

Client

Nature's FUSIONS
ESSENTIAL OILS

Source

Fir Balsam (Abies balsamea)
NF-BALF-19-A

Sample

Fir Balsam (Abies balsamea)

Batch #:..... | **NF-BALF-19-A**

Type:..... | **Essential Oil**

CAS Number:... | **8021-28-1**

Nature's Fusions

Client

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ESSENTIAL OILS

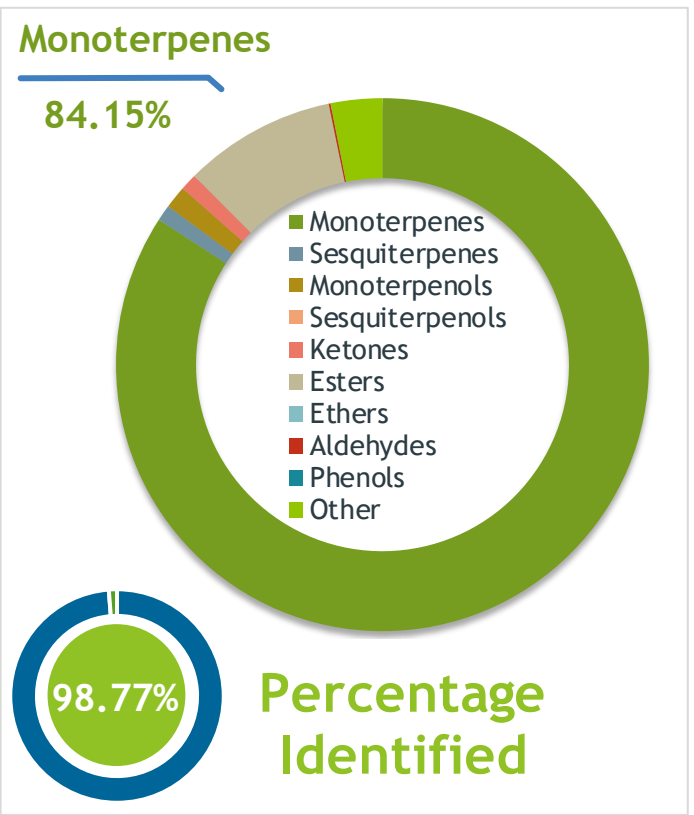
Website

Primary

29.16% | **beta-Pinene**

16.20% | **Limonene (Co-Eluting)**

16.00% | **delta-3-Carene**



Result

Conclusion

No adulterants, diluents, or contaminants were detected via this method. This oil meets the expected profile for genuine essential oil of Fir Balsam (*Abies balsamea*)

Internal Number: | **EVS-2897**

Essential Validation Services

747 SW 2nd Ave IMB 12 Suite 306
Gainesville, FL 32601

317.361.5044 |
<https://essentialvalidationservices.com/>

adam@essentialvalidationservices.com

Monoterpenes	84.15%	84.15%
Sesquiterpenes	0.98%	0.98%
Monoterpenols	1.37%	1.37%
Sesquiterpenols	0.00%	0.00%
Ketones	1.02%	1.02%
Esters	9.24%	9.24%
Ethers	0.00%	0.00%
Aldehydes	0.11%	0.11%
Phenols	0.00%	0.00%
Other	3.13%	3.13%

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Fir Balsam (Abies balsamea)
 NF-BALF-19-A

