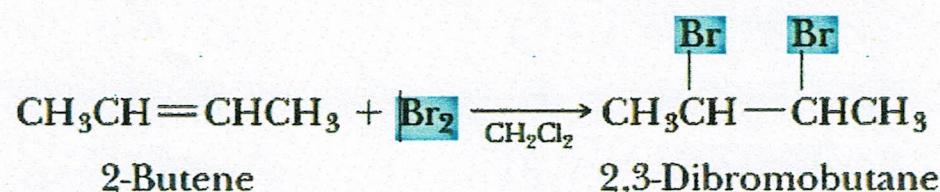
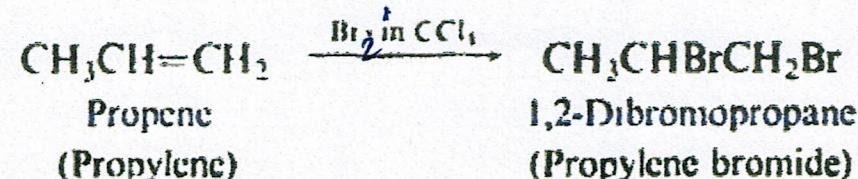
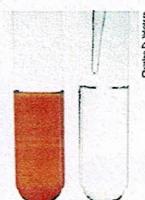


31

Example:

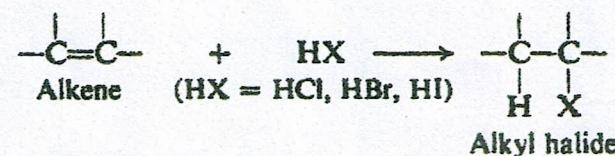
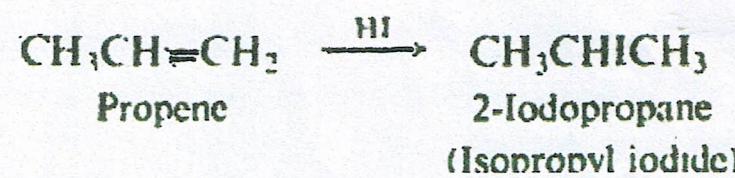
رَجَلٌ لَهُ حَادِي بَرْمَ



A solution of bromine in dichloromethane is red. Add a few drops of an alkene and the red color disappears.

6.6 Addition of hydrogen halides. Markovnikov's rule

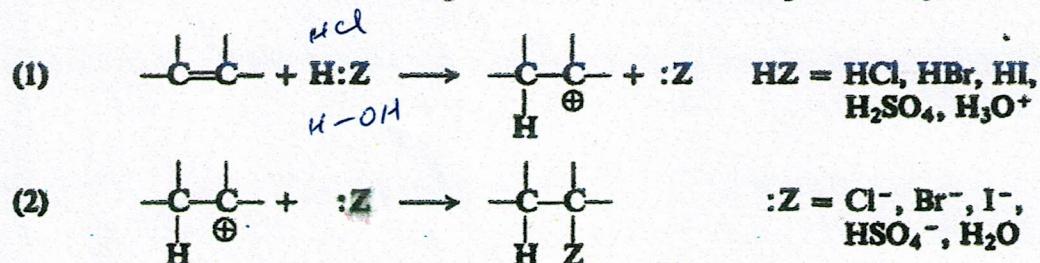
An alkene is converted by hydrogen chloride, hydrogen bromide, or hydrogen iodide into the corresponding alkyl halide.

*Examples:*

البرومات

Mechanism of addion reaction (Markonikov)

Addition of the acidic reagent, HZ , is believed to proceed by two steps:

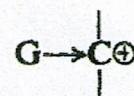


Step (1) involves transfer of hydrogen ion from $:Z$ to the alkene to form a carbonium ion; this is a transfer of a proton from one base to another.

