

Certificate of Analysis

Triethylene glycol

PurCert Standard for GC

(Secondary Reference Standard)

Product Number	PSR37200	CAS No.	112-27-6
Brand	PureSynth	Lot No.	HT07
Molecular Formula	C ₆ H ₁₄ O ₄	Date of Mfg.	July.2022
Molecular Weight	150.17 g/mol	Date of Exp.	June.2026

Test	Specification	Result
Description	Colorless liquid	Colorless liquid
Clarity	Clear	Clear
Assay (GC-FID)	≥ 99.5 %	99.81 %
Water (By KF)	NMT 0.05 %	0.0470 %
Density	1.121-1.25 g/cm ³	1.123 g/cm ³
Identification by ¹ H NMR	Conforms to structure	Conforms
Identification by GC-MS	Conforms to molecular mass	Conforms
Identification by IR	Conforms to structure	Conforms

***Traceable to USP Reference standard 1683708, Lot No: R159H0**

Storage Condition: Store at ambient temperature and keep container tightly closed.

Remark: The batch complies with the prescribed quality of the above specification.

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Assay by GC-FID

METHOD: GC- FID conditions:

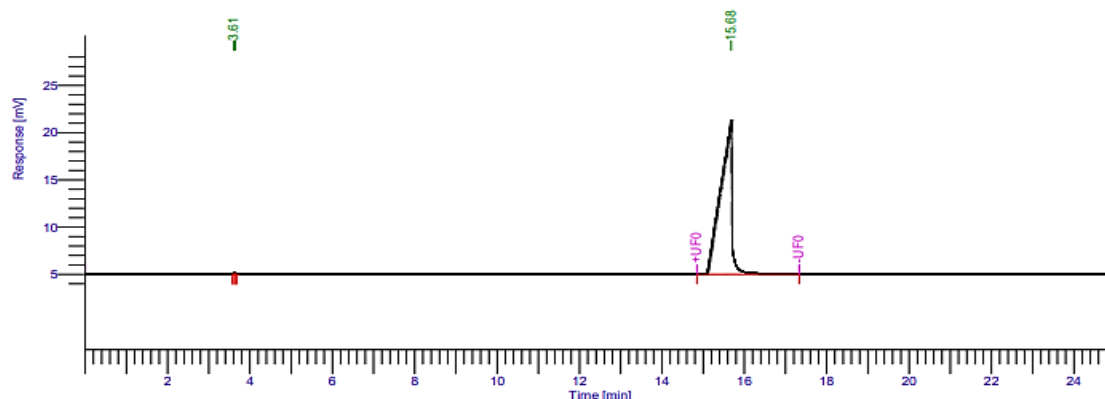
Column: Agilent Technologies DB-FFAP 30mx 0.530mm, 1.0micron

Instrument: PerkinElmer, GC 2014,

Detector: FID, **Carrier gas:** Nitrogen

Temp programming: Initial 50°C hold for 1min, 5°C Ramp/ min., 100 °C hold for 1 min., 25°C Ramp up to 250°C hold for 2 min., Run time 20 min.

Software Version	: 6.3.4.0700	Date	: 10/10/2022 4.33.25 PM
Operator	: manager	Sample Name	: AR22000446-TRIETHYLENEGLYCOL-HT07
Sample Number	: 1		
AutoSampler	: BUILT-IN	Study	: GC Purity
Instrument Name	: Clarus 680	Rack/Vial	: 0/13
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 24.72 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
Data Acquisition Time	: 10/10/2022 4.05.41 PM	Dilution Factor	: 1.00
		Cycle	: 1



GC Reports

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]
1		3.609	303.20	166.57	0.09
2		3.646	302.66	163.86	0.09
3		15.680	325230.95	16326.18	99.81
			325836.81	16656.60	100.00

Missing Component Report
Component Expected Retention (Calibration File)

All components were found

Purity by GC-FID: 99.81 %

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IDENTIFICATION TESTS

GC-MS Spectrum:

METHOD: GC-MS conditions:

Column: Agilent Technologies, Elite -5MS, 30 m X 0.25 mm, 1.0micron

Instrument: Perkin Elmer, **Carrier gas:** Helium

Source Temp.: 230°C, Transfer line: 250°C

Inlet Temp.: 180°C, **Diluent:** Methanol

Source energy: 70eV

Mass by GC-MS:

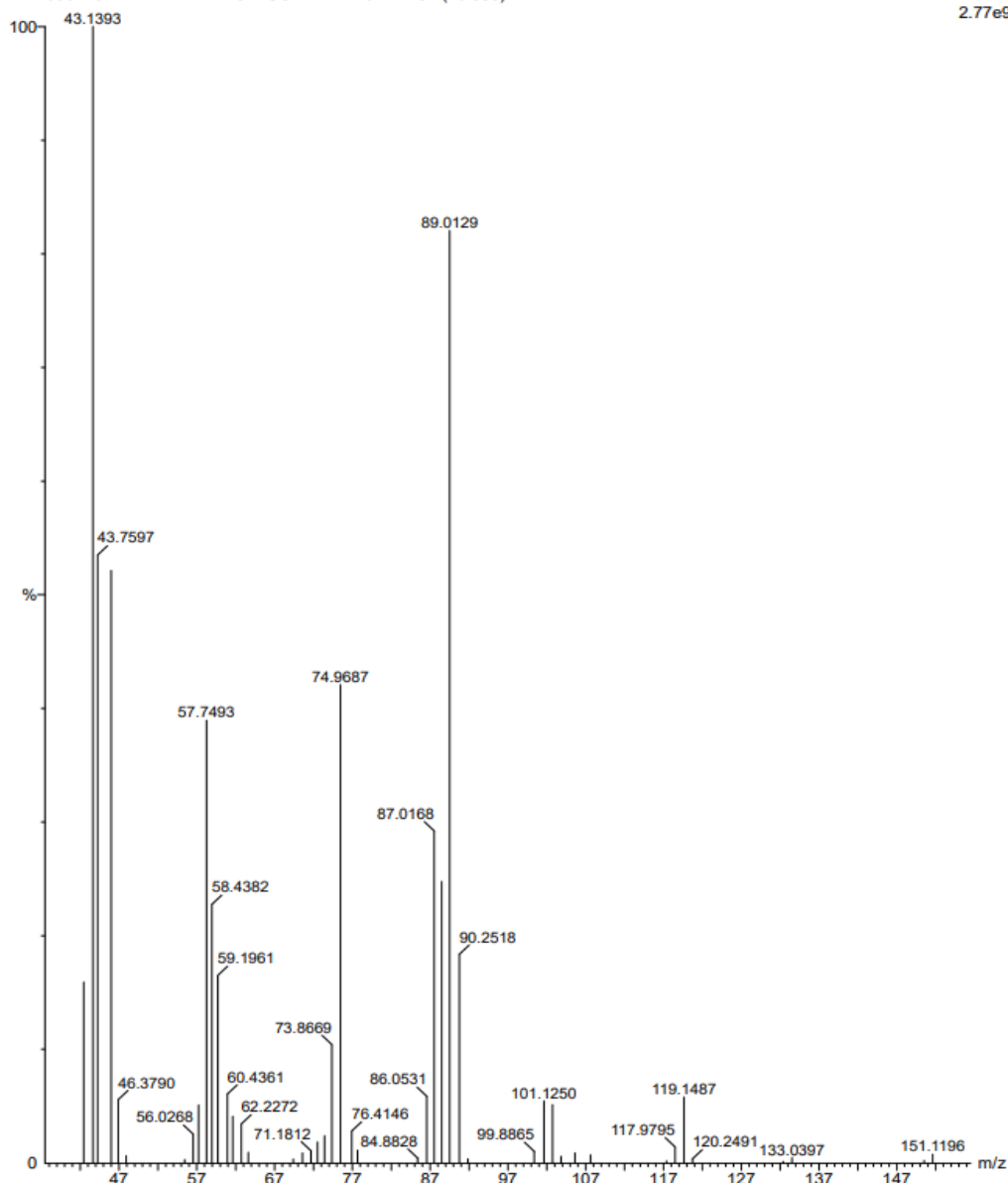
Product Name: Triethylene glycol

Product Code: PSR37200

Oct-2022 + 11:26:54

Scan EI+
2.77e9

AR22000446-TRIETHYLENE GLYCOL- HT07 2137 (10.688)



