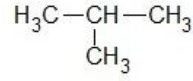
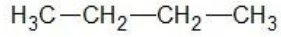


# İZOMERİ

İZOMER: Kapalı formülleri aynı, atomların uzayda üç boyutlu düzenlenmesi bakımından farklı organik bileşikler.



## I. Düzlem üzerindeki formül izomerleri (Yapı izomeri)

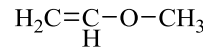
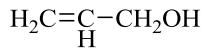
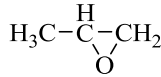
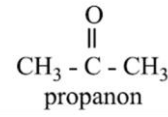
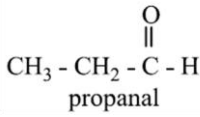
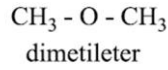
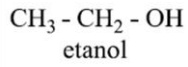
1. Fonksiyonel izomeri
2. Pozisyonel izomeri
  - a. konum izomeri
  - b. iskeletsel izomeri
3. Tautomeri

## II. Stereoizomeri

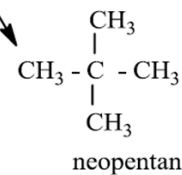
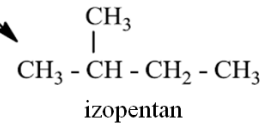
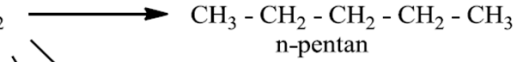
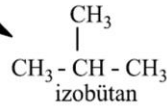
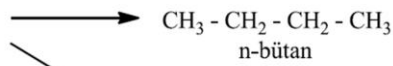
1. Konfigürasyon izomerleri
  - a. Geometrik izomeri → cis/trans (E/Z) izomeri
  - b. Optik izomeri (Kiralite)
2. Konformerler

### Fonksiyonel izomeri

Aynı atomları, aynı sayıda, farklı bağlanma türü ile içeren izomerlerdir.

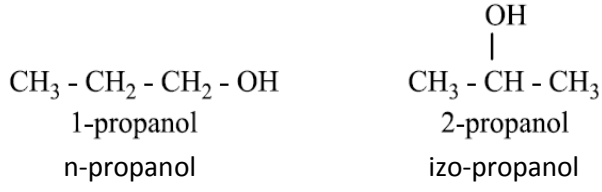


### İskeletsel izomeri

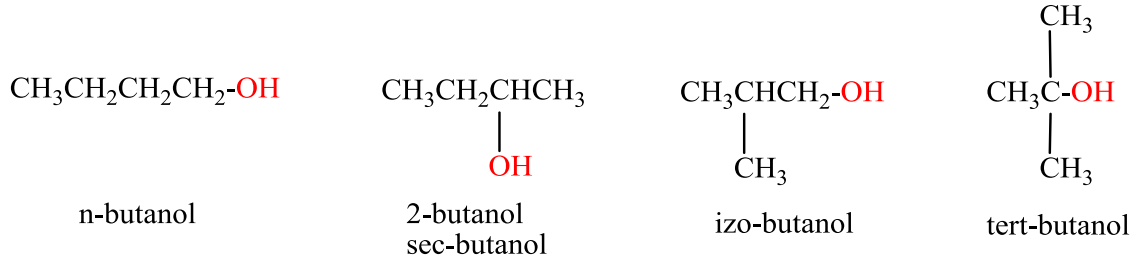


## Konum izomeri

C<sub>3</sub>H<sub>7</sub>OH

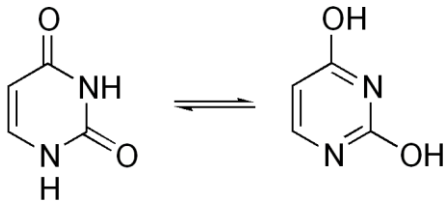
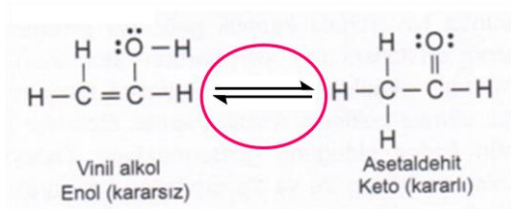


