

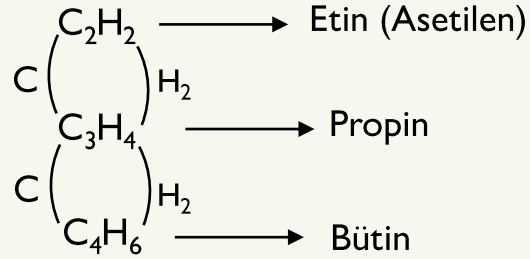
dersdeo

öğrenmenin en kolay yolu o!

KİMYA

ALKİNLER (ASETİLEN SINIFI)

- $\text{— C} \equiv \text{C —}$ üçlü bağ içeren hidrokarbonlardır.
- Genel formülleri $\text{C}_n\text{H}_{2n-2}$ dir.
- $\text{R}_1 \text{C} \equiv \text{C R}_2$ şeklinde gösterilir.
- En küçük üyesi etil (asetilen) dir.



Homolog sıra (dizi) oluştururlar.

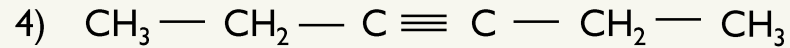
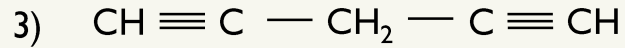
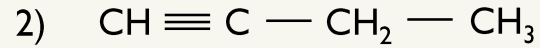
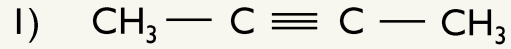
— $\text{C} \equiv \text{C}$ — üçlü bağın ait olduğu karbon atomları sp hibritleşmesi yapmıştır.

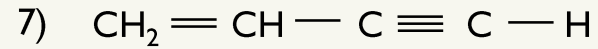
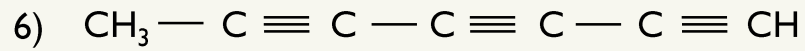
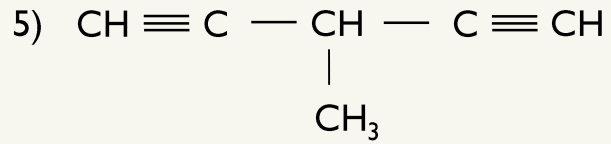
- Fonksiyonel (işlevsel) grup üçlü bağ (— C≡C—) dir.
- Bağ sağlamlığı : $C \equiv C > C = C > C - C$
- Bağ uzunluğu : $C - C > C = C > C \equiv C$
- Bağ açısı : Alkan $\longrightarrow$ Alken $\longrightarrow$ Alkin

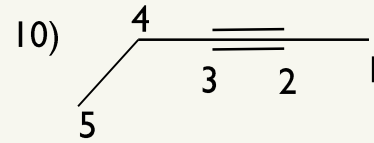
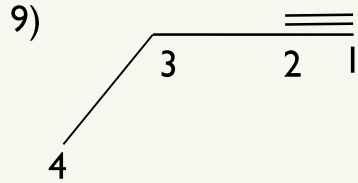
$\xrightarrow{\text{Bağ açısı}} \text{ARTAR}$

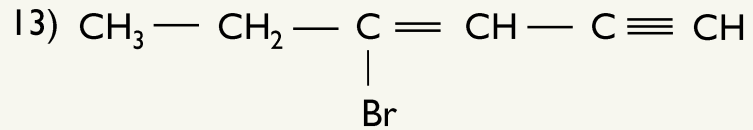
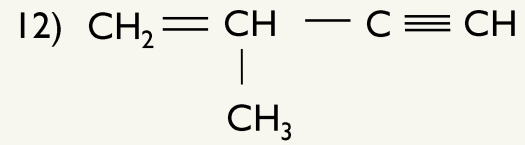
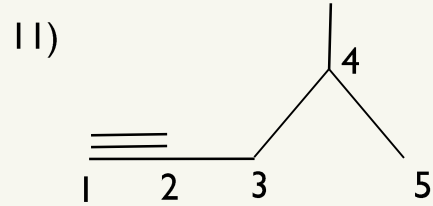
- Alkinlerin kaynama noktaları ve erime noktaları düşüktür.
- Alkinler suda çözünmezler.
- Özkütleleri sudan küçüktür.

Alkinlerin Adlandırılması







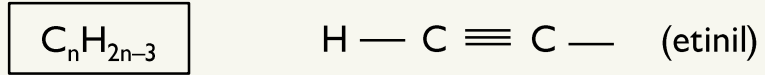


ÖRNEK

3, 4 di metil I hekzin bileşığının yapı formülü nedir?

