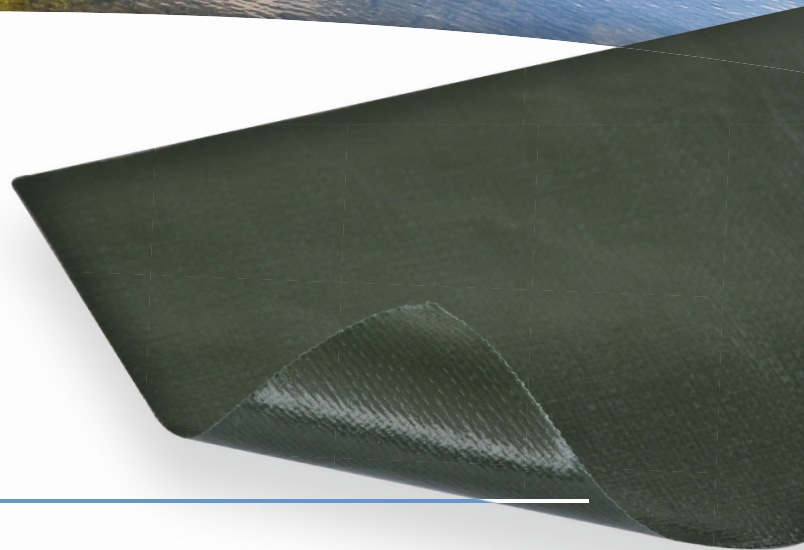




# GEOMEMBRANE

## COVERTOP GEOMEMBRANE

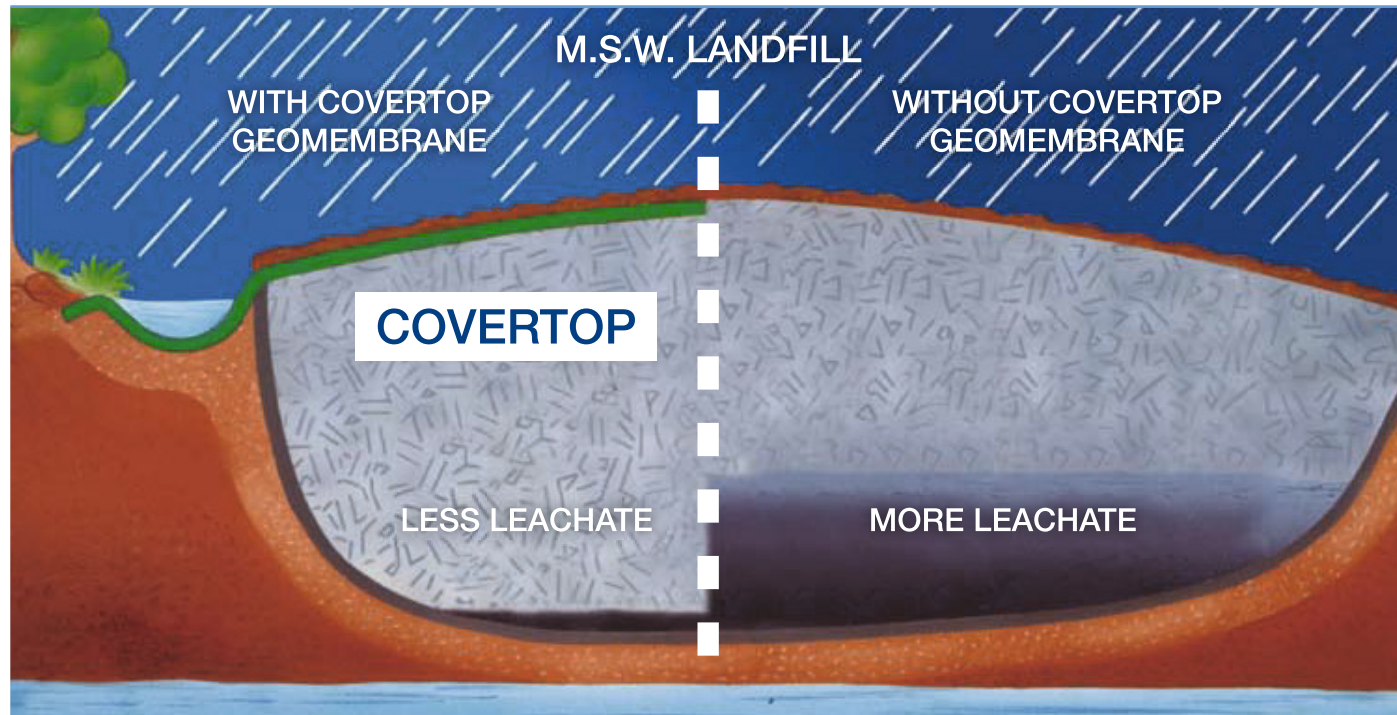


ANTI-LEACHATE CAPPING FOR LANDFILLS  
MAKING SAFE AND IMPROVING  
POLLUTED AND CONTAMINATED AREAS



**BRESCIANI**

## CAPPING TEMPORARY



### TEMPORARY CAPPING

Temporary anti-leachate capping for a controlled M.S.W. Landfill using a **COVERTOP** reinforced polyethylene waterproofing geomembrane.

One of the problem afflicting controlled M.S.W. landfills during use is the inevitable formation of leachate, which is difficult to collect and dispose of properly and requires expensive purification processes.

While the formation of leachate is an unsolvable problem for unpre-treated M.W.S. landfills, the increase in volume is due to the amount of rainwater that filters into the body of the landfill if it has not been properly waterproofed from above.

Rainwater causes a considerable increase in the volume of leachate, which leads to huge problems and high disposal costs.

In order to prevent the landfill from filling up with rainwater, which could be re-used for irrigation or other applications instead of increasing the volume of leachate, Bresciani has come up with factory-welded reinforced polyethylene waterproofing geomembranes that are extremely effective.

### BENEFIT

Main advantages of reinforced **COVERTOP**:

- considerable saving due to drastic reduction in the quality of expensive inert materials used to cover the waste
- valuable space saving within the landfill
- reduced environmental impact of the landfill due to the natural green colour of the geomembrane
- no more dispersal of lightweight refuse by the wind
- no more stray animals, insect and bird cause the risk of infection
- no more erosion of the landfill banks by the flow of rain water
