

Infrastructure and Construction



Industry



Landfills and Remediation



Landscaping



## Trisoplast®: the innovative mineral barrier for environmental protection and waterproofing

### Introduction

In addition to being used for normal water-insulating purposes, the flexible Trisoplast mineral barrier is used for a wide range of applications to prevent contaminated water from entering the environment.

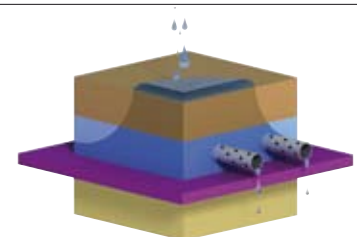
Worldwide, the understanding and need for environmental protection is becoming increasingly important. Effective sealing systems with high lifetime expectations are required to protect our groundwater, air and soil.

Trisoplast offers a number of advantages compared to other sealing systems, resulting in a cost-effective, high level of environmental protection.

### What is Trisoplast?

Trisoplast is a patented mineral barrier, which was developed in the Netherlands by Trisoplast Mineral Liners. Its outstanding performance is achieved on-site by simply mixing the special bentonite-polymer component with a mineral filler, e.g. sand. The mixture is installed as a robust layer and can be covered immediately by a layer which provides the necessary confining pressure. After finishing the construction the Trisoplast layer absorbs the first water from the environment that reaches the layer. This causes the bentonite clay to swell and form a network of chemical bonds with the dissolved polymer to create a strong, dense hydrogel structure.

Whereas Trisoplast predominantly gets its mechanical strength from sand, the bentonite-polymer gel provides the necessary flexibility and hydraulic performance which is 100 to 1000 times better than with traditional mineral barriers.



covering layer  
 drainage layer  
 TRISoplast  
MINERAL LINERS  
 subgrade



### The use of Trisoplast

Trisoplast has become the preferred mineral barrier for landfill applications in the Netherlands. In addition, it has also already been approved as suitable mineral barrier for landfill and contaminated land applications in a number of other European and non-European countries.

Trisoplast applications also include industrial sites, tank farms, environmental facilities, dredging spoil depots, reservoir basins, contaminated land, waterways and ponds, irrigation, dams, etc.

### The main advantages

A number of renowned independent institutes in several European countries have carried out extensive research into Trisoplast under the supervision of the relevant federal and local authorities. The results showed that Trisoplast has significantly better barrier properties in comparison with traditional mineral barriers:

- Extremely low permeability
- Self-healing ability
- Robustness
- Ability to cope with differential settlement due to high flexibility
- Gel formation prevents erosion of bentonite
- High chemical and physical stability
- High moisture retention capability (high resistance to drying out)
- Simple sealing to structures and penetrations
- Easy & fast installation
- Long term slope stability
- Gain of void space due to reduced layer thickness
- Low gas permeability
- High lifetime expectancy

### Why innovation?

All sealing systems, mineral barriers as well as geomembranes, have certain limitations. Therefore, the development of new techniques or further improvements to existing systems are required in order for them to

better deal with the various environments they are used in. Traditional mineral barriers are often the preferred option due to their robustness and their high, natural durability. However, these might develop harmful cracks as a result of differential settlement or desiccation. With Trisoplast, these negative effects are effectively prevented due to its high plasticity and chewing-gum like behavior.

The mechanical properties, especially the high friction angles in combination with significant cohesion values, make it possible to design steeper slopes without additional reinforcement. Moreover, this possibility, together with significantly reduced thickness, results in additional, valuable void space. The polymer enhancement in Trisoplast also leads to a higher chemical stability and an improved sealing performance.

### Easy to use

The fairly dry Trisoplast mixture, which is normally produced in a mobile mixing plant, is best installed using a hydraulic excavator. Sufficient compaction is easily achieved by using a small compactor, a roller or vibrating plate. Mineral barriers are often used to isolate industrial sites in order to prevent pollution by spill or calamities. In case of isolation of liquids that do not cause clay barriers to swell (e.g. oils, strong salt solutions), after installation the design must ensure sufficient water saturation of the layer, either by rainwater or by artificial means.

For more information please contact us directly or visit our web page.

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