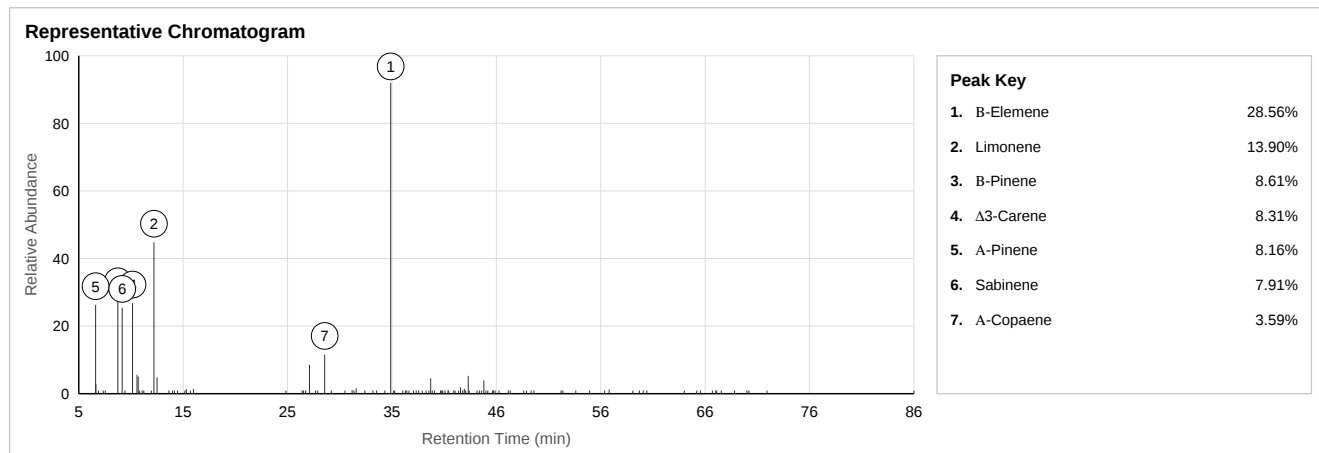


GC-MS Composition Profile

Product Name	Pepper Black
Botanical Name	Piper nigrum
INCI Name	Piper Nigrum Fruit Oil
Country of Origin	India
CAS Number	8006-82-4 / 84929-41-9
Analysis Date	May 10, 2026
Profile Type	Typical / representative composition profile; natural lots may vary.

Representative Chromatogram



Peak Composition Table

Peak	RT (min)	Compound	Typical %
1	5.13	Isovaleraldehyde	0.01
2	6.76	A-Pinene	8.16
3	6.79	A-Thuyene	0.91
4	7.04	Toluene	0.01
5	7.49	A-Fenchene	0.01
6	7.70	Camphene	0.22
7	8.91	B-Pinene	8.61
8	9.33	Sabinene	7.91
9	9.60	Δ^2 -Carene	0.01
10	10.33	Δ^3 -Carene	8.31
11	10.76	B-Myrcene	1.74
12	10.88	A-Phellandrene	1.57
13	10.99	Psi-Limonene	0.04
14	11.26	O-Cymene	0.01
15	11.42	A-Terpinene	0.08
16	12.15	Isosylvestrene	0.01
17	12.40	Limonene	13.90
18	12.70	B-Phellandrene	1.50
19	13.85	Cis-B-Ocimene	0.02
20	14.19	Terpene Isomer	0.03
21	14.38	Γ -Terpinene	0.17
22	14.68	Trans-B-Ocimene	0.14
23	15.39	M-Cymene	0.02
24	15.53	P-Cymene	0.42
25	15.93	Isoterpinolene	0.14
26	16.23	Terpinolene	0.43
27	25.16	A,P-Dimethylstyrene	0.01
28	26.73	A-Cubebene	0.22
29	26.87	Trans-Thuyanol	0.12
30	27.07	Elementene Isomer	0.10

