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ENG 2008-4

Waterproofing Systems



since
1938



The continuous development experienced in the rubber industry and technology all around the globe has lead to a widespread use of rubber in various areas. The civil construction sector has also benefited from these developments and has introduced the synthetic rubber based water insulation sheets called EPDM membrane to the sector. Day by day the EPDM non-permeable sheets are becoming more preferable over many other similar products in our country, just as in other developed countries, thanks to their superior characteristics compared to others.

Foundations of Aktaş Group, the producer of Lineflex brand EPDM membrane, have been seeded with the establishment of the company; Sait Aktaş Rubber and plastic Industry, in 1938.

The company was founded to serve the rubber and plastic industry. It produced and launched Turkey's first air suspension bellows in 1972. Again, the company signed into another initiative in 2005 and produced the water insulation sheet; Lineflex EPDM Membrane from synthetic elastomer.

Currently, AKIZO Insulation Systems Industry and Commerce Inc., one of the lineflex EPDM membrane group affiliates, is responsible from selling, marketing and application activities of the lineflex EPDM membrane.



Superior Specifications

Outstanding Resistance to Atmospheric and Environmental Effects

Because of elastomer additives and polymer in its formula, it presents a strong resistance to atmospheric ozone gas and to sun's UV beams. It does not loss even a bit of its capacity during sudden temperature fluctuations between -40°C and +120°C. It is resistive to plant roots, salt and many chemicals of water and soil.

Alone, it provides long lasting and economical solution at water insulation

At ageing tests, it is proven that it stays on the surface without degeneration for minimum of 30 years. With this asset, it provides the users an economic and maintenance free insulation solution.

Superior Physical and Mechanical Properties

It is suitable for different geographical conditions and even at geographical places with -40°C temperatures, it does not lose its flexibility. It has more than 300% elongation. Without any extra constructive prevention efforts, it continuous its service during concrete surface dilatations.

Plane Lineflex EPDM Membrane 1,06mm (unreinforced)		
Description of Test	Test Result	Required Min Value (DIN7864 T3)
Unit Weight	1,235kg/m ² +/- 100gr	---
Fracture Point	10,7 Mpa	Min. 6 Mpa
Coefficient Of Linear Expansion	476%	Min. 300%
Dimensional Stability (100c aging)	No Chance	Max. +/- 1%
Ozone Resistance	40 °C 20% elongate; 50+2ppm Ozone const. 72 hours later no cracking	No Cracking
Weld Point Impermeability	No Leakage	No Leakage
Compresses Water Resistance	No Leakage	No Leakage
Fire Resistance (flammability)	Meets B2	Shall Meet B2

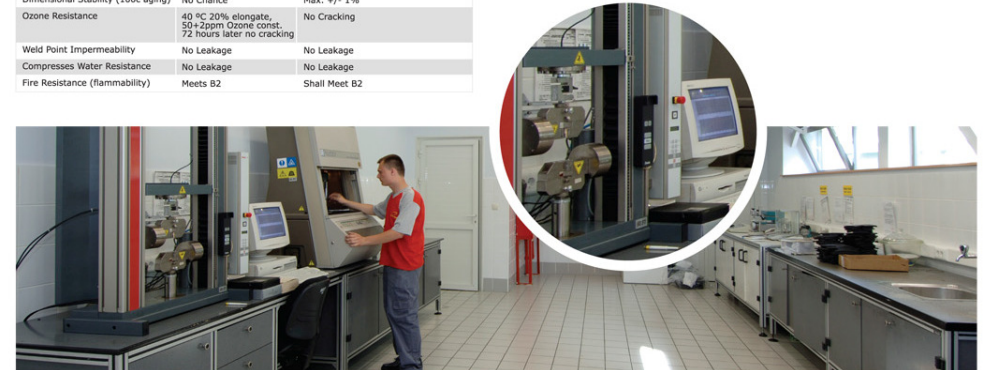


Product Range and Easy Application

Lineflex EPDM Membranes are manufactured and marketed between 0,5 mm-3 mm thickness range as 1,5 meter wide, 25 mt. or 50 mt. long rolls. If required, wider panels could be produced on project basis, so that application time is shortened with lesser joints.

Lineflex EPDM membranes are used on

- Terrace and dome type roofs, under roof tiles,
- Building foundations and facets
- Cut and cover tunnel construction
- Structures with dilatation
- Facades
- Base of the ponds, pools, treatment facilities for water and moisture insulation.



EPDM and Butyl Bands

With all its accessories and supporting material, Lineflex EPDM membranes provide you a complete insulation system. All that is needed for water insulation applications, required for your buildings are supplied by the Lineflex EPDM membrane systems.



EPDM Membrane

EPDM membrane is manufactured as a black and colour, textured membrane, either in reinforced form or not and at various thickness, namely 0.5 mm-1.0 mm-1.2 mm-1.5 mm-2.0 mm and 2.5 mm. The width of the membrane rolls varies from 100 to 150 cm and is 25 and 50 m in length for those.



