

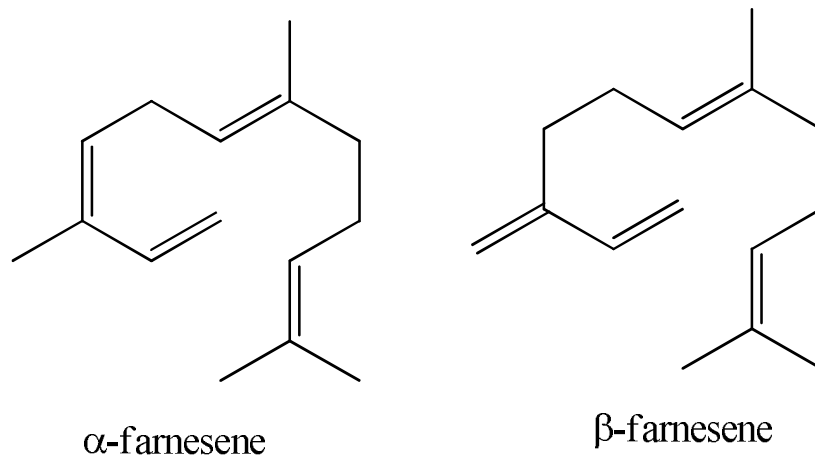
Sesquiterpenes or sesquiterpenoids (C_{15}), forming the higher boiling fractions of the essential oils. The general M.F. is $(C_5H_8)_n$; where is $n = 3$

Classification of sesquiterpenoids	Number of double bonds
Acyclic	4
Monocyclic	3
Bicyclic	2
Tricyclic	1

a) Acyclic sesquiterpenes

1-Farnesene

M.F. is $C_{15}H_{22}$; it has two isomers ,are α -farnesene and β - farnesene.



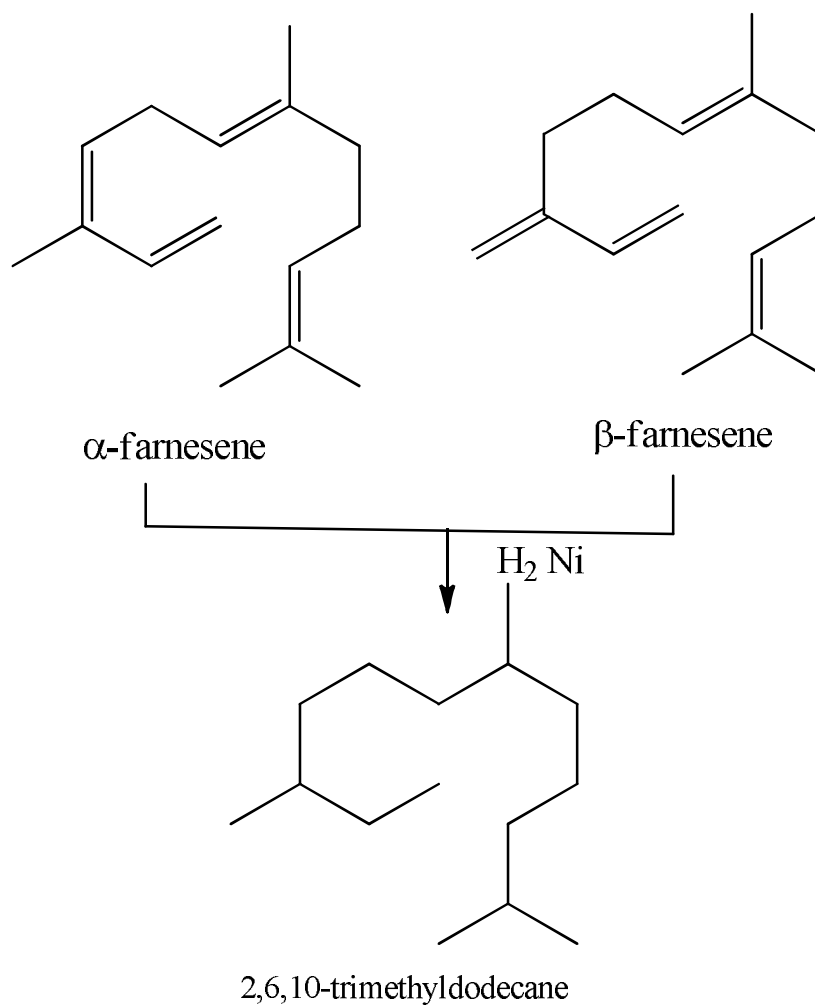
α -Farnesene is a liquid and not occurs naturally ;

