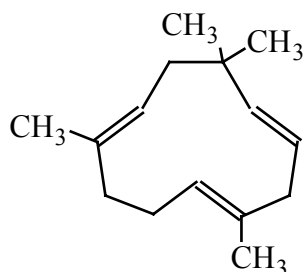


Bijlage A

In deze bijlage worden de chemische structuren en bijbehorende chemische gegevens van hoparomacomponenten weergegeven.

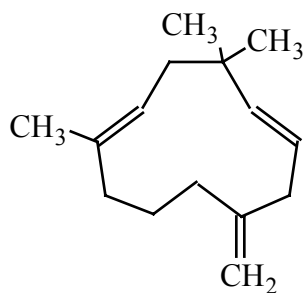


alfa-humuleen

CAS: 6753-98-6; $C_{15}H_{24}$; $M=204.36$

(E,E,E)-2,6,6,9-tetramethyl-1,4,8-cycloundecatrieen

kookpunt: 106-107°C; dichtheid: 0.8865 g/cm³

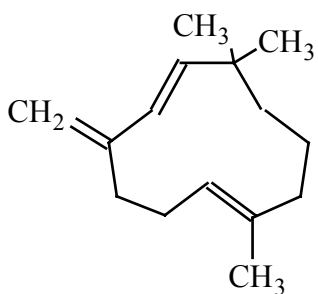


beta-humuleen

CAS: 116-04-1; $C_{15}H_{24}$; $M=204.36$

(E,E)-1,4,4-trimethyl-8-methyleen-1,5-cycloundecadien

kookpunt: 106-107°C; dichtheid: 0.8905 g/cm³

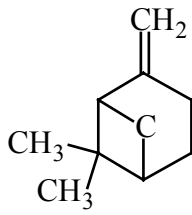


gamma-humuleen

CAS: ?; $C_{15}H_{24}$; $M=204.36$

(E,E)-1,5,5-trimethyl-8-methyleen-6,11-cycloundecadien

kookpunt: 106-107°C

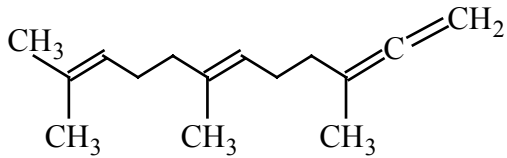


beta-pineen

CAS: 19902-08-0; $C_{10}H_{16}$; $M=136$

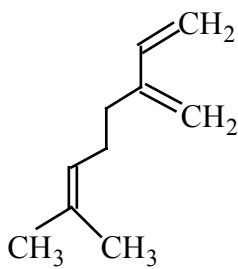
(1R,5R)-6,6-dimethyl-2-methylenebicyclo[3.1.1]heptane

kookpunt: ?



farneseen

structuur o.v.b.

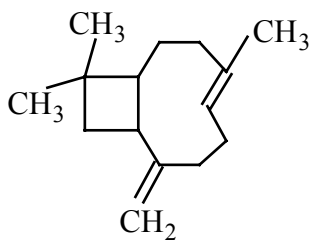


myrceen

CAS: 123-35-3; $C_{10}H_{16}$; $M=136.24$

7-methyl-3-methylene-1,6-octadiene

kookpunt: ?°C

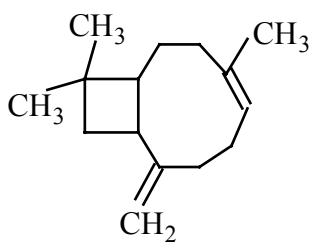


caryophylleen

CAS: 87-44-5; $C_{15}H_{24}$; $M=204.36$

[1R-(1R*,4E,9S*)]-4,11,11-trimethyl-8-methylenebicyclo[7.2.0]undec-4-ene,
of β -caryophylleen/trans-caryophylleen

kookpunt: 118-119°C; $\rho=0.9052$; $n=1.5030$; terpene odor (cloves/terpentine)



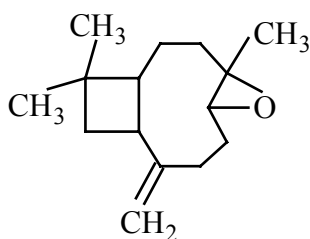
isocaryophylleen

CAS: 118-65-0; $C_{15}H_{24}$; $M=204.36$

γ -caryophylleen/cis-caryophylleen

kookpunt: $125^{\circ}C$; $\rho=0.8995$; $n=1.54966$

Oxidatieprodukten:

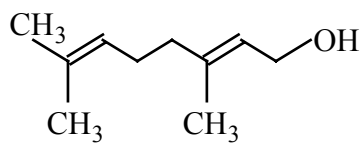


caryophylleen oxide (epoxycaryophylleen)

CAS: 1139-30-6; $C_{15}H_{24}O$; $M=220.35$

Andere oxidatieprodukten zijn humuleenepoxides en humuleendiepoxydes (voor structuur zie humuleen, waar aan een dubbele binding een of twee zuurstof atomen geaddeerd zijn).