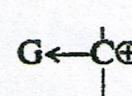
② Addition of ② to carbonium ion
Carbonium ions

the Carbonium ion, (Carbo ation) a group of atoms that contains a carbon atom bearing only six electrons. Carbonium ions are classified as primary, secondary, or tertiary after the carbon bearing the positive charge. They are named by use of the word cation. For example

Carbonium Ion Stability

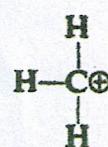


G releases electrons:
disperses charge,
stabilizes cation

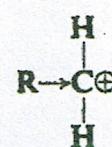


G withdraws electrons:
intensifies charge,
destabilizes cation

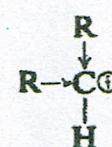
The facts are, then, that *the greater the number of alkyl groups, the more stable the carbonium ion.*



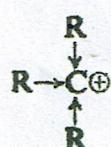
Methyl cation



Primary cation



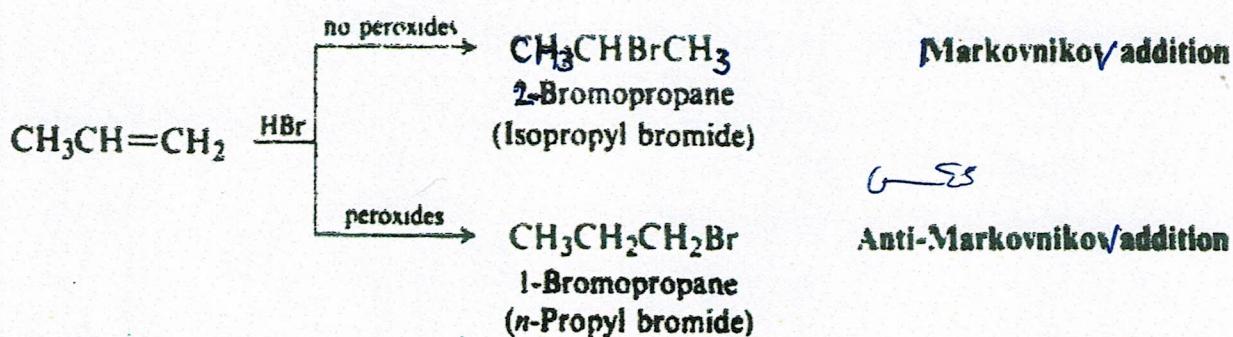
Secondary cation



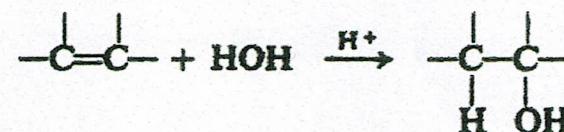
Tertiary cation

Electron release: Disperses charge, stabilizes ion

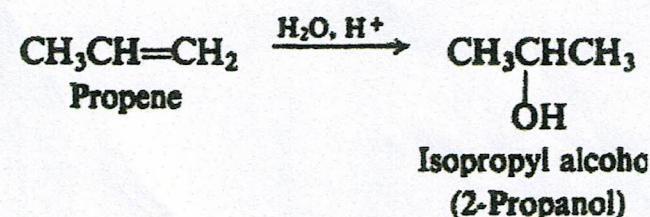
نهاية حاردة



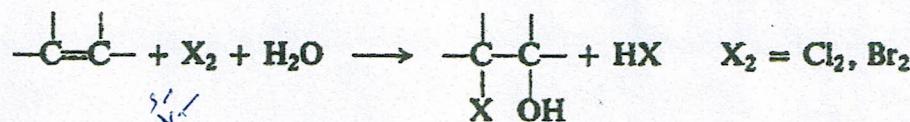
5. Addition of water. Hydration. Discussed in Sec. 6.9.