Alkinil Grubu

Alkinlerden 1 hidrojen çıkarıldığında geriye kalan gruba alkinil grubu denir.



Alkinlerin Genel Özellikleri

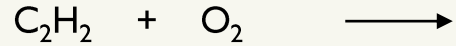
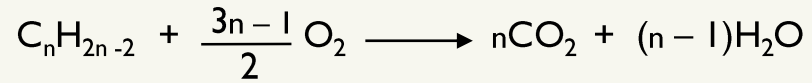
- Alkinler apolar olduklarından oda koşullarında polar çözücü olan suda çözünmezler. CCl_4 gibi apolar çözücülerde çözünürler.
- Aynı basınç altında kaynama noktaları, aynı karbon sayılı alken ve alkanlardan genelde büyüktür.

Molekül Ağırlıkları $\uparrow$ $\text{KN} \uparrow$

- Alkinlerin fiziksel özellikleri alkenlere benzer.

Alkinlerin Reaksiyonları

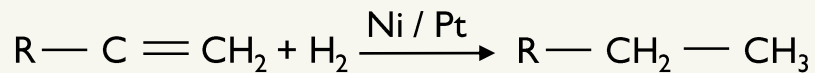
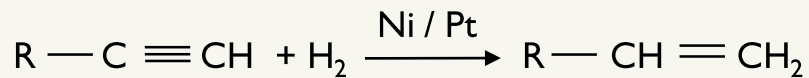
1) Yanma tepkimesi verirler.



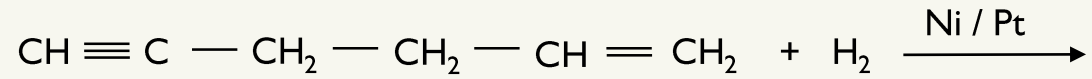
2) Katılma tepkimesi verirler.

Alken ve Alkinlere; halojen asidi (HCl, HBr, HI) , halojen (Cl_2 , Br_2 , I_2) , H_2O ve H_2 katılması, elektrofilik katılma mekanizmasına göre gerçekleşir.

a) H₂ Katılması



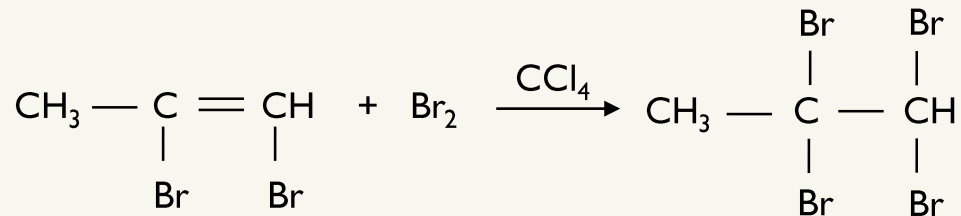
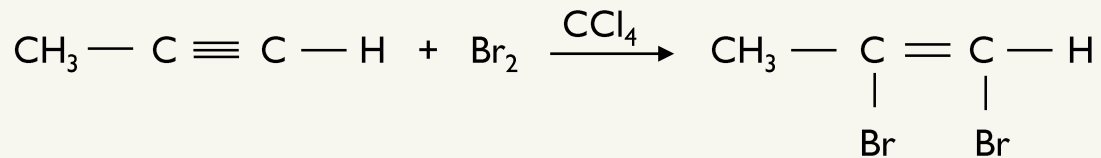
(Radikaller eşliğinde elektrofilik katılma)



I hekzen 5 in

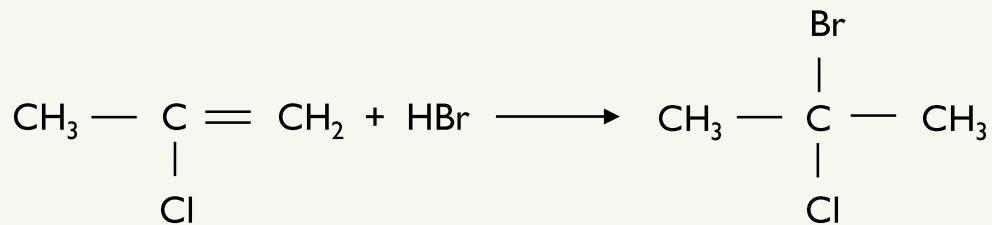
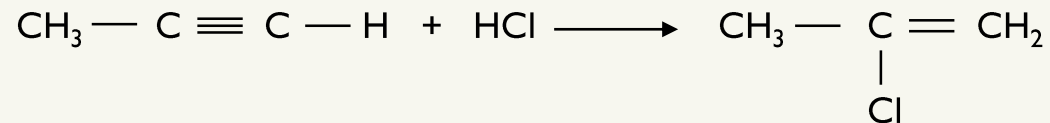
b) Halojen Katılması

Alkinler bromlu suyun rengini giderirler.



