

Client

Nature's FUSIONS
ESSENTIAL OILS

Source

Black Spruce (Picea mariana)
NF-BLKS-19-A

Sample

Black Spruce (Picea mariana)

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

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

CAS Number:... | **91722-19-9**

Nature's Fusions

Client

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ESSENTIAL OILS

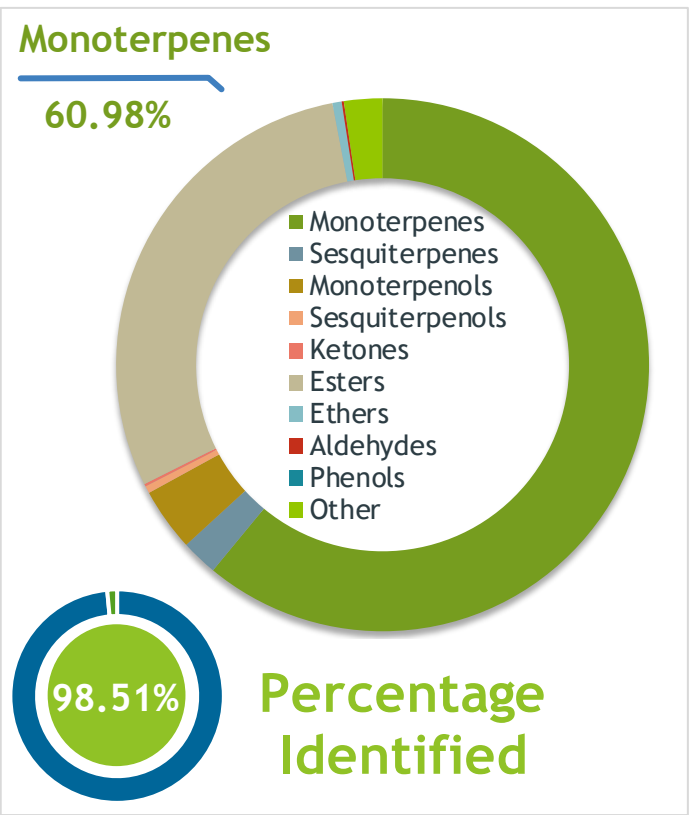
Website

Primary

28.68% | **Bornyl acetate**

16.87% | **alpha-Pinene**

10.88% | **beta-Pinene**



Result

Conclusion

No adulterants, diluents, or contaminants were detected via this method. This oil meets the expected profile for genuine essential oil of Black Spruce (Picea mariana)

Internal Number: | **EVS-2871**

Essential Validation Services

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

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

adam@essentialvalidationservices.com

Monoterpenes	60.98%	60.98%
Sesquiterpenes	2.21%	2.21%
Monoterpenols	3.83%	3.83%
Sesquiterpenols	0.44%	0.44%
Ketones	0.15%	0.15%
Esters	29.37%	29.37%
Ethers	0.56%	0.56%
Aldehydes	0.13%	0.13%
Phenols	0.00%	0.00%
Other	2.33%	2.33%

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Nature's FUSIONS
 ESSENTIAL OILS

