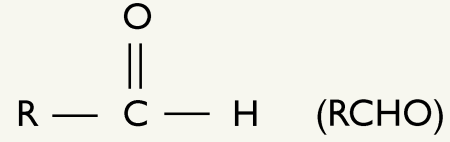


dersdeo

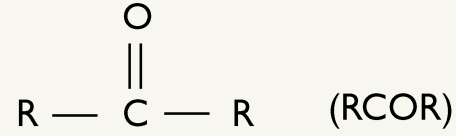
öğrenmenin en kolay yolu o!

KİMYA

ALDEHİT VE KETONLAR



(Aldehit)
 $n \geq 1$

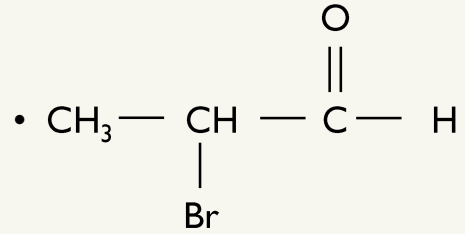
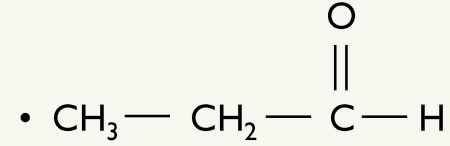
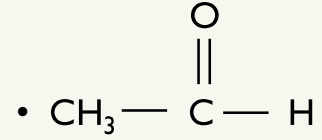
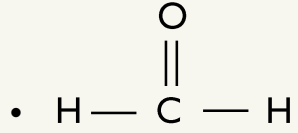


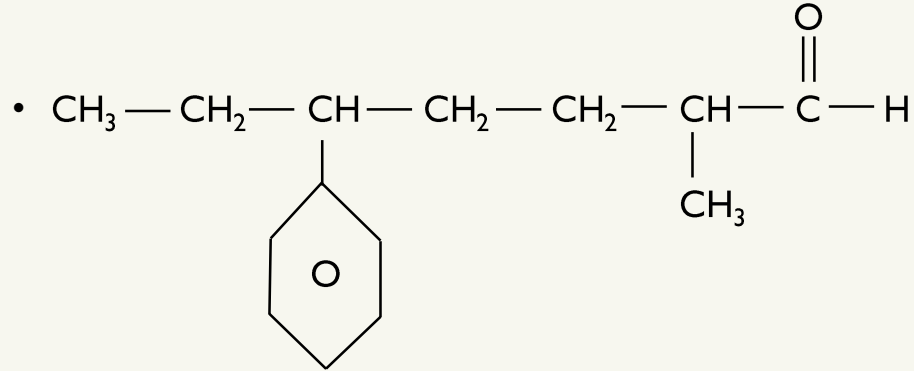
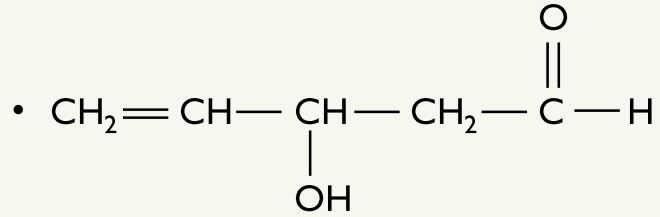
(Keton)
 $n \geq 3$

Aldehit ve ketonların genel formülleri $\text{C}_n\text{H}_{2n}\text{O}$ 'dur.

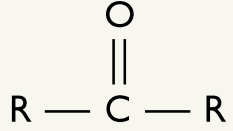
- Birbirinin izomerleridir. İzomerlikleri 3 .C den itibaren başlar.

Aldehitlerin Adlandırılması

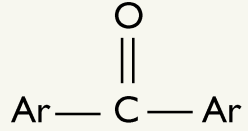




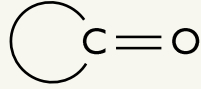
Ketonların Adlandırılması



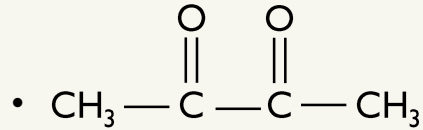
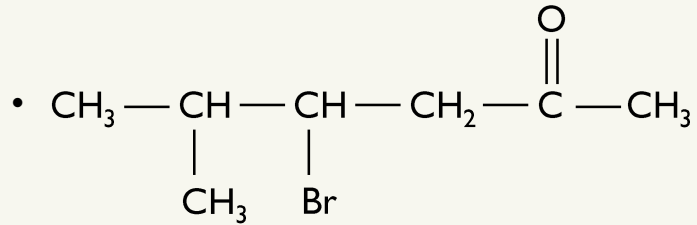
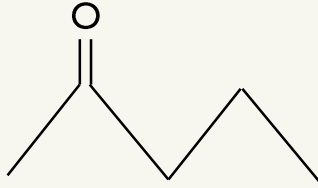
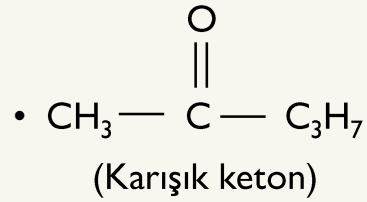
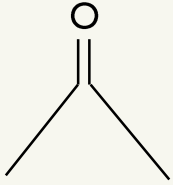
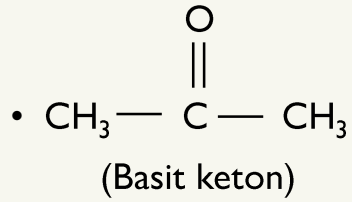
(Alifatik keton)