Identification by GC-MS: Conforms to molecular mass

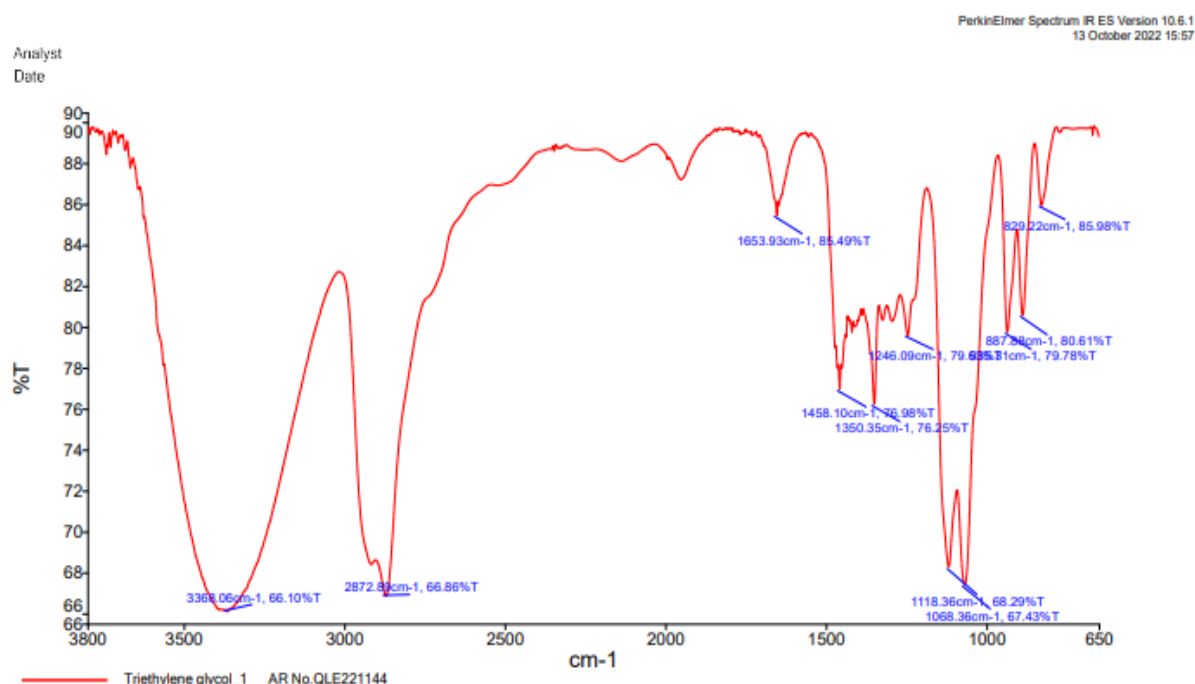
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Infrared spectrum:

Product Name: Triethylene glycol

Product Code: PSR37200



Source Spectra Results	
Spectrum Name	Number Of Peaks
Triethylene glycol_1	11

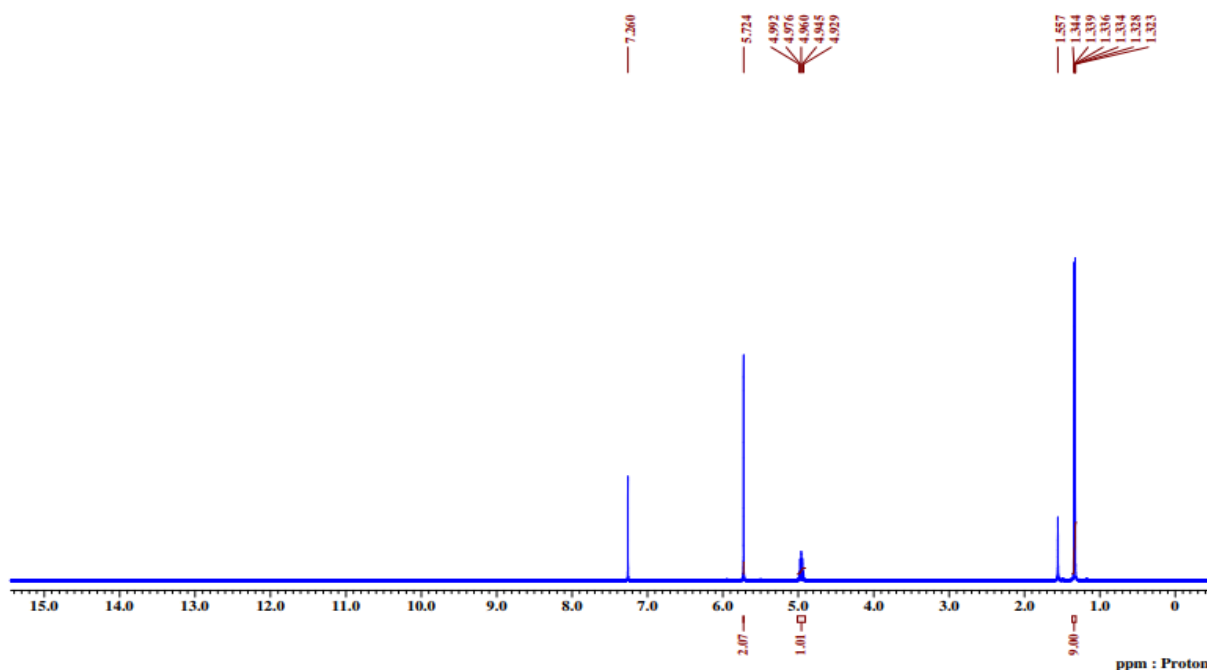
List of Peak Area/Height		
Peak Number	X (cm-1)	Y (%T)
1	3368.06	66.10
2	2872.89	66.86
3	1653.93	85.49
4	1458.10	76.98
5	1350.35	76.25
6	1246.09	79.63
7	1118.36	68.29
8	1068.36	67.43
9	935.31	79.78
10	887.88	80.61
11	829.22	85.98

