Tellurium Encyclopedia Article

Tellurium

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Tellurium

Tellurium is the fourth element in Group 16 of the **periodic table**, a group of elements sometimes known as the chalcogens. Tellurium has an **atomic number** of 52, an atomic **mass** of 127.60, and a chemical symbol of Te.

Properties

Tellurium is a grayish white solid with a shiny surface. Its melting point is 841.6°F (449.8°C), its **boiling point** is 1,814°F (989.9°C), and its **density** is 6.24 grams per cubic centimeter. Although the element has many metal-like properties, it is rather brittle and does not conduct an electric current very well.

Tellurium reacts with both acids and some alkalis. Its most interesting chemical property is that it combines with **gold** to form gold telluride (Au_2Te_3), a form in which much of the world's gold occurs.

Occurrence and Extraction

Tellurium is one of the rarest elements in the Earth's crust with an abundance estimated at about one part per billion. Its most common ore is sylvanite, a complex combination of gold, **silver**, and tellurium. Tellurium is obtained commercially as a byproduct in the refining of **copper** and **lead**.

Discovery and Naming

Tellurium was discovered in 1782 by the Austrian mineralogist Baron Franz Joseph Müller von Reichenstein (1740-1825). Von Reichenstein made his discovery while analyzing a sample of gold from a colleague that contained an unknown impurity. His tests indicated that the impurity was a new element, for which he suggested the name tellurium. The name was based on the Latin word *tellus*, meaning "Earth."

Uses

Tellurium is used primarily in alloys, to which it gives an improved quality of machinability. It is most commonly alloyed with steel, but may also be combined with copper and lead to improve their workability and to make them more resistant to vibration and fatigue. Small amounts of tellurium are used in the rubber and textile industries, primarily as catalysts. A growing application of tellurium is in electrical and electronic devices, such as photocopiers, printers, and infrared detection systems.