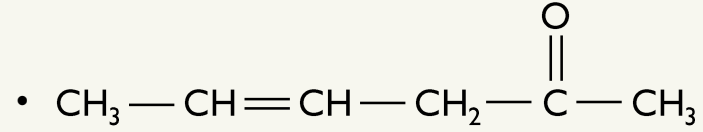
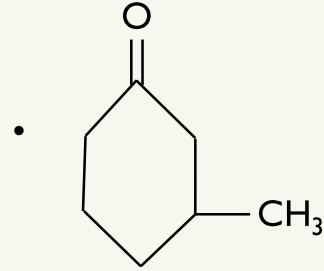
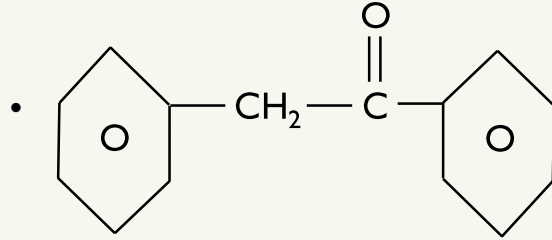
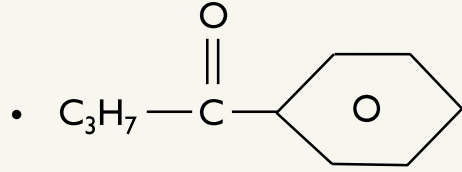


(Aromatik keton)



(Halkalı keton)

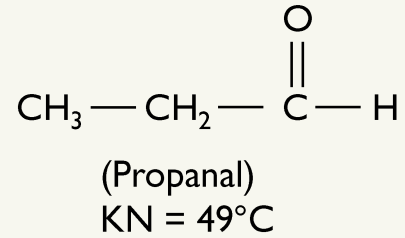
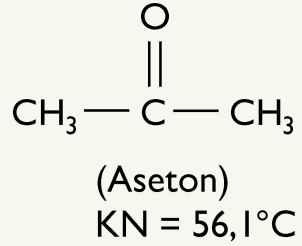




Aldehit ve Ketonların Fiziksel Özellikleri

- Gaz halindeki formaldehit dışında, her iki sınıfında küçük moleküllü üyeleri sıvıdır. Kaynama noktaları, aynı karbon sayılı alkol ve organik asitlerden daha düşüktür. Ancak eterlerden ve hidrokarbonlardan daha yüksektir.

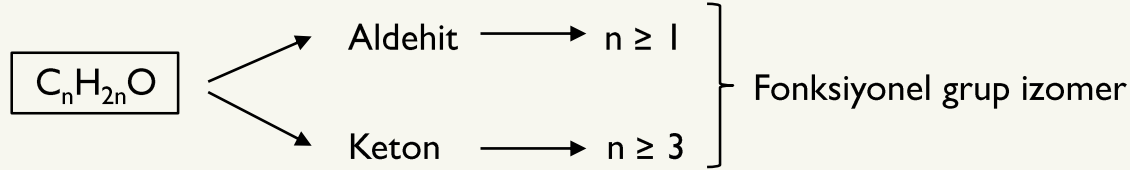
- Ketonların kaynama noktaları, izomeri olan aldehitlerden daha fazladır.



- Aldehitlerin 3, ketonların 5 karbonuya kadar olan üyeleri suda çözünür. Molekül büyüdükçe çözünürlük azalır. Ketonlar çözücü olarak kullanılırlar.

(Örnek : Aseton)

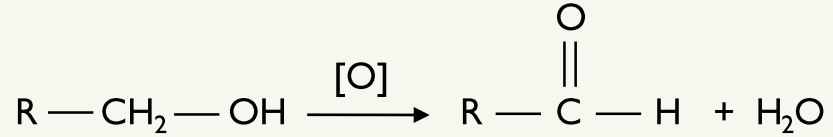
- Homolog sıra oluştururlar.
- Aynı karbon sayılı aldehitlerle ketonlar birbirinin izomeridir.



