

# DuPont Controlled Environments

## TERMINOLOGY LIST



**Latex Particle Challenge**—Measures the ability of the fabric to filter out neutralized latex spheres of a specified size from a standard aerosol challenge. Higher percentages indicate higher particle barrier. (ASTM F2299)

**Mullen Burst Strength**—Measures the pressure necessary to cause a rupture in a fabric sample clamped to an inflatable diaphragm. (ASTM 774)

**Particle Filtration Efficiency**—Measures the ability of the fabric to filter out particles from room air over a range of particle sizes. Higher percentages indicates higher particle barrier. (IEST-RP-CC003.3)

**Particle Shedding (Releasable Large Particles)**—Measures particles larger than 5.0  $\mu\text{m}$  released from a one square foot area of fabric by applying a vacuum to the surface. Results may be reported as a classification; see table below for classification requirements. (ASTM F51, IEST-RP-CC003.3)

Class	Maximum count per 0.1m <sup>2</sup> of fabric	
	Particles >5 $\mu\text{m}$	Fibers (10:1 aspect ratio)
A	999	10
B	4,999	25
C	9,999	50
D	14,999	125
E	25,000	175

**Particle Shedding (Helmke Drum Test)** —Measures particle shedding from a garment or accessory being tumbled in a small drum. Results are reported by category; the category requirements for coveralls are in the table below. (IEST-RP-CC003.3)

The test is intended to be run on full garments, but some types of garments will not tumble properly in the drum due to stiffness, size or other factors. Testing on fabric swatches or cut garments may not be an accurate predictor of full garment performance due to edge effects.

Category	Garment type	Particle emission rate (particles/min)	
		0.3 $\mu\text{m}$ and larger	0.5 $\mu\text{m}$ and larger
I	Coverall	<2,000	<1,200
II	Coverall	2,000 – 20,000	1,200 – 12,000
III	Coverall	20,000 – 200,000	12,000 – 120,000

**Basis Weight**—Reports the weight (or mass) of fabric for a given area. (ASTM D751-00)

**Bacterial Filtration Efficiency**—Measures the ability of the fabric to filter out bacteria (staphylococcus aureus) from a standard aerosol challenge. (ASTM F2101)

**Flammability**—Provides an indication of the ease of ignition and speed of flame spread of normal apparel fabrics. Garments are categorized as class 1 (normal), class 2 (intermediate), or class 3 (rapid and intense burning). (U.S. Flammable Fabrics Act, 16 CFR 1610) Note: Other standards apply to protective clothing worn when the threat of heat, fire, or explosion exists. (16 CFR 1610)

**Frazier Porosity**—Measures volume of air flow through a standard area of fabric at a pressure drop of 0.5 inches of water. (ASTM D 737-96, IST 70.1)

**Gurley Hill Porosity**—Measures time required for a given volume of air to pass through an area of material under a pressure drop of approx. 4.9 inches of water. (TAPPI T460/ASTM D726)

**Hydrostatic Head (Hydrohead)**—Measures the water pressure the fabric can withstand before leakage occurs. Results are reported as a column height of water (cm). Higher numbers indicate better penetration resistance. (ASTM D751-00 AATCC 127, IST 80.6-01)

**Static Decay**—Measures the time required for a material to dissipate 90% of a specified electrical charge (voltage). (IST 40.2)

**Sterility Assurance Level (SAL)**—Indicates the probability of an individual item being nonsterile - for example, an SAL of  $10^{-3}$  indicates a 1 in 1000 probability of nonsterility and an SAL of  $10^{-6}$  indicates a 1 in 1,000,000 probability of nonsterility. (SAL for DuPont Controlled Environment products is validated using ANSI/AAMI/ISO 11137)

**Surface Resistivity**—Measures the resistance to the flow of electrical charge across the surface of an insulating material. Calculated by multiplying the surface resistance by a geometric factor to standardize for electrode and sample dimensions. (ASTM D257-99)

**Thickness**—Measures the separation created by the fabric between a movable plate and a parallel fixed plate at a specified pressure. (ASTM D1777-96)

**Tongue Tear**—Measures the force needed to propagate a tear in the fabric in a ripping action. Higher numbers indicate better tear propagation resistance. (ASTM D2261-83)

**Trapezoidal Tear (or Trap Tear)**—Measures the force needed to propagate a tear in the fabric in a stretching (elongational) action. Higher numbers indicate better tear propagation resistance. (ASTM D 5733-99, IST 100.2).

