

Exercise 1.17

A solid white substance A is heated strongly in the absence of air. It decomposes to form a new white substance B and a gas C. The gas has exactly the same properties as the product obtained when carbon is burned in an excess of oxygen. Based on these observations, can we determine whether solids A and B and gas C are elements or compounds?

Solution

Burning carbon in an excess of oxygen produces a substance with both carbon and oxygen—a compound. Since gas C has the same properties, it has to be a compound with both carbon and oxygen. Gas C came from substance A, so substance A also has to be a compound with carbon and oxygen. There's not enough information to say anything about substance B.