

SULFUR

The lemon yellow element sulfur has been known since ancient times. It was often called brimstone by the ancients. It has an atomic number = 16 and atomic weight = 32.066 u. It is essential to life due to its presence in amino acids such as methionine and cysteine. The average person ingests between 850-930 mg daily in the form of protein. The average 70 kg person contains about 140 g of S. Sulfur has been used as a medicine since ancient times for digestive disorders, and more recently to treat the bacterial source of rosacea. Sulfa drugs, the earliest antibiotics, contain sulfur in the molecules of the drugs.

There are 11 isotopes of sulfur, four of which occur naturally. The naturally occurring isotopes and their percent abundances are: S-32, 95.02%; S-34, 4.21%; S-33, 0.75%, and S-36, 0.02%. The atomic weight of S reflects this distribution. Sulfur is found in nature as molecules containing eight sulfur atoms, or S₈. Sulfur has a density of 2.070 g/mL and a melting point of 112°C. The main natural source of sulfur are the metal pyrites, such as iron pyrite, FeS₂.

Early chemists observed that when sulfur reacts with chlorine ($Z=17$) the formula of the product is SCl₂. They also observed that the elements oxygen and selenium also react with chlorine to yield products with like formulas, OCl₂ and SeCl₂, respectively. Other elements react with oxygen to give products of different formulas.