SealEco

Elastoseal EPDM Tanking System

Waterproofing of basements, foundations and cut-and-cover tunnels

ElastoSeal

EPDM Rubber
- facts about EPDM

EPDM is a synthetic rubber that is an Elastomer. The material has unique properties like elasticity and these properties are unchanged when the membrane is at stress. EPDM is also a thermo-set material meaning that the material keeps its properties in a broad temperature range and that it cannot be melted.

EPDM was introduced in the early sixties and has over the years found an increasing use as construction material in the automotive industry, within building and civil engineering.

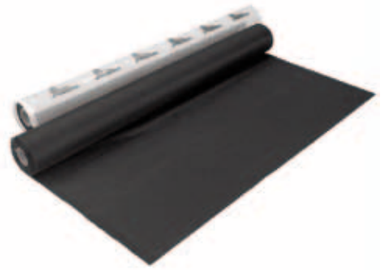
Waterproofing over decades
Rubber is the geomembrane that has been used the longest in the marketplace and the product has already proven its suitability as waterproofing over decades.

Characteristics of Elastoseal EPDM Tanking system

- **Superior durability and service life.**
  Independent study made by SKZ in Germany shows that expected service life is exceeding 50 years.
- **Withstands movements from earth settlements or temperature changes.**
  The membrane can be stretched to over 300% without changing the typical properties of the membrane. It is also superior when it comes to multidimensional tension as the material doesn't have any yield point.
- **Endure almost unlimited loads and water pressure.**
  Rubber has viscoelastic properties which mean that the products elasticity is predominant at low load and that it becomes more viscous with higher loads. The membrane and the seams can resist a hydrostatic pressure exceeding 70 meter water head (6.9 BAR).
- **Excellent UV and ozone resistance – can be used exposed.**
  The carbon black in EPDM is a natural UV absorber.
- **Root resistant.**
  Both the membrane and the seams has been tested and approved for root penetration from vegetation.
- **High resistance to chemicals.**
  EPDM is cross linked and stable and don't react or emit anything when in contact with concrete or other substances you normally find in ground applications.
- **Quick installations.**
  The membrane has low weight per sq. m. and is preferably installed in big panels with few seams to be done during the installation.
- **Proven over decades.**
  Rubber membranes have been used for over 50 years in geomembrane applications and have the longest history of all waterproofing membranes.
- **Fully engineered system.**
  All seaming is done by heat welding with the patented Thermobond technology. The system incorporates a full range of waterproofing accessories including a weldable waterstop for compartmentalization.

Product range

Elastoseal EPDM Tanking membrane can either be supplied in roll form or prefabricated according to drawing.



Thickness (mm)	Width (m)	Length (m)	Weight (Kg/Sq.m.)	Made to drawing (Sq.m.)
1.5	1.70 3.35 5.00	25 25 25	1.70 1.70 1.70	Specified measurements min-max. 300-1000