- considerably improved sanitary and environmental conditions; great reduction in unpleasant smells and less impact on the surrounding population
- possible re-use of the geomembrane in other parts of the landfill, which is not possible with non-reinforced geomembranes.
- possibility of making the temporary capping permanent if the landfill is permanently closed, even after many years; the geomembrane is merely covered with clayey soil and/or loam to encourage the growth of grass.

## CAPPING PERMANENT



### PERMANENT CAPPING

Covering of a controlled m.S.W. Landfill by means of a **COVERTOP** reinforced polyethylene waterproofing geomembrane.

For some time now, permanent capping has been used to prevent rainwater from getting into a full landfill and also reduce considerably the volume of expansive leachate to dispose of. It involves the use of waterproofing geomembranes, which are usually combined with a suitable layer of earth to encourage the growth of grass. The choice of the most suitable type of geomembrane for this kind of operation – considering that mere covering of clayey soil never guarantees absolute waterproofing – must necessarily involve the following requirements:

1. A covering with high tensile strength and tear resistance to withstand – without breakage – the weight of the earth above hollows caused by the inevitable differentiated tamping and settling of the waste.
2. A lightweight, flexible rough surface geomembrane on which a suitable layer of covering earth can be laid without causing slipping even on considerable slopes.
3. The smallest number of on-site weldings, which represent fault lines for any geomembrane.

4. The possibility for the laying company to handle both earth moving and geomembrane laying operations in order to optimise times and hence operating costs.