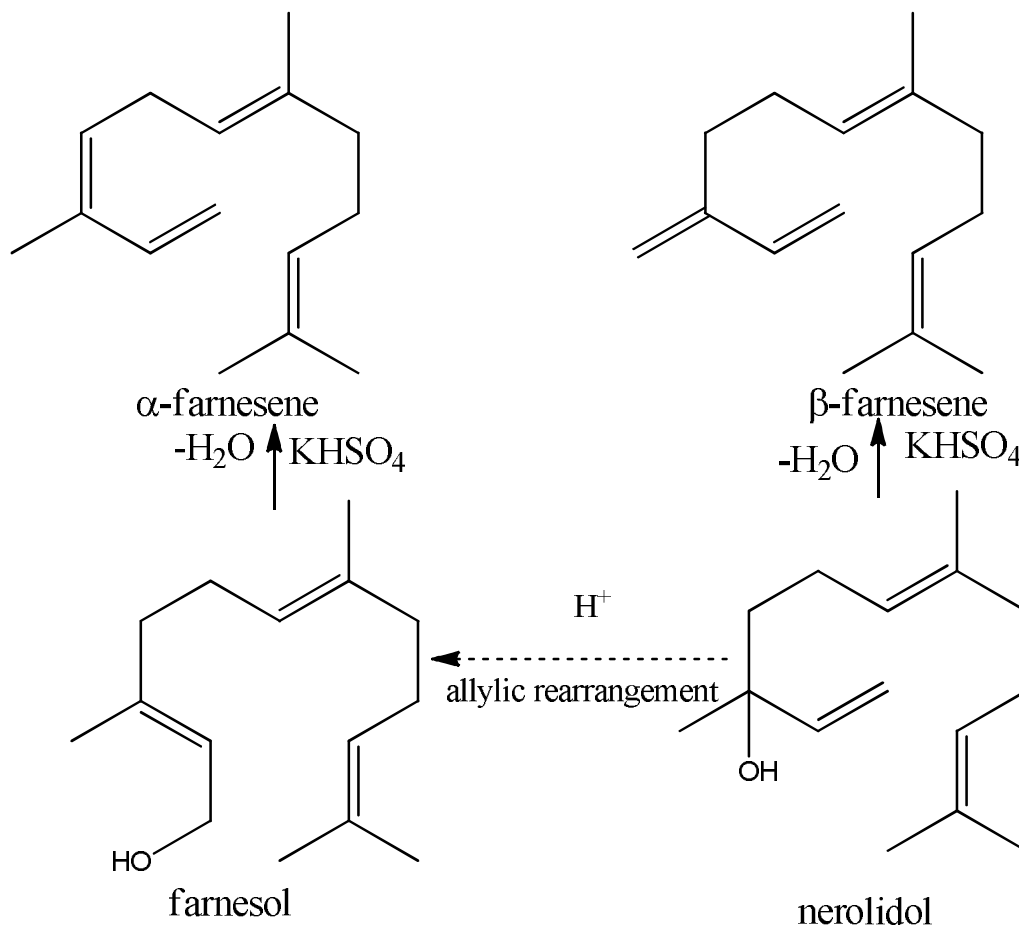
β - Farnesene is a liquid and occurs naturally in oil of hops.

Both of α -farnesene and β - farnesene are catalytically reduced to a compound with M.F, $C_{15}H_{32}$ corresponding to C_nH_{2n+2} ;thus,both of them is acyclic compound.

Also ,catalytic hydrogenation indicates that both of contains four double bonds.

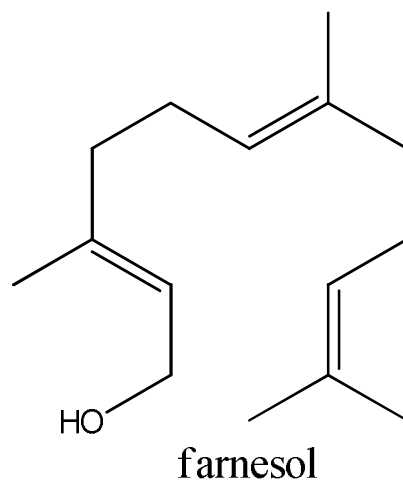
Both of them contains two *conjugated* double bonds ,since it reacts with *one* molecule of maleic anhydride,thus,the other two double bonds *separated*.