(Elektrofilik katılma)

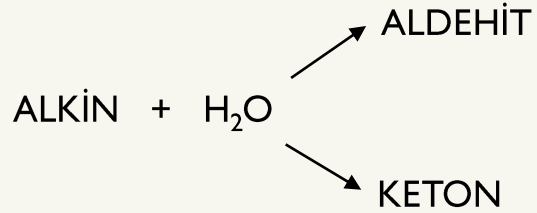
c) Alkinlere HX (HCl, HBr, HI) Katılması

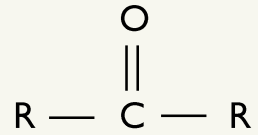


(Markovnikov kuralına göre katıldığından, elektrofilik katılma tepkimesidir.)

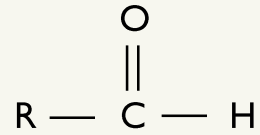
d) H₂O Katılması

HgSO₄ katalizörlüğünde asitli ortamda alkinlere su katılması, elektrofilik katılma tepkimesidir.

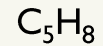
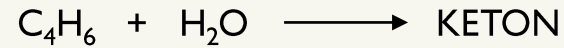
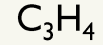
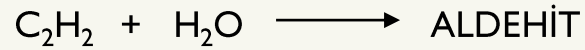




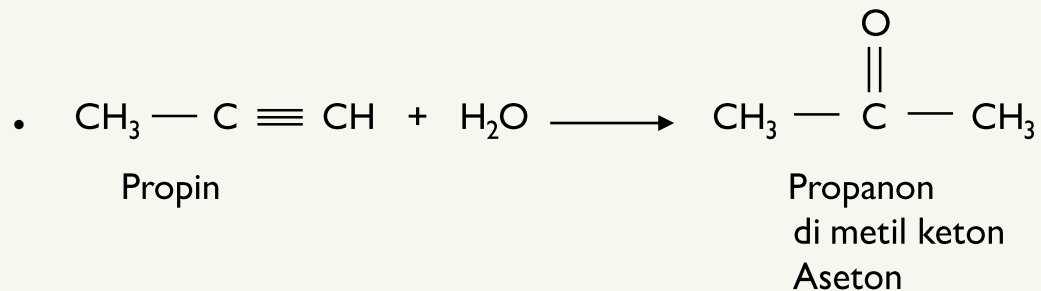
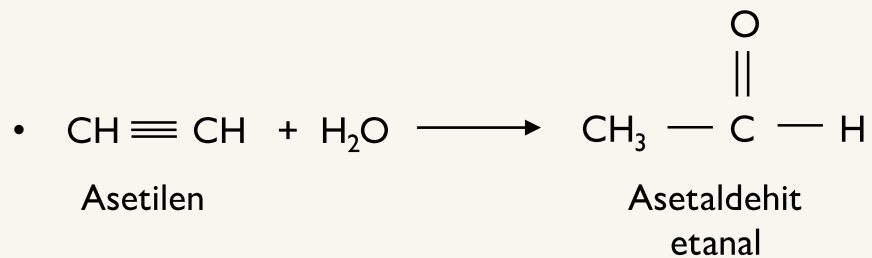
KETON

