

Prep Standard - Chemical Standard Summary

Order ID : M1785

Test : VOCMS Group2

Prepbatch ID :

Sequence ID/Qc Batch ID: vx032921,

Standard ID :

VP100006,VP100007,VP100049,VP100098,VP100438,VP100440,VP100582,VP100584,VP100695,VP101192,VP101195,VP101197,VP101685,VP101686,VP101687,VP101688,VP101689,VP101690,VP101691,VP101724,VP101842,VP101843,VP101844,VP101845,VP101846,VP99051,VP99335,VP99969,VP99970,

Chemical ID :

V10264,V10592,V10597,V10685,V10700,V10703,V10707,V10710,V10779,V10780,V10781,V10782,V10933,V10963,V1103 9,V11167,V11168,V11169,V11170,V11172,V11173,V11178,V11192,V11193,V11194,V11195,V11196,V11197,V11198,V11199,V 11207,V11214,V11242,V11243,V11248,V11256,V11257,V11258,V11259,V11321,V11322,V11333,V11334,V11463,V11464,V1 1467,V11540,V11541,V11542,V11546,V11592,V11593,V11604,V11607,V11610,V11612,V11636,V11637,V11740,V11761,V11 762,V11763,V11764,V11765,V11766,V8726,V9527,V9528,VP101847,W2606,

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Recipe ID 253	NAME 8260 Working STD (BCM)-First source, 20PPM	<u>NO.</u> VP100006	<u>Prep Date</u> 01/22/2021	Expiration Date 07/21/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 01/25/2021
FROM	0.25000ml of V10710 + 24.75000ml o	of V11593 =	= Final Quanti	ty: 25.000 ml				
Recipe				Expiration	Prepared			Supervised By

Recipe				Expiration	Prepared			Supervised By
<u>ID</u>	NAME	<u>NO.</u>	Prep Date	<u>Date</u>	<u>By</u>	<u>ScaleID</u>	PipettelD	Mahesh Dadoda
719	8260 Working STD (BCM)-First source, 400PPM	<u>VP100007</u>	01/22/2021	07/21/2021	Semsettin Yesilyurt	None	None	01/25/2021
FROM	1.20000ml of V10700 + 1.20000ml of Final Quantity: 25.000 ml	f V10707 + ⁻	1.20000ml of '		000ml of V1070	3 + 20.00000ml	of V11593 =	

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VOC STANDARD PREPARATION LOG

Recipe ID 247	NAME	<u>NO.</u> VP100049	Prep Date 01/25/2021	Expiration Date 07/25/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Amit Patel 01/28/2021
FROM	0.25000ml of V10264 + 24.75000ml of	of V11592 :	= 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>	PipettelD	<u>Supervised By</u>
1817		<u>VP100098</u>	01/25/2021	07/25/2021	Semsettin	None	None	Amit Patel
1017	800ppm	<u>vi 100000</u>	01/20/2021	01720/2021	Yesilyurt		None	01/28/2021
FROM	0.80000ml of V9528 + 1.20000ml of	V9527 + 23.	00000ml of V	11592 = Final	Quantity: 25.00	0 ml		

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VOC STANDARD PREPARATION LOG

Recipe ID 1810	NAME 8260 Working Std(2-CVE)-800ppm	<u>NO.</u> VP100438	Prep Date 02/09/2021	Expiration Date 08/09/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 02/09/2021
FROM	1.00000ml of V11256 + 1.00000ml of Final Quantity: 50.000 ml	⁻ V11257 + 1	1.00000ml of \	/11258 + 1.000	00ml of V11259	+ 46.00000ml	of V11607 =	

Recipe <u>ID</u> 1812	NAME 8260 Working Std(2-CVE)-100ppm	<u>NO.</u> VP100440	<u>Prep Date</u> 02/09/2021	Expiration Date 08/09/2021	<u>Prepared</u> <u>By</u> Semsettin Yesilyurt	<u>ScaleID</u> None	PipettelD None	Supervised By Mahesh Dadoda 02/09/2021
FROM	0.25000ml of V11259 + 24.75000ml of	L of V11607 =	l = Final Quanti	ty: 25.000 ml	resilyurt			02/03/2021

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VOC STANDARD PREPARATION LOG

Recipe ID 257	NAME 8260 Calibration Working STD Mix-First source, 160PPM	<u>NO.</u> VP100582	Prep Date 02/15/2021	Expiration Date 03/25/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 02/18/2021
FROM	0.40000ml of V11173 + 1.00000ml of 1.00000ml of V11192 + 1.00000ml of 1.00000ml of V11243 + 1.00000ml of 10.60000ml of V11463 = Final Quan	V11193 + 1 V11321 + 1	.00000ml of \ I.00000ml of \	/11194 + 1.000	00ml of V11198	+ 1.00000ml of	V11242 +	

Recipe ID 245	NAME 8260 Calibration Working STD Mix-First source, 20PPM	<u>NO.</u> VP100584	Prep Date 02/15/2021	Expiration Date 03/25/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 02/18/2021
FROM	17.50000ml of V11463 + 2.50000ml o	of VP100582	1 2 = Final Qua	untity: 20.000 n			1	

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VOC STANDARD PREPARATION LOG

Recipe ID 259	NAME 8260 Calibration Working STD Mix-Second source, 160PPM	<u>NO.</u> VP100695	Prep Date 02/19/2021	Expiration Date 04/06/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 02/22/2021
FROM	0.16000ml of V11178 + 0.40000ml of 0.80000ml of V11039 + 0.80000ml of							

Recipe ID 263	NAME 8260 Working STD (Acrolein)-Second source,		Prep Date 03/09/2021	04/06/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/11/2021
FROM	800PPM 0.60000ml of V11766 + 1.00000ml of	V11765 + 8	3.40000ml of \	/11604 = Final		00 ml		

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Recipe ID 51	NAME 8260 Working STD (Acrolein) -first source, 800PPM	<u>NO.</u> VP101195	Prep Date 03/09/2021	<u>Expiration</u> <u>Date</u> 04/08/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/11/2021
FROM	0.40000ml of V11764 + 1.20000ml of Final Quantity: 25.000 ml	V11761 + 1	1.20000ml of \	/11762 + 1.200	00ml of V11763	+ 21.00000ml	of V11604 =	

<u>Recipe</u> <u>ID</u> 180	NAME 8260 Working STD (Acrolein)-First source, 100PPM	<u>NO.</u> VP101197	Prep Date 03/09/2021	Expiration Date 04/08/2021	<u>Prepared</u> <u>By</u> Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/11/2021
FROM	17.50000ml of V11604 + 2.50000ml of	L of VP101198	5 = Final Qua	ntity: 20.000 m	-			00,11,2021

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Recipe ID 334	NAME 1 PPB ICC, 8260-Water	<u>NO.</u> VP101685	Prep Date 03/24/2021	<u>Expiration</u> <u>Date</u> 03/25/2021	<u>Prepared</u> <u>By</u> John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/25/2021
FROM	39.98200ml of W2606 + 0.00200ml o VP101197 + 0.00200ml of VP99970					/P100584 + 0.0	10200ml of	

<u>Recipe</u> <u>ID</u> 335	NAME 5 PPB ICC, 8260-Water	<u>NO.</u> VP101686	Prep Date 03/24/2021	Expiration Date 03/25/2021	Prepared By John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/25/2021
<u>FROM</u>	39.94200ml of W2606 + 0.00800ml c VP100584 + 0.01000ml of VP101197					/P100440 + 0.0	1000ml of	03/23/2021

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Recipe ID 337	NAME 20 PPB ICC, 8260-Water	<u>NO.</u> VP101687	Prep Date 03/24/2021	<u>Expiration</u> <u>Date</u> 03/25/2021	<u>Prepared</u> <u>By</u> John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/25/2021
FROM	39.97000ml of W2606 + 0.00200ml o VP100582 + 0.00500ml of VP101195						500ml of	

<u>Recipe</u> <u>ID</u> 380	NAME 50 PPB ICC, 8260-Water	<u>NO.</u> VP101688	Prep Date 03/24/2021	Expiration Date 03/25/2021	Prepared By John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/25/2021
FROM	39.94450ml of W2606 + 0.00500ml o VP100438 + 0.01250ml of VP100582						250ml of	

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Recipe ID 381	NAME 100 PPB ICC, 8260-Water	<u>NO.</u> VP101689	Prep Date 03/24/2021	Expiration Date 03/25/2021	<u>Prepared</u> <u>By</u> John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/25/2021
FROM	39.89700ml of W2606 + 0.00800ml o VP100438 + 0.02500ml of VP100582						500ml of	

FROM 39.84950ml of W2606 + 0.00800ml of VP100049 + 0.01500ml of VP100007 + 0.01500ml of VP99969 + 0.03750ml of VP100438 + 0.03750ml of VP100582 + 0.03750ml of VP101195 = Final Quantity: 40.000 ml	Recipe ID 382	NAME 150 PPB ICC, 8260-Water	<u>NO.</u> VP101690	Prep Date 03/24/2021	Expiration Date 03/25/2021	Prepared By John Carlone	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 03/25/2021
	FROM							3750ml of	

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Recipe ID 385	NAME 50 PPB ICV, 8260-Water	<u>NO.</u> VP101691	Prep Date 03/24/2021	Expiration Date 03/25/2021	Prepared By John Carlone	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 03/25/2021
FROM	39.92950ml of W2606 + 0.00500ml o VP100695 + 0.01250ml of VP101192					P100098 + 0.01	250ml of	

	<u>cipe</u> ID	NAME	<u>NO.</u>	Prep Date	Expiration Date	Prepared By	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u> Mahesh Dadoda
2	257	8260 Calibration Working STD Mix-First source, 160PPM	<u>VP101724</u>	03/25/2021	05/04/2021	Semsettin Yesilyurt	None	None	03/29/2021
<u></u>	<u>ROM</u>	0.40000ml of V11172 + 0.40000ml of 0.80000ml of V11637 + 1.00000ml of 1.20000ml of V11196 + 1.20000ml of 10.60000ml of V11740 = Final Quan	V11170 + 1 V11197 + 1	.20000ml of \ .20000ml of \	/10781 + 1.200	00ml of V11169	+ 1.20000ml of	f V11195 +	

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Recipe ID 620	NAME 50 PPB CCC, 8260-Water	<u>NO.</u> VP101842	Prep Date 03/29/2021	<u>Expiration</u> <u>Date</u> 03/30/2021	<u>Prepared</u> <u>By</u> Mahesh Dadoda	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By John Carlone 03/31/2021
FROM	39.94450ml of W2606 + 0.00500ml o VP100438 + 0.01250ml of VP101195						250ml of	

<u>Recipe</u> <u>ID</u> 620	NAME 50 PPB CCC, 8260-Water	<u>NO.</u> VP101843	Prep Date 03/29/2021	Expiration Date 03/30/2021	<u>Prepared</u> <u>By</u> Mahesh Dadoda	<u>ScaleID</u> None	PipetteID None	Supervised By John Carlone 03/31/2021
FROM	39.94450ml of W2606 + 0.00500ml c VP100438 + 0.01250ml of VP101195						250ml of	

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Recipe ID 620	NAME 50 PPB CCC, 8260-Water	<u>NO.</u> VP101844	Prep Date 03/29/2021	<u>Expiration</u> <u>Date</u> 03/30/2021	<u>Prepared</u> <u>By</u> Mahesh Dadoda	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By John Carlone 03/31/2021
FROM	39.94450ml of W2606 + 0.00500ml c VP100438 + 0.01250ml of VP101195						250ml of	

<u>Recipe</u> <u>ID</u> 620	NAME 50 PPB CCC, 8260-Water	<u>NO.</u> VP101845	Prep Date 03/29/2021	Expiration Date 03/30/2021	Prepared By Mahesh Dadoda	<u>ScaleID</u> None	PipettelD None	Supervised By John Carlone 03/31/2021
FROM	39.94450ml of W2606 + 0.00500ml o VP100438 + 0.01250ml of VP101195						250ml of	

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VOC STANDARD PREPARATION LOG

Recipe ID 589	NAME BFB TUNE CHECK	<u>NO.</u> VP101846	Prep Date 03/29/2021	Expiration Date 03/30/2021	<u>Prepared</u> <u>By</u> Mahesh Dadoda	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By John Carlone 03/31/2021
FROM	39.98400ml of W2606 + 0.01600ml c	f VP99051	= Final Quan	tity: 40.000 ml				

Recipe ID 218	NAME BFB, 25PPM	<u>NO.</u> VP99051	Prep Date 12/15/2020	Expiration Date 06/15/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 12/18/2020
FROM	0.25000ml of V10597 + 24.75000ml o	of V11467 :	= Final Quanti	ty: 25.000 ml				

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Recipe ID 262	NAME 8260 Working STD (BCM)-Second source, 100PPM	<u>NO.</u> VP99335	Prep Date 12/28/2020	Expiration Date 06/28/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 12/29/2020
FROM	1.00000ml of V8726 + 9.00000ml of V	V11464 = F	inal Quantity:	10.000 ml				

<u>Recipe</u> <u>ID</u> 617	NAME 8260 Surrogate, 400PPM	<u>NO.</u> VP99969	Prep Date 01/20/2021	Expiration Date 07/20/2021	<u>Prepared</u> <u>By</u> Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 01/22/2021
FROM	0.80000ml of V10685 + 49.20000ml	I of V11612 =	Final Quanti	ty: 50.000 ml	reonyart			01122/2021

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<u>Recipe</u> <u>ID</u> 1738	NAME 8260 surrogate 20 ppm	<u>NO.</u> VP99970	Prep Date 01/20/2021	Expiration Date 07/20/2021	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Mahesh Dadoda 01/22/2021
FROM	0.02000ml of V10685 + 24.99000ml (of V11612 =	- = Final Quanti	ty: 25.000 ml			<u>.</u>	



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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555581 / Custom Standard, 8260 Internal Std [CS 5179-1]	A0153385	07/25/2021	01/25/2021 / SAM	10/01/2019 / sam	V10264
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	A0155430	06/30/2021	02/08/2021 / SAM	01/09/2020 / sam	V10592
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30067 / BFB tuneing solution	A0147670	06/15/2021	12/15/2020 / SAM	01/09/2020 / sam	V10597
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555582 / Custom Mixture, 8260 A/B Surrogate Mix [CS 5179-2]	A0158153	07/20/2021	01/20/2021 / SAM	02/28/2020 / sam	V10685
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul	A0155519	07/21/2021	01/21/2021 / SAM	03/05/2020 / sam	V10700
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM,	A0155519	07/21/2021	01/21/2021 / SAM	03/05/2020 / sam	V10703



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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul	A0155519	07/21/2021	01/21/2021 / SAM	03/05/2020 / sam	V10707
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30225 / VOA Mix, bromochloromethane, 2000ug/mL, P&TM, 1mL/ampul	A0155519	07/21/2021	01/21/2021 / SAM	03/05/2020 / sam	V10710
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)	050219	08/08/2021	02/08/2021 / SAM	03/18/2020 / sam	V10779
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)	050219	08/08/2021	02/08/2021 / SAM	03/18/2020 / sam	V10780
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)	050219	09/18/2021	03/18/2021 / SAM	03/18/2020 / sam	V10781
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)	050219	09/18/2021	03/18/2021 / SAM	03/18/2020 / sam	V10782



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	A0158115	10/31/2026	12/06/2020 / SAM	04/22/2020 / sam	V10933
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)	050119	07/08/2021	01/08/2021 / SAM	06/05/2020 / sam	V10963
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)	010419	08/08/2021	02/08/2021 / SAM	07/16/2020 / sam	V11039
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)	010719	08/08/2021	02/08/2021 / SAM	08/01/2020 / sam	V11167
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)	010719	08/08/2021	02/08/2021 / SAM	08/01/2020 / sam	V11168
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)	010719	09/18/2021	03/18/2021 / SAM	08/01/2020 / sam	V11169



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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)	010719	09/18/2021	03/18/2021 / SAM	08/01/2020 / sam	V11170
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	A0160703	09/18/2021	03/18/2021 / SAM	08/21/2020 / sam	V11172
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	A0160703	07/08/2021	01/08/2021 / SAM	08/21/2020 / sam	V11173
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	A0158421	08/19/2021	02/19/2021 / SAM	08/21/2020 / sam	V11178
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	A0154174	08/08/2021	02/08/2021 / SAM	08/21/2020 / sam	V11192
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	A0154174	08/08/2021	02/08/2021 / SAM	08/21/2020 / sam	V11193



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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	A0154174	08/08/2021	02/08/2021 / SAM	08/21/2020 / sam	V11194
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	A0154174	09/18/2021	03/18/2021 / SAM	08/21/2020 / sam	V11195
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	A0154174	09/18/2021	03/18/2021 / SAM	08/21/2020 / sam	V11196
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	A0154174	09/18/2021	03/18/2021 / SAM	08/21/2020 / sam	V11197
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	A0154174	08/08/2021	02/08/2021 / SAM	08/21/2020 / sam	V11198
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
	30006 / VOA Mix, CLP	A0154174	09/18/2021	03/18/2021 /	08/21/2020 /	V11199



CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30006 / VOA Mix, CLP method Calibration Std #1 ketones 5000uq/ml, PTM, 1ml	A0159420	07/08/2021	01/08/2021 / SAM	08/21/2020 / sam	V11207
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	A0159420	07/08/2021	01/08/2021 / SAM	08/21/2020 / sam	V11214
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	A0164211	08/08/2021	02/08/2021 / SAM	09/14/2020 / sam	V11242
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	A0164211	08/08/2021	02/08/2021 / SAM	09/14/2020 / sam	V11243
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	A0164091	08/08/2021	02/08/2021 / SAM	09/14/2020 / sam	V11248
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)	082620	08/09/2021	02/09/2021 / SAM	09/18/2020 / sam	V11256



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)	082620	08/09/2021	02/09/2021 / SAM	09/18/2020 / sam	V11257
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)	082620	08/09/2021	02/09/2021 / SAM	09/18/2020 / sam	V11258
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)	082620	08/09/2021	02/09/2021 / SAM	09/18/2020 / sam	V11259
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	A0160196	08/08/2021	02/08/2021 / SAM	10/02/2020 / sam	V11321
Supplier	ItemCode / ItemName	Lot #	Expiration	Date Opened /	Received Date /	Chemtech
	itemcode / iteminame	L01 #	Date	Opened By	Received By	Lot #
Restek	30042 / VOA Mix,500 series method 502.2 Calibration Std #1 gases, 2000uq/ml, PTM, 1ml	A0160196	Date 08/08/2021	Opened By 02/08/2021 / SAM	Received By 10/02/2020 / sam	Lot # V11322
Restek Supplier	30042 / VOA Mix,500 series method 502.2 Calibration Std #1 gases,			02/08/2021 /	10/02/2020 /	



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	A0160196	09/18/2021	03/18/2021 / SAM	10/02/2020 / sam	V11334
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)	0000230446	08/05/2021	02/05/2021 / pedro	10/29/2020 / sam	V11463
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)	0000230446	06/28/2021	12/28/2020 / SAM	10/29/2020 / sam	V11464
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)	0000258810	06/15/2021	12/15/2020 / SAM	10/29/2020 / sam	V11467
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	A0162411	09/18/2021	03/18/2021 / SAM	12/24/2020 / SAM	V11540

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	A0162411	08/08/2021	02/08/2021 / SAM	12/24/2020 / SAM	V11541



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	A0162411	08/08/2021	02/08/2021 / SAM	12/24/2020 / SAM	V11542
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	A0162411	09/18/2021	03/18/2021 / SAM	12/24/2020 / SAM	V11546
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)	0000258810	07/25/2021	01/25/2021 / SAM	12/30/2020 / SAM	V11592
		E				
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 #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	0000258810	07/21/2021	01/21/2021 / SAM	12/30/2020 / SAM	V11593

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)	0000258810	08/25/2021	02/25/2021 / SAM	12/30/2020 / SAM	V11604

Chemtech Lot #
V11607



CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA9077-02 / Methanol, Purge/Trap (cs=6x1L)	0000230446	08/19/2021	02/19/2021 / SAM	12/30/2020 / SAM	V11610
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)	0000230446	07/20/2021	01/20/2021 / SAM	12/30/2020 / SAM	V11612
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	A0168095	09/18/2021	03/18/2021 / SAM	01/22/2021 / SAM	V11636
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	A0168095	09/18/2021	03/18/2021 / SAM	01/22/2021 / SAM	V11637
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)	0000258810	09/22/2021	03/22/2021 / SAM	03/03/2021 / SAM	V11740
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	030821	04/08/2021	03/09/2021 / SAM	03/09/2021 / SAM	V11761
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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	030821	04/08/2021	03/09/2021 / SAM	03/09/2021 / SAM	V11762
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	030821	04/08/2021	03/09/2021 / SAM	03/09/2021 / SAM	V11763
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	030821	04/08/2021	03/09/2021 / SAM	03/09/2021 / SAM	V11764
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	030621	04/06/2021	03/09/2021 / SAM	03/09/2021 / SAM	V11765
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	030621	04/06/2021	03/09/2021 / SAM	03/09/2021 / SAM	V11766
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	70046 / Bromochloromethane Std. sol/methanol 1000ppm	072918	06/28/2021	12/28/2020 / SAM	07/27/2018 / sam	V8726



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)	031419	07/25/2021	01/25/2021 / SAM	03/15/2019 / sam	V9527
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)	031419	07/25/2021	01/25/2021 / SAM	03/15/2019 / sam	V9528
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	DIW / DI Water	Daily Lab-Certified	10/24/2024	10/24/2019 / apatel	10/24/2019 / apatel	W2606

Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis





Material No.: 9077-02 Batch No.: 0000258810 Manufactured Date: 2020/04/01 Expiration Date: 2023/04/01 Revision No: 1

Certificate of Analysis

Test	Specification	Result
Assay (CH3OH) (by GC, corrected for water)	>= 99.9 %	100.0
Residue after Evaporation	<= 1.0000 ppm	0.5000
Titrable Acid (µeq/g)	<= 0.3	0.2
Titrable Base (µeq/g)	<= 0.1	<0.01
Water (by KF, coulometric)	<= 0.08 %	< 0.01
Volatile Organic Trace Analysis – Below EPA 8260B CRQL	Conforms / Fails	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: US Packaging Site: Phillipsburg Mfg Ctr & DC



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



CERTIFIED REFERENCE MATERIAL

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. :	30042	Lot No.:	A0158115
Description :	502.2 Calibration Mix #1		
	502.2 Calibration Mix #1 2,000µg/ml	., P&T Methanol,	1mL/ampul
Container Size :	2 mL	Pkg Amt:	> 1 mL
Expiration Date :	October 31, 2026	Storage:	0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	Dichlorodifluoromethane (CFC-12) CAS # 75-71-8 (Lot 00012554) Purity 99%	2,003.0 μg/mL 4)	+/- 13.5699 μg/mL Gravimetric +/- 112.5204 μg/mL Unstressed +/- 115.1432 μg/mL Stressed
2	Chloromethane (methyl chloride) CAS # 74-87-3 (Lot SHBK657 Purity 99%	2,002.2 μg/mL 71)	+/- 13.7609 μg/mL Gravimetric +/- 112.5010 μg/mL Unstressed +/- 115.1223 μg/mL Stressed
3	Vinyl chloride CAS # 75-01-4 (Lot 00015559 Purity 99%	2,000.7 μg/mL)	 +/- 14.3428 μg/mL Gravimetric +/- 112.4884 μg/mL Unstressed +/- 115.1060 μg/mL Stressed
4	Bromomethane (methyl bromide) CAS # 74-83-9 (Lot 101604) Purity 99%	2,000.2 µg/mL	+/- 13.8233 μg/mL Gravimetric +/- 112.3951 μg/mL Unstressed +/- 115.0136 μg/mL Stressed
5	Chloroethane (ethyl chloride) CAS # 75-00-3 (Lot 107-4010) Purity 99%	2,001.0 µg/mL 39114-1)	+/- 13.1358 μg/mL Gravimetric +/- 112.3597 μg/mL Unstressed +/- 114.9812 μg/mL Stressed
6	Trichlorofluoromethane (CFC-11) CAS # 75-69-4 (Lot MKCJ865 Purity 99%	2,001.8 µg/mL 58)	+/- 13.8031 μg/mL Gravimetric +/- 112.4818 μg/mL Unstressed +/- 115.1024 μg/mL Stressed

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

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

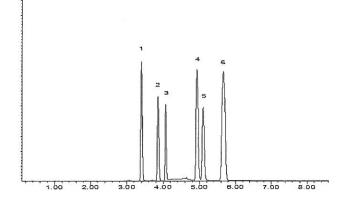
Carrier Gas: helium-constant flow 2.0 mL/min.