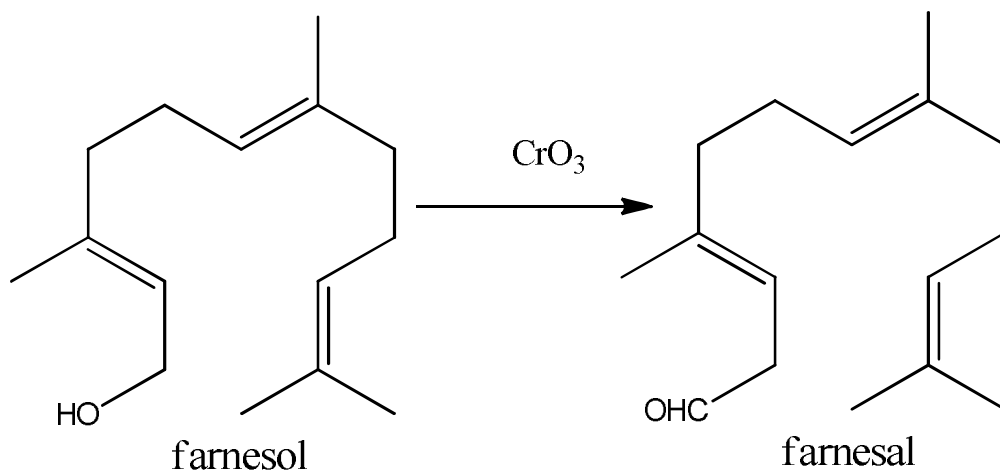
2-Farnesol

M.F. $\text{C}_{15}\text{H}_{26}\text{O}$

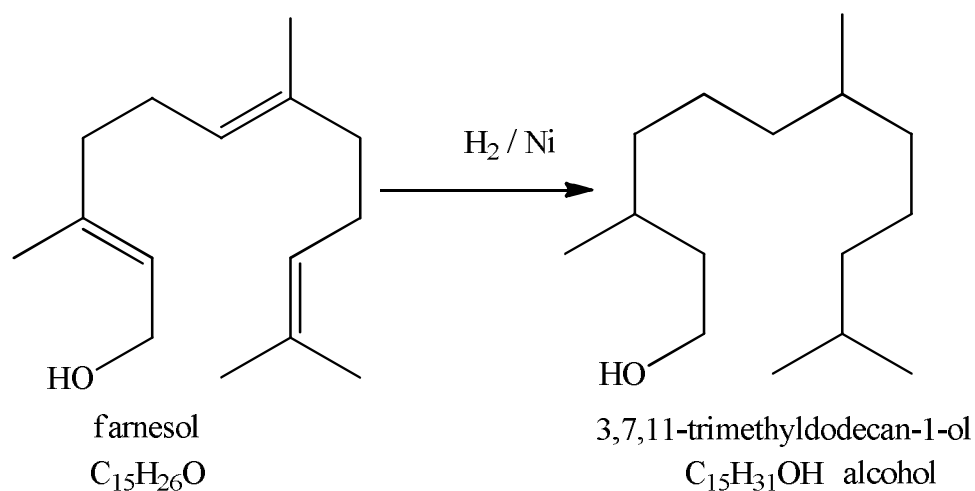


This is occurs in the oil of amberette seeds .

The oxo function is primary alcohol since farnesol oxidized with chromic acid to farnesal(an aldehyde).



