

Landfill Cover of Pont Scorff – Morbihan (56), France



EPDM Geomembrane as landfill cover. A flexible and long-term solution.



Pont Scorff is a French community of 3,000 habitants in the North East of France. Since 2000, there has been a landfill for domestic waste storage (class 2) which is located close to the village. It was therefore essential to build up the landfill in a way which reduces its environmental impact during the time it is in operation and many years after.

For this purpose, once the landfill cells were filled up (between 2000 and 2008), they were covered with Firestone EPDM Geomembrane. 60,000 m² of EPDM Geomembrane was installed by Sodaf-Géo Etanchéité in order to limit the production of leachate, control the emission of biogas and reintegrate the site in the landscape. Firestone EPDM Geomembrane has also been used to line the 1,500 lm long outlying ditch, designed to collect rainwater flowing down the embankment.

Quick Facts

Project scope :

- Class 2 landfill (domestic waste)
- Used between 2000 and 2007
- Load capacity of 53,000 t/year
- Covered in 3 phases: in 2000 - 2003 - 2008
- Cover of 60,000 m² done with Firestone EPDM Geomembrane
- 1,500 lm of outlying ditch lined with Firestone EPDM Geomembrane

Challenges faced:

- To avoid rain water infiltration into the landfill
- To avoid biogas emissions into the atmosphere
- To absorb differential soil settlement
- To allow connection of the cells after many years
- To make a watertight connection around penetrations
- To manage rain water coming down the embankment
- To allow integration of the landfill in the landscape

Solutions offered by Firestone EPDM Geomembrane :

- Water tightness with low gas permeability
- High elasticity (>300%)
- Long-term durability even when exposed to UV radiation
- Can be seamed and repaired even after many years
- Fast and easy installation
- Highly flexible (at high and low temperature, adapts to irregular shapes)
- Root resistant



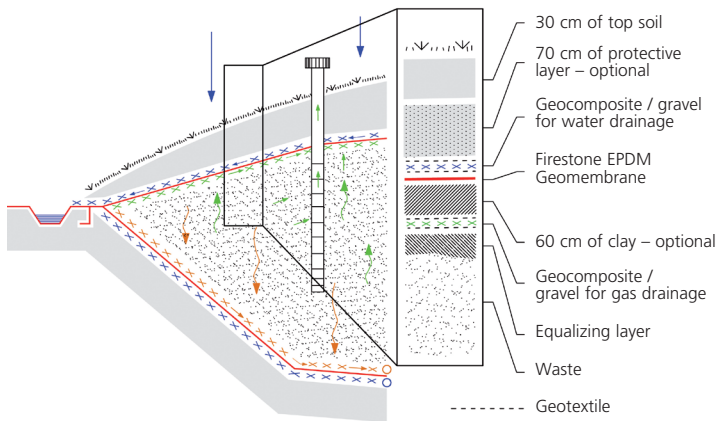
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Principle of the landfill cover

Even when the landfill cover is no longer in use, it will continue to produce leachate for many years (water seeping through the waste with the risk of groundwater pollution) and greenhouse gas from the biodegradation of organic waste (methane + CO²). The installation of a waterproof cover allows the collection of the biogas and reduces rainwater ingress into the landfill (thus decreasing the quantity of leachate to be treated and the biodegradation). When biodegradation is reduced, this means less landfill gas, leachates and settlements.

Rain water drained above the geomembrane is discharged into the hydrographical net through the ditch. The collected biogas is sent to flares (burnt) or turbines (power generation).

Structure of the landfill cover: principle



In all cases, puncture resistant geotextiles are placed above and below the geomembrane.

Physical Properties	Test Method	Declared Value - 1.1 mm	Declared Value - 1.5 mm	Tolerance
Mass per unit area	EN 1849-2	1288 g/m ²	1695 g/m ²	± 5%
Tensile strength (MD/CD)	ISO R 527	9 N/mm ²	10 N/mm ²	- 1
Elongation (MD/CD)	ISO R 527	≥ 300 %	≥ 300 %	
Dimensional stability	EN 1107-2	≤ 0.5 %	≤ 0.5 %	
Flexibility at low temperature	EN 495-5	≤ -45 °C	≤ -45 °C	
Resistance to static puncture	EN ISO 12236	0.7 kN	0.9 kN	- 0.1
Liquid tightness under high pressure (4 bar = 40 m depth)	EN 1928:2000 method B	Watertight	Watertight	
Water permeability (Liquid tightness)	EN 14150	3.0 10 ⁻⁶ m ³ /m ² d	3.0 10 ⁻⁶ m ³ /m ² d	± 10 ⁶
Methane permeability (Gas tightness)	ASTM D1434	2.25 10 ⁻³ m ³ /m ² d	2.25 10 ⁻³ m ³ /m ² d	
Durability - weathering (25y)	EN 12224	pass	pass	
Durability - oxidation	EN 14575	pass	pass	
Friction angle	EN ISO 12957-2	27,5°	27,5°	± 1
Resistance to roots	CEN/TS 14416	pass	pass	

Firestone EPDM Geomembrane

Firestone EPDM Geomembrane (Ethylene - Propylene - Diene) is a vulcanized synthetic rubber geomembrane of high elasticity (>300%). The significant presence of carbon black (>25%) and mineral fillers (<25%) in its composition gives to the geomembrane an excellent UV resistance and a good resistance to traction.

Firestone EPDM Geomembrane is watertight, flexible, elastic, resistant to aging (UV radiation and ozone) and quick/easy to install.

Benefits of Firestone EPDM Geomembrane for covers and outlying ditches of landfills

- **High deformability:** Even if the waste is properly compacted, differential settlement will occur. Its high elasticity (>300%) and flexibility allows the membrane to adapt to deformations without suffering any damage.
- **High durability:** the geomembrane will keep its mechanical properties and protect the landfill for many years.
- **Possible to seam an old membrane:**
 - ♦ connection between old and new cells
 - ♦ easily repaired after decades of service
- **Quick to install:** membranes up to 930 m², installation of 2,000 m²/day (with 4 people)
- **High friction angle:** stable on the slopes
- **Flexible:** easy to install into the trenches
- **Resistant to UV and thermal variations:** high durability of the outlying ditch and exposed geomembrane
- **Root resistant:** landscape reinstatement



Other applications: water reservoirs, snow reservoirs, dung pits, waste water reservoirs, wetlands, canals, aquaculture, decorative ponds, ...

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