AROMATICS DATA

GC-MS BATCH SUMMARY

Batch KAF-106

November 13, 2026

Makrut Lime Peel Essential Oil

Citrus hystrix

Essential Oil

DISTILLATION DATE	EXTRACTION	CULTIVATION	COUNTRY OF ORIGIN
March 15, 2025	Steam Distilled	Wildcrafted	Thailand

TOP 5 COMPONENTS

of 119 measured

limonene (d)	Monoterpene	**27.61%**
β-pinene	Monoterpene	**20.17%**
terpinen-4-ol	Monoterpenol	**9.42%**
α-terpineol	Monoterpenol	**7.94%**
γ-terpinene	Monoterpene	**5.54%**

Full composition · 119 components across 9 families

Monoterpene	**69.94%**
limonene (d)	27.61%
β-pinene	20.17%
γ-terpinene	5.54%
α-terpinene	3.66%
terpinolene	3.25%
α-pinene	3.07%
β-myrcene	1.81%
β-phellandrene	1.33%
sabinene	1.07%
α-phellandrene	0.65%

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camphene	0.43%
3,8-p-menthadiene	0.42%
p-cymene	0.34%
α-fenchene	0.13%
α-thujene	0.12%
terpinolene isomer	0.10%
(E)-β-ocimene	0.08%
isoterpinolene	0.07%
psi-limonene	0.02%
(Z)-β-ocimene	0.02%
tricyclene	0.02%
α-p-dimethylstyrene	0.01%
δ-3-carene	0.01%
bornylene	0.01%
Monoterpenol	**23.52%**
terpinen-4-ol	9.42%
α-terpineol	7.94%
isopulegol	1.46%
neoisopulegol	1.31%
linalool	0.55%
γ-terpineol	0.50%
citronellol	0.43%
linalool · linalol	0.42%
fenchol	0.37%
borneol	0.34%
(Z)-β-terpineol	0.17%
terpinene-1-ol	0.16%
isoisopulegol	0.13%
isopulegol isomer	0.10%
geraniol	0.05%

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aliphatic alcohol	0.05%
nerol	0.02%
p-cymen-8-ol	0.02%
(E)-p-menth-2-en-1-ol	0.02%
(Z)-p-menth-2-en-1-ol	0.02%
isoborneol	0.01%
δ-terpineol	0.01%
pinol	0.01%
(E)-piperitol	0.01%
Sesquiterpene	**3.03%**
δ-cadinene	0.65%
α-copaene	0.62%
β-caryophyllene	0.43%
germacrene D	0.28%
α-caryophyllene	0.17%
β-elemene	0.12%
β-1-cubebene	0.11%
zonarene	0.07%
bicyclogermacrene	0.06%
γ-selinene	0.06%
valencene	0.05%
γ-muurolene	0.05%
α-selinene	0.05%
muuroladiene isomer	0.05%
α-bulnesene	0.05%
ledene	0.05%
cadina-1,4-diene	0.04%
(E,E)-α-farnesene	0.03%
α-cubebene	0.02%
allo-aromadendrene	0.02%

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α-guaiene	0.01%
cadina-3,5-diene	0.01%
δ-elemene	0.01%
sesquiterpene	0.01%
calarene isomer	0.01%
Oxide	**2.05%**
linalool (Z)-oxide	0.86%
1,4-cineole	0.55%
linalool (E)-oxide	0.49%
1,8-cineole	0.14%
4,8-terpinolene epoxide	0.01%
Ester	**1.02%**
geranyl acetate	0.65%
citronellyl acetate	0.31%
neryl acetate	0.05%
aliphatic ester	0.01%
Sesquiterpenol	**0.84%**
γ-eudesmol	0.21%
α-muurolol · α-muurolene	0.11%
α-cadinol	0.08%
α-muurolol	0.08%
δ-cadinol	0.05%
cubenol	0.05%
α-eudesmol	0.04%
epi-cubenol	0.04%
elemol	0.04%
nerolidol	0.03%
gleenol	0.03%
eudesma-7(11)-en-4-ol	0.02%

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juneol	0.02%
miscellaneous sesquiterpenol	0.02%
β-eudesmol	0.02%
Other	**0.27%**
aromatic component · aromatic compound	0.04%
compound mw=154	0.04%
(E)-arbusculon	0.03%
citronellic acid	0.02%
trans-1,2-dihydroxy-p-menth-2-ene	0.02%
acide sorbique	0.02%
3-buten-2-ol, 2-methyl-	0.02%
cis-1,2-dihydroxy-p-menth-2-ene	0.02%
(Z)-arbusculon	0.02%
tridecane	0.01%
cis-pyranic linalool oxide	0.01%
compound mw=152	0.01%
aromatic component · ketonic compound	0.01%
Aldehyde	**0.23%**
citronellal	0.09%
octanal	0.08%
nonanal	0.03%
decanal	0.02%
2-hexenal	0.01%
Ketone	**0.15%**
(Z)-arbusculone	0.05%
piperitone	0.05%
(E)-arbusculone	0.04%
camphor	0.01%

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SPECIFIC GRAVITY @20°C	REFRACTIVE INDEX @20°C	OPTICAL ROTATION @20°C	FLASH POINT
0.879	**1.475**	**12.30**	**50.5**

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