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

Inj. Temp: 200°C

Det. Temp: 250°C

Det. Type: MSD



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.



Date Mixed: 24-Feb-2020 Balance: B707717271



Date Passed: 27-Feb-2020

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
 www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

www.absolutestandards.com



Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT Part Number: 95317 Solvent(s): Lot Lot Number: 010419 Methanol DT14006 Eh. Aliago Description: Universal VOA Megamix 010419 69 components Formulated By: Eli Aliaga DATE Expiration Date: 010422 Recommended Storage: Freezer (0 °C) Rento Nominal Concentration (µg/mL): 2000 16 010419 NIST Test ID#: 2684186 5E-05 Balance Uncertain Pedro L. Rentas DATE Weight(s) shown below were combined and diluted to (mL): 100.0 0.001 Flask Uncertaint Expanded SDS Information (RM#) Lot Dil. Initial Initial Nominal Purity Uncertainty Target Punty (Solvent Safety Info. On Attached pg.) Actua Actua Uncertainty Compound Part Nut Number Factor Vol. (mL) Conc. (ug/mL) Conc (µg/mL) (96) Uncertainty (+/-) (µg/mL) Pipette (mL) Weight(g Weight(g) Conc (µg/mL CAS# OSHA PEL (TWA) LD50 Acetonitrile (0324) 060812 NA 2000 99.9 0.2 N/ 0.20022 0.20040 2001.8 75-05-8 8 1 40 ppm (70mg/m3/8H) orl-rat 2460mg/kg 2. Allyl chloride (3-Chloropropene) (0325) 102396 NA NA NA 2000 99 0.2 NA 0.20204 0.20210 2000.6 8.1 107-05-1 1 ppm (3mg/m3/8H) orl-rat 700mg/kg Carbon disulphide NA 3 NA NA (0060) MKBZ8689\ 2000 99 0.2 NA 0.20204 0.20215 2001.1 8.1 75-15-0 4 ppm (12mg/m3) (skin) orl-rat 1200mg/kg cis-1,4-Dichloro-2-butene (1196) 14718EF NA NA NA 2000 95 0.2 NA 0.21055 0.21060 2000.5 8.5 1476-11-5 N/4 N/A 5 Irans-1.4-Dichloro-2-butene (0486) MKBP6041V NA NA NA 2000 96.5 0.2 NA 0.20728 0.20745 2001.7 8.4 110-57-6 N/A N/A (0153) 6. Diethyl ether 209453 NA NA NA 2000 99 0.2 NA 0.20204 0.20210 2000.6 8. 60-29-7 N/A N/A 7. Ethyl methacrylate (0381) 06126P> NA NA NA 2000 99 0.2 NA 0.20204 0.20220 2001.6 8.1 97-63-2 N/A orl-rat 14800mg/kg 8. lodomelhane (0489) SHBF8718V NA NA NA 2000 99.5 0.2 NA 0.20103 0.20140 2003.7 8.1 orl-rat 76mg/kg 74-88-4 5 ppm(28mg/m3/8H)(skin) 9. 2-Methyl-1-propanol 0.20103 (0445) 15241EB NA NA NA 2000 99.5 0.2 NA 0.20110 2000. 8.1 78-83-1 50 ppm (150mg/m3/8H) orl-rat 2460mg/kg 10. Methacrylonitrile (0442 00427E1 NA NA NA 2000 99 0.2 NA 0.20204 0.20215 2001.1 8.1 126-98-7 1 ppm (3mg/m3/8H)(skin) ori-rat 120mg/kg 11. Methyl acrylate (1075)SHBK0679 NA NA NA 99.9 2000 0.2 NA 0.20022 0.20120 2009.8 8.1 96-33-3 10 ppm(35mg/m3/8H)(skin) orl-rat 277mg/kg 12. Methyl methacrylate (0404)03021BX NA NA NA 2000 99 0.2 NA 0.20204 0.20225 2002. 8.1 80-62-6 100 ppm (410mg/m3/8H) orl-rat 7872mg/kg 13. Nitrobenzene (0228 01213TV NA NA NA 2000 99 0,2 NA 0.20204 0.20220 2001.8 8.1 98-95-3 ppm (5mg/m3/8H)(skin ori-rat 780mg/kg 14. 2-Nitropropane (0461) 14002JX NA NA NA 2000 95 0.2 NA 0.21055 0.21060 2000.5 8.5 79-46-9 10 ppm (35mg/m3/8H) orl-rat 720mg/kg 15. Pentachloroethane (0450) HGA01 NA NA NA 2000 98 0.2 NA 0.20410 0.2042 2001.4 8.2 76-01-7 N/A N/A 16. 1,1,2-Trichlorotrifluoroethane (0474 18930 NA NA NA 2000 99 0.2 NA 0.20204 0.20215 2001.1 8.1 76-13-1 1000 ppm (7600mg/m3/8H) ori-rat 43g/kg 17. Bromodichloromethane 35171 051118 0.05 5.00 40001.7 2000 NA NA 0.017 NA NA orf-rat 916mg/kg 1999.9 15.9 75-27-4 N/A 18. Dibromochloromethane 35171 051118 0.05 5.00 40000.8 2000 NA NA 0.017 NA NA 1999.8 15.9 124-48-1 orl-rat 848mg/kg N/A 19. cis-1,2-Dichloroethene 35171 051118 0.05 5.00 40002.0 2000 NA NA 0.017 NA NA 1999.9 15.8 156-59-2 N/A N/A 20. trans-1.2-Dichloroethene 35171 051118 0.05 5 00 40000.8 2000 NA NA 0.017 NA NA orl-rat 1235mg/kg 15.9 1999.8 156-60-5 N/A 21. Methylene chloride 35171 051118 0.05 5.00 40003.2 2000 NA NA 0.017 NA NA 1999.9 15.8 75-09-2 orl-rat 820mg/kg 500 ppm 1,1-Dichloroethene 20005.5 22 3225 122818 0.10 10.00 2000 NA NA 0.042 NA NA 2000.3 18.7 75-35-4 1 ppm (4mg/m3/8H) orl-rat 200mg/kg 23. Bromoform 9532 010419 0.10 10.00 NA NA 20001.7 2000 NA 0.042 NA 18.7 ori-rat 933mg/kg 2000.0 75-25-2 0.5 ppm (5mg/m3) (skin) 24. Carbon tetrachloride 95321 010419 0.10 10.00 20001.3 2000 NA NA 0.042 NA NA 56-23-5 1999.8 18.7 orl-rat 2350mg/kg 2 ppm (12.6mg/m3/8H) 25 Chloroform 95321 010419 0.10 10.00 20001.8 2000 NA NA 0.042 NA NA 2000.0 18.7 67-66-3 50 ppm (240mg/m3) (CL) orl-rat 908mg/kg 26. Dibromomethane 27. 1,1-Dichloroethane 95321 010419 10.00 0.10 20001. 2000 NA NA NA NA 0.042 2000.0 18.7 74-95-3 N/A orl-rat 108mg/kg 95321 010419 0.10 10.00 20000.8 2000 NA NA 0.042 NA NA 75-34-3 1999.9 18,7 100 ppm orl-rat 725mg/kg 28. 2,2-Dichloropropane 95321 010419 0.10 10.00 20002.1 2000 NA NA 0.042 NA NA 2000.0 18.7 594-20-7 N/A 29. Tetrachloroethene 95321 010419 0.10 10.00 20002. 2000 NA NA 0.042 NA NA 2000.0 18.7 127-18-4 25 ppm (170mg/m3/8H)(final) orl-rat 2629mg/kg 30. 1,1,1-Trichloroethane 95321 010419 0.10 10.00 20001.3 2000 NA NA 0.042 NA NA 2000.0 18.7 71-55-6 orl-rat 10300mg/kg 350 ppm (1900mg/m3/8H) 31 1,2-Dibromo-3-chloropro 35161 052418 0.05 5.00 40000.5 2000 NA NA 0.017 NA NA 1999.8 15.8 96-12-8 0.001 ppm orl-rat 170mg/kg 35161 40001.8 32. 1.2-Dibromoethane 052418 0.05 5.00 2000 NA NA 0.017 NA NA 1999.9 15.8 106-93-4 20 ppm (8H orl-rat 108mg/kg 33. 1,2-Dichloroethane 35161 052418 0.05 5.00 40001.4 2000 NA NA 0.017 NA NA 1999.9 15.8 107-06-2 ori-rat 670mg/kg 50 ppm (8H) 34 1,2-Dichloropropane 3516 052418 0.05 5.00 40001.5 2000 NA NA 0.017 NA NA 1999.9 15.8 78-87-5 75 ppm (350mg/m3/8H orl-rat 1947mg/kg 35. 1,3-Dichloropropane 35161 052418 0.017 0.05 5 00 40001.0 2000 NA NA NA NA 1999.8 15.8 142-28-9 N/A unr-mus 3600mg/kg 36 1,1-Dichloropropene 35161 052418 0.05 5.00 39639.5 2000 NA NA 0.017 NA NA 1981.8 24.2 563-58-6 N/A N/A 37 cis-1,3-Dichloropropene 35161 052418 0.05 40001.2 5.00 NA 2000 NA 0.017 NA NA 1999.8 15.9 10061-01-5 N/A N/A 38. trans-1,3-Dichloropropene 35161 052418 40000. 0.05 5.00 2000 NA NA 0.017 NA NA 1999.8 16.0 10061-02-6 N/A N/A 39 Hexachloro-1,3-butadiene 35161 052418 0.05 5,00 40000.9 2000 NA NA 0.017 NA NA 1999.8 15.9 87-68-3 0.02 ppm (0.24mg/m3/8H) orl-rat 82mg/kg 1,1,1,2-Tetrachloroethane 40 3516 052418 0.05 40000.5 5.00 2000 NA NA 0.017 NA NA 1999 8 15.8 630-20 N/A orl-rat 670mg/kg 41. 1,1,2,2-Teirachloroethane 3516 052418 40001. 0.05 5.00 2000 N/ NA NA 0.017 NA 1999.9 15.8 79-34-5 5 ppm (35mg/m3/9H)(skin) orl-rat 800mg/kg 42. NA 1,1,2-Trichloroethane 35161 052418 0.05 5.00 40000. 2000 NA 0.017 NA NA 1999.8 15.9 79-00-5 10 ppm (45mg/m3/8H)(skin) orl-rat 836mg/kg 43. Trichloroelhene 3518 052418 0.05 5.00 40000.6 2000 NA NA 0.017 NA NA 1999.8 15.8 79-01-6 50 ppm (270mg/m3/8H) orl-mus 2402mg/kg 44. 1,2,3-Trichloropropane 3516 052418 0.05 5,00 40000. 2000 NA NA NA NA 0.017 10 ppm (60mg/m3/8H) orl-rat 149.6mg/kg 1999.8 15.8 96-18-45. Benzene 35162 060418 0.05 5.00 40000.4 2000 NA NA 0.017 NA NA 1999.8 71-43-2 15.8 orl-rat 4894mg/kg 1 ppm 46. Bromobenzene 35162 060418 0.05 5,00 40000.5 2000 NA NA 0.017 NA NA 1999.8 15.8 108-86-1 orl-rat 2699mg/kg 47. n-Butyl benzene 35162 060418 0.05 5.00 40001 2000 NA NA NA 0.017 NA 1999.9 15.8 104-51-8 N/A N/A 48. Ethyl benzene 35162 060418 0.05 5.00 40000. 2000 NA NA 0.017 NA NA 1999.8 15.8 100-41-4 100 ppm (435mg/m3/8H) orl-rat >2000mg/kg 49. p-Isopropyl toluene 35162 060418 0.05 5.00 40001.0 1999.8 99-87-6 2000 NA NA 0.017 NA NA 15.8 N/A orl-rat 4750mg/kg 50. Naphthalene 40001 35162 060418 0.05 5.00 2000 NA NA 0.017 NA NA 10 ppm (50mg/m3/8H 1999.9 15.8 91-20orl-rat 490mg/kg 51. Styrene 35162 060418 0.05 5.00 40000.5 2000 NA NA 0.017 NA NA 1999.8 15.8 100-42-5 100 ppm orl-rat 5000mg/kg 52 Toluene 35162 060418 0.05 5.00 40000.4 2000 NA NA 0.017 NA NA 1999.8 15.8 108-88-200 ppm orl-rat 5000mg/kg 40002 53. 1,2,3-Trichlorobenzene 35162 060418 0.05 5.00 2000 NA NA 0.017 NA NA 1999.9 15.8 87-61-6 N/A lpr-mus 1390mg/kg 54. 1,2,4-Trichlorobenzene 35162 060418 0.05 5.00 40001.0 2000 NA NA 0.017 NA NA 1999.6 15.8 120-82orl-rat 756mg/kg 5 ppm (CL) (40mg/m3) 55. 1,2,4-Trimethylbenzene 35162 060418 0.05 5.00 40001.7 2000 NA NA 0.017 NA NA 1999.9 15.9 95-63-6 orl-rat 5g/kg 58. 1,3,5-Trimethylbenzene 35162 060418 5.00 0.05 40000.2 2000 NA NA 0.017 NA NA 15.9 1999.8 108-67-8 N/A N/A 57. m-Xylene 2000 35162 060418 0.05 5.00 40001.0 NA NA 0.017 NA NA 1999,8 15.8 108-38-3 100 ppm (435mg/m3/8H) orl-rat 5o/kg 58. tert-Butyl benzene 35163 051118 0.05 5.00 40001.5 2000 NA NA 0.017 NA NA 1999.9 15.8 98-06-6 NI N/A 59. sec-Butyl benzene 35163 051118 0.05 5.00 40001.3 2000 NA NA 0.017 NA NA 1999.8 orl-rat 2240mg/kg 15.8 135-98-8 N/A 60. Chlorobenzene 35163 051118 0.05 40001.6 NA 0.017 NA 5.00 2000 NA NA 1999.9 15.8 108-90-7 orl-rat 2290mg/kg 75 ppm (350mg/m3/8H) 2-Chlorotoluene 35163 051118 0.05 40001.0 5.00 2000 NA NA 0.017 NA NA 1999.8 95-49-8 15.8 50 ppm (250mg/m3/8H) orl-rat 3900mg/kg 62, 4-Chlorotoluene 35163 051118 0.05 5.00 40001.4 2000 NA NA 0.017 NA NA 1999.8 15.9 106-43-4 N/A orl-rat 2100mg/kg 63. 1,2-Dichlorobenzene 35163 051118 0.05 5.00 40002.3 2000 NA NA 0.017 NA NA 1999. 15.8 95-50-1 50 ppm (300mg/m3) (CL) orl-rat 500mg/kg 051118 1,3-Dichlorobenzene 35163 0.05 5.00 40001.5 2000 NA NA 0.017 NA NA 1999.9 15.9 541-73-1 NVA lpr-mus 1062mg/kg 65. 1,4-Dichlorobenzene 35163 051118 0.05 5.00 40001.3 2000 NA NA 0.017 NA NA orl-rat 500mg/kg 1999.8 15.8 106-46-7 75 ppm (450mg/m3/8H) 66. Isopropylbenzene 5.00 35163 051118 0.05 40001.7 2000 NA NA 0.017 NA NA 1999.9 15.9 98-82-8 50 ppm (245mg/m3/8H) orl-rat 1400mg/kg 67 n-Propylbenzene 35163 051118 0.05 40001.0 NA 5.00 2000 NA 0.017 NA NA 1999.8 15.9 103-65-1 N/8 orl-rat 6040mg/kg 68. o-Xylena 35163 40001. 051118 0.05 5.00 2000 NA NA 0.017 NA NA 1999.6 100 ppm (435mg/m3/8H) 15.8 95-47-6 lpr-mus 1364mg/kg 69. p-Xylene 35163 051118 40001.3 2000 NA NA 0.05 5.00 0.017 NA NA 1999.8 15.8 106-42-3

NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

61

64

100 ppm (435mg/m3/8H)

orl-rat 5g/kg



Certified Reference Material CRM

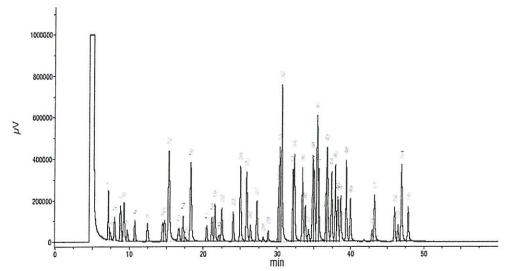




Run Length: 60.00 min, 36000 points at 10 points/second. Created: Wed, Jan 9, 2019 at 1:40:49 PM. Sampled: Sequence "010819-GC13M1", Method "GC13-M1". Analyzed using Method "GC13-M1".

