PureSynth
Research Chemicals

Certificate of Analysis

Ethyl chloroacetate

PurTech Standard for GC

(Secondary Reference Standard)

Product Number	PSI397	**CAS No.**	105-39-5
Brand	Puresynth	**Lot No.**	GYKTF05T
Molecular Formula	$C_4H_7ClO_2$	**Date of Mfg.**	May.2022
Molecular Weight	122.55 g/mol	**Date of Exp.**	April.2025

Test	Specification	Result
Description	Colorless liquid	Colorless liquid
Clarity	Clear	Clear
Assay (By GC-FID)	≥ 98.5 %	98.89 %
Water (By KF)	NMT 0.05 %	0.0481 %
Identification by ^{1}H NMR	Conform to structure	Conforms
Identification by GC-MS	Conform to molecular mass	Conforms
Identification by IR	Conform to structure	Conforms

***Traceable to Internal Reference Standard.**

Storage Condition: Store in a Room temperature and Keep container tightly closed.

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

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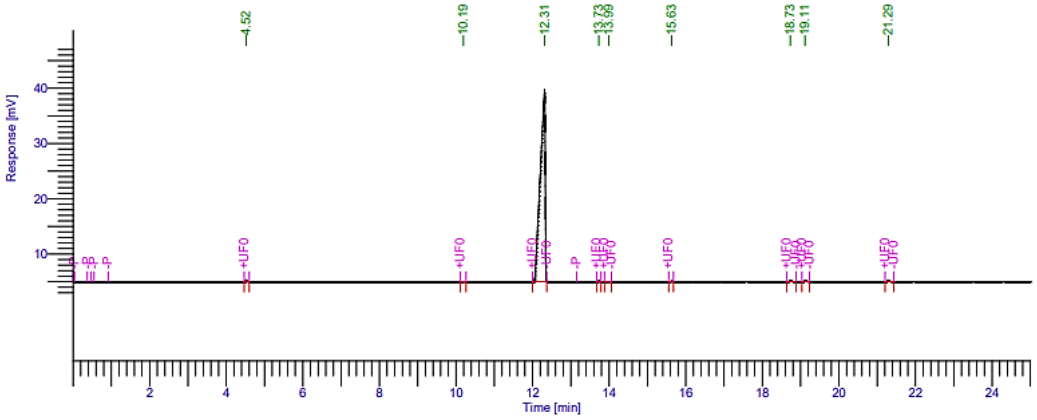
Assay by GC

METHOD: GC 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	: 10/09/2022 12.40.40 PM
Operator	: manager	Sample Name	: AR22000414-ETHYLCHLOROACETATE-GYKTF05T
Sample Number	: 1		
AutoSampler	: BUILT-IN	Study	GC Purity
Instrument Name	: Clarus 680	Rack/Vial	: 0/16
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 25.00 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 10/09/2022 11.59.33 AM	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1



GC Reports

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]
1		4.520	729.66	328.87	0.23
2		10.193	153.57	43.99	0.05
3		12.315	309782.21	34737.95	98.89
4		13.728	180.30	91.48	0.06
5		13.987	142.18	33.77	0.05
6		15.631	213.72	91.68	0.07
7		18.729	914.29	282.24	0.29
8		19.113	421.82	104.79	0.13
9		21.295	706.86	225.90	0.23
			313244.59	35940.68	100.00

Missing Component Report

Component	Expected Retention (Calibration File)

