance 222000 160000 140000 100000 60000 60000 20000 100000 100000 100000 100000 100000 100000 15.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	MG 553162	Abordance 20005 20005 20005 20005 20005 16000 16000 16000 16000 200 200	
<ul> <li>The ce</li> <li>Stands</li> <li>Stands</li> <li>Stands</li> <li>All Sta</li> <li>Uncert</li> <li>NUST'</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetria standards are prepend gravinetrically using balances that are cal smalards are precrifted (<i>H</i>.) 0.3% of the stated value, unless otherw . All Standards, after opening ampule, should be stored with caps fig of Uncertainty Reference: Taylor, B.N. and Kuyat, C.B., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wasl</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).</li> <li>Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with cass tight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	tated. ). NIST Measurement Result,"

Contraction of the

Safety Data Sheet (SDS)

GHS/OSHA Compliant

Section I Product and Co	mpany Identification			
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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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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 combined and diluted to (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 $\mu$ m). Injector B Temp = 200°C, Detector B Temp. = 220°C. Analyst: Candice Warren.	74 MKCD0033 10000 . Column: (60m X 0.25mm X 1.5 np. = 220°C. Analyst: Candice W	2-Chloroethyl viryl ether 74 MKCD0033 10000 99 0.2 0.50536 0.50550 10002.9 40.5 110-75-8 NA 00 Method: GC6MSD-1 M. Detector: MSD. Column: (60m X 0.25mm X 1.5 µm). Oven Profile: Temp 1 = 35°C (Time 1=10min.), Temp 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min., Injector B Temp = 200°C, Detector B Temp = 220°C. Analyst: Candice Warren.	40.5         110-75-8         N/A         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	
<ul> <li>The ce</li> <li>Stands</li> <li>Stands</li> <li>Stands</li> <li>All Sta</li> <li>Uncert</li> <li>NUST'</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetria standards are prepend gravinetrically using balances that are cal smalards are precrifted (<i>H</i>.) 0.3% of the stated value, unless otherw . All Standards, after opening ampule, should be stored with caps fig of Uncertainty Reference: Taylor, B.N. and Kuyat, C.B., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wasl</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).</li> <li>Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with cass tight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	tated. ). NIST Measurement Result,"

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 combined and diluted to (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 $1.1$ $2.6Solvent(s): LotsMethanol EJ143-US1.14.520 t^{2}1.14.520 t^{2}1.14.5$	Formulated By: Prashant Chaufuan 120524 Formulated By: Prashant Chaufuan DATE Reviewed By: Pedro L. Rentas DATE Expanded SDS Information Uncertainty (Solvent Safety Info. On Attached pg.) (++) (ug/mL) Case OstA PEL (TWA) LD50
1. 2-Chloroethyl vinyl ether 74 MKCD0033 10000 99 Method: GC6MSD-1 M. Detector: MSD. Column: (60m X 0.25mm X 1.5 $\mu$ m). Injector B Temp = 200°C, Detector B Temp. = 220°C. Analyst: Candice Warren.	74 MKCD0033 10000 . Column: (60m X 0.25mm X 1.5 np. = 220°C. Analyst: Candice W	2-Chloroethyl viryl ether 74 MKCD0033 10000 99 0.2 0.50536 0.50550 10002.9 40.5 110-75-8 NA 00 Method: GC6MSD-1 M. Detector: MSD. Column: (60m X 0.25mm X 1.5 µm). Oven Profile: Temp 1 = 35°C (Time 1=10min.), Temp 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min., Injector B Temp = 200°C, Detector B Temp = 220°C. Analyst: Candice Warren.	40.5         110-75-8         N/A         ort-rat 250mg/kg           ap 2 = 200°C (Time 2=8.75 min.), Rate = 4°C/min.,
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<ul> <li>The ce</li> <li>Stands</li> <li>Stands</li> <li>Stands</li> <li>All Sta</li> <li>Uncert</li> <li>NUST'</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetria standards are prepend gravinetrically using balances that are cal smalards are precrifted (<i>H</i>.) 0.3% of the stated value, unless otherw . All Standards, after opening ampule, should be stored with caps fig of Uncertainty Reference: Taylor, B.N. and Kuyat, C.B., "Guidelines NIST Technical Note 1297, U.S. Government Printing Office, Wasl</li> </ul>	<ul> <li>The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.</li> <li>Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).</li> <li>Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.</li> <li>All Standards, after opening ampule, should be stored with cass tight and under appropriate laboratory conditions.</li> <li>Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).</li> </ul>	tated. ). NIST Measurement Result,"

