PERFORMANCE PRODUCTS

CFFA CHEMICAL FABRICS & FILM ASSOCIATION, INC.

Exploring Functional and Aesthetic Advantages of Coated Fabrics for Commercial Seating

chemicalfabricsandfilm.com | cffaperformanceproducts.org

BASF We create chemistry
BYK Additives & Instruments
ENDURATEX We cover the world.
EVONIK INDUSTRIES
ExxonMobil
Formosa Plastics
Morbern
OMNOVA SOLUTIONS
SPRADLING

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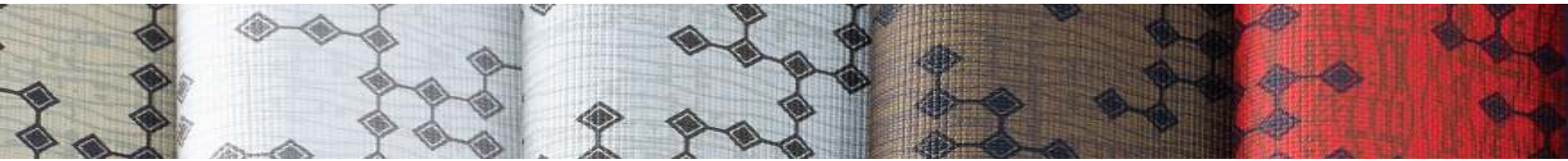
Who We Are

RONNIE BELL

- Technical Manager, Coated Fabrics, OMNOVA Solutions
- Chair, Performance Products Division, Chemical Fabrics and Film Association



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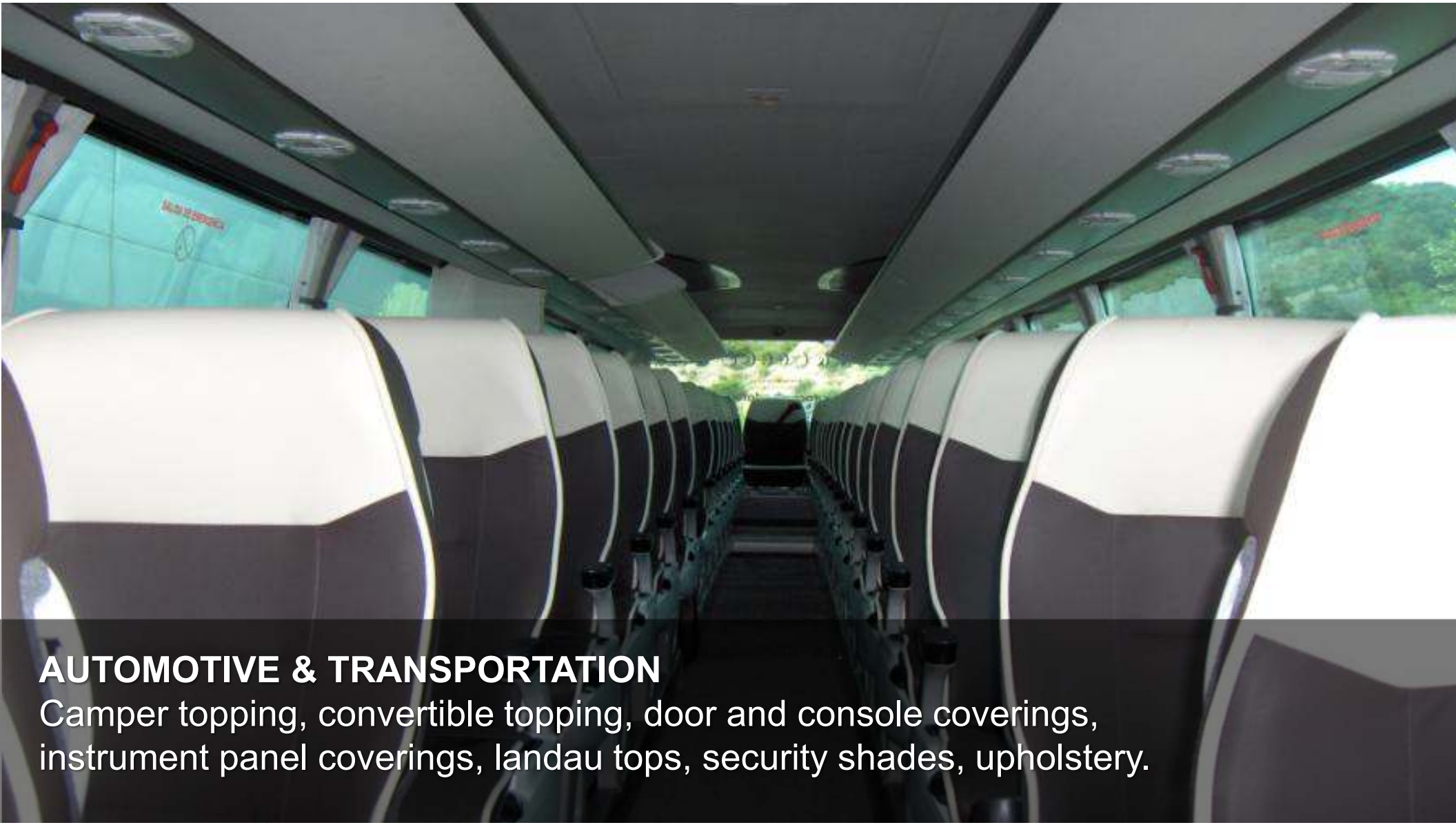
Who We Are