C<sub>4</sub>H<sub>9</sub>OH

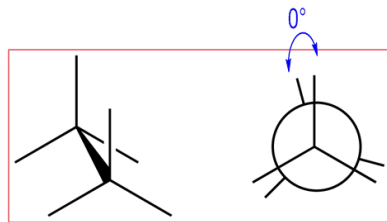


## Tautomeri

Keto-Enol dengesi

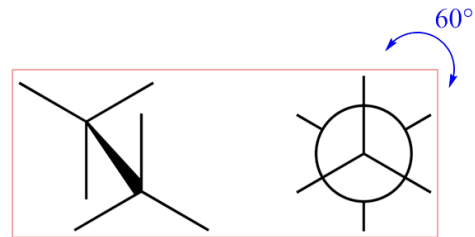


## Stereoizomeri



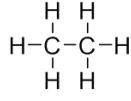
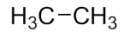
uzay çizgi Newman izdüşüm

ÇAKIŞIK

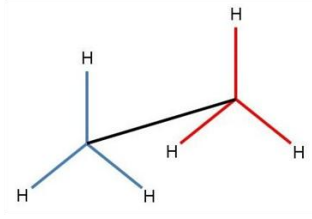


uzay çizgi Newman izdüşüm

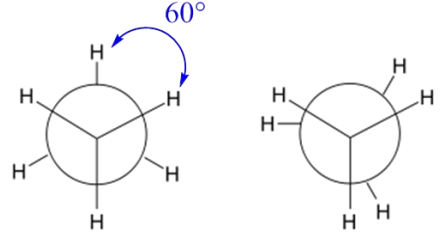
ÇAPRAZ



grafiksel

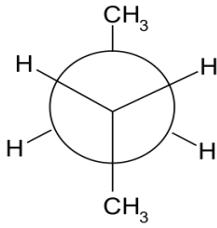
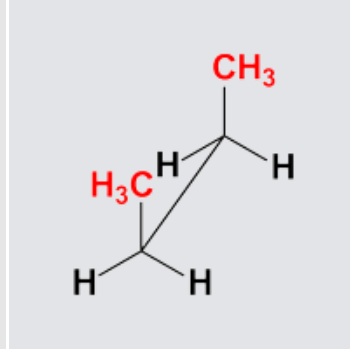
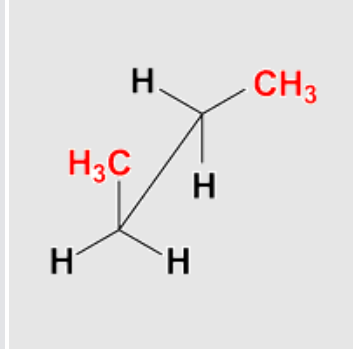
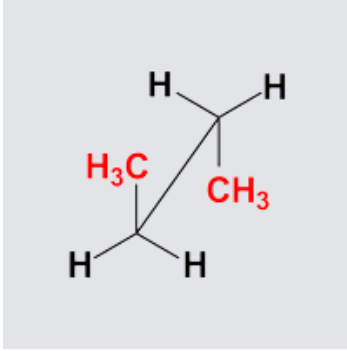


uzay çizgi

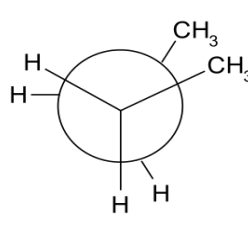


Newman

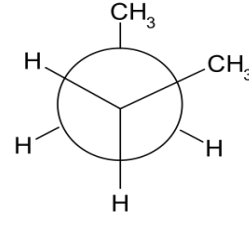
Butan'ın konformerleri:



ANTİ



ÇAKIŞIK



ÇAPRAZ

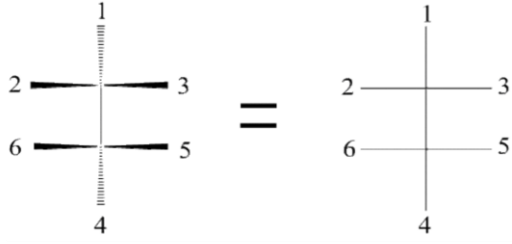
### Konformasyon

$\sigma$  Bağı ile bağlı 2 C atomunun taşıdığı süstitüentler serbest rotasyonla pozisyon deęiřtirebilirler. Bu pozisyon deęiřiklięi sonsuz sayıdadır ve "konformasyon" olarak ifade edilir.

