

Chapter 17 Organic Chemistry**Unsaturated Compounds: Alkenes and Alkynes**Unsaturated compounds

- have fewer hydrogen atoms attached to the carbon chain than alkanes
- are alkenes with C=C double bonds
- are C≡C with triple C≡C bonds

Naming Alkenes and AlkynesThe names of alkenes and alkynes

- use the corresponding alkane names
- change the end to ene for alkenes (double bond)
- change the end to yne for alkynes (triple bond)

Naming Alkenes and Alkynes

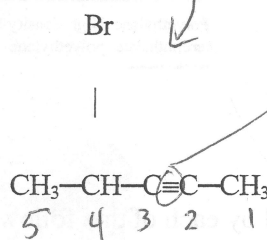
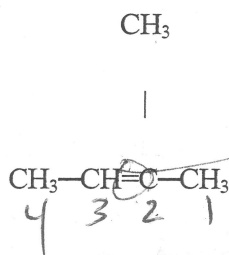
TABLE 17.5 Comparison of Names for Alkanes, Alkenes, and Alkynes

Alkane	Alkene	Alkyne
H ₃ C—CH ₃	H ₂ C=CH ₂	HC≡CH
Ethane	Ethene (ethylene)	Ethyne (acetylene)
CH ₃ —CH ₂ —CH ₃	CH ₃ —CH=CH ₂	CH ₃ —C≡CH
Propane	Propene (propylene)	Propyne

© 2011 Pearson Education, Inc.

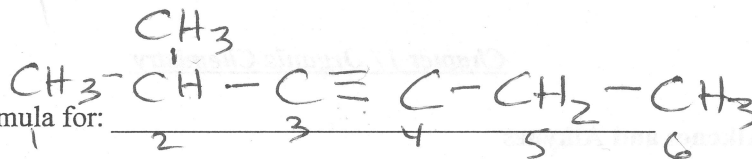
Naming Alkenes and Alkynes

1. Name the longest carbon chain that contains a double or triple bond.
2. # the carbon chain starting from the end nearer the double or triple bond
3. Give the location and name of each substituent (ABC order) as a prefix to the alkene or alkyne name

Example of Writing an Alkene NameWrite the IUPAC name for the following: 2-methyl-2butene / 4-bromo-2-pentyne

Learning Check

Draw the condensed structural formula for:



2-methyl-3-hexyne.

Polymers

Polymers are

- large, long-chain molecules
- found in nature, including cellulose in plants, starches in food, and proteins and DNA in the body
- also made synthetically, for example, polyethylene and polystyrene, Teflon, and nylon
- made up of small repeating units called monomers
- made by reaction of small alkenes

Synthetic Polymers in Everyday Items: PVC pipe, saran wrap, styrofoam, etc.

Polymerization

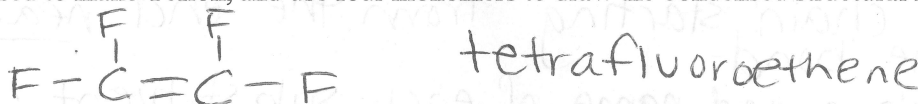
- In polymerization, small repeating called monomers join to form a long-chain polymer.

Some Alkenes and Their Polymers: $\text{CH}_2=\text{CH}_2$ ethene

Learning Check

What is the name and condensed structural formula of the starting monomer for polyethylene? ethene; $\text{CH}_2=\text{CH}_2$

Name the monomer used to make Teflon, and use four monomers to draw the condensed structural formula of a portion of a Teflon polymer.



Recycling Plastics

- Recycling is simplified by using Codes found on plastic items



1 PETE	2 HDPE	3 PVC	4 LDPE	5 PP	6 PS	7 O
Polyethylene terephthalate	High-density polyethylene	Polyvinyl chloride	Low-density polyethylene	Polypropylene	Polystyrene	Other

© 2011 Pearson Education, Inc.

Learning Check

What type of plastic is indicated by each of the following codes?

A. PVC

B. polypropylene

C. polystyrene