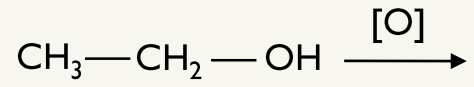
(izomerlikleri 3 . C dan itibaren başlar)

Aldehitlerin Genel Eldesi

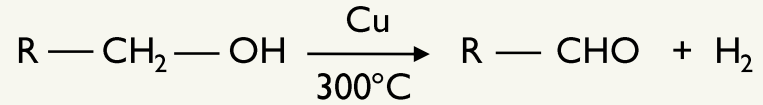
I) Primer (Birincil) Alkollerin Yükseltgenmesi İle;



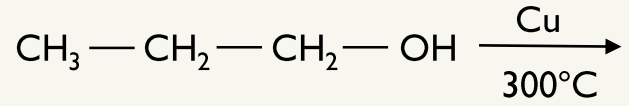
ÖRNEK



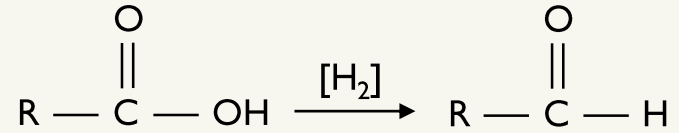
2) Primer Alkollerden Hidrojen Çekilmesi İle (Dehidrojenasyon)



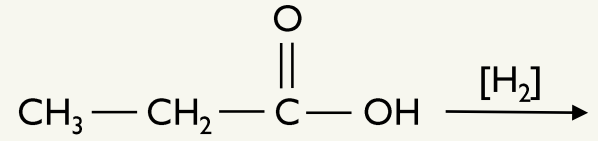
ÖRNEK



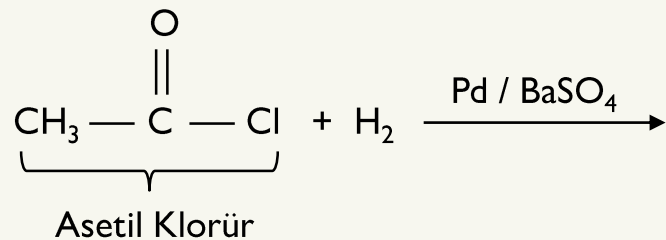
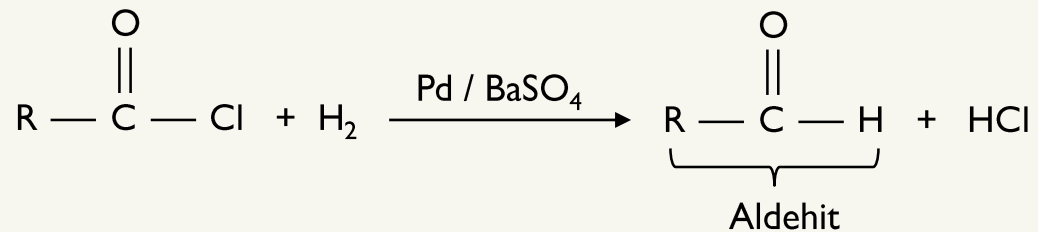
3) Karboksilli Asitlerin I Kademe İndirgenmesi ile



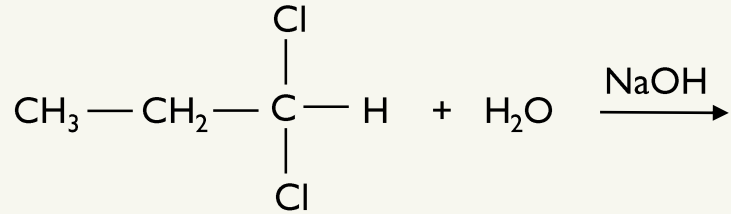
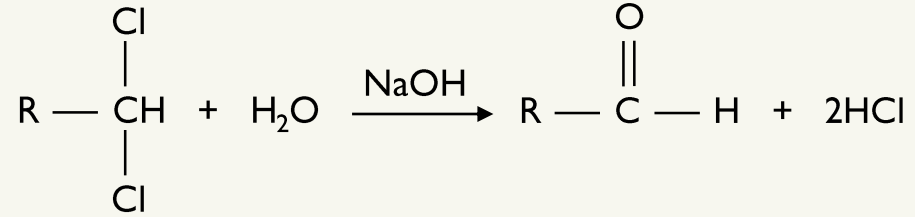
ÖRNEK



4) Asit Klorürlerden

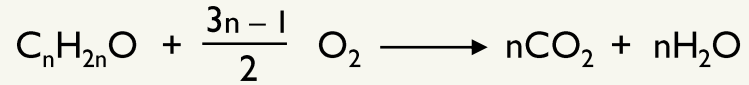


5) İki Halojenli Alkanlardan



Aldehitlerin Reaksiyonları

I) Yanarlar.

