

EVS | ESSENTIAL VALIDATION SERVICES | 240 GOOSE HOLLOW ROAD BERTHOUD, COLORADO 80513 | 317-361-5044

Client



Source



**Pepper, Black** (*Piper nigrum*)  
EVS-2025-NG-5

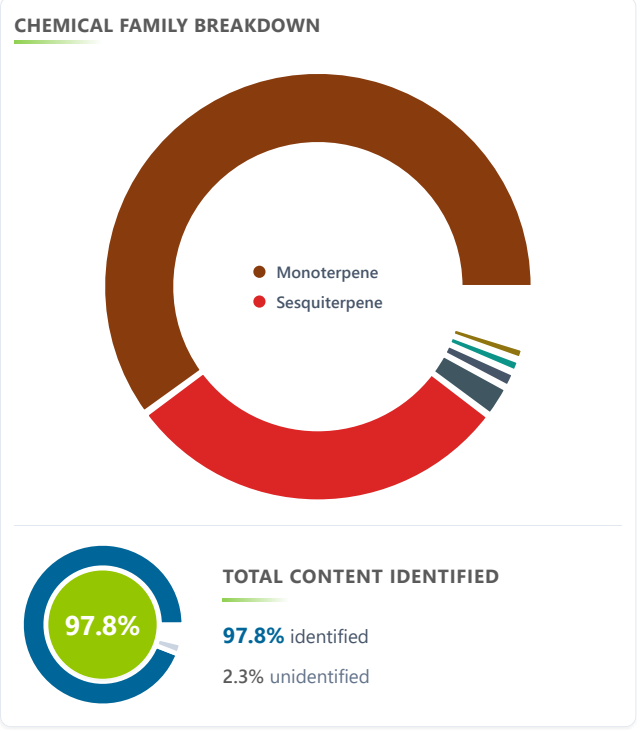


Sample

**Pepper, Black** (*Piper nigrum*)

---

**Batch #:** | MG-59518  
**Type:** | Essential Oil  
**Origin:** | Madagascar  
**CAS #:** | 8006-82-4



Client

**NATURE'S GIFT**


Properties

**RI:** | NT  
**SG:** | NT

Primary

**20.13%** | **beta-Caryophyllene**  
**16.85%** | **Limonene**  
**16.18%** | **alpha-Pinene**  
**12.50%** | **beta-Pinene**

Result



**Pass**  
Meets specifications

---

ANALYSIS SUMMARY

**70**

Total Compounds:

Conclusion

### PROFESSIONAL ANALYSIS SUMMARY

Analysis of this Pepper, Black (*Piper nigrum*) Essential Oil sample was conducted against the ISO 3061: 2008 (*Piper nigrum*) standard specification. The chromatographic analysis accounted for 97.8% of the total sample composition. All major constituents were found to be within the expected ranges specified in the standard. No adulterants, diluents, or contaminants were detected via this method. This oil meets the expected profile for genuine Pepper, Black (*Piper nigrum*).

Adam Christensen • Nov 20, 2025

---

Adam Christensen

Analyst Signature

Date

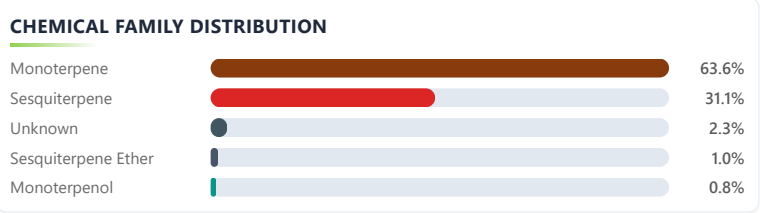
Nov 10, 2025

Lab



**Essential Validation Services**  
EO Testing Lab

240 Goose Hollow Road  
Berthoud, Colorado 80513  
Phone: (317) 361-5044  
[essentialvalidationservices.com](http://essentialvalidationservices.com)



Essential Validation Services


- Essential Oil testing is performed by using qualitative GC-MS, Method: S0PT.01 Client Method  
 - This report may not be published without the consent of Essential Validation Services.  
 - Chromatograph image may be requested  
 - This report is valid for 1 year from the analyzed date

