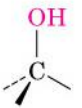
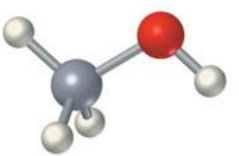
Alcol



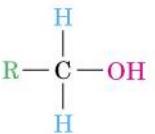
Alcol

$$CO + 2\,H_2 \xrightarrow[\text{Zinco ossido/cromo ossido}]{400^\circ C} CH_3OH$$

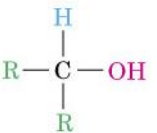


$$H_2C{=}CH_2 + H_2O \xrightarrow[250^\circ C]{H_3PO_4} CH_3CH_2OH$$

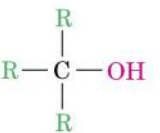
Nomenclatura



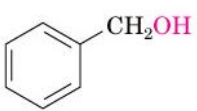
Alcol primario (1°)



Alcol secondario (2°)

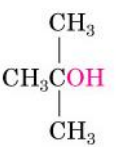


Alcol terziario (3°)



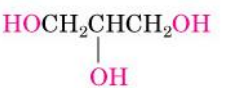
Alcol benzilico
(Fenil metanolo)

Alcol allilico
(2-Propen-1-olo)

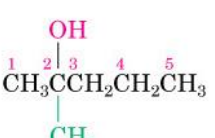


Alcol *tert*-butilico
(2-Metil-2-propanolo)

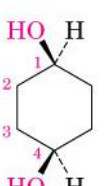
Glicole etilenico
(1,2-Etandiolo)



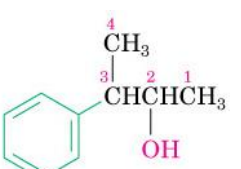
Glicerolo
(1,2,3-Propantriolo)



2-Metil-2-pentanolo

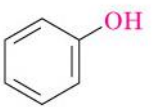


***cis*-1,4-Cicloesandiolo**

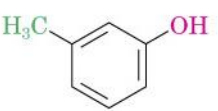


3-Fenil-2-butanolo

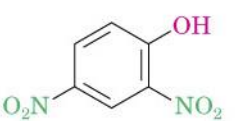
Fenoli



Fenolo



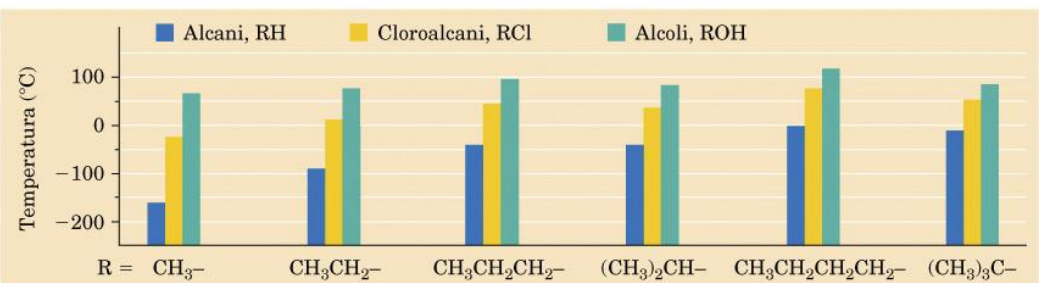
***m*-Metilfenolo**
(*m*-Cresolo)

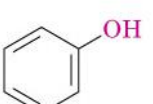


2,4-Dinitrofenolo

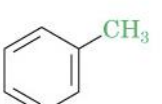
Legame a idrogeno

Confronto dei punti di ebollizione di alcuni alcani, cloroalcani ed alcoli. Gli alcoli mostrano generalmente i punti di ebollizione più alti.





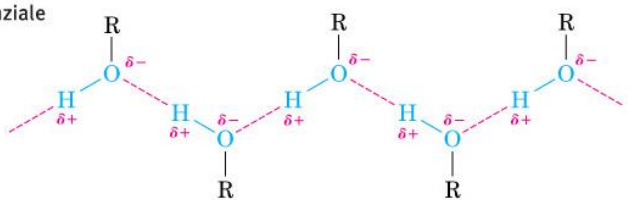
Fenolo: p.e. = 181.7°C



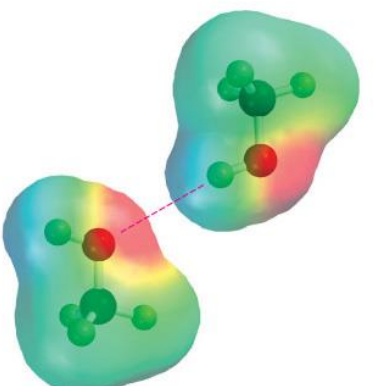
Toluene: p.e. = 110.6°C

Legame a idrogeno

Il legame a idrogeno negli alcoli e nei fenoli. Le molecole sono tenute unite da una debole attrazione che si instaura tra un idrogeno polarizzato positivamente di un gruppo OH e l'ossigeno polarizzato negativamente di un altro gruppo OH.