Comments

Comments GC13-M1 Analysis by Candice Warren Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min., Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min. Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.), Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C. FID Signal = Edaq Channel 1 Standard injection = 0.5µL, Range=3



eak #	Analyta	FID R	
1	Ether	(min.)	
2	1.1.2-Trict.love-1.2.2 trifluorov hone	7 37	
3	1.1-Detrivergeneration	7.99	
4	Acetoritiza	5 80	
5	i furvethase	9 01	
6	and change	9.27	
7	Carbon disulfide/ Hethylens chlorida	0 73	
-	times 1,2 Own-proethene	10 73	
9	1.1-Distriburocthane	12 44	
10	2,2 Octooropropane	14 49	
11	cla 1,2 at ch arouther a	14.76	
12	Hethacrylonitrile/Hethyl acrylate/Chloroform	18.33	
13	Isobutanoi/1,1,1-Tricklorosthane	16 69	
14	1.1-Distriproprise to	17 76	
:5	Carbien fetrazionica	17.72	
16	Benzene/1,2-Dichloroethane	16 29	
17	Trainingothere	20.45	
18	1.2 Distancements	21 17	
19	Hethyl methacry ate	21 56	
20	Branc an arresthane	22.05	
25	D-p methane	22.11	
22	2-Nitrum pane	22 45	
23	of 1,3-bith proproping	24	
24	Tewane	24.97	
25	Ethyl methacrylate/trans-1,3-Dichloropropene	21 82	
26	1.1.2 Trichloroethane	26.73	
22	Tetrachloroethene/1,3-Dichloropropane	27 20	
19	Distorroutiniscrethone	39.05	
29	1,2 Obromoethane	28.72	
30	C o entere	70.14	
31	Ethylbenzene/1,1,1,2-Tetrachloroethans	36 32	
32	m-Xylene/p-Xylene	30.59	
33	a lawe	32.12	
24	lityrove	23 30	
35	Isopropylbenzene/Bromoform	33 39	
36	de 1,4 Och ero 2-butche	33.99	
37	1.3.2.2 Tecrachier sethane	34.21	
38	1,2,3-Trichloropropane/n-Propylbanzene	34.82	
39	trans-1,4-Dickloro-2-butene/Promobenzene	34 99	
40	1,3,5-Trimethylbenzene/2-Chiorolaluene	35.42	
41	4 Christophilatero	39.62	
42	tert-Buty pendene	36 54	
43	1,2,4-Trimethylkenzene/Pentachioroethane	36.28	
-4.4	sec-8-m/identione	37 38	
45	p Isopropylication	37.91	
46	1.3-Durnametersene	38 21	
47	1,4 Elightersteining	20 64	
48	n Buly benzene	39.38	
49	1,2 methorite time	28.90	
10	1,2 Oderomo 3-chieropropane	42 59	
53	Nimbergene	43 23	
52	1 2,4-Thumforcpultzene	45 05	
53	Hera therebulad and	46 41	
54	Naph = +c	46 90	
55	1.2.1 Trichler besture	47 79	

Safety Data Sheet (SDS)

GHS/OSHA Compliant

Section I Product and Company Identification **IDENTITY** ANALYTICAL STANDARD DISSOLVED IN METHANOL Manufacturer's Name ABSOLUTE STANDARDS INC Emergency Telephone USA & CANADA 1-800-535-5053 Address 44 Rossotto Dr. **Emergency Telephone International** 1-352-323-3500 Hamden CT, 06514 Date Prepared/Revised May 1, 2019 Section II - Hazards Identification GHS Classification in accordance with 29 CFR 1910 (OSHA HCS) **Highly Flammable Liquid and Vapor** H225 H301, 311, 331 Toxic if swallowed, skin contact, inhaled H370 Cause damage to organs H351 Suspected of causing cancer P271 Use in ventilated area P280 Use gloves, eye protection/face sheild P302,332 If on skin, wash with soap and water P305,351,338 If in eyes, remove contacts, rinse with water Signal Word: DANGER Section III - Composition Components (Specific Chemical Identity; Common Name(s)) % (optional) METHYL ALCOHOL Methanol CAS#: 67-56-1 > 97 See Certified Weight Report For Other Analytes Present At Trace Quantities. INTENDED USE: REFERENCE MATERIAL Section IV. FIRST AID MEASURES General advice Consult a physician. Show this safety data sheet to the doctor in attendance. Move to safe area. If inhaled If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. Wash with soap and water. Consult a physician. In case of skin contact In case of eye contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. If swallowed Do NOT induce vomiting. Rinse mouth with water. Consult a physician. Section V. FIREFIGHTING MEASURES Flammability Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking. Suitable extinguishing media Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Protective equipment for fire Wear self contained breathing apparatus for fire fighting if necessary. Section VI. ACCIDENTAL RELEASE MEASURES Personal precautions Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Vapours accumulate to form explosive concentrations. Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Environmental precautions Clean up Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). Section VII. HANDLING AND STORAGE Precautions for safe handling Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. Storage Conditions Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION Methanol 67-56-1 TWA 200 ppm TWA 200 ppm Skin notation Potential for skin absorption, ingestion and inhalation. Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Personal protective equipment Eye protection. Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product. Section IX - Physical/Chemical Characteristics

Absolute Standards in	IC.	Hamden, CT 06518-0585	FAX: 203-281-2922	
Boiling Point	65°C	Specific Gravity (H2O = 1)	0.79	
Vapor Pressure (mm Hg)	96	Melting Point	-98°C	
Vapor Density (AIR = 1)	1.11	Evaporation rate (Butyl Acetate = 1)	4.6	
Solubility in Water	COMPLETE			

PO Box 5585

Appearance and Odor CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.

Section X. STABILITY AND REACTIVITY

Abcolute Standards Inc

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

Section XV. REGULATORY INFORMATION

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

Section XVI. Misc. INFORMATION

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

Phone: 203-281-2917



CERTIFIED REFERENCE MATERIAL

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. :	30042	Lot No.:	A0160196	
Description :	502.2 Calibration Mix #1			
	502.2 Calibration Mix #1 2,000	0µg/mL, P&T Methanol, 1	1mL/ampul	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	December 31, 2026	Storage:	0°C or colder	

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	Dichlorodifluoromethane (CFC-12) CAS # 75-71-8 (Lot 00012554) Purity 99%	, , , , , , , , , , , , , , , , , , , ,	+/- 13.6549 μg/mL Gravimetric +/- 112.4100 μg/mL Unstressed +/- 115.0297 μg/mL Stressed
2	Chloromethane (methyl chloride) CAS # 74-87-3 (Lot SHBK6571) Purity 99%	-,	+/- 13.2219 μg/mL Gravimetric +/- 112.3743 μg/mL Unstressed +/- 114.9956 μg/mL Stressed
3	Vinyl chloride CAS # 75-01-4 (Lot 00015559) Purity 99%	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	+/- 13.9531 μg/mL Gravimetric +/- 112.5119 μg/mL Unstressed +/- 115.1324 μg/mL Stressed
4	Bromomethane (methyl bromide) CAS # 74-83-9 (Lot 101604) Purity 99%		+/- 13.8657 μg/mL Gravimetric +/- 112.3970 μg/mL Unstressed +/- 115.0153 μg/mL Stressed
5	Chloroethane (ethyl chloride) CAS # 75-00-3 (Lot 107-401039114-1) Purity 99%		+/- 13.2647 μg/mL Gravimetric +/- 112.2929 μg/mL Unstressed +/- 114.9120 μg/mL Stressed
6	Trichlorofluoromethane (CFC-11) CAS # 75-69-4 (Lot MKCJ8658) Purity 99%		+/- 13.9770 μg/mL Gravimetric +/- 112.4806 μg/mL Unstressed +/- 115.1001 μg/mL Stressed

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

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

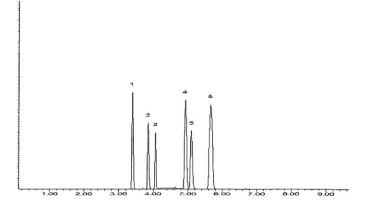
Carrier Gas: helium-constant flow 2.0 mL/min.

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

Inj. Temp: 200°C

Det. Temp: 250°C

Det. Type: MSD



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.



Date Mixed: 22-Apr-2020

Balance: B707717271

10.00

Date Passed: 27-Apr-2020

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
 www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



Nothanol UTTRA RESI-ANALYZED For Purge and Trap Analyzes

Material No.:9077-02 Batch No.: 0000230446 Παπυfactured Date:2019/04/10 Expiration Date:2022/04/10 Expiration No: 1 Revision No: 1

Certificate of Analysis

Electroconductivity Detection (ELCD) Below CRQL	teaT sesseq	Тq
Photoionization Detection (PID) Below CRQL	Passes Test	Тq
Water (by KF, coulometric)	% 80.0 =>	10.0 >
Titrable Base (µeq/g)	1.0 =:~	10*0:-
Titrable Acid (µeq/g)	5.0 =>	Z.0
Residue after Evaporation	mqq 0000.f =>	0.3000
Assay (CH3OH) (by GC, corrected for water)	% 6.66 =<	0°00 L
1651	Specification	fluz9A

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: US Packaging Site: Phillipsburg Mfg Ctr & DC

Vice President Global Quality Jamie Ethier inter 1 Amin

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. Phone: 610.386.1700 Methanol ULTRA RESI–ANALYZED For Purge and Trap Analysis





Material No.: 9077-02 Batch No.: 0000258810 Manufactured Date: 2020/04/01 Expiration Date: 2023/04/01 Revision No: 1

Certificate of Analysis

Test	Specification	Result
Assay (CH₃OH) (by GC, corrected for water)	>= 99.9 %	100.0
Residue after Evaporation	<= 1.0000 ppm	0.5000
Titrable Acid (µeq/g)	<= 0.3	0.2
Titrable Base (µeq/g)	<= 0.1	< 0.01
Water (by KF, coulometric)	<= 0.08 %	< 0.01
Volatile Organic Trace Analysis – Below EPA 8260B CRQL	Conforms / Fails	Conforms

Performance Tested for Use in EPA Methods 500 Series for Drinking Water 600 Series for Wastewater 846 for Solid Waste

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



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

	-	1080 # to 1 08019 #	Part # 0
measurements unless otherwise stated. ghts traceable to NIST (see above). propriate laboratory conditions. nd Expressing the Uncertainty of NIST Measurement Result," 14).	 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated. Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above). Standards are certified (+/·) 0.5% of the stated value, unless otherwise stated. All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions. Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994). 	• The certified v • Standards are • Standards are • All Standards • Uncertainty R NIST Technic	
->0 44 65 75 85 119 158 169 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170	0 35.00 40.00 45.00 50.00 55.00 60.0t ^{m/z>0}	Time> ⁰ 10.00 15.00 20.00 25.00 30.00 35.00	Time
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50000 40000 ad	40.50	200000	200
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nce 27	9005.D Abundance	Abundance Rog	Abund
S°C (Time 1 = 10min.), Temp. 2=200°C (Time 2 = 8.75 min. acrolein, and any dilutions thereof, should be used immediately acrolein.	ctor (Scan mode). Column: Vocol (60m X 0.25mm ID X 1.5 μ m film thi mp = 220°C. Analyst: Pedro Rentas. NOTE: Due to the instability of a tour technical department if further information is required.	Method: GC6MSD-1. Detector: Mass Selective Den Rate = 4°C/min., Injector Temp. = 200°C. Detector T Long ferm storage is not recommended. Please contact	
orl-ra	04715LL 5000 97 0.2 0.05157	Acrolein 5	1. <u>A</u>
Expanded SDS Information Actual Actual Uncertainty (Solvent Safety Info. On Attached pg.) Weight(g) Conc (ug/mL) (+/-) (ug/mL) CAS# OSHA PEL (TWA) LDS0	Lot Nominal Purity Uncertainty Target Number Conc (µg/mL) (%) Purity Weight(g)	Compound RM#	1 0
Reviewed By: Pedro L. Rentas DATE	040621 Refrigerate (4 °C) 5000 23060 5E-05 Balance Uncertainty ad to (mL): 10.0 0.007 Flask Uncertainty	Expiration Date: 040621 Recommended Storage: Refrigerate Nominal Concentration (µg/mL): 5000 NIST Test ID#: 23060 Weight(s) shown below were combined and diluted to (mL):	Z
Lott 120720Q	<u>91980</u> <u>030621</u> <u>Acrolein</u> Water	<u>CERTIFIED WEIGHT REPORT</u> Part Number: Lot Number: Description:	CERTIF
Certified Reference Material CRM ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com	Certified Refere	Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com	Absc 800-36 www.a

Printed: 3/8/2021, 12:22:30 PM

1 of 1

 The certified value is the conce Standards are prepared gravir Standards are certified (+i/-) 0.2 All Standards, after opening an Uncertainty Reference: Taylon NIST Technical Note 1297, U.2 	Time> ⁰ 10.00 15.00 20.00 25.00 30.00 35.00 40.00	50000	100000	150000	200000	Abundance TIC: [BSB2]79005.D 250000 8.93	 ACIVIEITI 5 07813BN Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode) Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. An Long term storage is not recommended. Please contact our technical dep 	Compound Lot Arrolein RM# Number	Expiration Date: 040821 Recommended Storage: Refrigerate (4 °C) Nominal Concentration (µg/mL): 5000 NIST Test ID#: 23060 Weight(s) shown below were combined and diluted to (mL):	<u>CERTIFIED WEIGHT REPORT</u> Part Number: <u>91980</u> Lot Number: <u>030821</u> Description: <u>Acrolein</u>	Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com
 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated. Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above). Standards, are certified (+t-) 0.5% of the stated value, unless otherwise stated. All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions. Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994). 	00 45.00 50.00 55.00 60.0(^{m/z>0} 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170	10000 37	2000	40000	5000 56	Abundance 27 60000 Scan 232 (8.927 min): [BSB2]79005.D	init 5 07813BN 5000 97 0.2 0.10302 0.10350 5023.4 21.3 107-02-8 0.1 ppm orl-rat 46mg/kg Method: GC6MSD-1. Detector: Mass Selective Detector (Scan mode). Column: Vocol (60m X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp, 1 = 35°C (Time 1 = 10min.), Temp, 2=200°C (Time 2 = 8.75 min.) Rate = 4°C/min., Injector Temp, = 200°C, Detector: Temp, = 220°C. Analyst: Pedro Renas. NOTE: Due to the instability of acrolein in solution, all solutions of acrolein, and any dilutions thereof, should be used immediately Long term storage is not recommended. Please contact our technical department if further information is required. Note: Profile: Temp, and any dilutions of acrolein. Note: Profile: Temp, and any dilutions thereof, should be used immediately		 °C) 5E-05 Balance Uncertainty 20.0 0.002 Flask Uncertainty 		Certified Reference Material CRM ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com

1 of 1

Absolute S	Standards I	nc.	Ha	PO Box 5585 amden, CT 06518-058	35	Phone: 203-281-2917 FAX: 203-281-2922
		Safety Data	Sheet (SDS)	GHS/OSHA Co	mpliant	
Section I Produ	ict and Co	mpany Identification				
IDENTITY Manufacturer's N Address		CAL STANDARD DIS ABSOLUTE STANE 44 Rossotto Dr. Hamden CT, 06514	DARDS INC	Emergency Tel	ephone USA & CANADA ephone International Revised	1-800-535-5053 1-352-323-3500 January 25, 2021
Section II - Haza	ards Identi	fication		,		
		CHC Classifi	ection in conce			
		GHS Classifi	cation in accor		R 1910 (OSHA HCS)	
Bost	an a strate a matrix post			H315	Causes skin and eye irrita	tion.
		ntilated area wash with soap and	l water	P280 P305,351,338	Use gloves, eye protection If in eyes, remove contacts	n/face sheild s, rinse with water
		Signal Word:	DANGER			
Section III - Com	position					
Components (Spe Water	ecific Cherr	nical Identity; Commo	n Name(s))	CAS#: 7732-18-	5	% (optional) > 97
See Certified V	Weight R	eport For Other A	nalytes Prese	ent At Trace Qu	antities.	
Section IV. FIRST						
General advice If inhaled In case of skin conta In case of eye conta If swallowed		Consult a physician. She If inhaled, move person Wash with soap and wat Rinse thoroughly with ple Do NOT induce vomiting	into fresh air. If not l er. Consult a physi enty of water for at l	breathing, give artificia cian. east 15 minutes and e	attendance.Move to safe area. al respiration. Consult a physician. consult a physician. ician.	
Section V. FIREF	IGHTING N	IEASURES			· · · · · · · · · · · · · · · · · · ·	
Suitable extinguishin Protective equipmen Hazardous Decompo	nt for fire	Wear self contain		am, dry chemical or c atus for fire fighting if		
Section VI. ACCI	DENTAL R	ELEASE MEASURES	S			
Personal precautions Environmental precau Clean up	itions	Prevent further leakage of	late to form explosi or spillage if safe to	ve concentrations. do so. Do not let prod	Ensure adequate ventilation. Remov uct enter drains. sal according to local regulations (se	
Section VII. HANE	DLING ANI	O STORAGE	- P			
Precautions for safe ha	andling	Avoid contact with	skin and eves Ave	bid inhalation of vapou	ur or mist	
Storage Conditions	J	Use ventilation Ke	ep away from source htly closed in a dry	ces of ignition. No sm	ioking. Prevent the build up of elect ace. Containers which are opened i	rostatic charge. must be carefully resealed
Section VIII. EXPO	OSURE CO	NTROLS/PERSONA	L PROTECTION	4		
Water		CAS#: 7732-18-5	TWA: 500 ppm	а 19. – У 19. – У 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 19. – 1	far far en fra	
Personal protective eq Avoid contact with skin		Respiratory protection othing. Wash hands thore	Handle with glove bughly after handling	s. Gloves must be ins g the product.	pected prior to use. Eye protection	on.
Section IX - PHYS	SICAL/CHE	MICAL CHARACTER	RISTICS			
			1			

Absolute Standards Inc.	PO Box 5585 Hamden, CT 06518-0585	Phone: 203-281-2917 FAX: 203-281-2922
Boiling Point	Specific Gravity ((H2O = 1)
Vapor Pressure (mm Hg)	Melting Point	0°C
Vapor Density (AIR = 1)	NA Evaporation rate	
	NA (Butyl Acetate = 1	
Solubility in Water Completely miscible		
Appearance and Odor CLEAR, COLORLESS	IQUID WITH SLIGHT CHEMIC.	CAL ODOR.
Section X. STABILITY AND REACTIVITY		
Chemical stability Stable under recommoder Possibility of hazardous reactions NA Conditions to avoid NA Materials to avoid NA Hazardous decomposition products - No data available	ended storage conditions.	
Section XI. TOXICOLOGICAL INFORMATION		
LC50 Inhalation - Rat NA LD50 Dermal - Guinea pig NA Causes skin irritation. Eye irritation		
Section XII. ECOLOGICAL INFORMATION		
LC50 NA EC50 NA		
Section XIII. DISPOSAL CONSIDERATIONS		
Dispose with normal Laboratory Solvent Waste.		
Section XIV. TRANSPORT INFORMATION		
DOT (US) Not dangerous goods Proper shipping name: Water	IATA Not dangerous go Proper shipping n	oods name: Water
Section XV. REGULATORY INFORMATION		
SARA 302: No chemicals in this material are subject to the repo	ing requirements of SARA Title III, Se	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 warm of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Material Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

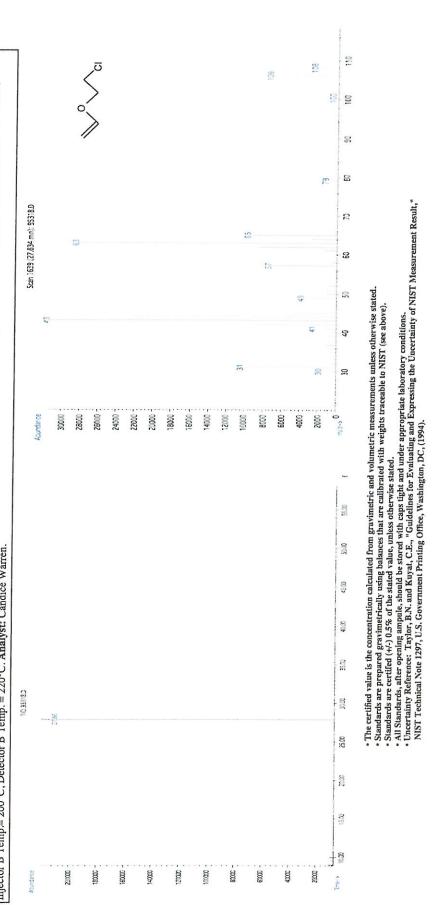
Absolute Standards, In	i
800-368-1131	
www.absolutestandards.com	

Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT													
Part Number:	Ľ	95318			0,	Solvent(s):	Lot#						I
Lot Number:	Ľ	082620				Methanol	DX932-US			()	/		
Description:	Ë	2-Chloroethyl vinyl ether	vinyl ether						~	1 mg	inter.	082620	
									Formulated By:		Benson Chan	DATE	1
Expiration Date:		082623											
Recommended Storage:		Refrigerate (4 °C)	() ·							0	0		
Nominal Concentration (µg/mL):		10000								letto	Rento		
NIST Test ID#:	#:	23060		5E-05	5E-05 Balance Uncertainty	y			Reviewed Rv.		Dadro I Dantas	02020	-1
Weight(s) shown below were combined and diluted to (mL):	d and dilut	ed to (mL):	30.0	0.002	0.002 Flask Uncertainty			_	6				
									Expanded		SDS Information		
Compared of the second s			Nominal	Purity	Purity Uncertainty	Target	Actual	Actual	Uncertainty (Solvent Si	Uncertainty (Solvent Safety Info. On Attached pg.)	ned pa.)	
Compound	RM#	RM# Lot Number	Conc (µg/mL)	(%)	Purity	Weight (g)	Weight (g)	Conc(µg/mL) (+/-) (µg/mL)	(+/-) (hg/mL)	CAS#	OSHA PEL (TWA)	1050	
1. 2-Chloroethyl vinyl ether	74	74 MKCD0033 10000	10000	66	0.2	0.30284	0.30289	10001.7	40.6	110-75-8	N/A	ort-rat 250molles	
Method: GC6MSD-1.M. Detector: MSD. Column: (60m X 0.5mm X 1.5 m). Onen B-netto: Town 1 - 2560 m; 1.1 0.1 m 2 0000 m; 1.2 m; 1	(SD. Colu	mn: (60m X 0	1 25mm X 1 5	0 (Long Droflor	7 mm 1 - 250		E				Rufillions Int. In	1
Injector B Temp.= 200°C, Detector B Temp.= 220°C. Analyst: Candice Warren.	Temp. = 2	20°C. Analyst	t: Candice Wa	rren.		cc = I dima	r (11mc l≡1	umu.), 1emp	$z = 200^{\circ}C$ (Ti	me 2=8.75	min.), Rate = 4°C/mii		



Lot # 082620 Part # 95318

Safety Data Sheet (SDS) GHS/OSHA Compliant

Section I Product and Company Identification

IDENTITY ANAL	YTICAL STANDARD DISSOLVED IN	METHANOL		
Manufacturer's Name	ABSOLUTE STANDARDS INC	Emergency Tele	phone USA & CANADA	1-800-535-5053
Address	44 Rossotto Dr. Hamden CT, 06514	Emergency Telephone International 1-352		1-352-323-3500 May 1, 2015
Section II - Hazards Id	lentification			
	GHS Classification in acco	rdance with 29 CF	R 1910 (OSHA HCS)	
H370 Cause	r Flammable Liquid and Vapor damage to organs ventilated area	H301, 311, 331 H351 P280	Toxic if swallowed, skin cor Suspected of causing cance Use gloves, eye protection//	er

Components (Specific Chemical Identity; Common Name(s)) Methanol METHYL ALCOHOL CAS#:

CAS#: 67-56-1

% (optional) > 97

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

Section IV. FIRST AID MEASURES

Section III - Composition

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

Section V. FIREFIGHTING MEASURES

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

Section VI. ACCIDENTAL RELEASE MEASURES

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

Section VII. HANDLING AND STORAGE

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

Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Methanol 67-56-1 TWA 200 ppm

Skin notation TWA 200 ppm

Potential for skin absorption , ingestion and inhalation.