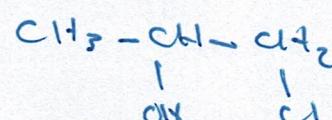
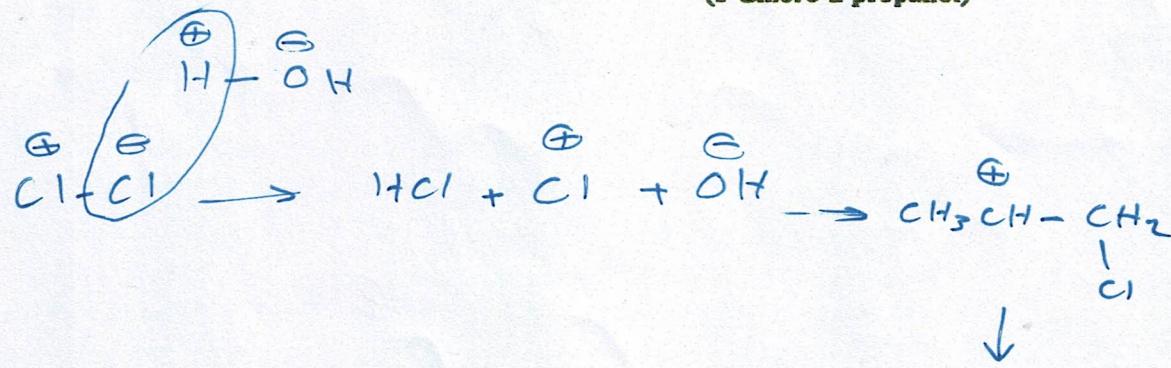
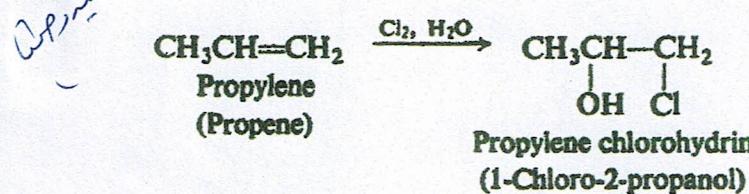
Example:



6. Halohydrin formation. Discussed in Sec. 6.14.



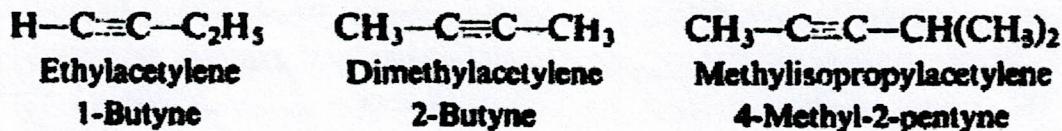
Example:



Alkyne

Nomenclature:

The alkynes are named according to two systems. In one, they are considered to be derived from acetylene by replacement of one or both hydrogen atoms by alkyl groups.



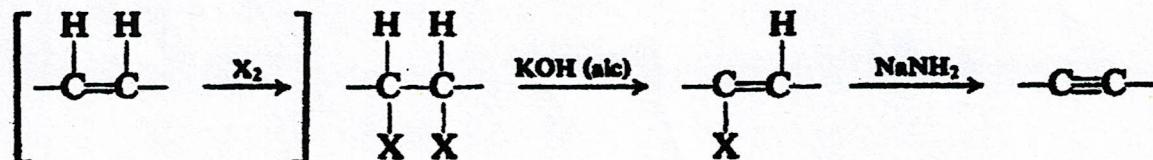
For more complicated alkynes the IUPAC names are used. The rules are exactly the same as for the naming of alkenes, except that the ending -yne replaces

-ene. The parent structure is the longest continuous chain that contains the triple bond, and the positions both of substituents and of the triple bond are indicated by numbers. The triple bond is given the number of the *first* triply-bonded carbon encountered, starting from the end of the chain nearest the triple bond.

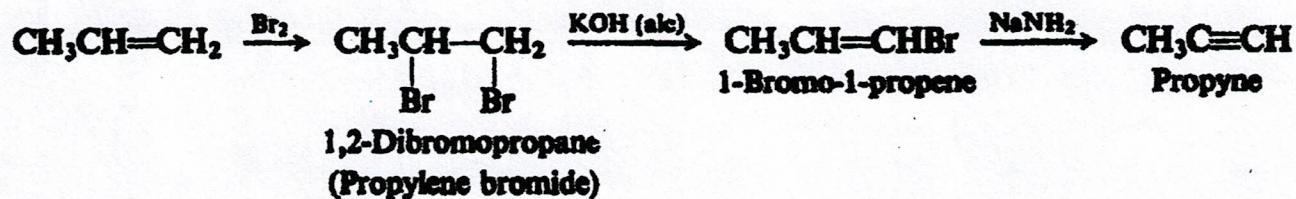
Name	Formula
Acetylene	$\text{HC}\equiv\text{CH}$
Propyne	$\text{HC}\equiv\text{CCH}_3$
1-Butyne	$\text{HC}\equiv\text{CCH}_2\text{CH}_3$
1-Pentyne	$\text{HC}\equiv\text{C}(\text{CH}_2)_2\text{CH}_3$
2-Butyne	$\text{CH}_3\text{C}\equiv\text{CCH}_3$
2-Pentyne	$\text{CH}_3\text{C}\equiv\text{CCH}_2\text{CH}_3$
3-Methyl-1-butyne	$\text{HC}\equiv\text{CCH}(\text{CH}_3)_2$
2-Hexyne	$\text{CH}_3\text{C}\equiv\text{C}(\text{CH}_2)_2\text{CH}_3$
3-Hexyne	$\text{CH}_3\text{CH}_2\text{C}\equiv\text{CCH}_2\text{CH}_3$

