Exercise 1.19

In the process of attempting to characterize a substance, a chemist makes the following observations: The substance is a silvery white, lustrous metal. It melts at 649 °C and boils at 1105 °C. Its density at 20 °C is 1.738 g/cm^3. The substance burns in air, producing an intense white light. It reacts with chlorine to give a brittle white solid. The substance can be pounded into thin sheets or drawn into wires. It is a good conductor of electricity. Which of these characteristics are physical properties, and which are chemical properties?

Solution

The substance is a silvery white, lustrous metal—physical property.

It melts at 649 °C and boils at 1105 °C—physical properties.

Its density at 20 °C is 1.738 g/cm^3—physical property.

The substance burns in air, producing an intense white light—chemical property.

It reacts with chlorine to give a brittle white solid—chemical property.

The substance can be pounded into thin sheets or drawn into wires—physical property.

It is a good conductor of electricity—physical property.