***Chemistry***

**1: Essential Ideas**

**1.3: Physical and Chemical Properties**

27. Classify each of the following changes as physical or chemical:

(a) condensation of steam

(b) burning of gasoline

(c) souring of milk

(d) dissolving of sugar in water

(e) melting of gold

Solution

(a) physical; (b) chemical; (c) chemical; (d) physical; (e) physical

29. The volume of a sample of oxygen gas changed from 10 mL to 11 mL as the temperature changed. Is this a chemical or physical change?

Solution

physical

31. Explain the difference between extensive properties and intensive properties.

Solution

The value of an extensive property depends upon the amount of matter being considered, whereas the value of an intensive property is the same regardless of the amount of matter being considered.

33. The density (d) of a substance is an intensive property that is defined as the ratio of its mass (m) to its volume (V).



Considering that mass and volume are both extensive properties, explain why their ratio, density, is intensive.

Solution

Being extensive properties, both mass and volume are directly proportional to the amount of substance under study. Dividing one extensive property by another will in effect “cancel” this dependence on amount, yielding a ratio that is independent of amount (an intensive property).

This resource file is copyright 2015, Rice University. All Rights Reserved.