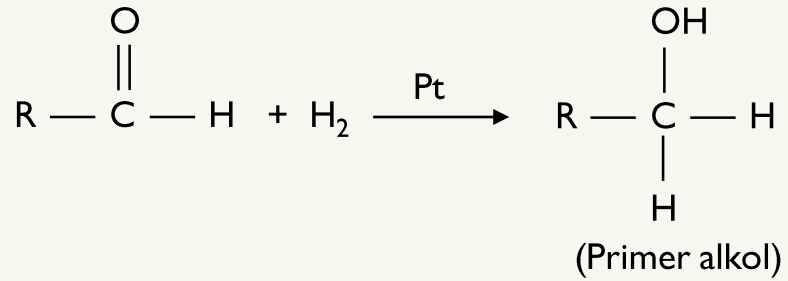


2) Hidrojenli maddelerle katılma tepkimesi verirler.

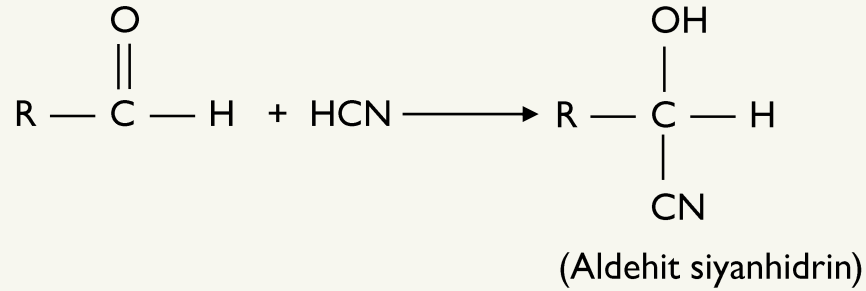
(H_2 , HCN , NH_3 , H_2O , NaHSO_3)

NOT: Yapısında $\begin{array}{c} \text{O} \\ || \\ \text{— C —} \end{array}$ (karbonil grubu) bulunduran aldehit ve keton bileşikleri nükleofilik katılma tepkimesi verirler.

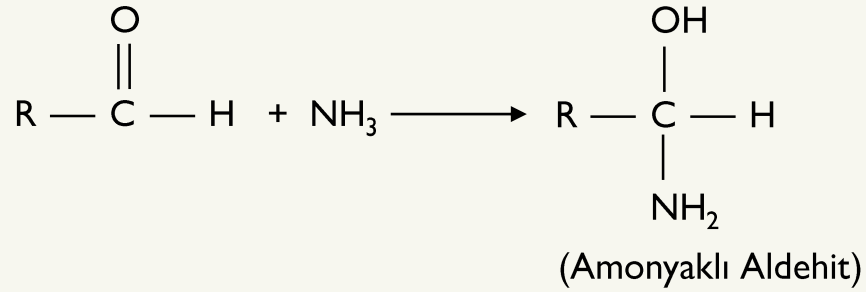
a) H₂ katılması



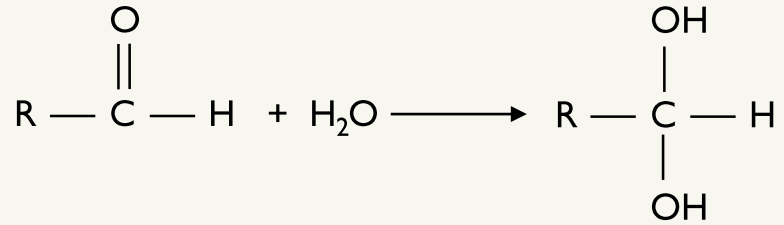
b) HCN katılması



c) NH_3 katılması

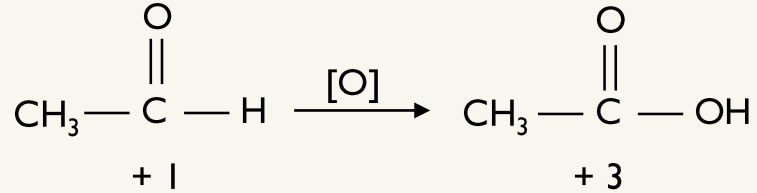
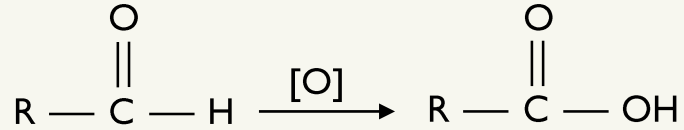


d) H₂O katılması



(Aldehit hidrat (kararsız))

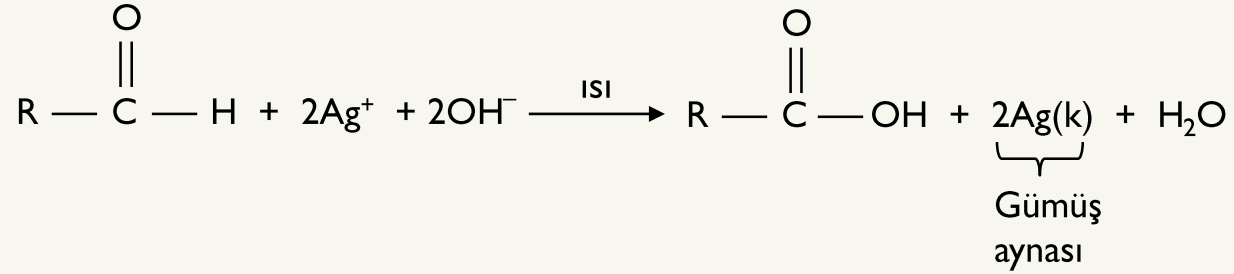
3) Aldehitler yükseltgenme tepkimesi verirler. (Aldehitler indirgendirler.)



