

Ch 8

Sec 8.4

HW: Sec Asses 32,36,37 Rev Con 57,58,79

obj: Use electronegativity values to classify a bond as polar, nonpolar or ionic.

Classifying Covalent Bonds

- 2 Types of Covalent Bonds

1) Nonpolar Covalent Bond

- Bond btw atoms w/ the same electronegativity.

- The electrons btw the atoms are shared equally.

* The electron pair is equidistant btw the two atoms.

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* The diatomic molecules ($H_2, N_2, O_2, F_2, Cl_2, Br_2, I_2$) have nonpolar bonds.

2) Polar Covalent Bond

- Bond btw atoms w/ different electronegativities

- The electrons btw the atoms are not shared equally.

* The electrons are controlled by the atom w/ the larger electronegativity.

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- Because the electrons are not shared equally the atoms gain a small charge.

$$\delta^+ \text{H} - \overset{\delta^-}{\underset{\delta^+}{\text{O}}} \text{H}$$

- Determine the type of Covalent Bond.

- * Degree of Polarity
- * Find the difference btw the electronegativities of the atoms.

NO $\cdot\ddot{\text{N}}::\ddot{\text{O}}:$ $:\text{N}=\ddot{\text{O}}:$

O - N
3.5 - 3.0
.5 Degree of Polarity.

Degree of Polarity

0 - .4 \Rightarrow non polar Bond
.4 - 1.0 \Rightarrow Slightly polar Bond
1.0 - 2.0 \Rightarrow Very polar Bond
2.0 \Rightarrow Ionic Bond

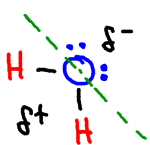
HCl H: $\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{Cl}}}$: H- $\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{Cl}}}$:

Cl - 3.16
H - 2.2
.96

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Polar Molecules

- A polar molecule is one that has a region w/a δ^- charge and a region w/a δ^+ charge



Polar Molecules

- 1) Polar Bond btw atoms
- 2) Proper Shape

- Not all molecules w/ Polar bonds are polar molecules



$$\text{O} - 3.5$$

$$\text{C} - 2.55$$

$$\underline{\quad .95}$$

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