

Welcome to

Advanced Textiles

EXXPO

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Coated Fabric Design for Environmental Sustainability

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A decorative graphic at the bottom of the slide consists of several overlapping, semi-transparent geometric shapes. From left to right, there is a dark grey/black shape, a large red shape with a fine grid pattern, a blue shape with a hexagonal pattern, a green shape with a grid pattern, and a pink shape with a multi-colored dot pattern.

Agenda



- Environmental Challenge with Traditional PVC Coated Fabrics
- Alternates to Coated PVC fabrics
- Examples of Applications in Australia
- Is Circularity within our Industry possible?

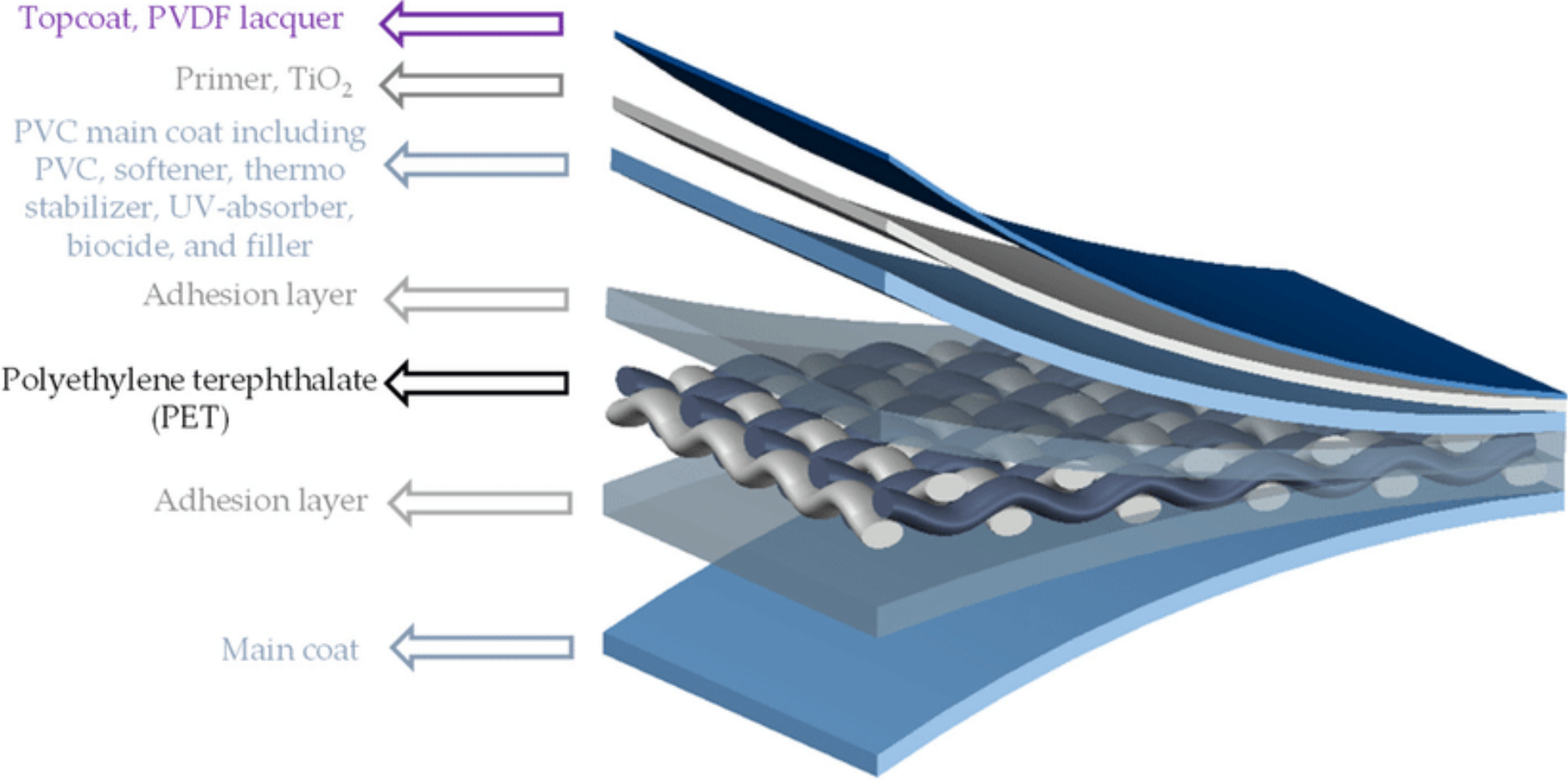
PVC's Strength is also its Weakness

PVC coated fabrics have many desirable attributes, which is why they are so widely used in our industry.

