Solutions and Other Mixtures

Mixtures of solids and liquids are all around us, but are all mixtures classified in the same way?

1. List at least five mixtures that you have encountered today. List the components of each mixture in general terms, if possible. Remember, the mixture could be two solids, a liquid and a solid, or two liquids. For example: mud is a mixture of soil and water; raisin bran cereal is a mixture of bran flakes and raisins.

   a. _______________________________________________________________________________

   b. _______________________________________________________________________________

   c. _______________________________________________________________________________

   d. _______________________________________________________________________________

   e. _______________________________________________________________________________

1. a. Which of the mixtures in your list are heterogeneous mixtures? Which are homogeneous?

   _______________________________________________________________________________

   _______________________________________________________________________________

   _______________________________________________________________________________

   b. What is the difference between a heterogeneous and a homogeneous mixture?

   _______________________________________________________________________________

   _______________________________________________________________________________
Chapter 7: Chemical Reactions

SECTION: THE NATURE OF CHEMICAL REACTIONS
1. Yes, this is an example of a chemical reaction.
2. No, this is not an example of a chemical reaction. It is an example of a physical change.
3. Yes, this is an example of a chemical reaction.
4. No, this is not an example of a chemical reaction. It is an example of a physical change.

SECTION: CHEMICAL EQUATIONS
1. Model B has the same number of atoms on each side, but model A does not.
2. In model A, some atoms are not accounted for, according to the law of conservation of mass.
3. Changing the subscript on the product indicates that the product is a compound other than water.

SECTION: REACTION TYPES
1. b
2. c
3. d
4. a

SECTION: REACTION RATES AND EQUILIBRIUM
1. c
2. Small sticks used as kindling catch fire more quickly than larger logs.
3. Atoms of liquid zinc at its melting point will react faster with HCl.

Chapter 8: Solutions

SECTION: SOLUTIONS AND OTHER MIXTURES
1. a.–e. Answers will vary. Be sure each is a mixture with its components listed.
2. a. Answers will vary depending on mixtures listed. Heterogeneous mixtures should be those that will have varying amounts of substance in each sample.
b. In a heterogeneous mixture, the amount of each substance varies with each sample of the mixture. In a homogenous mixture, each sample of mixture has the same composition or amount of each substance.

SECTION: HOW SUBSTANCES DISSOLVE
1. The sugar dissolves more quickly before ice is added. If ice is added first, the sugar does not dissolve as quickly.
2. The undissolved sugar settles to the bottom of the glass.
3. I can stir the tea or lemonade to help the sugar on the bottom of the glass dissolve.

SECTION: SOLUBILITY AND CONCENTRATION
1. a. water
   b. sodium hypochlorite, acetic acid, sodium, carbon dioxide. No, in club soda, both sodium and carbon dioxide are dissolved in water.
2. The label would remain the same because the concentration is given as a percentage, which remains unchanged for any volume of solution.
3. Yes, the masses of solute would vary with the volumes of solution.

Chapter 9: Acids, Bases, and Salts

SECTION: ACIDS, BASES, AND PH
1. acid
2. base
3. base
4. acid
5. base
6. Answers may vary. Sample answer: Acids are sour tasting; acids cause an open cut to sting.
7. Answers may vary. Sample answer: Bases are not sour tasting; bases are slippery when dissolved in water.

SECTION: REACTIONS OF ACIDS WITH BASES
1. HCl + NaOH → NaCl + H₂O
2. HCl + KOH → KCl + H₂O
3. HNO₃ + KOH → KNO₃ + H₂O
4. H₂SO₄ + Ca(OH)₂ → CaSO₄ + 2H₂O

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