

Prep Standard - Chemical Standard Summary

Order ID : N6070

Test : VOCMS Group3

Prepbatch ID :

Sequence ID/Qc Batch ID: vx121522,

Standard ID :

VP113990, VP115359, VP115432, VP115433, VP116911, VP117244, VP117471, VP117542, VP117544, VP117545,

Chemical ID :

V10601,V11274,V11275,V12010,V12080,V12224,V12411,V12412,V12684,V12685,V12757,V12766,V12779,V12780,V12 865,V12866,V12867,V12886,V12889,V13016,V13049,V13051,V13052,V13077,V13078,V13187,V13189,V13213,V13214,V13224,V13363,V13371,V13372,V13373,V13374,W2606,

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Recipe ID 719	NAME 8260 Working STD (BCM)-First source, 400PPM	<u>NO.</u> VP113990	Prep Date 07/28/2022	Expiration Date 01/28/2023	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 07/29/2022
FROM	1.00000ml of V12757 + 1.00000ml of 20.00000ml of V13016 = Final Quan			V12865 + 1.000	000ml of V1286	6 + 1.00000ml d	of V12867 +	

<u>Recipe</u> <u>ID</u>	NAME	<u>NO.</u>	Prep Date	Expiration Date	<u>Prepared</u> <u>By</u>	<u>ScaleID</u>	<u>PipettelD</u>	<u>Supervised By</u> Mahesh Dadoda
1810	8260 Working Std(2-CVE)-800ppm	<u>VP115359</u>	09/14/2022	03/14/2023	Semsettin Yesilyurt	None	None	09/14/2022
FROM	1.00000ml of V11274 + 1.00000ml of Quantity: 50.000 ml	V11275 + 1	.00000ml of \	/12779 + 1.000	00ml of V12780) + 46.00000ml	of V13224 = F	Final

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Recipe ID 247	NAME 8260 Internal Standard, 250PPM	<u>NO.</u> VP115432	Prep Date 09/16/2022	Expiration Date 01/15/2023	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 09/19/2022
FROM	0.25000ml of V12080 + 24.75000ml o	of V13224 =	= Final Quanti	ity: 25.000 ml				

<u>Recipe</u> <u>ID</u> 617	NAME 8260 Surrogate, 400PPM	<u>NO.</u> VP115433	<u>Prep Date</u> 09/16/2022	Expiration Date 03/14/2023	<u>Prepared</u> <u>By</u> Semsettin Yesilyurt	<u>ScaleID</u> None	PipettelD None	<u>Supervised By</u> Mahesh Dadoda 09/19/2022
FROM	0.40000ml of V12010 + 24.60000ml of	of V13224 =	= Final Quanti	ty: 25.000 ml	resilyurt			09/19/2022

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Recipe ID 257	NAME 8260 Calibration Working STD Mix-First source, 160PPM	<u>NO.</u> VP116911	Prep Date 11/15/2022	Expiration Date 12/19/2022	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 11/16/2022
FROM	0.40000ml of V12224 + 1.00000ml of 1.00000ml of V12886 + 1.00000ml of 1.00000ml of V13189 + 1.30000ml of Quantity: 25.000 ml	f V12889 +	1.00000ml of	V13077 + 1.000	000ml of V1307	8 + 1.00000ml d	of V13187 +	Final

<u>Recipe</u>				Expiration	Prepared			Supervised By
ID	NAME	<u>NO.</u>	Prep Date	<u>Date</u>	<u>By</u>	<u>ScaleID</u>	PipetteID	Mahesh Dadoda
51	8260 Working STD (Acrolein) -first source, 800PPM	<u>VP117244</u>	11/30/2022	12/28/2022	Semsettin Yesilyurt	None	None	12/02/2022
FROM	0.40000ml of V13374 + 1.20000ml o Quantity: 25.000 ml	f V13371 + ·	1.20000ml of	V13372 + 1.20	000ml of V1337	3 + 21.00000ml	of V13363 =	Final

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VOC STANDARD PREPARATION LOG

Recipe ID 218	<u>NAME</u> BFB, 25PPM	<u>NO.</u> VP117471	Prep Date 12/12/2022	Expiration Date 06/12/2023	Prepared By Semsettin Yesilyurt	<u>ScaleID</u> None	<u>PipetteID</u> None	Supervised By Krupa Patel 12/14/2022
FROM	0.25000ml of V10601 + 24.75000ml	of V13214 =	- Final Quanti	ty: 25.000 ml				

Recipe ID 589	NAME BFB TUNE CHECK	<u>NO.</u> VP117542	Prep Date 12/15/2022	Expiration Date 12/16/2022	Prepared By John Carlone	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 12/15/2022
FROM	39.98400ml of W2606 + 0.01600ml o	f VP117471	= Final Qua	ntity: 40.000 m	<u>, , , , , , , , , , , , , , , , , , , </u>			

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Recipe ID 620	NAME 50 PPB CCC, 8260-Water	<u>NO.</u> VP117544	Prep Date 12/15/2022	Expiration Date 12/16/2022	<u>Prepared</u> <u>By</u> John Carlone	<u>ScaleID</u> None	PipetteID None	Supervised By Mahesh Dadoda 12/15/2022
FROM	39.94450ml of W2606 + 0.00500ml o VP115359 + 0.01250ml of VP116911						1250ml of	

	12/15/2022
FROM 39.94450ml of W2606 + 0.00500ml of VP113990 + 0.00500ml of VP115433 + 0.00800ml of VP115432 + 0.01250ml of VP115359 + 0.01250ml of VP116911 + 0.01250ml of VP117244 = Final Quantity: 40.000 ml	



CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	30067 / BFB tuneing solution	A0147670	12/12/2023	12/12/2022 / SAM	01/09/2020 / sam	V10601
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	03/14/2023	09/14/2022 / SAM	09/18/2020 / sam	V11274
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	03/14/2023	09/14/2022 / SAM	09/18/2020 / sam	V11275
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]	A0173020	03/16/2023	09/16/2022 / SAM	06/04/2021 / SAM	V12010
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Supplier Restek	ItemCode / ItemName 555581 / Custom Standard, 8260 Internal Std [CS 5179-1]	Lot # A0173600	-		Received Date / Received By 06/22/2021 / SAM	
	555581 / Custom Standard, 8260 Internal Std		Date	Opened By 07/15/2022 /	Received By 06/22/2021 /	Lot #



CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	95319 / Revised Additions Mix (Min = 5)	031921	04/14/2023	10/14/2022 / SAM	11/30/2021 / SAM	V12411
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)	031921	04/14/2023	10/14/2022 / SAM	11/30/2021 / SAM	V12412
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	A0177872	04/14/2023	10/14/2022 / SAM	03/07/2022 / SAM	V12684
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	A0177872	04/14/2023	10/14/2022 / SAM	03/07/2022 / SAM	V12685
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	A0176219	01/28/2023	07/28/2022 / SAM	03/25/2022 / SAM	V12757
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	A0176219	01/28/2023	07/28/2022 / SAM	03/25/2022 / SAM	V12766



CHEMICAL RECEIPT LOG BOOK

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)	121321	03/14/2023	09/14/2022 / SAM	03/30/2022 / SAM	V12779
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)	121321	03/14/2023	09/14/2022 / SAM	03/30/2022 / SAM	V12780
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	A0183824	01/28/2023	07/28/2022 / SAM	04/22/2022 / SAM	V12865
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	A0183824	01/28/2023	07/28/2022 / SAM	04/22/2022 / SAM	V12866
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	A0183824	01/28/2023	07/28/2022 / SAM	04/22/2022 / SAM	V12867
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)	042921	04/14/2023	10/14/2022 / SAM	04/26/2022 / SAM	V12886



CHEMICAL RECEIPT LOG BOOK

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)	042921	04/14/2023	10/14/2022 / SAM	04/26/2022 / SAM	V12889
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)	0000288323	01/28/2023	07/28/2022 / SAM	07/11/2022 / SAM	V13016
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	A0179406	04/14/2023	10/14/2022 / SAM	08/12/2022 / SAM	V13049
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	A0179406	04/14/2023	10/14/2022 / SAM	08/12/2022 / SAM	V13051
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	A0179406	04/14/2023	10/14/2022 / SAM	08/12/2022 / SAM	V13052
	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Supplier						



CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Restek	555408 / Custom Standard, Vinyl Acetate Standard w/ Grav [CS 5066-6] TWO SEPARATE LOTS	A0187424	04/14/2023	10/14/2022 / SAM	08/12/2022 / SAM	V13078
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	A0186868	04/14/2023	10/14/2022 / SAM	09/01/2022 / SAM	V13187
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	A0186868	04/14/2023	10/14/2022 / SAM	09/01/2022 / SAM	V13189
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)	22C2362001	05/11/2023	11/11/2022 / pedro	09/13/2022 / SAM	V13213
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)	22C2362001	06/12/2023	12/12/2022 / SAM	09/13/2022 / SAM	V13214
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
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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)	22C2862010	05/29/2023	11/29/2022 / SAM	11/28/2022 / SAM	V13363
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	112822	12/28/2022	11/29/2022 / SAM	11/29/2022 / SAM	V13371
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	112822	12/28/2022	11/29/2022 / SAM	11/29/2022 / SAM	V13372
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	112822	12/28/2022	11/29/2022 / SAM	11/29/2022 / SAM	V13373
Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	91980 / Acrolin Std (Min = 5)	112822	12/28/2022	11/29/2022 / SAM	11/29/2022 / SAM	V13374

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

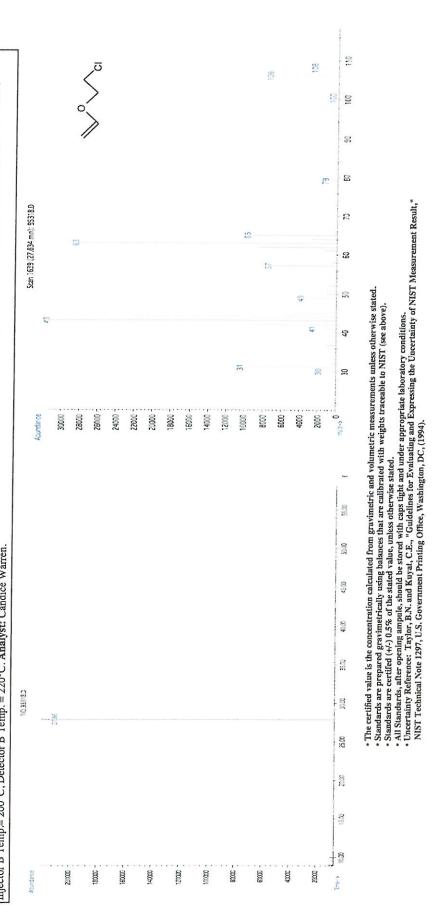
Absolute Standards, In	i
800-368-1131	
www.absolutestandards.com	

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-netlo: 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

Precautions for safe handling Storage Conditions	Avoid contact with skin and eyes. A Use ventilation Keep away from sou Keep container tightly closed in a d Reep container tightly to prevent leakage	we oN No ignition. No sm y and well-ventilated pla	r or mist. oking. Prevent the build up of electrosta ace. Containers which are opened must	ic charge. be carefully resealed
Section VII. HANDLING A	JDAROTS DI			
Personal precautions Environmental precautions Clean up	West respiratory protection. Avoid breath ignition. Vapours accumulate to form exp Prevent further leakage or spillage if saft Contain spillage, and then collect and pla	et o do so. Do not let propositions.	oduct enter drains.	
Section VI. ACCIDENTAL	SARUSAAM ASAAJAR			
Flammability Suitable extinguishing media Protective equipment for fire	heat/sparks/open flame/hot surface Use water spray, alcohol-resistant f Wear self contained breathing appa	. No smoking. oam, dry chemical or ca	e temperature is above the flash point. K arbon dioxide. Jecessary.	топ үвмя дэе
Section V. FIREFIGHTING	SERUSAEM			
General advice If inhaled In case of skin contact In case of eye contact If swallowed	Consult a physician. Show this safety de It inhaled, move person into fresh air. If Wash with soap and water. Consult a p Rinse thoroughly with plenty of water for Rinse thoroughly with plenty of water for Do NOT induce vomiting. Rinse mouth v	not breathing, give arlifi hysician. r at least 15 minutes and	cial respiration. Consult a physician. d consult a physician.	
Section IV. FIRST AID ME				
See Certified Weight INTENDED USE: REFER	Report For Other Analytes P BUCE MATERIAL	esent At Trace (Quantities.	
Components (Specific Che Methanol	mical Identity; Common Name(s)) METHYL ALCOHOL	1-93-73 :#SAO		(lenoitqo) % > 97
Section III - Composition				
	Signal Word: DANGER			
P271 Cause da	Appendiate Liquid and Vapor mage to organs ntilated area mash with soap and water	6305,351,338 P361 P280 P301, 311, 331	Toxic if swallowed, skin conta Suspected of causing cancer Use gloves, eye protection/fac If in eyes, remove contacts, rin	blishe sheild
	GHS Classification in acco	rdance with 29 CF	(SOH AHSO) 0161 A	
Section II - Hazards Iden	noitsaition	⁸⁶		
seath	44 Rossotto Dr. Hamden CT, 06514		phone International	1-362-323-3600 May 1, 2015
IDENTITY ANALYT Manufacturer's Name	CAL STANDARD DISSOLVED IN ABSOLUTE STANDARDS INC		AGANAO & ASU enorig	1-800-535-5053
Section I Product and C	noitsoititnebl ynsqmo			
	Safety Data Sheet (SDS)	GHS/OSHA Cor	tnsilqr	
sbrandate Standards	juc.	Hamden, CT 06518-05	282	FAX: 203-281-2917 FAX: 203-281-2922

Section IX - Physical/Chemical Characteristics

mqq 005 AWT 1-88-78

Potential for skin absorption, ingestion and inhalation. mqq 00S AWT

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

Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.

and kept upright to prevent leakage.

slx.202-lonsdfaM

Skin notation

Methanol

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 supervised by a person that indication is this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR supervised by a person trained in chemical handling. The user is responsible for determining the precautions and daters of this chemical noting of the material by trained personnel, or use personnel, or is one particular application. Depending on use and respirators must be used to avoid contact with noticers of this chemical rapors/Innes. Exposure to this product may have a daters of this chemical approx/Innes. Exposure to this product may have a canoir warm of all the potential uses are so varied, ABSOLUTE STANDARDS INC. writed, ABSOLUTE STANDARDS INC, writed, ABSOLUTE STANDARDS INC, writed, ABSOLUTE STANDARDS INC, writed, ABSOLUTE STANDARDS INC. The user is responsed to avoid contact with noticer substances. Material are the precision set of the product may have a canoir warm of all the potential uses are so raried, ABSOLUTE STANDARDS INC. writed, ABSOLUTE STANDARDS INC. Tamical rapors/Intend are approximated as a undertal or there the repetited or so and the chemicals or aubstances. ABSOLUTE STANDARDS INC. Warmanis that the chemical rapors/Intend set of the potential uses are so raried, ABSOLUTE STANDARDS INC. Warmanis that the chemical rapors/Intend set of the potential target of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. write the repetifications set of the potential uses are so raried, ABSOLUTE STANDARDS INC. The user states are so to the product and the chemicals or used are and the potential uses are so raried. ABSOLUTE STANDARDS inc. write the repetifications set of the potential target of the potential uses are so raried. ABSOLUTE STANDARDS inc. write the repetifications set of the potential tar

Section XVI. Misc. INFORMATION

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

Section XV. REGULATORY INFORMATION

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

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

Section XIV. TRANSPORT INFORMATION

Dispose with normal Laboratory Solvent Waste.

Section XIII. DISPOSAL CONSIDERATIONS

EC100 10'000'00 môly - 54 P EC20 54'200'00 môly - 48 P FC20 12'400 môly - 68 P

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

LD50 Oral - rat - 5,628 mg/kg LC50 Inhalation - rat - 4 h - 64000 ppm LD50 Dermal - rabbit - 15,800 mg/kg Toxic it absorbed through skin. Causes skin irritation. Toxic it absorbed through skin. Causes skin irritation. Toxic it amagekeye irritation Toxic it swallowed. Toxic it swallowed.

Section XI. TOXICOLOGICAL INFORMATION

Chemical stability Possibility of hazardous reactions Conditions to avoid Materials to avoid Materials

Section X. STABILITY AND REACTIVITY

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

			COMPLETE	Solubility in Water
4.6	Evaporation rate (Butyl Acetate = 1)	11.1		Vapor Density (AIA = 1)
O∘86-	Melting Point	96		Vapor Pressure (mm Hg)
62.0	Specific Gravity (H2O = 1)	0°28		tnio9 Poilio8

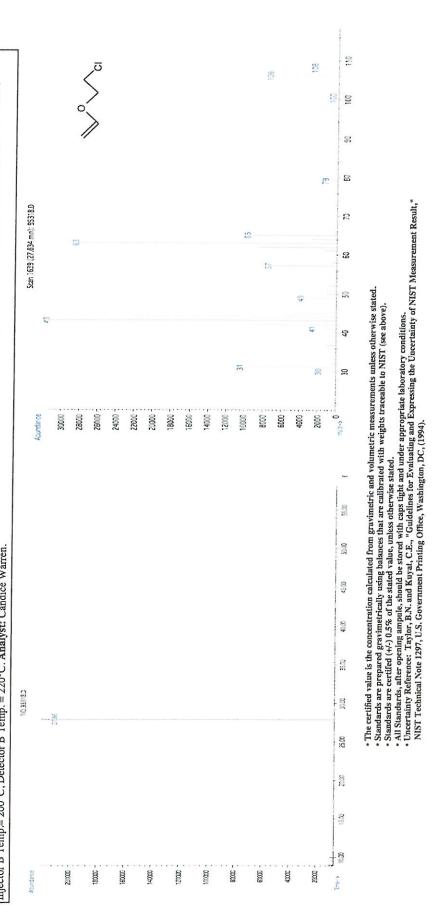
Absolute Standards, In	i
800-368-1131	
www.absolutestandards.com	

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-netlo: 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

Precautions for safe handling Storage Conditions	Avoid contact with skin and eyes. A Use ventilation Keep away from sou Keep container tightly closed in a d Reep container tightly to prevent leakage	we oN No ignition. No sm y and well-ventilated pla	r or mist. oking. Prevent the build up of electrosta ace. Containers which are opened must	ic charge. be carefully resealed
Section VII. HANDLING A	JDAROTS DI			
Personal precautions Environmental precautions Clean up	West respiratory protection. Avoid breath ignition. Vapours accumulate to form exp Prevent further leakage or spillage if saft Contain spillage, and then collect and pla	et o do so. Do not let propositions.	oduct enter drains.	
Section VI. ACCIDENTAL	SARUSAAM ASAAJAR			
Flammability Suitable extinguishing media Protective equipment for fire	heat/sparks/open flame/hot surface Use water spray, alcohol-resistant f Wear self contained breathing appa	. No smoking. oam, dry chemical or ca	e temperature is above the flash point. K arbon dioxide. Jecessary.	топ үвмя дэе
Section V. FIREFIGHTING	SERUSAEM			
General advice If inhaled In case of skin contact In case of eye contact If swallowed	Consult a physician. Show this safety de It inhaled, move person into fresh air. If Wash with soap and water. Consult a p Rinse thoroughly with plenty of water for Rinse thoroughly with plenty of water for Do NOT induce vomiting. Rinse mouth v	not breathing, give arlifi hysician. r at least 15 minutes and	cial respiration. Consult a physician. d consult a physician.	
Section IV. FIRST AID ME				
See Certified Weight INTENDED USE: REFER	Report For Other Analytes P BUCE MATERIAL	esent At Trace (Quantities.	
Components (Specific Che Methanol	mical Identity; Common Name(s)) METHYL ALCOHOL	1-93-73 :#SAO		(lenoitqo) % > 97
Section III - Composition				
	Signal Word: DANGER			
P271 Cause da	Appendiate Liquid and Vapor mage to organs ntilated area mash with soap and water	6305,351,338 P361 P280 P301, 311, 331	Toxic if swallowed, skin conta Suspected of causing cancer Use gloves, eye protection/fac If in eyes, remove contacts, rin	blishe sheild
	GHS Classification in acco	rdance with 29 CF	(SOH AHSO) 0161 A	
Section II - Hazards Iden	noitsaition	⁸⁶		
seath	44 Rossotto Dr. Hamden CT, 06514		phone International	1-362-323-3600 May 1, 2015
IDENTITY ANALYT Manufacturer's Name	CAL STANDARD DISSOLVED IN ABSOLUTE STANDARDS INC		AGANAO & ASU enorig	1-800-535-5053
Section I Product and C	noitsoititnebl ynsqmo			
	Safety Data Sheet (SDS)	GHS/OSHA Cor	tnsilqr	
sbrandate Standards	juc.	Hamden, CT 06518-05	282	FAX: 203-281-2917 FAX: 203-281-2922

Section IX - Physical/Chemical Characteristics

mqq 005 AWT 1-88-78

Potential for skin absorption, ingestion and inhalation. mqq 00S AWT

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

Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Eye protection.

and kept upright to prevent leakage.

slx.202-lonsdfaM

Skin notation

Methanol

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 supervised by a person that indication is this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR supervised by a person trained in chemical handling. The user is responsible for determining the precautions and daters of this chemical noting of the material by trained personnel, or use personnel, or is one particular application. Depending on use and respirators must be used to avoid contact with noticers of this chemical rapors/Innes. Exposure to this product may have a daters of this chemical approx/Innes. Exposure to this product may have a canoir warm of all the potential uses are so varied, ABSOLUTE STANDARDS INC. writed, ABSOLUTE STANDARDS INC, writed, ABSOLUTE STANDARDS INC, writed, ABSOLUTE STANDARDS INC, writed, ABSOLUTE STANDARDS INC. The user is responsed to avoid contact with noticer substances. Material are the precision set of the product may have a canoir warm of all the potential uses are so raried, ABSOLUTE STANDARDS INC. writed, ABSOLUTE STANDARDS INC. Tamical rapors/Intend are approximated as a undertal or there the repetited or so and the chemicals or aubstances. ABSOLUTE STANDARDS INC. Warmanis that the chemical rapors/Intend set of the potential uses are so raried, ABSOLUTE STANDARDS INC. Warmanis that the chemical rapors/Intend set of the potential target of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. write the repetifications set of the potential uses are so raried, ABSOLUTE STANDARDS INC. The user states are so to the product and the chemicals or used are and the potential uses are so raried. ABSOLUTE STANDARDS inc. write the repetifications set of the potential target of the potential uses are so raried. ABSOLUTE STANDARDS inc. write the repetifications set of the potential tar

Section XVI. Misc. INFORMATION

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

Section XV. REGULATORY INFORMATION

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

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

Section XIV. TRANSPORT INFORMATION

Dispose with normal Laboratory Solvent Waste.

