



# *Essential Validation Services*





## Sample:

Client: | Natural Sourcing  
 Sample: | Palo Santo (Bursera graveolens)  
 Batch # | PIU100718  
 CAS Number |  
 Type: | Essential Oil

## Conclusion:

- No adulterants, diluents, or contaminants were detected via this method.
- This oil meets the expected profile for genuine essential oil of Palo Santo (Bursera graveolens).



X 

Validated By:

Essential Validation Services

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## Summary of Analyses

A fresh sample of Palo Santo (Bursera graveolens) Essential Oil (10 uL in .5to.5 mL Hexane + ETOH) was prepared and analyzed via split injection GC/EI-MS.



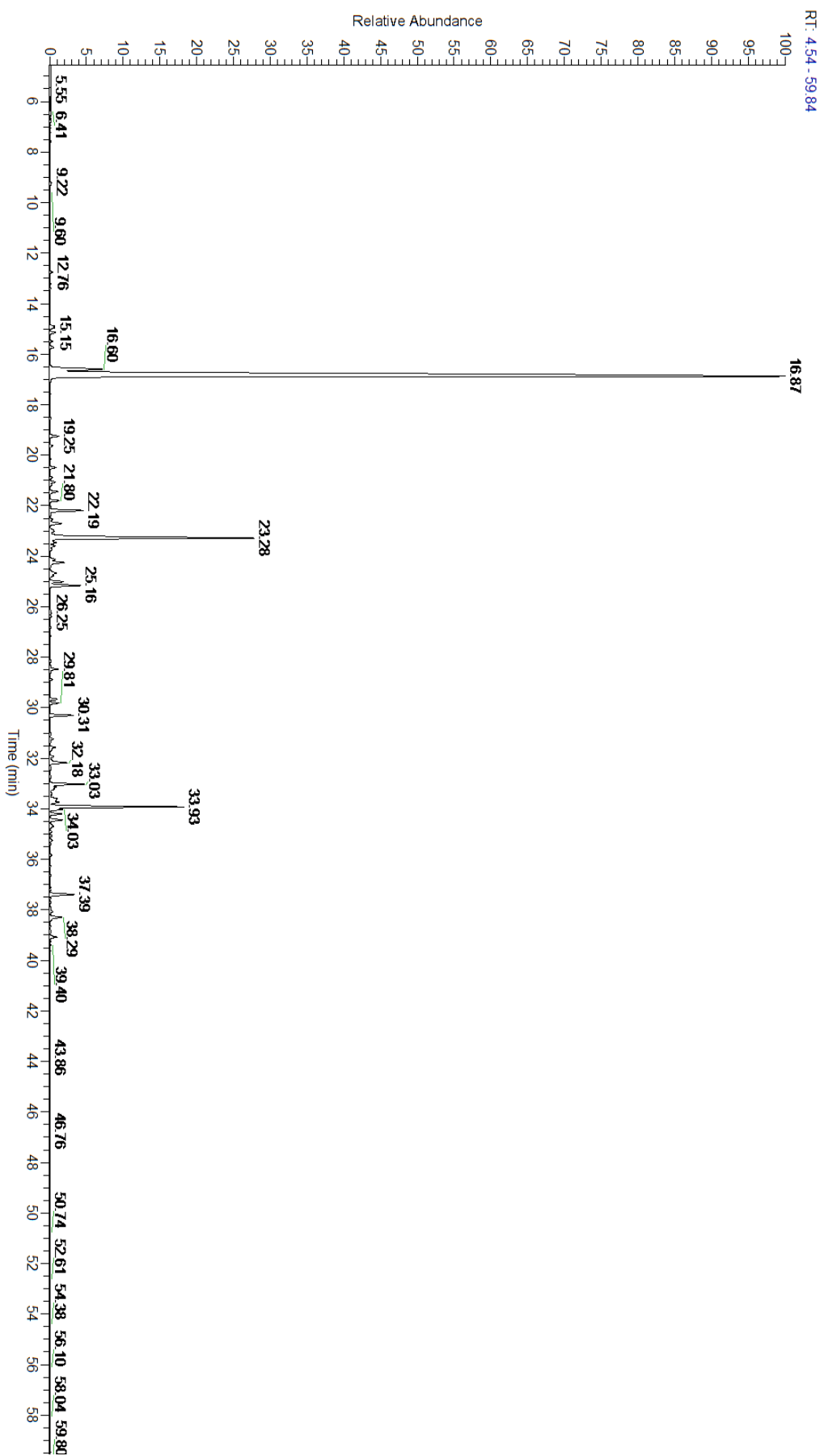
Main Compounds	Percentages
Limonene	58.20%
alpha-Terpineol	10.92%
beta-Bisabolene	5.51%
para-Cymene	3.25%
Menthofuran	1.53%
gamma-Muurolene	1.52%
Carvone	1.39%
Junenol	1.16%
beta-Elemene	0.98%
6,9-Guaiadiene	0.88%
trans-Carveol	0.81%
Terpinen-4-ol	0.60%
Pulegone	0.59%

