

# Firestone GeoGard™ EPDM

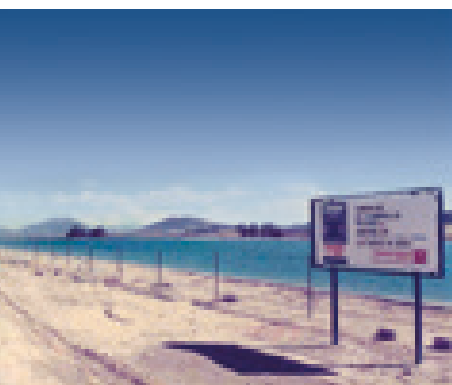
The geomembrane that works



Lining in Action™



## Dependable performance in demanding environments



Firestone GeoGard™ EPDM is a rubber liner offering a flexible and durable solution for a wide variety of agricultural, industrial and commercial applications including:

- Irrigation reservoirs and canals
- Fire reservoirs
- Agricultural pits and ponds
- Aquaculture ponds
- Stormwater reservoirs
- Wastewater reservoirs
- Artificial snow reservoirs
- Constructed wetlands
- Landfill covers
- Artificial lakes

Whether it is used for critical containment applications or sizeable water features, the Firestone GeoGard™ EPDM system is easy to install and built to last.

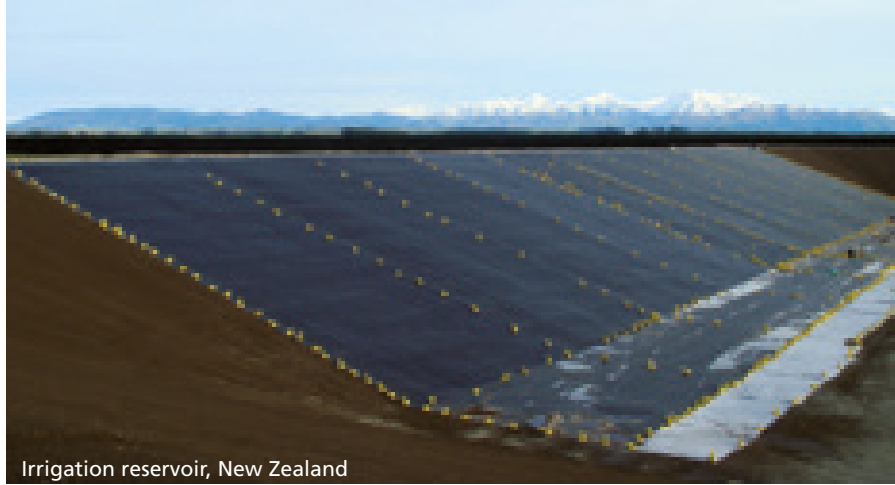
### Proven product

Thousands of applications worldwide - many in demanding environments - serve as living proof of the exceptional performance of Firestone GeoGard™ EPDM.

The first use of Firestone rubber membranes in irrigation reservoirs located in the South of Spain dates from the early seventies. Today, even after decades of service, the rubber liner continues to provide a dependable waterproof solution.