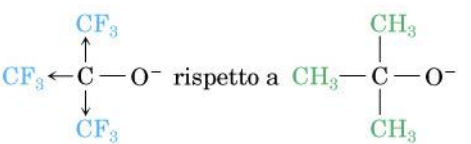


La mappa di potenziale elettrostatico del metanolo mostra chiaramente l'idrogeno del legame O—H polarizzato positivamente (zona blu) e l'ossigeno polarizzato negativamente (zona rossa).



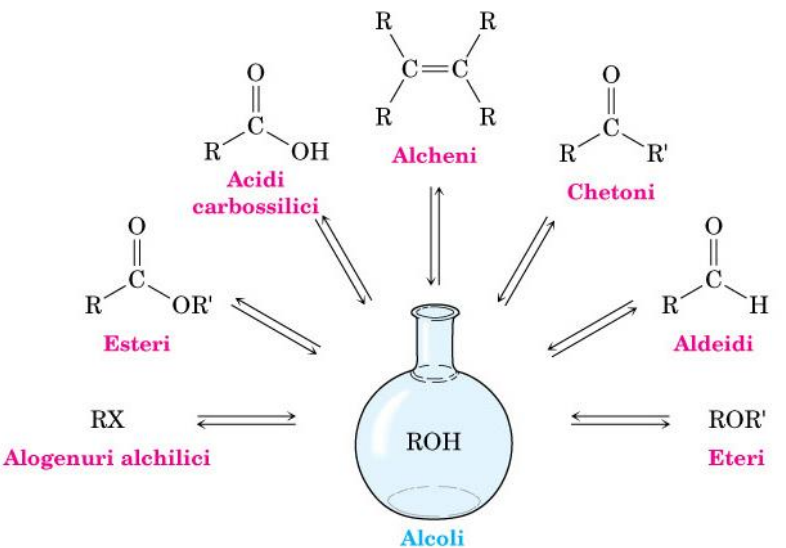
Acidità degli Alcol

I gruppi elettron-attrattori stabilizzano lo ione alcossido ed abbassano il pK_a

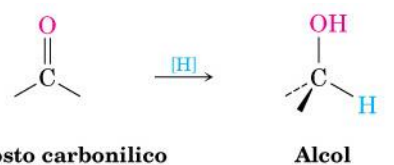


pK_a = 5.4 pK_a = 18

Il ruolo centrale degli alcoli nella chimica organica

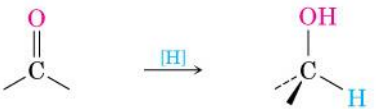


Riduzione di composti carbonilici



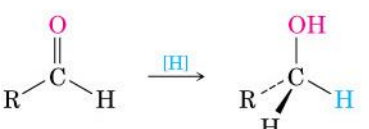
dove [H] indica un generico agente riducente

Riduzione di composti carbonilici

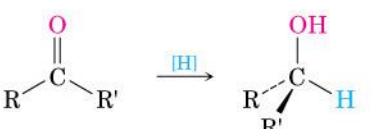


dove [H] indica un generico agente riducente

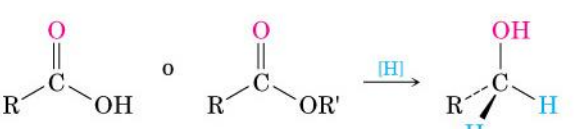
Composto carbonilico **Alcol**



Aldeide **Alcol primario**



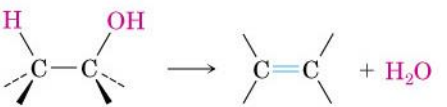
Chetone **Alcol secondario**

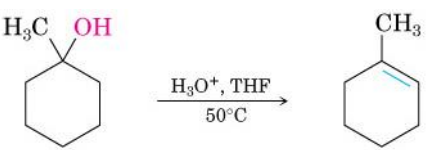


Acido carbossilico **Estere** **Alcol primario**

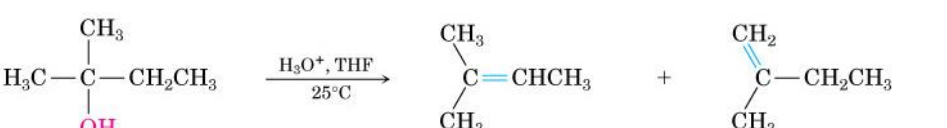
Disidratazione ad alcheni

Reazione di disidratazione





1-Metilcicloesanolo **1-Metilcicloesene (91%)**



2-Metil-2-butanolo

2-Metil-2-butene (alchene trisostituito)

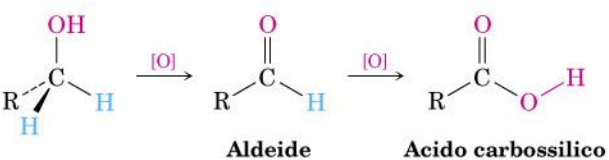
Prodotto principale

2-Metil-1-butene (alchene disostituito)

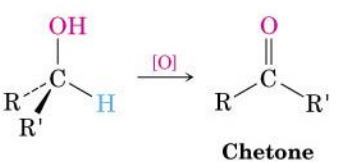
Prodotto secondario

Ossidazione a composti carbonilici

Alcol primario



Alcol secondario



Alcol terziario