Key features, and how they are achieved, include:

- High strength and dimensional stability (from the **polyester** scrim)
- Good levels of durability (from the **PVC** coating and surface **lacquers**)
- Good flexibility (from the **plasticizers** in the coating)
- Ease of fabrication though HF/RF welding (due to **Chlorine** branching)

Make-Up of a PVC Composite Fabric Structure



What is the key challenge to recycling PVC?

While each individual component can be recycled, the key challenge for a recycler is to ensure they are completely separated, for effective upcycling.

Current recycling methods available for PVC fabrics include:

- Mechanical shredding/recycling – for downcycled applications
- Solvent dissolution or swelling, to separate components
- Incineration/energy recovery

How to overcome these challenges

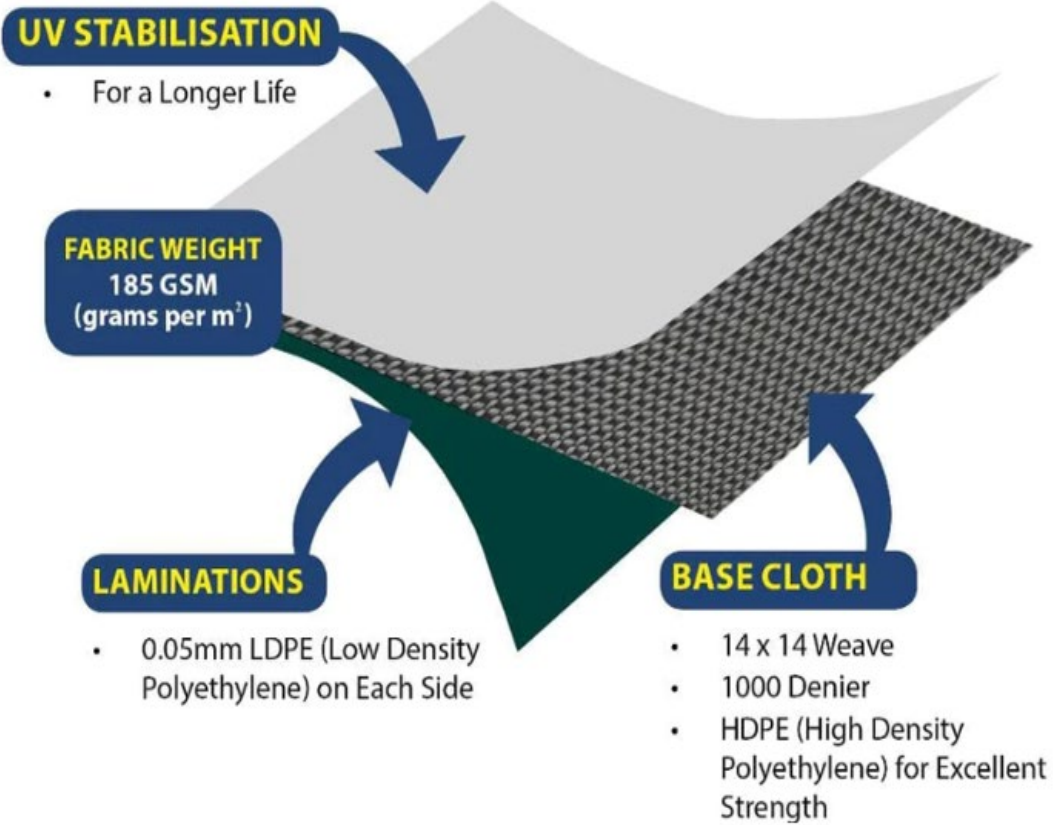
Develop and manufacture a coated fabric from a single source polymer – removing the need to separate individual components.

Combining PolyEthylenes (PE) has been widely used in the technical textile market for decades.