Source



Black Spruce (Picea mariana)
 NF-BLKS-19-A

Total Percentage		98.51%			
Number	RT	Area %	Compound Name	RI	Chemical Family
1	16.96	0.32%	1,8-Cineole	1031.80	Monoterpene Ether
2	10.28	0.01%	1-Hexanol	863.00	Aliphatic Alcohol
3	38.39	0.22%	alpha-Cadinol	1655.00	Sesquiterpenol
4	20.82	0.05%	alpha-Campholenal	1125.29	Monoterpene Aldehyde
5	13.03	0.06%	alpha-Fenchene	946.00	Monoterpene
6	32.46	0.04%	alpha-Humulene	1461.43	Sesquiterpene
7	33.83	0.28%	alpha-Muurolene	1500.25	Sesquiterpene
8	15.82	0.11%	alpha-Phellandrene	1002.00	Monoterpene
9	12.89	16.87%	alpha-Pinene	936.10	Monoterpene
10	21.35	0.10%	alpha-Pinocarveol	1143.75	Monoterpenol
11	16.34	0.11%	alpha-Terpinene	1014.00	Monoterpene
12	23.31	0.93%	alpha-Terpineol	1191.71	Monoterpenol
13	28.90	0.14%	alpha-Terpinyl acetate	1353.00	Monoterpene Ether
14	12.59	0.14%	alpha-Thujene	927.80	Monoterpene
15	31.38	0.19%	beta-Caryophyllene	1427.14	Sesquiterpene
16	14.68	10.88%	beta-Pinene	974.00	Monoterpene
17	33.50	0.01%	beta-Selinene	1487.57	Sesquiterpene
18	22.40	1.58%	Borneol	1168.71	Monoterpenol
19	26.85	28.68%	Bornyl acetate	1288.29	Monoterpene Ester
20	11.46	0.02%	Bornylene	902.50	Monoterpene
21	13.49	10.79%	Camphene	950.30	Monoterpene
22	21.74	0.37%	Camphene hydrate	1151.00	Monoterpenol
23	21.57	0.15%	Camphor	1147.55	Monoterpene Ketone
24	9.76	0.03%	cis-Hex-3-en-1-ol	850.00	Aliphatic Alcohol
25	32.74	0.02%	cis-Muurolo-4(14),5-diene	1465.75	Sesquiterpene
26	24.61	0.06%	Citronellol	1229.25	Monoterpenol
27	10.70	0.03%	Cyclofenchene	890.00	Monoterpene
28	16.09	9.42%	delta-3-Carene	1008.00	Monoterpene
29	34.52	0.88%	delta-Cadinene	1524.14	Sesquiterpene
30	28.37	0.05%	dihydrocarvyl acetate	1330.50	Monoterpene Ester
31	20.35	0.05%	Fenchol	1099.10	Monoterpenol
32	24.39	0.26%	Fenchyl acetate	1222.00	Monoterpene Ester
33	34.28	0.27%	gamma-Cadinene	1515.29	Sesquiterpene
34	34.99	0.20%	gamma-Cuprenene	1535.50	Sesquiterpene
35	33.11	0.11%	gamma-Muurolene	1478.86	Sesquiterpene

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Essential Validation Services





Sample:

Client: | Nature's Fusions
Sample: | Black Spruce (Picea mariana)
Batch # | 4276304
CAS Number | 91722-19-9
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

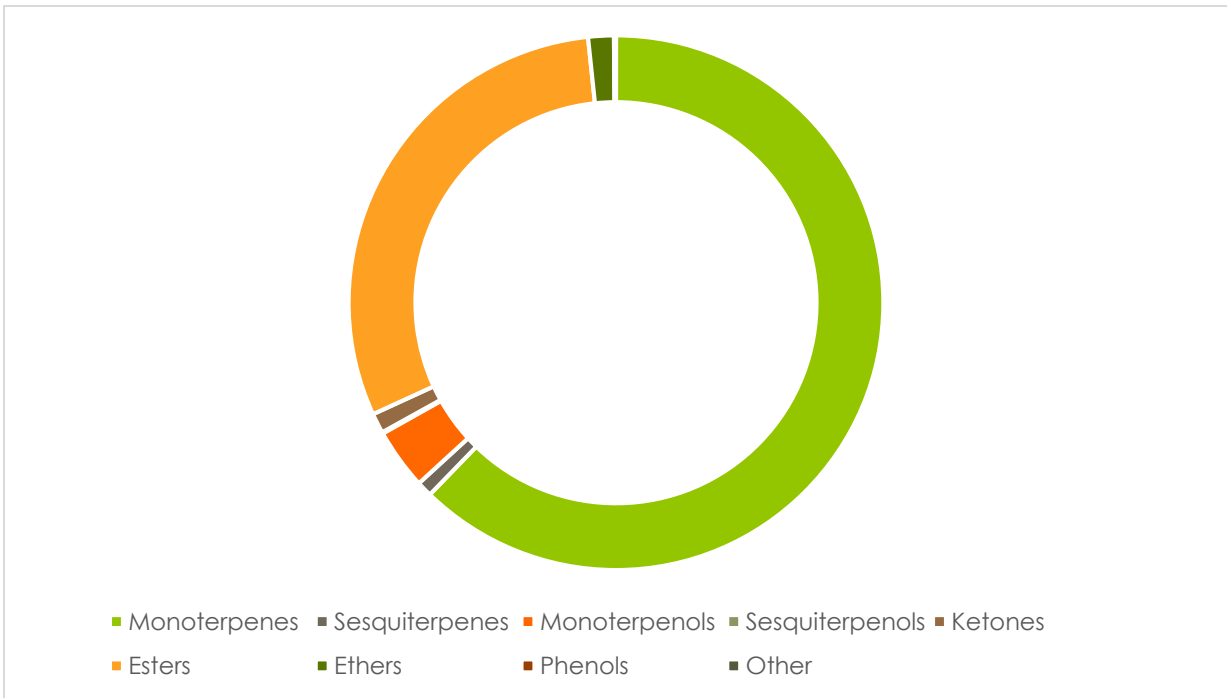
Summary of Analyses

A fresh sample of Black Spruce (Picea mariana) Essential Oil (10 uL in .5to.5 mL Hexane + ETOH) was prepared and analyzed via split injection GC/EI-MS.