Aluminum Band

Aluminum foils are laminated using butyl adhesives. This is a self-adhesive band that can stick quickly and easily to various materials. It is highly resistant to UV rays, to chemicals like acids, and is well applied both at high and low temperatures. This product can be used in all kinds of old and new roofs, at joints and finishing points of exterior panel cladding. It is marketed in 30 m rolls, which are 5 cm wide.



Dilatation Band

These are used for water insulation at the dilatation areas in all kinds of structures. It is a material with long life and with high flexibility that can yield by 300% and is UV resistant. Manufactured using 1-2 mm thick EPDM membrane, both sides are finished with 3 cm welted holes and is marketed as 25 m long rolls, with a width varying between 10-45 cm.



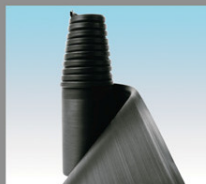
Band With Interlining

Textured interlining cloths are laminated using butyl adhesives. This is a self-adhesive elastic band that can fill in the cavities. It is used for water impermeability at critical points (wet floor corner details, under the blind frames of windows, frame of roof lids etc.) It is marketed in 30 m rolls, which are 10 cm wide.



Butyl Coated Band

EPDM membranes are laminated using butyl adhesives. This is a self-adhesive band that can stick very well to almost all kinds of surfaces. Its high elasticity makes it a product that can fit everywhere. A perfect insulation can be ensured against water, moisture and dust at joints of all kinds of structures like the roof sheets, edges and joints of the chimneys, exterior panels etc. It is marketed in 30 m rolls, which are 10 cm wide and 1mm thick.



EPDM Cord Tape

It is used as water proofing barrier on junctions of cutting and cladding sides with the building. It is an UV competent, flexible and long life material.

Adhesives and Mastics



EMT Adhesive

This is a contact adhesive with a solvent that enables adhesion of the EPDM membrane seams in a strong way. When joining the two membranes, the overlapping sections of the membranes must be at least 10 cm wide. The adhesive is applied on both surfaces with a clean brush. It must be ensured that the surface of application is always clean and moisture free. The average application is around 150 g/m².



KNT Adhesive

This is used to apply the EPDM membrane on various surfaces like walls, wooden or metallic surfaces. It is a rubber based adhesive. It must be ensured that the surface of application is always clean and moisture free. The average application is 1000 g/m². It should be applied on both surfaces then held that way for about 15 minutes, depending on weather conditions. After the adhesive is set, both surfaces are pressed on each other by some applying some pressure.



Mastic

The mastic marketed in 310 ml cartridges are used as the filling and sealing mastic, at the overlapping areas where the membranes are welded, between the surface where the membrane is fixed and the press strip.

The 600 ml sausage like packages are used for sticking the EPDM membrane to the surface at the exterior panel claddings, metal roofs and aluminum frame systems.

Both mastics are based on EPDM, and are products with considerable elasticity and perfect adhesion capability to concrete, metal, wooden and pvc surfaces.

Connection Units and Supporting Components



Press Strip

This product is used for finishing EPDM membranes. These are manufactured as 100-300 cm long, 20-50 mm wide and 1,2-3 mm plates, using aluminum or galvanized metal

Fasteners

Manufactured from galvanized metals, these are metal plates used to mechanically fix the EPDM membrane.

Screws and dowels

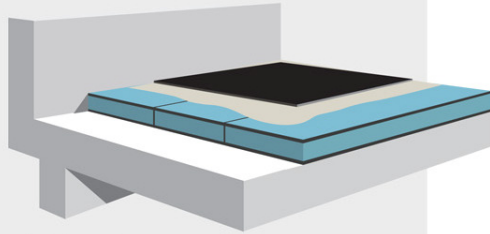
These are used to fix the press strip, fasteners and various other fixation components to the lower surface








Detail Accessories

All detail accessories are manufactured using EPDM based materials and especially designed for the functions required. The detail accessories are fixed on the EPDM membranes using thermal welding or adhesion methods. Some of the main detail accessories are the interior corner pieces, exterior corner pieces, vertical gutters, side parapet projections antenna connection details.

Terrace Roofs



Full Adhering

-  Lineflex
-  Adhesive
-  Polystyrene
-  Vapour barrier
-  Reinforced Concrete

Full Adhering

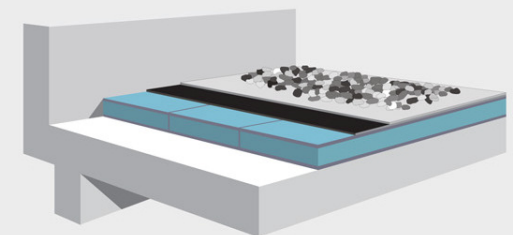
At roofs where mechanical pinning is not suitable, Lineflex Membrane is laid and affixed by fully adhering of the whole surface. In this system, no additional load is exerted on the roof. At roofs with extraordinary or irregular shapes and at domes, full adhering system is more suitable. The thermal insulation material should have a top surface that is suitable for adhering. Membrane edges can be joined/ bonded either with thermal tapes or EPDM adhesives. If adhesives are used, overlapping should be minimum 10 cm. Thermal insulation material with upper side suitable for gluing should be used. As thermal insulation material, perlite sheets, rock wool or polystyrene sheets can be used.