11/10/2025

Client



Source



**Pepper, Black** (*Piper nigrum*)

EVS-2025-NG-5

2

### Expected vs. Detected Components

Comparison against ISO 3061: 2008 for Pepper, Black (*Piper nigrum*) - ISO

Compound	Expected	Detected	Status	Family
1 alpha-Pinene	8.00-26.00%	16.18%	✓	Monoterpene
2 beta-Caryophyllene	10.00-25.00%	20.13%	✓	Sesquiterpene
3 Limonene	10.00-25.00%	16.85%	✓	Monoterpene
4 delta-3-Carene	7.00-16.00%	10.24%	✓	Monoterpene
5 beta-Pinene	7.00-15.00%	12.50%	✓	Monoterpene
6 Germacrene D	1.00-6.50%	1.47%	✓	Sesquiterpene
7 delta-Elemene	0.50-4.50%	2.10%	✓	Sesquiterpene
8 beta-Selinene	1.00-4.50%	1.64%	✓	Sesquiterpene
9 Sabinene	0.01-4.00%	2.35%	✓	Monoterpene
10 alpha-Selinene	0.50-3.00%	1.20%	✓	Sesquiterpene
11 Caryophyllene oxide	0.10-1.00%	0.97%	✓	Sesquiterpene Ether
12 alpha-Copaene	0.01-0.50%	0.14%	✓	Sesquiterpene

### Professional Analysis Summary

#### 1 Sample Analysis

This Pepper, Black (*Piper nigrum*) sample shows **70** detected compounds (**70** identified, 100.0% rate).

#### 2 Major Components

Predominant: **beta-Caryophyllene** (20.1%), **Limonene** (16.9%), **alpha-Pinene** (16.2%), +11 others.

#### 3 Chemical Profile

**11** chemical families: Sesquiterpene, Monoterpene, Sesquiterpene Ether, +8 others.

#### 4 Quality Assessment

Sample **meets** specifications for Pepper, Black (*Piper nigrum*).

Client



Source



**Pepper, Black** (*Piper nigrum*)

EVS-2025-NG-5

3

Total Percentage:

**97.75%**

Number	RT	Area %	Compound Name	Chemical Family
1	6.98	0.01%	Toluene	Simple Phenolic
2	10.48	0.12%	alpha-Thujene	Monoterpene
3	10.79	16.18%	alpha-Pinene ✓	Monoterpene (8.00%-26.00%)
4	11.21	0.01%	alpha-Fenchene	Monoterpene
5	11.29	0.46%	Camphene	Monoterpene
6	11.96	2.35%	Sabinene ✓	Monoterpene (0.01%-4.00%)
7	12.19	12.50%	beta-Pinene ✓	Monoterpene (7.00%-15.00%)
8	12.30	1.44%	Myrcene	Monoterpene
9	12.86	0.03%	2-Carene	Monoterpene
10	12.98	1.78%	alpha-Phellandrene	Monoterpene
11	13.23	10.24%	delta-3-Carene ✓	Monoterpene (7.00%-16.00%)
12	13.40	0.03%	alpha-Terpinene	Monoterpene
13	13.54	0.05%	o-Cymene	Monoterpene
14	13.66	0.76%	para-Cymene	Monoterpene
15	13.88	16.85%	Limonene ✓	Monoterpene (10.00%-25.00%)
16	14.01	0.14%	1,8-Cineole	Monoterpene Ether
17	14.32	0.15%	(Z)-beta-Ocimene	Monoterpene
18	14.91	0.07%	gamma-Terpinene	Monoterpene
19	15.27	0.02%	trans-Sabinene hydrate	Monoterpenol
20	16.00	0.16%	Isoterpinolene	Monoterpene
21	16.11	0.40%	Terpinolene	Monoterpene
22	16.31	0.28%	Linalool	Monoterpenol
23	16.68	0.05%	alpha-Pinene oxide	Monoterpene Ether
24	16.96	0.04%	trans-para-Mentha-2,8-dien-1-ol	Monoterpenol
25	17.95	0.02%	cis-para-Mentha-2,8-dien-1-ol	Monoterpenol
26	18.34	0.06%	trans-Pinocarveol	Monoterpenol
27	18.45	0.02%	trans-Verbenol	Monoterpenol
28	18.61	0.06%	Camphor	Monoterpene Ketone
29	19.75	0.04%	(E)-Isocitral	Monoterpene Aldehyde
30	19.85	0.04%	Terpinen-4-ol	Monoterpenol
31	20.02	0.03%	para-Cymen-8-ol	Monoterpenol

