

## MakMax Tensile Membrane Structures

### PTFE vs PVC Comparison

As the world's largest tensile membrane company, we have specialist fabrication facilities on several continents, including at our Australian head office in Brisbane. Our membrane fabrication processes fall under our ISO accredited quality, safety, and environment management plans, with works closely monitored by our Engineering and Project Management Teams. We only provide and recommend premium fabric materials with proven performance validated by rigorous testing at our R&D to ensure they meet our high standards of quality and longevity.

PTFE coated glass fibre membranes are currently the best tensile fabric products available in the market. The materials are UV stable, inert and have a proven design life of at least 50 years. They exhibit a high translucency, an extremely low surface energy which minimises dirt build up and maintenance intervals, and the best fire performance characteristics of any fabric material.

PVC coated polyester fabrics are an excellent economical weatherproof membrane. They offer a medium level of light transmission and generally last 15-25 years before needing replacement. PVC membranes with a PVDF coating have good dirt repellent characteristics however some UV aging of the colour should be expected through its lifespan.



## PTFE vs PVC Comparison

	PVC	PTFE
 Sun Protection	✓	✓
 Rain Protection	✓	✓
 Hail Protection	✓	✓
 Snow Protection	✓	✓
 Translucency	4-7%	14-18%
 Life Expectancy (years)	20+	50+
 Recyclable	✓	✗
 Self-Cleaning	Self-cleaning performance will diminish with age	✓
 Maintains Colour	Some yellowing over time may occur	✓

† Comparison based on solid membrane structures; PVC and PTFE are also available in mesh versions

MakMax Australia offers a range of the best PVC and PTFE membranes in the world from suppliers who have passed our rigorous quality testing and share our commitment to quality, longevity and performance. We recommend membranes with the most suitable properties for attractive and long-lasting tensile membrane structures.

- » Both PVC and PTFE effectively block UV rays.
- » Both PVC and PTFE membranes are weatherproof.
- » A more affordable option, PVC is also recyclable at the end of the usable life in some regions of the world.
- » PTFE membranes have a significantly higher translucency, providing a higher light level under the material which helps reduce artificial lighting during the daytime and provides a much brighter and inviting space than darker canopies.
- » PTFE membranes repel dirt and pollutants and have superior self-cleaning properties to PVC. This results in lower cleaning and maintenance costs throughout the life of the structure.
- » While both PVC and PTFE are durable and hard-wearing materials, PTFE membranes have a significantly longer life-span, maintaining their colour, strength, and performance over much longer periods.

### FIRE PERFORMANCE OF PVC & PTFE

PTFE membranes have superior fire performance characteristics to PVC membranes to most Australian and International fire testing standards. Below are some basic results of two commonly used membranes. Different manufactures and grades of material will have slightly different test-results, the below should be used as a guide only.

 Fire Performance	 <b>PVC: Mehler FR900N</b>	 <b>PTFE: Chukoh FGT600</b>
		<b>Total Duration of Sustained Flaming<sup>1</sup>:</b> N/A <b>Flammability index<sup>2</sup>:</b> 8 <b>Spread of Flame Index<sup>2</sup>:</b> 7 <b>Heat Evolved Index<sup>2</sup>:</b> 1 <b>Ignitability Index<sup>3</sup>:</b> 16 <b>Smoke Developed Index<sup>3</sup>:</b> 8 <b>Observation:</b> Visible smoke and melting.

<sup>1</sup> AS 1530.1 Methods for Fire Tests on Building Materials, Components and Structures. Part 1: Combustibility test for materials.

<sup>2</sup> AS 1530.2 Methods for Fire Tests on Building Materials, Components and Structures. Part 2: Test for Flammability of Materials.

<sup>3</sup> AS 1530.2 Methods for Fire Tests on Building Materials, Components and Structures Part 3: Simultaneous Determination of Ignitability, Flame Propagation, Heat Release and Smoke Release.

### A NOTE ON NON-COMBUSTIBILITY

Prior to the 2019 BCA, PTFE-coated glass fibre tension membrane materials were generally deemed non-combustible as the code permitted composite materials to be classified as non-combustible, providing the structural elements passed AS 1530.1 and any coatings were sufficiently thin. The glass fibre woven structural base cloth within PTFE fabric is non-combustible to AS 1530.1, but the PTFE coating is not, and the change in wording in the 2019 BCA is generally interpreted by certifiers and fire engineers to now not allow this material to be considered non-combustible.

Where non-combustible construction is required, a deemed to satisfy pathway is usually difficult to achieve, and PTFE-coated glass fibre membranes will normally need a performance solution to be used. Generally, in our experience, fire engineers and certifiers are familiar with PTFE-coated glass fibre membranes and based on the testing values to AS 1530 parts 1, 2 and 3 are usually happy to support a performance solution. PVC coated fabrics have on occasion been given performance solutions that have allowed their use in areas requiring non-combustible construction, however this is rare as the fire performance of PVC materials is inferior to PTFE-coated glass fibre membranes.

For more information visit [www.makmax.com.au/fabrics/](http://www.makmax.com.au/fabrics/)

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**MakMax Australia**

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