# A wide variety of applications



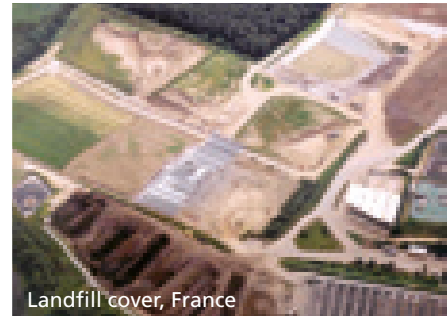
Irrigation reservoir, New Zealand



Artificial snow reservoir, Spain



Waste water reservoir, the Netherlands



Landfill cover, France



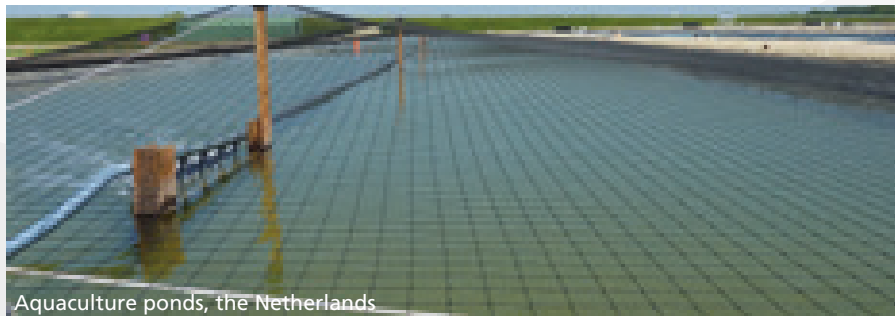
Aquaculture ponds, USA



Dung pit, France



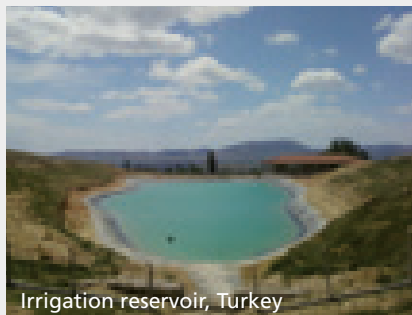
Constructed wetland, France



Aquaculture ponds, the Netherlands



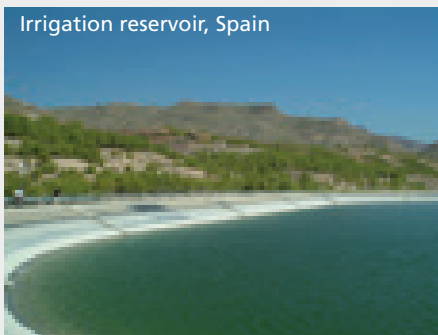
Dung pit, Hungary



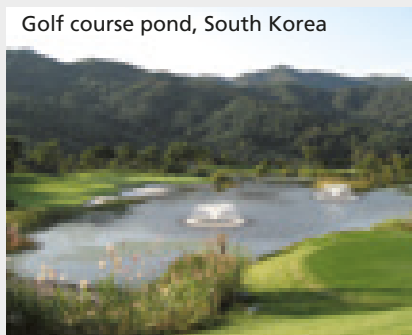
Irrigation reservoir, Turkey



Canal, Serbia



Irrigation reservoir, Spain



Golf course pond, South Korea



Fire reservoir, Germany

# Unique features and benefits



Firestone GeoGard EPDM is an elastomeric synthetic rubber membrane with a cross linked polymer structure, resulting in a chemically stable membrane with unique features and benefits.

## ✓ **Highly flexible even at low temperatures**

Firestone GeoGard EPDM is highly flexible even at temperatures as low as -45 °C, offering year-round installation. This flexibility enables the membrane to adapt to irregular shapes in the substrate and offers excellent lay-flat characteristics.

## ✓ **High elasticity and tensile strength**

Firestone GeoGard EPDM is highly elastic and can be elongated over 300% in all directions without cracking to accommodate earth settlements.

## ✓ **Hydrostatic pressure resistance**

Firestone GeoGard EPDM provides almost unlimited hydrostatic pressure resistance compared to other common geomembranes, allowing the membrane to be used in deep, large-sized water reservoirs.

## ✓ **Dimensional stability**

Firestone GeoGard EPDM can easily be deformed but will return to its original size and shape, unlike thermoplastic membranes that can undergo a permanent deformation and thickness reduction.

## ✓ **Long-term durability**

The first Firestone rubber lining installations dating from 1973 are living proof of the membrane's long lasting performance. Firestone GeoGard EPDM offers unmatched resistance to UV radiation, ozone and extreme temperatures, with no change of physical properties regardless whether the membrane is exposed or covered. It contains no plasticizers that could migrate and lead to premature membrane failure. If needed, Firestone GeoGard EPDM can be easily repaired even after decades of service.

## ✓ **Quick and easy to install**

Firestone GeoGard EPDM is available in large seamless panel sizes up to 15 m wide and 61 m long (930 m<sup>2</sup>) resulting in short installation times and fewer field seams for large surfaces. Additionally, Firestone's QuickSeam™ Tape System provides a proven field seaming solution without requiring special tools.

## ✓ **High chemical resistance**

Firestone GeoGard EPDM exhibits high resistance to alkaline and acid rain, nitrates and phosphates in solution, alcohols, soil chemicals and micro-organisms. Contact with hydrocarbons, petrol, hot bitumen, grease, oils and chlorine must be avoided.

## ✓ **Environmentally friendly**

Firestone GeoGard EPDM is a chemically stable membrane without environmental pollutants. The membrane's long life expectancy and recycling options, combined with its use for water conservation and environmental protection, make it a green geomembrane solution. Furthermore, Firestone's commitment to the environment has led to numerous initiatives throughout the company, including an ISO 14001 certified Environmental Management System at its EPDM manufacturing facilities.

# A fully engineered system

Firestone has developed a full range of accessories for its EPDM geomembrane that work together as a complete watertight system: QuickSeam™ Splice Tape, QuickSeam™ FormFlash, adhesives and sealants. Each component of Firestone's GeoGard EPDM system has been carefully designed and thoroughly tested in the company's R&D department.



## Reliable seaming method

Multiple Firestone GeoGard EPDM panels can be assembled on site using the Firestone QuickSeam Tape System. This technology is based on a self-adhesive EPDM/butyl tape used in combination with Firestone QuickPrime™ Plus primer. This tape seaming technique is quick and easy, does not require any special tools and provides high and consistent seam strength. The installation method, speed and quality are independent of membrane thickness.