Peak	RT (min)	Compound	Typical %
31	27.44	Δ -Elemene	2.66
32	28.03	Isoledene	0.13
33	28.24	Ylangene	0.02
34	28.91	A-Copaene	3.59
35	29.55	Camphor	0.01
36	30.87	A-Gurjunene	0.11
37	31.56	B1-Cubebene	0.34
38	31.74	Cis-Thuyanol	0.01
39	31.96	Linalool	0.49
40	32.79	Trans-P-Menth-2-En-1-Ol	0.02
41	33.57	Isocaryophyllene	0.08
42	33.93	Sesquiterpene	0.02
43	34.73	A-Trans-Bergamotene	0.03
44	35.29	B-Elemene	28.56
46	35.59	6,9-Guaiadiene	0.03
47	35.67	Aromadendrene	0.03
48	36.46	Myrtenal	0.01
49	36.71	Sesquiterpene	0.02
50	36.85	Cis-P-Mentha-2,8-Dien-1-Ol	0.01
51	37.06	Cadina-3,5-Diene	0.08
52	37.50	Germacrene A	0.01
53	37.76	Allo-Aromadendrene	0.03
54	38.00	Trans-Pinocarveol	0.01
55	38.34	Gurjunene Isomer	0.02
56	38.71	Sesquiterpene	0.03
57	38.98	Zonarene	0.07
58	39.16	A-Humulene	1.40
59	39.31	E-B-Farnesene	0.17
60	39.52	Sesquiterpene	0.06
61	40.11	Lavandulal	0.01
62	40.23	Terpenic Compound	0.03
63	40.32	Γ -Murolene	0.10
64	40.54	Calarene Isomer	0.05
65	40.83	A-Terpineol	0.10
66	40.90	Ledene	0.07
67	41.39	Gurjunene Isomer	0.19
68	41.52	Germacrene D	0.27
69	41.86	Sesquiterpene	0.05
70	42.04	B-Selinene	0.59
71	42.25	A-Zingiberene	0.02
72	42.41	A-Selinene	0.45
73	42.54	A-Murolene	0.27
74	42.79	B-Bisabolene	1.64
75	42.89	Bicyclogermacrene	0.18
76	43.64	Compound Mw=152	0.02
77	43.87	Terpenic Ketone	0.01
78	44.08	E,E-A-Farnesene	0.04
79	44.30	Δ -Cadinene	1.22
80	44.50	Γ -Cadinene	0.04
81	44.68	Terpenic Compound	0.03
82	45.14	B-Sesquiphellandrene	0.02
83	45.22	A-Curcumene	0.02
84	45.39	Trans-A-Bisabolene	0.05
85	45.76	Cadina-1,4-Diene	0.05
86	46.66	Compound Mw=152	0.01
87	46.85	Trans-Sabinol	0.03
88	48.16	Germacrene B	0.03
89	48.43	Calamenene	0.06
90	48.87	M-Cymene-8-Ol	0.01
91	49.14	P-Cymene-8-Ol	0.02

Peak	RT (min)	Compound	Typical %
92	51.77	Epi-Cubebol	0.06
93	51.94	A-Calacorene	0.01
94	53.19	Humulene Epoxide	0.05
95	54.53	Cubebol	0.17
96	55.98	Isocaryophyllene Oxide	0.08
97	56.42	Caryophyllene Oxide	0.39
98	58.71	Sesquiterpenic Oxide	0.02
99	59.34	Epoxy-6,7-Humulene	0.02
100	59.72	Nerolidol	0.03
101	60.06	Germacrene D-4-Ol	0.01
102	63.68	Spathulenol	0.03
103	64.89	Sesquiterpenol	0.01
104	65.24	Eugenol	0.01
105	66.40	T-Cadinol	0.01
106	66.72	Sesquiterpenic Oxide	0.02
107	66.81	A-Muurolol	0.03
108	67.26	Δ -Cadinol	0.10
109	68.54	Diterpene	0.01
110	69.73	Eudesma-7(11)-En-4-Ol	0.02
111	69.93	B-Nootkatol	0.16
112	71.68	Caryophylla-2,6-Dien-5-A-Ol	0.02
113	85.89	Ketonic Compound	0.02

Percentages are presented as a typical composition profile prepared from current reliable source data. Small analytical and natural lot-to-lot variation is expected.