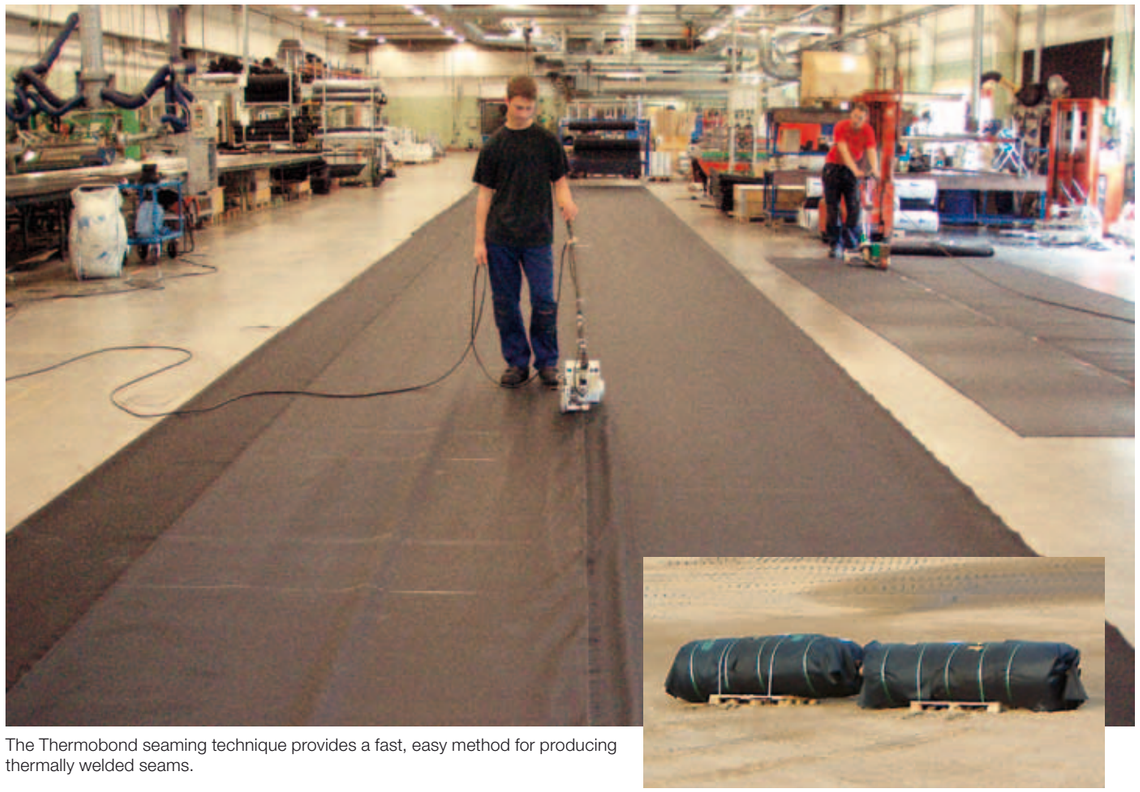
* Other available thicknesses are 1.0 and 1.2 mm

Membrane Specification
- of Elastoseal EPDM

The membrane complies with the standards: ASTM D6134, DIN 7864, EN 13956 and EN 13361.

Property	Method	Astm standard	Typical value
Thickness, mm (in)	ASTM D412	1.37 (0.054)	1.50 (0.059)
Hardness, Shore A	ASTM D2240	60 ± 10	60
Tensile strength, MPa (psi)	ASTM D412, Die C	9 (1305)	10 (1450)
Elongation, ultimate, %	ASTM D412, Die C	300	400
Tensile set, max %	ASTM D412, Die C	10	5
Tear resistance min, kN/m (lbf/in.)	ASTM D624, Die C	26.2 (150)	44 (252)
Brittleness temperature, max °C (°F)	ASTM D746	-45 (-49)	- 60 (-76)
Puncture resistance Kg (lbs)	ASTM E154	32 (70)	59 (130)
Water absorption max, mass %	ASTM D471	4	1
Water vapour transmission, max g/m²/day	ASTM E96	3.5	0.7
Water vapour permeance, max mg/pasm	ASTM E96	0.060	6.9E-6
Factory seam strength min, MPa (psi)	ASTM D816 mod. B	8.8 (1276)	Break in membrane
Heat aging at 166 hours 240°F	ASTM D573		
Tensile strength, min MPa (psi)	ASTM D412, Die C	8.3 (1204)	11 (1595)
Elongation ultimate, %	ASTM D412, Die C	210	300
Linear dimensional change, max %	ASTM D1204	± 1	< 1
Resistance to soil burial, 30 days	ASTM D3083		
Break strength change		10	4
Elongation at break change	ASTM D412, Die C	10	7

Prefabrication of Elastoseal EPDM
- enabling quick and safe installations



The Thermobond seaming technique provides a fast, easy method for producing thermally welded seams.