Contraction of the

Safety Data Sheet (SDS)

GHS/OSHA Compliant

Section I Product and Co	mpany Identification			
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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				
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Section III - Composition	·			
Components (Specific Cher Methanol	nical Identity; Common Name(s)) METHYL ALCOHOL	CAS#: 67-56-1		% (optional) > 97
See Certified Weight F	Report For Other Analytes Pre	esent At Trace	Quantities.	
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
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	m =		spected prior to use. Eye protect	ion.
Section IX - Physical/Che	mical Characteristics			

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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			

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CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

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**CERTIFIED REFERENCE MATERIAL** 

4 V

# **Certificate of Analysis**



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

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.

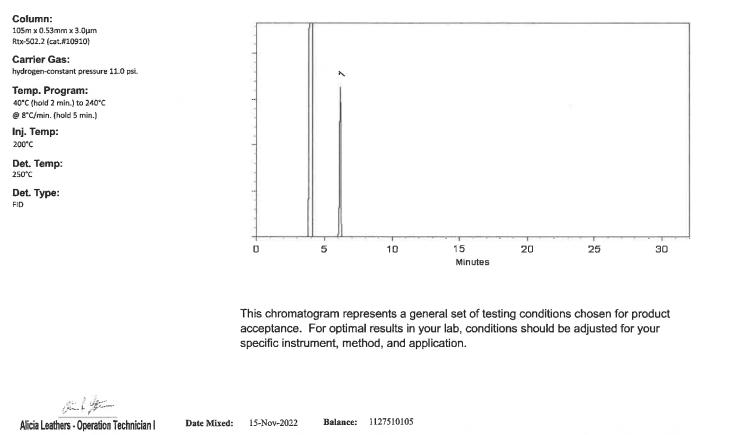
Catalog No. :	30470	Lot No.:	A0191703	
Description :	tert-Butanol Standard			
	tert-Butanol Std 50,000µg/mL, F	P&T Methanol, 1mL/an	npul	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	November 30, 2025	Storage:	0°C or colder	
		Ship:	Ambient	

## CERTIFIED VALUES

Elution Order		Compound	Grav. Conc. (weight/volume)		Expanded U (95% C.L.; K	the second second second	
1	tert-Butanol (TBA) CAS # 75-65-0 Purity 99%	(Lot 101619K21F-1)	50,122.0 μg/mL	+/-	293.4753 1,073.6797 1,104.8612	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Methanol						

CAS# 67-56-1

Purity 99%



Spale & Terror

Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 17-Nov-2022

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

### **General Certified Reference Material Notes**

### **Expiration Notes:**

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

### **Purity Notes:**

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

**Certified Uncertainty Value Notes:** 

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

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

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

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

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

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at <u>www.restek.com/Contact-Us</u>.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

### Manufacturing Notes:

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

### Handling Notes:

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



110 Benner Circle Bellefonte, PA 16823-8812 Tel: 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

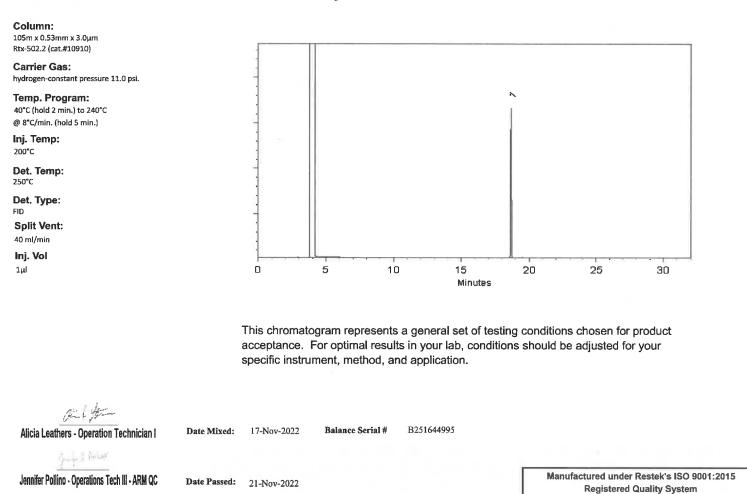
\* Expanded Uncertainty displayed in same units as Grav. Conc.