Monoterpenes	Sesquiterpenes	Monoterpenols	Sesquiterpenols	Ketones
61.73%	13.16%	13.91%	2.03%	3.04%
Esters	Ethers	Aldehydes	Phenols	Other
0.00%	2.14%	0.08%	0.23%	3.68%



- Monoterpenes
- Sesquiterpenes
- Monoterpenols
- Sesquiterpenols
- Ketones
- Esters
- Ethers
- Phenols
- Other

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Total Percentage		96.43%			
Peak Number	RT	Area %	Compound Name	RI	Chemical Family
1	12.76	0.09%	alpha-Pinene	936.10	Monoterpene
2	13.39	0.03%	3-Methyl cyclohexanone	945.00	Aliphatic Ketone
3	14.95	0.19%	6-Methyl-5-hepten-2-one	982.00	Aliphatic Ketone
4	15.15	0.26%	Dehydro-1,8-cineole	989.80	Monoterpene Ether
5	15.73	0.19%	alpha-Phellandrene	1002.00	Monoterpene
6	16.60	3.25%	para-Cymene	1024.30	Monoterpene
7	16.87	58.20%	Limonene	1029.50	Monoterpene
8	19.25	0.39%	2,5-dimethyl styrene		
9	19.63	0.12%	Linalool	1099.00	Monoterpenol
10	20.49	0.26%	trans-para-Mentha-2,8-dien-1-ol	1123.10	Monoterpenol
11	20.88	0.11%	Limona ketone	1134.50	Simple Phenolic
12	21.06	0.25%	cis-para-Mentha-2,8-dien-1-ol	1137.50	Monoterpenol
13	21.17	0.09%	trans-Limonene oxide	1138.10	Monoterpene Ether
14	21.44	0.38%	cis-beta-Terpineol	1144.20	Monoterpenol
15	21.80	0.38%	Menthone	1155.00	Monoterpene Ketone
16	22.19	1.53%	Menthofuran	1164.00	Monoterpene Ether
17	22.54	0.11%	Menthol	1177.40	Monoterpenol
18	22.70	0.60%	Terpinen-4-ol	1180.57	Monoterpenol
19	22.97	0.12%	para-Methylacetophenone	1186.50	Simple Phenolic
20	23.28	10.92%	alpha-Terpineol	1191.71	Monoterpenol
21	23.46	0.31%	cis-Dihydrocarvone	1197.57	Monoterpene Ketone
22	23.74	0.10%	trans-Dihydrocarvone	1203.83	Monoterpene Ketone
23	24.25	0.81%	trans-Carveol	1223.14	Monoterpenol
24	24.67	0.42%	cis-Carveol	1232.25	Monoterpenol
25	24.78	0.16%	Methyl Thymol	1234.57	Monoterpene Ether
26	25.01	0.59%	Pulegone	1244.43	Monoterpene Ketone
27	25.16	1.39%	Carvone	1248.14	Monoterpene Ketone
28	26.25	0.08%	Perillaldehyde	1281.00	Monoterpene Aldehyde
29	26.80	0.04%	Cumin alcohol	1301.55	Monoterpenol
30	28.47	0.35%	delta-Elemene	1335.83	Sesquiterpene
31	28.57	0.05%	Piperitenone	1347.00	Sesquiterpene Ketone
32	28.89	0.09%	alpha-Cubebene	1355.71	Sesquiterpene
33	29.67	0.33%	alpha-Ylangene	1371.33	Sesquiterpene
34	29.81	0.38%	alpha-Copaene	1379.00	Sesquiterpene
35	30.31	0.98%	beta-Elemene	1389.20	Sesquiterpene
36	31.24	0.15%	Mint Furanone Isomer A		
37	31.57	0.23%	Mint Furanone Isomer B		
38	31.66	0.08%	trans-alpha-Bergamotene	1435.00	Sesquiterpene
39	31.94	0.20%	beta-Humulene	1440.30	Sesquiterpene
40	32.18	0.88%	6,9-Guaiadiene	1446.00	Sesquiterpene
41	33.03	1.52%	gamma-Murolene	1478.86	Sesquiterpene
42	33.13	0.25%	alpha-Amorphene	1481.75	Sesquiterpene
43	33.22	0.19%	Germacrene D	1484.71	Sesquiterpene



