Sorbweb™Plus is a passive system designed for the containment of transformer mineral oil, yet when this oil is not present, water in the form of rain or snow melt freely passes through the system. Once installed the system is designed to hold 110% of the capacity of oil present in the container and to handle a rainfall event of the past Fifty year average and any water deluge system that may be present. Sorb-web™Plus is designed to last the life of the transformer.

Sorbweb™Plus is a multi-layer containment system using various layers of materials to contain mineral oils, which may be spilled. At the heart of the system is a geosynthetic known as rSmart Fabric. It consists of two designed geotextiles, which have a co-polymer in the center of the two geotextiles. The sandwiched co-polymer is interlocked together forming a continuous mat. The “Smart Fabric” when not subjected to mineral oil, allows water to pass through the system into the subsoil, or a drainage system can be built moving the water to a low-lying area. When the mineral oil comes in contact with the “Smart Fabric” the co-polymer will congeal and seal. This will prevent any mineral oil from leaving the containment area.

Sorbweb™Plus has been designed such that there is a layer of fire quenching stones on top of the system. This layer of fire quenching stone is at a depth of 40 cm to 100 cm, dependent upon design. The fire quenching stone is 38mm to 70mm in diameter and gives a void area of 40%. This is the area in which the spilled oil will be contained.

Having a void area of 40% any burning oil will enter the void and is immediately quenched due to the lack of oxygen. Once the fire is quenched the temperature will be dramatically reduced.

Tests have been performed using geosynthetics, fire quenching stones and burning oil to determine the effectiveness of the fire quenching stone. These tests were carried out by Hydro One Inc in 2004 and up-dated in 2007. The article which, was developed from this testing is called rTransformer Oil Spill Containment: Oil Burn Fire Test Report – Phase I and Phase II Fire Testing

This report showed conclusively that the fire quenching stones immediately quenched the fire from the burning oil. Through various probes in the layer of the fire quenching stone, significant decreases in temperature of the oil from when it was on fire to when it was quenched were recorded. In fact within a few millimeters the temperature drop was well below that of the geosynthetic melting point.

It was demonstrated by the rTransformer Oil Spill Containment: Oil Burn Fire Test Report – Phase I and Phase II Fire Testing report that the burning oil was quenched extremely close to the surface of the fire quenching stone. It was also shown that temperature of the quenched oil was about 100 C, well below the melting point of the impermeable geosynthetic at a height 1-cm and lower.

Therefore it is shown that when covered with a non-combustible material of 5 cm to 10 cm the geosynthetic geomembrane will not fail when the secondary containment is exposed to fire.

The rSmart Fabric® has further protection layers than that of the geosynthetic geomembrane. In that there will be in addition to the 30 to 65 cm layer of fire quenching stone there is a 5cm layer of sand which does not support combustion and a layer of Roxul, which is used as an absorbent layer for the oil. Roxul being manufactured of basalt stone also does not support combustion.

By the design of the system and the testing which has been performed by Skytech Canada Inc for Hydro One Inc it can be stated that burning oil will have no effect on the geosynthetic contained within the Sorweb™Plus system. There is sufficient noncombustible material covering the geosynthetic such that the geomembrane will not fail.