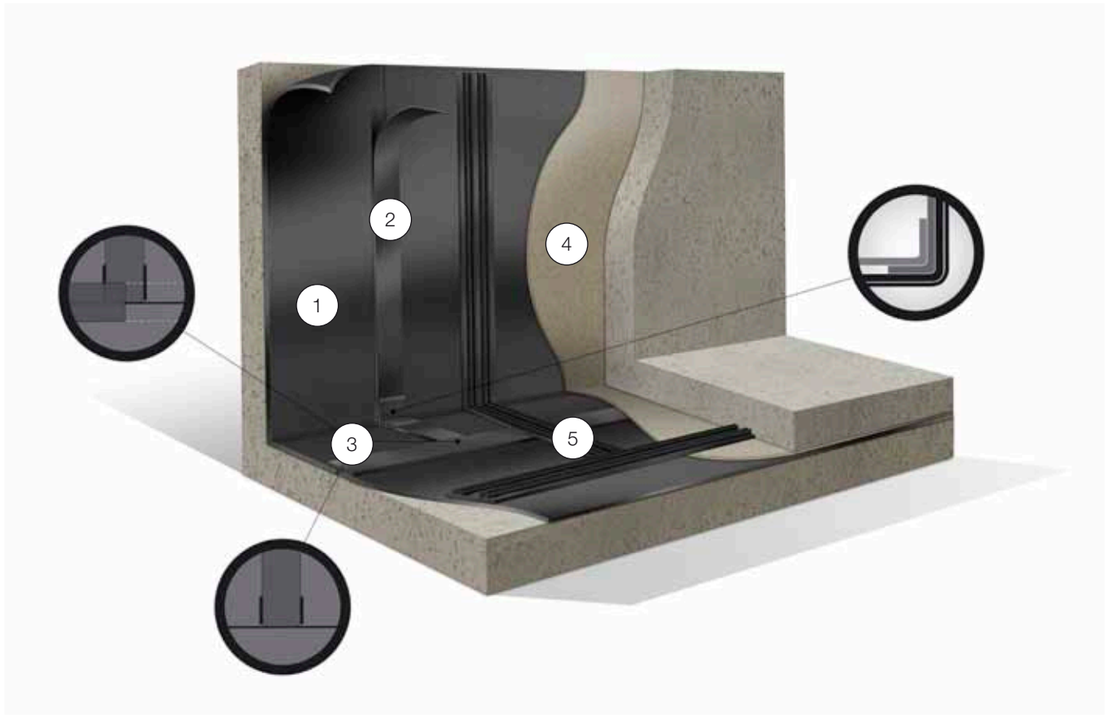
Thermobond seaming technique
- the obvious choice

The Thermobond seaming technique provides a fast, easy method for producing thermally welded seams.

All prefabrication and site seaming are performed with thermal hot air or hot wedge. Details like pipe connections, penetrations, overflows and flashings are seamed with a hot air gun. The combination of an elastic, vulcanized rubber membrane, prefabricated boots, engineered details and reliable, uncomplicated thermal welding in all types of weather provides a maximum of security and a homogenous elastic waterproofing membrane.

Thermobond is a technique developed and patented by SealEco. During the production a thin layer of a thermoplastic rubber (TPE) is laminated to one side of the membrane resulting in a vulcanized EPDM membrane which can be heat seamed. The combination of Elastoseal EPDM and Thermobond seaming provides a superior service life and performance of EPDM and the thermal seaming performance of thermoplastic membranes.

Installation
- of Elastoseal EPDM



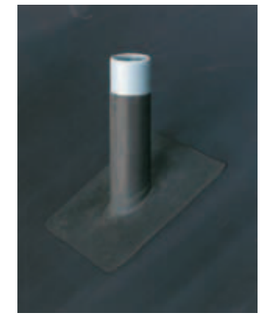
1 The Elastoseal EPDM tanking membrane is loosely laid to the foundation and is only anchored to the vertical at the top. If the substrate is rough or if there are sharp objects a protection layer is required also underneath the membrane.

2 The connection between panels is made with a Thermobond strip that is heat welded as a cover strip on top of the Elastoseal membrane.

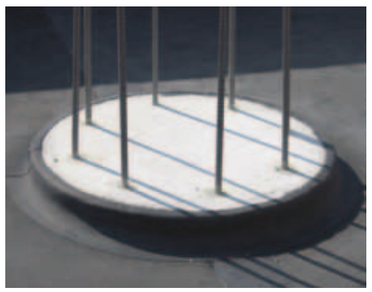
3 Where Thermobond strips cross it creates a T-joint. These should always be secured by adding a hot melt sealant where the membranes meet.