Section XIII. DISPOSAL CONSIDERATIONS

EC100 10'000'00 môly - 54 P EC20 54'200'00 môly - 48 P FC20 12'400 môly - 68 P

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

LD50 Oral - rat - 5,628 mg/kg LC50 Inhalation - rat - 4 h - 64000 ppm LD50 Dermal - rabbit - 15,800 mg/kg Toxic it absorbed through skin. Causes skin irritation. Toxic it absorbed through skin. Causes skin irritation. Toxic it amagekeye irritation Toxic it swallowed. Toxic it swallowed.

Section XI. TOXICOLOGICAL INFORMATION

Chemical stability Possibility of hazardous reactions Conditions to avoid Materials to avoid Materials

Section X. STABILITY AND REACTIVITY

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

			COMPLETE	Solubility in Water
4.6	Evaporation rate (Butyl Acetate = 1)	11.1		Vapor Density (AIA = 1)
O∘86-	Melting Point	96		Vapor Pressure (mm Hg)
62.0	Specific Gravity (H2O = 1)	0°28		tnio9 Poilio8

• The ce • Standa • Standa • All Sta • Uncert NIST	1002 022 021 001	192000 -	Abordance	1. 2-Chloroethyl vinyl ether 74 MKCD0033 10000 99 Method: GC6MSD-1 M. Detector: MSD. Column: (60m X 0.25mm X 1.5 μm). Injector B Temp.= 200°C, Detector B Temp.= 220°C. Analyst: Candice Warren.	Compound 2-Onloree Expiration Date: 121324 Recommended Storage: Refrigeration Nominal Concentration (µg/mL): 10000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (mL): Compound RM#	CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description	Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com
tified value is the concentration calcula rds are prepared gravimetrically using l rds are certified (+/-) 0.5% of the stated indards, after opening ampule, should anards, after opening ampule, should anards, after opening angule, should anards, after opening angule, and Kuya lichnical Note 1297, U.S. Government I	30.00 40.00 4500	20	Caltas	74 MKCD0033 10000 0. Column: (60m X 0.25mm X 1. 1. mp. = 220°C. Analyst: Candice W	2-chioroenry vinyi emer 121324 Refrigerate (4 °C) 10000 6UTB nd diluted to (mL): 30.0 Nominal RM# Lot Number Conc (vg/mL)	95318 121321	*
 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 (+1) 0.5% of the stated value, unless otherwise stated. All Standards, after opening annpule, 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). 	24000 22000 22000 18000 16000 100000 100000 10000 10000 10000 10000 10000 10000 10000	30000 - 28000 -	Abundance	99 0.2 0.30320 0.30411 5 μm). Oven Profile: Temp 1 = 35°C (Time 1: Varren.	5E-05 Balance Uncertainty 0.0003 Flask Uncertainty Purity Uncertainty Target Actual) (%) Purity Weight (g) Weight (g)	Solvent(s): Lot # Methanol EA899-US	Certified Reference Material
less otherwise stated. NST (see above). Pry conditions. 2 Uncertainty of NIST Measurement Result,"	10 10 10 10	3	Szan 1639 (27,834 mm): 95318.0 43	10030.2 40.7 110-75-8 =10min.), Temp 2 = 200°C (Time 2=8.75 m	Formulated By: Benson C Formulated By: Pedro L. F Reviewed By: Pedro L. F Expanded SDS Info Actual Uncertainty (Solvent Safety Inf Conc(ug/mL) (++) (ug/mL) CAS# 05HA P	S.	al CRM
				n-ra	121321 han DATE han DATE 121321 Instantion o. On Attached pg.) L (TWA)		ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com

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• The ce • Standa • Standa • All Sta • Uncert NIST	1002 022 021 001	192000 -	Abordance	1. 2-Chloroethyl vinyl ether 74 MKCD0033 10000 99 Method: GC6MSD-1 M. Detector: MSD. Column: (60m X 0.25mm X 1.5 μm). Injector B Temp.= 200°C, Detector B Temp.= 220°C. Analyst: Candice Warren.	Compound 2-Onloree Expiration Date: 121324 Recommended Storage: Refrigeration Nominal Concentration (µg/mL): 10000 NIST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (mL): Compound RM#	CERTIFIED WEIGHT REPORT Part Number: Lot Number: Description	Absolute Standards, Inc. 800-368-1131 www.absolutestandards.com
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less otherwise stated. NST (see above). Pry conditions. 2 Uncertainty of NIST Measurement Result,"	10 10 10 10	3	Szan 1639 (27,834 mm): 95318.0 43	10030.2 40.7 110-75-8 =10min.), Temp 2 = 200°C (Time 2=8.75 m	Formulated By: Benson C Formulated By: Pedro L. F Reviewed By: Pedro L. F Expanded SDS Info Actual Uncertainty (Solvent Safety Inf Conc(ug/mL) (++) (ug/mL) CAS# 05HA P	S.	al CRM
				n-ra	121321 han DATE han DATE 121321 Instantion o. On Attached pg.) L (TWA)		ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com

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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.

Catalog No. :	<u>555582</u> Lot No.: <u>A0173020</u>				
Description :	Custom 8260A/B Surrogate Mix				
	Custom 8260A/B Surrogate 1mL/ampul	Mix 25,000µg/mL, P&T Me	ethanol,		
Container Size :	2 mL	Pkg Amt:	> 1 mL		
Expiration Date :	June 30, 2024	Storage:	10°C or colder		
		Ship:	Ambient		

CERTIFIED VALUES

Component #	. Compoun	d	Grav. C (weight/v	NEW CONTRACTOR OF A STATE		Expanded U (95% C.L.; K		and a constant
1	1,2-Dichloroethane-d4 CAS # 17060-07-0 Purity 99%	(Lot PR-29377)	25,060.0		+/- +/- +/-	231.9100 1,416.6261 1,449.2417	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	1-Bromo-4-fluorobenzene (BFB) CAS # 460-00-4 Purity 99%	(Lot 20401KO)	25,188.0		+/- +/- +/-	233.0945 1,423.8618 1,456.6441	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	Dibromofluoromethane CAS # 1868-53-7 Purity 99%	(Lot 012021)	25,212.0		+/- +/- +/-	233.3166 1,425.2185 1,458.0320	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	Toluene-d8 CAS # 2037-26-5 Purity 99%	(Lot PR-31750)	25,104.0		+/- +/- +/-	232.3171 1,419.1134 1,451.7863	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed

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

Lane Kibe - Mix Technician

Date Mixed: 03-Jun-2021

Balance: B251644995

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) -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: 05/24/21

www.restek.com

555582 / Custom 8260A/B Surrogate Mix

Restek Corporation

110 Benner Circle Bellefonte, Pa. 16823

814-353-1300 814-353-1309

www.restek.com

For Laboratory use only

7

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

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:





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

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:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Toxic if swallowed or in contact with skin. Causes damage to organs.
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.
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
P&T Methanol	67-56-1	200-659-6	90
1-Bromo-4-fluorobenzene (BFB)	460-00-4	207-300-2	2.5
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

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
Fire and/or Explosion Hazards:	keep exposed 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 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. HANDLING AND STORAGE

7. HANDLING AND S					and the second			
Handling Technical Measures and Precautions: Storage Technical Measures and Conditions:			 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 Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition 					
				p away norn sources of	igniuon			
8. EXPOSURE CONT	ROLS / PERS	SONAL PROT	ECTION					
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			
1-Bromo-4- fluorobenzene (BFB)	460-00-4	Not established	None Known	Not established	No data available			
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			
Personal Protection:								
Engineering Measure	es:			Local exhaust ventilation is recommended when generating excessive levels of				
Respiratory Protection:			vapours from handling or thermal processing. 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: We			Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.					
Skin Protection: product. Do not wear contact lenses. Wear protective gloves. Inspect gloves for chemical break-through and repla regular intervals. Clean protective equipment regularly. Wash hands and oth 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:	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
	mmHg (HSDB)
Melting Point (°C):	-98 °C
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
Odor Threshold:	No data available
Solubility:	Moderate; 50-99%
5	

Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	90
Molecular Weight:	32.04

10. STABILITY AND REACTIVITY

Stability:

.

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

11. TOXICOLOGICAL IN	FORMATION					
Routes of Entry:		Inhalation, Skin Contact, Eye Contact, Ingestion				
Target Organs Potentia	Ily Affected By Exposure					
Chemical Interactions	That Change Toxicity:	Tract, Respiratory Tract None Known				
Immediate (Acute) Healt	th Effects by Route of Ex	posure:				
Inhalation Irritation:		spiratory irritation, dizziness, weakness, fatigue, nausea				
Inhalation Toxicity:	central nervous system	emic damage (see "Target Organs)Methanol can cause lepression and overexposure can cause damage to the				
Skin Contact:		isual impairment or blindness. In irritation, defatting, and dermatitis. Not likely to cause				
Eye Contact:		tation, tearing and reddening, but not likely to issue.				
Ingestion Irritation:	Irritating to mouth, throat	t, and stomach. Can cause abdominal discomfort, arrhea.Highly toxic and may be fatal if swallowed.				
Ingestion Toxicity:		cause target organ failure and/or death.May be fatal if				
Long-Term (Chronic) He	alth Effects:					
Carcinogenicity:	1	No data.				
Reproductive and Deve	lopmental 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				
Skin Contact:		"Target Organs)				
Skill Collact.		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 Toxicologica	al Data:					
Chemical Name	CAS No.	LD50/LC50				
Benzene, 1-bromo-4-fluor	ro- 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 Carcinogeni OSHA:	c Data:					
Chemical Name No data available	CAS No.					
ACGIH: Chemical Name	CAS No.					
No data available	040 110.					
NIOSH:						
Chemical Name No data available	CAS No.					
555582 / Custom 8260A/B \$	Surrogate Mix	Page 4 of 6				

NTP: Chemical Name No data available	CAS No.					
IARC: Chemical Name	CAS No.		Group No.			
12. ECOLOGICAL INFORMAT	TION					
Overview: Mobility: Persistence: Bioaccumulation: Degradability: Ecological Toxicity Data:		to plants and/or w No data No data No data	No data No data Biodegrades slowly.			
13. DISPOSAL CONSIDERAT	IONS			K. F. C.		
Waste Description of Spent Product: Disposal Methods: Waste Disposal of Packaging:		spent or discarded render the mixture waste determinati Dispose of by inci or Provincial regul Comply with all Lo	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	RMATION		-			
United States: DOT Proper Shipping Name: UN Number: Hazard Class: Packing Group:		Flammable liquids UN1993 3 II	s, n.o.s. (Methanol)	~		
International: IATA Proper Shipping Name: UN Number: Hazard Class: Packing Group:		Flammable liquids UN1993 3 II	3			
Marine Pollutant: No						
Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant			
No data available]		

15. REGULATORY INFORMATION

the second se						
United States:						
Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA	
P&T Methanol	67-56-1	Х	Х	-	Х	
1-Bromo-4-	460-00-4	-		-	Х	
fluorobenzene (BFB)						
1,2-dichloroethane-d4	17060-07-0	-	-	-	-	
dibromofluoromethane	1868-53-7	-	-	-	-	
toluene-d8	2037-26-5	-	-	-	-	
The following chemic	als are listed or	n 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	X	X
1-Bromo-4-	460-00-4	-	-	-	
fluorobenzene (BFB)					
1,2-dichloroethane-d4	17060-07-0	-	-	-	-
dibromofluoromethane	1868-53-7	-	-	-	-
toluene-d8	2037-26-5	-	-	-	-

16. OTHER INFORMATION

Prior Version Date: Other Information:	07/20/18 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.

Catalog No. :	<u>555581</u> Lot No.: <u>A0173600</u>				
Description :	Custom 8260 Internal Standard Mix				
	Custom 8260 Internal Standa 1mL/ampul	ard Mix 25,000µg/mL, P&`	۲ Methanol,		
Container Size :	2 mL	Pkg Amt:	> 1 mL		
Expiration Date :	June 30, 2024	Storage:	10°C or colder		
		Ship:	Ambient		

CERTIFIED VALUES

Componen #	t	Compound	Grav. Conc. (weight/volume)		Expanded U (95% C.L.; K	and the second sec	
1	1,4-Dichlorobenzene-d CAS# 3855-82-1 Purity 99%	4 (Lot PR-30447)	25,040.0 μg/mL	+/- +/- +/-	231.7249 1,415.4955 1,448.0851	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	1,4-Difluorobenzene CAS # 540-36-3 Purity 99%	(Lot MKBN8571V)	25,216.0 μg/mL	+/- +/- +/-	233.3536 1,425.4447 1,458.2633	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	Chlorobenzene-d5 CAS# 3114-55-4 Purity 99%	(Lot PR-29571)	25,120.0 μg/mL	+/- +/- +/-	232.4652 1,420.0178 1,452.7116	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	Pentafluorobenzene CAS # 363-72-4 Purity 99%	(Lot MKCK2250)	25,092.0 μg/mL	+/- +/- +/-	232.2061 1,418.4350 1,451.0923	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed

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

Malher Workman - Operations Technician I

Date Mixed: 18-Jun-2021

Balance: 1128360905

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) -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: 05/24/21

www.restek.com

555581 / Custom 8260 Internal Standard Mix

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

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:





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

8

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:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Toxic if swallowed or in contact with skin. Causes damage to organs.
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.
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	90
1,4-difluorobenzene	540-36-3	208-742-9	2.5
pentafluorobenzene	363-72-4	206-658-7	2.5
1,4-dichlorobenzene-d4	3855-82-1		2.5
chlorobenzene-d5	3114-55-4	221-482-0	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. 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

Methods for Clean-up:	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 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		
P&T 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	Not established	None Known	Not established	No data available		
pentafluorobenzene	363-72-4	Not established	None Known	Not established	No data available		
1,4-dichlorobenzene- d4	3855-82-1	Not established	None Known	Not established	No data available		
chlorobenzene-d5	3114-55-4	Not established	None Known	Not established	No data available		
Personal Protection:							
Engineering Measure	es:		Local exhaust ventilation is recommended when generating excessive levels of				
Respiratory Protection:			vapours from handling or thermal processing. 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				

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):	64.7 °C at 760 mmHg (HSDB)
Melting Point (°C):	-98 °C
Flash Point (°F):	36
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

9. PHYSICAL AND CHEMICAL PROPERTIES

Odor Threshold: Solubility: Partition Coefficient: n- VOC % by weight: Molecular Weight:	Mc	data available oderate; 50-99% data available .04	
10. STABILITY AND REA	ACTIVITY		
Stability: Conditions to Avoid: Materials to Avoid / Che Hazardous Decomposit		Stable under normal conditions. None known. Strong oxidizing agents Carbon dioxide Carbon monoxide	
11. TOXICOLOGICAL IN	FORMATION		
Routes of Entry: Target Organs Potentia	lly Affected By Exposure	Inhalation, Skin Contact, Eye Contact, Ingestion E: Eyes, Central nervous system stimulation, Skin, GI Tract, Respiratory Tract	
Chemical Interactions T	That Change Toxicity:	None Known	
Immediate (Acute) Healt Inhalation Irritation:	and headache.	piratory irritation, dizziness, weakness, fatigue, nausea	
Inhalation Toxicity:	central nervous system of	emic damage (see "Target Organs)Methanol can cause depression and overexposure can cause damage to the isual impairment or blindness.	
Skin Contact:	Can cause moderate ski	n irritation, defatting, and dermatitis. Not likely to cause	
Eye Contact:	permanent damage. Can cause moderate irrit permanently injure eye ti	tation, tearing and reddening, but not likely to issue.	
Ingestion Irritation:		t, and stomach. Can cause abdominal discomfort, arrhea.Highly toxic and may be fatal if swallowed.	
Ingestion Toxicity:		cause target organ failure and/or death.May be fatal if	
Long-Term (Chronic) He Carcinogenicity: Reproductive and Deve Inhalation: Skin Contact: Skin Absorption: Ingestion: Component Toxicologica	lopmental Toxicity:	No data. No data available to indicate product or any components 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) Upon prolonged or repeated contact, can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage. Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage Toxic if swallowed. May cause target organ failure and/or death.	
NIOSH: Chemical Name Benzene, 1,2,3,4,5-penta Methanol	CAS No.	LD50/LC50 Oral LD50 Rat 2 g/kg Inhalation LC50 Rat 22500 ppm 8 h	
Component Carcinogeni OSHA: Chemical Name No data available	c Data: 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	CAS No.		Group No.		
12. ECOLOGICAL INFORMATION	1				
Overview:		Moderate ecolog	gical hazard. This product	may be dangerous	
Mobility: Persistence: Bioaccumulation: Degradability: Ecological Toxicity Data:	No data No data No data Biodegrades slov	to plants and/or wildlife. No data No data			
13. DISPOSAL CONSIDERATION	S			2	
Waste Description of Spent Proc	luct:		ed material is a hazardous ed material with other mat		
Disposal Methods: Waste Disposal of Packaging:		render the mixtu waste determina Dispose of by ind or Provincial reg Comply with all L	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	ATION				
United States:					
DOT Proper Shipping Name:			ls, n.o.s. (Methanol,		
UN Number:		Pentafluorobenz UN1993	ene)		
Hazard Class:		3			
Packing Group:		11			
International:					
IATA Proper Shipping Name:		Flammable liquid	Flammable liquids, n.o.s. (Methanol,		
		Pentafluorobenzene)			
UN Number:	UN1993				
Hazard Class:		3			
Packing Group:		II			
Marine Pollutant: No					
Chemical Name	CAS#	Marine Pollutant	Severe Marine]	
			Pollutant		
No data available					

15. REGULATORY INFORMATION

United States:		and the second sec			
Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
P&T Methanol	67-56-1	Х	Х	-	Х
1,4-difluorobenzene	540-36-3	-	-	-	-
pentafluorobenzene	363-72-4	-	·-	-	Х
1,4-dichlorobenzene-d4	3855-82-1	<u> </u>	-	-	-
chlorobenzene-d5	3114-55-4	-	-	-	-

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:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
P&T Methanol	67-56-1	X	X	X	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:	12/15/16
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.



