

# Certificate of Analysis

## L-Menthol

### PurCert Standard for GC

(Secondary Reference Standard)

<b>Product Number</b>	PSR4203	<b>CAS No.</b>	2216-51-5
<b>Brand</b>	PureSynth	<b>Lot No.</b>	M4203T1023
<b>Molecular Formula</b>	C <sub>10</sub> H <sub>20</sub> O	<b>Date of Mfg.</b>	October.2023
<b>Molecular Weight</b>	156.27 g/mol	<b>Date of Exp.</b>	September.2027

Test	Specification	Result
Description	White Crystals	White Crystals
Assay (GC-FID)	≥ 99.5 %	99.76 %
Water (By KF)	NMT 0.2000 %	0.1181 %
Identification by <sup>1</sup> 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 1381709 Lot no: R09450**

**Storage Condition:** Store at room temperature and keep the 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:

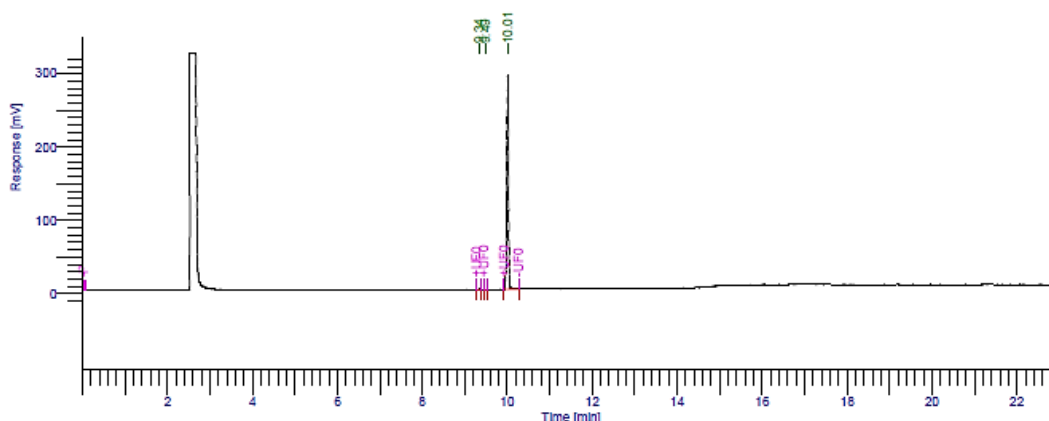
**Column:** Agilent Technologies DB-FFAP 30mx 0.530mm, 1.0micron

**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	: 28-12-2023 12:09:51
Operator	: manager	Sample Name	: L-MENTHOL-M4203T1023
Sample Number	: 001	Study	:
AutoSampler	: BUILT-IN	Rack/Vial	: 0/23
Instrument Name	: Clarus 690	Channel	: A
Instrument Serial #	: 690S23050206	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 23.00 min
Sampling Rate	: 12.5000 pts/s	Area Reject	: 0.000000
Sample Volume	: 1.000000 ul	Dilution Factor	: 1.00
Sample Amount	: 1.0000	Cycle	: 1
Data Acquisition Time	: 27-12-2023 17:11:31		



## GC Reports

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]
1		9.344	1150.18	476.09	0.15
2		9.492	723.91	289.73	0.09
3		10.011	785825.52	291366.35	99.76
			787699.60	292132.17	100.00

### Missing Component Report

Component Expected Retention (Calibration File)

All components were found

**Purity by GC-FID: 99.76 %**

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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:

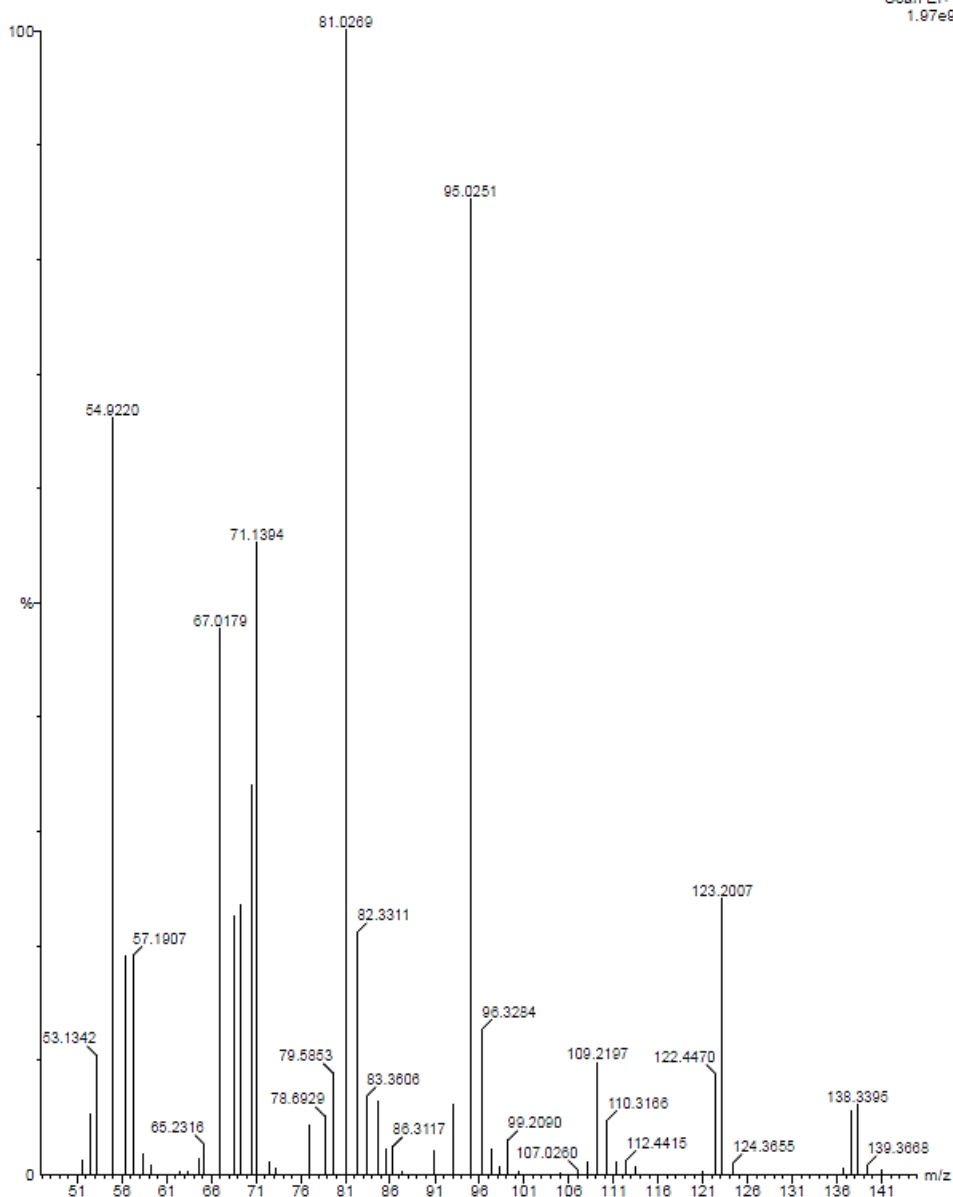
Product Name: L-Menthol

Product Code: PSR4203

L-MENTHOL-M4203T1023

, 27-Dec-2023 + 15:14:07

Scan EI+  
1.97e9



Identification by GC-MS: Conforms to molecular mass

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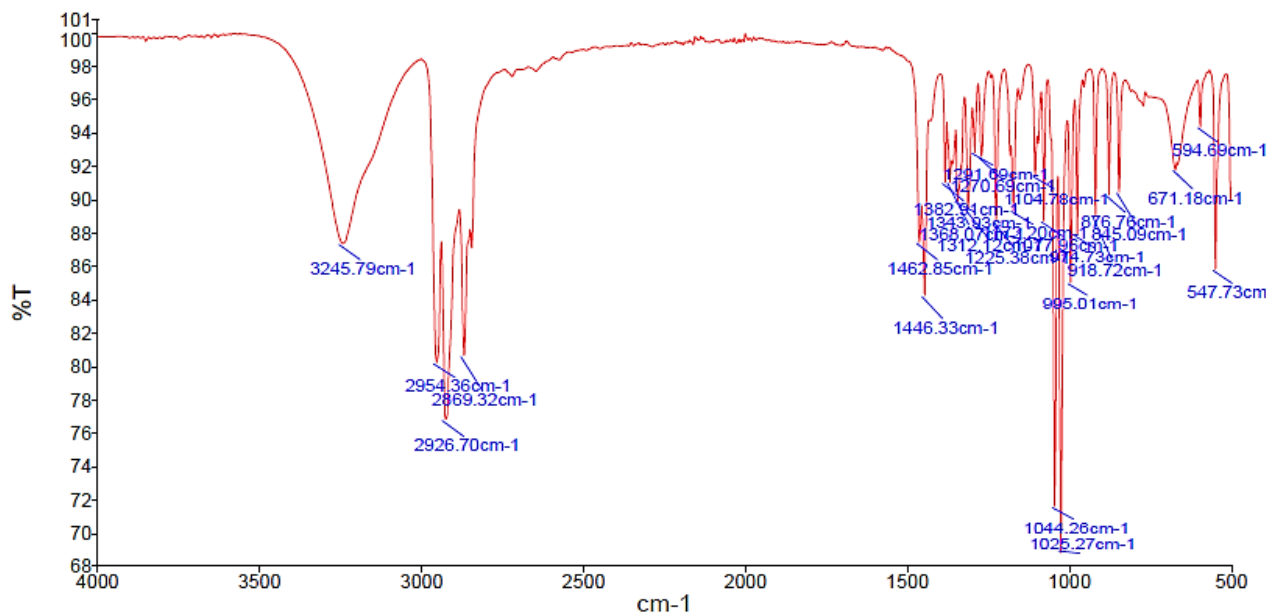
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**Infrared spectrum:**

**Product Name: L-Menthol**

**Product Code: PSR4203**

Analyst  
Date



AR23000182-L-Menthol-M4203T1023\_1 Sample 002 By Analyst Date Wednesday, December 27 2023

Source Spectra Results		
Spectrum Name	Number Of Peaks	
AR23000182-L-Menthol-M4203T1023_1	26	
List of Peak Area/Height		
Peak Number	X (cm-1)	Y (%T)
1	3245.79	87.40
2	2954.36	80.26
3	2926.70	76.85
4	2869.32	80.68
5	1462.85	87.48
6	1446.33	84.28
7	1382.91	91.07
8	1368.07	91.10
9	1343.93	89.95
10	1312.12	89.49
11	1291.69	92.87
12	1270.69	92.63
13	1225.38	88.77
14	1172.20	89.39
15	1104.78	91.48
16	1077.96	88.76
17	1044.26	71.65
18	1025.27	68.85
19	995.01	85.05
20	974.73	87.93
21	918.72	89.06
22	876.76	90.31
23	845.09	90.49
24	671.18	91.84
25	594.69	94.39
26	547.73	85.85

