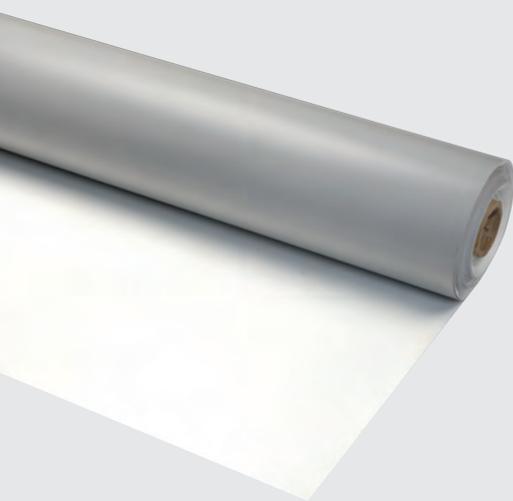




Firestone UltraPly™ TPO: An ecological membrane

Firestone UltraPly TPO is a light-colored roofing membrane that reflects the sunlight before it can be absorbed by the membrane and converted into heat energy. This characteristic of light-colored membranes, together with the advantages described hereafter, means that, especially for sunny climates, the Firestone UltraPly TPO membrane can be considered as an ecological membrane.



✓ Primary materials

The Firestone UltraPly TPO membrane is made from the incorporation of an ethylene propylene rubber into a polypropylene matrix. A polyester weft inserted reinforcement, manufactured in the Firestone Fibres & Textiles division, is incorporated in-between cap and core layer. This reinforcement gives the membrane a good resistance to puncture and tear and improves the durability of the membrane. Equal mechanical performance can thus be obtained by a **membrane with a lesser thickness**. Use of **less primary materials** contributes to the care for the environment.

✓ No plasticizers

The Firestone UltraPly TPO membrane does not contain any plasticizers. A liquid plasticizer will migrate or evaporate out of the membrane when in contact with certain chemical substances, oil, heat and/or simply through ageing. Loss of plasticizers will result in loss of flexibility and cracking of the membrane. As the TPO membrane contains no plasticizers, it is **less susceptible to weathering and has a better sustainability**.

✓ No halogens

The Firestone UltraPly TPO membrane is a non-halogenated product, contrary to some roofing membranes containing up to 10% halogenated flame retardants. Firestone uses MagnesiumHydroxide in order to improve the fire performance of its TPO membrane and meet today's fire safety regulations. **No toxic or corrosive combustion gases are produced in case of a fire**. Furthermore, investigations have shown that halogenated flame retardants can have an adverse effect on the long-term UV stability of the membrane and shorten the life expectancy of the membrane.



Manufacturing

The manufacturing process of the Firestone UltraPly TPO membrane has a limited impact on the environment. **The production of a TPO membrane requires less energy compared to other roofing membranes.** The polymers and additives are not considered dangerous goods for man and environment. Dust particles emitted during the production process do not contaminate the working environment. Finally, products resulting from chemical reactions at high temperature (extrusion process) are negligible.

Hot-air welding

Thanks to the chemical composition of the Firestone UltraPly TPO membrane (quality and quantity of anti-oxidants and UV stabilizers as well as the nature and quantity of the non-halogenated flame retardants), the welding areas do not require any specific cleaning or preparation using a solvent based cleaning agent. This way we are eliminating any depletion of natural resources required for the production of such a cleaning liquid. **No toxic substances are emitted during the welding of the seams.**

Superior durability

Firestone produces polyolefin membranes since the early nineties. In 2003, the company took the decision to discontinue production of PVC membranes because of the impact chlorine has on the environment. Since then sales of the UltraPly TPO membranes have grown rapidly and represent today more than 35 million m² per year. Firestone UltraPly TPO membranes have demonstrated their performance on rooftops around the world. Studies, both in the field as in the lab, **show the characteristics of the Firestone UltraPly TPO membrane do not change when ageing.**

Testing has shown that no ingredients are washed out of the membrane when in contact with water. Rain water can thus be collected from the roof and used domestically.

Easy to recycle

Today, **cut-offs and scrap material generated during production are entirely recycled within the production process.** They are mixed back into the core layer of the membrane. The absence of halogenated products in the membrane simplifies and allows full recycling of the membrane and/or disposal of the membrane by means of incineration.



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