 Solvent:
 P&T Methanol

 CAS #
 67-56-1

 Purity
 99%







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.





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. :	30042	Lot No.:	A0197644			
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 :	January 31, 2030	Storage:	0°C or colder			
		Ship:	Ambient			

## CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Dichlorodifluoromethane (CFC-12)	75-71-8	00012554	99%	2,001.6 µg/mL	+/- 112.7159
2	Chloromethane (methyl chloride)	74-87-3	SHBM9611	99%	2,002.0 µg/mL	+/- 112.7840
3	Vinyl chloride	75-01-4	00015559	99%	2,002.2 µg/mL	+/- 112.6713
4	Bromomethane (methyl bromide)	74-83-9	101604	99%	2,006.4 µg/mL	+/- 112.8861
5	Chloroethane (ethyl chloride)	75-00-3	107-401039114-1	99%	2,000.9 µg/mL	+/- 112.5990
6	Trichlorofluoromethane (CFC-11)	75-69-4	MKCL8411	99%	1,999.2 μg/mL	+/- 112.4861

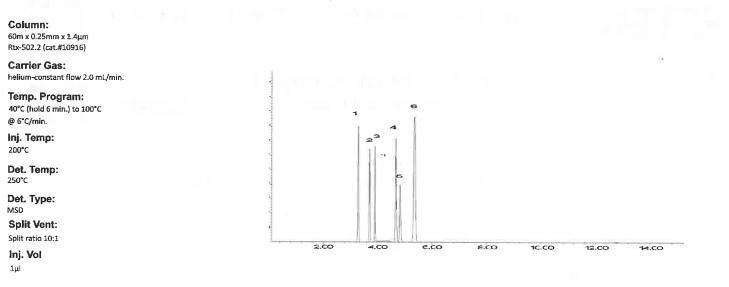
\* Expanded Uncertainty displayed in same units as Grav. Conc.

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.



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



# **Expiration Notes:**

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

## **Purity Notes:**

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

# **Certified Uncertainty Value Notes:**

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

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

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

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

## Manufacturing Notes:

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

- 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>30006</u> Lot No.: <u>A0200785</u>						
<b>Description</b> :	VOA Calibration Mix #1						
	VOA Calibration Mix #1 5,000µg 1mL/ampul	/mL, P&T Methanol/W	ater(90:10),				
Container Size :	2 mL	Pkg Amt:	> 1 mL				
Expiration Date :	November 30, 2026	Storage:	0°C or colder				
		Ship:	Ambient				

## CERTIFIED VALUES

Elution Order	Compound	CAS#	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Acetone	67-64-1	SHBP8774	99%	5,018.5 μg/mL	+/- 173.4162
2	2-Butanone (MEK)	78-93-3	SHBL5543	99%	5,016.0 μg/mL	+/- 173.3298
3	4-Methyl-2-pentanone (MIBK)	108-10-1	SHBP4724	99%	5,010.7 μg/mL	+/- 173.1455
4	2-Hexanone	591-78-6	MKCQ6663	99%	5,015.0 µg/mL	+/- 173.2952

\* 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%



Carrier Gas: hydrogen-constant pressure 11.0 psi.

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

Inj. Temp: 200°C

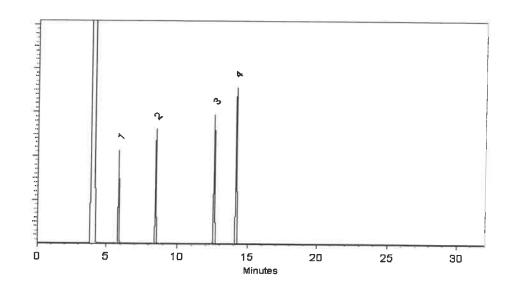
Det. Temp: 250°C

Det. Type: FID

Split Vent: 40 ml/min

lnj. Vol

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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.

