

EPDM

membranes

The watertight
difference



R U W A

Rubber Waterproofing Association



The Membrane

EPDM rubber membranes have unique properties making them the ultimate choice for a wide variety of roofing, waterproofing and lining applications. The product is available in thicknesses from 0,75 to 2,00 mm, while the most widely used thickness are 1,10 - 1,20 mm. Widths vary from 1,2 meters up to 15 meters. Lengths vary from 20 to 200 meters depending on application. Because the product can be prefabricated to many different lengths and widths, roll sizes are available from less than 10 sqm. up to 2000 sqm. While the most popular version of the product is produced as a homogenous black EPDM rubber sheet, membranes are also available with fleece backing and interior fabric reinforcement. A variety of surface colors are also possible.

Complete engineered waterproofing systems are available from the individual producers, including fastening and splicing systems as well as specialized components like pipe boots, drains, flashing materials, etc.

Roofing Membranes

The German institute SKZ, Würzburg, in the year 2003 published a report stating that expected service life of EPDM roofing membranes, defined as minimum 150 % elongation at break, exceeds 50 years. EPDM membranes have been installed on flat roofs and decks since the late 1960's, including billions of square meters installed in all types of climates, from the arctic cold to the heat under the equator. Roofs that today provide the ultimate testimony of the longevity and indestructibility of EPDM rubber roofing systems.

Loose applied membranes covered with coarse gravel, sedum vegetation systems, roof gardens or concrete are the most common EPDM roofing systems. When loose applied, large panels provide quick and simple installation under all weather conditions. Due to their simplicity of design, ballasted EPDM

roofs have an extraordinary total cost effectiveness. Highly engineered systems are available, where panels are made to measures, with incorporated pipe boots and collars for sky lights, etc.

EPDM roofing systems for mechanically fixed installation, as well as adhered systems, using cold adhesives or hot bonding bitumen, are offered by most producers. EPDM membranes for exposed roofing are often modified with flame retardants in order to fulfill EU or local standards on fire resistance.

Geomembranes

Because of their outstanding flexibility EPDM membranes have virtually no yield point under elongation. They elongate in a linear fashion up to 300 % and have a multiaxial elongation exceeding 100 %. At any temperature, from - 40 to + 120° C. They are not exposed to stress cracking and can be deformed to extreme limits and still return to its original size, shape and thickness. EPDM membranes also have viscoelastic properties, which means that they can withstand an almost unlimited pressure load.

EPDM membranes conforms tightly to soil and earth substrates, providing a natural looking and beautiful pond or a reservoir liner safe against wind forces and with a minimum of stress on the membrane.

EPDM liners are highly resistant to microbiological attack and root penetration. The membrane is UV resistant and can be installed either exposed or covered with earth. The service life and performance is exceptional, as the strength and elasticity remains virtually unchanged.

For this reasons EPDM membranes are finding an increasing use as liner for ponds, ornamental lakes, irrigation reservoirs, tanks, landfills and numerous other geotechnical applications.

The voice of the manufacturers: RUWA

Organization

The Rubber Waterproofing Association (RUWA) is a Product Group within the European Tyre & Rubber Manufacturers' Association, ETRMA. RUWA was formed in 2001 and represents all the main suppliers of EPDM waterproofing membranes in Europe.



Aims and objectives

RUWA's prime objectives are to co-ordinate and represent the interests of its members and their associates in respect of:

Standards and legislation

Various EU authorities develop and produce new European standards and legislations, which will largely influence the area of waterproofing in the future. RUWA is the voice of the EPDM membrane industry in all questions related to this. RUWA is the producers platform for collaboration and networking with as well as influencing the European Community.

Dialogue and Promotion

RUWA promotes and supports the wider use of EPDM membranes in roofing and geotechnical applications. We support increased awareness and understanding of EPDM membranes and foster responsible methods, codes of practises and applications by communicating with the market, with domestic organisations and with authorities.

Health, Safety and Environment

The RUWA members cooperate to minimise environmental impact in the production, installation, service life and recycling /disposal of the product. The RUWA members are committed to cooperate for the best possible environmental solutions.

Research and Education

With the strength the cooperation between all major producers provide, RUWA implements research and education programs for optimum membrane performance and quality in installation, specification and construction. RUWA provides technical liaison and assistance to partners, members and associates.



The Source: EPDM

EPDM (ethylene propylene diene monomer) is a synthetic rubber made from the by-products ethylene and propylene. The elastomer EPDM was developed by Dr. Ziegler and Dr. Natta. Over the last 40 years EPDM have found an ever increasing number of applications, in the automotive industry and in the building and civil engineering industry, etc.