- THE CHEMICAL FABRICS AND FILM ASSOCIATION is an international trade association representing manufacturers of polymer-based fabric and film products, used in the building and construction, automotive, fashion and many other industries.

- The members of the Performance Products Division manufacture chemical fabrics and film used in numerous applications such as contract upholstery, pool liners, and transportation interiors.

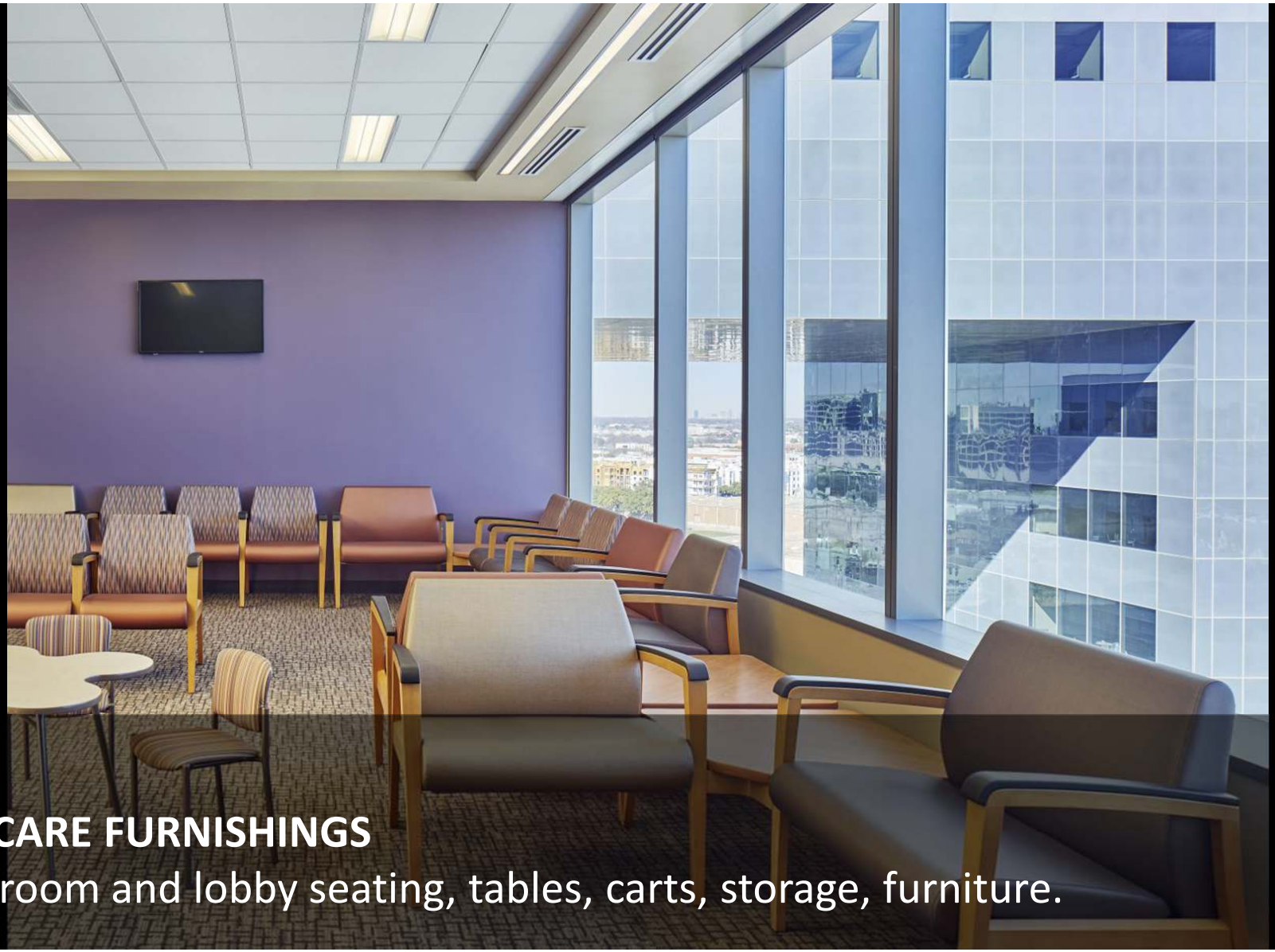


AUTOMOTIVE & TRANSPORTATION

Camper topping, convertible topping, door and console coverings, instrument panel coverings, landau tops, security shades, upholstery.

EXTERIOR FILMS & LAMINATES

Awnings and canopies, backlit awnings and signage, banners, outdoor decking, outdoor furniture, pond and pit liners, swimming pool liners, tents and tarpaulins.



HEALTHCARE FURNISHINGS

Waiting room and lobby seating, tables, carts, storage, furniture.

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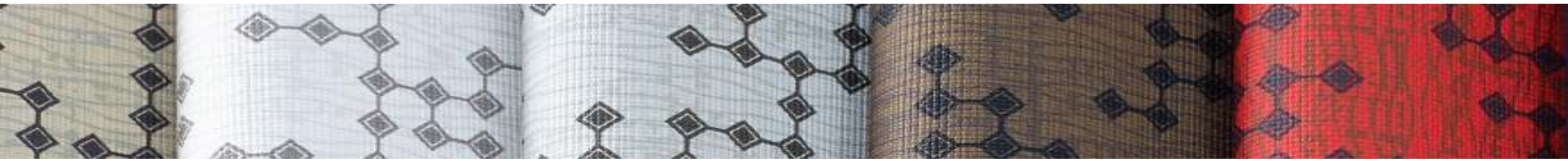
What are Chemical Coated Fabrics?

- Chemical coated fabrics are composite materials, made of one or more layers of polymer-based coating bonded to a flexible substrate.
- The fabric's coating is primarily made of PVC (vinyl) or polyurethane, but polymers such as silicone and a range of thermoplastic elastomers also may be used.



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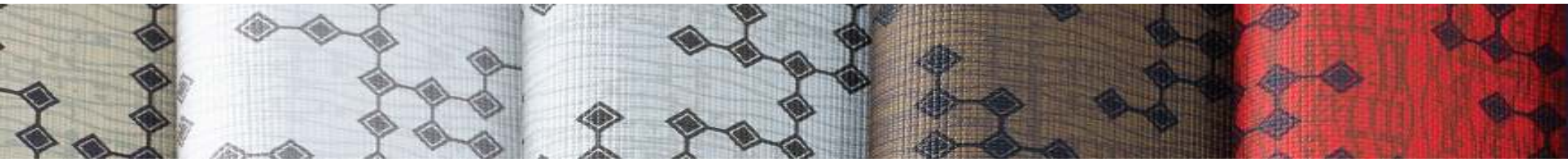
Why PVC?

- PVC, or vinyl, in particular can be thermoformed with four-way stretch fabrics to eliminate the stitched seams that tend to harbor mold, mildew and bacteria.
- In seating, coated fabrics are commonly bonded to urethane foam and sewn into covers that fit over urethane cushions providing the desired compression resistance and rebound properties, as well as desired fit and finish.



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Why PVC?

- PVC (or vinyl) coated fabrics are typically selected over alternatives for contract furnishings in institutional, hospitality, healthcare and retail settings for both functional and aesthetic reasons:
  - They are impermeable to moisture.
  - Properly topcoated, they have superior resistance to scuffs, scratching and cracking.
  - For healthcare settings, they are minimally textured, if at all, promoting ease of cleaning and disinfection.
  - The better quality products are stain resistant and highly cleanable without aggressive scrubbing.

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Why PVC?

- Vinyl is inherently more resistant than polyurethane to cleaners and disinfectants, particularly when they are not rinsed after being applied.
- Cleaners and disinfectants contain harsh chemicals that can create delamination issues such as a flaking and brittle wear layer when applied regularly to polyurethane coated fabrics without rinsing.
- Properly formulated PVC coated fabrics show superior long-term resistance to these cleaners and disinfectants.