4 The Elastoseal membrane should be protected against mechanical damage by a protection layer like for instance a protection board or a thick geotextile.

5 The membrane can be compartmentalized with Thermobond weldable waterstop that prevents water movement. The waterstop is welded on top of the membrane and is anchored into the concrete.



All detail work and repairs are done with Thermobond accessories that are seamed with hot air.



SealEco
- Quality Assurance System (QAS)

Elastoseal EPDM Tanking System is a completely engineered system, where product, seams, details, installation and site quality assurance guarantees a maximum of safety and performance.
All seams are controlled and visual inspections for mechanical damages are done on regular basis.

Installers are always trained and certified by SealEco before they are allowed to make installations.

SealEco
- Concern for the environment

EPDM membranes have minor negative influence on nature. The membrane is chemically stable and does not contain any additives or plasticizers that will be emitted or released during the service life, or when discarded or recycled. Long service life combined with the low weight give an effective resource usage throughout the product life cycle.

EPDM membranes reclaimed from old installations can be burned for energy production, placed on landfills or recycled for use in new EPDM products.

Applications
- of Elastoseal EPDM

- **Basements**
- **Foundations**
- **Secondary containments, tanks**
- **Cut-and-Cover Tunnels**
- **Roofing**
- **Reservoirs and ponds**
- **Canals**
- **Landfill covers**
- **Facades and damp proof course applications**

Ethylene Propylene Dienmethylene
- EPDM the chemistry in depth

EPDM is an amorphous elastomer obtained by the copolymerization of ethylene, propylene and a non-conjugated diene with saturated carbon structures in main chain.

During production the EPDM is vulcanized. The long rubber molecules are joined together by chemical cross-links, giving an elastic chemically stable product with negligible aging despite exposure to UV-radiation, atmosphere, chemicals, water, earth and extreme temperatures.

Because the EPDM remains saturated after vulcanization it resists degradation due to oxidation. The rubber compound also contains reinforcing carbon black, fillers, processing agents, antioxidants and vulcanizing ingredients.

References
- Installations with Elastoseal EPDM Tanking Systems

Al Fardan Twin Towers, Qatar,
Basement tanking

Hestra railway bridge, Sweden,
Tunnel tanking

Dubai International Airport, UAE,
Tunnel tanking

Imam Khomeini Mosque, Iran,
Roof waterproofing

Arab National Bank in Jeddah,
Saudi Arabia, Basement tanking

Sárvár hotel, Hungary, Basement
tanking

Palm Jumeirah Marina Apartments,
UAE, Basement tanking

Jebel Ali Airport, UAE,
Tunnel tanking

Our operations are conducted according to ISO 9001 and ISO 14000. Products and systems are tested according to applicable standards, supervised by independent laboratories, authorities and certified to local building codes in all the markets where we are active.

The Watertight Difference

Unique rubber membranes

Rubber is elastic, not plastic. Vulcanisation creates a stable cross-linked polymer structure with unsurpassed dimensional stability, elasticity and long term durability. Our systems involve patented, very competitive elastomeric materials and splicing techniques.

Fully engineered systems

30 years of close co-operation with architects, construction engineers and roofing contractors have resulted in complete and reliable solutions comprising rubber membranes, installation methods and compatible accessories; all backed by efficient technical service.

Focus on the environment

Environmental protection and care comes naturally to a supplier of products that contribute to the conservation of water, as well as the protection of goods and property from water leakage and moisture. Our rubber membranes are chemically stable and contain no problematic additives such as plasticisers, heat- or UV-stabilisers. They do not release any substances that cause allergies or hazards to the environment. Recycling options are available for membranes reclaimed from old installations.

SealEco

SealEco

Phone: +46 (0) 370 510 100
Fax: +46 (0) 370 510 101
Email: info@sealeco.com

Office Address: Kävsjövägen 38, SE-331 35 Värnamo, Sweden
Post Address: P.O. Box 514. SE-331 25 Värnamo, Sweden

Internet: www.sealeco.com

May 2011