**Konformerler**,  $\sigma$  baęı etrafında dönmeyle oluşabilen stereozomerlerdir.

## Fischer projeksiyonu

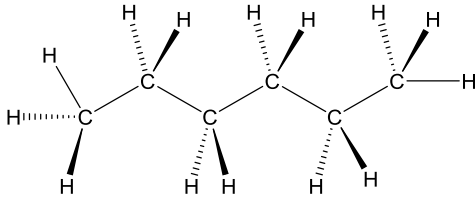
3D --> 2D



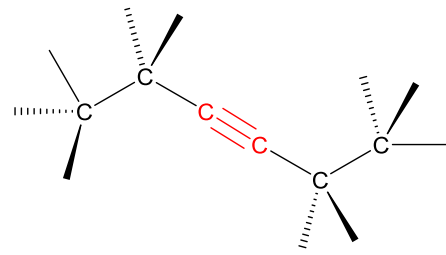
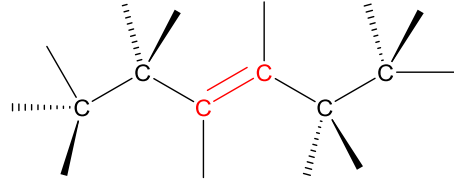
Yatay çizgiler düzlemin üstünde, dikey çizgiler düzlemin altında kalan grupları gösterir.

## Hidrokarbonlarda düz zincirler

Doymuş

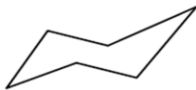
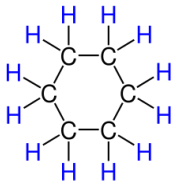


Doymamış



## Sikloheksanda konformasyon

C<sub>6</sub>H<sub>12</sub>



koltuk  
sandalye



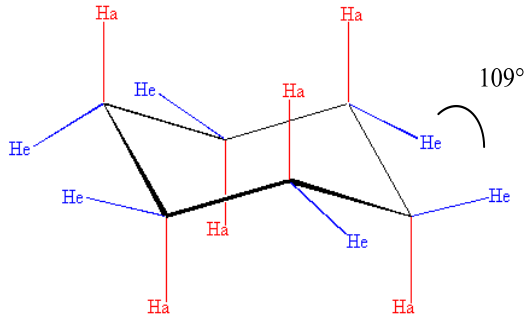
yarı koltuk



twist



kayık

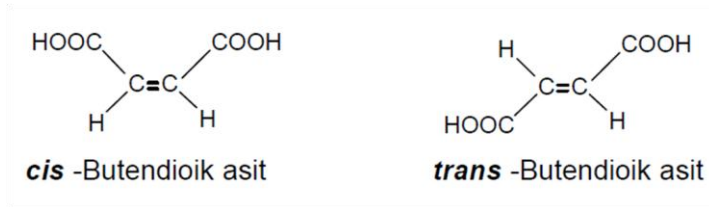


## Geometrik İzomeri

*cis/trans* izomeri

*Z/E* izomeri

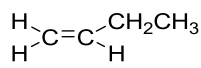
### 1. Etilenik bileşiklerde *cis/trans* izomeri



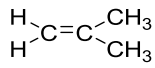
- Atomların bağlanma tarzı aynı
- = bağın yeri aynı
- Atomların uzaydaki düzeni FARKLI -----> **Stereoizomerler**

**Soru:** Aşağıdaki bileşiklerin hangilerinde geometrik izomeri yoktur? Neden? Açıklayınız.

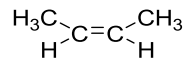
- 1,2-dikloroetilen
- 1,2-difluoroetilen
- 2-büten
- 1,1-difluoroetilen
- Etilen



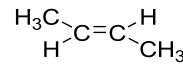
1-Buten



2-Metil-1-propen



*cis*-2-Buten



*trans*-2-Buten

Stereoizomerler

*cis*- ve *trans*- (=) bağın **konfigürasyonunu** tanımlar.

## Z/E İzomerisi

(=) bağı yapan atomlara bağlı büyük / öncelikli grupların konumları karşılaştırılır.