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

Section IX - Physical/Chemical Characteristics

Absolute Standards Inc.	PO Box 5585 Hamden, CT 06518-0585		Phone: 203-281-2917 FAX: 203-281-2922	
Boiling Point	65°C	Specific Gravity (H2O = 1)	0.70	
Vapor Pressure (mm Hg)		Melting Point	0.79	
96 96 Vapor Density (AIR = 1) Evaporation rate 1.11 (Butyl Acetate = 1)			-98°C 4.6	
Solubility in Water COMPLETE	1.11			
Appearance and Odor CLEAR, COLORLE	SS LIQUID W	ITH CHARACTERISTIC PUNGENT ODOR.		
Section X. STABILITY AND REACTIVITY				
Materials to avoid Acid chlorides, Aci Hazardous decomposition products formed under fire con	explosive mixtur ks, extreme temp id anhydrides, Ox	e with air. perature and sunlight. kidizing agents, Alkali metals, Reducing agents, Acids		
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 FO	R REPORTAE	LE QUANTITY OF 5000 lbs.		
LC5015,400 mg/l - 96 hEC5024,500.00 mg/l - 48 hEC10010,000.00 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: 1 Proper shippi	1230 Class: 3 Packing group: II ng name: Methanol		
Section XV. REGULATORY INFORMATION				
OSHA Hazards Flammable liquid, Target Organ Effect, SARA 302: No chemicals in this material are subject to the	an management of the second second second	on., Toxic by ingestion, Toxic by skin absorption, Irritant ements of SARA Title III, Section 302.		
Section XVI. Misc. INFORMATION				
1910.1200 et. seq.) and Global Harmonized System (GHS). This doct supervised by a person trained in chemical handling. The user is respo usage, protective clothing including eye and face guards and respirator	ument is intended on onsible for determining rs must be used to av	ates Occupational Safety and Health Act and regulations promulgated the y as a guide to the appropriate precautionary handling of the material by t ng the precautions and dangers of this chemical for his or her particular ap oid contact with material or breathing chemical vapors/fumes. Exposure potential uses are so varied, ABSOLUTE STANDARDS INC. cannot w	rained personnel, or plication. Depending on to this product may have	

basics, protective fortung including eye and face guards and respirators must be devide of a devine of the inflaterial of obtaining including product must be prostructed with a product must have been been been as a serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, ABSOLUTE STANDARDS INC. Cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. warrants that the chemical meets the specifications set forth on the label. ABSOLUTE STANDARDS INC DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR APPLICATION. The user should recognize that this product can cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.



CERTIFIED REFERENCE MATERIAL

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. :	30489	Lot No.:	A0162411	-
Description :	8260B Acetates Mix			
	8260B Acetates Mix 2,000 µg/mL, F	&T Methanol, 1mL	/ampul	_
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	January 31, 2022	Storage:	0°C or colder	
Handling:	This product is photosensitive.	-		_

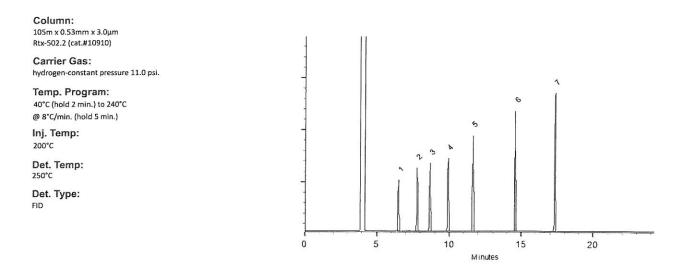
CERTIFIED VALUES

Elution .Order	an a	Compound	Grav. Conc. (weight/volume)		Expanded U (95% C.L.; H		anne an an ann an
1	Methyl acetate CAS # 79-20- Purity 99%	9 (Lot SHBK5436)	2,013.0 µg/mL	+/- +/- +/-	11.7308 121.4558 121.7442	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	Vinyl acetate CAS # 108-05 Purity 99%	-4 (Lot RD200601)	2,007.5 µg/mL	+/- +/- +/-	11.6987 121.1240 121.4115	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	Ethyl acetate CAS # 141-78 Purity 99%	-6 (Lot SHBL3655)	2,007.3 μg/mL	+/- +/- +/-	11.6973 121.1089 121.3964	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	Isopropyl acetate CAS # 108-21 Purity 99%	-4 (Lot BCBT9845)	2,007.0 µg/mL	+/- +/- +/-	11.6958 121.0938 121.3813	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
5	Propyl acetate CAS # 109-60 Purity 99%	-4 (Lot FGL01)	2,004.0 μg/mL	+/- +/- +/-	11.6784 120.9128 121.1999	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
6	Butyl acetate CAS # 123-86 Purity 99%	-4 (Lot SHBK5137)	2,007.5 μg/mL	+/- +/- +/-	11.6987 121.1240 121.4115	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
7	Amyl acetate CAS # 628-63 Purity 99%	.7 (Lot 41325/1)	2,013.8 μg/mL	+/- +/- +/-	11.7352 121.5011 121.7895	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed

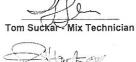
Solvent:	P&T Methanol			
	CAS #	67-56-1		
	Purity	99%		

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.



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.



Date Mixed:

09-Jul-2020

Balance: B707717271



Date Passed: 13-Jul-2020 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 <u>www.restek.com/Contact-Us</u> for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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.



Safety Data Sheet Revision Date: 12/04/20

www.restek.com

2 Letter ISO country code/language code: US/EN

Catalog Number / Product Name: Company: Address:

Phone#: Fax#: Emergency#:

1. IDENTIFICATION

Email: Revision Number: Intended use: **30489 / 8260B Acetates Mix** Restek Corporation 110 Benner Circle Bellefonte, Pa. 16823 814-353-1300 814-353-1309 800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US) www.restek.com 15 For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:



GHS Classification:	Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1 Flammable Liquid Category 2 Carcinogenicity Category 2 Acute Toxicity - Inhalation Dust / Mist Category 3 Acute Toxicity - Dermal Category 3 Acute Toxicity - Oral Category 3
GHS Signal Word:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Toxic if swallowed, in contact with skin or if inhaled. Suspected of causing cancer. Causes damage to organs.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Measures:	IF SWALLOWED: Immediately call a POISON CENTER/doctor/ IF ON SKIN: Wash with plenty of soap and water. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Specific treatment see section 4. Rinse mouth.

	Take off immediately all contaminated clothing and wash it before reuse. In case of fire: Use extinguishing media in section 5 for extinction.
Storage:	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS.
Single Exposure Target Organs: Repeated Exposure Target Organs:	Specific target organ toxicity - Single exposure - STOT SE 1: H370 Causes damage to organs. (C >= 10 %; No information to prove exclusion of certain routes of exposure); Specific target organ toxicity - Single exposure - STOT SE 2: H371 May cause damage to organs. (3 % <= C <10 %; Concentration limits for acute toxicity cannot be translated into GHS from the DSD especially when minimum classifications are given) No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
P&T Methanol	67-56-1	200-659-6	98.6
Propyl acetate	109-60-4	203-686-1	0.2
Isopropyl acetate	108-21-4	203-561-1	0.2
Vinyl acetate	108-05-4	203-545-4	0.2
Butyl acetate	123-86-4	204-658-1	0.2
Methyl acetate	79-20-9	201-185-2	0.2
Ethyl acetate	141-78-6	205-500-4	0.2
Amyl acetate	628-63-7	211-047-3	0.2

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention. Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician.
Skin Contact:	Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.
Ingestion:	Minimal risk of harm if swallowed. Do not induce vomiting. Seek medical attention immediately. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire. Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire.
Fire and/or Explosion Hazards:	Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back
Fire Fighting Methods and Protection:	Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Methods for Clean-up:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits. Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.
7. HANDLING AND STORAGE	
Handling Technical Measures and Preca	utions: Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment Wash

	spark-proof tools and explosion-proof equipment Wash thoroughly after handling Avoid contact with material. Remove contaminated clothing and wash before reuse "Empty" containers retain product residue (liquid and/or vapor) and can be dangerous.		
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition Keep away from heat, sparks, and flame		

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:					
Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
P&T Methanol	67-56-1	6000 ppm IDLH	250 ppm STEL	200 ppm TWA	200 ppm TWA; 260 mg/m3 TWA
Vinyl acetate	108-05-4	Not established	15 ppm STEL; 53 mg/m3 STEL	10 ppm TWA; 35 mg/m3 TWA	No data available
Personal Protection	• · ·				
Engineering Measu	res:		Local exhaust ve	entilation or other enginee	ring controls are normally required
Doominater Ducto			when handling o	r using this product to avo	id overexposure.
Respiratory Protect	ion:		No respiratory pr	otection required under n	ormal conditions of use. Provide
			general room exi	naust ventilation if sympto	oms of overexposure occur as explained uired.If an exposure limit is exceeded
			or if an operator	is experiencing symptoms	s of inhalation overexposure as
			explained in Sec	tion 3, provide respiratory	protection.
Eye Protection:			Wear chemically	resistant safety glasses v	with side shields when handling this
Skin Protection:				vear contact lenses.	
onin riotodion.			practice good pa	sideled a skin nazard. Wi	here use can result in skin contact,
			surgical style glou	woo Woob bondo and ath	a barrier cream and/or impervious
			water before eati	ves. wash hands and oth	er exposed areas with mild soap and
			Inspect aloves for	r chemical broak through	aving work. Wear protective gloves. and replace at regular intervals. Clean
			nrotective equina	Pent regularly Wash hone	and other exposed areas with mild
			soap and water h	before eating, drinking, and	d when leaving work
				siere earlig, armitily, and	a when leaving work

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	No data available
Odor:	Mild
Physical State:	Liquid
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	1.1 (air = 1)
Boiling Point (°C):	72.8 °C (HSDB) 64.7 °C at 760 mmHg (HSDB)

30489 / 8260B Acetates Mix

Melting Point (°C): Flash Point (°F): Flammability: Upper Flammable/Expl Lower Flammable/Expl Autoignition Temperatu Decomposition Temper Specific Gravity: Evaporation Rate: Odor Threshold: Solubility: Partition Coefficient: n- VOC % by weight: Molecular Weight:	1 osive Limit, % in air: 3 osive Limit, % in air: 6 ure (°C): 4 rature (°C): 0 N N -octanol in water: N 9	164 deg C
10. STABILITY AND RE	ACTIVITY	
Stability: Conditions to Avoid: Materials to Avoid / Cho Hazardous Decomposit		Stable under normal conditions. None known.Contamination Acids Oxidizing materials Peroxides Strong alkalies Carbon dioxide Carbon monoxide
11. TOXICOLOGICAL IN	IFORMATION	
Routes of Entry: Target Organs Potentia Chemical Interactions 1		Inhalation, Skin Contact, Eye Contact, Ingestion Ire: Eyes, Central nervous system stimulation, Skin, Gl Tract, Respiratory Tract None Known
Chemical interactions	mat change Toxicity.	None Klown
Immediate (Acute) Healt Inhalation Irritation:		Exposure: espiratory irritation, dizziness, weakness, fatigue, nausea
Inhalation Toxicity:	Harmful! Can cause sy central nervous system	rstemic damage (see "Target Organs)Methanol can cause n depression and overexposure can cause damage to the
Skin Contact:		visual impairment or blindness. kin irritation, defatting, and dermatitis. Not likely to cause
Eye Contact:	Can cause moderate in permanently injure eye	rritation, tearing and reddening, but not likely to
Ingestion Irritation:	Irritating to mouth, thro	at, and stomach. Can cause abdominal discomfort, diarrhea.Highly toxic and may be fatal if swallowed.
Ingestion Toxicity:	Toxic if swallowed. May swallowed.	y cause target organ failure and/or death.May be fatal if
Long-Term (Chronic) He	alth Effects:	
Carcinogenicity: Reproductive and Deve	Innmental Toxicity:	No data. No data available to indicate product or any components
Inhalation:	iopmental Toxicity.	present at greater than 0.1% may cause birth defects. Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)
Skin Contact:		Upon prolonged or repeated contact, can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.
Skin Absorption:		Upon prolonged or repeated exposure, no hazard in
Ingestion:		normal industrial use. Toxic if swallowed. May cause target organ failure and/or death.
Component Toxicologic NIOSH:	al Data:	
Chemical Name Vinyl acetate Acetic acid, vinyl ester	CAS No. 108-05-4	LD50/LC50 Inhalation LC50 Rat : 11400 mg/m3/4H; Inhalation LC50 Mouse : 1550 ppm/4H; Oral LD50 Rat : 2920 mg/kg; Oral LD50 Mouse : 1613 mg/kg; Dermal LD50 Rabbit : 2335 mg/kg

Methanol	67-56-1	6-1 Inhalation LC50 Rat 22500 ppm 8 h	
Component Carcinogenic Data OSHA: Chemical Name Vinyl acetate	CAS No. 108-05-4	Present	
ACGIH: Chemical Name Vinyl acetate	CAS No. 108-05-4	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans	
NIOSH: Chemical Name No data available	CAS No.		
NTP: Chemical Name No data available	CAS No.		
IARC: Chemical Name Monograph 63; 1995	CAS No. 108-05-4	Group No. Group 2B	
12. ECOLOGICAL INFORMATIC	DN		
Overview:		Moderate ecological hazard. This product may be dangerous	
Mobility: Persistence: Bioaccumulation: Degradability: Ecological Toxicity Data:		to plants and/or wildlife. No data No data Biodegrades slowly. No data available	
13. DISPOSAL CONSIDERATIO	NS		
Waste Description of Spent Pro Disposal Methods: Waste Disposal of Packaging:	oduct:	Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures. Dispose of by incineration following Federal, State, Local, or Provincial regulations. Comply with all Local, State, Federal, and Provincial Environmental Regulations.	
14. TRANSPORTATION INFORM	IATION		
United States: DOT Proper Shipping Name: UN Number: Hazard Class: Packing Group:		Flammable liquids, n.o.s. (Methanol, Ethyl acetate) UN1993 3 3 II	
International: IATA Proper Shipping Name: UN Number: Hazard Class: Packing Group:		Flammable liquids, n.o.s. (Methanol, Ethyl acetate) UN1993 3 II	

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine
No data available			Pollutant

15. REGULATORY INFORMATION

30489 / 8260B Acetates Mix

United States: Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
P&T Methanol	67-56-1	Х	Х		Х
Vinyl acetate	108-05-4	Х	Х	Х	Х

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Methanol	67-56-1	Prop 65 Devolop Tox

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
P&T Methanol	67-56-1	X	X	Х	Х
Propyl acetate	109-60-4	X	X	Х	X
Isopropyl acetate	108-21-4	X	X	Х	X
Vinyl acetate	108-05-4	X	X	Х	X
Butyl acetate	123-86-4	X	X	X	X
Methyl acetate	79-20-9	X	X	Х	X
Ethyl acetate	141-78-6	Х	X	Х	X
Amyl acetate	628-63-7	X	X	Х	X

16. OTHER INFORMATION

Prior Version Date:	05/14/19
Other Information:	Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References:	No data available
Disclaimer:	Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.



CERTIFIED REFERENCE MATERIAL

Certificate of Composition





Tel: (800)356-1688 Fax: (814)353-1309

Bellefonte, PA 16823-8812

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. :	555408-FL	A0164091			
Description :	Custom Vinyl Acetate Standard				
	Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/ampul				
Container Size :	2 mL	Pkg Amt:	> 1 mL		
Expiration Date :	March 31, 2022	Storage:	0°C or colder		
Handling:	This product is photosensitive.	Ship:	Ambient		

CERTIFIED VALUES

tulat

Elution Order		Ca	ompound	Grav. (weight/			Expanded ((95% C.L.;)	and the second se	
1	Vinyl ac CAS # Purity	etate 108-05-4 99%	(Lot 192709KJ)	8,080.0	μg/mL	+/- +/- +/-	47.4180 487.5448 488.7021	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Me CAS #	thanol 67-56-1					an de la composición		

Tech Tips:

Purity

99%

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.

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

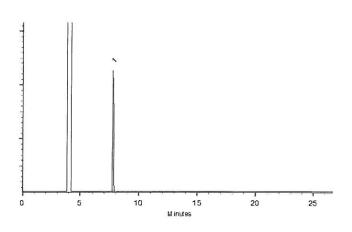
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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

Inj. Temp: 200°C

Det. Temp: 250°C

Det. Type: FID



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

Burn hill Brandon Reish - Mix Technician

Date Mixed:

Balance: 1127510105



Date Passed: 10-Sep-2020

01-Sep-2020

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

General Certified Reference Material Notes

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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:

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CERTIFIED REFERENCE MATERIAL

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

www.restek.com



Certificate of Composition



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

Catalog No. :	555408-SL	A0164211		
Description :	Custom Vinyl Acetate Standard			
	Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/ampul			
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	March 31, 2022	Storage:	0°C or colder	
Handling:	This product is photosensitive.	Ship:	Ambient	

CERTIFIED VALUES

Elution Order	Co	mpound	Grav. Conc. (weight/volume)	Expanded (95% C.L.;		7.1
1	Vinyl acetate CAS # 108-05-4 Purity 99%	(Lot 192709KJ)	8,010.0 μg/mL	47.0072 483.3210 484.4683	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Methanol CAS # 67-56-1			 dia dia 1		

Tech Tips:

Purity

99%

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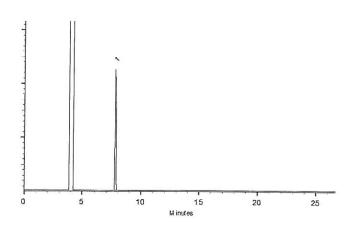
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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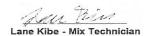
Inj. Temp: 200°C

Det. Temp: 250°C

Det. Type: FID



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



Date Mixed:

Balance: B251644995



Date Passed: 10-Sep-2020

08-Sep-2020

The set of the last of the las

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

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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.



CERTIFIED REFERENCE MATERIAL

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

www.restek.com



Certificate of Composition



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

Catalog No. :	555408-SL Lot No.: <u>A0168095</u>				
Description :	Custom Vinyl Acetate Standard	Vinyl Acetate Standard			
	Custom Vinyl Acetate Standard 8,000)µg/mL, P&T Metł	nanol, 1mL/ampul		
Container Size :	2 mL	Pkg Amt:	> 1 mL		
Expiration Date :	July 31, 2022	Storage:	-20°C or colder		
Handling:	This product is photosensitive.	Ship:	On Ice		

CERTIFIED VALUES

Elution Order		Compound	Grav. Conc. (weight/volum		Expanded (95% C.L.;	Uncertainty K=2)	
1	Vinyl acetate CAS # 108-05-4 Purity 99%	(Lot RD200601)	8,070.0 μg/n	nL +/- +/- +/-	47.3593 486.9414 488.0973	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Methanol CAS # 67-56-1					11 <u>,</u>	

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.

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

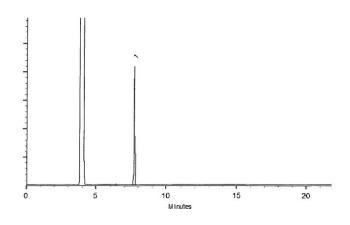
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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

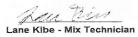
Inj. Temp: 200°C

Det. Temp: 250°C

Det. Type: FID



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



13-Jan-2021

Balance: 1128342314



Date Passed: 15-Jan-2021 Carrison (m)

Date Mixed:

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 <u>www.restek.com/Contact-Us</u> for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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.