PREPARATION OF ALKYNES

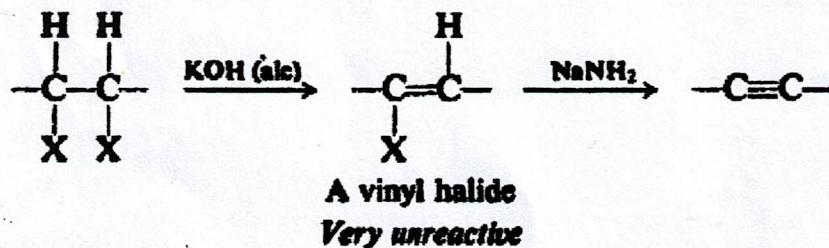
1. Dehydrohalogenation of alkyl dihalides. Discussed in Sec. 8.6.



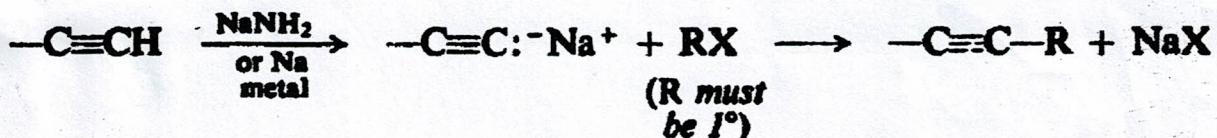
Example:



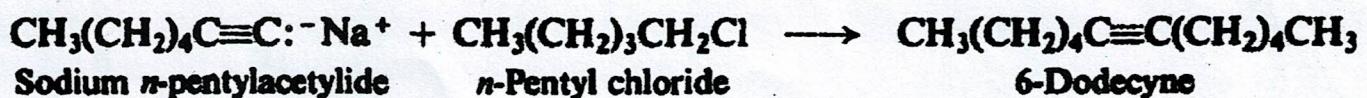
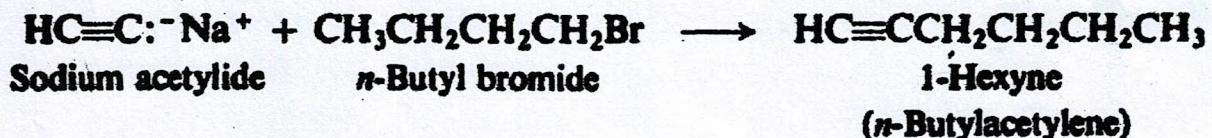
Dehydrohalogenation can generally be carried out in two stages as shown.



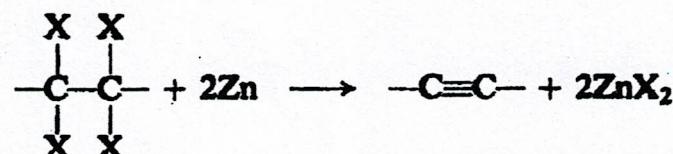
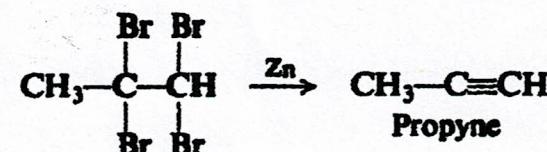
2. Reaction of sodium acetylides with primary alkyl halides. Discussed in Sec. 8.12



Examples:

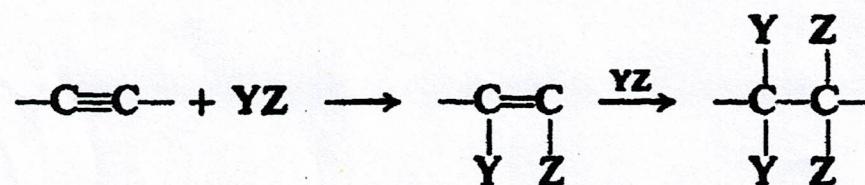


3. Dehalogenation of tetrahalides. Discussed in Sec. 8.6.

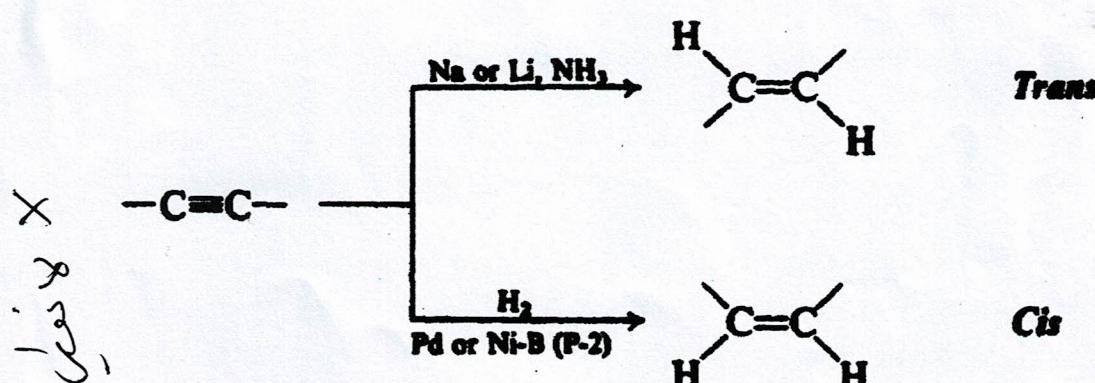
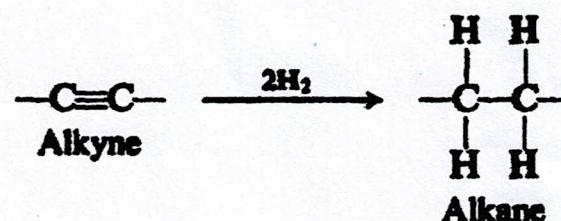
*Example:*

REACTIONS OF ALKYNES

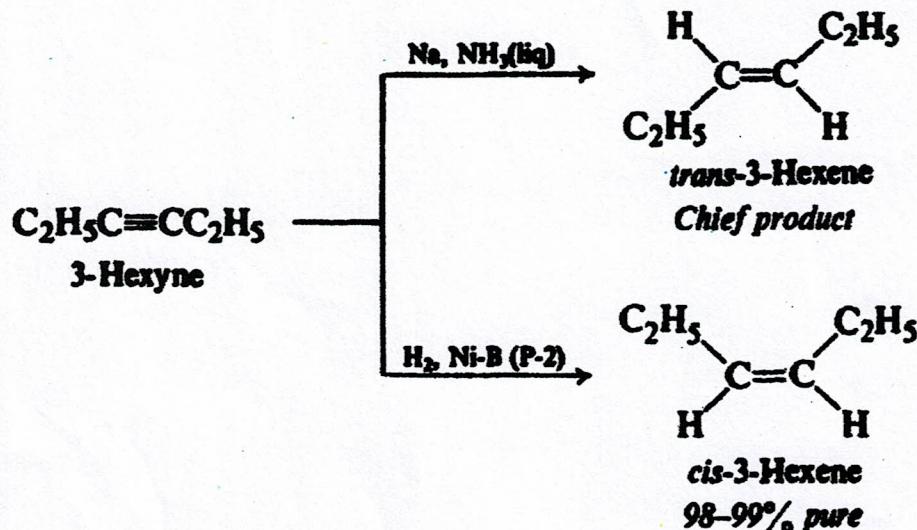
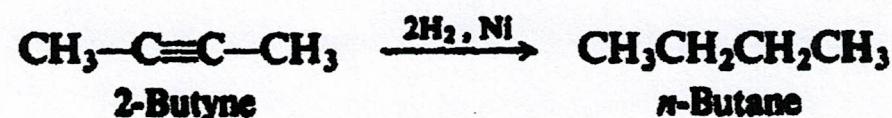
Addition Reactions



