

Bonding in Alkynes

Alkynes are *unsaturated* hydrocarbons.

General molecular formula: C_nH_{2n-2}

Alkynes contain one carbon-carbon triple-bond.

The smallest alkyne is acetylene (or ethyne), C_2H_2 .

1. Draw the line structure of C_2H_2 and describe its three-dimensional shape; i.e. planar, bent, pyramidal, linear, curved, etc.

Structure

Shape: _____

2. What is the orbital hybridization of the carbon atoms? Circle all that apply:

sp^3

sp^2

sp

sp_x

sp_y

sp_z

3. What is the percent s-character in the hybrid orbital of carbon? _____%

4. Draw the atomic hybrid orbital diagram of the atom corresponding to the hybridization of one carbon in acetylene.

5. Draw and label all σ and π bonds in acetylene.