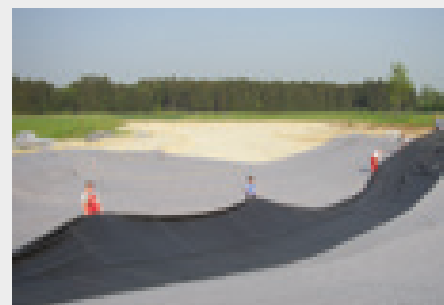


## Installation details

Flashing of pipes, other penetrations and corners is fast and easy with the use of Firestone QuickSeam FormFlash, an uncured EPDM flashing laminated to a self-adhesive QuickSeam Tape. Firestone QuickSeam FormFlash can be easily molded to adapt to any shape.

## Quality installation

The performance of a Firestone GeoGard EPDM system is subject to quality installation by approved lining contractors who share our commitment to excellence. Firestone offers contractors technical seminars covering all aspects of a Firestone GeoGard EPDM system installation. The company's installation support extends to the job site where field technicians offer training, professional assistance and quality inspection of finished installations. Firestone's installation standards are specified in a comprehensive installation guide including detail drawings.



# Certified quality geomembrane

## Technical Specifications

### Firestone GeoGard™ EPDM 1.1 mm and 1.5 mm

Physical Properties	Standard	Declared Value 1.1 mm (.045")	Declared Value 1.5 mm (.060")	Tolerance	Unit
Mass per unit area	EN 1849-2	1288	1695	± 5%	g/m <sup>2</sup>
Tensile strength (MD/CD)	ISO R 527	9	10	-1	N/mm <sup>2</sup>
Elongation (MD/CD)	ISO R 527	≥ 300	≥ 300		%
Dimensional stability	EN 1107-2	≤ 0.5	≤ 0.5		%
Foldability low temperature	EN 495-5	≤ -45	≤ -45		°C
Resistance to static puncture	EN ISO 12236	0.7	0.9	-0.1	kN
Liquid tightness under high pressure application (4 bar = 40 m depth)	EN 1928:2000 Method B	Watertight	Watertight		
Water permeability (Liquid tightness)	EN 14150	3.0 10 <sup>-6</sup>	3.0 10 <sup>-6</sup>	±10 <sup>-6</sup>	m <sup>3</sup> /m <sup>2</sup> d
Methane permeability (Gas tightness)	ASTM D1434	2.25 10 <sup>-3</sup>	2.25 10 <sup>-3</sup>		m <sup>3</sup> /m <sup>2</sup> d
Durability - weathering (25 y)	EN 12224	Pass	Pass		
Durability - oxidation	EN 14575	Pass	Pass		
Friction angle	EN ISO 12957-2	27.5	27.5	±1	°
Resistance to roots penetration	CEN/TS 14416	Pass	Pass		

Please visit [www.firestonebpe.com](http://www.firestonebpe.com) for the most up-to-date product and technical information.

## Product certification

The Firestone GeoGard EPDM membrane has obtained the CE-marking. In addition, it has been tested and certified to various international and national standards for physical properties and seam strength, including the French ASQUAL certification.





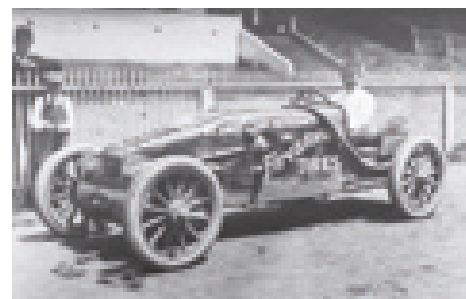
## Over a century of experience in rubber

Firestone has been a world-recognized leader in rubber polymer technology for over 100 years. Building on this broad legacy, Firestone Building Products has become a global leading manufacturer of rubber roofing and waterproofing systems. Firestone Building Products is a division of the Bridgestone Corporation, the world's largest tire and rubber company.

### Quality manufacturing and services

Firestone Building Products is dedicated to carrying on the quality tradition in rubber technology established by Harvey S. Firestone in 1900. The company's state-of-the-art EPDM manufacturing facilities based in North America follow stringent quality control guidelines from raw material selection to finished product testing. Our operations have also been certified according to ISO 9001 and ISO 14001.

Firestone's proven products are further backed by a professional level of service including assistance with specification development, ongoing technical support, training, technical field support and quality inspection of finished installations.



FM 32845



EMS 52644

## **Firestone Building Products Europe**

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| FOR FURTHER INFORMATION, PLEASE CONTACT YOUR LOCAL FIRESTONE GEOGARD EPDM  
DISTRIBUTOR OR FIRESTONE BUILDING PRODUCTS |

This brochure is meant only to highlight Firestone's products and specifications. Information is subject to change without notice. All products and specifications are listed in approximate weights and measurements. For complete product and detail information, please refer to the technical information posted on [www.firestonebpe.com](http://www.firestonebpe.com). Firestone takes responsibility for furnishing quality materials which meet Firestone's published product specifications. As neither Firestone itself nor its representatives practice architecture, Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure on which its products may be applied. If questions arise as to the soundness of a structure or its ability to support a planned installation properly, the owner should obtain opinions of competent structural engineers before proceeding. Firestone accepts no liability for any structural failure or for resultant damages and no Firestone Representative is authorized to vary this disclaimer.

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