

Introduction

Pyrophyllite, in fine grained, relatively homogeneous massive form, is widely used in ultra high pressure engineering applications. It often is called Lava stone or Wonder stone. Compositionally, the massive rock consists mainly of the mineral pyrophyllite, a hydrous aluminum silicate. Typical impurities are quartz, mica, iron oxide, and other silicate minerals.

The first use of pyrophyllite in high pressure work was by P. W. Bridgman. It was a relatively impure variety called catlinite, or pipestone. It was used by American Indians for carving smoking pipes. Bridgman discovered the good machinability and excellent frictional characteristics of catlinite during his extensive pioneering high pressure researches in the early 1900's. His first use for the material was as a conical seal for electrical leads going into a 30 kilobar hydrostatic pressure vessel. A later application which more effectively popularized the superior properties of pyrophyllite was his use of the material as a compressible seal in his 100 kilobar opposed anvil device (1).

Since Bridgman's work, many have become familiar with the good machinability, compressional, frictional, thermal and electrical characteristics of this material. No substance has yet been found that surpasses pyrophyllite in its areas of applicability.