110 Benner Circle Bellefonte, PA 16823-8812

Tel: (800)356-1688

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



ACCREDITED ISOREC 17025 Accredited Testing Laboratory Certificate #322202

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. :	30225	Lot No.:	A0176219	
Description :	Bromochloromethane Standard			
	Bromochloromethane 2000µg/m	L, P&T Methanol, 1mL	/ampul	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	September 30, 2026	Storage:	0°C or colder	
		Ship:	Ambient	

CERTIFIED VALUES

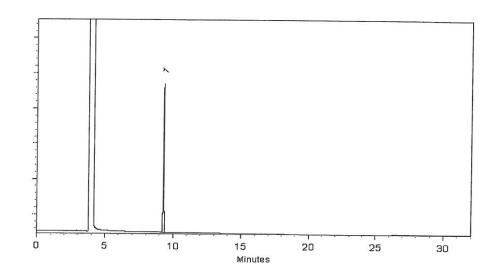
dulah

Elution Order		Cc	ompound	Grav. (weight/			Expanded ((95% C.L.; I	(-2)	
1	Bromochloromethane CAS # 74-97-5 Purity 99%		(Lot 00008541)	2,016.0	+/	+/- +/- +/-	+/- 113.0617 μg/	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Meth	anol							

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:



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:

08-Sep-2021 Balanc

Balance: 1128353505

Marlina Cowan - Operations Tech I

Date Passed: 10-Sep-2021

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

Expiration Notes:

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

Purity Notes:

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

Certified Uncertainty Value Notes:

The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified 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 non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

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

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

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

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



110 Benner Circle Bellefonte, PA 16823-8812

Tel: (800)356-1688

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



ACCREDITED ISOREC 17025 Accredited Testing Laboratory Certificate #322202

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. :	30225	Lot No.:	A0176219	
Description :	Bromochloromethane Standard			
	Bromochloromethane 2000µg/m	L, P&T Methanol, 1mL	/ampul	
Container Size :	2 mL	Pkg Amt:	> 1 mL	
Expiration Date :	September 30, 2026	Storage:	0°C or colder	
		Ship:	Ambient	

CERTIFIED VALUES

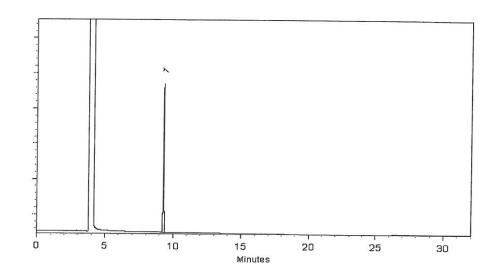
dulah

Elution Order		Cc	ompound	Grav. (weight/			Expanded ((95% C.L.; I	(-2)	
1	Bromochloromethane CAS # 74-97-5 Purity 99%		(Lot 00008541)	2,016.0	+/	+/- +/- +/-	+/- 113.0617 μg/	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Meth	anol							

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:



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:

08-Sep-2021 Balanc

Balance: 1128353505

Marlina Cowan - Operations Tech I

Date Passed: 10-Sep-2021

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

Expiration Notes:

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

Purity Notes:

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

Certified Uncertainty Value Notes:

The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified 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%.

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25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days	
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0°C or colder (Freezer) -20°C or colder (Deep Freezer)	< 25°C	≥ 25°C up to 7 days	

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- 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:
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Certing Laboratory Testing Laboratory Certificate #3222.02

ACCREDITED

С СЕКТІГІЕД КЕГЕКЕИСЕ МАТЕRIAL

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



certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

		- :qid2	tneidmA
Expiration Date :	June 30, 2028	Storage:	0°C or colder
Container Size :	ער דער	:tmA pyq	ן שך <
	502.2 Calibration Mix #1 2,000µg/n	, lonshiaM T&	լոdաթ/շալ
Description :	502.2 Calibration Mix #1		
: .oN golsta	30042	οť Νο.:	ST8TT10A

CERTIFIED VALUES

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		Exbanded (Exbanded () .veið /hgisw)	P	unodwoე	Elution Order
Gravimetric Unstressed Stressed	ヿ゙゚゚゚゚゚゚゚゚゚゚゚゚ヹゖ ヿ゙゚゚゚゚゚゚ヹ゚゚゚゚ ヿ゚゚゚゚゚゚゚゚゚゙ヹ゚゚゚゚゚゚゚゚゚゚゚゚゚	13.9607 4124.211 4124.211	-/+ -/+ -/+	7ณ/ธิป	5,000,2	(Lot 00012554)	Dichlorodifluoromethane (CFC-12) CAS # 75-71-8 Diction 99%	1
Gravimetric Unstressed Stressed	ๅш/ธิท่ ๅш/ธิท่ ๅш/ธิท่	114.9474 112.3274 13.2566	-/+ -/+ -/+	าน/ฮิป	2,000,2	(Lot SHBK6571)	Purity 99% CAS# 74-87-3 CAIstormethane (methyl chloride)	
Gravimetric Unstressed Stressed	ไт\2µ ปัก\2µ ปัก\2µ	112.0645 112.4449 112.4449	-/+ -/+ -/+	ไm\2µ	1.100,2	(Lot 00015559)	Purity 99% CAS# 75-01-4 Vinyl chloride	
Gravimetric Unstressed Stressed	ไต\ยม ปีสา ปีสา	13.6930 2200.211 2200.211	-/+ -/+ -/+	ๅ ɯ/ชิ๚	2.000,2	(Lot 101604)	Promomethane (methyl bromide) CAS # 74-83-9 Broind (methyl bromide)	
Gravimetric Unstressed Stressed	⅃т\вµ ⅃т\вµ Јт\вµ	112.2642 112.6506 12.6153	-/+ -/+ -/+	Jm/g4	S.000,2	(Lot 107-401039114-1)	Purity 99% CAS# 75-00-3 Urity 99%	
Gravimetric Unstressed Stressed	ๅш/ธิท่ ๅш/ธิท่ ๅш/ธิท่	2699.211 2699.211 202.810	-/+ -/+ -/+	Jm\ឱរ <u>ា</u>	2.000,2	(Lot MKCL8411)	Trichlorofluoromethane (CFC-11) CAS # 75-69-4 Purity 99%	

(91001#.162) 2.202-x19 m44.1 x mm22.0 x m03 :umuloo

.nim\/Jm 0.5 wolf fnstenoo-muiled Carrier Gas:

2°001 of (.nim 8 blod) 2°04 Temp. Program:

200°C :qməT .įnl .nim/J°ð @

Det. Temp: 250°C

asm Det. Type:

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

Date Mixed: 27-Oct-2021 Balance: B707717271

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Tom Suckar-Mix Technician

Martina Covan - Operations Tech I

1202-Vov-2021 Date Passed:

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

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.
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 C/MS, LC/MS, RI, and/or melting point.
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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:

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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.

Non-Standard Conditions	Standard Conditions	Label Conditions
≥60°C up to 5°03 ≤	C₀09 >	25°C Nominal (Room Temperature)
≥ 40°C up to 7 days	< 40°C	10°C or colder (Refrigerate)
sγsb 7 of qu ⊃°∂S≤	< 25°C	-20°C or colder (Freezer) -20°C or colder (Deep Freezer)

- 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.

Ranufacturing Notes:

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

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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 descrivated vials with most standards packed in 2mL ampules. Larger volume descrivated 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.



Certing Laboratory Testing Laboratory Certificate #3222.02

ACCREDITED

С СЕКТІГІЕД КЕГЕКЕИСЕ МАТЕRIAL

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



certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

		- :qid2	tneidmA
Expiration Date :	June 30, 2028	Storage:	0°C or colder
Container Size :	ער דער	:tmA pyq	ן שך <
	502.2 Calibration Mix #1 2,000µg/n	, lonshiaM T&	լոdաթ/շալ
Description :	502.2 Calibration Mix #1		
: .oN golsta	30042	οť Νο.:	ST8TT10A

CERTIFIED VALUES

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		Exbanded (Exbanded () .veið /hgisw)	P	unodwoე	Elution Order
Gravimetric Unstressed Stressed	ヿ゙゚゚゚゚゚゚゚゚゚゚゚゚ヹゖ ヿ゙゚゚゚゚゚゚ヹ゚゚゚゚ ヿ゚゚゚゚゚゚゚゚゚゙ヹ゚゚゙゚゚゚゙ヹ゚゚゚゚゚゚゚゚゚゚	13.9607 4124.211 4124.211	-/+ -/+ -/+	7ณ/ธิป	5,000,2	(Lot 00012554)	Dichlorodifluoromethane (CFC-12) CAS # 75-71-8 Diction 99%	1
Gravimetric Unstressed Stressed	ๅш/ธิท่ ๅш/ธิท่ ๅш/ธิท่	114.9474 112.3274 13.2566	-/+ -/+ -/+	าน/ฮิป	2,000,2	(Lot SHBK6571)	Purity 99% CAS# 74-87-3 CAIstormethane (methyl chloride)	
Gravimetric Unstressed Stressed	ไт\2µ ปัก\2µ ปัก\2µ	112.0645 112.4449 112.4449	-/+ -/+ -/+	ไm\2µ	1.100,2	(Lot 00015559)	Purity 99% CAS# 75-01-4 Vinyl chloride	
Gravimetric Unstressed Stressed	ไต\ยม ปีสา ปีสา	13.6930 2200.211 2200.211	-/+ -/+ -/+	ๅ ɯ/ชิ๚	2.000,2	(Lot 101604)	Promomethane (methyl bromide) CAS # 74-83-9 Broind (methyl bromide)	
Gravimetric Unstressed Stressed	⅃т\вµ ⅃т\вµ Јт\вµ	112.2642 112.6506 12.6153	-/+ -/+ -/+	Jm/g4	S.000,2	(Lot 107-401039114-1)	Purity 99% CAS# 75-00-3 Urity 99%	
Gravimetric Unstressed Stressed	ๅш/ธิท่ ๅш/ธิท่ ๅш/ธิท่	2699.211 2699.211 202.810	-/+ -/+ -/+	Jm\ឱរ <u>ា</u>	2.000,2	(Lot MKCL8411)	Trichlorofluoromethane (CFC-11) CAS # 75-69-4 Purity 99%	

(91001#.162) 2.202-x19 m44.1 x mm22.0 x m03 :umuloo

.nim\/Jm 0.5 wolf fnstenoo-muiled Carrier Gas:

2°001 of (.nim 8 blod) 2°04 Temp. Program:

200°C :qməT .įnl .nim/J°ð @

Det. Temp: 250°C

asm Det. Type:

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

Date Mixed: 27-Oct-2021 Balance: B707717271

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Tom Suckar-Mix Technician

Martina Covan - Operations Tech I

1202-Vov-2021 Date Passed:

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

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,
 C/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.
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- Purity values are rounded to the nearest whole number.

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- 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.
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Non-Standard Conditions	Standard Conditions	Label Conditions
≥60°C up to 5°03 ≤	C₀09 >	25°C Nominal (Room Temperature)
≥ 40°C up to 7 days	< 40°C	10°C or colder (Refrigerate)
sγsb 7 of qu ⊃°∂S≤	< 25°C	-20°C or colder (Freezer) -20°C or colder (Deep Freezer)

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Ranufacturing Notes:

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

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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 descrivated vials with most standards packed in 2mL ampules. Larger volume descrivated 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

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. :	30006	Lot No.:	A0179406				
Description :	VOA Calibration Mix #1						
	VOA Calibration Mix #1 5,000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul						
Container Size :	2 mL	Pkg Amt:	> 1 mL				
Expiration Date :	March 31, 2025	Storage:	0°C or colder				
		Ship:	Ambient				

CERTIFIED VALUES

Elution Order		Compo	und	Grav. ((weight/v			Expanded L (95% C.L.; P	All of the second second second	
1	Acetone CAS # Purity	67-64-1 99%	(Lot SHBN3661)	5,037.5	μg/mL	+/- +/- +/-	29.2885 303.9347 304.6563	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	2-Butanc CAS # Purity	one (MEK) 78-93-3 99%	(Lot SHBL5543)	5,034.3	µg/mL	+/- +/- +/-	29.2700 303.7436 304.4648	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	4-Methy CAS # Purity	I-2-pentanone (MIBK) 108-10-1 99%	(Lot SHBM7956)	5,032.2	μg/mL	+/- +/- +/-	29.2575 303.6129 304.3337	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	2-Hexan CAS # Purity	one 591-78-6 99%	(Lot MKCL1599)	5,033.7	µg/mL	+/- +/- +/-	29.2662 303.7034 304.4245	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Me	thanol/Water (90:10)							

olvent: J/Water CAS# 67-56-1/7732-18-5 Purity

99%

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

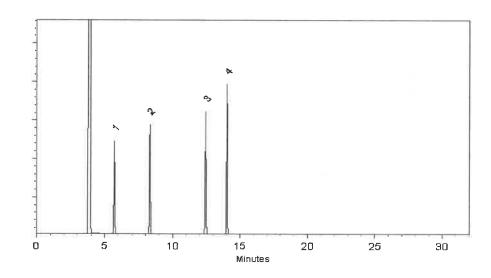
hydrogen-constant pressure 11.0 psi.

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.

Sourner Moodles. Sam Moodler - Operations Tech I

Date Mixed:

09-Dec-2021 Balance:

Balance: B707717271

10 dle - Operations Te

Date Passed: 13-Dec-2021

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

Expiration Notes:

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

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

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 non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

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

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

Manufacturing Notes:

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

Handling Notes:

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

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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. :	30006	Lot No.:	A0179406				
Description :	VOA Calibration Mix #1						
	VOA Calibration Mix #1 5,000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul						
Container Size :	2 mL	Pkg Amt:	> 1 mL				
Expiration Date :	March 31, 2025	Storage:	0°C or colder				
		Ship:	Ambient				

CERTIFIED VALUES

Elution Order		Compo	und	Grav. ((weight/v			Expanded L (95% C.L.; P	All of the second second second	
1	Acetone CAS # Purity	67-64-1 99%	(Lot SHBN3661)	5,037.5	μg/mL	+/- +/- +/-	29.2885 303.9347 304.6563	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	2-Butanc CAS # Purity	one (MEK) 78-93-3 99%	(Lot SHBL5543)	5,034.3	µg/mL	+/- +/- +/-	29.2700 303.7436 304.4648	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	4-Methy CAS # Purity	I-2-pentanone (MIBK) 108-10-1 99%	(Lot SHBM7956)	5,032.2	μg/mL	+/- +/- +/-	29.2575 303.6129 304.3337	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	2-Hexan CAS # Purity	one 591-78-6 99%	(Lot MKCL1599)	5,033.7	µg/mL	+/- +/- +/-	29.2662 303.7034 304.4245	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Me	thanol/Water (90:10)							

olvent: J/Water CAS# 67-56-1/7732-18-5 Purity

99%

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

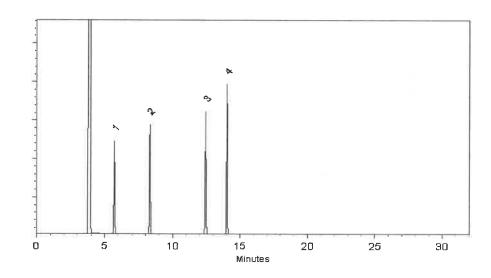
hydrogen-constant pressure 11.0 psi.

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.

Sourner Moodles. Sam Moodler - Operations Tech I

Date Mixed:

09-Dec-2021 Balance:

Balance: B707717271

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Date Passed: 13-Dec-2021

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

Expiration Notes:

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

Purity Notes:

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

Certified Uncertainty Value Notes:

 The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified 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 non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

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

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at <u>www.restek.com/Contact-Us</u>.
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Manufacturing Notes:

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

Handling Notes:

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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

Catalog No. :	30006	Lot No.:	A0179406				
Description :	VOA Calibration Mix #1						
	VOA Calibration Mix #1 5,000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul						
Container Size :	2 mL	Pkg Amt:	> 1 mL				
Expiration Date :	March 31, 2025	Storage:	0°C or colder				
		Ship:	Ambient				

CERTIFIED VALUES

Elution Order		Compo	und	Grav. ((weight/v			Expanded L (95% C.L.; P	All of the second second second	
1	Acetone CAS # Purity	67-64-1 99%	(Lot SHBN3661)	5,037.5	μg/mL	+/- +/- +/-	29.2885 303.9347 304.6563	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
2	2-Butanc CAS # Purity	one (MEK) 78-93-3 99%	(Lot SHBL5543)	5,034.3	µg/mL	+/- +/- +/-	29.2700 303.7436 304.4648	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
3	4-Methy CAS # Purity	I-2-pentanone (MIBK) 108-10-1 99%	(Lot SHBM7956)	5,032.2	μg/mL	+/- +/- +/-	29.2575 303.6129 304.3337	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
4	2-Hexan CAS # Purity	one 591-78-6 99%	(Lot MKCL1599)	5,033.7	µg/mL	+/- +/- +/-	29.2662 303.7034 304.4245	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Me	thanol/Water (90:10)							

olvent: J/Water CAS# 67-56-1/7732-18-5 Purity

99%

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

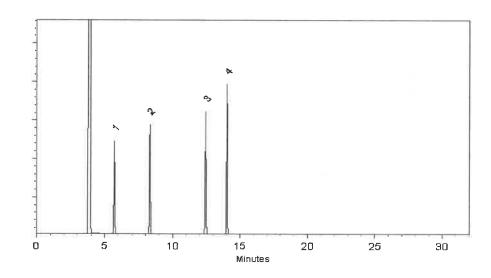
hydrogen-constant pressure 11.0 psi.

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.

Sourner Moodles. Sam Moodler - Operations Tech I

Date Mixed:

09-Dec-2021 Balance:

Balance: B707717271

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Date Passed: 13-Dec-2021

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

Expiration Notes:

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

Purity Notes:

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

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

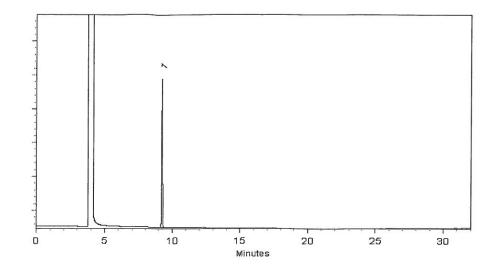
This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. :	30225	Lot No.:	Lot No.: A0183824				
Description :	Bromochloromethane Standa	ard					
	Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul						
Container Size :	2 mL	Pkg Amt:	> 1 mL				
Expiration Date :	April 30, 2027	Storage:	0°C or colder				
	9 - 0	Ship:	Ambient				

CERTIFIED VALUES

Elution Order	Compound		Grav. C		-	Expanded Uncertainty (95% C.L.; K=2)		la constances of	
1	Bromoch CAS # Purity	lloromethane 74-97-5 99%	(Lot 00008541)	2,000.0	μg/mL		11.8794 112.1643 114.7876	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Me	thanol							

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.



Date Mixed: 07-Apr-2022

Balance: 1127510105

Jennifer 2 Pollino Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 11-Apr-2022

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

Expiration Notes:

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

Purity Notes:

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

Certified Uncertainty Value Notes:

 The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified 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) -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:

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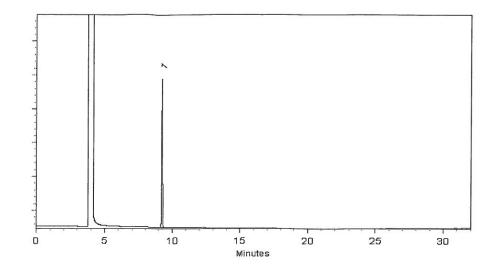
This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. :	<u>30225</u> Lot No.: <u>A0183824</u>					
Description :	Bromochloromethane Standard					
	Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul					
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	April 30, 2027	Storage:	0°C or colder			
	9 - 0	Ship:	Ambient			

CERTIFIED VALUES

Elution Order	Compound			Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)			
1	Bromoch CAS # Purity	nloromethane 74-97-5 99%	(Lot 00008541)	2,000.0	µg/mL	+/- +/- +/-	11.8794 112.1643 114.7876	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Me	thanol							

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.