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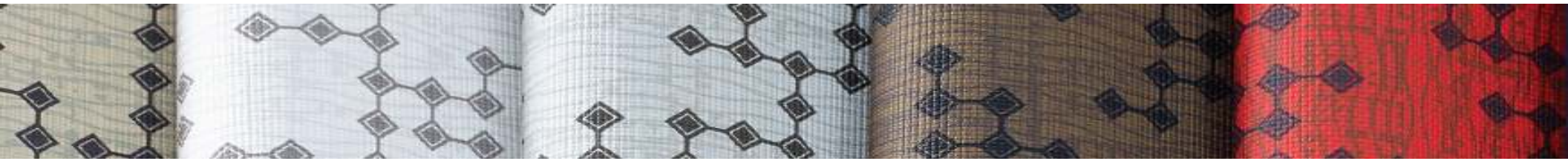
Additional Ingredients / Additives

Flame Retardants

- PVC itself is inherently flame retardant, but its ultimate resistance is determined by types and quantities of additives.
- A wide range of flame retardants can be added to enable a product to meet specific fire codes and standards, limiting or avoiding its contribution to the burning of other building products.



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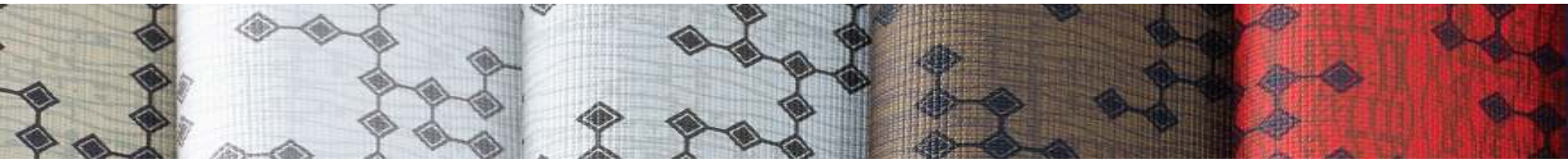
Additional Ingredients / Additives

Softness and Flexibility

- Plasticizers are the most important additives in vinyl coated fabrics, providing the required degree of softness and flexibility.
- Based on performance, certain phthalates have been the plasticizers of choice since the original patent for flexible vinyl in 1933.



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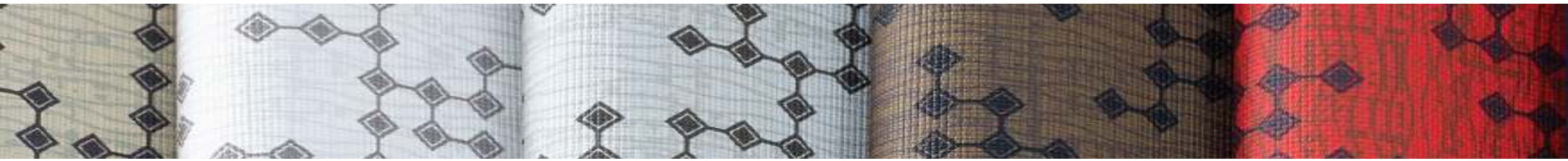
Additional Ingredients / Additives

Antimicrobials

- Antimicrobial agents registered with the US Environmental Protection Agency can also added to chemical fabric coatings to prevent the growth of mold and mildew and inhibit the proliferation of bacteria.
- Such microbial growth can degrade the fabric surface via staining, leading to its deterioration and/or causing odor to develop.



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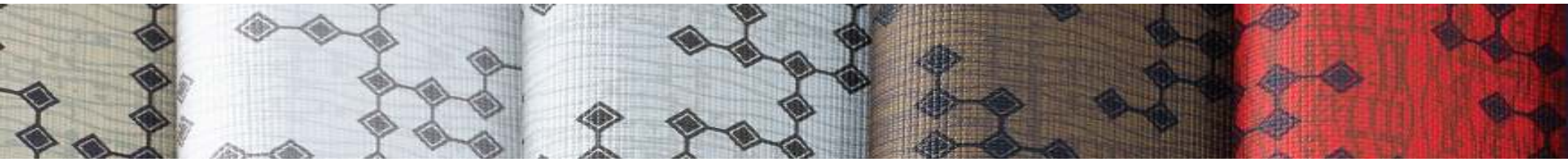
Performance and Testing

- To address the full spectrum of performance objectives, the development of standards has been important to the industry.
- Standards are used by CFFA to promote product performance, facilitate quality control and assure customer satisfaction.