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com

Certified Reference Material CRM



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

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050119 DATE	050119 DATE	ed pg.) LD50		ori-rat /8 mg/kg	ori-rat 26/Umg/kg	ori-rat 12/05mg/kg	UITIAL 04/ UMB/KG	ori-mus 5/ 00mg/kg	N/A	orl-rat 40/kg	orl-rat 39mg/kg	orl-rat 2500mo/kg	orl-rat 6408ma/kg	2	dt,"
Justin Dippold	Pedro L. Rentas	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) U	VIN	NIA	200 and 1060	500 nnm (2100mn/m3/8H)			line)/incomence with	NA	N/A	20 ppm (590mg/m3/8H)	N/A	rise stated. bove).	- Au Stautustus, arter opening ampute, should be stored with caps tight and under appropriate laboratory conditions. • Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).
d By:	BY:		107-13-1	100-60-9	110.82.7	108-20-3	123-91-1	67-72-1	108-87-2	1634-04-4	107-12-0	109-99-9	488-23-3	ts unless othern e to NIST (see a	oratory conditi g the Uncertain
Formulated By:	Reviewed By:	Expanded Uncertainty (+/-) (µg/mL)	40 A	81	5 6	8.1	161.6	8.1	8.1	8.1	80.8	40.1	8.7	c measurement ights traceable	ppropriate labo and Expressin 94).
		Expanded Actual Uncertainty Conc (µg/mL) (+/-) (µg/mL)	10002.4	2002.1	2001.5	2001.8	40003.8	2001.9	2001.5	2001.7	20002.4	10002.8	2002.1	and volumetri brated with we se stated.	ht and under a for Evaluating ington, DC, (19
Lot# DU230-US		Actual Weight(g)	1.01045	0.20124	0.20118	0.20222	4.04123	0.20223	0.20219	0.20059	2.02067	1.00139	0.21530	om gravimetric ces that are cali unless otherwi	d with caps tigl 2., "Guidelines i ng Office, Wash
Solvent(s): Methanol	2	Target Weight(g)	1.01021	0.20103	0.20103	0.20204	4.04085	0.20204	0.20204	0.20042	2.02042	1.00111	0.21508	 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated. Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above). Standards are certified (4/-) 0.5% of the stated value, unless otherwise stated. 	- An ownextue, arter openug ampute, should be stored with caps tight and under appropriate laboratory conditions. • Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).
	5E-05 Balance Uncertainty 0.001 Flask Uncertainty	Uncertainty Purity	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	the concentrati ed gravimetric d (+/-) 0.5% of 1	penng ampule, e: Taylor, B.N. 1297, U.S. Gov
	5E-05	Purity (%)	66	99.5	99.5	66	66	66	66	99.8	66	99.9	93	d value is are prepar are certife	vus, auter o / Referenc nical Note
<u>ions Mix</u> nts	°C) 100.0	Nominal Conc (µg/mL)	10000	2000	2000	2000	40000	2000	2000	2000	20000	00001	2000	 The certifie Standards Standards 	Uncertaint; NIST Tech
95319 050119 Revised Additions Mix 11 components 050122	Refrigerate (4 °C) Varied 6UTB ed to (mL):	Lot Number	4718CK	15538EZ	SHBD2795V	00412MX	03853KE	12604HBV	08046KN	02197JJ	1395468	113860	TUHA	TIC: 95319.D	26,83
	nd dilute	RM#	7	1072	1023	987	373	199	1627	209	645	200	421		26
Part Number: Lot Number: Description: Expiration Date:	Hecommended Storage: Refrigerate Nominal Concentration (µg/mL): Varied NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (mL):	Compound						6. Hexachloroethane	/. Methylcyclohexane	o. <u>Ivietriyi tert-buryi etner (MTBE)</u> 9 Dranianiteila		11 1934 Totromothylhosson	יייייייייייייייייייייייייייייייייייייי	Abundance	4000000

Lot # 050119 Part # 95319

MSD RT (min.) 13.56 13.79

Methyl tert-butyl ether (MTBE)

Di-isopropyl ether

Method GC6MSD-1: Column: Vocol (60m X 0.25mm ID X 1.5µm film thickness). Temp. 1 = 35°C (10min.), Temp. 2 = 200°C (8.75 min.), Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. Solvent Delay: 8 minutes. Analysis performed by Candice Warren.

20,18

13.79

2000000

18.53

3500000 -

3000000

2500000

Propionitrile Acrylonitrile

Tetrahydrofuran 1-Chlorobutane Cyclohexane

Name

18.53 15.44

20.17 20.58 20.83 24.84

26.84 48.44 51.62

Methylcyclohexane

51.62

1,2,3,4-Tetramethylbenzene

Hexachioroethane

1,4-Dioxane

60.00

55.00

50.00

45.00

40.00

35.00

30.00

25.00

20.00

15.00

10.00

Time-->0 -

24,85

20 BB

13,57

500000

10000001

1500000

48,44



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

Run 5, "P95319 L050119 [Varied in MeOH]"

Run Length: 60.00 min, 36000 points at 10 points/second. Created: Fri, May 3, 2019 at 10:19:18 PM. Sampled: Sequence "050319-GC13M1", Method "GC13-M1". Analyzed using Method "GC13-M1".

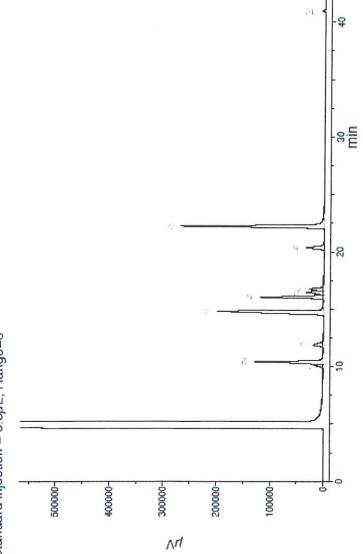
Comments

Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min., Air(make-up)=230mL/min., Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min., Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.), Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C. Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness GC13-M1 Analysis by Candice Warren Standard injection = 0.5μ L, Range=6 FID Signal = Edaq Channel 1

Name	(min.)
Methyl tert-butyl ether (MTBE)	9.97
Acrylonitrile	10.40
Di-isopropyl ether	11.87
Propionitrile	14.80
Tetrahydrofuran	16.02
Cyclohexane	16.45
1-Chlorobutane	16.73
Methylcyclohexane	20.34
1,4-Dioxane	22.22
Hexachloroethane	40.96
1,2,3,4-Tetramethvlbenzene	43.97

I

FID RT



200

Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com

Certified Reference Material CRM



Contraction function State Contraction State Contrelenter	www.absolutestaliualus.colii	aliaalus.colii													http	https://Absolutestar
Pert Number: Sement(s): Constraints: Resent Addition: Sement(s): Lots Perturbution: 20231 Description: 20231 Memanol DLOBO-LIS Perturbution: 00 Perturbution: 11 Constraints: Constraints: Perturbution: 00 Perurbution:	CERTIFIED WEIG	HT REPORT														
Uniform Ended		Part Number		95319				Solvi	ent(s):	1.01#						
Description: Tendinal Additions National Structure Tendinal Additional National Structure Tendinal Additional National Nationa Nationa National National National Nationa National National Na		Lot Number		050219				Mot		Dan I IC	-64.40		101	17	-	
Formulated D5. Present Onlyne. Formulation Date: Formulated D5. Present Onlyne. Normal Commended Street. Formulated D5. Period L Remiss Normal Commended Street. Market Commended Street. Formulation Normal Commended Street. Market Commended Street. Software Street. Market Commended Street. Market Commended Street. Software Street. Commonded Street. Translot. Software Street. Software Street. Commended Street. Translot. Software Street. <		Description	2	Revised Ad	ditions Mix								tor to	had hen	1 Par	050310
Experiation Date:				11 compor	lents							Formulate	d Bv:	Prashant Chauha	7	DATE DATE
Returned Strang: Refinance of Strang: Strang: Refinance of Strang: Refinance of Strang: Strang: <td></td> <td>Expiration Date</td> <td></td> <td>050222</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td>		Expiration Date		050222										1		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	3	Recommended Storage		Refrigerate	(4 °C)								9	A		
Weight(g) Bootom Lot Control	Nor	iinal Concentration (µg/mL) NIST Test ID#		Varied 6UTB		5E-05	Belance I la					Devriound	Y.	to Rent	la	050219
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Weight(s) sł	nown below were combined	and dilut	ted to (mL):	100.0	۲	Flask Uncer	lainty				INCAICHER	-y-			DAIE
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $												Expanded		SDS Informat	tion	
$ \frac{1}{23} - \frac{1}{23}$			l	, Iç	Nominal						Actual	Uncertainty	(Solven	it Safety Info. On	Attache	d pg.)
Acrylontifie 7 47/BCX 1000 98 0.2 101051 101061 100133 40.4 107-13-1 MM C-Chonolusine 1072 34502758V 20010 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20130 0.20140 0.20230 2.0014 0.20230 2.00140 0.20230 2.0116 0.77241 MM 0.77240 MM Methyler/chrkm 200 0.21 0.20141 0.20230 2.0016 0.11 0.69239 2.0116 0.77240 MM 0.77241 MM	Compound		RM#	Number	Conc (ug/r		Purity				Conc (µg/mL)	(+/-) (hg/mL)	CAS#	OSHA PEL (TW/	(A)	LDSO
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	1. Acrylonitrile		7	4718CK	10000		0.2	1.0		1.01061	10003.9	40.4	107-13-1	N/A		orl-rat 78 mollo
Cyclonkesten 1023<5HB02755V 2000 961 0.2 0.20103 0.20103 0.20110 0.0017 611 100-82-7 300 100-827 300 100-827 300 100-827 300 100-827 300 100-827 300 100-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 110-827 300 100-122 301 101-122-9 Month Month Month Month Month Month Month 300 101		ane	1072	15538EZ	2000	99.5		0.2(0.20120	2001.7	8.1	109-69-3	N/A		orl-rat 2670mo/ko
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		0	1023	SHBD2795\		99.5	0.2	0.2(0.20120	2001.7	8.1	110-82-7	300 ppm (1050ma/r		orl-rat 12705mo/kn
$ \left \begin{array}{cccccccccccccccccccccccccccccccccccc$		ether (DIPE)	987	00412MX	2000		0.2	0.2(0.20224	2002.0	8.1	108-20-3	500 ppm (2100mg/r		orl-rat 8470mg/kg
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			373	03853KE	40000		0.2	4.0		4.04110	40002.5	161.6	123-91-1	25 ppm (90mg/m3/8	1	rt-mus 5700ma/ka
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	6. Hexachloro	ethane	199	12604HBV	2000	66	0.2	0.2(0.20220	2001.6	8.1	67-72-1	1 ppm (10mg/m3/8h		ort-gpg 4970mg/kg
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		hexane	1627	08046KN	2000	66	0.2	0.2(0.20224	2002.0	8.1	108-87-2	N/A		N/A
Proplonitile 349 1395468 20000 99 0.2 2.02042 2.02032 80.6 107-12-0 NA 12.33-Hitramethylbenzene 360 113866 10000 93 0.2 1.00151 10004.0 40.1 109-99-99 20 pm (s60mgm36H) 12.33-Hitramethylbenzene 491 7000 93 0.2 1.00151 10004.0 40.1 109-99-9 20 pm (s60mgm36H) Abundance 491 The exclined an exclined cartered preimetric measurements unless othervise stated. Na 400000 93 0.2 1.00151 1.0004.0 40.1 109.5 10004.0 100 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1004.1 1		outyl ether (MTBE)	209	02197JJ	2000		0.2	0.2(0.20062	2002.0	8.1	1634-04-4	N/A		orl-rat 4g/kg
$ \frac{124taMydrofuratm}{12.3.4^{-1} flatamethybenzene } \frac{360}{11.3.6} \frac{113865}{2000} \frac{10000}{9.9} \frac{9.0}{0.2} \frac{1.00111}{0.21500} \frac{1.00151}{0.21500} \frac{100.00}{0.21500} \frac{0.1}{0.21500} \frac{100.999}{20.00.0} \frac{2.0}{8.7} \frac{148-233}{489-233} \frac{pm (s60mgraf68H)}{NA} $			349	1395468	20000		0.2	2.0		2.02082	20003.9	80.8	107-12-0	NA		orl-rat 39mg/kg
$ \frac{1,2,3,4-\text{Intramethylenczene}{13,3,4-\text{Intramethylenczene}{26,33} \frac{1,2,3,4-\text{Intramethylenczene}{13,3,5} \frac{1,2,3,4-\text{Intramethylenczene}{13,3,5} \frac{1,2,3,4-\text{Intramethylenczene}{13,3,5} \frac{1,2,3,4-\text{Intramethylenczene}{13,3,5} \frac{1,2,3,4-\text{Intramethylenczene}{13,3,5} \frac{1,2,3,4-\text{Intramethylenczene}{13,3,5} \frac{1,3,3,5}{1,3,5} \frac{1,3,3,5}{1,5,5} 1,3,3$		Iran	380	113886	10000		0.2	1.0		1.00151	10004.0	40.1	109-99-9	20 ppm (590mg/m		orl-rat 2500mg/kg
TC. 953191 • The certified value is the concentration calculated from gravinetric and volumentic measurements unless otherwise stated. • Standards are rectified value is the concentration calculated from gravinetric and value, miss otherwise stated. • Standards are rectified value is the concentration calculated from gravinetric and value, miss otherwise stated. • Standards are rectified value is the concentration calculated from gravity state stated value, miss otherwise stated. • Uncertainty Reference: Taylor, BX, and Kuyat, C.E., 'Guidelins for Expressing the Uncertainty of YIST Measurement Real • Ibis state • 10,53 • 10,53 • 10,53 • 10,53 • 10,53 • 10,53 • 10,53 • 11,79 • 20,18 • 13,79 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,18 • 20,19 •		amethylbenzene	491	AP01	2000	93	0.2	0.2		0.21540	2003.0	8.7	488-23-3	NA		orl-rat 6408mg/kg
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18,53 Nethod GC6MSD-1: Column: Vocol (60m X 0.25mm ID X 13,79 20,18 20,18 1.5µm film thickness). Temp. 1 = 35°C (10min.), Temp. 2 200°C, Detector Temp. = 320°C (0.75 min.), Rate = 4°C/min., Injector Temp. = 2018 2.50°C, Solvent Delay: 8 13,79 200°C, Detector Temp. = 320°C (10min.), Temp. 2 200°C, Detector Temp. = 220°C, Solvent Delay: 8 minutes. Analysis performed by Candice Warren. 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,79 13,74 14,70 12,3,4-Tetramethylenzene	4000000			26,33	NIST	Cechnical N	ote 1297, U	Governm	ent Printing	Office, Wash	ington, DC, (19	94).	g ure uncerta	inty of NLST MEASURE	ment kesul	. "1
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Lot # 050219 Part # 95319

Absolute Standards, Inc. www.absolutestandards.com 800-368-1131





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

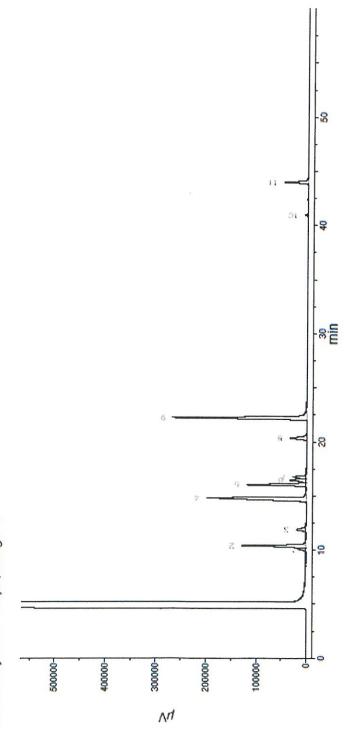
Run 4, "P95319 L050219 [Varied in MeOH]"

Run Length: 60.00 min, 36000 points at 10 points/second. Created: Fri, May 3, 2019 at 9:08:02 PM. Sampled: Sequence "050319-GC13M1", Method "GC13-M1". Analyzed using Method "GC13-M1".

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., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min. Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.), Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C. Comments GC13-M1 Analysis by Candice Warren Standard injection = 0.5µL, Range=6 FID Signal = Edaq Channel 1

Name	(min.
Methyl tert-butyl ether (MTBE)	9.97
Acrylonitrile	10.40
Di-isopropyl ether	11.87
Propionitrile	14.80
Tetrahydrofuran	16.02
Cyclohexane	16.45
1-Chlorobutane	16.73
Methylcyclohexane	20.34
1,4-Dioxane	22.22
Hexachloroethane	40.96
1,2,3,4-Tetramethylbenzene	43.97

FID RT





CERTIFIED REFERENCE MATERIAL

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. :	30067	Lot No.:	A0147670	
Description :	4-Bromofluorobenzene Standard			
	4-Bromofluorobenzene Standard 2,5 1mL/ampul	00µg/mL, P&T Me	ethanol,	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	April 30, 2024	Storage:	0°C or colder	

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	1-Bromo-4-fluorobenzene (BFB) CAS # 460-00-4 (Lot 20401KO) Purity 99%	1.0	+/- 14.7360 μg/mL Gravimetric +/- 140.8035 μg/mL Unstressed +/- 144.0975 μg/mL Stressed
Solvent:	P&T Methanol		

CAS # 67-56-1

Purity 99%

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

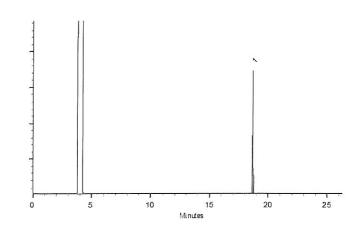
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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

Inj. Temp: 200°C

Det. Temp: 250°C

Det. Type: FID



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



Dustin Lidgett - Mix Technician Date Mixed:

01-Apr-2019

Balance: 1127510105



Date Passed: 04-Apr-2019

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
 www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle

CERTIFIED REFERENCE MATERIAL

Gravimetric Certificate





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. :	555581	Lot No.:	A0153385	
Description :	Custom 8260 Internal Standard Mix	¢		
	Custom 8260 Internal Standard Mix 1mL/ampul	(25,000µg/mL, P&	T Methanol,	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	September 30, 2022	Storage:	10°C or colder	

CERTIFIED VALUES

Component #	- 3	Compound	Grav. C (weight/ve	and the second	Expanded L (95% C.L.; P	and the second sec	
1	1,4-Dichlorobenze CAS # 3855-8 Purity 99%		25,060.0	μg/mL +/- +/- +/-	1,416.6261	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	1,4-Difluorobenze CAS# 540-36- Purity 99%		25,092.0	μg/mL +/- +/- +/-	1,418.4350	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	Chlorobenzene-d5 CAS # 3114-55 Purity 99%			μg/mL +/- +/- +/-	231.8729 1,416.4000 1,449.0104	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	Pentafluorobenzen CAS # 363-72- Purity 99%		25,072.0	μg/mL +/- +/- +/-	232.0210 1,417.3044 1,449.9357	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed

 Solvent:
 P&T Methanol

 CAS #
 67-56-1

 Purity
 99%

Just a Juini Joseph Jaglowski - Mix Technician

Date Mixed: 27-Sep-2019

Balance: B707717271

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

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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
 www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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
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0°C or colder (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.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



1. IDENTIFICATION

Catalog Number / Product Name: Company: Address:

Phone#: Fax#: Emergency#:

Email: Revision Number: Intended use:

Safety Data Sheet

Revision Date: 12/15/16 www.restek.com

555581 / Custom 8260 Internal Standard Mix Restek Corporation 110 Benner Circle Bellefonte, Pa. 16823 814-353-1300 814-353-1309 800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US) www.restek.com 7 For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:





GHS Classification:	Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1 Flammable Liquid Category 2 Acute Toxicity - Dermal Category 3 Acute Toxicity - Oral Category 3
GHS Signal Word: GHS Hazard: GHS Precautions:	Danger Highly flammable liquid and vapour. Toxic if swallowed or in contact with skin. Causes damage to organs.
Safety Precautions:	Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF SWALLOWED: Immediately call a POISON CENTER/doctor/ IF ON SKIN: Wash with plenty of soap and water. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF exposed: Call a POISON CENTER or doctor/physician. Call a POISON CENTER or doctor/physician if you feel unwell. Specific treatment see section 4. Rinse mouth. Take off immediately all contaminated clothing and wash it before reuse. In case of fire: Use extinguishing media in section 5 for extinction.
Storage:	Store in a well-ventilated place. Keep cool. Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single No data available. Exposure Target Organs:

Repeated No data available. Exposure Target Organs:

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
methanol	67-56-1	200-659-6	90.00000
1,4-difluorobenzene	540-36-3	208-742-9	2.500000
pentafluorobenzene	363-72-4	206-658-7	2.500000
1,4-dichlorobenzene-d4	3855-82-1		2.500000
chlorobenzene-d5	3114-55-4	221-482-0	2.500000

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get
	medical attention immediately
Eyes:	Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.
Skin Contact:	Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used extinguish
	a fire if swept across the base of the flames. Water can absorb heat and
	keep exposed material from being damaged by fire.
Fire and/or Explosion Hazards:	Vapors may be ignited by heat, sparks, flames or other sources of
	ignition at or above the low flash point giving rise to a fire (Class B).
	Vapors are heavier than air and may travel to a source of ignition and
	flash back.
Fire Fighting Methods and Protection:	Do not enter fire area without proper protection including self-contained
	breathing apparatus and full protective equipment. Fight fire from a safe
	distance and a protected location due to the potential of hazardous
	vapors and decomposition products. Flammable component(s) of this
	material may be lighter than water and burn while floating on the surface. Use water spray/fog for cooling.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide
6. ACCIDENTAL RELEASE MEASURES	
Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow
Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of
Personal Precautions and Equipment:	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based
Personal Precautions and Equipment:	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances
Personal Precautions and Equipment:	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill,
Personal Precautions and Equipment:	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the
Personal Precautions and Equipment:	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure
	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
Personal Precautions and Equipment: Methods for Clean-up:	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits. Prevent the spread of any spill to minimize harm to human health and the
	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits. Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal
	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits. Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a
	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits. Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay.
	personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits. Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a

evaluation.

