

Abstract

Aerogels are nanoporous solids known to be the lightest solids ever. They can be made from different kind of gels, whether they are organic or not. The most common aerogel is silica Aerogel, it is obtainable by supercritically drying silica gel. Aerogels have many properties, they have a very low density and a very high surface/volume ratio due to their nanoporous structure, making them extremely light and extremely good thermal insulators. Aerogels can also be super hydrophobic and absorb oily liquids. Different types of aerogel have many different properties ranging from light diffusion to more complex semiconductors properties.

Nowadays Aerogels are present in more an more domains, they are used by NASA on mars rovers as an insulator, in nuclear research in cherenkov radiation detectors, but also on LNG terminals as cryogenic insulation as well as in underwater pipelines.

Aerogel has a great potential in the maritime industry. It can be used to improve the insulation in the engine room where common insulation cannot work effectively, it can also increase the refrigerated cargo space by reducing the size of insulation layers. Its capacity to absorb oily liquids and repel water could improve the way we deal with cleaning oil leaks and oil spills. Using aerogel insulation in lifesaving appliances such as lifeboats could also increase the survival chances of seafarers in critical situations.

Overall aerogel could become more popular over the years thanks to their properties, however their production price is still very high.