All components were found

Purity by GC: - 98.89 %

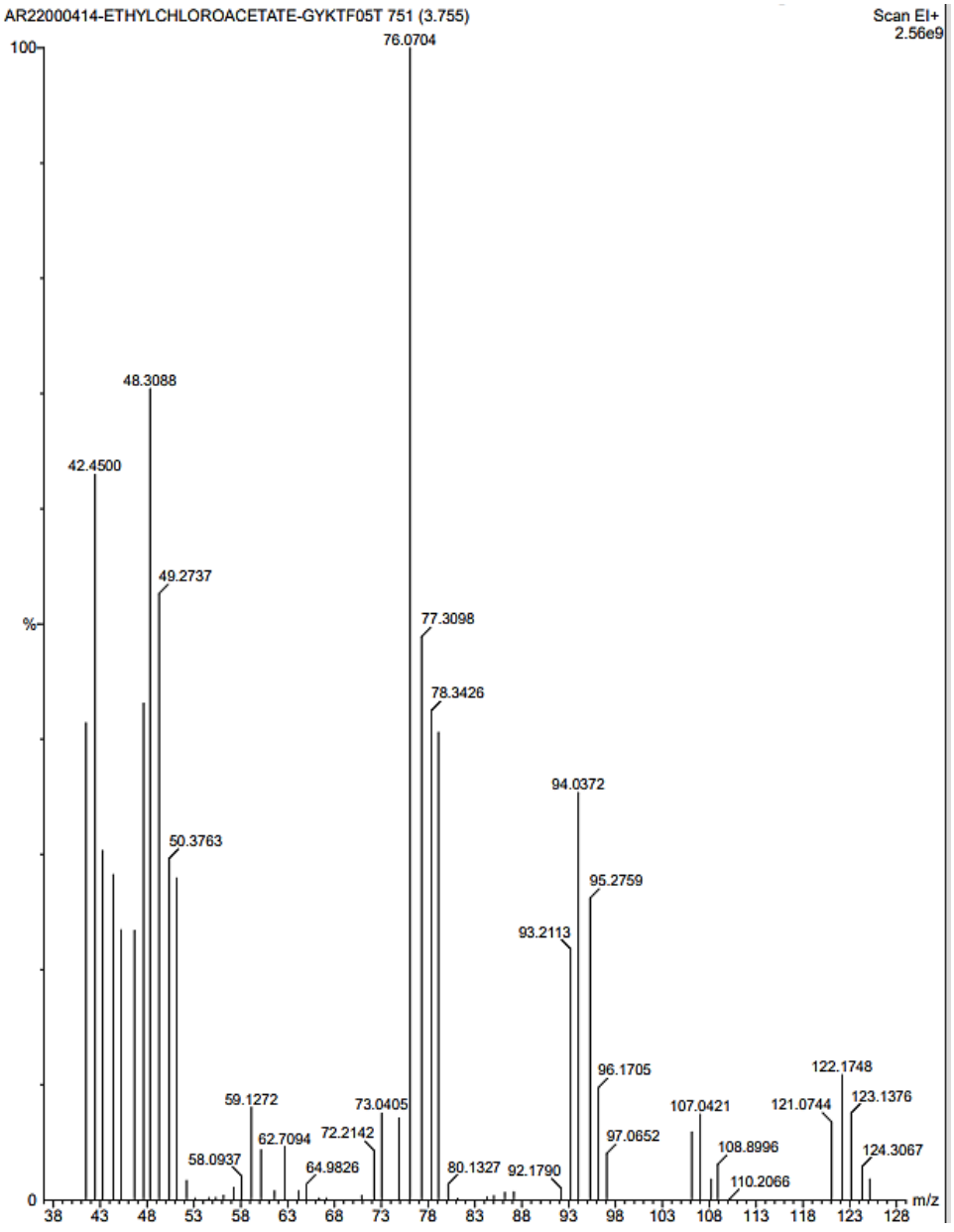
IDENTIFICATION TESTS

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: Ethyl chloroacetate
Product Code: PSI397