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Performance and Testing

- As it relates to inherent strength of the fabric before it is placed in service, specific test methods are intended to answer the following questions:
  - Does the fabric resist seam tearing?
  - How much force is required to tear the fabric?
  - How much force is required to break the fabric?
  - Is the fabric strong enough to withstand cracking when folded at low temperatures?
  - How much force is required to separate the chemical coating from the base substrate?
  - When the fabric is flexed and twisted, does it maintain its surface appearance without cracking ?

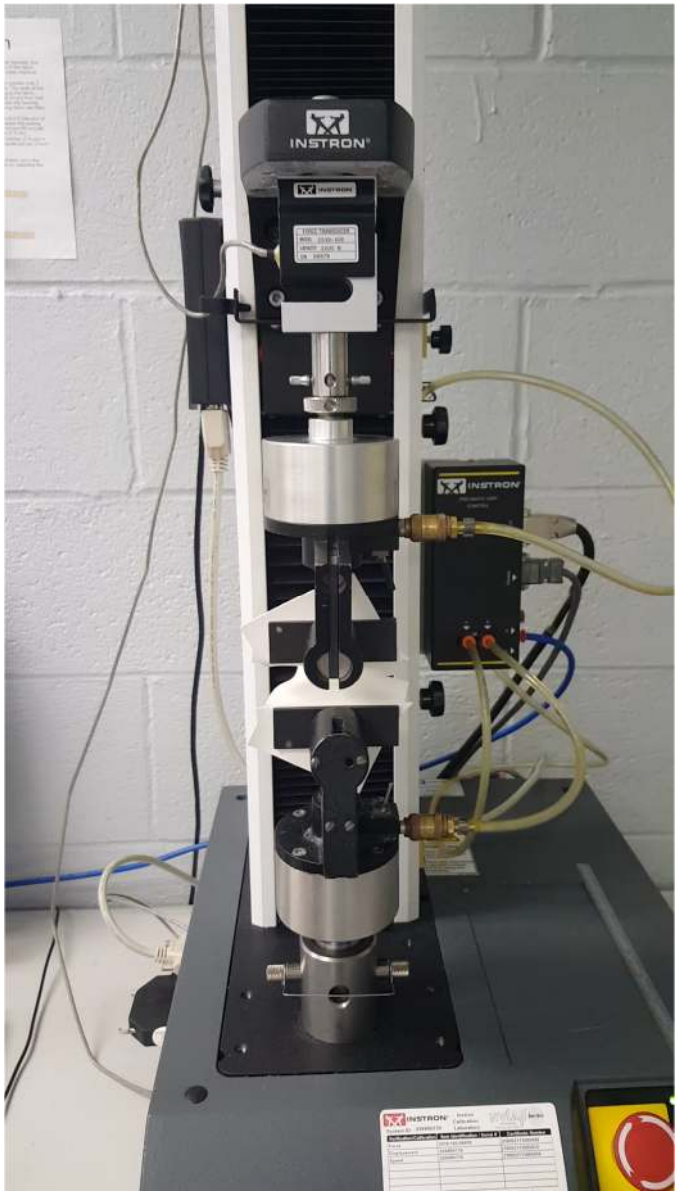
CFFA Standard Test Method

CFFA-16: Tearing Strength
Trapezoid Method

Purpose: To determine the resistance to further tearing after the material has been cut.

Reference: ASTM D751-06 (2011) - Standard Test Method for Coated Fabrics, Trapezoidal (Preferred Method for Non-Woven Coated Fabrics)

Apparatus: Testing machine consisting of straining mechanism, holding clamps and load recording mechanism.