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Laith Clemente - Operations Technician I

Date Mixed: 09-Aug-2023

Balance Serial # B707717271

Mandatas

Marlina Cowan - Operations Tech II ARM QC

Date Passed: 16-Aug-2023

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

# **Expiration Notes:**

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

# **Purity Notes:**

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
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  correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the
  parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

# **Certified Uncertainty Value Notes:**

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

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

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

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

# Manufacturing Notes:

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

# Handling Notes:

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

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chromatographic plus





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

Catalog No. :	30489	Lot No.: <u>A0205013</u>				
<b>Description</b> :	8260B Acetates Mix					
	8260B Acetates Mix 2,000 µg/mL, P&T Methanol, 1mL/ampul					
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	June 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%	2,012.7 μg/mL	+/- 69.5670
2	Vinyl acetate	108-05-4	RP231030CTH	98%	2,017.5 μg/mL	+/- 69.7338
3	Ethyl acetate	141-78-6	SHBQ9682	99%	2,020.0 μg/mL	+/- 69.8205
4	Isopropyl acetate	108-21-4	BCCG7069	99%	2,018.7 μg/mL	+/- 69.7744
5	Propyl acetate	109-60-4	KLOBM	99%	2,012.0 μg/mL	+/- 69.5439
6	Butyl acetate	123-86-4	SHBP6314		2,020.0 μg/mL	+/- 69.8205
7	Amyl acetate	628-63-7	41325/1		2,019.5 μg/mL	+/- 69.8046

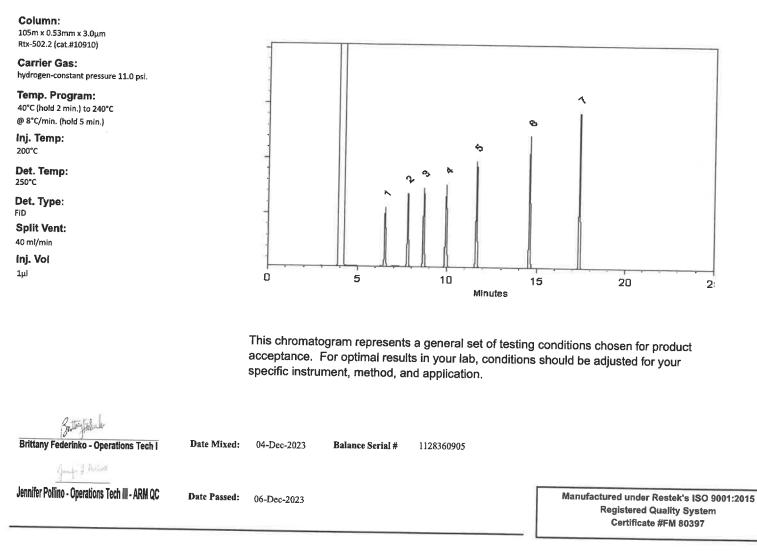
Solvent: P&T Methanol CAS # 67-56-1 Purity 99% \* Expanded Uncertainty displayed in same units as Grav. Conc.

# 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**



# **Expiration Notes:**

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

# **Purity Notes:**

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
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  correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the
  parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

# **Certified Uncertainty Value Notes:**

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

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

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

# Manufacturing Notes:

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

- 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
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  which includes complete instructions.
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# FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

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

### CERTIFIED VALUES

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

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

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

Tech Tips:

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

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

# **Quality Confirmation Test**

Column: 105m x 0.53mm x 3.0µm Rtx-502.2 (cat.#10910) **Carrier Gas:** hydrogen-constant pressure 11.0 psi. Temp. Program: ٩ 40°C (hold 2 min.) to 240°C @ 8°C/min. (hold 5 min.) Ø Inj. Temp: ÷-200°C Det. Temp: 0 250°C Det. Type: FID **Split Vent:** 40 ml/min Inj. Vol ٥ **1**µl 5 10 15 20 Minutes This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application. Soumuer Moodler Sam Moodler - Operations Tech I Date Mixed: 28-Mar-2024 **Balance Serial #** B707717271 Tiller Hurthy **Dillan Murphy - Operations Technician I** Manufactured under Restek's ISO 9001:2015 Date Passed: 01-Apr-2024 **Registered Quality System** 

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Certificate #FM 80397

# **Expiration Notes:**

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# **Purity Notes:**

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  correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the
  parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

# **Certified Uncertainty Value Notes:**

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

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

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

# **Manufacturing Notes:**

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

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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>30489</u> Lot No.: <u>A0209618</u>					
Description :	8260B Acetates Mix					
	8260B Acetates Mix 2,000 µg/mL, 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
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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