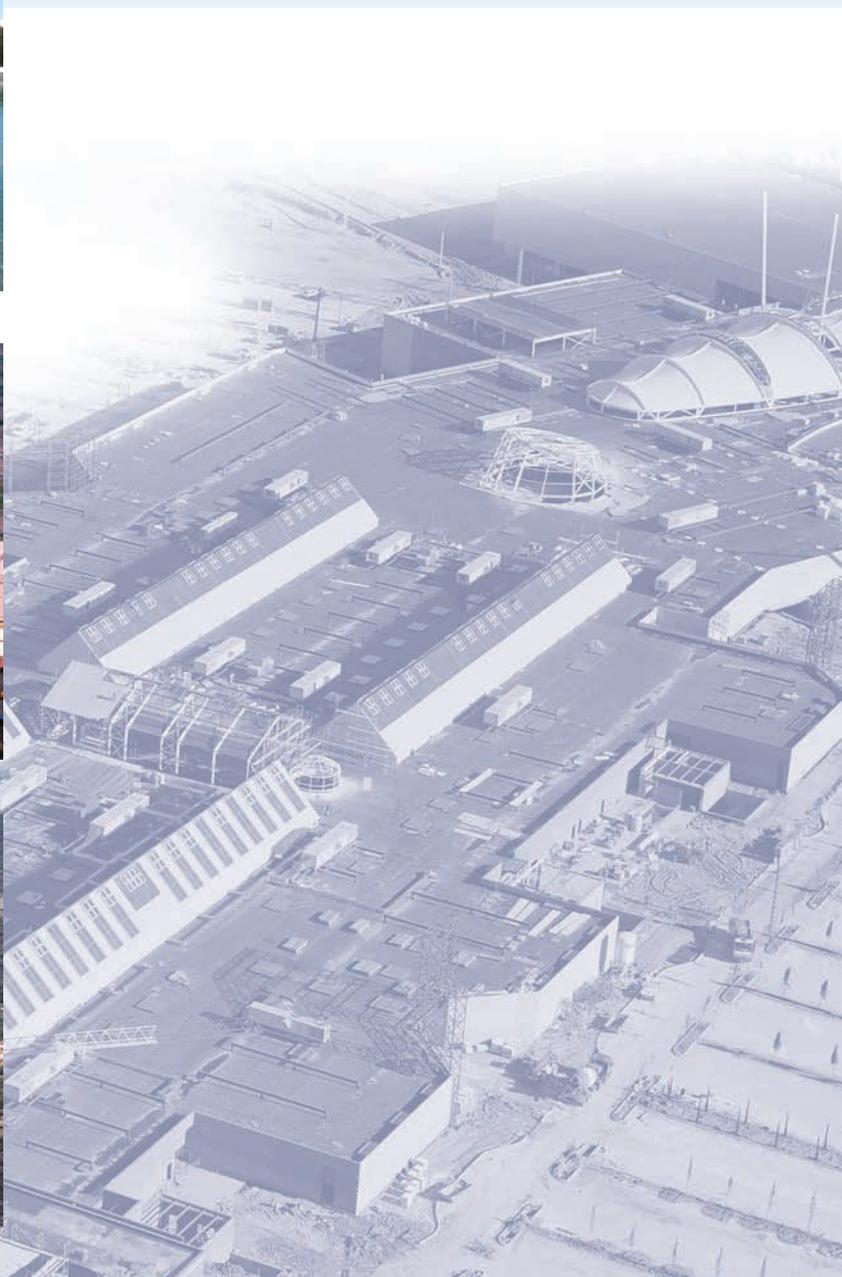
EPDM is an amorphous elastomer obtained by the copolymerization of ethylene, propylene and a non-conjugated diene monomer. EPDM is a polymer composed of saturated linear macromolecules with a paraffinic structure. Because the EPDM material remains saturated after vulcanisation it resists degradation due to oxidation. The rubber compound also contains reinforcing carbon black, fillers, processing aids, antioxidants and vulcanising ingredients.

During production the EPDM compound is vulcanised. The long rubber molecules are joined together by chemical cross-linking, making for an elastic, flexible membrane, which differs from thermoplastic materials in that it is stable to temperature change, is chemically resistant and will always return to its original dimensions after being elongated.

The EPDM polymer and the cross-linked molecular structure give the EPDM membranes their unique properties, negligible aging over long periods of time despite exposure to the atmosphere, sunlight, UV radiation, chemical pollutants, water, and extremes of temperature.

EPDM contains no plasticizers which can evaporate or be washed out over time or migrate to other materials. The strength and elasticity remains virtually unchanged over decades, without shrinkage, melting, hardening or cracking, and the membrane remains flexible at temperatures from -40 to $+120^{\circ}\text{C}$.

EPDM is also highly chemical resistant, and resistant to attacks by roots, rodents, fungi, algae, bacteria and microorganisms.



The Applications

Since its development in the late sixties, EPDM membranes have been used in a wide variety of applications.

Roofing

The primary application for EPDM membranes is roof waterproofing. With over 100 million square meters installed every year, EPDM is indeed the world's most widely used single-ply roofing membrane. Its unique properties make it an ideal choice for industrial, commercial, as well as residential projects.