7. HANDLING AND STORAGE	
Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:					
Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
methanol	67-56-1	6000 ppm IDLH	250 ppm STEL	200 ppm TWA	200 ppm TWA; 260 mg/m3 TWA
1,4-difluorobenzene	540-36-3	ND		No TLV	No data available.
pentafluorobenzene	363-72-4	ND		No TLV	No data available.
1,4-dichlorobenzene- d4	3855-82-1	ND		No TLV	No data available.
chlorobenzene-d5	3114-55-4	ND		No TLV	No data available.
Personal Protection: Engineering Measure Respiratory Protectio			vapors from han Respiratory prote product. General Use a respirator eliminate sympto experiencing sym provide respirator	dling or thermal processin action may be required to or local exhaust ventilation if general room ventilation oms. If an exposure limit is optoms of inhalation over ry protection.	avoid overexposure when handling this on is the preferred means of protection. It is not available or sufficient to exceeded or if an operator is exposure as explained in Section 3,
Eye Protection:			Wear chemically	resistant safety glasses v vear contact lenses.	vith side shields when handling this
Skin Protection:			Wear protective regular intervals.	gloves. Inspect gloves for Clean protective equipme	chemical break-through and replace at ent regularly. Wash hands and other efore eating, drinking, and when

9. PHYSICAL AND CHEMICAL PROPERTIES

	-
Appearance, color:	No data available.
Odor:	Mild
Physical State:	No data available.
pH:	No data available.
Vapor Pressure:	No data available.
Vapor Density:	1.1 (air = 1)
Boiling Point:	No data available.
Melting Point:	-98 °C
Flash Point:	36
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	36
Lower Flammable/Explosive Limit, % in air:	6
Autoignition Temperature:	464 deg C
Decomposition Temperature:	No data available.
Specific Gravity:	0.791 - 0.792 g/cm3 at 20 °C
Evaporation Rate:	No data available.
Odor Threshold:	No data available.
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available.
VOC % by weight:	90
Molecular Weight:	32.04
100	

10. STABILITY AND REACTIVITY

Stability:	
Conditions to Avoid:	
Materials to Avoid / Chemical Incompatiability:	

Stable under normal conditions. No data available. Strong oxidizing agents Hazardous Decomposition Products:

Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

11. TOXICOLOGICAL IN	FURMATION				
Routes of Entry: Target Organs Potentia	lly Affected By Exposur	Inhalation, Skin Contact, Eye Contact, Ingestion re: Eyes, Central nervous system stimulation, Skin, Gl Tract, Respiratory Tract			
Chemical Interactions T	hat Change Toxicity:	None Known			
Immediate (Acute) Healt Inhalation Irritation:		xposure: spiratory irritation, dizziness, weakness, fatigue, nausea			
Inhalation Toxicity: Harmful! Can cause systemic damage (see "Target Organs)Methanol can cause central nervous system depression and overexposure can cause damage to the optic nerve resulting in visual impairment or blindness.					
Skin Contact: Can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.					
Eye Contact:	Can cause moderate irr permanently injure eye t	itation, tearing and reddening, but not likely to			
Ingestion Irritation:	Irritating to mouth, throa nausea, vomiting and di	t, and stomach. Can cause abdominal discomfort, arrhea.Highly toxic and may be fatal if swallowed.			
Ingestion Toxicity:	Toxic if swallowed. May swallowed.	cause target organ failure and/or death.May be fatal if			
Long-Term (Chronic) He	alth Effects:	No data			
Carcinogenicity: Reproductive and Devel	opmental Toxicity:	No data. Contains a known human reproductive and/or			
Inhalation:		developmental hazard. Upon prolonged and/or repeated exposure, can cause			
imalation.		moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic			
Skin Contact:		damage upon prolonged and/or repeated exposure (see "Target Organs) Upon prolonged or repeated contact, can cause moderate skin irritation, defatting, and dermatitis. Not			
Skin Absorption:		likely to cause permanent damage. Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage			
Ingestion:		Toxic if swallowed. May cause target organ failure and/or death.			
Component Toxicologica	Il Data:				
NIOSH: Chemical Name	CAS No.	LD50/LC50			
Methanol	67-56-1	Inhalation LC50 Rat 22500 ppm 8 h			
Benzene, 1,2,3,4,5-pentat		Oral LD50 Rat 2 g/kg			
Component Carcinogenio OSHA:	c Data:				
Chemical Name No data available.	CAS No.				
ACGIH: Chemical Name No data available.	CAS No.				
NIOSH: Chemical Name No data available.	CAS No.				
NTP: Chemical Name No data available.	CAS No.				
IARC: Chemical Name No data.	CAS No.	Group No. Group 1			
555581 / Custom 8260 Inter	nal Standard Mix	Page 4 of 6			

No data. No data.	Group 2A Group 2B
12. ECOLOGICAL INFORMATION	
Overview:	Moderate ecological hazard. This product may be dangerous
N	to plants and/or wildlife.
Mobility:	No data
Persistence:	No data
Bioaccumulation:	No data
Degradability: Ecological Toxicity Data:	Biodegrades slowly.
Ecological Toxicity Data:	No data available.
13. DISPOSAL CONSIDERATIONS	
Waste Description of Spent Product:	Spent or discarded material is a hazardous waste.
Disposal Methods:	Dispose of by incineration following Federal, State, Local,
	or Provincial regulations.
Waste Disposal of Packaging:	Comply with all Local, State, Federal, and Provincial
	Environmental Regulations.
14. TRANSPORTATION INFORMATION	
United States:	
DOT Proper Shipping Name:	Flammable liquids, n.o.s. (Methanol,
· · · · · · · · · · · · · · · · · ·	Pentafluorobenzene)
UN Number:	UN1993
Hazard Class:	3
Packing Group:	Î.
International:	
IATA Proper Shipping Name:	Elammable liquida n.a.a. (Methanel
and the set of the set	Flammable liquids, n.o.s. (Methanol, Pentafluorobenzene)
UN Number:	UN1993
Hazard Class:	3
Packing Group:	9 II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available.			. onutant

15. REGULATORY INFORMATION

CAS#	CERCLA	SARA 313		TSCA
	ULINOLA	04104 010	313	ISCA
67-56-1	Х	х	-	X
540-36-3	-		-	-
363-72-4	-	-	-	x
3855-82-1	-	-	-	-
3114-55-4	-	-	-	_
	540-36-3 363-72-4 3855-82-1	67-56-1 X 540-36-3 - 363-72-4 - 3855-82-1 -	67-56-1 X X 540-36-3 363-72-4 3855-82-1	67-56-1 X X - 540-36-3 - - - 3855-82-1 - - -

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Methanol	67-56-1	Prop 65 Devolop Tox

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
methanol	67-56-1	X	X	Х	X
1,4-difluorobenzene	540-36-3	-	-	-	-
pentafluorobenzene	363-72-4	-	-	-	-
1,4-dichlorobenzene-d4	3855-82-1	-	-	-	-
chlorobenzene-d5	3114-55-4	-	-	-	_

16. OTHER INFORMATION

Prior Version Date:	03/03/16
Other Information:	Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References:	No data available.
Disclaimer:	Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding prodcuts described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.



CERTIFIED REFERENCE MATERIAL

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. :	30489	Lot No.:	A0155430	
Description :	8260B Acetates Mix			
	8260B Acetates Mix 2,000 µg/mL,	P&T Methanol, 1mL	/ampul	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	June 30, 2021	Storage:	0°C or colder	
Handling:	This product is photosensitive.			

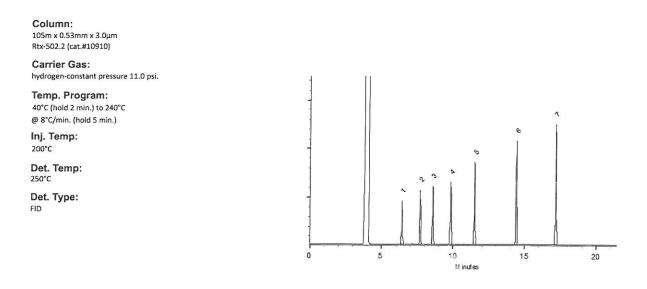
CERTIFIED VALUES

Elution Order		Compound	Grav. Conc. (weight/volume)		Expanded U (95% C.L.; I	the second se	
1	Methyl acetate CAS # 79-20-9 Purity 99%	(Lot SHBK5436)	2,012.7 μg/mL	+/- +/- +/-	11.8115 121.4437 121.7320	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	Vinyl acetate CAS # 108-05-4 Purity 99%	(Lot 192709KJ)	2,020.0 µg/mL	+/- +/- +/-	11.8545 121.8862 122.1755	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	Ethyl acetate CAS # 141-78-6 Purity 99%	(Lot SHBK2184)	2,018.7 µg/mL	+/- +/- +/-	11.8467 121.8058 122.0949	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	Isopropyl acetate CAS # 108-21-4 Purity 99%	(Lot BCBT9845)	2,012.7 µg/mL	+/- +/- +/-	11.8115 121.4437 121.7320	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
5	Propyl acetate CAS # 109-60-4 Purity 99%	(Lot MUZQD)	2,018.7 µg/mĽ	+/- +/- +/-	11.8467 121.8058 122.0949	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
6	Butyl acetate CAS # 123-86-4 Purity 99%	(Lot SHBK5137)	2,020.0 µg/mL	+/- +/- +/-	11.8545 121.8862 122.1755	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
7	Amyl acetate CAS # 628-63-7 Purity 99%	(Lot 41325/1)	2,017.3 μg/mL	+/- +/- +/-	11.8388 121.7253 122.0142	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed

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.



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.



Date Mixed: 02-Dec-2019

Balance: B707717271

TEER

Date Passed: 04-Dec-2019

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



1. IDENTIFICATION

Catalog Number / Product Name: Company: Address:

Phone#: Fax#: Emergency#:

Email: Revision Number: Intended use:

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:





30489 / 8260B Acetates Mix

800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)

Restek Corporation

110 Benner Circle Bellefonte, Pa. 16823

814-353-1300

814-353-1309

www.restek.com

For Laboratory use only

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GHS Classification:	Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1 Flammable Liquid Category 2 Carcinogenicity Category 2 Acute Toxicity - Inhalation Dust / Mist Category 3 Acute Toxicity - Dermal Category 3 Acute Toxicity - Oral Category 3
GHS Signal Word: GHS Hazard: GHS Precautions:	Danger Highly flammable liquid and vapour. Toxic if swallowed, in contact with skin or if inhaled. Suspected of causing cancer. Causes damage to organs.
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF SWALLOWED: Immediately call a POISON CENTER/doctor/ IF ON SKIN: Wash with plenty of soap and water. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Specific treatment see section 4. Rinse mouth.

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30489 / 8260B Acetates Mix

Safety Data Sheet Revision Date: 05/14/19

Revision Date: 05/14/ www.restek.com

2 Letter ISO country code/language code: US/EN

	Take off immediately all contaminated clothing and wash it before reuse. In case of fire: Use extinguishing media in section 5 for extinction.
Storage:	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS.
Single Exposure Target Organs: Repeated Exposure Target Organs:	Specific target organ toxicity - Single exposure - STOT SE 1: H370 Causes damage to organs. (C >= 10 %; No information to prove exclusion of certain routes of exposure); Specific target organ toxicity - Single exposure - STOT SE 2: H371 May cause damage to organs. (3 % <= C <10 %; Concentration limits for acute toxicity cannot be translated into GHS from the DSD especially when minimum classifications are given) No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
methanol	67-56-1	200-659-6	98.6
pentyl acetate (n-amyl acetate)	628-63-7	211-047-3	0.2
Isopropyl acetate	108-21-4	203-561-1	0.2
n-Butyl acetate	123-86-4	204-658-1	0.2
Vinyl acetate	108-05-4	203-545-4	0.2
n-Propyl acetate	109-60-4	203-686-1	0.2
Methyl acetate	79-20-9	201-185-2	0.2
Ethyl acetate	141-78-6	205-500-4	0.2

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention. Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical eye. Get immediate medical attention and monitor the eye daily as advised by your physician.
Skin Contact:	Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.
Ingestion:	Minimal risk of harm if swallowed. Do not induce vomiting. Seek medical attention immediately. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire. Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire.
Fire and/or Explosion Hazards:	material from being damaged by fire. Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back
Fire Fighting Methods and Protection:	Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
Methods for Clean-up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.
7. HANDLING AND STORAGE	

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment Wash thoroughly after handling Avoid contact with material. Remove contaminated clothing and wash before reuse "Empty" containers retain product residue (liquid and/or vapor) and can be dangerous.
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition Keep away from heat, sparks, and flame

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States: Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit	
methanol	67-56-1	6000 ppm IDLH	250 ppm STEL	200 ppm TWA	200 ppm TWA; 260 mg/m3 TWA	
Vinyl acetate	108-05-4	Not established	15 ppm STEL; 53 mg/m3 STEL	10 ppm TWA; 35 mg/m3 TWA	No data available	
Personal Protection	1:					
Engineering Measures:			Local exhaust ventilation or other engineering controls are normally required			
Respiratory Protection:		when handling or using this product to avoid overexposure. No respiratory protection required under normal conditions of use. Provide general room exhaust ventilation if symptoms of overexposure occur as explained Section 3. A respirator is not normally required. If an exposure limit is exceeded or if an operator is experiencing symptoms of inhalation overexposure as explained in Section 3, provide respiratory protection.				
Eye Protection:		Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.				
Skin Protection:			Not normally cor practice good pe surgical style glo water before eat Inspect gloves fo protective equipt	nsidered a skin hazard. N ersonal hygiene and wea oves. Wash hands and o ing, drinking, and when or chemical break-throug	Where use can result in skin r a barrier cream and/or imp ther exposed areas with mile leaving work. Wear protectiv h and replace at regular inte nds and other exposed area and when leaving work	ervious d soap and ve gloves. ervals. Clean

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	No data available
Odor:	Mild
Physical State:	Liquid
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	1.1 (air = 1)
Boiling Point (°C):	72.8 °C (HSDB) 64.7 °C at 760 mmHg (HSDB)

Melting Point (°C):	-98 °C
Flash Point (°F):	18
Flammability:	Highly Flammable Extremely Flammable
Upper Flammable/Explosive Limit, % in air:	36
Lower Flammable/Explosive Limit, % in air:	6
Autoignition Temperature (°C):	464 deg C
Decomposition Temperature (°C):	0
Specific Gravity:	0.791 - 0.792 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	No data available
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.8
Molecular Weight:	32.04

10. STABILITY AND REACTIVITY

Stability:

Conditions to Avoid: Materials to Avoid / Chemical Incompatiability: Hazardous Decomposition Products:

Stable under normal conditions. None known.Contamination Acids Oxidizing materials Peroxides Strong alkalies Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion
Target Organs Potentially Affected By Exposure:	Eyes, Central nervous system stimulation, Skin, GI
	Tract, Respiratory Tract
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure: Inholation

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs)Methanol can cause central nervous system depression and overexposure can cause damage to the optic nerve resulting in visual impairment or blindness.
Skin Contact:	Can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.
Eye Contact:	Can cause moderate irritation, tearing and reddening, but not likely to permanently injure eye tissue.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea. Highly toxic and may be fatal if swallowed.
Ingestion Toxicity:	Toxic if swallowed. May cause target organ failure and/or death.May be fatal if swallowed.

Long-Term (Chronic) Health Effects:

icate product or any components 0.1% may cause birth defects. repeated exposure, can cause itation, dizziness, weakness, fatigue, Harmful! Can cause systemic
itation, dizziness, weakness, fatigue, Harmful! Can cause systemic
d and/or repeated exposure (see
ated contact, can cause defatting, and dermatitis. Not nt damage.
ated exposure, no hazard in
cause target organ failure
-

Component Toxicological Data: NIOSH:

Chemical Name	CAS No.	LD50/LC50
Vinyl acetate	108-05-4	Inhalation LC50 Rat : 11400 mg/m3/4H;
Acetic acid, vinyl ester		Inhalation LC50 Mouse : 1550 ppm/4H; Oral
		LD50 Rat : 2920 mg/kg; Oral LD50 Mouse :
		1613 mg/kg; Dermal LD50 Rabbit : 2335 mg/kg

Methanol	67-56-1	Inhalation LC50 Rat 22500 ppm 8 h	
Component Carcinogenic Da	ata:		
OSHA:			
Chemical Name	CAS No.		
Vinyl acetate	108-05-4	Present	
ACGIH:	040.01		
Chemical Name Vinyl acetate	CAS No. 108-05-4	A2 Conferend Animal Continuous III	
Viriyi acetate	100-03-4	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans	
		Unknown relevance to Humans	
NIOSH:			
Chemical Name	CAS No.		
No data available			
NTP:			
Chemical Name	CAS No.		
No data available	040 110.		
IARC:			
Chemical Name	CAS No.	Group No.	
Monograph 63; 1995	108-05-4	Group 2B	
12. ECOLOGICAL INFORMA	TION		
Overview:		Moderate ecological hazard. This product may be dangerous	
2		to plants and/or wildlife.	
Mobility:		No data	
Persistence: Bioaccumulation:		No data	
Degradability:		No data Biodegrades slowly.	
Ecological Toxicity Data:		No data available	
13. DISPOSAL CONSIDERAT			
Waste Description of Spent	Product:	Spent or discarded material is a hazardous waste. Mixing	
		spent or discarded material with other materials may	
		render the mixture hazardous. Perform a hazardous waste determination on mixtures.	
Disposal Methods:		Dispose of by incineration following Federal, State, Local,	
		or Provincial regulations.	
Waste Disposal of Packaging	g:	Comply with all Local, State, Federal, and Provincial	
		Environmental Regulations.	
14. TRANSPORTATION INFO	RMATION		
United States:			
DOT Proper Shipping Name:		Flammable liquids, n.o.s. (Methanol, Ethyl acetate)	
UN Number:		UN1993	
Hazard Class:		3	
Packing Group:		11	
International:			
IATA Proper Shipping Name:		Flammable liquids, n.o.s. (Methanol, Ethyl acetate)	
UN Number:		UN1993	
Hazard Class:		3	
Packing Group:		ll	
the set of			
Marine Pollutant: No			

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
methanol Vinyl acetate	67-56-1 108-05-4	X	×	-	X
VITYI acetate	108-05-4	^	^	^	^

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation	
Methanol	67-56-1	Prop 65 Devolop Tox	

State Right To Know Listing:

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Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
methanol	67-56-1	X	X	Х	X
pentyl acetate (n-amyl acetate)	628-63-7	X	X	Х	X
Isopropyl acetate	108-21-4	X	X	Х	X
n-Butyl acetate	123-86-4	X	X	Х	Х
Vinyl acetate	108-05-4	X	X	Х	Х
n-Propyl acetate	109-60-4	X	X	Х	Х
Methyl acetate	79-20-9	X	X	Х	Х
Ethyl acetate	141-78-6	X	X	Х	Х

16. OTHER INFORMATION

Prior Version Date:	01/17/18
Other Information:	Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References:	No data available
Disclaimer:	Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

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 <u>www.restek.com/Contact-Us</u> for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



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.

Bromochloromethane Standard			

CERTIFIED VALUES

Elution Order	Co	mpound	Grav. Conc. (weight/volume)		Expanded ((95% C.L.;)	Uncertainty K=2)	
1	Bromochloromethane CAS # 74-97-5 Purity 98%	(Lot 00008541)	2,012.9 μg/mL	+/- +/- +/-	11.9561 112.8889 115.5292	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Methanol CAS# 67-56-1						

CAS#

Purity 99% **Column:** 105m x 0.53mm x 3.0μm Rtx-502,2 (cat.#10910)

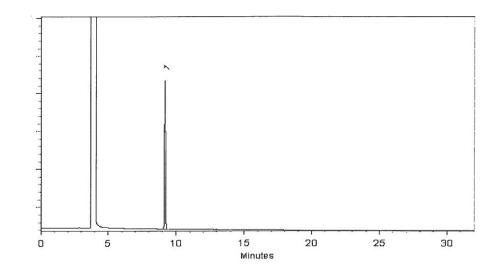
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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

Inj. Temp: 200°C

Det. Temp: 250°C

Det. Type: FID



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

how Tim Lane Kibe - Mix Technician

Date Mixed: 04-Dec-2019

Balance: 1128342314

Tyler Brown - Operations Tech-ARM QC

Date Passed: 05-Dec-2019

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 <u>www.restek.com/Contact-Us</u> for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



1. IDENTIFICATION

Catalog Number / Product Name: Company: Address:

Phone#: Fax#: Emergency#:

Email: **Revision Number:** Intended use:

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:





Restek Corporation

800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)

110 Benner Circle Bellefonte, Pa. 16823

814-353-1300

814-353-1309

www.restek.com

For Laboratory use only

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GHS Classification:	Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1 Hazardous for the ozone layer Flammable Liquid Category 2 Acute Toxicity - Inhalation Dust / Mist Category 3 Acute Toxicity - Dermal Category 3 Acute Toxicity - Oral Category 3
GHS Signal Word:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Toxic if swallowed, in contact with skin or if inhaled. Causes damage to organs.
GHS Precautions:	Harms public health and the environment by destroying ozone in the upper atmosphere.
Safety Precautions:	Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF SWALLOWED: Immediately call a POISON CENTER/doctor/ IF ON SKIN: Wash with plenty of soap and water. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Specific treatment see section 4. Rinse mouth. Take off immediately all contaminated clothing and wash it before reuse. In case of fire: Use extinguishing media in section 5 for extinction.