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Column: 105m x 0.53mm x 3.0µm Rtx-502.2 (cat.#10910) **Carrier Gas:** hydrogen-constant pressure 11.0 psi. Temp. Program: ٩ 40°C (hold 2 min.) to 240°C @ 8°C/min. (hold 5 min.) Ø Inj. Temp: ÷-200°C Det. Temp: 0 250°C Det. Type: FID **Split Vent:** 40 ml/min Inj. Vol ٥ **1**µl 5 10 15 20 Minutes This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application. Soumuer Moodler Sam Moodler - Operations Tech I Date Mixed: 28-Mar-2024 **Balance Serial #** B707717271 Tiller Hurthy **Dillan Murphy - Operations Technician I** Manufactured under Restek's ISO 9001:2015 Date Passed: 01-Apr-2024 **Registered Quality System** 

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Certificate #FM 80397

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Catalog No. :	30006	Lot No.:	A0210618	
<b>Description</b> :	VOA Calibration Mix #1			
	VOA Calibration Mix #1 5,00 1mL/ampul			
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%

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# **Expiration Notes:**

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# **Purity Notes:**

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- Purity of isomeric compounds is reported as the sum of the isomers.
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- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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

Catalog No. :	30006	Lot No.:	A0210618	
<b>Description</b> :	VOA Calibration Mix #1			
	VOA Calibration Mix #1 5,00 1mL/ampul			
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%

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# **Expiration Notes:**

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

# **Purity Notes:**

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

# **Certified Uncertainty Value Notes:**

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

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

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

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

# **Manufacturing Notes:**

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

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



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

Catalog No. :	30006	Lot No.:	A0210618	
<b>Description</b> :	VOA Calibration Mix #1			
	VOA Calibration Mix #1 5,00 1mL/ampul			
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	July 31, 2027	Storage:	0°C or colder	
	3	Ship:	Ambient	

## CERTIFIED VALUES

Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	Acetone	67-64-1	SHBQ8504	99%	5,014.8 μg/mL	+/- 173.2883
2	2-Butanone (MEK)	78-93-3	SHBQ4704	99%	5,012.4 μg/mL	+/- 173.2054
3	4-Methyl-2-pentanone (MIBK)	108-10-1	SHBP9200	99%	5,011.6 μg/mL	+/- 173.1777
4	2-Hexanone	591-78-6	MKCQ6663	99%	5,013.0 µg/mL	+/- 173.2261

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

Solvent: P&T Methanol/Water (90:10)

CAS # 67-56-1/7732-18-5 Purity 99%

-



# **Expiration Notes:**

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

# **Purity Notes:**

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

# **Certified Uncertainty Value Notes:**

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

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

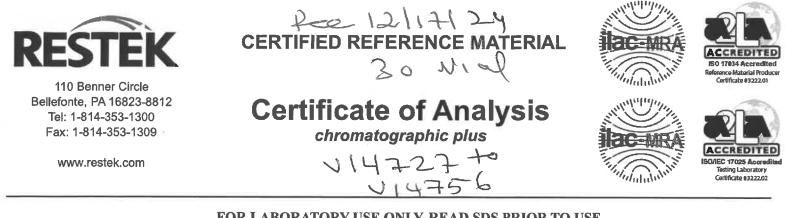
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

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

# **Manufacturing Notes:**

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

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



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

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

Catalog No. :	30042	Lot No.:	A0216826	
<b>Description</b> :	502.2 Calibration Mix #1			
	502.2 Calibration Mix #1 2,000	)µg/mL, P&T Methanol, 1	ImL/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

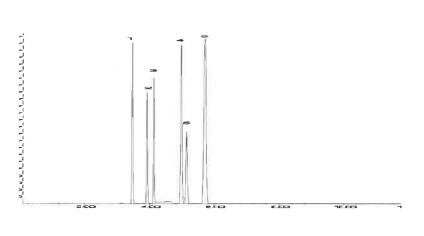
Det. Temp: 250°C

Det. Type:

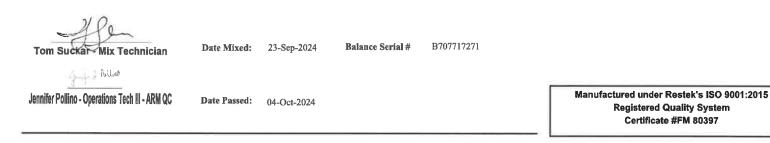
MSD Split Vent:

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:

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

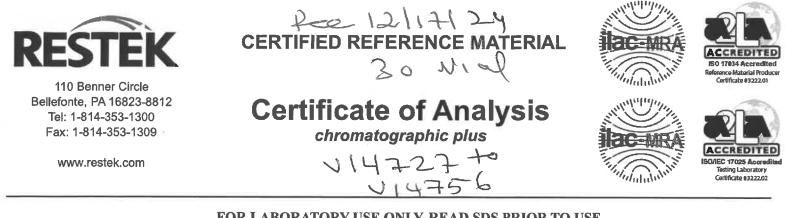
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

• 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.