Aldehitler zayıf yükseltgenlerle de yükseltgenebilirler. Bu tepkimeler aldehitlerin tanınma tepkimeleri olarak bilinir.

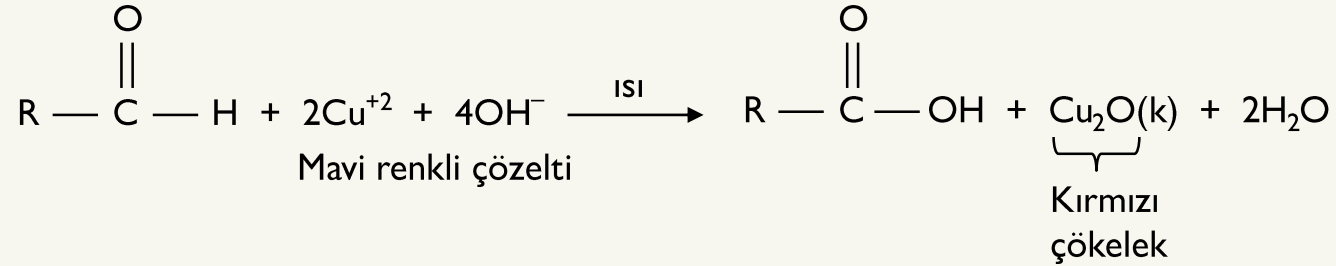
Tollens Ayıracı

Amonyaklı gümüş nitrat çözeltisi Tollens ayıracıdır.



Fehling Ayıracı

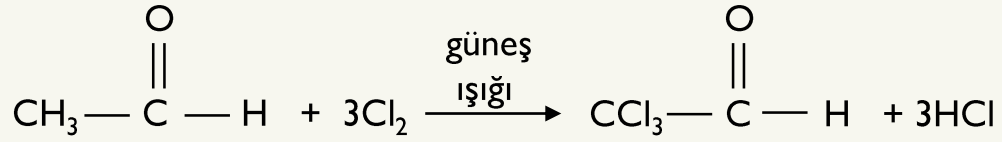
Bazik ortamda Cu^{+2} iyonları içeren çözelti fehling ayıracıdır.



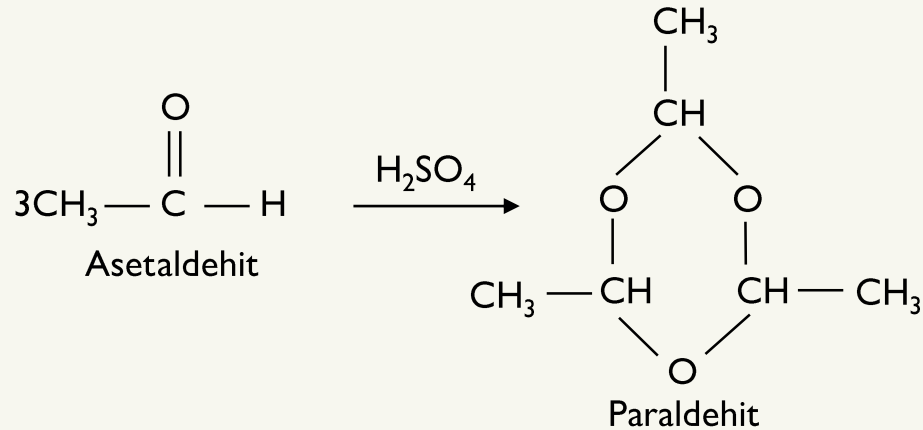
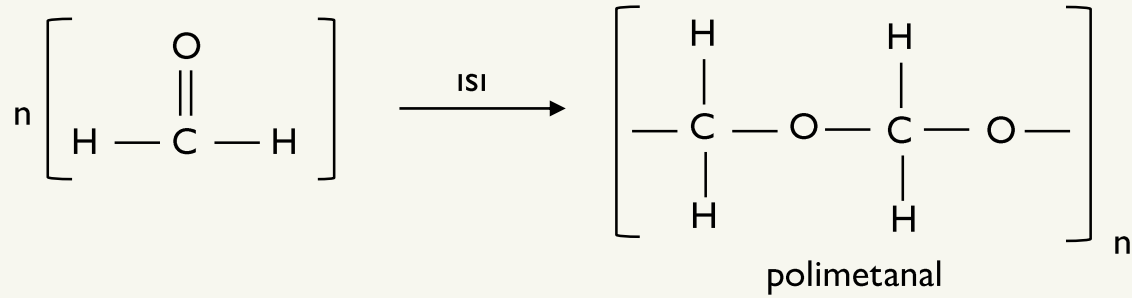
- Fehling ayıracı yerine Benedict ayıracı (Bakır II sitratın bazik çözeltisi) kullanılarak Cu^{+2} iyonları Cu^+ ya indirgenirken kiremit kırmızısı Cu_2O çökeleği oluşur.