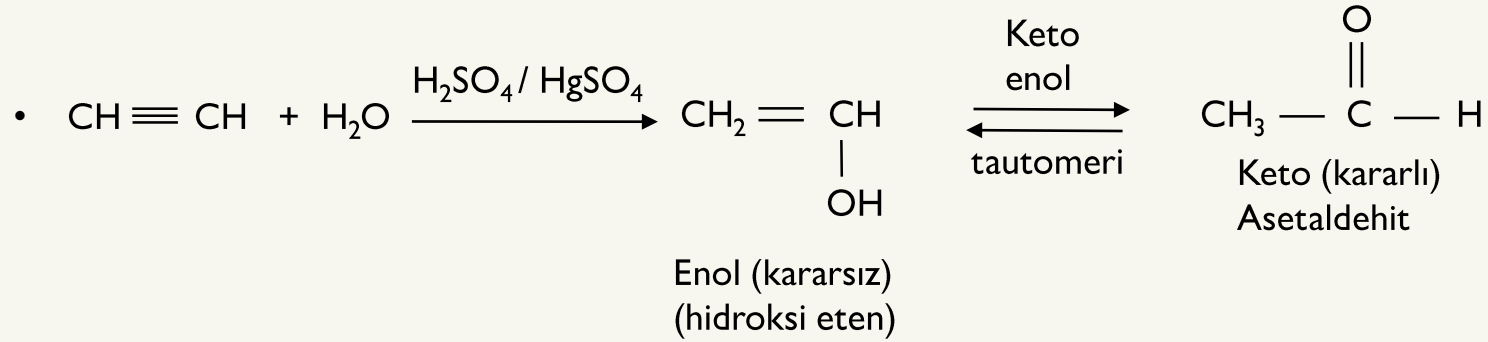


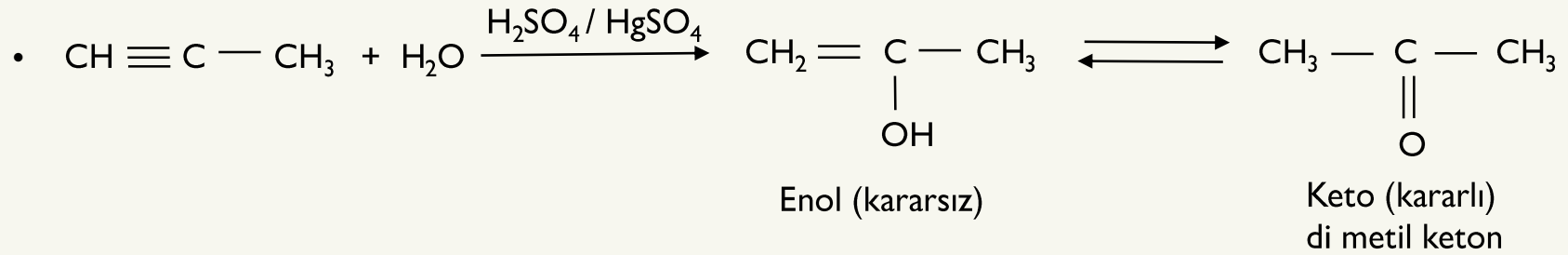
ALDEHİT



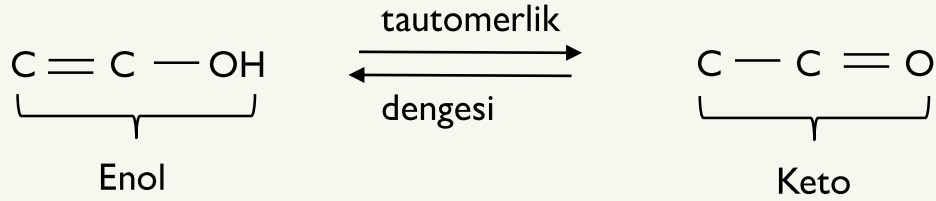
⋮







NOT: Organik kimyada tautomerlik, bir izomerlik şeklidir. $C = C$ çift bağ üzerindeki OH ın yapısındaki hidrojen atomu ile çift bağ yer değiştirir, oluşan bu kararlılık dengesine tautomerlik dengesi denir.

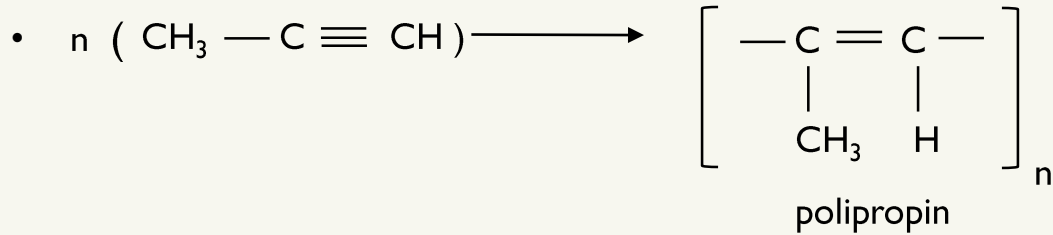
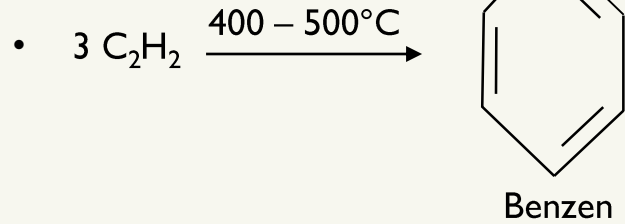