Identification by IR: Conforms to structure

¹H NMR Spectrum:

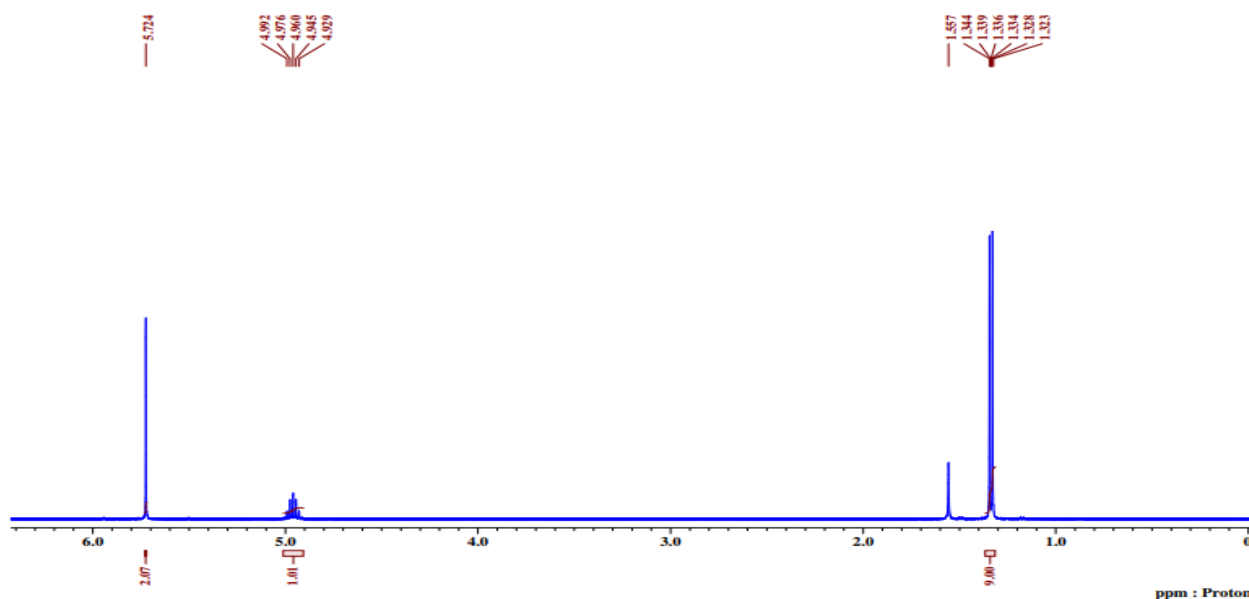
Product Name: Triethylene glycol

Product Code: PSR37200



Sample_Id	= Triethylene glycol	Experiment	= proton.jpg	Relaxation_Delay	= 5[s]
Author	= delta	X_Domain	= Proton	Exp_Total	= 205.0[s]
Creation_Time	= 12-OCT-2022 17:56:45	Dis_Title	= Proton		
Revision_Time	= 12-OCT-2022 18:23:37	Solvent	= CHLOROFORM-D		
Experiment_Details		Scans	= 16		
Instrument	= JEOL[Delta V5.3.2]	Temp_Get	= 18.4[°C]		
Spectrometer	= JNM-ECE400S/L1	X_Acq_Time	= 1.16916224[s]		

¹H NMR Spectrum: Expansion



Sample_Id	= Triethylene glycol	Experiment	= proton.jpg	Relaxation_Delay	= 5[s]
Author	= delta	X_Domain	= Proton	Exp_Total	= 205.0[s]
Creation_Time	= 12-OCT-2022 17:56:45	Dis_Title	= Proton		
Revision_Time	= 12-OCT-2022 18:23:37	Solvent	= CHLOROFORM-D		
Experiment_Details		Scans	= 16		
Instrument	= JEOL[Delta V5.3.2]	Temp_Get	= 18.4[°C]		
Spectrometer	= JNM-ECE400S/L1	X_Acq_Time	= 1.16916224[s]		

Identification by ¹H NMR: Conforms to structure

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Maximum limits of impurities

WATER DETERMINATION

Method: Karl Fisher titration

Water Content (PSR37200) = **0.0470 %**

Approved By
Head - Technical

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