

Molybdenum is a silver/gray metal. Its name is derived from the Greek word “molybdaena”, meaning “lead”. The name was also used to describe galena and graphite, which have similar appearances in natural form. In 1778, Karl Scheele had been able to distinguish molybdenite from graphite by noting that molybdenite formed a white powder when treated with nitric acid, whereas graphite did not. Molybdenum metal was isolated and proven to be a new element in 1790 by P.J. Hjelm, drawing on the earlier work of Scheele.

In the 1800’s, molybdenum was used primarily in dyes and the preparation of certain chemical compounds, but little else was done with it. However, in 1893 German chemists Sternberg and Deutsch developed an economical process to produce 96% pure molybdenum metal. Although the product still contained 3% carbon, the sales price of \$0.86 per pound generated interest in possible commercial uses. Tests designed to evaluate molybdenum’s ability to replace tungsten as an additive in tool steel were unsuccessful, primarily because of sulphur and phosphorus impurities in the molybdenum.

In 1894, grey molybdenum oxide was produced in an electric furnace. The oxide contained 9% carbon, which made the compound hard enough to scratch glass. This inspired French chemist Henri Moissan to do his own electric furnace experiments. He succeeded in producing molybdenum which was 99.98% pure. He then set about determining the atomic weight and other properties of molybdenum.

Due to a variety of economic conditions and the difficulty in reliably producing pure molybdenum, very little commercial use was seen until World War I when molybdenum was widely used as an additive to toughen armor plating. Even after that, molybdenum did not enjoy immediate success. Speculation on whether or not there would ever be a market for molybdenum gained it the moniker “the metallurgical mystery”.

The use of molybdenum has increased steadily, and today it is in demand both in pure form and as a steel additive. Most molybdenum is currently mined in China, the United States, and Chile – in that order. Strangely enough, an ancient Japanese sword blade made by Masamuné in 1330 was found to contain molybdenum.

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Molybdenum is one of the refractory metals. It does not have the density of tungsten, but still has a relatively high melting point and is somewhat easier to machine. MTS provides molybdenum rod, bar, plate, and sheet stock. We also provide material trays, heat shields, nuts, and threaded rod for the vacuum furnace industry, as well as glass melting electrodes and vacuum evaporation boats.

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