NOT: 0,1 M $\text{K}_2\text{Cr}_2\text{O}_7$ çözeltisine 2 – 3 damla benzaldehit damlatılırsa renk turuncudan yeşile döner. Bu durum aldehitlerin yükseltgenmesinden kaynaklanır. Örneğin 0,1 M $\text{K}_2\text{Cr}_2\text{O}_7$ çözeltisine aseton damlatılırsa renkte bir değişiklik olmaz; çünkü ketonlar yükseltgenemezler.

4) Yer değıştirme tepkimesi verirler.



5) Polimerleşme tepkimesi verirler.



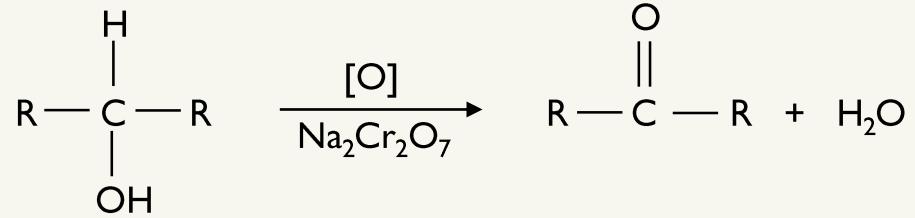
ÖRNEK

8,8 gr asetaldehit elde etmek için kaç gram CaC_2 kullanılmalıdır?

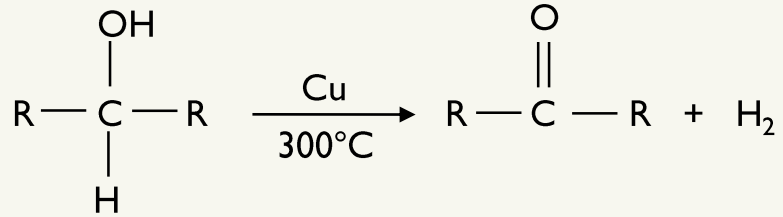
(H = 1 C = 12 O = 16 Ca = 40)

Ketonların Genel Elde Edilme Yolları

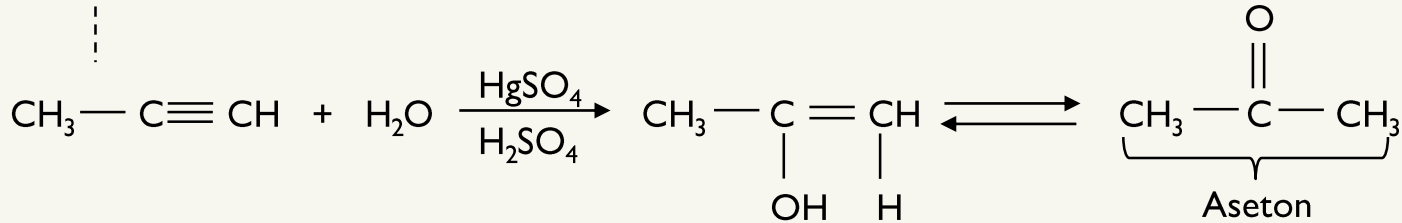
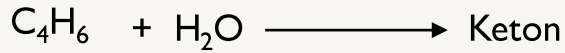
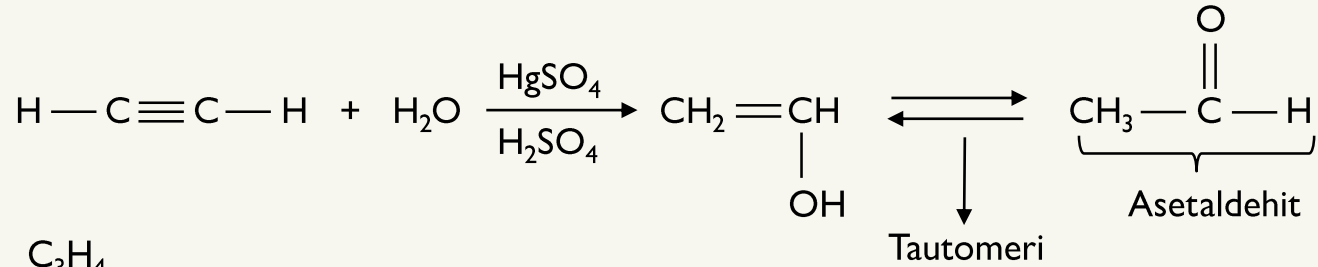
I) Sekonder Alkollerin Yükseltgenmesi İle;

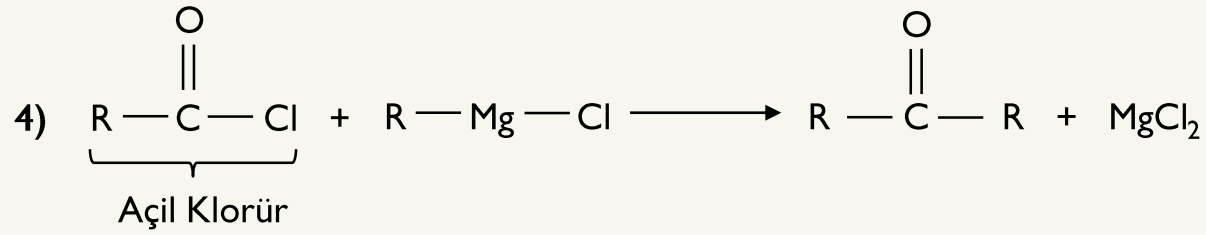


2) Sekonder Alkollerden H₂ Çekilmesi İle;

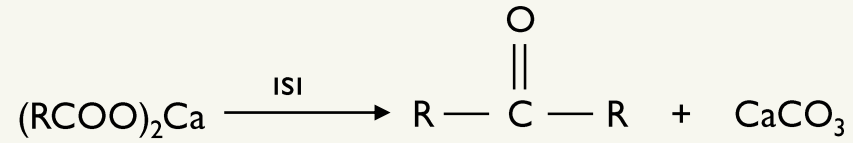


3) Alkinlere Su Katılması

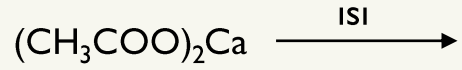




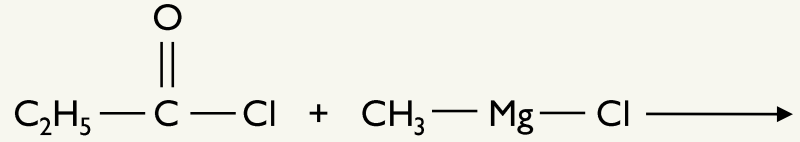
5) Karboksilli Asitlerin Metal Tuzları İle



ÖRNEK



ÖRNEK

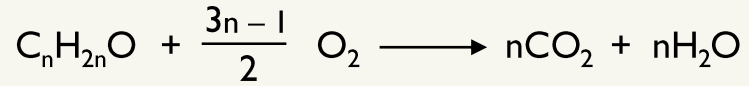


ÖRNEK

Sekonder bütanolün yükseltgenme ürünü nedir?

Ketonların Reaksiyonları

I) Yanarlar.

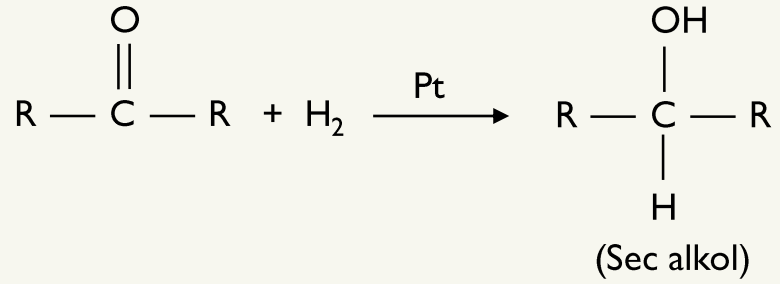


2) Katılma tepkimesi verirler.

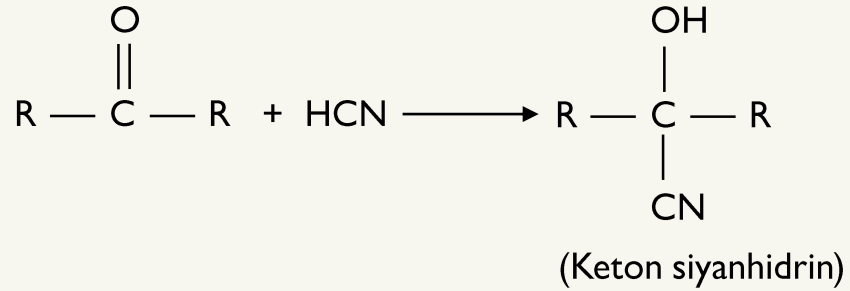
Ketonların katılma tepkimeleri nükleofilik katılma tepkimesidir. Hidrojenli maddelerle katılma tepkimesi verirler.

(H_2 , HCN , NH_3 , H_2O , NaHSO_3)

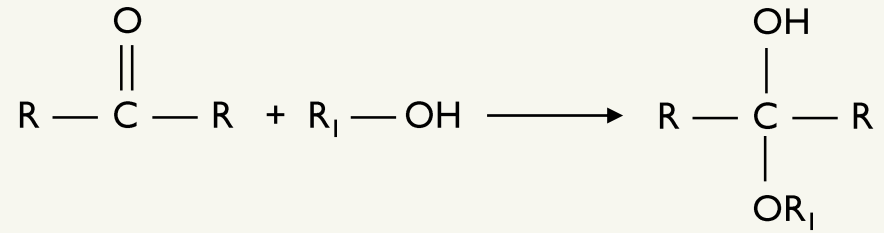
a) H₂ katılması



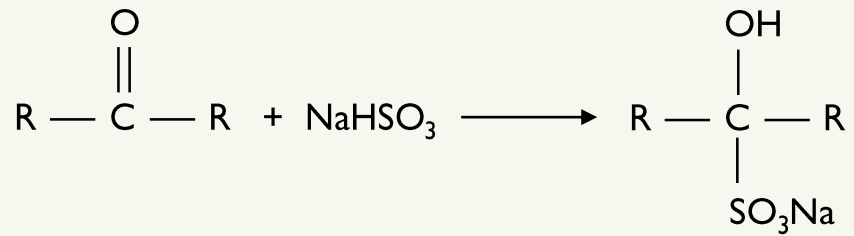
b) HCN katılması



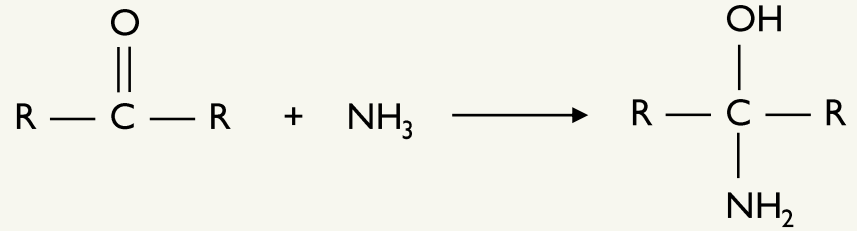
c) Alkol katılması



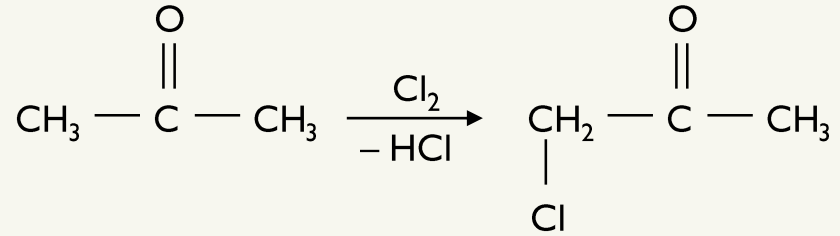
d) NaHSO₃ katılması



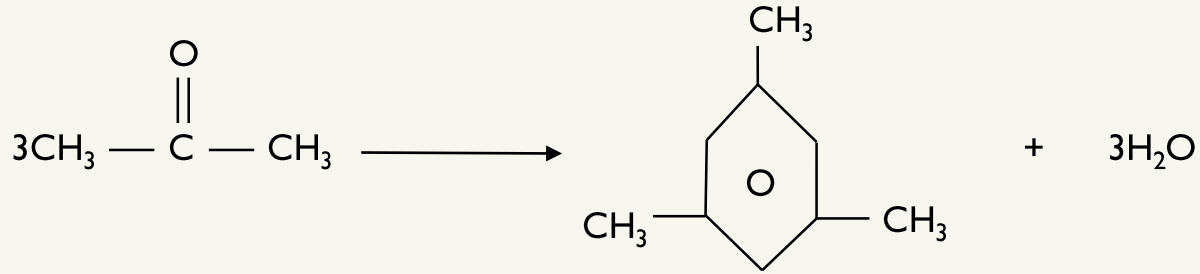
e) NH_3 katılması



3) Yer deęiřtirme tepkimesi verirler.



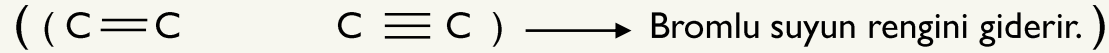
4) Ketonlar polimerleşmez. (Aseton hariç)



1, 3, 5 tri metil benzen
(mesitilen)

NOT: Ketonlar yükseltgenme tepkimesi vermezler. Fehling ve Tollens ayıracına etki etmezler.

NOT: Aldehit ve keton bromlu suyun rengini gidermez.



ÖRNEK

Eşit molde propanon ve propanal karışımı, yeterince fehling çözeltisi ile tepkimeye girince 72 gram Cu_2O çökeleği oluşuyor. Buna göre başlangıçtaki karışım kaç gramdır?
(H = 1 C = 12 O = 16 Cu = 64)