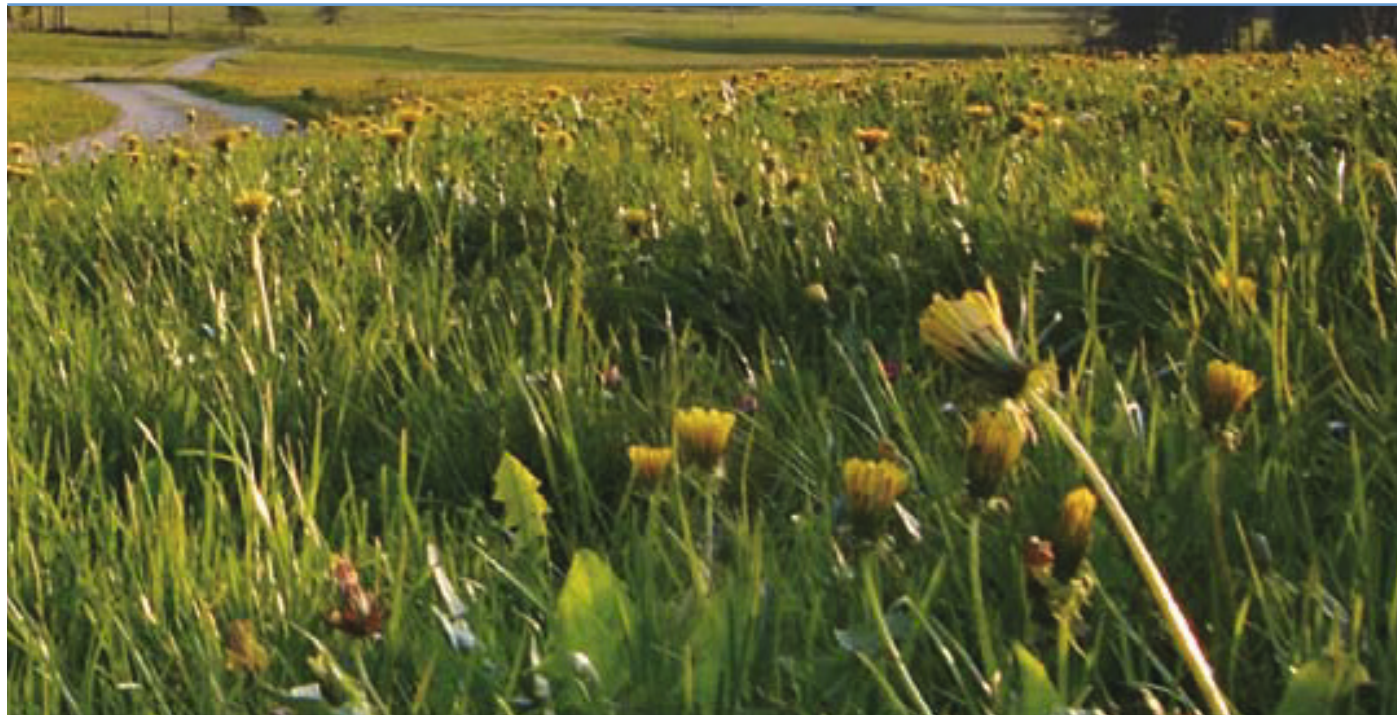
### WHY CHOOSE COVERTOP?

Reinforced polyethylene geomembranes in the COVERTOP range satisfy all these requirements.

Permanent capping with COVERTOP reinforced polyethylene membrane is:

- safer, as reinforced geomembranes are superior to other non-reinforced polyethylene membranes that are thicker and more expensive
- quicker and more flexible, since BRESCIANI can promptly provide very large pre-welded sections to cover any size of landfill
- cheaper, as the COVERTOP geomembrane is less expensive and laying is quicker.

## CAPPING EVENING / DAILY



### M.S.W. DAILY COVERING

The correct management of an M.S.W. landfill necessarily requires daily covering of the waste dumped and tamped in the trenches.

This operation is usually carried out by spreading a suitable layer of inerts on top of the daily waste dumped by the collection vehicles. This type of covering, however, has numerous disadvantages:

- it wastes a large amount of the landfill volume;
- it is very expensive and difficult to find on site the right type of inert material to cover the waste;
- it involves high costs for labour and the mechanical equipment used to spread the layer of covering.

### BENEFIT

These COVERTOP reinforced polyethylene sheets offer the following advantages:

- they allow considerable saving of the inert covering materials and hence valuable space in the landfill;
- they are lightweight and quick-and-easy to lay; as they are reinforced internally they can be reused several times over a period of months, unlike ordinary polyethylene which has to be replaced every day;
- they prevent lightweight waste from being dispersed by the wind;
- they keep away stray animals, birds and insects, which can transmit serious infection



## MAKING SAFE AND IMPROVING



### MAKING SAFE AND IMPROVING

Polluted and contaminated areas.

