

# Provosil®

## Perlite Cryogenic Insulation

A premium PERLITE product by  
**REDCO II**

PRODUCT  
INFORMATION  
BULLETIN

**07**

Expanded perlite is used for a wide variety of insulating applications ranging from cryogenic vessels requiring “super” insulation to low temperature and high temperature applications, lightweight perlite insulating concrete, insulating board, insulating plasters, masonry wall insulation and underfloor insulation.

Redco II has a long and successful history in cryogenic perlite insulation going back all the way to the first known use of perlite in such an application at the North American Rocketdyne facility in Santa Susana, California. All Redco II cryogenic perlite grades are manufactured to meet ASTM C549 standards for perlite loose fill insulation.

The thermal conductivity of expanded perlite insulation in atmospheric pressure conditions has been shown to correlate directly with the density of the perlite. Particle gradation has only a minor effect on thermal conductivity. It should be noted by users that expanded perlite will break down if subjected to excessive handling. Such degradation will result in a higher density and a higher thermal conductivity.

For cryogenic applications of -150°F (-101°C) and below requiring “super” insulation, cryogenic perlite provides a superior insulation with thermal conductivity up to 40 times less than 0.200 Btu·in/h·ft<sup>3</sup>°F (0.029 W/m·k) depending on vacuum and temperature. Usual applications for cryogenic perlite insulation are in double walled helium and hydrogen storage spheres. It is also used for storage of oxygen, nitrogen and LNG when especially low thermal conductivities are desired. In addition to large field erected storage tanks, cryogenic grade perlite is used to insulate smaller shop fabricated vessels designed for the storage of many of the cryogenic gases.

Perlite insulation suitable for evacuated cryogenic service exhibits low thermal conductivity throughout a range of temperatures, pressures and densities. Cryogenic temperatures are generally considered to be below -150°F (-107°C). Thermal conductivity of evacuated cryogenic perlite is many times lower than that of nonevacuated perlite insulation. For example, at a mean temperature of -115°F (-82°C), normal nonevacuated cryogenic perlite at 4 lb/ft<sup>3</sup> (64 kg/m<sup>3</sup>) would have a thermal conductivity about 22 times as great as evacuated perlite at 8.7 lb/ft<sup>3</sup> (139 kg/m<sup>3</sup>) and interstitial pressure of 10 microns.

For more information regarding our cryogenic perlite and potential applications, please don't hesitate to contact us.