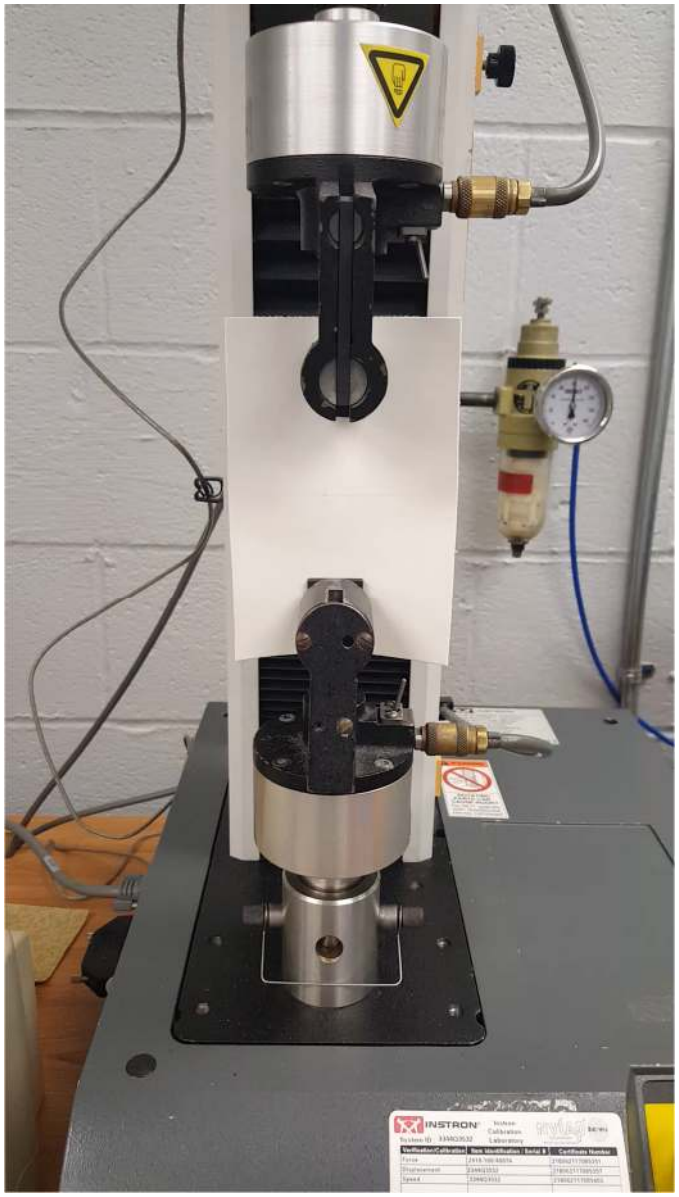
CFFA Standard Test Method

CFFA-17: Tensile Strength and Elongation (Also Referred to as Breaking Strength)

Purpose: To determine the pulling force required to rupture chemical coated fabrics.

Reference: ASTM D751-06 (2011) - Standard Test Methods for Coated Fabrics

Apparatus: Testing machine consisting of straining mechanism, holding clamps and load recording mechanism (Universal Tester).



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Performance and Testing

The full portfolio of test methods CFFA adopted measure specific properties of coated fabrics produced with knit, non-woven and woven substrates includes:

- **CFFA-1 Abrasion resistance (Example to follow)**
- CFFA-100 Accelerated exposure to disinfectants
- CFFA-2 Accelerated light aging
- **CFFA-3 Adhesion of coating to fabric (Example to follow)**
- CFFA-300 Bacterial resistance
- CFFA-4 Blocking
- CFFA-6a Cold crack resistance
- CFFA-7 Crocking (wet and dry) resistanceCFFA-9 Flame and smoke resistance
- **CFFA-10 Flex (Example to follow)**
- CFFA-120 Mildew resistance
- CFFA-14 Seam strength
- CFFA-16b (tongue), 16c (trap) Tearing strength
- CFFA-17 Tensile strength and elongation
- CFFA-18 Volatility