Ballast System

Ballast Roofing System is the most economical option in building terrace insulations. This system can be used in different roof types. At ballast roofing system application, EPDM Membranes are lined one next to the other, with an overlapping of 4 cm. and are bonded to each other using hot air bonding. Under special circumstances adhesives may be used at the overlapping sections. In such case the overlapping should be minimum 10 cm. Roof parapets, pipes, rain gutters and similar elements are coated with detail components manufactured from EPDM Membrane.

For thermal insulation, perlite sheets, polyurethane sheets, rock wool or polystyrene sheets can be used. For protection, the EPDM membranes are coated with civil engineering fabric. On top of this civil engineering fabric, 50kg/m2 of river gravel is laid to prevent the insulation from being blown off by winds. The gravels should not have sharp and pointed edges. The sizes of the gravel should be at a range between 20-40 mm. If crushed rock is used, civil engineering fabric should be at least 200 gr./m2 50 mm thick concrete plates must be laid on roofs where people shall walk.



Ballast

-  Pebbles
-  Geotextile
-  Lineflex
-  Polystyrene
-  Vapour Barrier
-  Reinforced Concrete



Under Roof Tiles



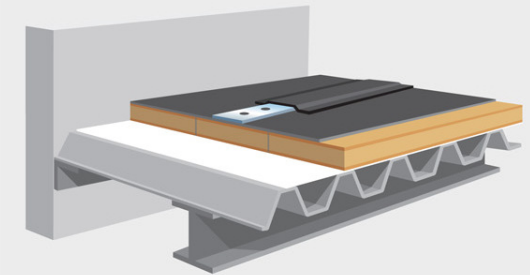
Mechanically Anchored System



Mechanical Pinning

On light and flat roofs where no static load is allowed, the membrane is mechanically pinned to the surface with special studs.

The rock wool which is laid on ribbed iron sheet is covered with Lineflex Membrane. A strip of 1.5 meter width of the membrane is pinned on the ribbed sheet together with the rock wool from its seamless side using mechanical pinning. Mechanically pinned side of the membrane is covered using the adjacent membrane strip by overlapping this strip by 15 cm. Overlaps are bonded using hot air bonding. Adjacent membrane edges laid without the overlapping of thermal strips are jointed either using thermal tapes or special adhesives.

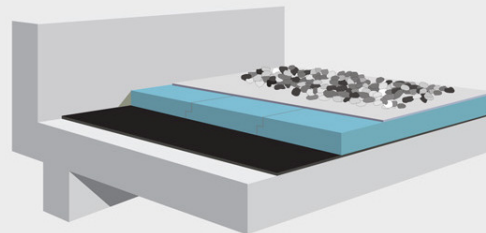


Mechanical Pinning

- Lineflex
- Stone Wool
- Vapour barrier
- Steel Trapeze Floor
- Steel Floor

Inverted Roof

In the inverted roof systems, the membrane is laid under the thermal insulation system, opposing to the application method used in flat roofs. Mechanical fixation or complete adhesion is not required in this system. To protect the system against wind, a minimum of 200 gr/m² of civil engineering fabric is laid over the thermal insulation layer, which then is covered with a minimum of 50 kg/m² river gravel. Gravel sizes should be within a range between 20-40 mm. Or minimum of 50 mm thick concrete blocks are laid instead.



Inverted roof

- Pebbles
- Geotextile
- Polystyrene
- Lineflex
- Reinforced Concrete





Facades



The space between the window frame and the building is sealed/made watertight using EPDM Membrane against the sweating that occurs behind the curtain wall or against humidity that may be caused by rain. In these systems, EPDM membranes are used in 150-200 mm. wide strips. If requested wider strips are also manufactured. They are manufactured either with one side being self adherent or a plane flat membranes. Primers, cleaning compounds, adhering mastic and cover strips are used as accessories.



Basement Water Insulation

Tanking water insulation is applied to protect the foundations and curtain walls of foundations in buildings, against the damaging affects of ground water as well as the affects of substances like sulfates etc. at soils with no ground water. Foundation tanking increases structural life. Foundations are the most important structural elements of the building that transmit all the load to the ground.

It is observed that in the past earthquakes, most of the collapsed buildings had damaged or worn out foundations. High performance Lineflex EPDM Membrane protects the foundations throughout their service life against water and chemicals like acids, alkalis and salts.

Tanking is managed by coating the side curtain walls of the building that are in contact with soil using Lineflex EPDM Membrane.



Dilatation Band

These are used for water insulation at the dilatation areas in all kinds of structures. It is a material with long life and with high flexibility that can yield by 300% and is UV resistant. Manufactured using 1-2 mm thick EPDM membrane, both sides are finished with 3 cm welted holes and is marketed as 25 m long roles, with a width varying between 10-45 cm.



Hot Welding

Both edges of Lineflex EPDM membranes are coated with thermal bands. By these thermal bands it is possible to bind the overlapping edges of two membranes by applying hot air thermal bonding.