Date Mixed: 07-Apr-2022

Balance: 1127510105

Jennifer 2 Pollino Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 11-Apr-2022

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

Expiration Notes:

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

Purity Notes:

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

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Handling Notes:

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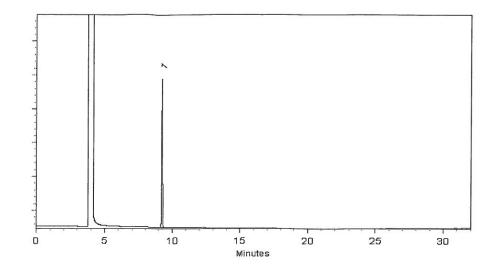
This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. :	<u>30225</u> Lot No.: <u>A0183824</u>					
Description :	Bromochloromethane Standard					
	Bromochloromethane 2000µg/mL, P&T Methanol, 1mL/ampul					
Container Size :	2 mL	Pkg Amt:	> 1 mL			
Expiration Date :	April 30, 2027	Storage:	0°C or colder			
	9 - 0	Ship:	Ambient			

CERTIFIED VALUES

Elution Order	Compound			Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)			
1	Bromoch CAS # Purity	nloromethane 74-97-5 99%	(Lot 00008541)	2,000.0	µg/mL	+/- +/- +/-	11.8794 112.1643 114.7876	μg/mL μg/mL μg/mL	Gravimetric Unstressed Stressed
Solvent:	P&T Me	thanol							

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



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Date Mixed: 07-Apr-2022

Balance: 1127510105

Jennifer 2 Pollino Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 11-Apr-2022

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

Expiration Notes:

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

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 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) -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	A0187421				
Description :	Custom Vinyl Acetate Standard					
	Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/ampul					
Container Size :	<u>2 mL</u>	Pkg Amt:	> 1 mL			
Expiration Date :	January 31, 2024	Storage:	-20°C or colder			
Handling:	This product is photosensitive.	Ship:	On Ice			

CERTIFIED VALUES

20

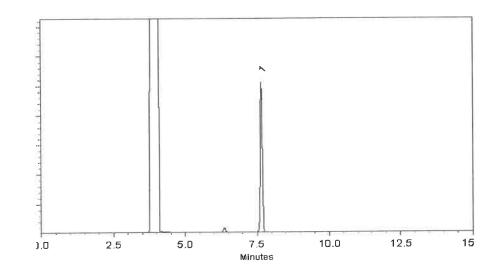
Elution Order		Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	Vinyl acetate CAS # 108-05-4 Purity 99%	(Lot RD220630)	8,078.0 µg/mL	+/- 47.4062 μg/mL Gravimetric +/- 487.4241 μg/mL Unstressed +/- 488.5812 μg/mL Stressed
Solvent:	P&T Methanol CAS # 67-56-1			

Purity 99%

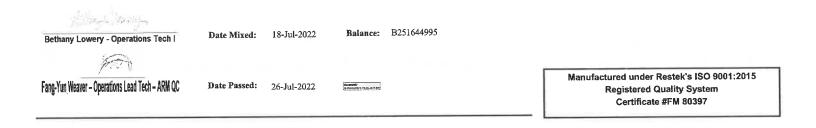
Tech Tips:

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.

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.



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 non-standard temperature conditions.
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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
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Manufacturing Notes:

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

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
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most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom
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CERTIFIED REFERENCE MATERIAL

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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	A0187421				
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	Custom Vinyl Acetate Standard 8,000µg/mL, P&T Methanol, 1mL/ampul					
Container Size :	<u>2 mL</u>	Pkg Amt:	> 1 mL			
Expiration Date :	January 31, 2024	Storage:	-20°C or colder			
Handling:	This product is photosensitive.	Ship:	On Ice			

CERTIFIED VALUES

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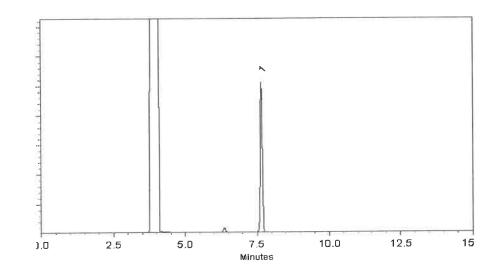
Elution Order		Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
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Solvent:	P&T Methanol CAS # 67-56-1			

Purity 99%

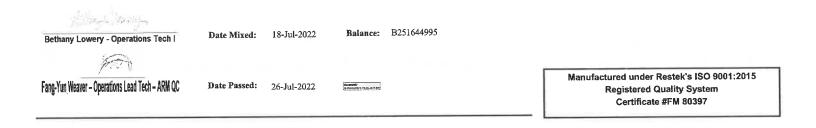
Tech Tips:

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.

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.



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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
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 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.

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- 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
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Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis

Mavantor^{**}



Material No.: 9077-02 Batch No.: 22C2362001 Manufactured Date: 2022-02-15 Expiration Date: 2025-02-14 Revision No.: 0

Certificate of Analysis

Test	Specification	Result	
Assay (CH3OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %	
Residue after Evaporation	≤ 1.0 ppm	< 0.1 ppm	
Titrable Acid (µeq/g)	≤ 0.3	0.3	
Titrable Base (µeq/g)	≤ 0.10	0.03	
Water (by KF, coulometric)	≤ 0.08 %	< 0.01 %	
Volatile Organic Trace Analysis – Below EPA 8260B CRQL	Conforms	Conforms	

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

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

James Techie Jamie Ethier

Vice President Global Quality

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

Mavantor^{**}



Material No.: 9077-02 Batch No.: 22C2362001 Manufactured Date: 2022-02-15 Expiration Date: 2025-02-14 Revision No.: 0

Certificate of Analysis

Test	Specification	Result	
Assay (CH3OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %	
Residue after Evaporation	≤ 1.0 ppm	< 0.1 ppm	
Titrable Acid (µeq/g)	≤ 0.3	0.3	
Titrable Base (µeq/g)	≤ 0.10	0.03	
Water (by KF, coulometric)	≤ 0.08 %	< 0.01 %	
Volatile Organic Trace Analysis – Below EPA 8260B CRQL	Conforms	Conforms	

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

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

James Techie Jamie Ethier

Vice President Global Quality

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





Material No.: 9077-02 Batch No.: 0000288323 Manufactured Date: 2021-06-11 Expiration Date: 2024-06-10 Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (CH ₃ OH) (by GC, corrected for water)	≥ 99.9 %	< 0.1 %
Residue after Evaporation	≤ 1.0 ppm	< 0.1 ppm
Titrable Acid (µeq/g)	≤ 0.3	< 0.1
Titrable Base (µeq/g)	≤ 0.10	< 0.01
Water (by KF, coulometric)	≤ 0.08 %	< 0.01 %
Volatile Organic Trace Analysis - Below EPA 8260B CRQL	Conforms	Fails

For Laboratory,Research, or Manufacturing Use Performance Tested for Use in EPA Methods 500 Series for Drinking Water 600 Series for Wastewater 846 for Solid Waste Country of Origin: USA Packaging Site: Phillipsburg Mfg Ctr & DC

James Techie

Jamie Ethier Vice President Global Quality

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

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Certified Reference Material CRM



CERTIFIED WEIGHT REPORT Part Number: 95317 Solvent(s): Lot# Lot Number: 042921 DY186-USQ8 Methanol Description: Universal VOA Megamix 29 042921 69 components Formulated By DATE Expiration Date: 042924 Recommended Storage: Freezer (0 °C) Rent Nominal Concentration (µg/mL): 2000 042921 NIST Test ID#: 6UTB 5E-05 Hale **Reviewed By** Pedro L. Rentas DATE 100.0 0.012 Flask Uncerta Weight(s) shown below were combined and diluted to (mL); SDS Information Expanded (RM# Lot Dil Nominal Punty Punty Uncertainty Target Actual Actual Uncertainty (Solvent Safety Info. On Attached pg.) Compound Part Num (%) Uncertainty Numbe Factor Vol. (mL) Conc.(ug/mL) Conc (µg/mL) Pipette (mL) Neight(g) Weight(g) Conc (µg/mL) (+/-) (µg/mL) CAS# OSHA PEL (TWA) LD50 (0324) Acetonitrile 060812 NA NA NA 2000 99.9 0.20021 0.20041 2002.0 0 2 NZ 75-05-8 40 ppm (70mg/m3/8H) orl-rat 2450mg/kg 2. Allyl chloride (3-Chloropropene) NA NA (0325) 102396 NA 2000 99 0.2 NA 0.20203 0.20233 2003.0 8.2 107-05-1 1 ppm (3mg/m3/8H) ori-rat 700mg/kg 3. Carbon disulphide (0060) MKCD9604 NA NA NA 2000 100 0.2 NA 0.20001 0.20015 2001.4 8.1 75-15-0 orl-rat 1200mg/kg 4 ppm (12mg/m3) (skin) cis-1,4-Dichloro-2-butene (1196)14718EF NA NA NA 2000 95 0.2 NA 0.21054 0.21060 2000.6 8.5 1476-11-5 N/A N/A NA 5. trans-1,4-Dichloro-2-butene (0486 MKBP6041V NA N/ 2000 96.5 NA 0.2 0.20726 0.20751 2002.4 8.4 110-57-6 N/A N/A 6. Diethyl ether (Ethyl ether) (0153)SHBK1918 NA NA NA 2000 99.9 0.2 NA 0.20023 0.2004 2002.3 ori-rat 1215mg/kg 8.1 60-29-7 400ppm (1200mg/m3/8H) Ethyl methacrylate (0381) 06126PX NA NA NA 2000 99 0.2 NA 0.20203 0.20230 2002.7 8.2 97-63-2 orl-rat 14800mg/kg N/A SHBF8718V NA 8. Iodomethane (0489) NA NA 2000 99.5 NA 0.2 0.20101 0.20130 2002.8 8.1 74-88-4 orl-rat 76mg/kg 5 ppm(28mg/m3/8H)(s 9. 2-Methyl-1-propanol (0445) 15241EB NA NA 2000 NA 99.5 0.2 NA 0.2010 0.20123 2002.1 78-83-1 50 ppm (150mg/m3/8H) orl-rat 2460mg/kg 8.1 10. Methacrylonitrile (0442) 00427ET NA NA NA 2000 99 0.2 NA 0.20203 0.20220 2001.7 8.2 126-98-7 1 ppm (3mg/m3/8H)(skin) orl-rat 120mg/kg 11. Methyl acrylate (1075 SHBK0679 NA N/ NA 2000 99.9 0.2 NA 0.20021 0.20046 2002.5 8.1 96-33-3 orl-rat 277mg/kg 10 ppm(35mg/m3/8H)(skin) 12. Methyl methacrylate (0404) MKBW5137V NA NA NA 2000 NA 99.9 0.2 0.2002 0.20048 2002.7 80-62-6 8.1 100 ppm (410mg/m3/8H) ori-rat 7872mg/kg 13. Nitrobenzene 01213TV (0228)NA NA NA 2000 99 0.2 NA 0.20203 0.20218 2001.5 8.2 98-95-3 1 ppm (5mg/m3/8H)(skin) orl-rat 780mg/kg 14. 2-Nitropropane NA NA (0461 14002J) NA 2000 97.3 0.2 NA 0.20556 0.2056 2001.0 8.3 79-46-9 orl-rat 720mg/kg 10 ppm (35mg/m3/8H) 15. Pentachloroethane (0450) HGA01 NA NA NA 2000 NA 98 0.2 0.20409 0.20418 2000.9 8.2 76-01-7 N/A N/A 1,1,2-Trichlorotrilluoroethane (0474) 18930 NA NA NA 2000 99 0.2 NA 0.20203 0.2022 2001.8 8.2 76-13-1 1000 ppm (7600mg/m3/8H) orl-rat 43g/kg 17. Bromodichloromethane 35171 100220 0.05 5.00 40018.8 2000 NA NA 0.017 NA NA 2000.8 18.4 75-27-4 N/A orl-rat 916mg/kg 0.05 18. Dibromochloromethane 35171 100220 5.00 40007.7 2000 NA NA 0.017 NA NA 18.4 orl-rat 848mg/kg 2000.3 124-48-1 N/A 19. cis-1,2-Dichloroethene 35171 100220 0.05 5.00 40012.4 2000 NA NA 0.017 NA NA 156-59-2 2000.5 18.4 N/A N/A 20. trans-1,2-Dichloroethene 35171 100220 0.05 5.00 40005.0 NA NA 2000 0.017 NA NA 2000.2 18.4 156-60-5 orl-rat 1235mg/kg N/A 21. Methylene chloride 35171 100220 0.05 5.00 40013.9 NA NA 2000 NA 0.017 NA 2000.6 18.4 ori-rat 820mg/kg 75-09-2 500 ppm 22 1,1-Dichloroethene 3225 03182 0.10 10.00 20009.1 2000 NA NA 0.042 NA NA 19.3 2000.8 75-35-4 1 ppm (4mg/m3/8H) orl-rat 200mg/kg 9532 23. Bromolorm 010419 10.00 0.10 20001. 2000 NA NA 0.042 NA NA 2000.1 19.3 75-25-2 0.5 ppm (5mg/m3) (skin ori-rat 933mg/kg 24. Carbon tetrachloride 95321 010419 0.10 10.00 20001.3 2000 NA NA 0.042 NA NA 2000.0 19.2 orl-rat 2350mg/kg 56-23-5 2 ppm (12.6mg/m3/8H) 25 Chloroform 95321 010419 0.10 10.00 20001.8 2000 NA NA 0.042 NA NA 2000.1 19.2 67-66-3 50 ppm (240mg/m3) (CL) orl-rat 908mg/kg 26. Dibromomethane 95321 010419 0.10 10.00 20001. NA NA 2000 0.042 NA NA 2000.1 19.3 74-95-3 N/A orl-rat 108mg/kg 27. 1,1-Dichloroethane 95321 010419 0.10 10.00 20000. NA 2000 NA 0.042 NA NA 2000.0 19.3 75-34-3 100 ppm orf-rat 725mg/kg 28 2,2-Dichloropropane 95321 010419 0.10 10.00 20002.1 2000 NA NA 0.042 NA NA 2000.1 19.3 594-20-7 N/A N/A 29. Tetrachloroethene 9532 010419 0.10 10.00 20002. 2000 NA NA NA 0.042 NA 2000.1 19.3 127-18-4 25 ppm (170mg/m3/8H)(final) orl-rat 2629mg/kg 30. 1.1.1-Trichloroethane 9532 010419 0.10 10.00 20001 2000 NA NA 0.042 NA NA orl-rat 10300mg/kg 2000.1 19.3 71-55-6 350 ppm (1900mg/m3/8H) 31 1,2-Dibromo-3-chloropropana 3516 01142 0.05 5.00 40001.2 2000 NA NA 0.017 NA NA 2000.0 18.4 96-12-8 0.001 ppm orl-rat 170mg/kg 32. 1,2-Dibromoethane 3516 01142 0.05 40003.9 5.00 2000 NA NA 0.017 NA NA 2000.1 18.4 106-93-4 20 ppm (8H) orl-rat 108mg/kg 33. 1.2-Dichloroethane 35161 011421 0.05 5.00 40004 NA NA 2000 0.017 NA NA 2000,1 18.4 107-06-2 orl-rat 670mg/kg 50 ppm (8H) 34 1,2-Dichloropropane 011421 35161 0.05 5.00 40002.2 2000 NA NA 0.017 NA NA 2000.0 18.4 78-87-5 75 ppm (350mg/m3/8H) ori-rat 1947mg/kg 35. 1,3-Dichloropropane 35161 01142 0.05 40013.9 5.00 2000 NA NA 0.017 NA NA 2000.6 18.4 142-28-9 NA unr-mus 3600mg/kg 36. 1,1-Dichloropropene 35161 011421 0.05 NA N/ 5.00 40015.0 2000 0.017 NA NA 2000.7 563-58-8 26.1 N/A N/A 37. cis-1,3-Dichloropropene 35161 011421 0.05 5.00 40004.4 2000 NA NA 0.017 NA NA 2000.1 18.4 10061-01-5 N/A N/A 011421 38 trans-1,3-Dichloropropene 35161 0.05 5.00 40009.1 NA NA 2000 0.017 NA NA 2000.4 18.5 10061-02-6 N/A N/A NA 39. Hexachloro-1,3-butadiene 35161 011421 0.05 5.00 40003. 2000 NA 0.017 NA NA 2000.1 orl-rat 82mg/kg 28.4 87-68-3 0.02 ppm (0.24mg/m3/8H) 40. 1,1,1,2-Tetrachloroethane 35161 011421 0.05 5.00 40011.9 2000 NA NA 0.017 NA NA 2000. 18.4 630-20-6 N/A orl-rat 670mg/kg 41. 1,1,2,2-Tetrachloroethane 3516 011421 0.05 5.00 NA 40011.0 2000 NA 0.017 NA NA 2000.5 18.4 79-34-5 5 ppm (35mg/m3/9H)(s orl-rat 800mg/kg 42. 1,1,2-Trichloroethane 35161 011421 0.05 5.00 40000.8 2000 NA NA 0.011 NA NA 1999.9 18.4 79-00-5 10 ppm (45mg/m3/8H)(skin) orl-rat 838mg/kg 43. Trichloroethene 35181 011421 0,05 5.00 40003.2 2000 NA NA 0.017 NA NA 2000. 18.4 79-01-6 orl-mus 2402mg/kg 50 ppm (270mg/m3/8H) 44. 1,2,3-Trichloropropane 3516 01142 0.05 NA 5.00 40015. NA 2000 0.017 NA NA 2000.1 18.4 96-18-10 ppm (60mg/m3/8H) ori-rat 149.6mg/kg 45. Benzene 35162 02082 0.05 5.00 40008.8 NA 2000 NA 0.01 NA NA 2000.3 18.4 71-43-2 1 ppm orl-rat 4894mg/kg 46. Bromobenzene 35162 02082 0.05 5.00 40019.0 2000 NA NA 0.017 NA NA 2000.9 18.4 108-86-1 orl-rat 2699mg/kg N/A 47. n-Butyl benzene 35162 02082 0.05 40019.8 2000 NA 5.00 NA 0.017 NA NA 2000.9 18.4 104-51-8 N/A N/A 48. Ethyl benzene 35162 02082 0.05 5.00 40000.5 2000 NA NA 0.017 NA NA orl-rat >2000mg/kg 1999.9 18.4 100-41-4 100 ppm (435mg/m3/8H) 49. p-lsopropyi toluene 35162 02082 0.05 5.00 40056.4 2000 NA NA 0.017 NA NA 2002. 18.4 99-87-6 orl-rat 4750mg/kg N/A 50. Naphthalene 35162 02082 0.05 5.00 40005.1 2000 NA NA 0.011 NA NA 2000.2 18.3 91-20-3 10 ppm (50mg/n ori-rat 490mg/kg 51. Styrene 35162 020821 0.05 5.00 40022 8 NA 2000 NA 0.017 NA NA 2001.0 18.4 100-42-5 100 ppm ort-rat 5000mg/kg 52. Toluene 35162 020821 0.05 5.00 40008.9 2000 NA NA 0.017 NA NA 2000. 18,4 108-88-3 200 ppm orl-rat 5000mg/kg 53. 1,2,3-Trichlorobenzene 35162 02082 0.05 5.00 40002.0 2000 NA NA 0.017 NA NA 2000.0 18.4 87-61-6 ipr-mus 1390mg/kg 54. 1,2,4-Trichlorobenzene 35162 020821 0.05 5.00 40027 2000 NA NA 0.017 NA NA 2001.3 18.4 orl-rat 756mg/kg 120-82-1 5 ppm (CL) (40mg/m3) 1,2,4-Trimethylbenzene 35162 02082 0.05 5.00 40012.4 2000 NA NA 0.017 NA NA 2000.8 18.4 95-63-6 N/A orl-rat 5g/kg 56. 1,3,5-Trimethylbenzene 35162 02082 0.05 5.00 40011.5 2000 NA NA 0.017 NA NA 2000.5 18.5 108-67-8 N/A orl-rat 5000mg/kg 57. m-Xylene 35162 020821 0.05 5.00 40021.8 2000 NA NA 0.017 NA NA 2001.0 18.4 orl-rat 5g/kg 108-38-3 100 ppm (435mg/m3/8H) tert-Butyl benzene 35163 022521 0.05 5.00 40005.9 2000 NA NA 0.017 NA NA 18.4 2000. 98-06-6 N/A N/A 59 sec-Butyl benzene 35163 022521 0.05 5.00 40011.7 2000 NA NA 0.017 NA NA 2000.5 18.4 135-98-8 N/A ort-rat 2240mg/kg 60. Chlorobenzene 35163 022521 0.05 40009.0 5.00 2000 NA NA 0.017 NA NA 2000.4 ori-rat 2290mg/kg 18.4 108-90-7 75 ppm (350mg/m3/8H) 61. 2-Chlorotoluene 35163 022521 0.05 5.00 40002.0 2000 NA NA 0.017 NA NA 2000.0 18.4 95-49-8 50 ppm (250mg/m3/8H) orl-rat 3900mg/kg 62. 4-Chlorotoluene 35163 022521 0.05 5.00 40000.4 2000 NA NA 0.017 NA NA 1999.9 18.4 106-43-4 orl-rat 2100mg/kg NA 0.05 63, 1.2-Dichlorobenzene 35163 022521 5.00 40004.0 2000 NA NA 0.017 NA NA 2000.1 orl-rat 500mg/kg 18.4 95-50-1 50 ppm (300mg/m3) (CL) 1,3-Dichlorobenzene 64 35163 022521 0.05 5.00 40003.6 2000 NA NA 0.017 NA NA 2000.1 18,4 541-73-1 N/A ipr-mus 1062mg/kg 65. 1,4-Dichlorobenzene 40005.0 35163 022521 0.05 5.00 2000 NA NA 0.017 NA NA 2000.2 18.4 106-46orl-rat 600mg/kg 75 ppm (450mg/m3/8H) 66. Isopropylbenzene 35183 022521 0.05 5.00 40007.4 2000 NA NA 0.017 NA NA 2000.3 18.4 orl-rat 1400mg/kg 98-82-8 50 ppm (245mg/m3/8H) 67. n-Propylbenzene 35163 022521 0.05 5.00 40004,6 2000 NA NA 0.017 NA NA 2000.1 18.4 103-65-1 N/A orl-rat 6040mg/kg 35163 68. o-Xylene 02252 0.05 5.00 40003.0 2000 NA NA 0.017 NA NA 2000.1 18.4 95-47-6 lpr-mus 1384mg/kg 100 ppm (435mg/m3/8H) 69. p-Xylena 35163 022521 40005.0 2000 NA 0.05 5.00 NA 0.017 NA NA 2000.2 18.4 106-42-3

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) 0.25 of the stated value, unleas otherwise stated. All Standards, after opening ampule, boold be stored with caps light and under appropriate laboratory conditions. Uncertainty Reference: Taylor, BA, and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST recentical Note 1297, U.S. Government Prinding Office, Washington, DC, (1994).