EVS | ESSENTIAL VALIDATION SERVICES | 240 GOOSE HOLLOW ROAD BERTHOUD, COLORADO 80513 | 317-361-5044

Essential Validation Services

- Essential Oil testing is performed by using qualitative GC-MS, Method: SOLT01 Client Method
- This report may not be published without the consent of Essential Validation Services.
- Chromatograph image may be requested
- This report is valid for 1 year from the analyzed date

11/10/2025

Client



Source



**Pepper, Black** (*Piper nigrum*)

EVS-2025-NG-5

4

Number	RT	Area %	Compound Name	Chemical Family
32	20.35	0.18%	alpha-Terpineol	Monoterpenol
33	20.74	0.02%	Myrtenal	Monoterpene Aldehyde
34	20.87	0.04%	Myrtenol	Monoterpenol
35	20.97	0.05%	cis-Carveol	Monoterpenol
36	24.45	0.01%	19.48 Isobornyl acetate	Unknown
37	26.75	2.10%	delta-Elemene	(0.50%-4.50%) Sesquiterpene
38	27.28	0.08%	alpha-Cubebene	Sesquiterpene
39	28.26	0.25%	Longicyclene	Sesquiterpene
40	28.32	0.08%	alpha-Ylangene	Sesquiterpene
41	28.51	0.14%	alpha-Copaene	(0.01%-0.50%) Sesquiterpene
42	29.08	1.33%	beta-Elemene	Sesquiterpene
43	30.01	0.10%	alpha-Gurjunene	Sesquiterpene
44	30.53	20.13%	beta-Caryophyllene	(10.00%-25.00%) Sesquiterpene
45	30.78	0.32%	gamma-Elemene	Sesquiterpene
46	31.05	0.39%	alpha-Guaiene	Sesquiterpene
47	31.27	0.01%	6,9-Guaiadiene	Sesquiterpene
48	31.42	0.07%	Aromadendrene	Sesquiterpene
49	31.86	1.47%	alpha-Humulene	Sesquiterpene
50	32.40	0.04%	27.57 Cumacrene	Unknown
51	32.62	0.07%	gamma-Murolene	Sesquiterpene
52	32.70	0.04%	gamma-Gurjunene	Sesquiterpene
53	32.78	0.03%	alpha-Amorphene	Sesquiterpene
54	32.94	1.47%	Germacrene D	(1.00%-6.50%) Sesquiterpene
55	33.20	1.64%	beta-Selinene	(1.00%-4.50%) Sesquiterpene
56	33.52	1.20%	alpha-Selinene	(0.50%-3.00%) Sesquiterpene
57	33.68	0.08%	beta-Bisabolene	Sesquiterpene
58	33.85	0.06%	Eremophilene	Sesquiterpene
59	34.06	0.06%	Pentadecane	Alkane
60	34.17	0.07%	gamma-Cadinene	Sesquiterpene
61	34.89	0.02%	trans-Cadina-1,4-diene	Sesquiterpene
62	35.43	0.01%	Elemol	Sesquiterpenol
63	35.81	0.10%	Longipinanol	Sesquiterpenol
64	36.77	0.03%	Spathulenol	Sesquiterpenol

EVS | ESSENTIAL VALIDATION SERVICES | 240 GOOSE HOLLOW ROAD BERTHOUD, COLORADO 80513 | 317-361-5044

Essential Validation Services

- Essential Oil testing is performed by using qualitative GC-MS, Method: SOLT01 Client Method
- This report may not be published without the consent of Essential Validation Services.
- Chromatograph image may be requested
- This report is valid for 1 year from the analyzed date

11/10/2025

Client



Source



### Pepper, Black (*Piper nigrum*)

EVS-2025-NG-5



Number	RT	Area %	Compound Name	Chemical Family
65	37.07	0.97%	Caryophyllene oxide <span style="color: green;">✔</span>	Sesquiterpene Ether
66	37.41	0.03%	Globulol	Sesquiterpenol
67	38.06	0.06%	Humulene epoxide II	Sesquiterpene Ether
68	38.35	0.03%	Ledol	Sesquiterpenol
69	38.59	0.52%	Isospathulenol	Sesquiterpenol
70	39.13	0.06%	allo-Aromadendrene epoxide	Sesquiterpene Ester

EVS | ESSENTIAL VALIDATION SERVICES | 240 GOOSE HOLLOW ROAD BERTHOUD, COLORADO 80513 | 317-361-5044