EPDM's application methods - ballasted, fully adhered and mechanically attached - allow the membrane to be installed on flat roofs as well as on slopes with positive drainage, including vertical applications for fully adhered systems.

Lining

EPDM Geomembranes have been used for over 30 years in various lining applications such as garden and landscape ponds, irrigation ponds and canals, agricultural waste reservoirs & water reservoirs. EPDM Geomembranes are also increasingly used to cover solid waste reservoirs to prevent against pollution.

Others

EPDM membranes are also used in other applications including foundations waterproofing, thru-wall flashings, terraces, parking decks, etc.

In short, thanks to its unmatched track record, EPDM's popularity is growing in an ever-wider range of applications.



The environmental factor

Concern for the environment makes EPDM membranes the natural choice

EPDM membranes are chemically stable and contain no dangerous additives or plasticizers. No chemicals are emitted or released, neither over the service life of the product or when dumped or recycled. The membrane leaves the environment unharmed.

Long service life in combination with low weight and volume gives EPDM a favourable result in LCA analyses, compared to, for example, multi layer, heavy bitumenous products or chlorinated products.

EPDM membranes reclaimed from old installations can be dumped without affecting the environment, burned for energy production, or recycled for use in new EPDM liners or other industrial rubber goods.

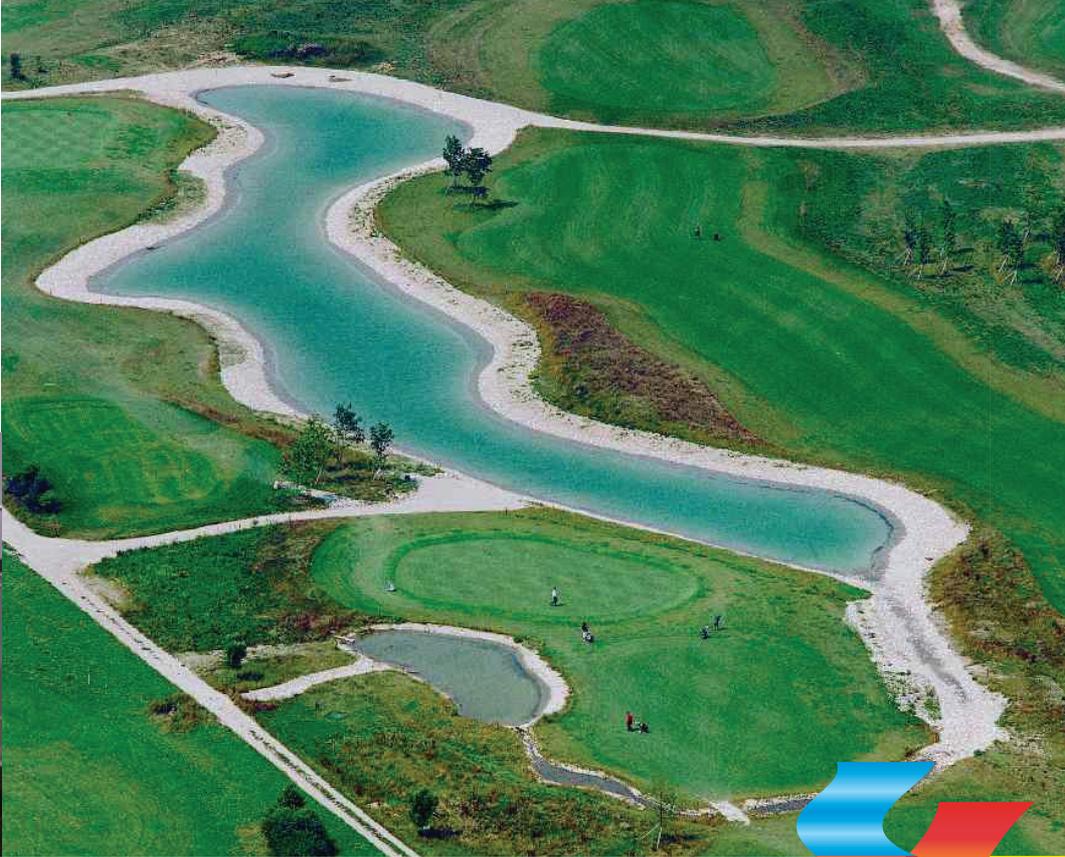
Life Cycle Assessment – LCA

LCA can be used to determine all potential environmental effects of the product, from production of raw material, during installation and service life and up to and including final removal or recycling. Because EPDM has a low weight compared with other membrane products, and do not contain any CFC's, HCFC's, phtalates, dioxine, low grade hydro carbons or any other harmful chemicals, and because EPDM has a documented expected service life exceeding 50 years, the LCA is very favourable when compared to alternative products.

Recycling

EPDM membranes can be recycled, by reusing the elastomeric components. The product is reduced to a micron fraction powder, in a "Cryogenic" grinding process, and reused by mixing into new EPDM rubber compounds.





RUWA

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c/o



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