

[TP] Substances A and B combine to form substance C in the balanced chemical equation

$$3\,A + 2\,B \rightarrow 4\,C$$

If 12 mol A and 6 mol B react completely, how many moles of C are formed?

25% 1. 16 mol C
25% 2. 9 mol C
25% 3. 6 mol C
25% 4. None of the above

Response Counter 10

Lecture 11 CH101 A1 (MWF 9 am)

Monday, October 3, 2016

- Review: Stoichiometry: Amounts in chemical transformations
- Limiting reagent
- Percent yield

Begin ch6

- Hydrogen bonding in ice and water

Next lecture: Heat versus temperature; heat capacity; vapor pressure and boiling; intermolecular forces

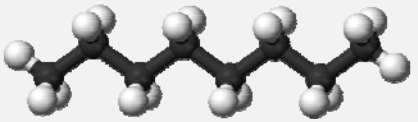
Stoichiometry: Chemical amounts

Intense exercise uses lactic acid, $CH_3CH(OH)C(O)OH$, as a combustion fuel. How many moles of carbon dioxide are formed for each mole of lactic acid "burned" completely in the oxygen of air, forming CO_2 and water?

Strategy: Each C makes one CO_2.

[Quiz] A primary component of gasoline is octane, C_8H_{18}, shown in the figure. How many moles of water are formed for each mole of octane "burned" completely in the oxygen of air?

20% 1. 3 mol water
20% 2. 6 mol water
20% 3. 9 mol water
20% 4. 12 mol water
20% 5. None of the above



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Limiting reagent

Our Learning Assistants are starting a sandwich making business.

To start, they will offer only a single option …

A cheese club sandwich on whole wheat bread.

With 15 slices of bread and 6 slices of cheese, …

How many sandwiches can they make?

How much of each ingredient will be left over?

Let's see…

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Limiting reagent

3 Bread + 2 Cheese → 1 Sandwich

Balanced chemical equation is the "recipe"

Amounts of reactants is how much can be made

Limiting is which reactant makes the least

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[TP] Substances A and B combine to form substance C in the balanced chemical equation

$$3\,A + 2\,B \rightarrow 4\,C$$

If 12 mol A and 6 mol B react completely, how many moles of A remain unreacted?

25% 1. 0 mol A
25% 2. 3 mol A
25% 3. 6 mol A
25% 4. None of the above

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Reaction yield

Reaction yield is the proportion of the actual yield to the theoretical yield.

1. Determine the limiting reagent.
2. Determine the theoretical (maximum possible) yield.
3. Use the actual yield to compute the reaction yield

[Quiz] Substances A and B combine to form substance C in the balanced chemical equation

$$2\ A + B \rightarrow 2\ C$$

8 mol A and 5 mol B react to form 6 mol C. The % yield is ...

20% 1. 100%
20% 2. 75%
20% 3. 60%
20% 4. 40%
20% 5. None of these

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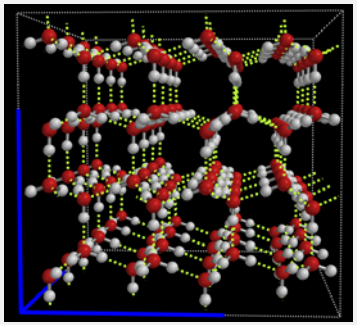
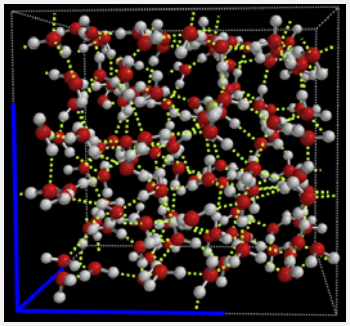
H-bonding in ice and water

Ice and water



Ice and water



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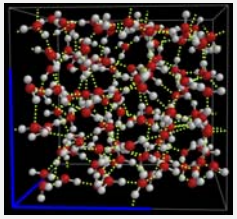
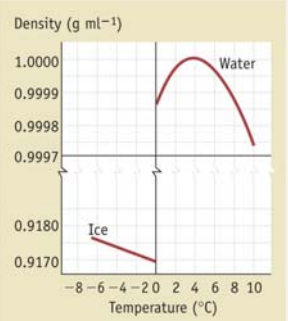
Effect of *T* on water density

Why does the density rise from 0 ˚C to 4 ˚C?

Why does the density fall from 4 ˚C to higher temperatures?





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