Safety Data Sheet Revision Date: 08/22/19

www.restek.com

30225 / Bromochloromethane Standard

2 Letter ISO country code/language code: US/EN

Storage:	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS. Refer to manufacturer/supplier for information on recovery/recycling.
Single Exposure Target Organs:	Specific target organ toxicity - Single exposure - STOT SE 1: H370 Causes damage to organs. (C >= 10 %; No information to prove exclusion of certain routes of exposure); Specific target organ toxicity - Single exposure - STOT SE 2: H371 May cause damage to organs. (3 % <= C <10 %; Concentration limits for acute toxicity cannot be translated into GHS from the DSD especially when minimum classifications are given)
Repeated Exposure Target Organs:	No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
methanol	67-56-1	200-659-6	99.8
bromochloromethane	74-97-5	200-826-3	0.2

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.
Skin Contact:	Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing
	agents. Water may be ineffective but water spray can be used extinguish
	a fire if swept across the base of the flames. Water can absorb heat and
	keep exposed material from being damaged by fire.
Fire and/or Explosion Hazards:	Vapors may be ignited by sparks, flames or other sources of ignition if
	material is above the flash point giving rise to a fire (Class B). Vapors are
	heavier than air and may travel to a source of ignition and flash back.
Fire Fighting Methods and Protection:	Do not enter fire area without proper protection including self-contained
	breathing apparatus and full protective equipment. Fight fire from a safe
	distance and a protected location due to the potential of hazardous
	vapors and decomposition products. Flammable component(s) of this
	material may be lighter than water and burn while floating on the surface.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide
6. ACCIDENTAL RELEASE MEASURES	

Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
Methods for Clean-up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7.	HANDL	ING	AND	STOR	AGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid
	breathing the material. Use only in a well ventilated area. Use
	spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from
	incompatible materials and conditions. Keep container(s)
	closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:					
Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
methanol	67-56-1	6000 ppm IDLH	250 ppm STEL	200 ppm TWA	200 ppm TWA; 260 mg/m3 TWA
Personal Protection					
Engineering Measu	Jres:			ndling or thermal proces	ed when generating excessive levels of
Respiratory Protection:		Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms. If an exposure limit is exceeded or if an operator is experiencing symptoms of inhalation overexposure as explained in Section 3, provide respiratory protection.			
Eye Protection:			Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.		
Skin Protection:			Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work		

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	No data available
Odor:	Mild
Physical State:	Liquid
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	1.1 (air = 1)
Boiling Point (°C):	64.7 °C at 760 mmHg (HSDB)
Melting Point (°C):	-98 °C
Flash Point (°F):	52
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	36
Lower Flammable/Explosive Limit, % in air:	6
Autoignition Temperature (°C):	464 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.791 - 0.792 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	No data available
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.8
Molecular Weight:	32.04
10. STABILITY AND REACTIVITY	
Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.
Materials to Avoid / Chemical Incompatiabili	ty: Strong oxidizing agents
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide
1. TOXICOLOGICAL INFORMATION	

11. IOXICOLOGICAL INFORMATION

Routes of Entry:			
Target Organs Potentially	y Affected	By Ex	posure

Inhalation, Skin Contact, Eye Contact, Ingestion re: Eyes, Central nervous system stimulation, Skin, Gl Tract, Respiratory Tract Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

	th Effects by Route of E	
Inhalation Irritation:	Can cause moderate re	espiratory irritation, dizziness, weakness, fatigue, nausea
	and headache.	
Inhalation Toxicity:	Harmful! Can cause sy	stemic damage (see "Target Organs)Methanol can cause
	central nervous system	depression and overexposure can cause damage to the
	optic nerve resulting in	visual impairment or blindness.
Skin Contact:	Can cause moderate sl	kin irritation, defatting, and dermatitis. Not likely to cause
	permanent damage.	, 0.
Eye Contact:		ritation, tearing and reddening, but not likely to
	permanently injure eye	
Ingestion Irritation:		at, and stomach. Can cause abdominal discomfort,
ingestion initiation.		liarrhea. Highly toxic and may be fatal if swallowed.
Ingestion Toxicity:		y cause target organ failure and/or death.May be fatal if
ingestion roxicity.	swallowed.	y cause target organ failure and/or death.May be fatar in
	swallowed.	
Long-Term (Chronic) He	aalth Effacts:	
	saith Lifects.	No data.
Carcinogenicity:	lonmontal Taxiaity	
Reproductive and Deve	siopmental loxicity:	No data available to indicate product or any components
		present at greater than 0.1% may cause birth defects.
Inhalation:		Upon prolonged and/or repeated exposure, can cause
		moderate respiratory irritation, dizziness, weakness, fatigue,
		nausea and headache.Harmful! Can cause systemic
		damage upon prolonged and/or repeated exposure (see
		"Target Organs)
Skin Contact:		Upon prolonged or repeated contact, can cause
		moderate skin irritation, defatting, and dermatitis. Not
		likely to cause permanent damage.
Ingestion:		Toxic if swallowed. May cause target organ failure
		and/or death.
Component Toxicologic	al Data:	
NIOSH:		
Chemical Name	CAS No.	LD50/LC50
Methanol	67-56-1	Inhalation LC50 Rat 22500 ppm 8 h
Component Carcinogen	ic Data:	
OSHA:	lo Data:	
Chemical Name	CAS No.	
No data available	OAG NO.	
NO Gala available		
ACCILL		
ACGIH:	CACNA	
Chemical Name	CAS No.	
No data available		
NIOSH:		
Chemical Name	CAS No.	
No data available		
NTP:		
Chemical Name	CAS No.	
No data available		
IARC:		
Chemical Name	CAS No.	Group No.
12. ECOLOGICAL INFO	RMATION	
		Medenate apple sized beyond. This product was the demonstration
Overview:		Moderate ecological hazard. This product may be dangerous
		to plants and/or wildlife.
Mobility:		No data
Persistence:		No data
Bioaccumulation:		No data
Degradability:		Biodegrades slowly.
Ecological Toxicity Dat	a:	No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product:	Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may
	render the mixture hazardous. Perform a hazardous
	waste determination on mixtures.
Disposal Methods:	Dispose of by incineration following Federal, State, Local, or Provincial regulations.
Waste Disposal of Packaging:	Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States: DOT Proper Shipping Name: UN Number: Hazard Class: Packing Group:	Methanol UN1230 3 II	
International: IATA Proper Shipping Name: UN Number: Hazard Class: Packing Group:	Methanol UN1230 3(6.1) II	

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:					
Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
methanol	67-56-1	Х	Х	-	х

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Methanol	67-56-1	Prop 65 Devolop Tox

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
methanol	67-56-1	X	Х	X	Х
bromochloromethane	74-97-5	X	X	Х	Х

16. OTHER INFORMATION

Prior Version Date:	11/08/18
Other Information:	Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References:	No data available
Disclaimer:	Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.



CERTIFIED REFERENCE MATERIAL

Gravimetric Certificate



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

www.restek.com



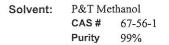
FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

555582	Lot No.:	<u>A0158153</u>	
Custom 8260A/B Surrogate Mix			
Custom 8260A/B Surrogate Mix 25,000µ 1mL/ampul	Jg/mL, P&⊤ M	ethanol,	
2 mL	Pkg Amt:	> 1 mL	
February 28, 2023	Storage:	10°C or colder	
	Custom 8260A/B Surrogate Mix Custom 8260A/B Surrogate Mix 25,000µ 1mL/ampul 2 mL	Custom 8260A/B Surrogate Mix Custom 8260A/B Surrogate Mix 25,000µg/mL, P&T M 1mL/ampul 2 mL Pkg Amt:	

CERTIFIED VALUES

Component #		Compoun	d	Grav. ((weight/v			Expanded U (95% C.L.; K		
1		oethane-d4 7060-07-0 9%	(Lot PR-29377)	25,224.0	µg/mL	+/- +/- +/-	233.4276 1,425.8969 1,458.7260	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	CAS # 4	fluorobenzene (BFB) 60-00-4 9%	(Lot 20401KO)	25,128.0	μg/mL	+/- +/- +/-	232.5392 1,420.4701 1,453.1742	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	- 100 Aver - 170	oromethane 868-53-7 9%	(Lot 0012016)	25,200.0	μg/mL	+/- +/- +/-	233.2055 1,424.5402 1,457.3380	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4		037-26-5 9%	(Lot I-21928)	25,184.0	μg/mL	+/- +/- +/-	233.0575 1,423.6357 1,456.4127	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed



Mix Technician Tom Suckar

Date Mixed: 25-Feb-2020

Balance: B707717271

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

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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 <u>www.restek.com/Contact-Us</u> for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



Safety Data Sheet Revision Date: 07/20/18

www.restek.com

555582 / Custom 8260A/B Surrogate Mix

2 Letter ISO country code/language code: US/EN

Catalog Number /	Product Name:
Company:	
Address:	

Phone#:
Fax#:
Emergency#:

1. IDENTIFICATION

Email: Revision Number: Intended use:

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:





Restek Corporation 110 Benner Circle Bellefonte, Pa. 16823 814-353-1300 814-353-1309

www.restek.com

For Laboratory use only

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800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)

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GHS Classification:	Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1 Hazardous for the ozone layer Flammable Liquid Category 2 Acute Toxicity - Dermal Category 3 Acute Toxicity - Oral Category 3
GHS Signal Word:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Toxic if swallowed or in contact with skin. Causes damage to organs. Harms public health and the environment by destroying ozone in the upper atmosphere.
GHS Precautions:	
Safety Precautions:	Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF SWALLOWED: Immediately call a POISON CENTER/doctor/ IF ON SKIN: Wash with plenty of soap and water. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF exposed: Call a POISON CENTER or doctor/physician. Call a POISON CENTER or doctor/physician if you feel unwell. Specific treatment see section 4. Rinse mouth. Take off immediately all contaminated clothing and wash it before reuse. In case of fire: Use extinguishing media in section 5 for extinction.

Storage:	Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS. Refer to manufacturer/supplier for information on recovery/recycling.
Single Exposure Target Organs:	Specific target organ toxicity - Single exposure - STOT SE 1: H370 Causes damage to organs. (C >= 10 %; No information to prove exclusion of certain routes of exposure); Specific target organ toxicity - Single exposure - STOT SE 2: H371 May cause damage to organs. (3 % <= C <10 %; Concentration limits for acute toxicity cannot be translated into GHS from the DSD especially when minimum classifications are given)
Repeated Exposure Target Organs:	No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
methanol	67-56-1	200-659-6	90
1,2-dichloroethane-d4	17060-07-0		2.5
dibromofluoromethane	1868-53-7		2.5
toluene-d8	2037-26-5	218-009-5	2.5
1-bromo-4-fluorobenzene	460-00-4	207-300-2	2.5

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.
Skin Contact:	Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire. Use alcohol resistant foam, carbon dioxide, dry chemical, or water spray when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the fire. Do not direct a water stream directly into the hot burning liquid.
Fire and/or Explosion Hazards:	Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a fire (Class B). Vapors are heavier than air and may travel to a source of ignition and flash back.
Fire Fighting Methods and Protection:	Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide
6. ACCIDENTAL RELEASE MEASURES	
Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the

limits. Methods for Clean-up: Prevent environ protectiv minimur	sponding to the spill. Never exceed any occupational exposure the spread of any spill to minimize harm to human health and the ment if safe to do so. Wear complete and proper personal ve equipment following the recommendation of Section 8 at a m. Dike with suitable absorbent material like granulated clay. and store in a sealed container pending a waste disposal on.
7. HANDLING AND STORAGE	
Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid
Storage Technical Measures and Conditions:	breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:					
Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
methanol	67-56-1	6000 ppm IDLH	250 ppm STEL	200 ppm TWA	200 ppm TWA; 260 mg/m3 TWA
1,2-dichloroethane- d4	17060-07-0	Not established	None Known	Not established	No data available
dibromofluoromethan e	1868-53-7	Not established	None Known	Not established	No data available
toluene-d8	2037-26-5	Not established	None Known	Not established	No data available
1-bromo-4- fluorobenzene	460-00-4	Not established	None Known	Not established	No data available
Personal Protection: Engineering Measure				untilation is recommended	
Engineering measure			vanours from ha	ndling or thermal processi	when generating excessive levels of
Respiratory Protectio	on:		Respiratory prote product. General Use a respirator eliminate sympto	ection may be required to or local exhaust ventilation if general room ventilation ms.lf an exposure limit is nptoms of inhalation overe	avoid overexposure when handling this avoid overexposure when handling this on is the preferred means of protection. is not available or sufficient to exceeded or if an operator is exposure as explained in Section 3,
Eye Protection:			Wear chemically		ith side shields when handling this
Skin Protection:			Wear protective gregular intervals.	gloves. Inspect gloves for Clean protective equipme	chemical break-through and replace at ent regularly. Wash hands and other efore eating, drinking, and when

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	No data available
Odor:	Mild
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	1.1 (air = 1)
Boiling Point (°C):	151.5 °C Boiling Point (at 1013.25 hPa) 64.7 °C at 760
127 Construction (129) Hold Store	mmHg (HSDB)
Melting Point (°C):	-98 °Č
Flash Point (°F):	50
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	36
Lower Flammable/Explosive Limit, % in air:	6
Autoignition Temperature (°C):	464 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.791 - 0.792 g/cm3 at 20 °C
Evaporation Rate:	No data available

555582 / Custom 8260A/B Surrogate Mix

Odor Threshold: No data available Solubility: Moderate: 50-99% Partition Coefficient: n-octanol in water: No data available VOC % by weight: 0 Molecular Weight: 32.04 **10. STABILITY AND REACTIVITY** Stability: Stable under normal conditions. Conditions to Avoid: None known. Materials to Avoid / Chemical Incompatiability: Strong oxidizing agents Hazardous Decomposition Products: Carbon dioxide Carbon monoxide **11. TOXICOLOGICAL INFORMATION** Inhalation, Skin Contact, Eye Contact, Ingestion Routes of Entry: Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Skin, GI Tract, Respiratory Tract **Chemical Interactions That Change Toxicity:** None Known Immediate (Acute) Health Effects by Route of Exposure: Inhalation Irritation: Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache. Inhalation Toxicity: Harmful! Can cause systemic damage (see "Target Organs)Methanol can cause central nervous system depression and overexposure can cause damage to the optic nerve resulting in visual impairment or blindness. Skin Contact: Can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage. Eve Contact: Can cause moderate irritation, tearing and reddening, but not likely to permanently injure eye tissue. Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, Ingestion Irritation: nausea, vomiting and diarrhea. Highly toxic and may be fatal if swallowed. Toxic if swallowed. May cause target organ failure and/or death. May be fatal if Ingestion Toxicity: swallowed. Long-Term (Chronic) Health Effects: Carcinogenicity: No data. **Reproductive and Developmental Toxicity:** No data available to indicate product or any components

present at greater than 0.1% may cause birth defects. Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatique, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs) Skin Contact: Upon prolonged or repeated contact, can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage. Toxic if swallowed. May cause target organ failure Ingestion: and/or death. Component Toxicological Data: NIOSH: 0 4 0 N

Chemical Name	CAS No.	LD50/LC50
Benzene, 1-bromo-4-fluoro-	460-00-4	Inhalation LC50 Rat 18 g/m3 4 h; Oral LD50 Rat 2700 mg/kg
Methanol	67-56-1	Inhalation LC50 Rat 22500 ppm 8 h
Component Carcinogenic Data OSHA:	:	

CAS No.

Chemical Name CAS No. No data available

Chemical Name	CAS No.
No data available	
NIOSH:	

555582 / Custom 8260A/B Surrogate Mix

Chemical Name

No data available		
NTP: Chemical Name No data available	CAS No.	
IARC: Chemical Name	CAS No.	Group No.
12. ECOLOGICAL INFORMA	TION	
Overview:		Moderate ecological hazard. This product may be dangerous
Mobility: Persistence: Bioaccumulation: Degradability: Ecological Toxicity Data:		to plants and/or wildlife. No data No data No data Biodegrades slowly. No data available
13. DISPOSAL CONSIDERA	TIONS	
Waste Description of Spent Disposal Methods: Waste Disposal of Packagin		Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures. Dispose of by incineration following Federal, State, Local, or Provincial regulations. Comply with all Local, State, Federal, and Provincial Environmental Regulations.
14. TRANSPORTATION INFO	ORMATION	
United States: DOT Proper Shipping Name UN Number: Hazard Class: Packing Group:	:	Flammable liquids, n.o.s. (Methanol) UN1993 3 II
International: IATA Proper Shipping Name UN Number: Hazard Class: Packing Group:	:	Flammable liquids, n.o.s. (Methanol) UN1993 3 II
Marine Pollutant: No		

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:						
Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA	
methanol	67-56-1	Х	X	-	Х	
1,2-dichloroethane-d4	17060-07-0	-	-	1.55	-	
dibromofluoromethane	1868-53-7	-	-	-	_	
toluene-d8	2037-26-5	-	-	-	-	
1-bromo-4-	460-00-4	-	-	-	Х	
fluorobenzene						
The following chemica	als are listed or	CA Prop 65:				
Chemical Name		CAS #	Regulation			
Methanol		67-56-1	Prop 65 Devolop Tox	-		

Chemical Name	CAS #	Regulation
Methanol	67-56-1	Prop 65 Devolop Tox

State Right To Know	/ Listing:				
Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California

555582 / Custom 8260A/B Surrogate Mix

methanol	67-56-1	X	X	X	X
1,2-dichloroethane-d4	17060-07-0	-	-	.=	
dibromofluoromethane	1868-53-7	-	-	-	-
toluene-d8	2037-26-5	-	-	-	-
1-bromo-4-	460-00-4	-	-	-	-
fluorobenzene					

16. OTHER INFORMATION

Prior Version Date:	03/03/16
Other Information:	Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References:	No data available
Disclaimer:	Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

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Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com		Analytic	Analytical Reference Material ARM	se Materia	II ARM		*	Scopes: http://	ISO 17034 Accredited Scopes: http://AbsoluteStandards.com
CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description:	95318 031419 2-Chloroethyl vinyl ether		Solvent(s): Methanol	Lot# DU230-US			Eh L	150 00 001	031419
Expiration Date: 031422 Recommended Storage: Refrigerat Nominal Concentration (µg/mL): 10000 NIST Test ID#: 2684186 Weight(s) shown below were combined and diluted to (mL):	031422 Refrigerate (4 °C) 10000 2684186 2684186 diluted to (mL): 30.0	5E-05 Balance Uncertainty 0.002 Flask Uncertainty	tinity			Formulated By: Reviewed By:	1 P	Eli Aliaga El Aliaga 031	DATE 031419 DATE
Compound	Nominal RM# Lot Number Conc (ug/mL)	Purity Uncertainty) (%) Purity	/ Target Weight (g)	Actual Weight (g)	Actual Conc(µg/mL)	Expanded Uncertainty (+/-) (Jug/mL)	SD: (Solvent Safet cAS# 0:	SDS Information (Solvent Safety Info. On Attached pg.) CAS# 0SHA PEL (TWA) LD50	
1. 2-Chloroethyl vinyl ether	74 MKCD0033 10000	99 0.2	0.30284	0.30292	10002.6	40.6	110-75-8	1-ra	
Method: GC6MSD-1.M. Detector: MSD. Column: (60m X 0.25mm X 1.5 μ m). 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.	. Column: (60m X 0.25mm X 1. np. = 220°C. Analyst: Candice V	5μ m). Oven Profil. Varren.	e: Temp 1 = 35°	C (Time 1=1()min.), Temp	2 = 200°C (Time 2=8.75 mir	1.), Rate = 4°C/min.,	þ
Asundance	TC: 95318.D		Ahindarce			Scan 1639 (27.834 min): 95318.0	34 min): 95318.D		
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1600 1500 2500 2500	30.00 39.00 40.00 45.00	55,00	, <-Z/₩ }	8	\$	50 60	70 80	90 100 110	ſ
• The ce • Standa	rtified value is the concentration calcul ırds are prepared gravimetrically usins	lated from gravimetric a	ud volumetric mea	surements unles	ss otherwise sta	ted.			
Standa All Star	• Standards are certified (+/-) 0.5% of the stated value, unlease to consider the will wrights traceable to NLS1 (see above). • All Standards, after opening ampule, should be stored with case table and under approxizite laboratory conditions.	1 value, unless otherwise be stored with caps tight	e stated.	iraceaole io NL riste laboratory	o 1 (see above). / conditions				
Uncert NIST 7	ainty Reference: Taylor, B.N. and Kur	vat, C.E., "Guidelines fo	or Evaluating and 1	Expressing the L	Incertainty of N	IIST Measuren	nent Result,"		
New Work Control of Co		רווושא טווינט אווווא נייש	ngton, DC, (1774).						

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1 of 1

Lot # 031419 Part # 95318

Absolute Standards, 800-368-1131 www.absolutestandards.com	Standards, 1 estandards.com	ds.con	, Inc.			V				Analy	/tical	Refere	ence M	Analytical Reference Material ARM	ARM					N	Ś	ISO 17025-34-35-43 Accredited Scopes: http://AbsoluteStandards.com	ISO 9001 QS Registered ISO 17025-34-35-43 Accredited opes: http://AbsoluteStandards.com
<u>CERTIFIED WEIGHT REPORT</u>	HT REP		Part Number: Lot Number: Description:		70046 072618 Bromoc	7004 <u>6</u> 072618 Bromochloromethane	methane	10			Solvent(s): Methanol	nt(s): anol	Lot# DS526				2	5		20	9	073	072618
Expiration Date: 072623 Recommended Storage: Refrigeration Nominal Concentration (µg/mL): 1000 NIST Test ID#: 822-27587 Weight(s) shown below were combined and diluted to (mL):	Expiration Date: Recommended Storage: Nominal Concentration (µg/mL); NIST Test ID#: s) shown below were combined	Expir mmende centratic NIS ow were	Expiration Date: Recommended Storage: I Concentration (µg/mL): NIST Test ID#: n below were combined	te: 」)#: ad and di	072623 Refrige 1000 822-27t luted to (m)	072623 Refrigerate (4 °C) 1000 822-275872-11 822 do (mL):	4 °C) 11 25.0		5E-05 Bal	Balance Uncertainty Flask Uncertainty	ainty sty				Rey For	Formulated By:	By:		Eli Aliaga	ntas 200		072	DATE 072618 DATE
Compound				RM#		Lot Number	Nominal Conc (µg/mL)		Purity U	Uncertainty Purity	Target Weight(g)	et It(g)	Actual Weight(g)	Actual Conc (µg/n	Ê	Expanded Uncertainty (+/-) (µg/mL)	(Solvi cas#	si Saf	SDS Information (Solvent Safety Info. On Attached pg.) cAS# 05HA PEL (TWA) LDS	matioi On Ati	n tached	LD50	
1. Bromochloromethane Method GC6MSD-1.M: Candice Warren	C6MSD	I.M:	46 AY01 1000 Column : (60m X 0.25mm X 1.5 μm) Temp 1 =	46 60m X 0	A .25mm	АҮ01 л X 1.5 <i>µ</i> п	1000 n) Temp 1	0 1 = 35°	99 C (10mi	0.2 n.), Tem	0.02526 p 2 = 200°C	526 0°C (8.7	0.02540 5 min.), R	99 0.2 0.02526 0.02540 1005.7 5.7 74-97-5 200 ppm (1050mg/m3/8H) or 35°C (10min.), Temp 2 = 200°C (8.75 min.), Rate = 4°C/min., Injector B= 200°C, Detector B = 220°C. Analyst:	7 nin., Inj	5.7 ector B=	74-97-	5 200 Detecto	74-97-5 200 ppm (1050mg/m3/8H) orl-rat 5000mg/kg 200°C, Detector B = 220°C. Analyst:	Ing/m3/8	iH) orl- alyst:	rat 5000	mg/kg
Abundance				TIC: 70046.D)46.D							Abundance		49	Scan	Scan 1136 (19.943 min); 70046.D	13 min): 700	46.D				L	
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				The certif		40.00	30 45.00					•	30 40	• The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated, • Standards are measured environmetrically using between the statemetric and volumetric measurements unless otherwise stated,									

Part # 70046 Lot # 072618

1 of 1

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



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

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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. :	30470	Lot No.:	A0158421	
Description :	tert-Butanol Standard			
	tert-Butanol Std 50,000µg/mL,	P&T Methanol, 1mL/am	npul	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	March 31, 2023	Storage:	0°C or colder	

CERTIFIED VALUES

Elution Order	C	ompound	Grav. ((weight/v			Expanded U (95% C.L.; K		
1	tert-Butanol (TBA) CAS # 75-65-0 Purity 99%	(Lot SHBL0592)	49,864.0	μg/mL	+/- +/- +/-	291.9647 1,068.1530 1,099.1740	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Methanol CAS# 67-56-1							

Purity 99%

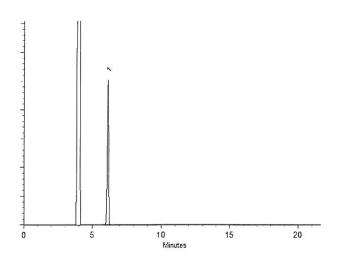
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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



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.



Date Mixed:

Balance: B251644995



Date Passed: 04-Mar-2020

03-Mar-2020

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
 www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.

- 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.
- 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



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



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

Catalog No. :	30006	Lot No.:	A0159420	
Description :	VOA Calibration Mix #1			
	VOA Calibration Mix #1 5,000µ 1mL/ampul	ıg/mL, P&T Methanol/W	ater(90:10),	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	June 30, 2023	Storage:	0°C or colder	

CERTIFIED VALUES

Elution Order		Compo	und	Grav. (weight/			Expanded ((95% C.L.; I		
1	Acetone CAS # Purity	67-64-1 99%	(Lot MKCK2598)	5,006.4	µg/mL	+/- +/- +/-	29.1076 302.0583 302.7754	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	2-Butano CAS # Purity	one (MEK) 78-93-3 99%	(Lot SHBK9603)	5,001.8	μg/mL	+/- +/- +/-	29.0809 301.7808 302.4972	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	4-Methy CAS # Purity	1-2-pentanone (MIBK) 108-10-1 99%	(Lot SHBK5017)	5,001.5	µg/mL	+/- +/- +/-	29.0792 301.7627 302.4791	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	2-Hexan CAS # Purity	one 591-78-6 99%	(Lot MKCL1599)	5,001.6	µg/mL	+/- +/- +/-	29.0797 301.7687 302.4851	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Me	thanol/Water (90:10)							

Solvent: P&T Methanol/Water (90:10) CAS # 67-56-1/7732-18-5 Purity 99%

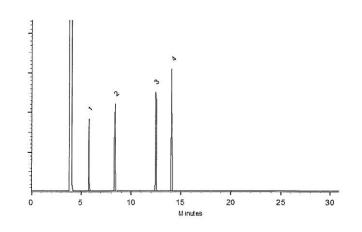
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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



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.

Cattleen Sottes

Cathleen Soltis - Mix Technician



Date Mixed: 30-Mar-2020

Balance: B251644995

Date Passed: 01-Apr-2020

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
 www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.

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



CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



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

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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. :	30470	Lot No.:	A0160703	
Description :	tert-Butanol Standard		- 472	
	tert-Butanol Std 50,000µg/mL	, P&T Methanol, 1mL/an	npul	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	May 31, 2023	Storage:	0°C or colder	

CERTIFIED VALUES

Elution Order	Comp	ound	Grav. ((weight/v			Expanded U (95% C.L.; K	CALL AND	
1	tert-Butanol (TBA) CAS # 75-65-0 Purity 99%	(Lot SHBL5806)	50,148.0	µg/mL	+/- +/- +/-	293.6276 1,074.2366 1,105.4344	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Methanol CAS# 67-56-1		<u></u>					

Purity 99%

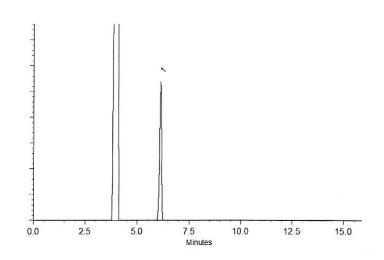
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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



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.

Conta 7. Bu

Russ Bookhamer - Operations Technician I

Date Mixed: 11-May-2020

Balance: 1128360905



Date Passed: 13-May-2020

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
 www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.

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



CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



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

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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. :	30006	Lot No.:	A0154174	
Description :	VOA Calibration Mix #1			
	VOA Calibration Mix #1 5,000µ 1mL/ampul	g/mL, P&T Methanol/W	/ater(90:10),	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	January 31, 2023	Storage:	0°C or colder	

CERTIFIED VALUES

Elution Order 1		Compound	Grav. Conc. (weight/volume)			Expanded ((95% C.L.; I		
	Acetone CAS # 67-64-1 Purity 99%	(Lot SHBK6362)	5,005.9	μg/mL	+/- +/- +/-	29.1047 302.0281 302.7452	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	2-Butanone (MEK) CAS # 78-93-3 Purity 99%	(Lot SHBK2537)	5,002.6	µg/mL	+/- +/- +/-	29.0855 301.8290 302.5456	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	4-Methyl-2-pentanon CAS # 108-10-1 Purity 99%	e (MIBK) (Lot SHBK5017)	5,007.2	μg/mL	+/- +/- +/-	29.1123 302.1066 302.8238	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	2-Hexanone CAS # 591-78-6 Purity 99%	(Lot MKCD9048)	5,009.0	μg/mL	+/- +/- +/-	29.1228 302.2152 302.9327	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Methanol/Water	(90:10)						

Solvent: P&T Methanol/Water (90:10) CAS # 67-56-1/7732-18-5 Purity 99%

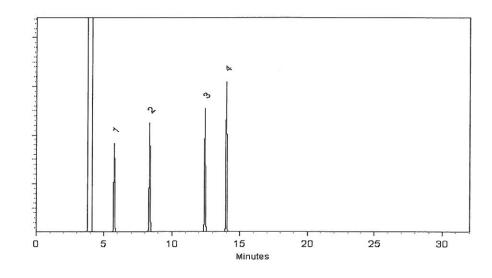
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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



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.



Fang-Yun Lo GC Analyst

Balance: B707717271 Date Mixed: 22-Oct-2019



Date Passed: 24-Oct-2019

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 <u>www.restek.com/Contact-Us</u> for use recommendations if your shipment was in-transit for more than 7 days at nonstandard 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)	< 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.

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

Absolute Standards, Inc. 300-368-1131 vww.absolutestandards.com			٩	Certified Reference Material CRM								ANAB ISO 17034 Accredite AR-1539 Certificate Numbe https://Absolutestandards.cor				
WEIGHT REPORT Part Number: Lot Number: Description Expiration Date: Recommended Storage: Nominal Concentration (u/mL):	010719 Univers 69 corr 010722 Freezer	al VOA Mega oponents	amix		7	0	78 108	6 300	Solvent(s): Methanol	Lot# DT140Q6			Formulate	1	Justin Dippold	010719 DATE 010719
NIST Test ID#: Weight(s) shown below were combined	268418		100.0		Balance Uncert Flask Uncertain	ainty	, -						Reviewed	By:	Pedro L. Rentas SDS Information	DATE
Compound	(RM#) Part Numbr	Lot er Number	Dil. Factor	Initial Vol. (ml.)	Initial Conc.(ug/mL)	Nominal Conc (µg/ml	Punty L) (%)	Purity Uncertainty	Uncertainty Pipette (mL)	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Uncertainty (+/-) (µg/mL)		ent Safety Info. On Attac OSHA PEL (TWA)	LD50
Acetonitrile Ally chloride (3-Chloropropene) Carbon disulphide . cis-1,4-Dichloro-2-butene trans-1,4-Dichloro-2-butene Dichtyl ether Chlyl ether Ehyl methacrylate Jodomethane 2-Methyl-1-propanol	(0324) (0325) (0060) (1196) (0486) (0153) (0381) (0489) (0445)	060812 102396 MKBZ86899 14718EF MKBP60411 209453 06126PX SHBF8718 15241EB	NA NA NA NA V NA NA	NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA	2000 2000 2000 2000 2000 2000 2000 200	99.9 99 95 96.5 99 99 99 99.5 99.5	0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	NA NA NA NA NA NA NA NA	0.20022 0.20204 0.21055 0.20728 0.20204 0.20204 0.20204 0.20103 0.20103	0.20050 0.20215 0.20215 0.21075 0.20750 0.20230 0.20225 0.20135 0.20120	2002.8 2001.1 2001.1 2001.9 2002.2 2002.6 2002.1 2003.2 2001.7	8.1 8.1 8.5 8.4 8.2 8.1 8.1 8.1 8.1	75-05-8 107-05-1 75-15-0 1476-11-5 110-57-6 60-29-7 97-63-2 74-88-4 78-83-1	40 ppm (70mg/m3/8H) 1 ppm (3mg/m3/8H) 4 ppm (12mg/m3) (skin) N/A N/A N/A N/A N/A S ppm(2mg/m3/8H)(skin) 50 ppm (150mg/m3/8H)	ori-rat 2460mg/kg ori-rat 700mg/kg nV/A NVA NVA ori-rat 14800mg/kg ori-rat 14800mg/kg ori-rat 2480mg/kg
Methylacrylonitrile Methyl acrylate Methyl methacrylate Methyl methacrylate Nitrobenzene 2-Nitropropane Pentachloroothane 1,1,2-Trichlorotrilluoroethane Gromodichloromethane Dibromodihoromethane	(0442) (1075) (0404) (0228) (0461) (0450) (0474) 35171 35171	00427ET SHBK0673 03021BX 01213TV 14002JX HGA01 18930 051118 051118		NA NA NA NA NA NA 5.00 5.00	NA NA NA NA NA NA 40001.7 40000.8	2000 2000 2000 2000 2000 2000 2000 200	99 99.9 99 99 95 98 99 NA NA	0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	NA NA NA NA NA NA 0.017 0.017	0.20204 0.20022 0.20204 0.20204 0.21055 0.20410 0.20204 NA NA	0.20215 0.20100 0.20220 0.20215 0.21075 0.20430 0.20220 NA NA	2001.1 2007.8 2001.6 2001.1 2001.9 2001.9 2001.8 1999.9 1999.8	8.1 8.1 8.1 8.5 8.2 8.1 15.9 15.9	126-98-7 96-33-3 80-62-6 98-95-3 79-46-9 76-01-7 76-13-1 75-27-4 124-48-1	1 ppm (3mg/m3/8H)(skin) 10 ppm(35mg/m3/8H)(skin) 100 ppm (410mg/m3/8H) 1 ppm (5mg/m3/8H)(skin) 10 ppm (35mg/m3/8H) N/A 1000 ppm (7600mg/m3/8H) N/A	orl-rat 120mg/kg orl-rat 277mg/kg orl-rat 7872mg/kg orl-rat 780mg/kg orl-rat 720mg/kg N/A orl-rat 43g/kg orl-rat 916mg/kg orl-rat 848mg/kg
cis-1,2-Dichloroethene trans-1,2-Dichloroethene trans-1,2-Dichloroethene Methylene chloride 1,1-Dichloroethene Carbon letrachloride Chloroform Dibromomethane 1,1-Dichloroethane	35171 35171 35171 32251 95321 95321 95321 95321	051118 051118 051118 122818 010419 010419 010419 010419	0.05 0.05 0.10 0.10 0.10 0.10 0.10 0.10	5.00 5.00 10.00 10.00 10.00 10.00 10.00	40002.0 40000.8 40003.2 20005.5 20001.7 20001.3 20001.8 20001.7	2000 2000 2000 2000 2000 2000 2000 200	NA NA NA NA NA NA NA	NA NA NA NA NA NA NA	0.017 0.017 0.042 0.042 0.042 0.042 0.042 0.042	NA NA NA NA NA NA NA	NA NA NA NA NA NA NA	1999.9 1999.8 1999.9 2000.3 2000.0 1999.9 2000.0 2000.0	15.8 15.9 15.8 18.7 18.7 18.7 18.7 18.7	156-59-2 156-60-5 75-09-2 75-35-4 75-25-2 56-23-5 67-66-3 74-95-3	N/A N/A 500 ppm 1 ppm (4mg/m3/8H) 0.5 ppm (4mg/m3/8H) 2 ppm (12.6mg/m3/8H) 50 ppm (240mg/m3/8CL) N/A	N/A orf-rat 1235mg/kg orf-rat 820mg/kg orf-rat 200mg/kg orf-rat 2350mg/kg orf-rat 208mg/kg orf-rat 908mg/kg
1,1-Dickioroethane 2-Dichioropropane achioroethane 1,2-Dibromo-3-chioropropane 1,2-Dibromosthane 1,2-Dichioroethane 1,2-Dichioroethane 1,2-Dichioropropane 1,3-Dichioropropane	95321 95321 95321 95321 35161 35161 35161 35161 35161	010419 010419 010419 010419 052418 052418 052418 052418 052418	0.10 0.10 0.10 0.05 0.05 0.05 0.05 0.05	10.00 10.00 10.00 5.00 5.00 5.00 5.00 5.	20000.8 20002.1 20002.2 20001.7 40000.5 40001.5 40001.4 40001.5 40001.0	2000 2000 2000 2000 2000 2000 2000 200	NA NA NA NA NA NA NA	NA NA NA NA NA NA NA	0.042 0.042 0.042 0.042 0.017 0.017 0.017 0.017 0.017	NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA	1999.9 2000.0 2000.0 1999.8 1999.9 1999.9 1999.9 1999.9	18.7 18.7 18.7 18.7 15.8 15.8 15.8 15.8 15.8	75-34-3 594-20-7 127-18-4 71-55-6 96-12-8 106-93-4 107-06-2 78-87-5 142-28-8	100 ppm N/A 25 ppm (170mg/m3/8H)(linal) 350 ppm (1900mg/m3/8H) 0.001 ppm 20 ppm (8H) 50 ppm (8H) 76 ppm (850mg/m3/8H) N/A	orl-rat 725mg/kg N/A orl-rat 2629mg/kg orl-rat 10300mg/kg orl-rat 170mg/kg orl-rat 670mg/kg orl-rat 1947mg/kg unr-mus 3600mg/kg
1.1-Dichloropropene cis-1,3-Dichloropropene trans-1,3-Dichloropropene Hexachloro-1,3-Dutadiene 1,1,2-Tetrachloroethane 1,1,2-Trichloroethane 1,1,2-Trichloroethane 1,1,2-Trichloroethane	35161 35161 35161 35161 35161 35161 35161 35161 35161	052418 052418 052418 052418 052418 052418 052418 052418 052418	0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00	39639.5 40001.2 40000.7 40000.9 40000.5 40001.5 40000.7 40000.6	2000 2000 2000 2000 2000 2000 2000 200	NA NA NA NA NA NA NA	NA NA NA NA NA NA NA	0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017	NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA	1981.6 1999.8 1999.8 1999.8 1999.8 1999.8 1999.9 1999.8 1999.8	24.2 15.9	563-58-6 10061-01-5 10061-02-6 87-68-3 630-20-6 79-34-5 79-00-5 79-01-6	N/A N/A N/A 0.02 ppm (0.24mg/m3/8H) N/A 5 ppm (35mg/m3/8H)(skin) 10 ppm (45mg/m3/8H)(skin) 50 ppm (270mg/m3/8H)(skin)	N/A N/A N/A orl-rat 82mg/kg orl-rat 800mg/kg orl-rat 836mg/kg orl-rat 836mg/kg
1,2,3-Trichloropropane Benzene Bromobenzene n-Butyl benzene Ehryl benzene p-Isopropyl toluene Naphthalene	35161 35162 35162 35162 35162 35162 35162 35162	052418 060418 060418 060418 060418 060418 060418	0.05 0.05 0.05 0.05 0.05 0.05 0.05	5.00 5.00 5.00 5.00 5.00 5.00 5.00	40000.5 40000.4 40000.5 40001.5 40000.4 40001.0 40001.5	2000 2000 2000 2000 2000 2000 2000 200	NA NA NA NA NA NA	NA NA NA NA NA NA	0.017 0.017 0.017 0.017 0.017 0.017 0.017	NA NA NA NA NA NA	NA NA NA NA NA NA	1999.8 1999.8 1999.8 1999.9 1999.8 1999.8 1999.8 1999.8	15.8 15.8 15.8 15.8 15.8 15.8 15.8 15.8	96-18-4 71-43-2 108-86-1 104-51-8 100-41-4 99-87-6 91-20-3	10 ppm (60mg/m3/8H) 1 ppm N/A N/A 100 ppm (435mg/m3/8H) N/A 10 ppm (50mg/m3/8H)	ori-rat 149.8mg/kg ori-rat 4894mg/kg ori-rat 2899mg/kg N/A ori-rat >2000mg/kg ori-rat 4750mg/kg ori-rat 490mg/kg
Styrene Toluene 1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene 1,2,4-Trimelhylbenzene m-Xylene tert-Bitty benzene	35162 35162 35162 35162 35162 35162 35162 35162 35163	060418 060418 060418 060418 060418 060418 060418 060418 060418	0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00	40000.5 40000.4 40002.4 40001.0 40001.7 40000.2 40001.0 40001.5	2000 2000 2000 2000 2000 2000 2000 200	NA NA NA NA NA NA NA	NA NA NA NA NA NA NA	0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017	NA NA NA NA NA NA NA	NA NA NA NA NA NA NA	1999.8 1999.8 1999.9 1999.9 1999.8 1999.8 1999.8 1999.8 1999.8	15.8 15.8 15.8 15.9 15.9 15.9 15.8 15.8	100-42-5 108-88-3 87-61-6 120-82-1 95-63-6 108-67-8 108-38-3 98-06-6	100 ppm 200 ppm N/A 5 ppm (CL) (40mg/m3) N/A N/A N/A 100 ppm (435mg/m3/8H) N/A	orl-rat 5000mg/kg orl-rat 5000mg/kg orl-rat 750mg/kg orl-rat 750mg/kg orl-rat 5g/kg N/A
1,2-Dichlorobenzene	35163 35163 35163 35163 35163 35163 35163 35163	051118 051118 051118 051118 051118 051118 051118	0.05 0.05 0.05 0.05 0.05 0.05 0.05	5.00 5.00 5.00 5.00 5.00 5.00 5.00	40001.5 40001.3 40001.6 40001.0 40001.4 40002.3 40001.5	2000 2000 2000 2000 2000 2000 2000	NA NA NA NA NA NA	NA NA NA NA NA NA	0.017 0.017 0.017 0.017 0.017 0.017 0.017	NA NA NA NA NA NA	NA NA NA NA NA NA	1999.9 1999.8 1999.8 1999.8 1999.8 1999.8 1999.9 1999.9	15.8 15.8 15.8 15.8 15.9 15.9 15.8 15.9	98-06-6 135-98-8 108-90-7 95-49-8 106-43-4 95-50-1 541-73-1	N/A N/A 75 ppm (350mg/m3/8H) 50 ppm (250mg/m3/8H) N/A 50 ppm (300mg/m3) (CL) N/A	N/A ort-rat 2240mg/kg ort-rat 2290mg/kg ort-rat 3900mg/kg ort-rat 2100mg/kg ort-rat 500mg/kg lpr-mus 1062mg/kg
1,4-Dichlorobenzene	35163	051118	0.05	5.00	40001.3	2000	NA	NA	0.017	NA	NA	1999.8	15.8	106-46-7	76 ppm (450mg/m3/8H)	ori-rat 500mg/kg

The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
 Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
 Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
 Standards, after opening ampule, should be stored with caps light and under appropriate laboratory conditions.
 All Standards, after opening, assumption, Status, C.S., "Coldentiates for Evaluating and Expressing the Uncertainty of NIST Measurement Result,"
 NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

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Certified Reference Material CRM



