

Enhanced Textile Specifications

Barrier Properties

- Bacterial Filtration Efficiency (BFE): >99.99% (Current standard: >99.9% per ASTM F2101).
- Liquid Chemical Barrier (ASTM F903): Resistance to 90% concentration of Sulfuric Acid, Phosphoric Acid, and Hydrochloric Acid (Current: 70% Sulfuric, 85% Phosphoric, 37% Hydrochloric acid failed).
- Synthetic Blood Penetration Resistance (ASTM F1670): Pass at 10x higher pressure than current tests.

Durability

- Tensile Strength (ASTM D5034):
- Warp: 125 lbs/in. (Current: 25.2 lbs/in.)
- Fill: 147 lbs/in. (Current: 29.4 lbs/in.)
- Tear Strength (ASTM D2261):
- Lengthwise: 48 lbs../in. (Current: 4.8 lbs/in.)
- Widthwise: 57 lbs../in. (Current: 5.7 lbs/in.)

Comfort and Breathability

- Water Vapor Transmission Rate (ASTM E96): ≥7,330 g/m²/24 hrs.. (Current: 733 g/m²/24 hrs..)
- Air Permeability (ASTM D737): ≥0.6 cu. Ft./min./sq. Ft. (Current: 0.06 cu ft./min./sq.).

Thickness and Weight of fabric

- Thickness (ASTM D1777): ≥1.1 mm (Current: 0.22 mm).
- Weight (ASTM D3776): ≥250 g/m² (Current: 25 g/m²).

Chemical Resistance

- Household Bleach (100% concentration): Enhanced resistance under ASTM F903.
 - NFPA 701 or 2112 (Flame Resistance): Pass with self-extinguishing capabilities.

Enhanced Design Considerations

- Seams impermeable, ultrasonic welding for complete impermeability.
- Integration of antistatic treatments for high-voltage lab environments.