Total Percentage		98.77%			
Number	RT	Area %	Compound Name	RI	Chemical Family
1	10.84	1.90%	Santene	884.00	Normonoterpene
2	12.35	0.95%	Tricyclene	923.00	Monoterpene
3	12.58	0.17%	alpha-Thujene	927.80	Monoterpene
4	12.87	11.19%	alpha-Pinene	936.10	Monoterpene
5	13.47	6.44%	Camphene	950.30	Monoterpene
6	14.41	0.03%	Sabinene	973.00	Monoterpene
7	14.71	29.16%	beta-Pinene	974.00	Monoterpene
8	15.25	1.70%	Myrcene	989.20	Monoterpene
9	15.83	0.18%	alpha-Phellandrene	1002.00	Monoterpene
10	16.10	16.00%	delta-3-Carene	1008.00	Monoterpene
11	16.33	0.12%	alpha-Terpinene	1014.00	Monoterpene
12	16.66	0.31%	para-Cymene	1024.30	Monoterpene
13	16.88	16.20%	Limonene	1029.50	Monoterpene
14	16.89	Co-Eluting	beta-Phellandrene	1030.00	Monoterpene
15	18.09	0.25%	gamma-Terpinene	1054.00	Monoterpene
16	18.66	0.01%	cis-Linalool oxide (5) (furanoid)	1075.10	Monoterpenol
17	19.31	1.45%	Terpinolene	1092.10	Monoterpene
18	19.71	0.15%	Linalool	1099.00	Monoterpenol
19	21.34	0.08%	alpha-Pinocarveol	1143.75	Monoterpenol
20	21.55	0.71%	Camphor	1147.55	Monoterpene Ketone
21	21.72	0.13%	Camphene hydrate	1151.00	Monoterpenol
22	22.37	0.36%	Borneol	1168.71	Monoterpenol
23	22.79	0.30%	Terpinen-4-ol	1180.57	Monoterpenol
24	23.13	0.08%	Cryptone	1187.33	Monoterpene Ketone
25	23.28	0.34%	alpha-Terpineol	1191.71	Monoterpenol
26	23.54	0.11%	Myrtenal	1200.43	Monoterpene Aldehyde
27	25.61	0.23%	Piperitone	1258.50	Monoterpene Ketone
28	26.75	9.24%	Bornyl acetate	1288.29	Monoterpene Ester
29	29.06	0.06%	alpha-Longipinene	1357.90	Sesquiterpene
30	31.34	0.25%	beta-Caryophyllene	1427.14	Sesquiterpene
31	32.26	0.04%	(E)-beta-Farnesene	1456.29	Sesquiterpene
32	32.42	0.11%	alpha-Humulene	1461.43	Sesquiterpene
33	33.96	0.52%	beta-Bisabolene	1509.86	Sesquiterpene

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NF-BALF-19-A

Number	RT	Area %	Compound Name	RI	Chemical Family

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- Chromatograph image may not show full run time



Essential Validation Services





Sample:

Client: | Nature's Fusions
Sample: | Fir Balsam (Abies balsamea)
Batch # | 11055-A34
CAS Number | 8021-28-1
Type: | Essential Oil

Conclusion:

- No adulterants, diluents, or contaminants were detected via this method.



X *Adam Christen*

Validated By:

Essential Validation Services

747 SW 2nd Ave, Gainesville, FL 32601

Phone: 317-361-5044 E-mail: Adam@essentialvalidationservices.com

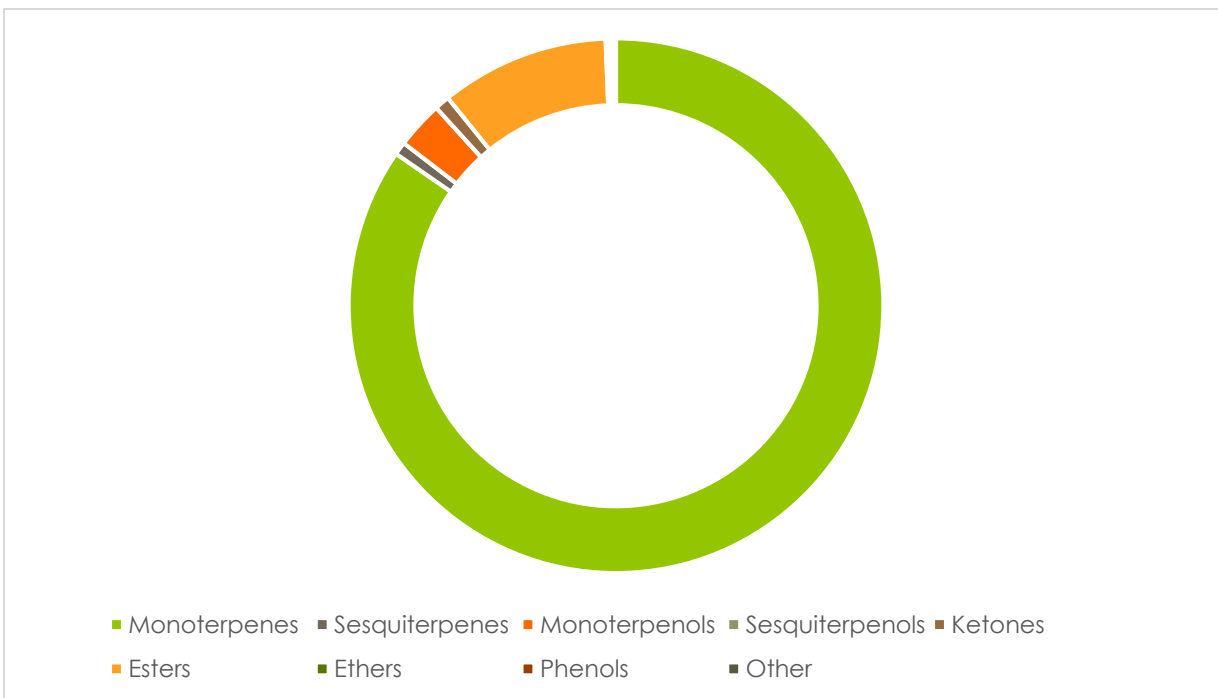
Summary of Analyses

A fresh sample of Fir Balsam (Abies balsamea) Essential Oil (10 uL in .5to.5 mL Hexane + ETOH) was prepared and analyzed via split injection GC/EI-MS.



Main Compounds	Percentages
beta-Pinene	24.44%
delta-3-Carene	16.81%
alpha-Pinene	14.89%
Limonene	14.64%
Bornyl acetate	9.80%
Camphene	5.26%
Myrcene	1.58%
Terpinolene	1.35%
Santene	1.30%
alpha-Terpineol	1.00%
Borneol	0.93%
Bisabolene (unknown isor)	0.76%
para-Cymene	0.71%

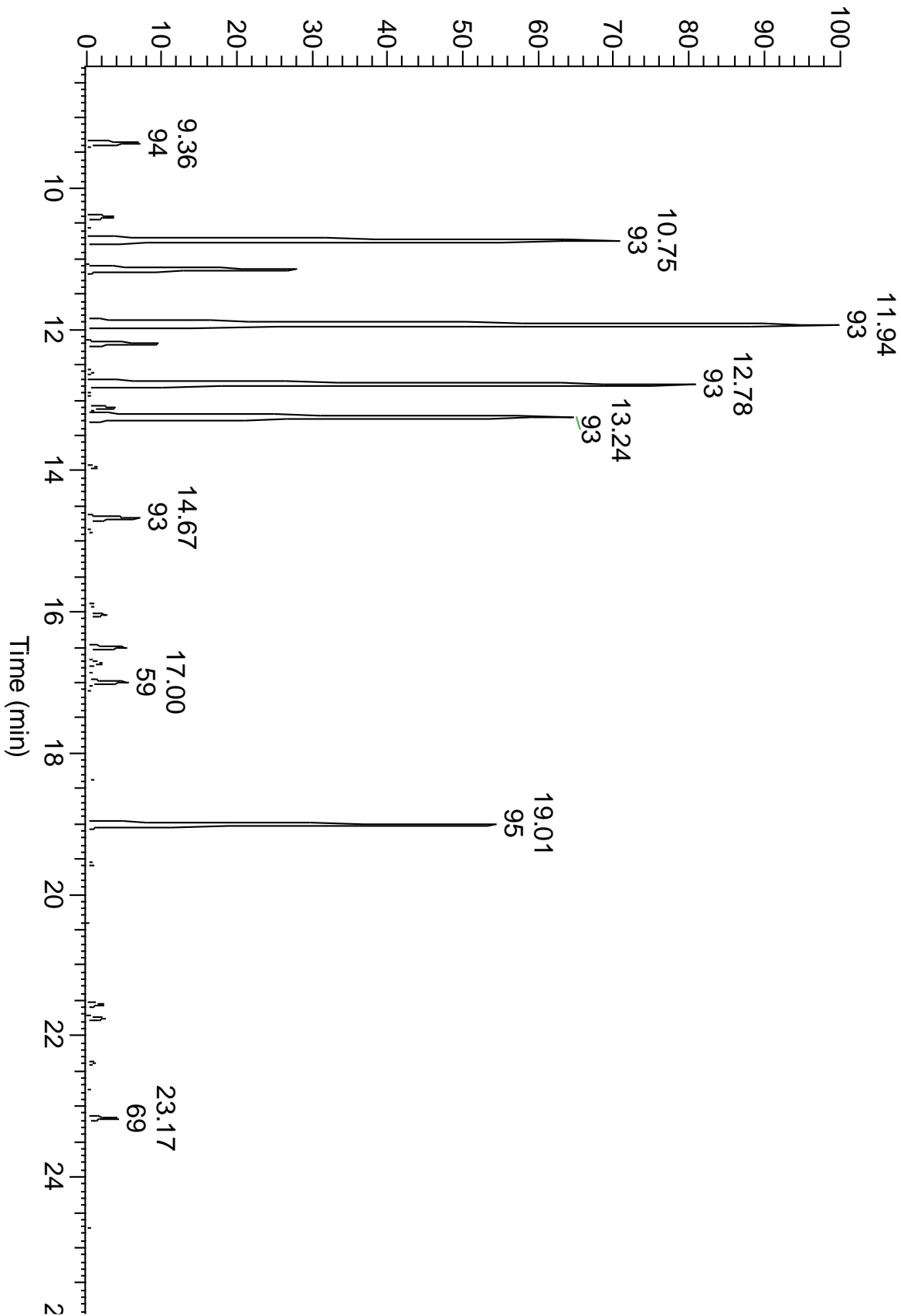
Monoterpenes	Sesquiterpenes	Monoterpenols	Sesquiterpenols	Ketones
83.09%	0.77%	2.81%	0.00%	0.89%
Esters	Ethers	Aldehydes	Phenols	Other
10.02%	0.22%	0.23%	0.54%	0.16%



