



POLYETHYLENE FABRIC

DURABLE AND RELIABLE FABRIC FOR FABRIC COVERED STRUCTURES

With its high tensile and tear strength, polyethylene (PE) fabric can withstand high winds and temperatures. PE offers lower lifecycle costs due to its durability and UV-resistance. The material features a stronger scrim with a special weaving pattern that increases its tensile strength and resistance to tearing or breaking - a superior performing material when used as a covering for fabric structures. Most fabric covers are made of engineered PE fabric which is 12 oz per square yard (407 gsm) in weight, and 24 mils thick.



Source: Calhoun Super Structure, 2015

PHYSICAL PROPERTIES OF POLYETHYLENE (PE) FABRIC

Polyethylene (PE) fabric thermoplastic polymer is composed of ethylene monomers and possesses several advantageous physical properties.

Lightweight: PE is lightweight, making it easy to handle, transport, and install.

Water Resistant: Manufactured with a proprietary coating on both sides which makes it a waterproof membrane, protecting occupants, equipment, and assets.

Chemical Resistant: Resists deterioration from certain chemicals including acids and alkalis.

UV Resistant: Can withstand prolonged exposure to sunlight without significant degradation or damage; further offers UVA/B protection to building interiors.

Fire-Retardant: Can meet the standards required by building codes; flame-retardant compounds are added during manufacturing and integrated into the polymer matrix.

Low Friction Co-efficient: Has a smooth surface that allows objects to slide easily over it; useful in cases where low friction is desired, such as conveyor belts.

DID YOU KNOW?

Polyethylene (PE) is known for its high strength - to - weight ratio with weights ranging from 250 gsm to 500 gsm and good chemical resistance.

POLYETHYLENE (PE) FABRIC VERSUS PVC

Polyethylene (PE) fabric and polyvinyl chloride (PVC) are two common materials used as fabric covers for various applications. How do they compare?

Composition: PE is a thermoplastic polymer composed of ethylene monomers, while PVC is a thermoplastic polymer composed of vinyl chloride monomers.

Flexibility: PE fabric is generally more flexible than PVC. It has a greater natural flexibility and can be easily folded and manipulated. PVC is rigid and requires plasticizers to enhance its flexibility.

Durability: Both materials are known for their durability, but PVC is generally considered to be more durable than polyethylene.

Strength: PE fabric has good tensile strength, meaning it can withstand pulling forces without tearing easily. PVC is strong but may be more prone to cracking or breaking under extreme stress.

Waterproofing: While PVC is more often used in applications requiring a high level of water resistance, both membranes are waterproof.

Environmental Impact: PE fabric is considered to have a lower environmental impact compared to PVC. PE is recyclable and generally produces fewer toxins during production and disposal. PVC requires more energy-intensive production processes and may release toxic chemicals when burned.

Cost: PE fabric is typically less expensive than PVC. The production of PVC involves more complex manufacturing processes, making it relatively more costly.

Calhoun Super Structure uses polyethylene (PE) fabric in the production of its fabric structures, and applies site-specific analysis of conditions to determine loading and structural requirements.

OPTIMAL FOR FABRIC STRUCTURES

Because of the strength and durability of polyethylene fabrics, semi-permanent structures can be economically built to last for over 25 years. Other benefits of polyethylene fabric covers for fabric structure applications include:

- Effectively moderates interior temperatures
- Better in unstable, seismic conditions due to mitigation of shock waves and vibration
- Can endure temperatures up to 70 degrees celsius (158 fahrenheit)
- Does not promote fungal growth
- Easy to clean using simple soap and water
- Can withstand significant stress and stretching without tearing or cracking
- Can be easily bent or folded to fit various shapes of structures
- High translucency and illuminance means less artificial lighting and greater energy savings

HOW MUCH LIGHT DO YOU REQUIRE?

USE CASE	ILLUMINANCE (LUX)
Warehouse	150
Livestock Facility	200
Sports Complex/Auditorium	500
Production Plant	4,000
Performance of prolonged visual tasks	5,000-20,000
Inside a single layer FR PE fabric	69,000
Inside a single layer Non-FR PE fabric	78,000

Source: NovaShield, 2023. Based on NovaShield 400 Series fabric in white.