



## Evacuated Tube

Evacuated tube's consists of two glass tubes each. The outer tube is made of extremely strong transparent borosilicate glass that is able to resist impact from hail up to 38 mm in diameter. The inner tube is also made of borosilicate glass, but coated with a special selective coating (ALN/AIN-SS/CU) which features excellent solar heat absorption and minimal heat reflection properties. The air is withdrawn (evacuated) from the space between the two glass tubes to form a vacuum, which eliminates conductive and convective heat loss.

In order to maintain the vacuum between the two glass layers, a barium getter is used (the same as in television tubes). During manufacture this getter is exposed to high temperatures which cause the bottom of the evacuated tube to be coated with a pure layer of barium. This barium layer actively absorbs any CO, CO<sub>2</sub>, N<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>O and H<sub>2</sub> outgases from the tube during storage and operation, thus helping to maintaining the vacuum. The barium layer also provides a clear visual indicator of the vacuum status. The silver coloured barium layer will turn white if ever the vacuum is lost. This makes it easy to determine whether or not a tube is operating correctly.



## Storage Tank

The storage tank on a low pressure system is an open to vent system. This term is used due to the fact of any pressure that builds up within the tank during solar radiation heating, the pressure pushes out through the vent pipe situated on the side of the storage tank and also situated on the side of the Ball valve operated Feeder tank. The evacuated tubes fit within specifically designed openings on the storage tank. When the tank is filled with water, the glass tubes also fill up with water. The Openings are water sealed with a high quality silicon rubber seal that is resistant to high temperature exposure.

## What Happens?

When the solar radiation hits the glass tubes, the water within the tubes will start to heat causing thermal convection to take place. This thermal convection pushes the newly heated water up the tube into the storage tank and at the same time cooler water flow down into the glass tube. This cycle will continue heating the total volume of stored water. It is possible to reach extreme temperatures within the storage tank when the volume is not used. The possible boiling waters pressure will not damage the unit as the pressure will simply escape via the vent pipes. Please note that it is very important to fit a Thermostatic Mixing Valve to the hot water outlet to avoid any accidental scalding.