GC-MS Spectrum: Conforms to molecular mass

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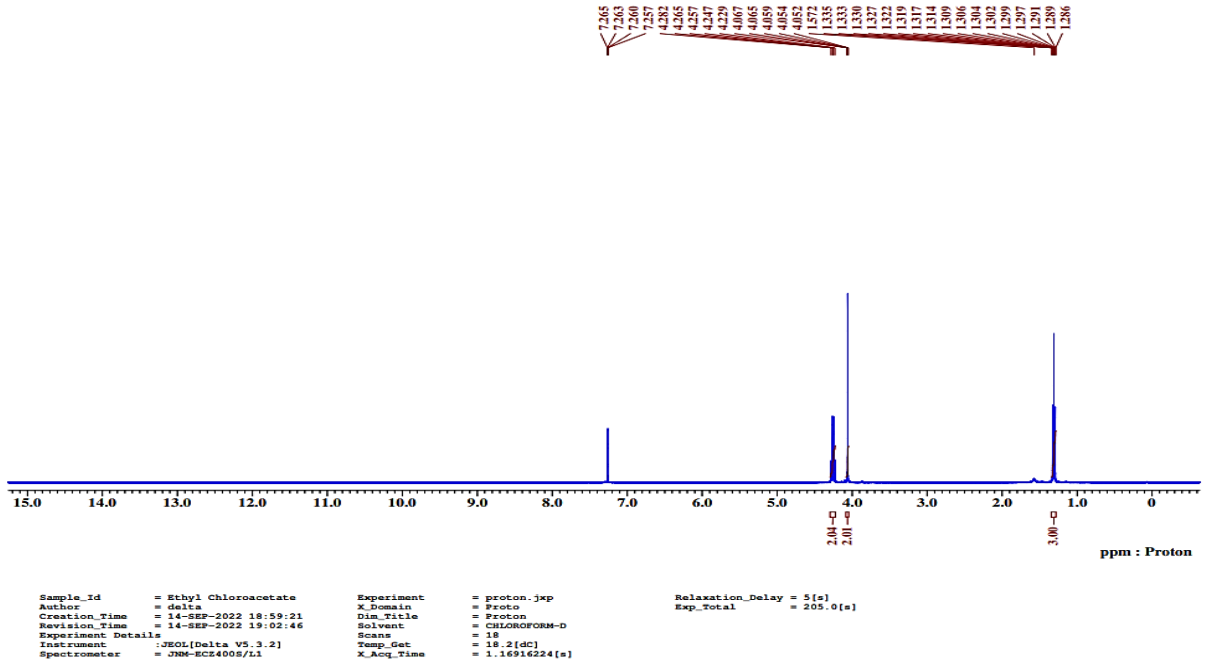
^{1}H NMR Spectrum:

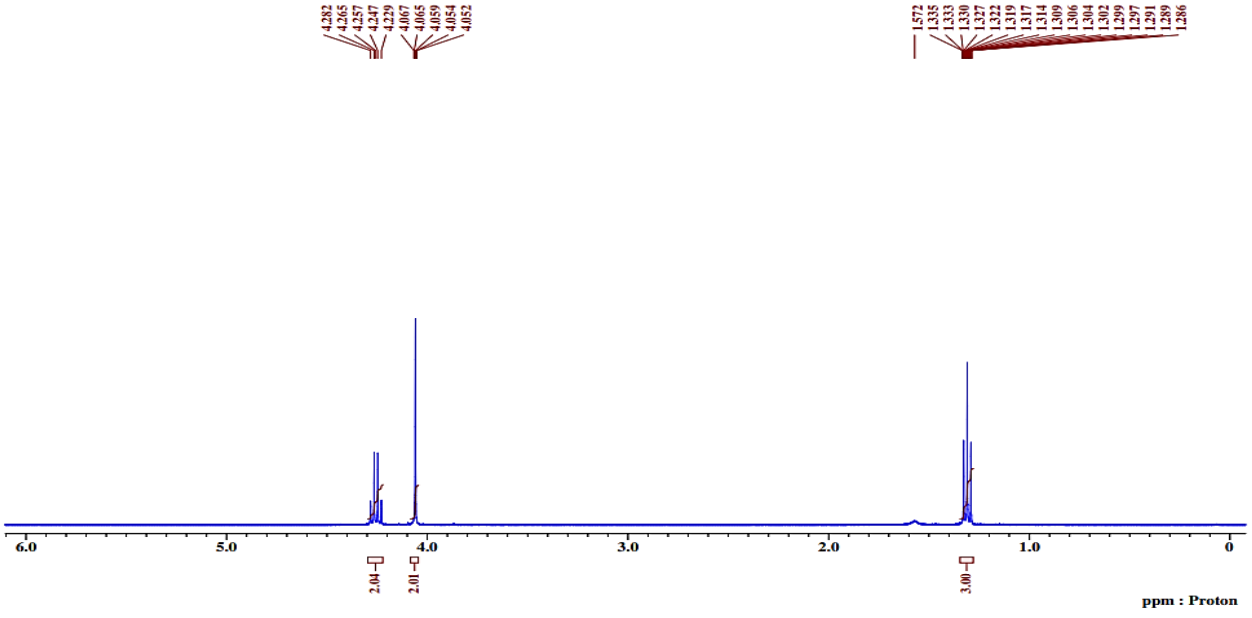
Product Name: Ethyl chloroacetate

Product Code: PSI397



Sample_Id	= Ethyl Chloroacetate	Experiment	= proton.jxp	Relaxation_Delay	= 5[s]
Author	= delta	X_Domain	= Proto	Exp_Total	= 205.0[s]
Creation_Time	= 14-SEP-2022 18:59:21	Dim_Title	= Proton		
Revision_Time	= 14-SEP-2022 19:02:46	Solvent	= CHLOROFORM-D		
Experiment Details		Scans	= 18		
Instrument	:JEOL[Delta V5.3.2]	Temp_Get	= 18.2[dC]		
Spectrometer	= JNM-ECZ400S/L1	X_Acq_Time	= 1.16916224[s]		