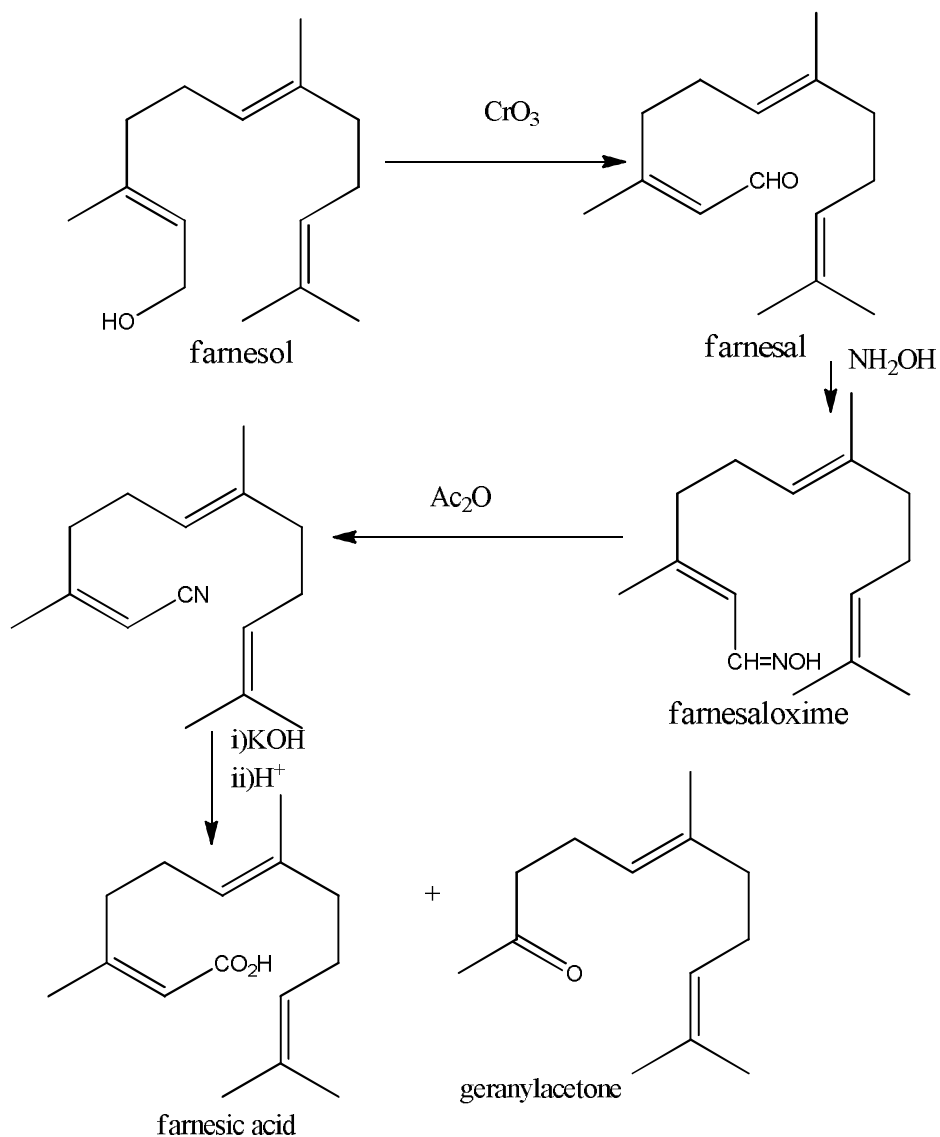
Farnesol is acyclic compound with three double bonds; from catalytic hydrogenation.



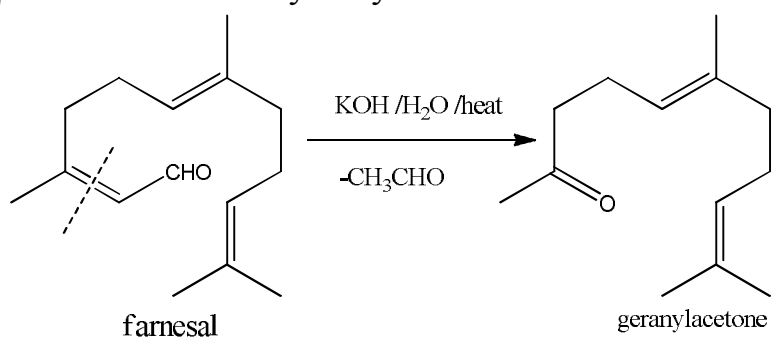
The M.F. of $\text{C}_{15}\text{H}_{31}\text{OH}$ corresponds to $\text{C}_n\text{H}_{2n+1}\text{OH}$, corresponding to acyclic compound.

Position of the double bonds can be indicated as follows:

Since farnesol does not react with maleic anhydride (No D.A.R.); the three double bonds are separated.



The farnesal is an α,β -unsaturated aldehyde by this reaction



The structure of farnesol has been confirmed by its synthesis from synthetic nerolidol.