($C = C = C = \text{-----}$) kümüle

tekli bağlar ile dönüşümü sıralanmış ise

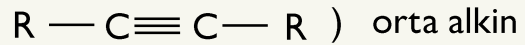
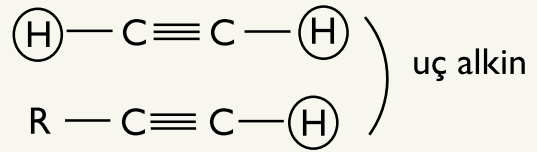
($C = C - C = C - C \text{-----}$) konjuge ikili bağlar adını alırlar.

3) Polimerleşme tepkimesi verirler.

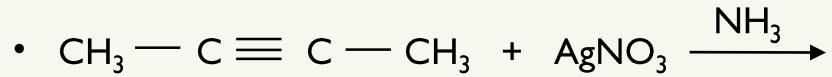


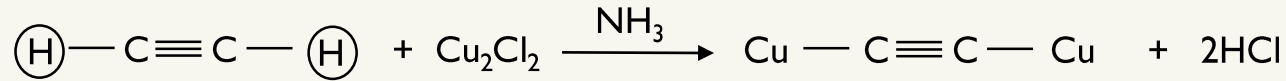
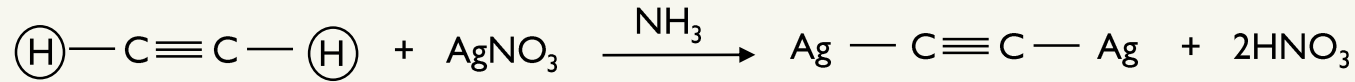
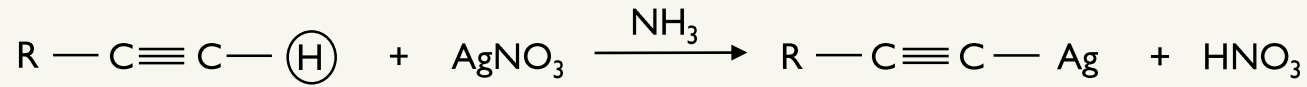
4) Asetilenik protonun yer değiştirme reaksiyonu

- Alkinlerdeki üçlü bağ hidrojenleri zayıf asidiktir.

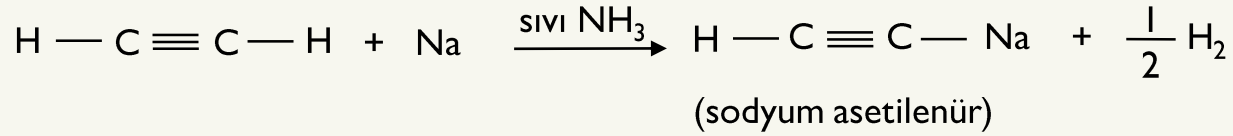


NOT: Uç alkinler NH_3 lü ortamda AgNO_3 veya Cu_2Cl_2 çözeltileri ile yer değiştirme tepkimesi verirler. Alkinler AgNO_3 çözeltisi ile beyaz çökelek, Cu_2Cl_2 çözeltisi ile kırmızı çökelek oluştururlar.



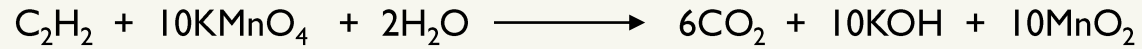


- Alkali metallere (Na, K) uç alkinler yer deęiřtirme tepkimesi verirler ve H₂(g) aıęa ıkar.



5) Alkinlerin Oksitlenmesi

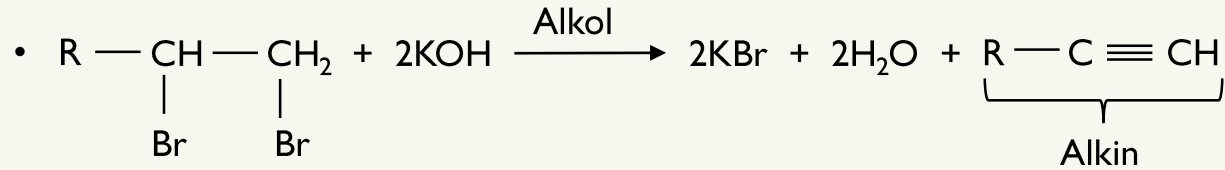
Alkinler derişik KMnO_4 çözeltisiyle bazik ortamda yükseltgenirler.

