

Leak Detection

DESCRIPTION OF LEAK DETECTOR AND OPERATIONAL PRINCIPLES

The leak detection system developed for Glasteel II ® Underground Fuel Tanks is based on the loss of vacuum in the interstitial space formed between the primary containment vessel and the secondary containment system. A vacuum gauge is used to monitor the interstitial vacuum which must be at 33 kPa (254 mm Hg) \pm 3.3 kPa (25 mm Hg) at the beginning of the test.

The leak detection process is based on the fact that the vacuum cannot be maintained if a leak is present in either the primary or secondary shell.

The test time is the time interval required for a .378 Lt./hr leak to produce a vacuum change from 33 kPa (254 mm Hg) to 16.5 kPa (127 mm Hg) under typical operating conditions. The time interval varies according to the volume of the interstitial space which is in turn a function of the tank size. If the vacuum decreases to below 16.5 kPa (127 mm Hg) further investigation to locate the source of the loss of vacuum is required. The test should be repeated after the investigation is complete.

Loss of vacuum can be due to several factors. These include an air leak in either the inner or outer shell, a leak in the fittings of the tank, out-gassing of fibreglass materials surrounding the steel inner tank or a liquid leak into the interstitial space.

The primary factors that will effect the test time for an air leak include the volume of the interstitial space, the size of the leak, and any temperature changes in the interstitial space.