Bloemige/ester componenten



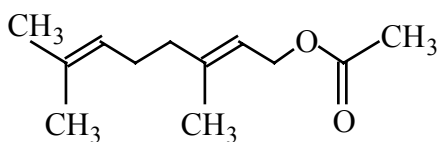
geraniol

CAS: 106-24-1; $C_{10}H_{18}O$; $M=154.25$

(E)-3,7-dimethyl-2,6-octadien-1-ol

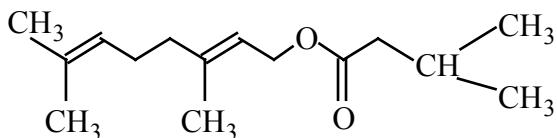
kookpunt: $114-115^{\circ}C$; $\rho=0.8894$; $n=1.4766$

isomeer van linalool; 'sweet rose odor'



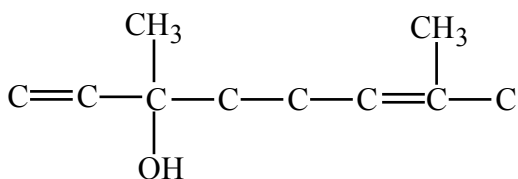
geranyl acetaat

CAS: 16409-44-2; C₁₂H₂₀O₂; M=196.29



geranyl isobutyraat

CAS: ?; C₁₄H₂₆O; M=226



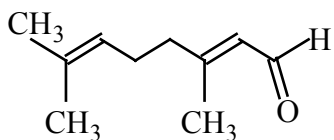
linalool

CAS: 78-70-6; C₁₀H₁₈O; M=154.25

3,7-dimethyl-1,6-octadien-3-ol

isomeer van geraniol

Citrus/houtachtige componenten



geranial (citral a)

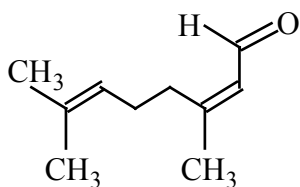
CAS: 5392-40-5; C₁₀H₁₆O; M=152.24

3,7-dimethyl-2,6-octadienal

kookpunt: 92-93°C; ρ=0.8888; n=1.4898

isomeer van neral (citral b), ethanal-groep neral trans

'strong lemon odor'



neral (citral b)

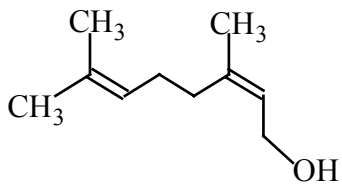
CAS: ?; C₁₀H₁₆O; M=152.24

3,7-dimethyl-2,6-octadienal

kookpunt: 91-92°C; ρ=0.8869; n=1.4869

isomeer van geranial (citral a), ethanal-groep neral cis
'lemon odor, not as intensive and a little sweeter than

geranial'



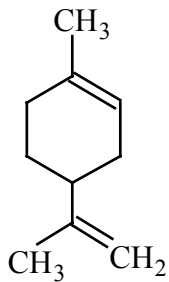
nerol

CAS: ?; C₁₀H₁₈O; M=154.25

(Z)-3,7-dimethyl-2,6-octadien-1-ol

kookpunt: 114-115°C (ovb); ρ=0.8813; n=?

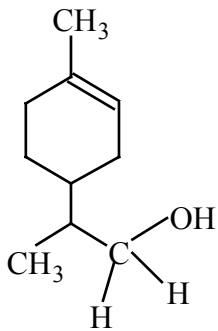
cis-isomeer van geraniol; 'sweet rose odor'



limoneen (carveen)

CAS: ?; C₁₀H₁₆; M=136.24

(R)-4-isopropenyl-1-methyl-1-cyclohexeen



limoneen-10-ol

CAS: ?; C₁₀H₁₈O; M=154

structuur onder voorbehoud