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



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

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

Catalog No. :	30042	Lot No.:	A0216826	
<b>Description</b> :	502.2 Calibration Mix #1			
	502.2 Calibration Mix #1 2,000	)µg/mL, P&T Methanol, 1	ImL/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

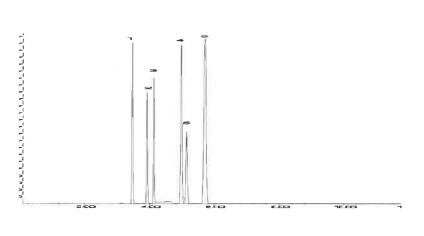
Det. Temp: 250°C

Det. Type:

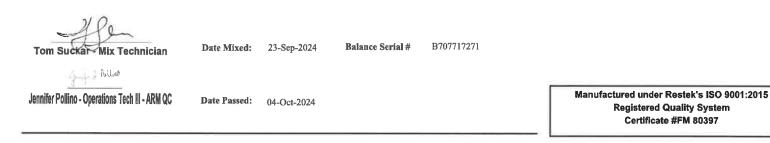
MSD Split Vent:

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:**

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  correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the
  parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

# **Certified Uncertainty Value Notes:**

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

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

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:

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



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

www.restek.com

## **CERTIFIED REFERENCE MATERIAL**

# **Certificate of Analysis**

chromatographic plus





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

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

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

#### CERTIFIED VALUES

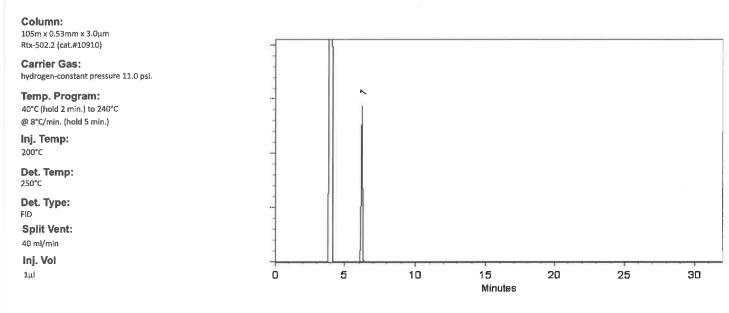
Elution Order	Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	tert-Butanol (TBA)	75-65-0	SHBQ8002-1	99%	50,007.5 μg/mL	+/- 717.6137

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

 Solvent:
 P&T Methanol

 CAS #
 67-56-1

 Purity
 99%



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

WOLF Aaron Enyart - Operations Tech I

Date Mixed: 07-Oct-2024

**Balance Serial #** 

B251644995

Sittery Falend

Brittany Federinko - Operations Tech I

Date Passed: 09-Oct-2024

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

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

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:**

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

www.restek.com

### **CERTIFIED REFERENCE MATERIAL**





gravimetric



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

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

Catalog No. :	555584	55584 Lot No.: <u>A0219012</u>					
<b>Description</b> :	Custom CLP VOA Surrogate Standard Mix						
	Custom CLP VOA Surrogate St 1mL/ampul	andard Mix 25,000µg/n	nL, P&T Methanol,				
Container Size :	2 mL	Pkg Amt:	> 1 mL				
Expiration Date :	November 30, 2027	Storage:	0°C or colder				
		Ship:	Ambient				

#### CERTIFIED VALUES

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

CAS # 67-56-1 Purity 99%

Jess Hoy - Operations Tech I

Date Mixed: 12-Nov-2024

Nov-2024 Bala

Balance: 1127510105

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

### Expiration Notes:

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

### **Purity Notes:**

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

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

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

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

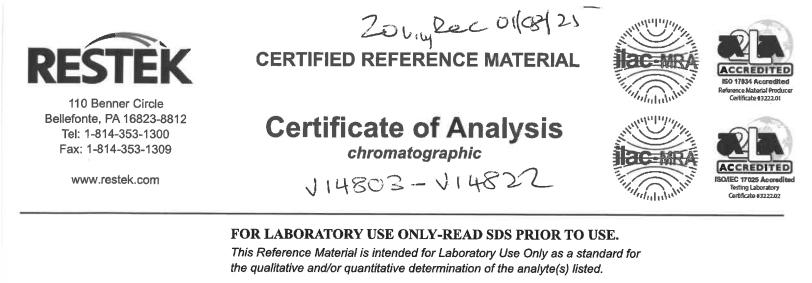
*k* is a coverage factor of 2, which gives a level of confidence of approximately 95%.