Following the enforcement of Ministerial Decree no. 471/99, the improvement of contaminated areas is now mandatory. The criteria for the various interventions required for such improvements are divided into three categories:

- emergency making safe
- environmental improvement and restoration
- permanent making safe

Bresciani Geomembrane already possesses all the requisites for emergency and environmental interventions:

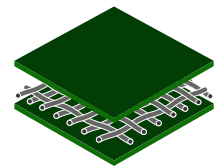
- full range of geomembranes to suit all possible conditions
- large ready-seamed make-to-measure sheets to insulate the polluted area in a few hours
- extremely quick and easy laying, which minimizes costs
- Superior-quality membranes made and packaged under ISO 9001:2008 Quality Certification.



# GEOMEMBRANES COVERTOP



Geomembranes in the Bresciani COVERTOP range are made using a brand-new construction concept - the high mechanical resistance required by the designer is obtained by means of a high-density polyethylene (HDPE) basic fabric forming the reinforcement, sandwiched between two layers of a hot-rolled low-density polyethylene (LDPE).

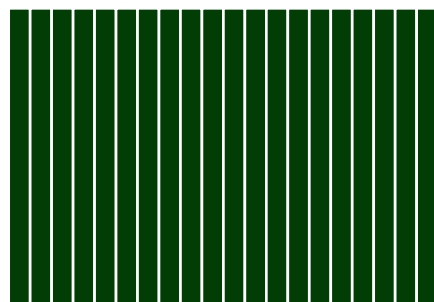


Make-up of the COVERTOP geomembrane.

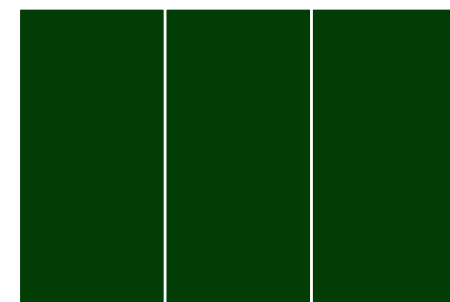
- LDPE coating
- HDPE basic fabric
- LDPE coating

The membrane is thus made up of three layers of polyethylene: a first coating of LDPE, an inner HDPE reinforcing fabric and a second coating of LDPE. The result is COVERTOP, a waterproof geomembrane which is intentionally thinner but, due to the HDPE reinforcement, much more resistant than a non-reinforced polyethylene membrane of even greater weight and thickness.

Example, Non-reinforced polyethylene geomembrane:  
19 joins totalling di 1.520 m of on-site weldings.



6 x 80



40 x 80

Another advantage of COVERTOP reinforced polyethylene geomembranes over non-reinforced ones lies in the different way in which they are laid in the landfill. As the COVERTOP reinforced membrane is highly resistant yet lightweight, it can be factory welded in ideal environmental conditions to get single sections of exceptional size (e.g. 40x400 m = 4.000 sqm) thus eliminating or at least reducing to a minimum the difficult task of on-site welding.

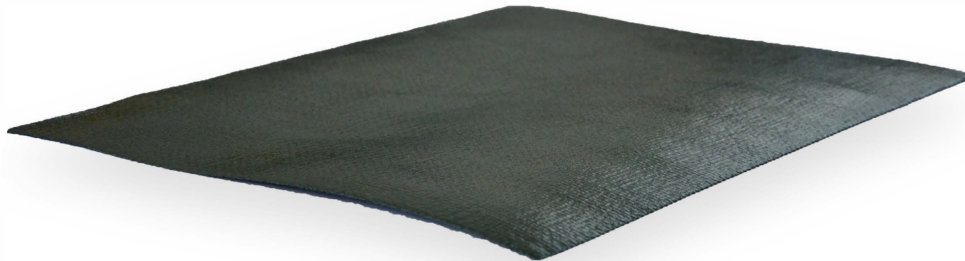
## Factory welding

Data on the ultimate strength on in-factory weldings on COVERTOP reinforced geomembranes shows that they do not constitute fault lines, with decidedly higher values than for on-site welding of non-reinforced polyethylene. So COVERTOP reinforced polyethylene geomembranes can easily be used to cover large landfill sites using a small number of large ready-waldded sections, namely with over 90% of the weldings carried out at the factory under consistent ideal environmental conditions.

Reinforced polyethylene geomembrane COVERTOP:  
2 joins totalling 160 m of on-site weldings.



BRESCIANI



## **GEOMEMBRANE**

GEOMEMBRANE COVERTOP



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