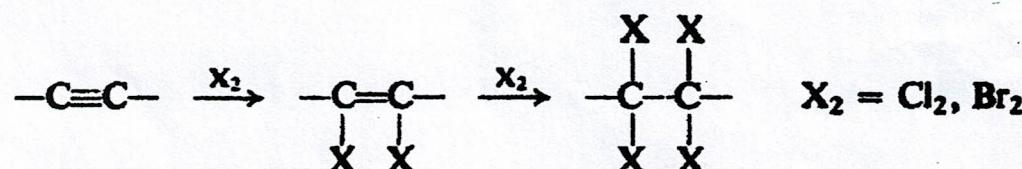
1. Addition of hydrogen. Discussed in Sec. 8.9.



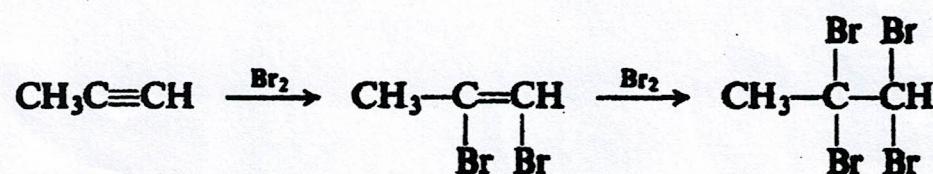
Examples:



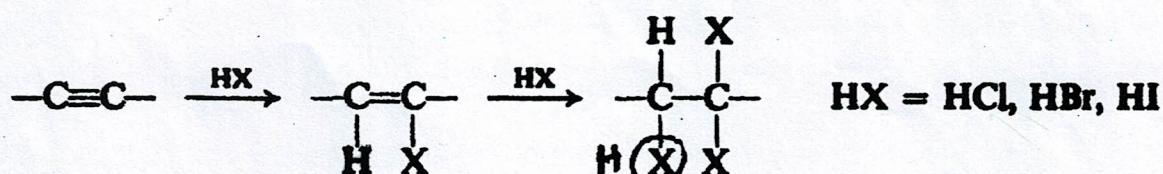
2. Addition of halogens. Discussed in Sec. 8.8.



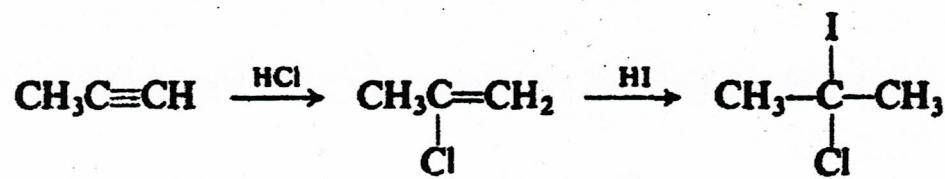
Example:



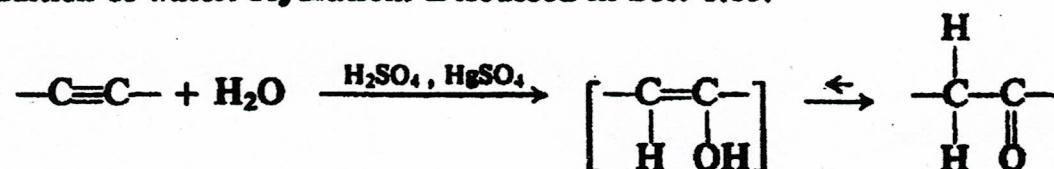
3. Addition of hydrogen halides. Discussed in Sec. 8.8.