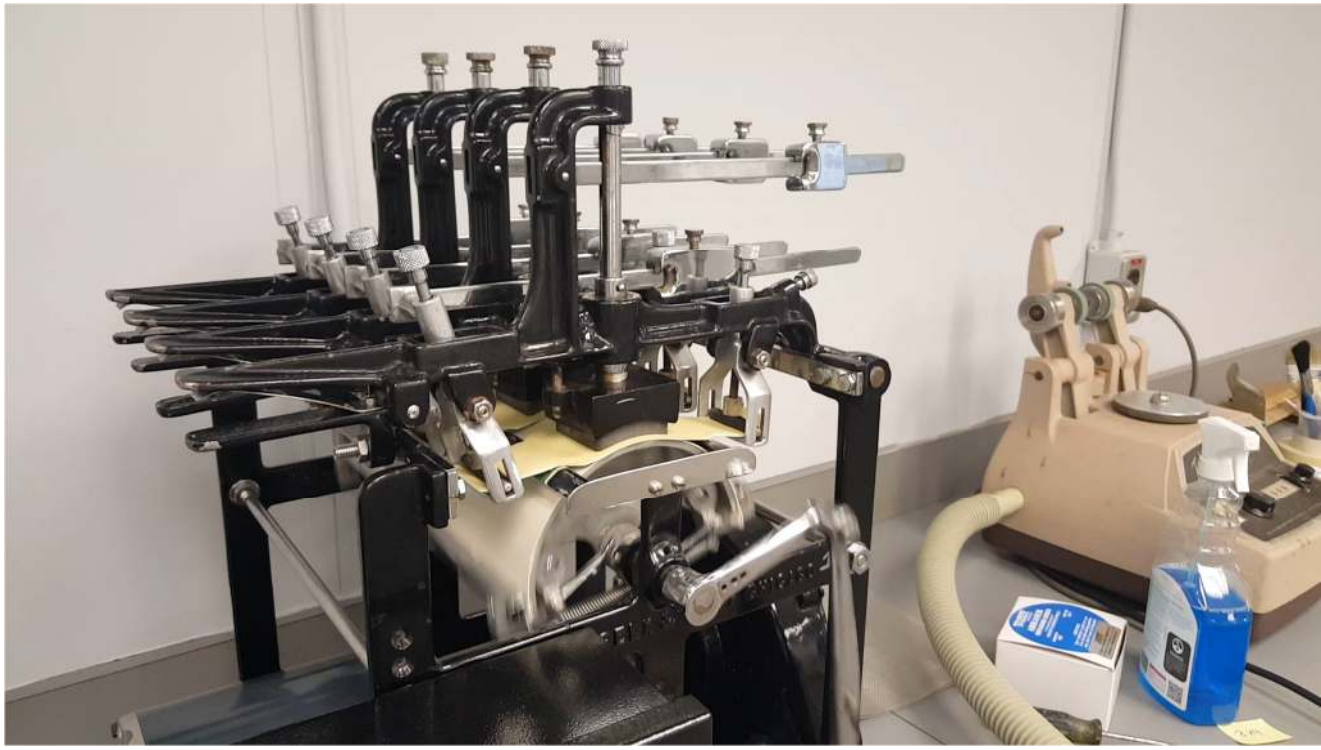
CFFA Standard Test Method

CFFA-1 & CFFA-200: Abrasion Resistance Wyzenbeek Method

Purpose: To determine the abrasion resistance of chemical coated fabrics and films under service conditions.

Reference: ASTM D4157-13 – Standard Test Method for Abrasion Resistance of Textile Fabrics (Oscillatory Cylinder Method)