100 ppm (435mg/m3/8H)

orl-rat 5g/kg



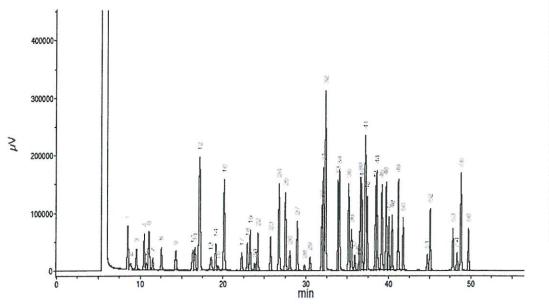




Run Length: 60.00 min, 35999 points at 10 points/second. Created: Thu, Apr 29, 2021 at 3:49:30 PM. Sampled: Sequence "042521-GC5M1", Method "GC5-M1". Analyzed using Method "GC5-M1".

Comments

GC5-M1 Analysis by Candice Warren Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min., 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=4



		FID RI
eak #	Analyte	(min.)
1	Ether	8.48
2	1,1,2-Trichloro-1,2.2-trillucroethane	8.50
3	1,1-Dichloroethene	9.51
4	Acetonitrile	10.44
5	locomethane	10.71
6	Allyl chillode	11.02
7	Carbon disulfide/Hethylene chloride	11.51
8	trans-1,2 Ochioroethene	12.55
9	1,1-Dichloroethane	14.28
10	2,2-Dichloropropane	16.33
11	cis-1.2 Dichtorbethene	16.59
12	Methacrylonitrile/Methyl acrylate/Chloroform	17.14
13	Isobutanol/1,1,1-Trichloroethace	18.52
14	1.1-Dichloropropene	19.08
15	Carbon tetrachloride	18.39
16	Banzene/1,2-Dichloroethane	20 10
17	Thichiorcethene	22 23
18	1,2-Dichloropropane	22.92
19	Methyl methacry use	23.26
20	Bramos union methane	23.79
21	D-bromomethane	23.98
22	2-Nitropropane	24.18
23	cis-1,3-Dichilikapropene	25.71
24	Thuese	25.71
25	Ethyl methacrylate/trans-1,3-Dichloropropene	27 50
26	1,1,2-Trichlaroethene	28.04
27	Tetrachloroethene/1,3-Dichloropropane	29.92
28	Dibroinochloromethane	29.79
29	1,2-Dibromiletnane	30.45
30	Chiprobenzene	31.89
31	Ethylbenzene/1,1,1,2-Tetrachloroethane	32.07
32	m-Xylene/p-Xylene	32.33
33	o Xviene	33.87
34	Styrene	34.04
35	Isopropyibenzene/Bromoform	35.14
36	cis-1,4-Dishtera-2-butene	35.49
37	1,1,2,2-Tetrachloroethane	35.90
38	1,2,3-Trichlorepropane	36.34
39	n-Propylbenzena	36.58
40	trans-1,4-Dichlero-2-butene/Bromobenzene	35.73
41	1,3,5-Trimethylbenzene/2-Chlorotoluene	37.17
42	4 Chorotoluene	37.38
43	tert-Butylberuene	38.41
44	1,2,4-Trimethylbonzene/Pentachloroethane	38.55
45	sec-Bulyibenzene	39.16
46	p-iscpropytoluene	39 68
47	1.3-Dictriorabenzane	40 01
48	1,4-Distionabenzene	43.42
49	n-Butylbenzone	41 15
50	1,2-Dichlorobenzene	41.74
51	1,2-Ditromo-3-chloropropane	44.68
52	Ndrobenzene	45.04
53	1,2,4-Thchlorobenzene	47.80
54	Hexachloristutadiene	48.29
50	Naphtnalene	48.76
56	1,2,3-Trichlorobenzene	49 66

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. Hamden CT, 06514	Emergency Telephone International Date Prepared/Revised	1-352-323-3500 May 1, 2019
Section II - Hazards Ide	ntification		

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

H225 H370 P271 P302,332	Highly Flammable Liquid and Vapor Cause damage to organs Use in ventilated area If on skin, wash with soap and water	H351 P280	Toxic if swallowed, skin contact, inhaled Suspected of causing cancer Use gloves, eye protection/face sheild If in eyes, remove contacts, rinse with water
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Signal Word: DANGER

Section III - Composition

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

METHYLALCOHOL 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

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

Section V. FIREFIGHTING MEASURES

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

Section VI. ACCIDENTAL RELEASE MEASURES

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

Section VII. HANDLING AND STORAGE

Precautions for safe handling	Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
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)	0.79
Vapor Pressure (mm Hg)		96	Melting Point	-98°C
Vapor Density (AIR = 1)		1.11	Evaporation rate (Butyl Acetate = 1)	4.6
Solubility in Water	COMPLETE			
Appearance and Odor	CLEAR, COLORLESS LIQUID WITH CHARACTERISTIC PUNGENT ODOR.			
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Section X. STABILITY AND REACTIVITY

Chemical stabilityStable under recommended storage conditions.Possibility of hazardous reactionsVapours may form explosive mixture with air.Conditions to avoidHeat, flames, sparks, extreme temperature and sunlight.Materials to avoidAcid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, AcidsHazardous decomposition products formed under fire conditions. - Carbon oxides

Section XI. TOXICOLOGICAL INFORMATION

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

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

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

Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Section XIV. TRANSPORT INFORMATION

DOT (US)		IATA	
UN number: 1230 Class: 3	Packing group: II	UN number: 1230 Class: 3 I	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 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 an cause severe injury or death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards Inc. will periodically revise this Safety Data Sheet. If you have any questions, please call Technical Service at 1-203-281-2917 for assistance.

www.absolutestandards.com



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT Part Number: 95317 Solvent(s): Lot# Lot Number: 042921 DY186-USQ8 Methanol Description: Universal VOA Megamix 29 042921 69 components Formulated By DATE Expiration Date: 042924 Recommended Storage: Freezer (0 °C) Rent Nominal Concentration (µg/mL): 2000 042921 NIST Test ID#: 6UTB 5E-05 Hale **Reviewed By** Pedro L. Rentas DATE 100.0 0.012 Flask Uncerta Weight(s) shown below were combined and diluted to (mL); SDS Information Expanded (RM# Lot Dil Nominal Punty Punty Uncertainty Target Actual Actual Uncertainty (Solvent Safety Info. On Attached pg.) Compound Part Num (%) Uncertainty Numbe Factor Vol. (mL) Conc.(ug/mL) Conc (µg/mL) Pipette (mL) Neight(g) Weight(g) Conc (µg/mL) (+/-) (µg/mL) CAS# OSHA PEL (TWA) LD50 (0324) Acetonitrile 060812 NA NA NA 2000 99.9 0.20021 0.20041 2002.0 0 2 NZ 75-05-8 40 ppm (70mg/m3/8H) orl-rat 2450mg/kg 2. Allyl chloride (3-Chloropropene) NA NA (0325) 102396 NA 2000 99 0.2 NA 0.20203 0.20233 2003.0 8.2 107-05-1 1 ppm (3mg/m3/8H) ori-rat 700mg/kg 3. Carbon disulphide (0060) MKCD9604 NA NA NA 2000 100 0.2 NA 0.20001 0.20015 2001.4 8.1 75-15-0 orl-rat 1200mg/kg 4 ppm (12mg/m3) (skin) cis-1,4-Dichloro-2-butene (1196)14718EF NA NA NA 2000 95 0.2 NA 0.21054 0.21060 2000.6 8.5 1476-11-5 N/A N/A NA 5. trans-1,4-Dichloro-2-butene (0486 MKBP6041V NA N/ 2000 96.5 NA 0.2 0.20726 0.20751 2002.4 8.4 110-57-6 N/A N/A 6. Diethyl ether (Ethyl ether) (0153)SHBK1918 NA NA NA 2000 99.9 0.2 NA 0.20023 0.2004 2002.3 ori-rat 1215mg/kg 8.1 60-29-7 400ppm (1200mg/m3/8H) Ethyl methacrylate (0381) 06126PX NA NA NA 2000 99 0.2 NA 0.20203 0.20230 2002.7 8.2 97-63-2 orl-rat 14800mg/kg N/A SHBF8718V NA 8. Iodomethane (0489) NA NA 2000 99.5 NA 0.2 0.20101 0.20130 2002.8 8.1 74-88-4 orl-rat 76mg/kg 5 ppm(28mg/m3/8H)(s 9. 2-Methyl-1-propanol (0445) 15241EB NA NA 2000 NA 99.5 0.2 NA 0.2010 0.20123 2002.1 78-83-1 50 ppm (150mg/m3/8H) orl-rat 2460mg/kg 8.1 10. Methacrylonitrile (0442) 00427ET NA NA NA 2000 99 0.2 NA 0.20203 0.20220 2001.7 8.2 126-98-7 1 ppm (3mg/m3/8H)(skin) orl-rat 120mg/kg 11. Methyl acrylate (1075 SHBK0679 NA N/ NA 2000 99.9 0.2 NA 0.20021 0.20046 2002.5 8.1 96-33-3 orl-rat 277mg/kg 10 ppm(35mg/m3/8H)(skin) 12. Methyl methacrylate (0404) MKBW5137V NA NA NA 2000 NA 99.9 0.2 0.2002 0.20048 2002.7 80-62-6 8.1 100 ppm (410mg/m3/8H) ori-rat 7872mg/kg 13. Nitrobenzene 01213TV (0228)NA NA NA 2000 99 0.2 NA 0.20203 0.20218 2001.5 8.2 98-95-3 1 ppm (5mg/m3/8H)(skin) orl-rat 780mg/kg 14. 2-Nitropropane NA NA (0461 14002J) NA 2000 97.3 0.2 NA 0.20556 0.2056 2001.0 8.3 79-46-9 orl-rat 720mg/kg 10 ppm (35mg/m3/8H) 15. Pentachloroethane (0450) HGA01 NA NA NA 2000 NA 98 0.2 0.20409 0.20418 2000.9 8.2 76-01-7 N/A N/A 1,1,2-Trichlorotrilluoroethane (0474) 18930 NA NA NA 2000 99 0.2 NA 0.20203 0.2022 2001.8 8.2 76-13-1 1000 ppm (7600mg/m3/8H) orl-rat 43g/kg 17. Bromodichloromethane 35171 100220 0.05 5.00 40018.8 2000 NA NA 0.017 NA NA 2000.8 18.4 75-27-4 N/A orl-rat 916mg/kg 0.05 18. Dibromochloromethane 35171 100220 5.00 40007.7 2000 NA NA 0.017 NA NA 18.4 orl-rat 848mg/kg 2000.3 124-48-1 N/A 19. cis-1,2-Dichloroethene 35171 100220 0.05 5.00 40012.4 2000 NA NA 0.017 NA NA 156-59-2 2000.5 18.4 N/A N/A 20. trans-1,2-Dichloroethene 35171 100220 0.05 5.00 40005.0 NA NA 2000 0.017 NA NA 2000.2 18.4 156-60-5 orl-rat 1235mg/kg N/A 21. Methylene chloride 35171 100220 0.05 5.00 40013.9 NA NA 2000 NA 0.017 NA 2000.6 18.4 ori-rat 820mg/kg 75-09-2 500 ppm 22 1,1-Dichloroethene 3225 03182 0.10 10.00 20009.1 2000 NA NA 0.042 NA NA 19.3 2000.8 75-35-4 1 ppm (4mg/m3/8H) orl-rat 200mg/kg 9532 23. Bromolorm 010419 10.00 0.10 20001. 2000 NA NA 0.042 NA NA 2000.1 19.3 75-25-2 0.5 ppm (5mg/m3) (skin ori-rat 933mg/kg 24. Carbon tetrachloride 95321 010419 0.10 10.00 20001.3 2000 NA NA 0.042 NA NA 2000.0 19.2 orl-rat 2350mg/kg 56-23-5 2 ppm (12.6mg/m3/8H) 25 Chloroform 95321 010419 0.10 10.00 20001.8 2000 NA NA 0.042 NA NA 2000.1 19.2 67-66-3 50 ppm (240mg/m3) (CL) orl-rat 908mg/kg 26. Dibromomethane 95321 010419 0.10 10.00 20001. NA NA 2000 0.042 NA NA 2000.1 19.3 74-95-3 N/A orl-rat 108mg/kg 27. 1,1-Dichloroethane 95321 010419 0.10 10.00 20000. NA 2000 NA 0.042 NA NA 2000.0 19.3 75-34-3 100 ppm orf-rat 725mg/kg 28 2,2-Dichloropropane 95321 010419 0.10 10.00 20002.1 2000 NA NA 0.042 NA NA 2000.1 19.3 594-20-7 N/A N/A 29. Tetrachloroethene 9532 010419 0.10 10.00 20002. 2000 NA NA NA 0.042 NA 2000.1 19.3 127-18-4 25 ppm (170mg/m3/8H)(final) orl-rat 2629mg/kg 30. 1.1.1-Trichloroethane 9532 010419 0.10 10.00 20001 2000 NA NA 0.042 NA NA orl-rat 10300mg/kg 2000.1 19.3 71-55-6 350 ppm (1900mg/m3/8H) 31 1,2-Dibromo-3-chloropropana 3516 01142 0.05 5.00 40001.2 2000 NA NA 0.017 NA NA 2000.0 18.4 96-12-8 0.001 ppm orl-rat 170mg/kg 32. 1,2-Dibromoethane 3516 01142 0.05 40003.9 5.00 2000 NA NA 0.017 NA NA 2000.1 18.4 106-93-4 20 ppm (8H) orl-rat 108mg/kg 33. 1.2-Dichloroethane 35161 011421 0.05 5.00 40004 NA NA 2000 0.017 NA NA 2000,1 18.4 107-06-2 orl-rat 670mg/kg 50 ppm (8H) 34 1,2-Dichloropropane 011421 35161 0.05 5.00 40002.2 2000 NA NA 0.017 NA NA 2000.0 18.4 78-87-5 75 ppm (350mg/m3/8H) ori-rat 1947mg/kg 35. 1,3-Dichloropropane 35161 01142 0.05 40013.9 5.00 2000 NA NA 0.017 NA NA 2000.6 18.4 142-28-9 NA unr-mus 3600mg/kg 36. 1,1-Dichloropropene 35161 011421 0.05 NA N/ 5.00 40015.0 2000 0.017 NA NA 2000.7 563-58-8 26.1 N/A N/A 37. cis-1,3-Dichloropropene 35161 011421 0.05 5.00 40004.4 2000 NA NA 0.017 NA NA 2000.1 18.4 10061-01-5 N/A N/A 011421 38 trans-1,3-Dichloropropene 35161 0.05 5.00 40009.1 NA NA 2000 0.017 NA NA 2000.4 18.5 10061-02-6 N/A N/A NA 39. Hexachloro-1,3-butadiene 35161 011421 0.05 5.00 40003. 2000 NA 0.017 NA NA 2000.1 orl-rat 82mg/kg 28.4 87-68-3 0.02 ppm (0.24mg/m3/8H) 40. 1,1,1,2-Tetrachloroethane 35161 011421 0.05 5.00 40011.9 2000 NA NA 0.017 NA NA 2000. 18.4 630-20-6 N/A orl-rat 670mg/kg 41. 1,1,2,2-Tetrachloroethane 3516 011421 0.05 5.00 NA 40011.0 2000 NA 0.017 NA NA 2000.5 18.4 79-34-5 5 ppm (35mg/m3/9H)(s orl-rat 800mg/kg 42. 1,1,2-Trichloroethane 35161 011421 0.05 5.00 40000.8 2000 NA NA 0.011 NA NA 1999.9 18.4 79-00-5 10 ppm (45mg/m3/8H)(skin) orl-rat 838mg/kg 43. Trichloroethene 35181 011421 0,05 5.00 40003.2 2000 NA NA 0.017 NA NA 2000. 18.4 79-01-6 orl-mus 2402mg/kg 50 ppm (270mg/m3/8H) 44. 1,2,3-Trichloropropane 3516 01142 0.05 NA 5.00 40015. NA 2000 0.017 NA NA 2000.1 18.4 96-18-10 ppm (60mg/m3/8H) ori-rat 149.6mg/kg 45. Benzene 35162 02082 0.05 5.00 40008.8 NA 2000 NA 0.01 NA NA 2000.3 18.4 71-43-2 1 ppm orl-rat 4894mg/kg 46. Bromobenzene 35162 02082 0.05 5.00 40019.0 2000 NA NA 0.017 NA NA 2000.9 18.4 108-86-1 orl-rat 2699mg/kg N/A 47. n-Butyl benzene 35162 02082 0.05 40019.8 2000 NA 5.00 NA 0.017 NA NA 2000.9 18.4 104-51-8 N/A N/A 48. Ethyl benzene 35162 02082 0.05 5.00 40000.5 2000 NA NA 0.017 NA NA orl-rat >2000mg/kg 1999.9 18.4 100-41-4 100 ppm (435mg/m3/8H) 49. p-lsopropyi toluene 35162 02082 0.05 5.00 40056.4 2000 NA NA 0.017 NA NA 2002. 18.4 99-87-6 orl-rat 4750mg/kg N/A 50. Naphthalene 35162 02082 0.05 5.00 40005.1 2000 NA NA 0.011 NA NA 2000.2 18.3 91-20-3 10 ppm (50mg/n ori-rat 490mg/kg 51. Styrene 35162 020821 0.05 5.00 40022 8 NA 2000 NA 0.017 NA NA 2001.0 18.4 100-42-5 100 ppm ort-rat 5000mg/kg 52. Toluene 35162 020821 0.05 5.00 40008.9 2000 NA NA 0.017 NA NA 2000. 18,4 108-88-3 200 ppm orl-rat 5000mg/kg 53. 1,2,3-Trichlorobenzene 35162 02082 0.05 5.00 40002.0 2000 NA NA 0.017 NA NA 2000.0 18.4 87-61-6 ipr-mus 1390mg/kg 54. 1,2,4-Trichlorobenzene 35162 020821 0.05 5.00 40027 2000 NA NA 0.017 NA NA 2001.3 18.4 orl-rat 756mg/kg 120-82-1 5 ppm (CL) (40mg/m3) 1,2,4-Trimethylbenzene 35162 02082 0.05 5.00 40012.4 2000 NA NA 0.017 NA NA 2000.8 18.4 95-63-6 N/A orl-rat 5g/kg 56. 1,3,5-Trimethylbenzene 35162 02082 0.05 5.00 40011.5 2000 NA NA 0.017 NA NA 2000.5 18.5 108-67-8 N/A orl-rat 5000mg/kg 57. m-Xylene 35162 020821 0.05 5.00 40021.8 2000 NA NA 0.017 NA NA 2001.0 18.4 orl-rat 5g/kg 108-38-3 100 ppm (435mg/m3/8H) tert-Butyl benzene 35163 022521 0.05 5.00 40005.9 2000 NA NA 0.017 NA NA 18.4 2000. 98-06-6 N/A N/A 59 sec-Butyl benzene 35163 022521 0.05 5.00 40011.7 2000 NA NA 0.017 NA NA 2000.5 18.4 135-98-8 N/A ort-rat 2240mg/kg 60. Chlorobenzene 35163 022521 0.05 40009.0 5.00 2000 NA NA 0.017 NA NA 2000.4 ori-rat 2290mg/kg 18.4 108-90-7 75 ppm (350mg/m3/8H) 61. 2-Chlorotoluene 35163 022521 0.05 5.00 40002.0 2000 NA NA 0.017 NA NA 2000.0 18.4 95-49-8 50 ppm (250mg/m3/8H) orl-rat 3900mg/kg 62. 4-Chlorotoluene 35163 022521 0.05 5.00 40000.4 2000 NA NA 0.017 NA NA 1999.9 18.4 106-43-4 orl-rat 2100mg/kg NA 0.05 63, 1.2-Dichlorobenzene 35163 022521 5.00 40004.0 2000 NA NA 0.017 NA NA 2000.1 orl-rat 500mg/kg 18.4 95-50-1 50 ppm (300mg/m3) (CL) 1,3-Dichlorobenzene 64 35163 022521 0.05 5.00 40003.6 2000 NA NA 0.017 NA NA 2000.1 18,4 541-73-1 N/A ipr-mus 1062mg/kg 65. 1,4-Dichlorobenzene 40005.0 35163 022521 0.05 5.00 2000 NA NA 0.017 NA NA 2000.2 18.4 106-46orl-rat 600mg/kg 75 ppm (450mg/m3/8H) 66. Isopropylbenzene 35183 022521 0.05 5.00 40007.4 2000 NA NA 0.017 NA NA 2000.3 18.4 orl-rat 1400mg/kg 98-82-8 50 ppm (245mg/m3/8H) 67. n-Propylbenzene 35163 022521 0.05 5.00 40004,6 2000 NA NA 0.017 NA NA 2000.1 18.4 103-65-1 N/A orl-rat 6040mg/kg 35163 68. o-Xylene 02252 0.05 5.00 40003.0 2000 NA NA 0.017 NA NA 2000.1 18.4 95-47-6 lpr-mus 1384mg/kg 100 ppm (435mg/m3/8H) 69. p-Xylena 35163 022521 40005.0 2000 NA 0.05 5.00 NA 0.017 NA NA 2000.2 18.4 106-42-3

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) 0.25 of the stated value, unleas otherwise stated. All Standards, after opening ampule, boold be stored with caps light and under appropriate laboratory conditions. Uncertainty Reference: Taylor, BA, and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST recentical Note 1297, U.S. Government Prinding Office, Washington, DC, (1994).