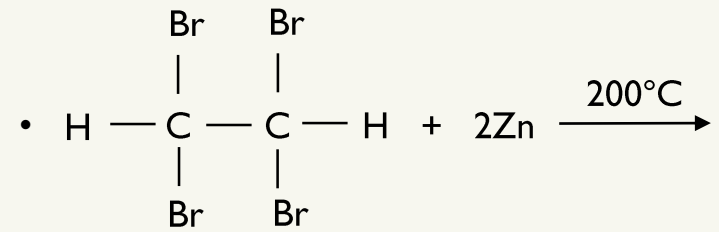
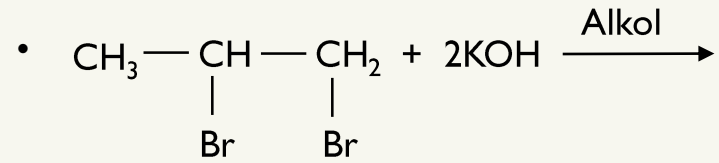


ALKİNLERİN ELDESİ

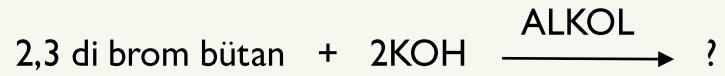
Alkinler eliminasyon ve süstitüsyon tepkimeleri ile elde edilirler.

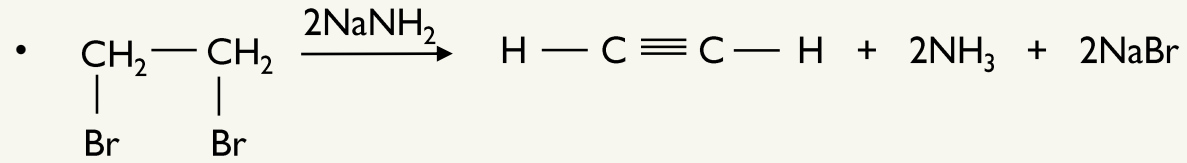
I) Visinal (Komşu) Alkil Dihalojenürlerden (Eliminasyon (Ayrılma))



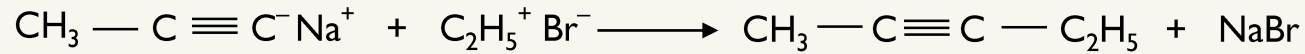
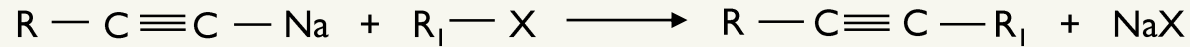


ÖRNEK



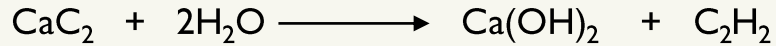
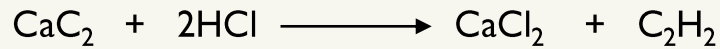
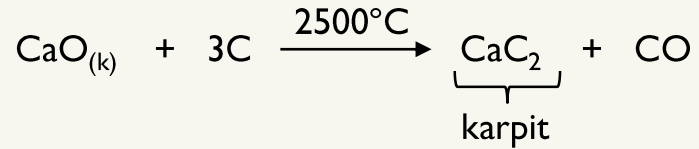
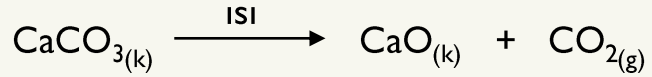


2) Sodyum asetilenür veya potasyum asetilenürlerin alkil halojenürlerle tepkimesi



- Asetilenür, güçlü bir nükleofildir ve alkil halojenürlerle nükleofilik süstitüsyon reaksiyonu verir.

Asetilenin Özel Eldesi



ÖRNEK

C_2H_2 ve C_3H_6 gazlarından oluşan 80 litre karışım, aynı koşullarda 140 litre H_2 gazı ile tamamen doyurulmaktadır. Buna göre karışımda % kaç C_2H_2 gazı vardır?