Apparatus: Oscillatory Cylinder Type



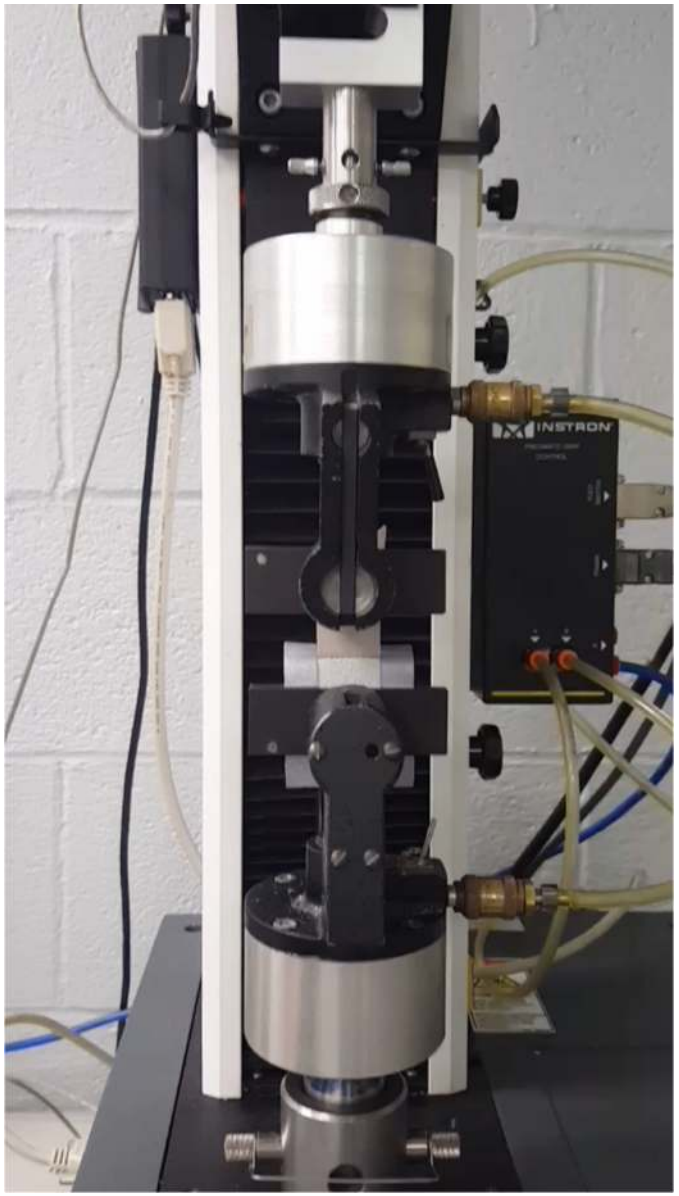
CFFA Standard Test Method

CFFA-3: Adhesion of Coating to Fabric

Purpose: To determine the force or pull necessary to separate chemical coating from its fabric backing.

Reference: ASTM D751-06 (2011) - Standard Test Methods for Coated Fabrics

Apparatus: Testing machine consisting of straining mechanism, holding clamps, and load recording mechanism (Universal Tester).



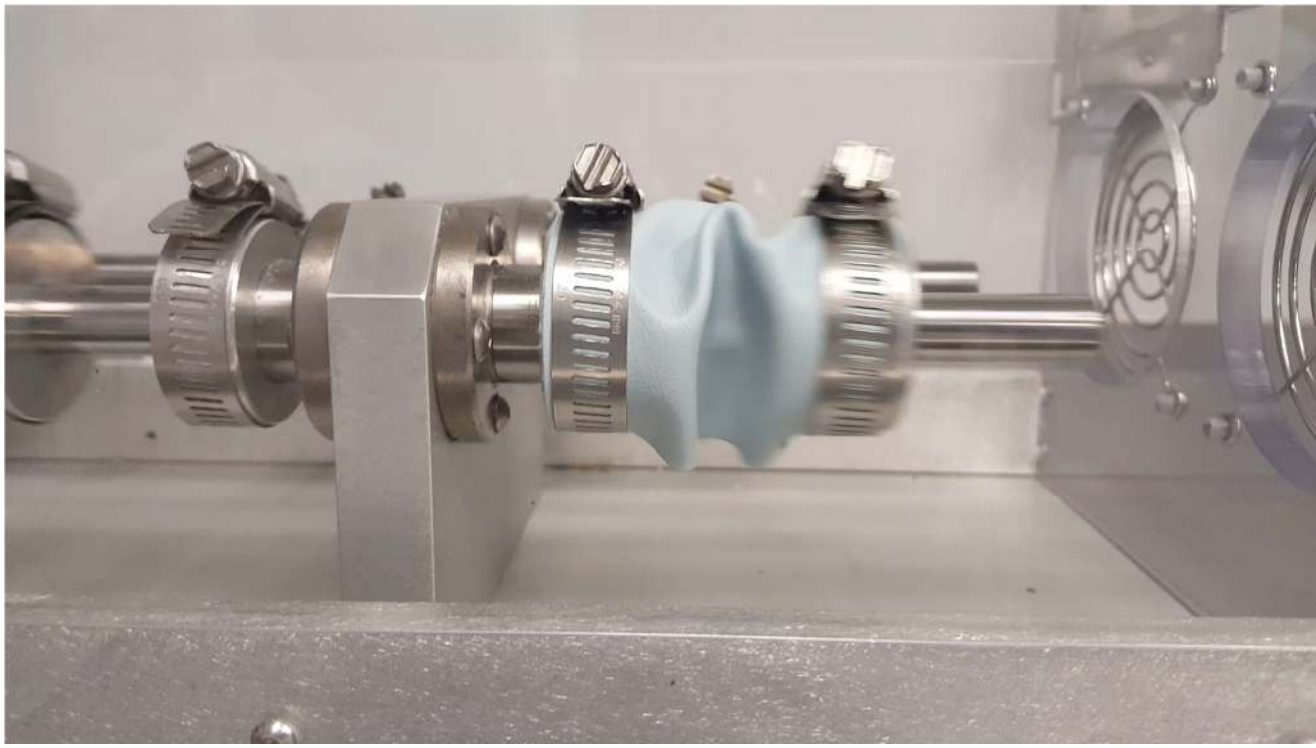
CFFA Standard Test Method

CFFA-10: Flex Resistance

Purpose: To determine resistance of a coated fabric to repeated flexing under specific conditions.

Reference: ASTM D2097-03(2016) – Standard Test Method for Flex Testing of Finish on Upholstery Leather

Apparatus: Flex-O-Test (formerly known as the Newark Flex Tester)




QUESTIONS?

THANK YOU!

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