100 ppm (435mg/m3/8H)

orl-rat 5g/kg



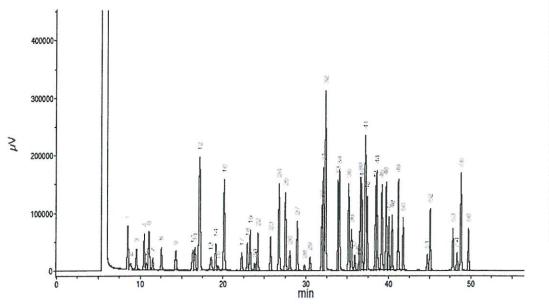




Run Length: 60.00 min, 35999 points at 10 points/second. Created: Thu, Apr 29, 2021 at 3:49:30 PM. Sampled: Sequence "042521-GC5M1", Method "GC5-M1". Analyzed using Method "GC5-M1".

Comments

GC5-M1 Analysis by Candice Warren Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min., 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=4



		FID RI
eak #	Analyte	(min.)
1	Ether	8.48
2	1,1,2-Trichloro-1,2.2-trillucroethane	8.50
3	1,1-Dichloroethene	9.51
4	Acetonitrile	10.44
5	locomethane	10.71
6	Allyl chillode	11.02
7	Carbon disulfide/Hethylene chloride	11.51
8	trans-1,2 Ochioroethene	12.55
9	1,1-Dichloroethane	14.28
10	2,2-Dichloropropane	16.33
11	cis-1.2 Dichtorbethene	16.59
12	Methacrylonitrile/Methyl acrylate/Chloroform	17.14
13	Isobutanol/1,1,1-Trichloroethace	18.52
14	1.1-Dichloropropene	19.08
15	Carbon tetrachloride	18.39
16	Banzene/1,2-Dichloroethane	20 10
17	Trichlorcethene	22 23
18	1,2-Dichloropropane	22.92
19	Methyl methacry use	23.26
20	Bramos union methane	23.79
21	D-bromomethane	23.98
22	2-Nitropropane	24.18
23	cis-1,3-Dichilikapropene	25.71
24	Thuese	25.71
25	Ethyl methacrylate/trans-1,3-Dichloropropene	27 50
26	1,1,2-Trichlaroethene	28.04
27	Tetrachloroethene/1,3-Dichloropropane	29.92
28	Dibroinochloromethane	29.79
29	1,2-Dibromiletnane	30.45
30	Chiprobenzene	31.89
31	Ethylbenzene/1,1,1,2-Tetrachloroethane	32.07
32	m-Xylene/p-Xylene	32.33
33	o Xviene	33.87
34	Styrene	34.04
35	Isopropyibenzene/Bromoform	35.14
36	cis-1,4-Dishtera-2-butene	35.49
37	1,1,2,2-Tetrachloroethane	35.90
38	1,2,3-Trichlorepropane	36.34
39	n-Propylbenzena	36.58
40	trans-1,4-Dichlero-2-butens/Bromobenzene	35.73
41	1,3,5-Trimethylbenzene/2-Chlorotoluene	37.17
42	4 Chorotoluene	37.38
43	tert-Butylberuene	38.41
44	1,2,4-Trimethylbonzene/Pentachloroethane	38.55
45	sec-Bulyibenzene	39.16
46	p-iscpropytoluene	39 68
47	1.3-Dictriorabenzane	40 01
48	1,4-Distionabenzene	43.42
49	n-Butylbenzone	41 15
50	1,2-Dichlorobenzene	41.74
51	1,2-Ditromo-3-chloropropane	44.68
52	Ndrobenzene	45.04
53	1,2,4-Thchlorobenzene	47.80
54	Hexachionstrutadiene	48.29
50	Naphtnalene	48.76
56	1,2,3-Trichlorobenzene	49 66

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. Hamden CT, 06514	Emergency Telephone International Date Prepared/Revised	1-352-323-3500 May 1, 2019
Section II - Hazards Ide	ntification		

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

H225 H370 P271 P302,332	Highly Flammable Liquid and Vapor Cause damage to organs Use in ventilated area If on skin, wash with soap and water	H351 P280	Toxic if swallowed, skin contact, inhaled Suspected of causing cancer Use gloves, eye protection/face sheild If in eyes, remove contacts, rinse with water
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Signal Word: DANGER

Section III - Composition

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

METHYLALCOHOL 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

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

Section V. FIREFIGHTING MEASURES

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

Section VI. ACCIDENTAL RELEASE MEASURES

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

Section VII. HANDLING AND STORAGE

Precautions for safe handling	Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
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)	0.79
Vapor Pressure (mm Hg)		96	Melting Point	-98°C
Vapor Density (AIR = 1)		1.11	Evaporation rate (Butyl Acetate = 1)	4.6
Solubility in Water	COMPLETE			
Appearance and Odor	CLEAR, COLORLES	S LIQUID WI	ITH CHARACTERISTIC PUNGENT ODOR.	
	the survey of the survey survey is the			

Section X. STABILITY AND REACTIVITY

Chemical stabilityStable under recommended storage conditions.Possibility of hazardous reactionsVapours may form explosive mixture with air.Conditions to avoidHeat, flames, sparks, extreme temperature and sunlight.Materials to avoidAcid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, AcidsHazardous decomposition products formed under fire conditions. - Carbon oxides

Section XI. TOXICOLOGICAL INFORMATION

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

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

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

Section XIII. DISPOSAL CONSIDERATIONS

Dispose with normal Laboratory Solvent Waste.

Section XIV. TRANSPORT INFORMATION

DOT (US)		IATA	
UN number: 1230 Class: 3	Packing group: II	UN number: 1230 Class: 3 I	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 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 an 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. :	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%		+/- 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)

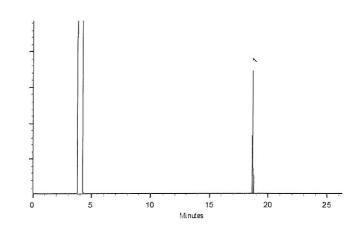
Carrier Gas: hydrogen-constant pressure 11.0 psi.

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

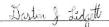
Inj. Temp: 200°C

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

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

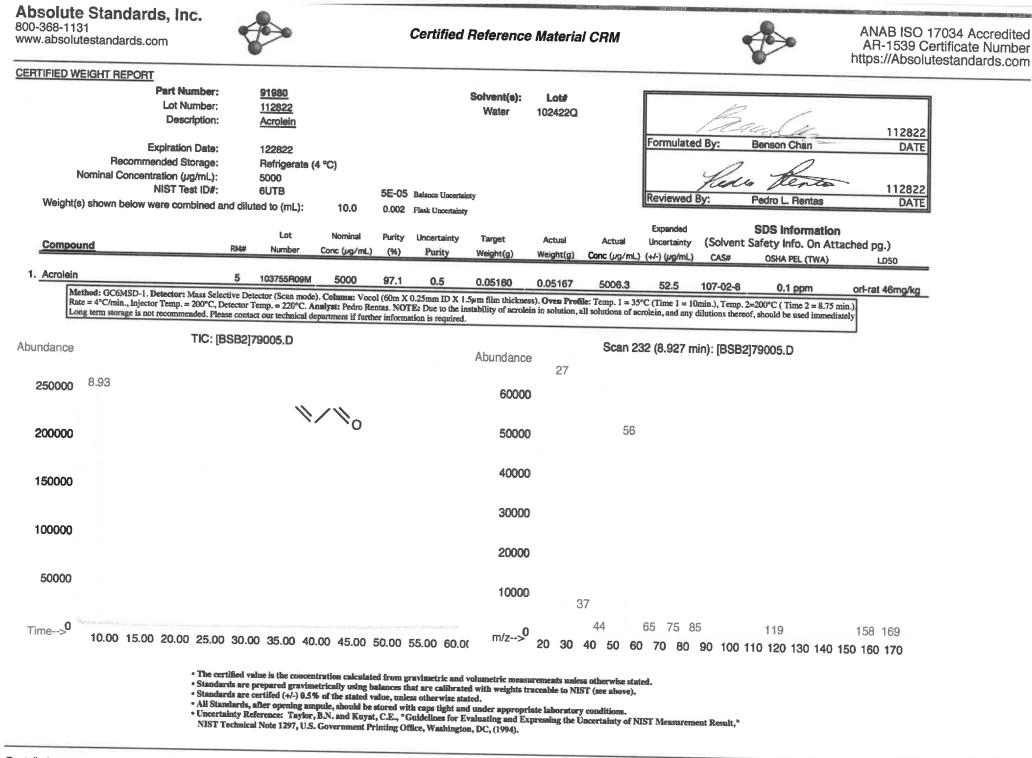
- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at <u>www.restek.com/Contact-Us</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:

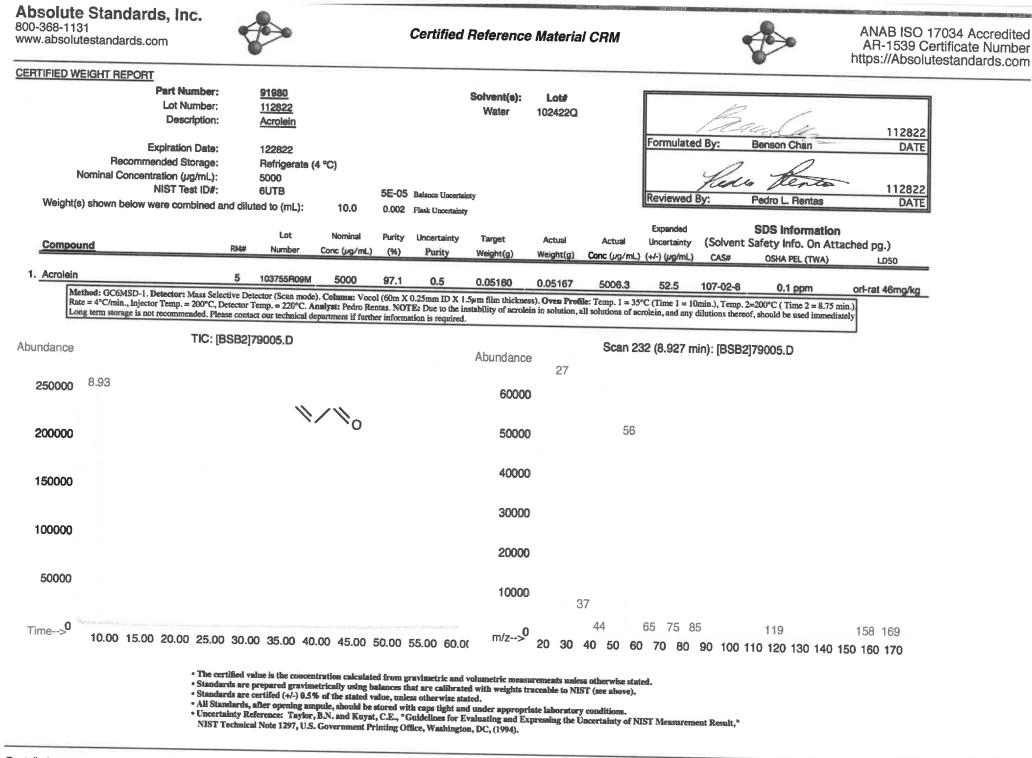
- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability 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.



Absolute Standards Inc.	Ha	PO Box 5585 Hamden, CT 06518-0585	Phone: 203-281-2917 FAX: 203-281-2922
	Safety Data Sheet (SDS)	GHS/OSHA Compliant	
Section I Product and Company	pany Identification		
IDENTITY ANALYTICAL STANDARD DISSOLVED IN WATER Manufacturer's Name ABSOLUTE STANDARDS INC Er Address 44 Rossotto Dr. Er Hamden CT, 06514 De	AL STANDARD DISSOLVED IN WA ABSOLUTE STANDARDS INC 44 Rossotto Dr. Hamden CT, 06514	ITER Emergency Telephone USA & CANADA Emergency Telephone International Date Prepared/Revised	1-800-535-5053 1-352-323-3500 May 1, 2022
Section II - Hazards Identification	c		
P271 Use in ventilated area P302,332 If on skin, wash with si Signal Word: DANGER	GHS Classification in accor Use in ventilated area If on skin, wash with soap and water Signal Word: DANGER	GHS Classification in accordance with 29 CFR 1910 (OSHA HCS) area H315 Causes skin and eye irritation. vith soap and water P280 Use gloves, eye protection/face shelld P305,351,338 If in eyes, remove contacts, rinse with water VGER	shelid e with water
Section III - Composition			
Components (Specific Chemical Identity; Common Name(s)) Water	lentity; Common Name(s))	CAS#: 7732-18-5	% (optional) > 97
See Certified Weight Report For Other Analytes Present At Trace Quantities. INTENDED USE: REFERENCE MATERIAL Section IV. FIRST AID MEASURES	: For Other Analytes Prese NATERIAL S	ent At Trace Quantities.	
	0		
General advice Consult a if inhaled f inhaled, In case of skin contact Wash with In case of eye contact Rinse thor if swallowed Do NOT ir	Consult a physician. Show this safety data sheet to the doctor in attenc If inhaled, move person into fresh air. If not breathing, give artificial resi Wash with scap and water. Consult a physician. Rinse thoroughly with plenty of water for at least 15 minutes and consu Do NOT induce vomiting. Rinse mouth with water. Consult a physician.	Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. Wash with scap and water. Consult a physician. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Do NOT induce vomiting. Rinse mouth with water. Consult a physician.	
Section V. FIREFIGHTING MEASURES	URES		
Sultable extinguishing media Protective equipment for fire Hazardous Decomposition products	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Wear self contained breathing apparatus for fire fighting if necessary. Carbon oxides	am, dry chemical or carbon dioxide. atus for fire fighting if necessary.	
Section VI. ACCIDENTAL RELEAS	LEASE MEASURES		
Personal precautions Wear re ignition. Environmental precautions Prevent Clean up Contain	espiratory protection. Avoid breathing I. Vapours accumulate to form explosi it further leakage or spillage if safe to n spillage, and then collect and place	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. Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13).	urces of on 13).
Section VII. HANDLING AND STOI	STORAGE		
Precautions for safe handling Storage Conditions	Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use ventilation Keep away from sources of ignition. No smoking. Pr Keep container tightly closed in a dry and well-ventilated place. Con and kept upright to prevent leakage.	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. 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.	charge. carefully resealed
Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION	DLS/PERSONAL PROTECTION	7	
Water CAS#: 7	CAS#: 7732-18-5 TWA: 500 ppm		
Personal protective equipment Respiratory protection Handle with gloves. Gloves mu Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product	ttory protection Handle with glove Wash hands thoroughly after handlin	Handle with gloves. Gloves must be inspected prior to use. Eye protection. Jubly after handling the product.	
Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS	L CHARACTERISTICS		
Boiling Point Vapor Pressure (mm Hg)	100°C	Specific Gravity (H2O = 1) Melting Point	1
Water-SDS.xls		Page 1 of 2	Printed: 11/28/22

Absolute Standards Inc.	PO I Hamden, C	PO Box 5585 Hamden, CT 06518-0585	Phone: 203-281-2917 FAX: 203-281-2922
	NA		0.0
Vapor Density (AIR = 1)		Evaporation rate (Ruthi Acetate – 1)	
Solubility in Water Completely miscible		1)	
Appearance and Odor CLEAR, COLORLESS I	LIQUID WITH SLI	CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR.	
Section X. STABILITY AND REACTIVITY			
Chemical stability Stable under recomn Possibility of hazardous reactions NA Conditions to avoid NA Materials to avoid NA Hazardous decomposition products - No data available	Stable under recommended storage conditions. NA NA NA ata available	itions.	
Section XI. TOXICOLOGICAL INFORMATION			
LD50 Oral - Rat NA 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	IAT ON Pro	IATA Not dangerous goods Proper shipping name: Water	
Section XV. REGULATORY INFORMATION			
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302	orting requirements of	f 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. sec) and Global Harmonized System (GHS). This document is intended only as a guide to the appropriate precautionary handling of the material by intende prosoned, or supervised by a person trained in chemical Dynamize. The present constant and regulations the for determining the presentions and respirators must be used to avoid contact with material or theratinal 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 theratinal for Nix. This sheet may interact with other substances. Since the potential upstate the specifications states activated may interact with other substances. Since the potential upstates the specifications extended angress of use or interaction with other substances. ABSOLUTE STANDARDS INC. cannot ware of all the potential three are avoid angress of use or interaction with other substances. Since that product can cause server the potential material or the known dangers of use or interaction with other PALLONTION. The user should condition that the chemical meets the specifications effective and the potential dangers of use or interaction with other part of the this product material states the speciality if improperly handled or the known dangers of use are not leaded. RED ALL PARTIONARY INFORMATION. As new documented general safety information becomes available, Absolute Standards inc. will periodically revise this Material Stafety Data Sheet. If you have any questions, please call Technical Service at 1.203-2917 for assistance.	of the United States Occup aly as a guide to the approprecautions and dangers of t recautions and dangers of the with material or bureathing are so varied, ABSOLUTE the chemical meets the spec- or THE PRODUCT SUPPI OTHE PRODUCT SUPPI or the special y information becomes ava or assistance.	ational Safety and Health Act and regulations promulgated thereunder (2: priate precautionary handling of the material by trained personnel, or supe this chemical for his or her particular application. Depending on usage, pr g chemical vapors/tunes. Exposure to this product may have serious adv g STANDARDS INC. cannot vann of all the potential dangers of use or in cifications set forth on the label. ABSOLUTE STANDARDS INC DISCI LIED HEREUNDER, IT'S MERCHAVTABILLITY OR IT'S FITNESS FO LIED HEREUNDER, IT'S MERCHAVTABILLITY OR IT'S FITNESS FO ally if improperly handled or the known dangers of use are not heccled. R allable, Absolute Standards inc. will periodically revise this Material Safe ailable, Absolute Standards inc. will periodically revise this Material Safe	CFR J910.1200 et. vised by a person orecive clothing rese health effects. AIMS ANY AIMS ANY ANS ANY FA PARTICULAR EAD AILL y Data Sheet. If y Data Sheet. If