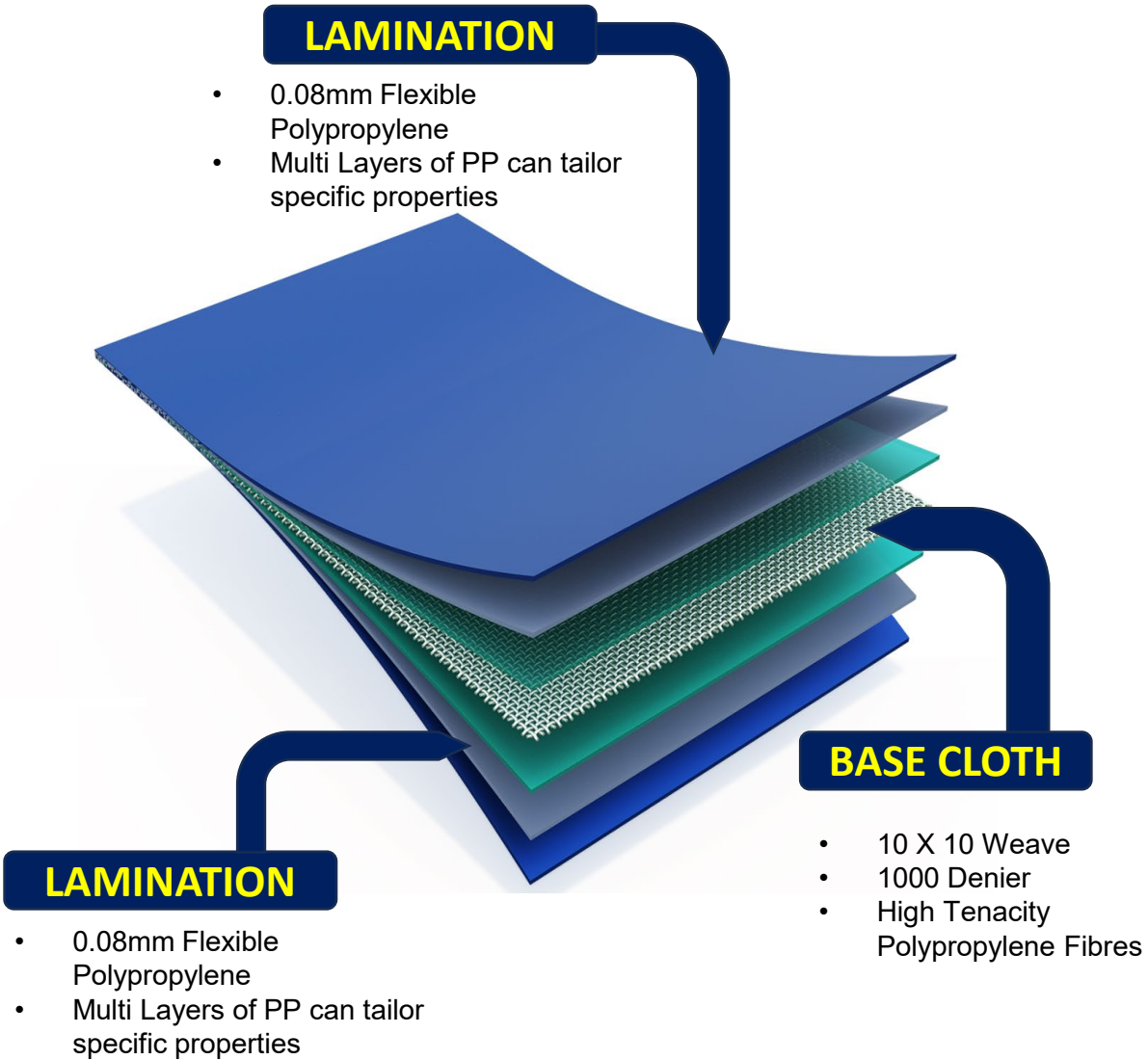
- Typically, this will involve blending an HDPE base fiber with an LDPE/LLDPE coating.

Combining PolyPropylenes (PP) is a more recent development. PP based fabrics have aesthetics and flexibility that more closely align with flexible PVC.

PE and PP Fabric Design

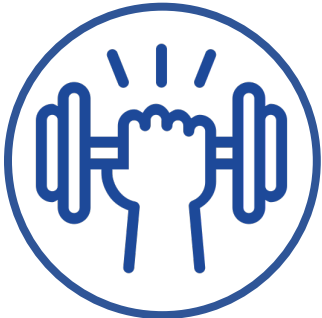


PolyEthylene Coated Fabric



PolyPropylene Coated Fabric

Key Attributes of PE and PP Fabric Design



Strength



Flexibility



Non-toxic



Water Resistance



Lightweight



Tear Resistance



PFAS Free



Durability



Flame Resistance



Recyclable

Examples of PVC-Free Coated Fabrics in Australia

- Grain Covers and Agricultural Covers
- Water Containment
- Roofing Membranes
- Signage and Banner Fabrics

Agricultural Covers

- Polypropylene based product
- Designed for excellent outdoor durability, ease of handling and high flex resistance
- Polypropylene offers superior strength-to-weight properties compared to coated PVC



Water Containment

- Polyethylene / Polypropylene based product
- Designed for excellent flexibility, water tightness and stress crack resistance
- PE / PP can achieve NSF61 and AS4020 certification