**Identification by IR: Conforms to structure**

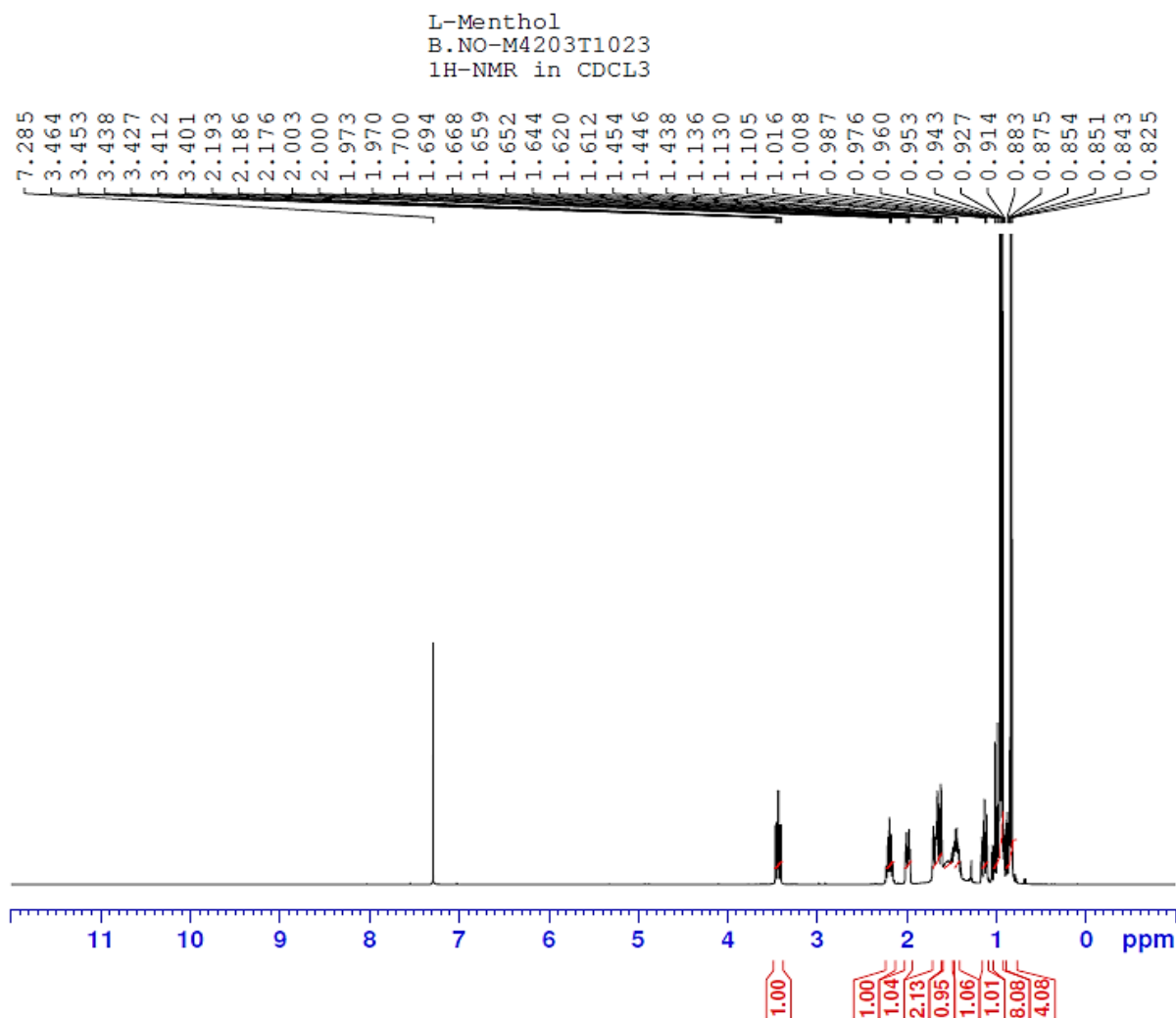
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**<sup>1</sup>H NMR Spectrum:**

Product Name: L-Menthol

Product Code: PSR4203



Identification by <sup>1</sup>H NMR: Conforms to structure

**Maximum limits of impurities**

**WATER DETERMINATION**

Method: Karl Fisher titration

Water Content (PSR4203) = **0.1181 %**

Approved By  
Head - Technical

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