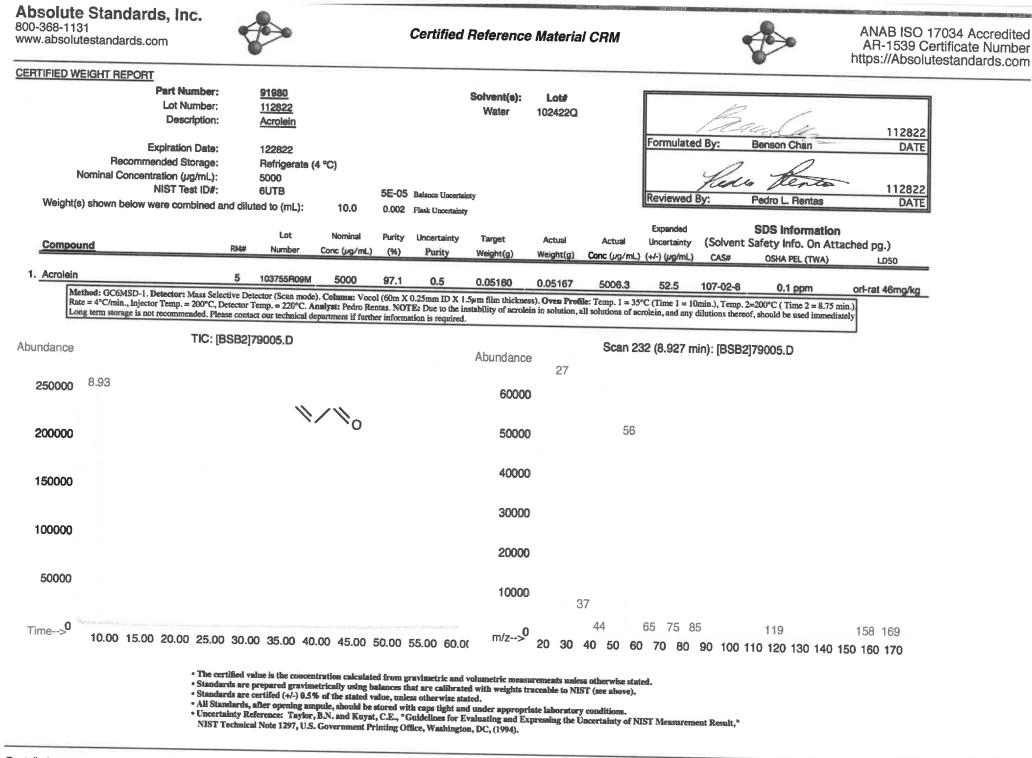
Water-SDS.xls



Absolute Standards Inc.	Ha	PO Box 5585 Hamden, CT 06518-0585	Phone: 203-281-2917 FAX: 203-281-2922
	Safety Data Sheet (SDS)	GHS/OSHA Compliant	
Section I Product and Company	pany Identification		
IDENTITY ANALYTICAL STANDARD DISSOLVED IN WATER Manufacturer's Name ABSOLUTE STANDARDS INC Er Address 44 Rossotto Dr. Er Hamden CT, 06514 De	AL STANDARD DISSOLVED IN WA ABSOLUTE STANDARDS INC 44 Rossotto Dr. Hamden CT, 06514	ITER Emergency Telephone USA & CANADA Emergency Telephone International Date Prepared/Revised	1-800-535-5053 1-352-323-3500 May 1, 2022
Section II - Hazards Identification	c		
P271 Use in ventilated area P302,332 If on skin, wash with si Signal Word: DANGER	GHS Classification in accor Use in ventilated area If on skin, wash with soap and water Signal Word: DANGER	GHS Classification in accordance with 29 CFR 1910 (OSHA HCS) area H315 Causes skin and eye irritation. vith soap and water P280 Use gloves, eye protection/face shelld P305,351,338 If in eyes, remove contacts, rinse with water VGER	shelid e with water
Section III - Composition			
Components (Specific Chemical Identity; Common Name(s)) Water	lentity; Common Name(s))	CAS#: 7732-18-5	% (optional) > 97
See Certified Weight Report For Other Analytes Present At Trace Quantities. INTENDED USE: REFERENCE MATERIAL Section IV. FIRST AID MEASURES	: For Other Analytes Prese NATERIAL S	ent At Trace Quantities.	
	0		
General advice Consult a if inhaled f inhaled, In case of skin contact Wash with In case of eye contact Rinse thor if swallowed Do NOT ir	Consult a physician. Show this safety data sheet to the doctor in attenc If inhaled, move person into fresh air. If not breathing, give artificial resi Wash with scap and water. Consult a physician. Rinse thoroughly with plenty of water for at least 15 minutes and consu Do NOT induce vomiting. Rinse mouth with water. Consult a physician.	Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. Wash with scap and water. Consult a physician. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Do NOT induce vomiting. Rinse mouth with water. Consult a physician.	
Section V. FIREFIGHTING MEASURES	URES		
Sultable extinguishing media Protective equipment for fire Hazardous Decomposition products	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Wear self contained breathing apparatus for fire fighting if necessary. Carbon oxides	am, dry chemical or carbon dioxide. atus for fire fighting if necessary.	
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Personal precautions Wear re ignition. Environmental precautions Prevent Clean up Contain	espiratory protection. Avoid breathing I. Vapours accumulate to form explosi it further leakage or spillage if safe to n spillage, and then collect and place	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. Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13).	urces of on 13).
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Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS	L CHARACTERISTICS		
Boiling Point Vapor Pressure (mm Hg)	100°C	Specific Gravity (H2O = 1) Melting Point	1
Water-SDS.xls		Page 1 of 2	Printed: 11/28/22

Absolute Standards Inc.	PO I Hamden, C	PO Box 5585 Hamden, CT 06518-0585	Phone: 203-281-2917 FAX: 203-281-2922
	NA		0.0
Vapor Density (AIR = 1)		Evaporation rate (Rumi Acetate – 1)	
Solubility in Water Completely miscible		1)	
Appearance and Odor CLEAR, COLORLESS I	LIQUID WITH SLI	CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR.	
Section X. STABILITY AND REACTIVITY			
Chemical stability Stable under recomn Possibility of hazardous reactions NA Conditions to avoid NA Materials to avoid NA Hazardous decomposition products - No data available	Stable under recommended storage conditions. NA NA NA ata available	itions.	
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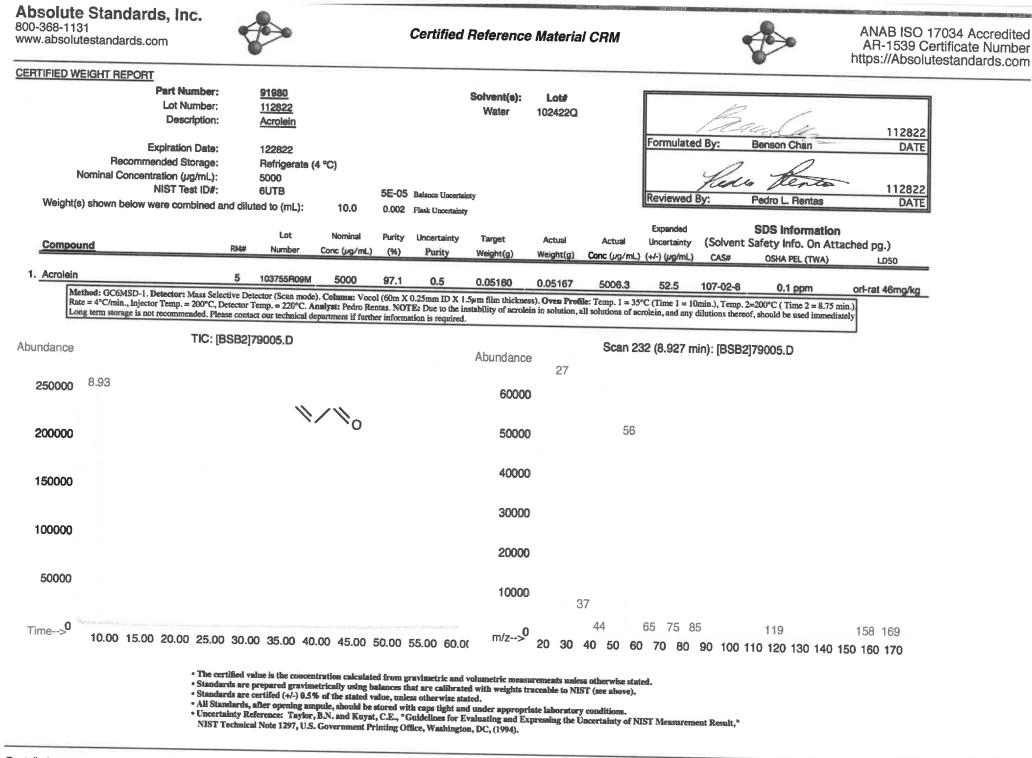
Water-SDS.xls



Absolute Standards Inc.	Ha	PO Box 5585 Hamden, CT 06518-0585	Phone: 203-281-2917 FAX: 203-281-2922
	Safety Data Sheet (SDS)	GHS/OSHA Compliant	
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Section III - Composition			
Components (Specific Chemical Identity; Common Name(s)) Water	lentity; Common Name(s))	CAS#: 7732-18-5	% (optional) > 97
See Certified Weight Report For Other Analytes Present At Trace Quantities. INTENDED USE: REFERENCE MATERIAL Section IV. FIRST AID MEASURES	: For Other Analytes Prese NATERIAL S	ent At Trace Quantities.	
	0		
General advice Consult a if inhaled f inhaled, In case of skin contact Wash with In case of eye contact Rinse thor if swallowed Do NOT ir	Consult a physician. Show this safety data sheet to the doctor in attenc If inhaled, move person into fresh air. If not breathing, give artificial resi Wash with scap and water. Consult a physician. Rinse thoroughly with plenty of water for at least 15 minutes and consu Do NOT induce vomiting. Rinse mouth with water. Consult a physician.	Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. Wash with scap and water. Consult a physician. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Do NOT induce vomiting. Rinse mouth with water. Consult a physician.	
Section V. FIREFIGHTING MEASURES	URES		
Sultable extinguishing media Protective equipment for fire Hazardous Decomposition products	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Wear self contained breathing apparatus for fire fighting if necessary. Carbon oxides	am, dry chemical or carbon dioxide. atus for fire fighting if necessary.	
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Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION	DLS/PERSONAL PROTECTION	7	
Water CAS#: 7	CAS#: 7732-18-5 TWA: 500 ppm		
Personal protective equipment Respiratory protection Handle with gloves. Gloves mu Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product	ttory protection Handle with glove Wash hands thoroughly after handlin	Handle with gloves. Gloves must be inspected prior to use. Eye protection. Jubly after handling the product.	
Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS	L CHARACTERISTICS		
Boiling Point Vapor Pressure (mm Hg)	100°C	Specific Gravity (H2O = 1) Melting Point	1
Water-SDS.xls		Page 1 of 2	Printed: 11/28/22

Absolute Standards Inc.	PO I Hamden, C	PO Box 5585 Hamden, CT 06518-0585	Phone: 203-281-2917 FAX: 203-281-2922
	NA		0.0
Vapor Density (AIR = 1)		Evaporation rate (Rumi Acetate – 1)	
Solubility in Water Completely miscible		1)	
Appearance and Odor CLEAR, COLORLESS I	LIQUID WITH SLI	CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR.	
Section X. STABILITY AND REACTIVITY			
Chemical stability Stable under recomn Possibility of hazardous reactions NA Conditions to avoid NA Materials to avoid NA Hazardous decomposition products - No data available	Stable under recommended storage conditions. NA NA NA ata available	itions.	
Section XI. TOXICOLOGICAL INFORMATION			
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Absolute Standards Inc.	Ha	PO Box 5585 Hamden, CT 06518-0585	Phone: 203-281-2917 FAX: 203-281-2922
	Safety Data Sheet (SDS)	GHS/OSHA Compliant	
Section I Product and Company	pany Identification		
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Section II - Hazards Identification	c		
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Personal protective equipment Respiratory protection Handle with gloves. Gloves mu Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product	ttory protection Handle with glove Wash hands thoroughly after handlin	Handle with gloves. Gloves must be inspected prior to use. Eye protection. Jubly after handling the product.	
Section IX - PHYSICAL/CHEMICAL CHARACTERISTICS	L CHARACTERISTICS		
Boiling Point Vapor Pressure (mm Hg)	100°C	Specific Gravity (H2O = 1) Melting Point	1
Water-SDS.xls		Page 1 of 2	Printed: 11/28/22

Absolute Standards Inc.	PC Hamden	PO Box 5585 Hamden, CT 06518-0585	Phone: 203-281-2917 FAX: 203-281-2922
	NA		0°C
Vapor Density (AIR = 1)		Evaporation rate (Burty Acetate = 1)	NA
Solubility in Water Completely miscible			-
Appearance and Odor CLEAR, COLORLESS I	LIQUID WITH SL	CLEAR, COLORLESS LIQUID WITH SLIGHT CHEMICAL ODOR.	
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Section XI. TOXICOLOGICAL INFORMATION			
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SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302	orting requirements	of SARA Title III, Section 302.	
Section XVI. Misc. INFORMATION			
The information in this Material Safety Data Sheet meets the requirements seq.) and Global Harmonized System (GHS). This document is intended on trained in chemical handling. The user is responsible for determining the principulning eve and face guards and respirators must be used to avoid contact. This chemicals or substances. ABSOLUTE STANDARDS INC. warrants that IT OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD T APPLICATION. The user should recognize that this product can cause sever PRECAUTIONARY INFORMATION. As new documented general safet you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2017 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-2917 [or you have any questions, please call Technical Service at 1-203-281-291-2017 [or you have and questions, please call Techni	of the United States Occu ally as a guide to the appr recentions and dangers of twith material or breath, are so varied, ABSOLUT are so varied, ABSOLUT are chemical meets the ap to THE PRODUCT SUI or training or death, espe- ere injury or death, espe- or assistance.	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 precautiowary 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 dangens of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face grands and respirations must be used to avoid contact with material or breathing determical vorsens to this product may have serious advorse health effects. The thermical manufactor with other substances. Since the potential uses are so varied, ABSDUTE STANDARDS INC, cannot warn of all the potential dangers of use or interaction with other chemicals or substances. ABSOUTE STANDARDS INC, warrants that the chemical mores the specifications set forth on the label. ABSOUTE STANDARDS INC POSICILIAGA OTHER WARRANTIES EXPRESSED DOR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILLT OR TTS FITNESS FOR A PARTICULAR The MARANTIES EXPRESSED DOR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, PRAMATIABILLT OR TTS FITNESS FOR A PARTICULAR DEPELCATIONARY INFORMATION. As new documented general safety information becomes available, Absolute Shandards 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.	CFR 1910.1200 et. vised by a person otective clothing area halth effects. AIMS ANY R A PARTICULAR EAD ALL y Data Sheet. If

Water-SDS.xls

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

Certified Reference Material CRM



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

יייףטייז וטטטוונטון	031921 DATE 031921 031921 DATE	l pg.) LDSO	orl-rat 78 mg/kg orl-rat 2670mg/kg orl-rat 12705mg/kg orl-rat 8470mg/kg	orl-mus 5700mg/kg orl-gpg 4970mg/kg NI/A orl-rat 4g/kg orl-rat 39mg/kg	on-rat 6408mg/kg ement Result."
4		SDS Information (Solvent Safety Info. On Attached pg.) As# 0SHA PEL (TWA) L		25 ppm (90mg/m3/8H)(skin) or 1 ppm (10mg/m3/8H)(skin) or N/A N/A N/A	ated. aled. NIST Measur ASD RT (min.) 13.56 13.79 13.79 13.79 13.75 13.75 13.75 20.83 20.17 20.58 20.83 20.68 20.83 24.84 26.84 48,44
		J		123-91-1 2 67-72-1 1 108-87-2 1634-04-4 107-12-0	0.2 0.21506 0.21536 2002.8 8.7 488-23-3 MA The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise s Standards are certified (H-) 0.5% (He stated value, unless otherwise stated. Standards are certified (H-) 0.5% (He stated value, unless otherwise stated. All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions. • All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions. MA • All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions. Internationy of Standards, after opening and Expressing the Uncertainty of NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC. (1994). • NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC. (1994). • All Standards, after opening and Expressing the Uncertainty of Standards are confired for a 0.255mm ID X • Si Termp. 1 = 35°C (10min.), Termp. 2 • All Ret = 4°C/min., Injector Temp. = Di-isopropyl ether • Di-estored by Candice Warren. Tetrahydrofuran 51), Rate = 4°C/min., Injector Temp. = Di-isopropyl ether • All Standards Termp. 1 Di-ostoregraphic ether • All Standards Termp. 1 Di-ostoregraphic ether • Other Her Di-ostoregrap
	Formulated By Reviewed By:	Expanded Uncertainty (+/-) (µg/mL)	40.5 8.1 8.2 8.2	161.9 8.2 8.2 8.1 8.1 81.0	8.7 and volumer as stated with we se stated with we se stated under for Evaluation for Evaluation for Evaluation for Evaluation for Evaluation for Evaluation for Evaluation for Evaluation Methy Methy Methy Hexac
		Expanded Actual Uncertainty Conc (µg/mL) (µ/-) (µg/mL)	10002.5 2003.0 2002.8 2001.7	40005.0 2002.7 2003.2 2003.9 20005.0 10003.5	0.2 0.21506 0.21536 2002.8 8.7 • The certified value is the concentration calculated from gravimetric and volus standards are certified (+7) 0.3% of the stated value, unless otherwise stated. 8.1 • Standards are certified (+7) 0.3% of the stated value, unless otherwise stated. 9.1 9.2 • Standards are certified (+7) 0.3% of the stated value, unless otherwise stated. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • NIST Technical Note 1297, U.S. Government Printing Office, Washington, 1 9.2 9.2 • S.S. Termp. 1 3 9.2 9.2 • S.S. Termp. 1 1.3 9.2 9.2 • Discrete Warren. 1 9.2 9.2 • All Standards and Voluce Warren. 1 9.2 9.2 • S.S. Termp. 1 1 9.2 9.2 • Discrete Warren. 1 9.2 9.2
	Lot# DY186-US	Actual Weight(g)	1.01040 0.20033 0.20130 0.20220	4.04110 0.20230 0.20235 0.20080 2.02080	0.21536 antion calculated really using balared of the stated valuu ile, should be sto 3.N. and Kuyat. (Government Pri Government Pri Governm
	Solvent(s): Methanol	Target Weight(g)	1.01015 0.20003 0.20101 0.20203	0.20203 0.20203 0.20041 2.02030 1.00105	2000 93 0.2 0.21506 0.21536 319.D • The certified value is the concentration calculate • Standards are prepared gravimetrically using bla • Standards are certified (+1) 0.5% of the stated value • Mall Standards, after opening ampule, should be • Uncertainty Reference: Taylor, B.N. and Kuyat • Standards are equiling and the end of the end of the end • Uncertainty Reference: Taylor, B.N. and Kuyat • Standards are end of the end of th
	S. 5E-05 Balance Uncertainty 0.012 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 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	0.2 The certified val Standards are pro- Standards are co All Standards, a Utocertainty Ref NIST Technical NIST Technical S, Temp. 1 S, Temp. 1 S, Technical NIST Technical NIST Technical NIST Technical Column: Voi S, Temp. 1 S, Technical S, Technical S
	5E-05 0.012	Purity) (%)	99.99 99.59 99.5	99 99 99 99 99 99 99 99 99 99 99 99 99	93 6MSD-1: 16MSD-1: 11cknes 1.75 min 2.75 min 2.75 min 2.75 min 2.75 min
	titons Mix ents 4 °C) 100.0	Nominal Conc (µg/mL)	10000 2000 2000 2000	2000 2000 2000 2000 20000 10000	1 2000 TIC: 95319,D Method GC 1.5µm film = 1.5µm film = 200°C (fe zo0°C, Det
	95319 031921 <u>Bevised Additions Mix</u> 11 components 031924 Refrigerate (4 °C) Varied 6UTB d to (mL): 100.0	Lot Number	4718CK MKCM5711 SHBD2795V 00412MX	12604HBV 08046KN 02197JJ 1395468 113886	AP01 TIC: 9 26,83 24,85
	and dilute	RM#	7 1072 1023 987 373	199 1627 209 349 380	16
	IFIED WEIGHT REPORT 95319 Part Number: 95319 Lot Number: 95319 Lot Number: 95319 Description: 100000 Revised A 11 comption Tarticol 11 comption Recommended Storage: 031924 Nominal Concentration (µg/mL): Varied NiST Test ID#: 6UTB Weight(s) shown below were combined and diluted to (mL):		OIPE)	ier (MTBE)	13,79 13,79 13,79 13,79 20 20 20 20 20 20 20 20 20 20 20 20 20
	CERTIFIED WEIGHT REPORT Recomm Nominal Concent Weight(s) shown below v	Compound	Acrylonitrile 1-Chlorobutane Cyclohexane Di-isopropyl ether (DIPE) 1,4-Dioxane	Hexachloroethane Methylcyclohexane Methyl tert-butyl ether (MTBE) Propionitrile Tetrahydrofuran	1,2,3,4-1 etramethylbenzene Abundance 4000000 3500000 3500000 2500000 2500000 1500000 1 1000000 1000000 13

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1 of 2

Lot # 031921

Part # 95319





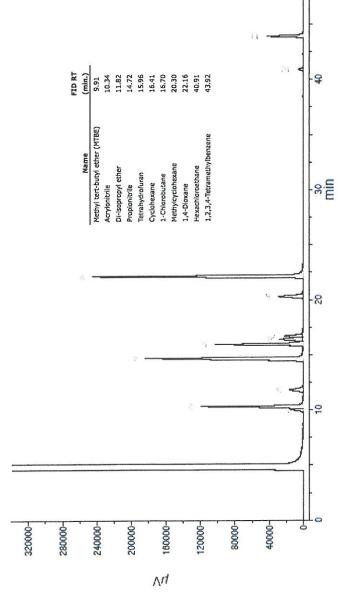
ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com



Run Length: 60.00 min, 36000 points at 10 points/second. Created: Sun, Mar 28, 2021 at 4:18:23 PM. Sampled: Sequence "032421-GC13M1", Method "GC13-M1". Analyzed using Method "GC13-M1".