Main Compounds	Percentages
Bornyl acetate	24.55%
Limonene	19.08%
Camphene	17.74%
alpha-Pinene	12.89%
beta-Pinene	3.16%
Fenchyl Acetate	3.01%
delta-3-Carene	2.50%
para-Cymene	2.38%
alpha-Terpinyl acetate	1.96%
Tricyclene	1.75%
Borneol	1.23%
Cryptone	0.62%
alpha-Terpineol	0.56%

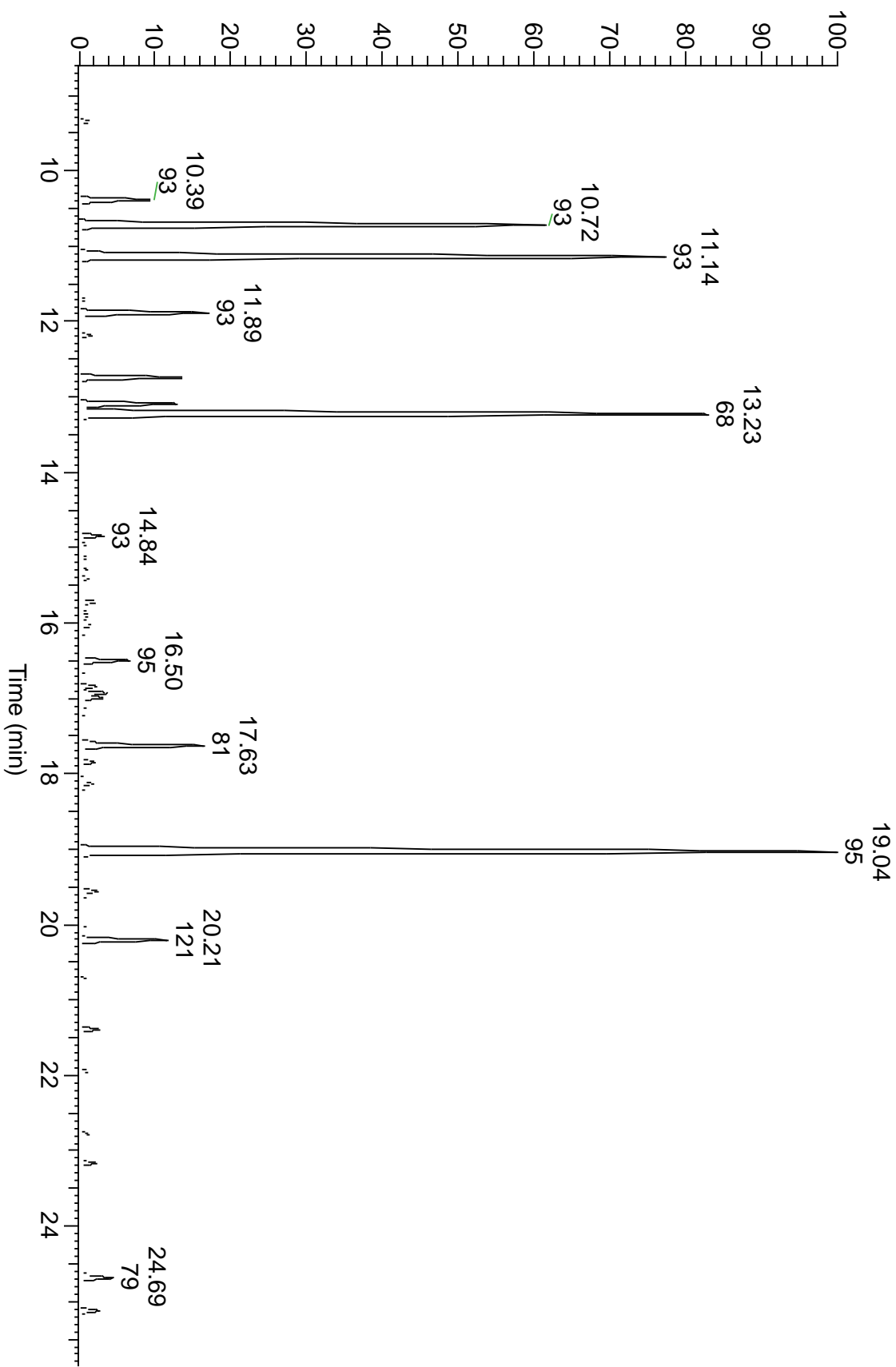
Monoterpenes	Sesquiterpenes	Monoterpenols	Sesquiterpenols	Ketones
61.41%	0.92%	3.62%	0.08%	1.19%
Esters	Ethers	Aldehydes	Phenols	Other
29.76%	1.53%	0.09%	0.00%	0.03%



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RT: 8.60 - 25.98



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Total Percentage	98.63%				
Peak Number	RT	Area %	Compound Name	RI	Chemical Family
1	9.34	0.27%	Santene	891.33	Monoterpenes
2	9.90	0.03%	Bornylene	902.50	Other
3	10.39	1.75%	Tricyclene	923.20	Monoterpenes
4	10.72	12.89%	alpha-Pinene	936.10	Monoterpenes
5	10.84	0.04%	alpha-Fenchene	949.40	Monoterpenes
6	11.14	17.74%	Camphene	953.30	Monoterpenes
7	11.71	0.16%	Sabinene	973.00	Monoterpenes
8	11.89	3.16%	beta-Pinene	977.70	Monoterpenes
9	12.18	0.31%	Myrcene	989.20	Monoterpenes
10	12.74	2.50%	delta-3-Carene	1011.30	Monoterpenes
11	13.09	2.38%	para-Cymene	1024.30	Monoterpenes
12	13.23	19.08%	Limonene	1029.50	Monoterpenes
13	13.23	Co-Eluting	beta-Phellandrene	1030.00	Monoterpenes
14	13.23	Co-Elute	1,8-Cineole	1031.80	Ethers
15	13.35	0.09%	(Z)-beta-Ocimene	1037.80	Monoterpenes
16	13.56	0.06%	(E)-beta-Ocimene	1047.70	Monoterpenes
17	14.27	0.05%	cis-Linalool oxide (5) (furanoid)	1075.10	Monoterpenols
18	14.67	0.20%	trans-Linalool oxide (5) (furanoid)	1092.20	Monoterpenols
19	14.75	0.06%	para-Cymenene	1092.43	Monoterpenes
20	14.84	0.55%	alpha-Pinene epoxide	1095.00	Monoterpenes
21	14.95	0.18%	Linalool	1099.00	Monoterpenols
22	15.13	0.18%	cis-p-Menth-2-en-1-ol	1123.10	Monoterpenols
23	15.40	0.25%	trans-p-Mentha-2,8-dien-1-ol	1127.50	Monoterpenols
24	15.71	0.45%	cis-p-Mentha-2,8-dien-1-ol	1137.10	Monoterpenols
25	15.81	0.19%	trans-Limonene oxide	1138.10	Ethers
26	15.90	0.22%	trans-Pinocarveol	1144.10	Monoterpenols
27	16.03	0.31%	Camphor	1153.86	Ketones
28	16.50	1.23%	Borneol	1168.71	Monoterpenols
29	16.84	0.37%	p-Cymen-8-ol	1184.43	Monoterpenes
30	16.92	0.62%	Cryptone	1185.33	Ketones
31	16.99	0.56%	alpha-Terpineol	1191.71	Monoterpenols
32	17.15	0.30%	Myrtenol	1198.00	Monoterpenols
33	17.63	3.01%	Fenchyl Acetate	1222.00	Esters
34	18.07	0.09%	Cuminal	1243.00	Aldehydes
35	18.13	0.26%	Carvone	1248.14	Ketones
36	18.23	0.11%	Linalyl acetate	1263.80	Esters
37	19.04	24.55%	Bornyl acetate	1288.29	Esters
38	20.21	1.96%	alpha-Terpinyl acetate	1353.00	Esters
39	20.72	0.13%	Geranyl acetate	1384.71	Esters
40	21.39	0.39%	Isolatedene	1400.90	Sesquiterpenes
41	22.36	0.10%	alpha-Humulene	1461.43	Sesquiterpenes
42	23.10	0.07%	beta-Guaiene	1490.67	Sesquiterpenes