Düzlemin aynı tarafında → **Z** (*zusammen* = beraber)

farklı tarafında → **E** (*entgegen* = karşıt)

Yüksek atom ağırlığı taşıyanlar önceliklidir:  $I > Br > Cl > F > O > N > C > H$

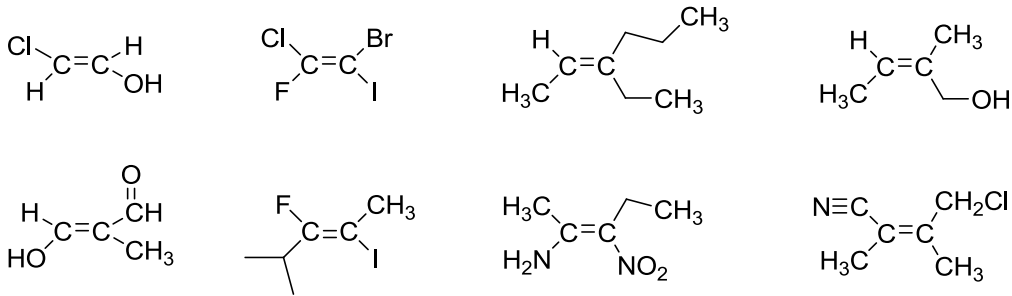
**Soru:** Aşağıdaki bileşiklerin Z ya da E konfigürasyonunda olduğunu belirtiniz.



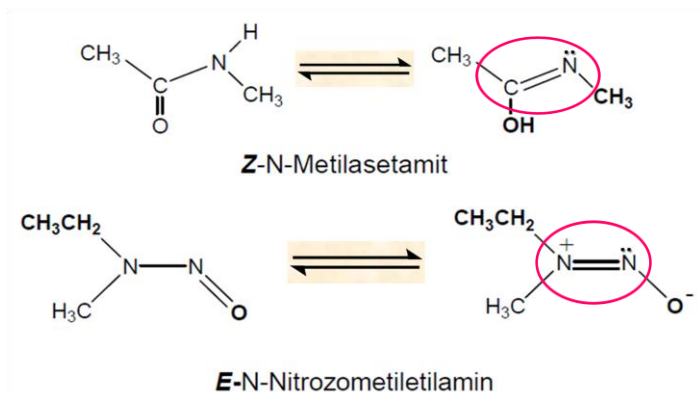
## Chan-Ingold-Prelog Öncelik Sistemi (CIP)

1. İzomerlerin taşıdığı atomlardan büyük atom ağırlığı olan önceliklidir.
2. = bağı karbonlarının taşıdığı ilk atomlar aynı ise bir sonraki.... bir sonraki atomların ağırlığına bakılarak karar verilir.
3. = veya ≡ bağı taşıyan gruplarda, bu bağların taşıdığı atomlar bağı sayısı kadar o atoma tek bağı ile bağlanmış gibi değerlendirilir.

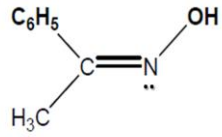
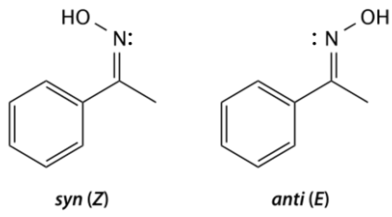
**Soru:** Aşağıdaki bileşiklerin Z ya da E konfigürasyonunda olduğunu belirtiniz.



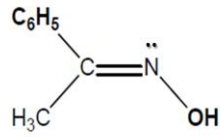
## Azotlu yapılarda Z/E izomeri



## Sin/anti izomerisi



*sin*-Asetofenon oksim



*anti*-Asetofenon oksim

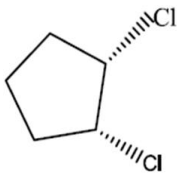
## 2. Halkalı bileşiklerde geometrik izomeri



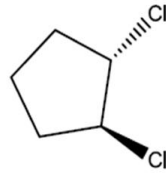
*trans*-1,2-dimetilsiklopropan



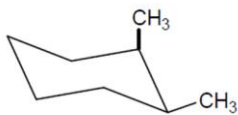
*cis*-1,2-dimetilsiklopropan



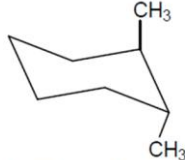
*cis*-1,2-diklorsiklopentan



*trans*-1,2-diklorsiklopentan



*cis* -1,2-Dimetilsikloheksan



*trans* -1,2-Dimetilsikloheksan