Comments

GC13-M1 Analysis by Candice Warren Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness Flow rates: Total tlow=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. Standard injection = 0.5μ L, Range=6 FID Signal = Edaq Channel 1



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2 of 2

Section IX - Physical/Chemical Characteristics Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product. Eye protection. Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Potential for skin absorption, ingestion and inhalation. mqq 00S AWT Skin notation mqq 00S AWT 1-88-78 Methanol Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION and kept upright to prevent leakage. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed Storage Conditions Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Precautions for safe handling Section VII. HANDLING AND STORAGE Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). Clean up Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Environmental precautions ignition. Vapours accumulate to form explosive concentrations. Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of Personal precautions Section VI. ACCIDENTAL RELEASE MEASURES Wear self contained breathing apparatus for fire fighting if necessary. Protective equipment for fire Use water spray, alcohol-resistant toam, dry chemical or carbon dioxide. sibem gninsiugnitxe eldetiu2 heat/sparks/open flame/hot surface. No smoking. Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from Flammability Section V. FIREFIGHTING MEASURES Do NOT induce vomiting. Rinse mouth with water. Consult a physician. bewollewe 1 Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. In case of eye contact Wash with soap and water. Consult a physician. In case of skin contact If inhaled, move person into tresh air. If not breathing, give artificial respiration. Consult a physician. belsdni 1 Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. General advice Section IV. FIRST AID MEASURES INTENDED USE: REFERENCE MATERIAL See Certified Weight Report For Other Analytes Present At Trace Quantities. 26 < L-92-76 :#2AO METHYL ALCOHOL Methanol (lenoitqo) % Components (Specific Chemical Identity; Common Name(s)) Section III - Composition SA A Signal Word: DANGER 75 If in eyes, remove contacts, rinse with water P305,351,338 It on skin, wash with soap and water P302,332 Use gloves, eye protection/face sheild P280 Use in ventilated area L/2d Suspected of causing cancer H361 Cause damage to organs 028H H301, 311, 331 Toxic if swallowed, skin contact, inhaled Highly Flammable Liquid and Vapor H225 GHS Classification in accordance with 29 CFR 1910 (OSHA HCS) Section II - Hazards Identification 0102 , 1 ysM Date Prepared/Revised Hamden CT, 06514 1-362-323-3500 Emergency Telephone International 44 Rossotto Dr. Address Emergency Telephone USA & CANADA 1-800-939-9093 ABSOLUTE STANDARDS INC Manufacturer's Name ANALYTICAL STANDARD DISSOLVED IN METHANOL **IDENTITY** Section I Product and Company Identification InsilgmoO AHSO/2HD Safety Data Sheet (SDS) FAX: 203-281-2922 Hamden, CT 06518-0585

Absolute Standards Inc.

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. handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute usage, protective elothing including eye and face guards and respirators must be used to avoid confact with material or breathing chemical vapors/lumes. Exposure to this product may have series or varied, ABSOLUTE STANDARDS INC. cannot warn of all 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. 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. warmanis that the chemical meets are specifications set forth on the fabel. ABSOLUTE STANDARDS INC. TANDARDS INC. Cannot warm of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. Warmanis that the chemical meets the specifications set forth on the fabel. ABSOLUTE STANDARDS INC. TANDARDS INC. Cannot warm of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. TANDARDS INC. Cannot warm of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. THE PARADINE ANX OTHER WARRANTIES, EXPRESSION REALED THE REALMORD INC. SUPPLIED HEREUNDER, ITS 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 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 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

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302. Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant sb1szsH AH2O

Section XV. REGULATORY INFORMATION

Section XVI. Misc. INFORMATION

Proper shipping name: Proper shipping name: Methanol Methanol UN number: 1230 Class: 3 Packing group: II UN number: 1230 Class: 3 Packing group: II (SU) TOA ATAI

Section XIV. TRANSPORT INFORMATON

Dispose with normal Laboratory Solvent Waste.

Section XIII. DISPOSAL CONSIDERATIONS

10,000.00 mg/ - 24 h	EC100
74,500.00 mg/l - 48 h	EC60
4 96 - 1/gm 004,21	LC50

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

.bewollswa ti oixoT Toxic if inhaled. Causes respiratory tract initation. Eye damage/eye irritation Toxic if absorbed through skin. Causes skin initation. LD50 Dermal - rabbit - 15,800 mg/kg LC50 Inhalation - rat - 4 h - 6400 ppm LD50 Oral - rat - 5,628 mg/kg

Section XI. TOXICOLOGICAL INFORMATION

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

Section X. STABILITY AND REACTIVITY

Appearance and Odor	CLEAR, COLORLESS I	רוסחום א	ITH CHARACTERISTIC PUNGENT ODOR.	
Solubility in Water	COMPLETE			
(r = AIA) (tianed toqsV		11.1	Evaporation rate (Butyl Acetate = 1)	9.4
		96	1100 - Gumou	O∘86-

apor Pressure (mm Hg)	96	Melting Point	⊃ ₀86-
זעוסק 6עוווס	O•29	Specific Gravity (H2O = 1)	62.0

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Certified Reference Material CRM



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יייףטייז וטטטוונטון	031921 DATE 031921 031921 DATE	l pg.) LDSO	orl-rat 78 mg/kg orl-rat 2670mg/kg orl-rat 12705mg/kg orl-rat 8470mg/kg	orl-mus 5700mg/kg orl-gpg 4970mg/kg NI/A orl-rat 4g/kg orl-rat 39mg/kg	on-rat 6408mg/kg ement Result."
4		SDS Information (Solvent Safety Info. On Attached pg.) As# 0SHA PEL (TWA) L		E P	ated. aled. NIST Measur ASD RT (min.) 13.56 13.79 13.79 13.79 13.75 13.75 13.75 20.83 20.17 20.58 20.83 20.68 20.83 24.84 26.84 48,44
		J		123-91-1 2 67-72-1 1 108-87-2 1634-04-4 107-12-0	0.2 0.21506 0.21536 2002.8 8.7 488-23-3 MA The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise s Standards are certified (H-) 0.5% (He stated value, unless otherwise stated. Standards are certified (H-) 0.5% (He stated value, unless otherwise stated. All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions. • All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions. MA • All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions. Internationy of Standards, after opening and Expressing the Uncertainty of NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC. (1994). • NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC. (1994). • All Standards, after opening and Expressing the Uncertainty of Standards are confired for a 0.255mm ID X • Si Termp. 1 = 35°C (10min.), Termp. 2 • All Ret = 4°C/min., Injector Temp. = Di-isopropyl ether • Di-estored by Candice Warren. Tetrahydrofuran 51), Rate = 4°C/min., Injector Temp. = Di-isopropyl ether • All Standards Termp. 1 Di-ostoregraphic ether • All Standards Termp. 1 Di-ostoregraphic ether • Other Her Di-ostoregrap
	Formulated By Reviewed By:	Expanded Uncertainty (+/-) (µg/mL)	40.5 8.1 8.2 8.2	161.9 8.2 8.2 8.1 8.1 81.0	8.7 and volumer as stated with we se stated with we se stated under for Evaluation for Evaluation for Evaluation for Evaluation for Evaluation for Evaluation for Evaluation for Evaluation Methy Methy Methy Hexac
		Expanded Actual Uncertainty Conc (µg/mL) (µ/-) (µg/mL)	10002.5 2003.0 2002.8 2001.7	40005.0 2002.7 2003.2 2003.9 20005.0 10003.5	0.2 0.21506 0.21536 2002.8 8.7 • The certified value is the concentration calculated from gravimetric and volus standards are certified (+7) 0.3% of the stated value, unless otherwise stated. 8.1 • Standards are certified (+7) 0.3% of the stated value, unless otherwise stated. 9.1 9.2 • Standards are certified (+7) 0.3% of the stated value, unless otherwise stated. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • All Standards, after opening ampule, should be stored with caps tight and um. 9.1 9.2 • NIST Technical Note 1297, U.S. Government Printing Office, Washington, 1 9.2 9.2 • S.S. Termp. 1 3 9.2 9.2 • S.S. Termp. 1 1.3 9.2 9.2 • Discrete Warren. 1 9.2 9.2 • All Standards and Voluce Warren. 1 9.2 9.2 • S.S. Termp. 1 1 9.2 9.2 • Discrete Warren. 1 9.2 9.2
	Lot# DY186-US	Actual Weight(g)	1.01040 0.20033 0.20130 0.20220	4.04110 0.20230 0.20235 0.20080 2.02080	0.21536 antion calculated really using balared of the stated valuu ile, should be sto 3.N. and Kuyat. (Government Pri Government Pri Governm
	Solvent(s): Methanol	Target Weight(g)	1.01015 0.20003 0.20101 0.20203	0.20203 0.20203 0.20041 2.02030 1.00105	2000 93 0.2 0.21506 0.21536 319.D • The certified value is the concentration calculate • Standards are prepared gravimetrically using bla • Standards are certified (+1) 0.5% of the stated value • Mall Standards, after opening ampule, should be • Uncertainty Reference: Taylor, B.N. and Kuyat • Standards are equiling and the end of the end of the end • Uncertainty Reference: Taylor, B.N. and Kuyat • Standards are end of the end of th
	S. 5E-05 Balance Uncertainty 0.012 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 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	0.2 The certified val Standards are pro- Standards are co All Standards, a Utocertainty Ref NIST Technical NIST Technical S, Temp. 1 S, Temp. 1 S, Technical NIST Technical NIST Technical NIST Technical Column: Voi S, Temp. 1 S, Technical S, Technical S
	5E-05 0.012	Purity) (%)	99.99 99.59 99.5	99 99 99 99 99 99 99 99 99 99 99 99 99	93 6MSD-1: 16MSD-1: 11cknes 1.75 min 2.75 min 2.75 min 2.75 min 2.75 min
	titons Mix ents 4 °C) 100.0	Nominal Conc (µg/mL)	10000 2000 2000 2000	2000 2000 2000 2000 20000 10000	1 2000 TIC: 95319,D Method GC 1.5µm film = 1.5µm film = 200°C (fe zo0°C, Det
	95319 031921 <u>Bevised Additions Mix</u> 11 components 031924 Refrigerate (4 °C) Varied 6UTB d to (mL): 100.0	Lot Number	4718CK MKCM5711 SHBD2795V 00412MX	12604HBV 08046KN 02197JJ 1395468 113886	AP01 TIC: 9 26,83 24,85
	and dilute	RM#	7 1072 1023 987 373	199 1627 209 349 380	16
	IFIED WEIGHT REPORT Part Number: 95319 Lot Number: 031921 Lot Number: 031921 Description: Hevised A 1 Compc Expiration Date: 031924 Recommended Storage: Refrigeration Nominal Concentration (µg/mL): Varied Neight(s) shown below were combined and diluted to (mL):		OIPE)	ier (MTBE)	13,79 13,79 13,79 13,79 20 20 20 20 20 20 20 20 20 20 20 20 20
	CERTIFIED WEIGHT REPORT Recomm Nominal Concent Weight(s) shown below v	Compound	Acrylonitrile 1-Chlorobutane Cyclohexane Di-isopropyl ether (DIPE) 1,4-Dioxane	Hexachloroethane Methylcyclohexane Methyl tert-butyl ether (MTBE) Propionitrile Tetrahydrofuran	1,2,3,4-1 etramethylbenzene Abundance 4000000 3500000 3500000 2500000 2500000 1500000 1 1000000 1000000 13

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1 of 2

Lot # 031921

Part # 95319





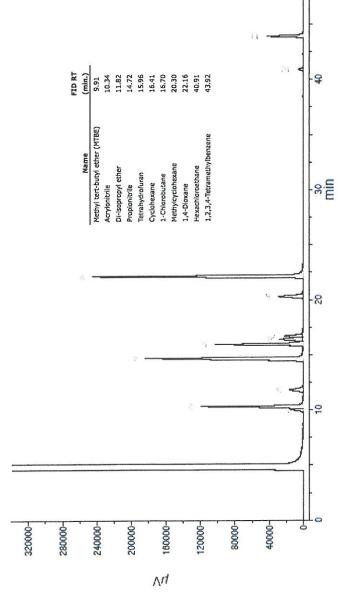
ANAB ISO 17034 Accredited AR-1539 Certificate Number https://Absolutestandards.com



Run Length: 60.00 min, 36000 points at 10 points/second. Created: Sun, Mar 28, 2021 at 4:18:23 PM. Sampled: Sequence "032421-GC13M1", Method "GC13-M1". Analyzed using Method "GC13-M1".

Comments

GC13-M1 Analysis by Candice Warren Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness Flow rates: Total tlow=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. Standard injection = 0.5μ L, Range=6 FID Signal = Edaq Channel 1



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Section IX - Physical/Chemical Characteristics Avoid contact with skin, eyes and clothing. Wash hands thoroughly after handling the product. Eye protection. Personal protective equipment Respiratory protection Handle with gloves. Gloves must be inspected prior to use. Potential for skin absorption, ingestion and inhalation. mqq 00S AWT Skin notation mqq 00S AWT 1-88-78 Methanol Section VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION and kept upright to prevent leakage. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed Storage Conditions Use ventilation Keep away from sources of ignition. No smoking. Prevent the build up of electrostatic charge. Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Precautions for safe handling Section VII. HANDLING AND STORAGE Contain spillage, and then collect and place in container for disposal according to local regulations (see section 13). Clean up Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Environmental precautions ignition. Vapours accumulate to form explosive concentrations. Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of Personal precautions Section VI. ACCIDENTAL RELEASE MEASURES Wear self contained breathing apparatus for fire fighting if necessary. Protective equipment for fire Use water spray, alcohol-resistant toam, dry chemical or carbon dioxide. sibem gninsiugnitxe eldetiu2 heat/sparks/open flame/hot surface. No smoking. Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from Flammability Section V. FIREFIGHTING MEASURES Do NOT induce vomiting. Rinse mouth with water. Consult a physician. bewollewe 1 Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. In case of eye contact Wash with soap and water. Consult a physician. In case of skin contact If inhaled, move person into tresh air. If not breathing, give artificial respiration. Consult a physician. belsdni 1 Consult a physician. Show this safety data sheet to the doctor in attendance.Move to safe area. General advice Section IV. FIRST AID MEASURES INTENDED USE: REFERENCE MATERIAL See Certified Weight Report For Other Analytes Present At Trace Quantities. 26 < L-92-76 :#2AO METHYL ALCOHOL Methanol (lenoitqo) % Components (Specific Chemical Identity; Common Name(s)) Section III - Composition SA A Signal Word: DANGER 75 If in eyes, remove contacts, rinse with water P305,351,338 It on skin, wash with soap and water P302,332 Use gloves, eye protection/face sheild P280 Use in ventilated area L/2d Suspected of causing cancer H361 Cause damage to organs 028H H301, 311, 331 Toxic if swallowed, skin contact, inhaled Highly Flammable Liquid and Vapor H225 GHS Classification in accordance with 29 CFR 1910 (OSHA HCS) Section II - Hazards Identification 0102 , 1 ysM Date Prepared/Revised Hamden CT, 06514 1-362-323-3500 Emergency Telephone International 44 Rossotto Dr. Address Emergency Telephone USA & CANADA 1-800-939-9093 ABSOLUTE STANDARDS INC Manufacturer's Name ANALYTICAL STANDARD DISSOLVED IN METHANOL **IDENTITY** Section I Product and Company Identification InsilgmoO AHSO/2HD Safety Data Sheet (SDS) FAX: 203-281-2922 Hamden, CT 06518-0585

Absolute Standards Inc.

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. handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Absolute usage, protective elothing including eye and face guards and respirators must be used to avoid confact with material or breathing chemical vapors/lumes. Exposure to this product may have series or varied, ABSOLUTE STANDARDS INC. cannot warn of all 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. 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. warmanis that the chemical meets are specifications set forth on the fabel. ABSOLUTE STANDARDS INC. TANDARDS INC. Cannot warm of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. Warmanis that the chemical meets the specifications set forth on the fabel. ABSOLUTE STANDARDS INC. TANDARDS INC. Cannot warm of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. TANDARDS INC. Cannot warm of all the potential dangers of use or interaction with other chemicals or substances. ABSOLUTE STANDARDS INC. THE PARADINE ANX OTHER WARRANTIES, EXPRESSION REALED THE REALMORD INC. SUPPLIED HEREUNDER, ITS 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 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 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

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302. Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Irritant sb1szsH AH2O

Section XV. REGULATORY INFORMATION

Section XVI. Misc. INFORMATION

Proper shipping name: Proper shipping name: Methanol Methanol UN number: 1230 Class: 3 Packing group: II UN number: 1230 Class: 3 Packing group: II (SU) TOA ATAI

Section XIV. TRANSPORT INFORMATON

Dispose with normal Laboratory Solvent Waste.

Section XIII. DISPOSAL CONSIDERATIONS

10,000.00 mg/ - 24 h	EC100
74,500.00 mg/l - 48 h	EC60
4 96 - 1/gm 004,21	LC50

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

.bewollswa ti oixoT Toxic if inhaled. Causes respiratory tract initation. Eye damage/eye irritation Toxic if absorbed through skin. Causes skin initation. LD50 Dermal - rabbit - 15,800 mg/kg LC50 Inhalation - rat - 4 h - 6400 ppm LD50 Oral - rat - 5,628 mg/kg

Section XI. TOXICOLOGICAL INFORMATION

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

Section X. STABILITY AND REACTIVITY

Appearance and Odor	CLEAR, COLORLESS I	רוסחום א	.RODO TNEBNUG STREATSARAHS HTIV	
Solubility in Water	COMPLETE			
(t = AIA) (tianed tods)		11.1	Evaporation rate (Butyl Acetate = 1)	9.4
		96		O∘86-

apor Pressure (mm Hg)	96	Melting Point	⊃ ₀86-
זעוסק 6עוווס	O•29	Specific Gravity (H2O = 1)	62.0

Methanol ULTRA RESI-ANALYZED For Purge and Trap Analysis





Material No.: 9077-02 Batch No.: 0000288323 Manufactured Date: 2021-06-11 Expiration Date: 2024-06-10 Revision No.: 1

Certificate of Analysis

Test	Specification	Result	
Assay (CH₃OH) (by GC, corrected for water)	≥ 99.9 %	100.0 %	
Residue after Evaporation	≤ 1.0 ppm	0.5 ppm	
Titrable Acid (μeq/g)	≤ 0.3	0.2	
Titrable Base (µeq/g)	≤ 0.10	0.05	
Water (by KF, coulometric)	≤ 0.08 %	0.01 %	
Volatile Organic Trace Analysis - Below EPA 8260B CRQL	Conforms	Fails	

For Laboratory,Research,or Manufacturing Use Performance Tested for Use in EPA Methods 500 Series for Drinking Water 600 Series for Wastewater 846 for Solid Waste Country of Origin: USA Packaging Site: Phillipsburg Mfg Ctr & DC

ames Techie

Jamie Ethier Vice President Global Quality

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

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