^{1}H NMR Spectrum: Expansion



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Spectrometer	= JNM-ECZ400S/L1	X_Acq_Time	= 1.16916224[s]		

^{1}H NMR Spectrum: Conforms to structure

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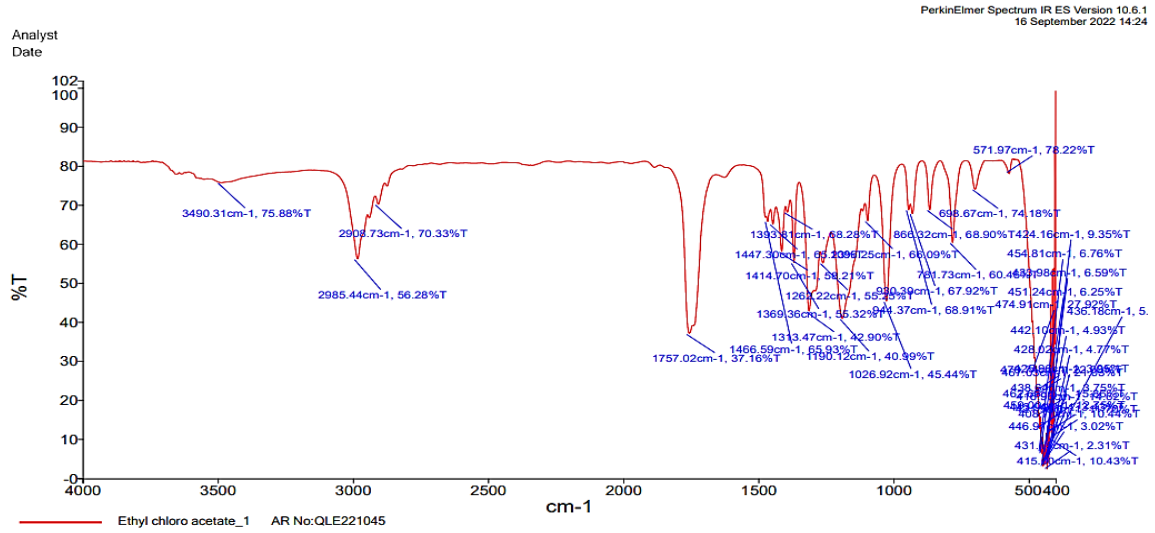
Infrared spectrum:

Product Name: Ethyl chloroacetate

Product Code: PSI397



Source Spectra Results	
Spectrum Name	Number Of Peaks
Ethyl chloro acetate_1	42

List of Peak Area/Height		
Peak Number	X (cm-1)	Y (%T)
1	3490.31	75.88
2	2985.44	56.28
3	2908.73	70.33
4	1757.02	37.16
5	1466.59	65.93
6	1447.30	65.23
7	1414.70	58.21
8	1393.81	68.28
9	1369.36	55.32
10	1313.47	42.90
11	1262.22	55.25
12	1190.12	40.99
13	1096.25	66.09
14	1026.92	45.44
15	944.37	68.91
16	930.39	67.92
17	866.32	68.90
18	781.73	60.46
19	698.67	74.18
20	571.97	78.22
21	474.91	27.92
22	470.74	22.00
23	467.03	21.03
24	462.66	15.86
25	459.00	12.75
26	454.81	6.76
27	451.24	6.25
28	446.97	3.02
29	443.94	3.43

List of Peak Area/Height		
Peak Number	X (cm-1)	Y (%T)
30	442.10	4.93
31	438.64	3.75
32	436.18	5.97
33	433.98	6.59
34	431.15	2.31
35	428.02	4.77
36	425.96	3.95
37	424.16	9.35
38	421.98	11.70
39	416.96	14.62
40	415.00	10.43
41	408.71	10.44
42	401.13	34.41

IR Spectrum: Conforms to structure

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Maximum limits of impurities

WATER DETERMINATION

Method: Karl Fisher titration

Water Content (PSI397) = **0.0481 %**

Approved By

Head - Technical