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

### **Manufacturing Notes:**

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

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



Catalog No. :	555408-SL	Lot No.: <u>A0220471</u>					
Description :	Custom Vinyl Acetate Standard						
Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/amj							
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				

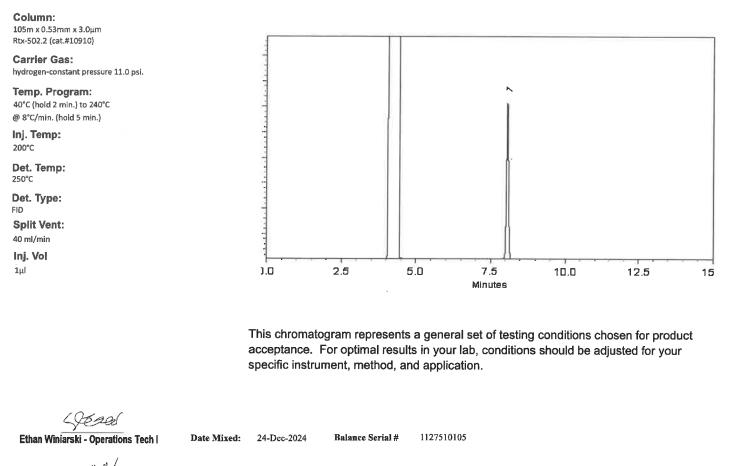
#### CERTIFIED VALUES

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

### **Expiration Notes:**

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

### **Purity Notes:**

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  correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the
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- Purity of isomeric compounds is reported as the sum of the isomers.
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### **Certified Uncertainty Value Notes:**

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

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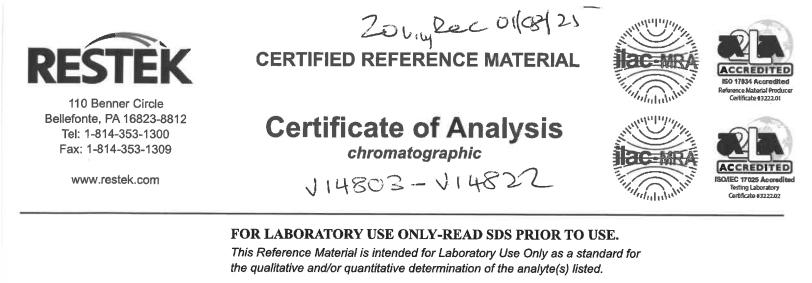
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

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

### Manufacturing Notes:

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

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



Catalog No. :	555408-SL	Lot No.: <u>A0220471</u>					
Description :	Custom Vinyl Acetate Standard						
Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/amj							
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				