Roofing Membranes

- Polyethylene based product
- Designed for excellent outdoor durability, mechanical properties and dimensional stability
- Polyethylene can achieve extended UV warranties and comply to international fire retardant standards



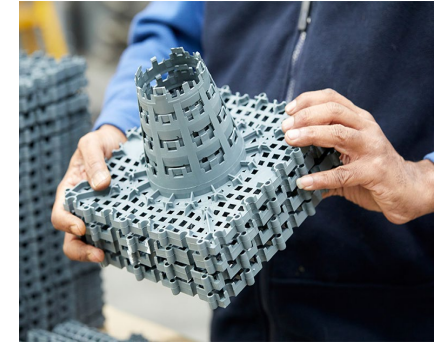
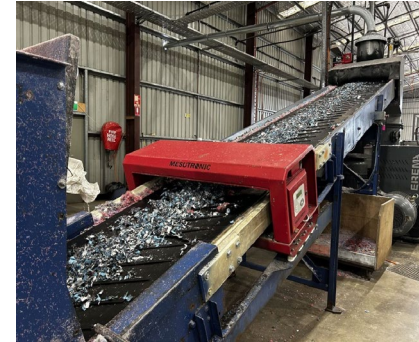
Large Format Banners

- Polypropylene based product
- Designed for excellent ink adhesion, aesthetics and mechanical properties
- Polypropylene needs to be surfaced treated to assist with print performance



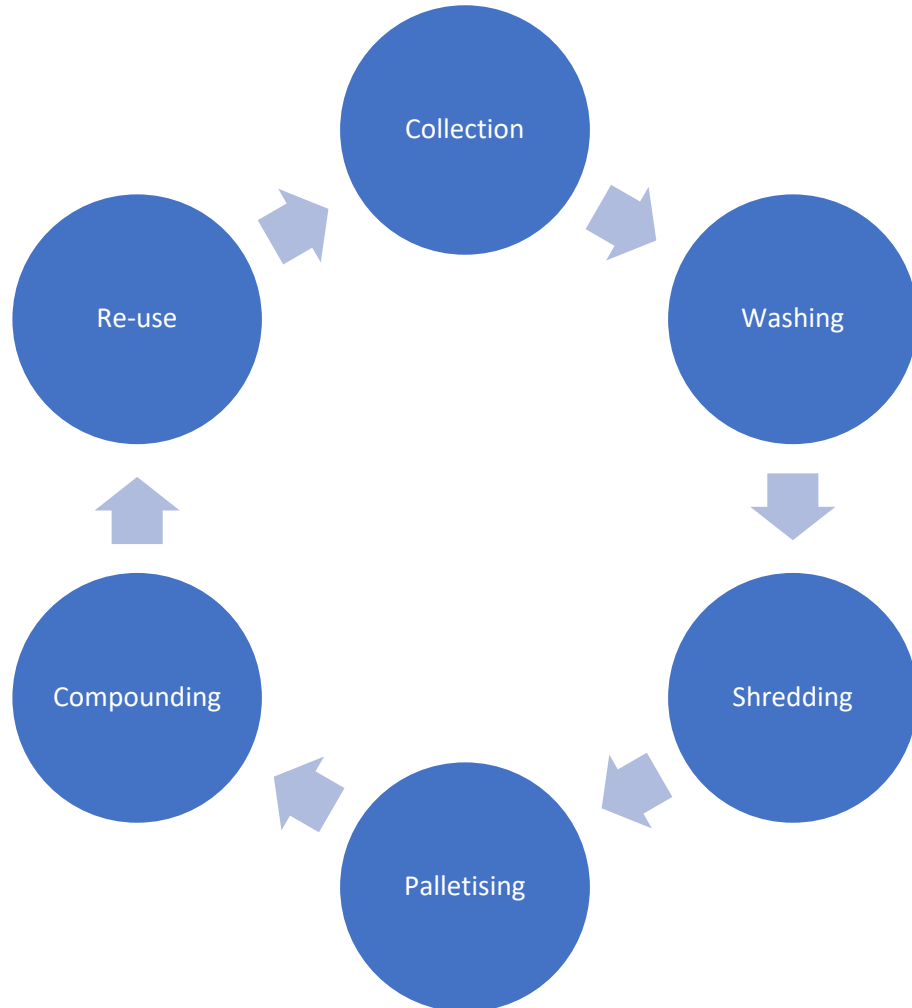
All of these technical fabrics can be easily recycled

Mechanical Recycling Process



Creating circularity within our industry

Mechanical Recycling Process



Thank You and Questions



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See You Next Year



Sept. 24-26, 2024

Anaheim, California

See you next year!

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