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RT: 8.26 - 26.13



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Total Percentage	98.73%				
Peak Number	RT	Area %	Compound Name	RI	Chemical Family
1	9.36	1.30%	Santene	891.33	Monoterpenes
2	10.41	0.68%	Tricyclene	923.20	Monoterpenes
3	10.53	0.15%	alpha-Thujene	927.80	Monoterpenes
4	10.75	14.89%	alpha-Pinene	936.10	Monoterpenes
5	11.15	5.26%	Camphene	953.30	Monoterpenes
6	11.74	0.12%	Benzaldehyde	962.70	Phenols
7	11.82	0.04%	Sabinene	973.00	Monoterpenes
8	11.94	24.44%	beta-Pinene	977.70	Monoterpenes
9	12.20	1.58%	Myrcene	989.20	Monoterpenes
10	12.60	0.22%	(Z)-3-Hexenyl acetate	1009.00	Esters
11	12.78	16.81%	delta-3-Carene	1011.30	Monoterpenes
12	12.91	0.12%	alpha-Terpinene	1017.10	Monoterpenes
13	13.11	0.71%	para-Cymene	1024.30	Monoterpenes
14	13.24	14.64%	Limonene	1029.50	Monoterpenes
15	13.24	Co-Eluting	beta-Phellandrene	1030.00	Monoterpenes
16	13.37	0.11%	1,8-Cineole	1031.80	Ethers
17	13.95	0.25%	gamma-Terpinene	1063.71	Monoterpenes
18	14.67	1.35%	Terpinolene	1089.43	Monoterpenes
19	14.85	0.16%	Linalool	1099.00	Monoterpenols
20	15.00	0.09%	alpha-Thujone	1112.00	Ketones
21	15.10	0.04%	beta-Thujone	1118.00	Ketones
22	15.29	0.10%	beta-Fenchol	1116.50	Monoterpenols
23	15.90	0.24%	trans-Pinocarveol	1144.10	Monoterpenols
24	16.04	0.48%	Camphor	1153.86	Ketones
25	16.50	0.93%	Borneol	1168.71	Monoterpenols
26	16.72	0.48%	Terpinen-4-ol	1180.57	Monoterpenols
27	16.84	0.11%	p-Cymen-8-ol	1184.43	Monoterpenes
28	16.94	0.09%	Cryptone	1185.33	Ketones
29	17.00	1.00%	alpha-Terpineol	1191.71	Monoterpenols
30	17.15	0.23%	Myrtenal	1200.43	Aldehydes
31	17.44	0.04%	Eucarvone	1214.00	Ketones
32	17.86	0.06%	Methyl thymol	1234.57	Monoterpenols
33	18.37	0.15%	Piperitone	1259.60	Ketones
34	19.01	9.80%	Bornyl acetate	1288.29	Esters
35	21.41	0.03%	Cedr-8-ene	1400.00	Sesquiterpenes
36	21.56	0.42%	Methyleugenol	1407.29	Phenols
37	21.75	0.42%	beta-Caryophyllene	1427.14	Sesquiterpenes
38	21.90	0.04%	trans-alpha-Bergamotene	1435.00	Sesquiterpenes
39	22.38	0.21%	alpha-Humulene	1461.43	Sesquiterpenes
40	23.17	0.76%	Bisabolene (unknown isomer)	1499.90	Monoterpenes
41	23.51	0.07%	delta-Cadinene	1524.14	Sesquiterpenes
42	24.69	0.11%	Caryophyllene Oxide	1594.86	Ethers