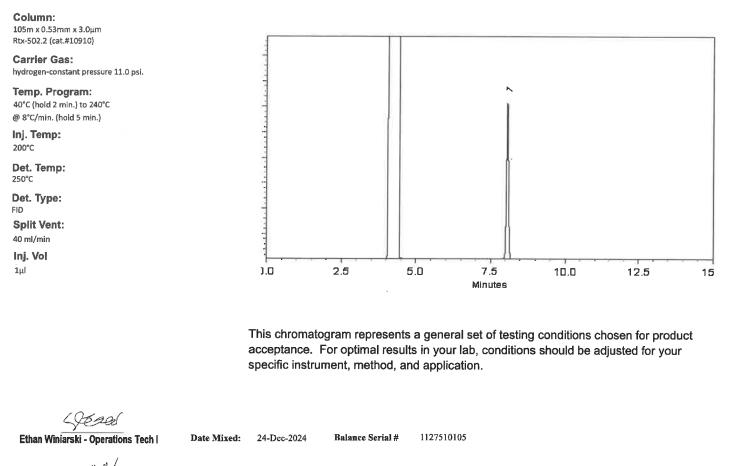
#### CERTIFIED VALUES

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

### **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:

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

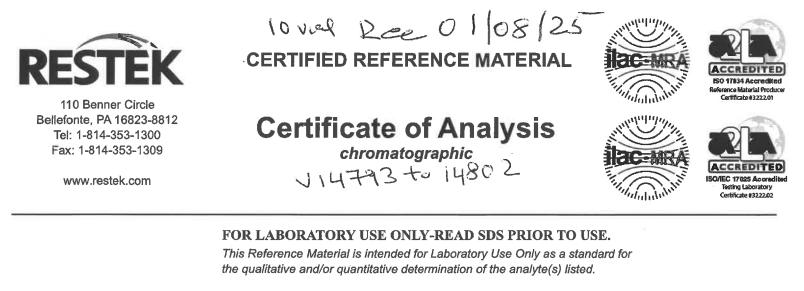
k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

• 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.



Catalog No. :	555408-FL	Lot No.:	A0220563				
<b>Description</b> :	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

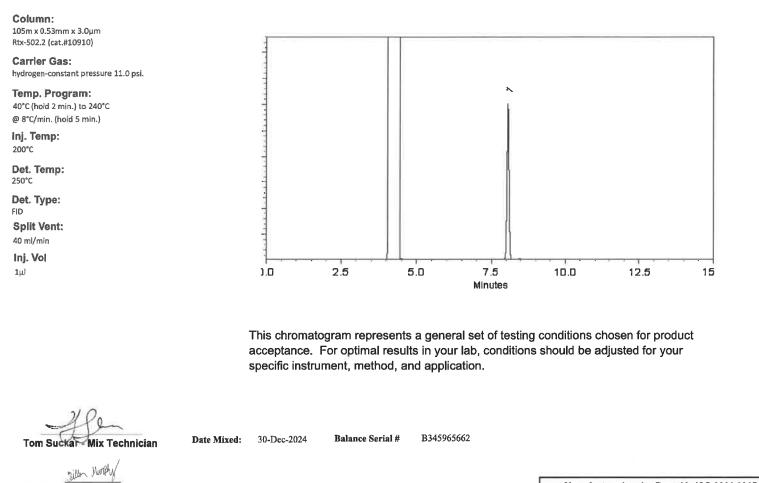
Elution Order		Compound	CAS #	Lot #	Purity	Grav. Conc. (weight/volume)	Expanded Uncertainty * (95% C.L.; K=2)
1	Vinyl acetate		108-05-4	RD240423RSR	99%	8,060.0 μg/mL	+/- 278.5905

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

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

#### 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.



Dillan Murphy - Operations Technician I

Date Passed: 02-Jan-2025

REVIEWED By Jamiller Publico at 7:11 are, Jan 00, 2025

### **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:

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

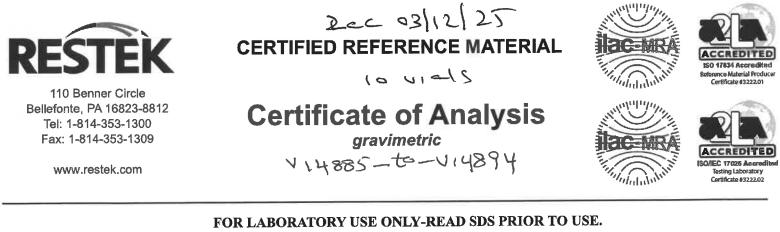
*k* is a coverage factor of 2, which gives a level of confidence of approximately 95%.

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

#### CERTIFIED VALUES

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

Penelope Riglin - Operations Tech I

CAS #

Purity

67-56-1

99%

Date Mixed: 10-N

10-Mar-2025

Balance: 1128342314

### **Expiration Notes:**

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

### **Purity Notes:**

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  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.

Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis

Avantor



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

# Certificate of Analysis

Test	Specification	Result
Assay (CH3OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %
Residue after Evaporation	≤ 1.0 ppm	0.2 ppm
Titrable Acid (µeq/g)	≤ 0.3	0.2
Titrable Base (µeq/g)	≤ <b>0.</b> 10	0.03
Water (by KF, coulometric)	≤ 0.08 %	< 0.01 %
Volatile Organic Trace Analysis – Below EPA 8260B CRQL	Conforms	Conforms

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

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

James Techie

Jamie Ethier Vice President Global Quality

Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis





N14883 N14884

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

# Certificate of Analysis

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

ames Techie

Jamie Ethier Vice President Global Quality

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