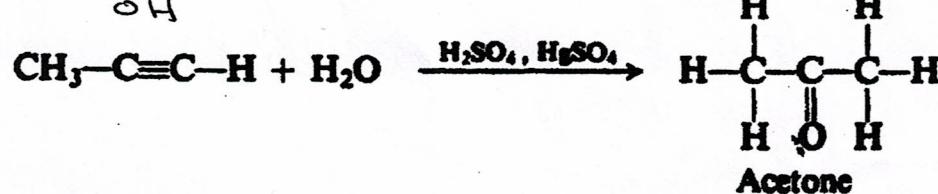
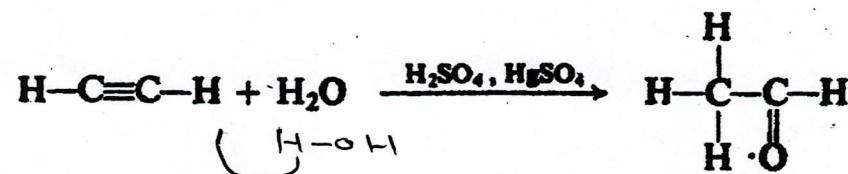
Example:



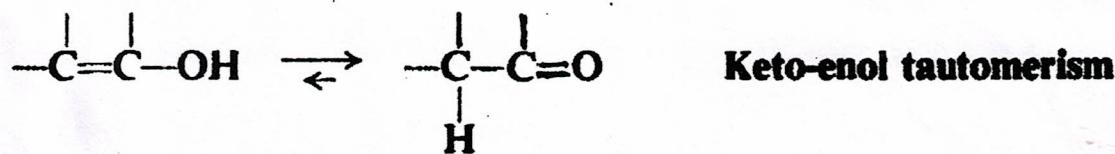
4. Addition of water. Hydration. Discussed in Sec. 8.13.



Examples:



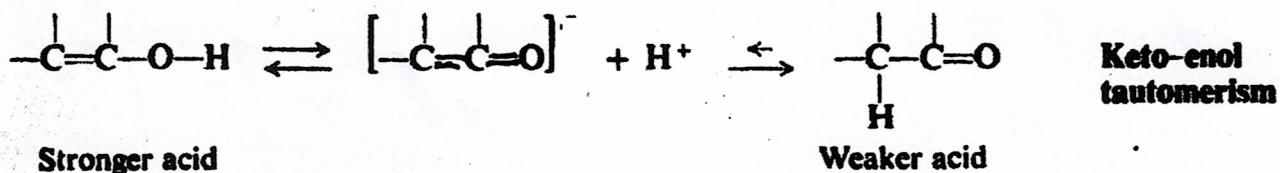
Acetone



Enol structure

Keto structure

↓
↓
↓



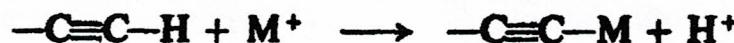
Stronger acid

Weaker acid

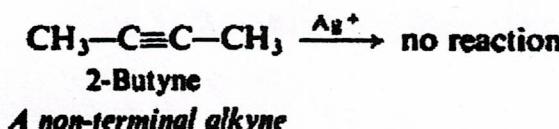
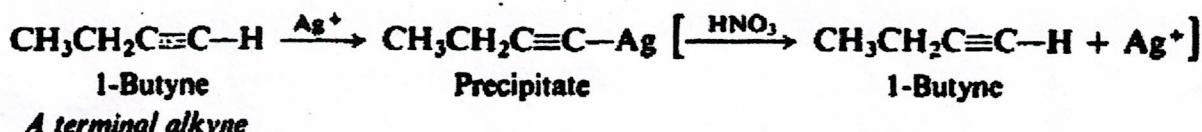
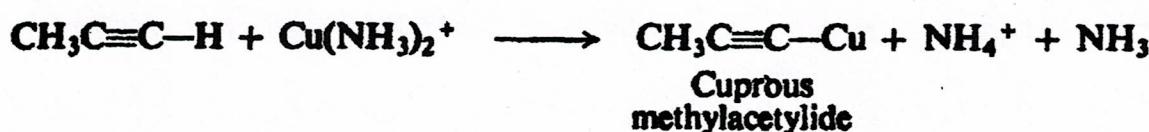
Reactions as Acids



5. Formation of heavy metal acetylides. Discussed in Sec. 8.11.



Examples:



6. Formation of alkali metal acetylides. Discussed in Sec. 8.10.

Examples:

