DuPont Controlled Environments

GARMENT AND PRODUCT CATALOG

DUPONT®

The miracles of science™

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DUPONT GARMENTS FOR CONTROLLED ENVIRONMENTS

QUALITY, COMFORT AND DURABILITY FOR YOUR CLEANROOM

For more than 200 years, DuPont has been putting science to work by creating sustainable solutions essential to a better, safer, healthier life for people everywhere. One of the areas in which safety and health are of paramount importance is in cleanrooms and controlled environments.

DuPont understands your need to do everything possible to improve productivity and reduce risk in your controlled environment. The DuPont Controlled Environments portfolio offers a comprehensive selection of single-use cleanroom apparel and accessories designed for use in pharmaceutical, medical device, biotech and electronic settings that require high standards for particle and microbiological contamination control.

DuPont™ Tyvek® garments have a long history of use in cleanrooms due to their excellent barrier to particles, microorganisms and non-hazardous liquids. They are comfortable, durable and available in many styles for different cleanroom and controlled environment applications.

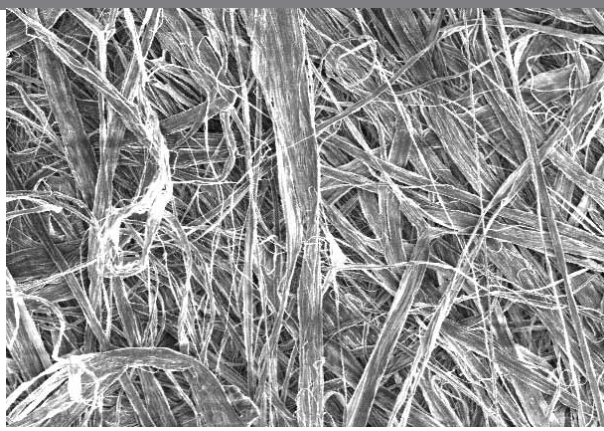
With the DuPont Controlled Environments offering, you get the advantage of a wide range of proven, science-based solutions that help keep your cleanroom environment protected.

Garment material

DUPONT™ TYVEK® STERILE GARMENTS

The highest performing garments in our product line are made from DuPont™ Tyvek®, which has been used to make high-quality cleanroom garments for more than 20 years. Tyvek® is made by DuPont with a proprietary flash-spinning process using continuous fibers of high-density polyethylene that are randomly distributed and non-directional.

- Tyvek® is tough, yet extremely lightweight and soft.
- Tyvek® offers a balance of protection, durability and comfort.
- Tyvek® acts as a breathable barrier against particles and bacteria.
- Tyvek® repels water-based liquids and liquid aerosols.
- Tyvek® is inherently low linting and has excellent abrasion resistance.
- There is a Tyvek® manufacturing facility in the USA.



DuPont™ Tyvek® is made with a unique flash-spinning process that creates a tortuous path for particles.

Image shown at 200x magnification.

THE SUPERIORITY OF SINGLE-USE GARMENTS FROM DUPONT

DuPont sterile cleanroom garments, designed for single use, offer meaningful advantages in today's challenging cleanroom environments, including:

- **Quality** – single-use garments are not subjected to multiple cycles of wearing, laundering and sterilization, so fabric barrier and strength are consistent and predictable. Also, DuPont Controlled Environments garments help minimize cross-contamination risk because clean-processing and packaging are done in a facility that only handles new garments.
- **Flexibility** – the DuPont single-use apparel program allows you to order only the quantities that you plan to use, which offers flexibility as your needs change.
- **Cost Control** – single-use garments help eliminate budget uncertainties associated with garment repair, damage and loss, helping you to better predict expenditures.

DUPONT QUALITY SYSTEMS FOR CLEANROOM GARMENTS

DuPont single-use garments for controlled environments offer the following standards of quality:

- The DuPont Controlled Environments quality management system is ISO 9001:2008 registered.
- DuPont™ Tyvek® IsoClean® sterile garments have a sterility assurance level of 10^{-6}. Irradiation doses are validated in accordance with ANSI/AAMI/ISO 11137 through bioburden and dose verification testing.
- DuPont™ Tyvek® IsoClean® sterile garments are gamma irradiated in a facility that is registered by ISO 13485:2003 quality standard and adheres to the requirements of ANSI/AAMI/ISO 11137.
- A Certificate of Sterility and a Certificate of Compliance come with every shipment of sterile Tyvek® IsoClean® single-use garments.
- Dose audits are conducted quarterly to maintain dose validation.
- Customers are invited to audit our manufacturing and sterilization facilities.
- Quality documentation is readily available and accurate when requested to help meet customer requirements.
- Lot traceability is maintained through garment manufacturing, processing and sterilization.

Garment properties

SELECTING CLEANROOM GARMENTS

Not all cleanrooms are created equal, nor are all cleanroom garments. The design of the cleanroom and the activities performed there will greatly influence the requirements of the cleanroom garment needed for a specific application.

People can be a major source of particle contamination (see Table I). The ability of cleanroom clothing to minimize particle contamination is dependent on the properties of the fabric used to construct the garments. Factors to consider include: filtration capability, durability, cleanliness, electrostatic dissipation and liquid barrier, which are described here.

Table I.
Particle generation through people movement

Type of people movement	Particles/min. (>0.5 µm)
Sitting without moving	100,000
Moving hands, arms, head	500,000
Active hand/arm movement; fast turning of the head	1,000,000
Standing up from a sitting position or vice-versa	2,500,000
Rapid movement; climbing stairs, etc.	10,000,000

Source: *Encyclopedia of Cleanrooms, Bio-cleanrooms, and Aseptic Areas* by Philip R. Austin, 2000, Contamination Control Seminars.

Filtration Capability

The primary function of cleanroom clothing is to act as a filter between the wearer and the environment to reduce the particle load generated by the wearer that is released into the environment. Particle and bacterial filtration efficiency tests measure the fabric's ability to act as a barrier to particle release. Tests vary in the size of particles used in the challenge, the flow rate of air through the fabric and the presence or absence of charge on the challenge particles.

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

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

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

Durability

Cleanroom clothing should be durable enough to maintain its intended barrier during use throughout the expected life of the garment; therefore, resistance to ripping and tearing is important. Durability can be measured by Mullen Burst Strength, Trapezoidal Tear and Grab Tear tests.

Mullen Burst Strength
(ASTM D774) – Measures the pressure necessary to cause a rupture in a fabric sample clamped to an inflatable diaphragm.

Trapezoidal Tear (or Trap Tear)
(ASTM D5733-99, IST 100.2) – Measures the force needed to propagate a tear in the fabric in a stretching (elongational) action. Higher numbers indicate better tear propagation resistance.

Grab Tear
(ASTM D5034) – Measures the breaking strength of a fabric when it is pulled in opposite directions.

Cleanliness (Particle Generation)

Cleanroom clothing should be made of materials that are low in lint and particle generation. A garment's particle shedding level can be measured using the Helmke Drum.

Particle Shedding (Helmke Drum Test)

(IEST-RP-CC003.3) – 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 shown in Table II.

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.

Table II.
Category requirements for cleanroom coveralls

Category	Garment Type	Particle emission rate (particles/min.)	
		0.3 µm and larger	0.5 µm 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

Electrostatic Dissipation

In some environments, static dissipation can be necessary to protect equipment. In order for any garment system to be static dissipative, it must be able to drain a charge buildup through proper grounding devices, such as workstation grounding clips or static-dissipative floors.

Surface Resistivity

(ASTM D257-99) – Measures the resistance to the flow of electrical charge across the surface of an insulating material. It is calculated by multiplying the surface resistance by a geometric factor to standardize for electrode and sample dimensions.

Note: Tyvek® garments are not flame resistant and should not be used in potentially flammable or explosive environments.

Liquid Barrier

In some wet processing applications, liquid barrier is desirable to keep the worker dry and comfortable. A fabric's ability to prevent water penetration can be measured with a hydrostatic head (Hydrohead) test.

Hydrostatic Head (Hydrohead)

(ASTM D751-00, AATCC 127, IST 80.6-01) – 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.

Note: For protection from hazardous or infectious liquids, additional barrier tests are required to establish suitability for use.

DuPont™ Tyvek® IsoClean®

DUPONT™ TYVEK® ISOCLEAN® GARMENTS FOR ISO 4/5 (CLASS 10/100) AND ISO 7/8 (CLASS 10,000/100,000) CONTROLLED ENVIRONMENTS

One of the most popular products in the DuPont Controlled Environments portfolio, DuPont™ Tyvek® IsoClean® clean-processed and sterile single-use garments offer an ideal balance of protection, durability and comfort. In addition, they feature the lowest linting and particle shedding of any garments in the DuPont portfolio.

Tyvek® IsoClean® bulk garments are available sterile and non-sterile in a wide variety of styles, such as coveralls, frocks, lab coats, hoods, gowns, bouffants, shoe and boot covers and sleeve protectors. For more information on Tyvek® IsoClean® garments, see p. 18 of this catalog.

ISO 4/5 Controlled Environments

ISO 7/8 Controlled Environments

Properties of DuPont™ Tyvek® IsoClean®

DuPont™ Tyvek® IsoClean® garments are superior in terms of all of the physical properties that contribute to the quality of cleanroom garments, as shown in Tables III and IV below.

Table III. Typical Physical Properties* of DuPont™ IsoClean® Clean-Processed

Property	Standard	Units	Tyvek® IsoClean® Clean-Processed
Basis Weight	ASTM D3776	oz/yd^2	1.3
Thickness	ASTM D1777	mils	5.0
Bacterial Filtration Efficiency (3.0 µm)	ASTM F2101	%	98.4
Particle Filtration Efficiency (0.5 µm)	ASTM F2299**	%	96.0
Particle Filtration Efficiency (>0.5 µm)	IEST-RP-CC003.3	%	76.7
Grab Tensile, MD	ASTM D5034	lb_f	19.3
Grab Tensile, CD	ASTM D5034	lb_f	22.0
Mullen Burst	ASTM D774	psi	55.0
Hydrostatic Head	AATCC TM127	cm H_2O	82.3
Surface Resistivity (55% RH)	ASTM D257	ohms	1.0×10^{12}
Flammability	16 CFR 1610	—	Class 1

**These properties are typical for garments that have not been sterilized. Sterilization may affect strength, water barrier and static dissipation.*
***Particles not neutralized.*
MD = Machine direction CD = Cross direction

Table IV. Typical Physical Properties of DuPont™ IsoClean® Bulk

Property	Standard	Units	Tyvek® IsoClean® Bulk
Basis Weight	ASTM D3776	oz/yd^2	1.2
Thickness	ASTM D1777	mils	5.4
Bacterial Filtration Efficiency (3.0 µm)	ASTM F2101	%	99.0
Grab Tensile, MD	ASTM D5034	lb_f	18.0
Grab Tensile, CD	ASTM D5034	lb_f	25.5
Mullen Burst	ASTM D774	psi	48.0
Hydrostatic Head	AATCC TM127	cm H_2O	100.0
Surface Resistivity (55% RH)	ASTM D257	ohms	6.3×10^9
Flammability	16 CFR 1610	–	Class 1

MD = Machine direction CD = Cross direction

Garment processing and packaging options

Opaque sterile pouch packaging features a no-smear label.

STERILE

Clean-processed and sterile (option code CS)

Garments are specially processed to minimize particle shedding, then folded for aseptic donning and individually packaged in an ISO Class 4 cleanroom. The case quantity is packaged in a cardboard case with two polyethylene liners. Sterility is achieved by gamma irradiation. Irradiation dosage is validated in accordance with ISO 11137 for a Sterility Assurance Level (SAL) of 10^{-6}.

Sterile (option code 0S)

Garments are folded for aseptic donning and individually packaged. The case quantity is packaged in a cardboard case with two polyethylene liners. Some sterile items are folded and individually packaged in an ISO Class 5 cleanroom (see garment data sheet). Sterility is achieved by gamma irradiation. Irradiation dosage is validated in accordance with ISO 11137 for a Sterility Assurance Level (SAL) of 10^{-6}.

NON-STERILE

Clean-processed (option code 0C)

Garments are specially processed to minimize particle shedding and individually packaged in an ISO Class 4 cleanroom. The case quantity is packaged in a cardboard case with two polyethylene liners.

Individually packaged (option code PI)

Garments are individually packaged in an ISO Class 5 cleanroom. The case quantity is packaged in a cardboard case with two polyethylene liners.

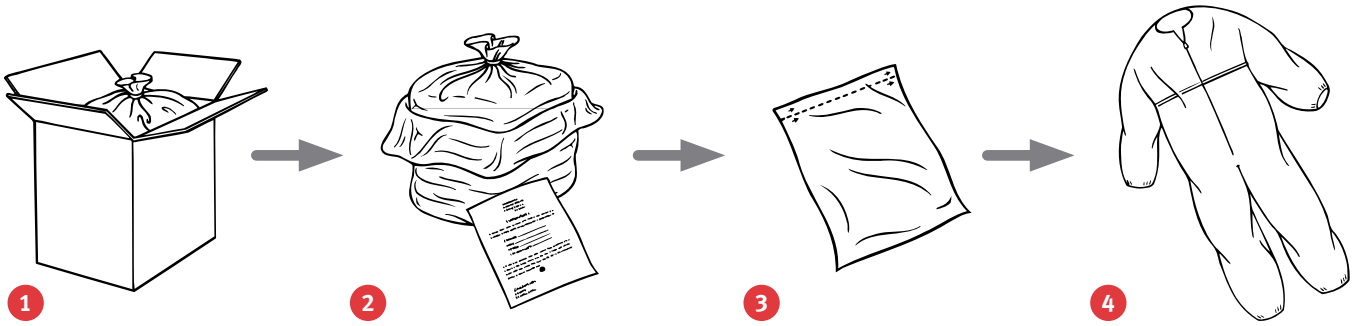
Bulk (option code 0B or 00)

Case quantities are packed in a cardboard case with two polyethylene liners.

Note: Individual packaging for shoe and boot covers indicates that each pair has its own sealed bag. Masks and cuff tapes may have subgroupings of individually packaged items within the case.

STERILE PACKAGING PROCESS

CRITICAL ASSURANCE STERILE APPAREL MULTILEVEL PACKAGING



1. **Outer shipping carton is securely sealed. Carton displays product label, sterile dot indicator and fully traceable lot number.**
2. **Multilevel interior packaging features one or two polyethylene carton liners secured with twist ties. The outer liner provides protection from dust and contamination, particularly if outer carton is discarded. A lot-specific Certificate of Compliance with sterile dot indicator is placed between the two liners. The inner liner allows transportation of product to a cleaner, more controlled environment.**
3. **Completely heat sealed, airtight individual garment opaque bag is made from durable polyethylene film and features a varnish-coated ink, easy-to-open linear-tear and embossed lot number.**
4. **Sterile garment consistently folded and packaged to ease aseptic donning. Traceable lot numbers are stamped on each individual sterile garment.**

Controlled environment apparel selection guide

When it comes to working in a broad range of controlled environments, specifiers have many product options from which to select. The process to understand which option matches a given environment can be confusing and taxing. DuPont has tried to help reduce some of that burden by providing a complete line of products and information to help guide specifiers through their selection process.

To get the most out of your cleanroom apparel, it is necessary to understand where each product can be used. To provide a quicker overview of our products and where they are intended for use, we developed the simple guide below. Our goal is to provide the appropriate DuPont product that is suitable for a given environment or hazard.

DuPont Controlled Environments Garments
DuPont™ IsoClean®, Micro-Clean® 2-1-2, DuPont™ General Environment and ProClean®

	Environments/ Hazards	DuPont™ Tyvek® IsoClean® Clean-Processed		DuPont™ Tyvek® IsoClean® Bulk		DuPont™ Tyvek® Micro-Clean® 2-1-2		DuPont™ General Environment	DuPont™ ProClean®*	Considerations
		Sterile	Non-Sterile	Sterile	Non-Sterile	Sterile	Non-Sterile	Non-Sterile	Non-Sterile	
Environments	ISO Class 5 Aseptic Cleanrooms (Former FED-STD-209E; Class 100)	●		◐		◐				Tyvek® IsoClean® sterile garments offer excellent cleanliness, barrier and sterility assurance level.
Environments	ISO Class 6, 7, and 8 Bioburden Control Areas (Former FED-STD-209E; Class 1000, 10,000 and 100,000)	●		●		◐				Tyvek® IsoClean® sterile garments offer excellent cleanliness, barrier and sterility assurance level.
Environments	ISO Class 6, 7, and 8 Cleanrooms (Former FED-STD-209E; Class 1000, 10,000 and 100,000)		●		●		◐	◐	◐	Tyvek® provides excellent particle barrier and durability, and is low linting. Clean processing and bound seams should be considered for more critical environments.
Hazards	Non-hazardous, dry particles	●	●	●	●	●	●	⊙	●*	Tyvek® provides a superior barrier against particles as small as 0.5 microns, even after abrasion. Bound seam garments offer a higher level of protection than serged seam garments.
Hazards	Non-hazardous, light liquid splash	◐	◐	◐	◐			⊙	●*	ProClean® provides an effective barrier against a variety of common non-hazardous liquids.
Hazards	Hazardous powders *Notice: DuPont Controlled Environments garments should not be used in potentially explosive or flammable environments.*	●	●	●	●					Use bound seamed garments when working with hazardous powders.
Hazards	Hazardous liquid splash Examples: organic solvents, caustics									Please refer to our Tychem® product line for liquid and vapor chemical protection.
Hazards	Electric arc, industrial fire hazard, welding	Do Not Use								Please refer to Nomex® for flame-resistant apparel. Controlled Environment garments are not suitable for firefighting activities, nor for protection from hot liquids, steam, molten metals, welding, electric arc or thermal radiation.

**Barrier properties may be compromised through use.* ● Best ◐ Better ⊙ Good (Blank) Not recommended

Controlled environment apparel selection guide

Fabric Performance Features

Fabric	Available Sterile	Particle Barrier	Non-Hazardous Liquid Barrier	Comfort	Durability	Static Dissipation†	Particle Shedding	Strengths
DuPont™ Tyvek® IsoClean® Flashspun polyolefin, clean-processed	Yes	●	◐	◐	●		●	Best combination of comfort, protection and durability
DuPont™ Tyvek® IsoClean® Flashspun polyolefin, bulk	Yes	●	◐	◐	●	●	⊙	
DuPont™ Tyvek® Micro-Clean® 2-1-2 Flashspun polyolefin	Yes	●		◐	●	◐**	⊙	
DuPont™ General Environment	No	◐		●	◐	◐	◐	Comfort
DuPont™ ProClean® Microporous Films	No	●*	●*	⊙	⊙	●	◐	Effective liquid barrier; low cost

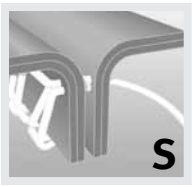
**Barrier properties may be compromised through use.*
***Antistatic performance may be reduced for sterile products.*
† Nuisance static.

● Best ◐ Better ⊙ Good (Blank) Not recommended

Gown recommendations

SEAM CONSTRUCTION

Even the best protective fabrics are useless without strong, tight seams.

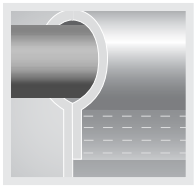


Serged or sewn

A seam produced when three threads are interlocked around the raw edges of two pieces of material for a strong, stress-resistant seam.

Bound

Tightly sewn with a reinforced outer binding to increase seam strength and barrier. For potential misting exposure of non-hazardous liquids or particle penetration through the seam.



Covered elastic

Elastic covered by garment material so elastic is not exposed.

ISO 16644-1 AIR CLEANLINESS CLASSES FOR CLEANROOMS AND CLEAN ZONES

ISO Classification Number	0.1 µm	0.2 µm	0.3 µm	0.5 µm	1.0 µm	5.0 µm	SI	English Former FED-STD-209E
ISO Class 1	10	2						
ISO Class 2	100	24	10	4				
ISO Class 3	1000	237	102	35	8		M 1.5	1
ISO Class 4	10000	2370	1020	352	83		M 2.5	10
ISO Class 5	100000	23700	10200	3520	832	29	M 3.5	100
ISO Class 6	1000000	237000	102000	35200	8320	293	M 4.5	1000
ISO Class 7				352000	83200	2930	M 5.5	10000
ISO Class 8				3520000	832000	29300	M 6.5	100000
ISO Class 9				35200000	8320000	293000		

MINIMUM GOWNING RECOMMENDATIONS

	ISO Class 8 (Class 100,000)	ISO Class 7 (Class 10,000)	ISO Class 6 (Class 1,000)	ISO Class 5 (Class 100)	ISO Class 4 (Class 10)
Hair cover	•	•	•	•	•
Hood				•	•
Face mask				•	•
Frock	•	•			
Coverall			•	•	•
Shoe covers	•	•			
Boots			•	•	•

IEST-RP-CC003.3

How to select the right garments

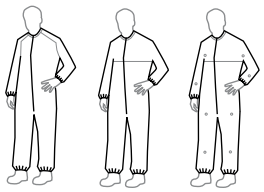
THE DUPONT CONTROLLED ENVIRONMENTS GARMENT PORTFOLIO

To help you select the right garments for your controlled environment, please select garment type, sterile or non-sterile, then select your preference for either clean-processed, bulk or individually packaged.

COVERALLS—WITHOUT HOOD

STERILE

clean

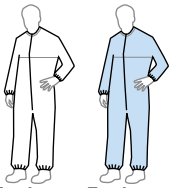


Tyvek® IsoClean® IC182 p. 18

Tyvek® IsoClean® IC253 p. 18

Tyvek® IsoClean® IC254 p. 18

individual packages

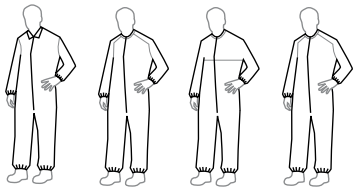


Tyvek® IsoClean® IC253 p. 18

Tyvek® Micro-Clean® 2-1-2 CC252 p. 23

NON-STERILE

clean



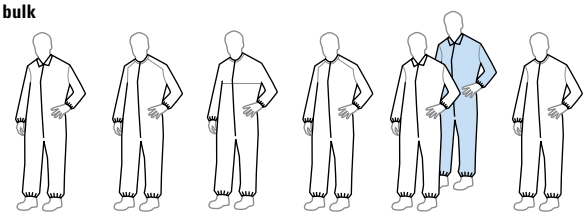
Tyvek® IsoClean® IC181 p. 18

Tyvek® IsoClean® IC182 p. 18

Tyvek® IsoClean® IC253 p. 18

Tyvek® IsoClean® IC258 p. 18

bulk



Tyvek® IsoClean® IC181 p. 18

Tyvek® IsoClean® IC182 p. 18

Tyvek® IsoClean® IC253 p. 18

Tyvek® IsoClean® IC258 p. 18

General Environment GE181 p. 21

ProClean® PC143 p. 22

individual packages

Tyvek® Micro-Clean® 2-1-2 CC252 p. 23

COVERALLS—HOODED

STERILE

clean

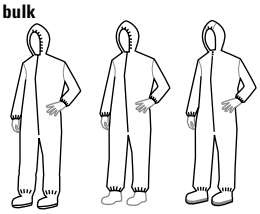
Tyvek® IsoClean® IC105 p. 18

NON-STERILE

clean

Tyvek® IsoClean® IC105 p. 18

bulk



Tyvek® IsoClean® IC105 p. 18

Tyvek® IsoClean® IC180 p. 19

ProClean® PC122 p. 22

HOODS & BOUFFANTS

STERILE

clean

Tyvek® IsoClean® IC666
p. 19

Tyvek® IsoClean® IC668
p. 19

Tyvek® IsoClean® IC729
p. 19

Tyvek® Micro-Clean® 9820
p. 23

NON-STERILE

clean

Tyvek® IsoClean® IC666
p. 19

Tyvek® IsoClean® IC668
p. 19

Tyvek® IsoClean® IC729
p. 19

bulk

Tyvek® IsoClean® IC666
p. 19

Tyvek® IsoClean® IC668
p. 19

Tyvek® IsoClean® IC729
p. 19

individual packages

ProClean® PC663
p. 22

SHOE & BOOT COVERS

STERILE

clean

Tyvek® IsoClean® IC446
p. 20

Tyvek® IsoClean® IC458
p. 20

Tyvek® IsoClean® IC447
p. 20

individual packages

Tyvek® IsoClean® IC457
p. 20

NON-STERILE

clean

Tyvek® IsoClean® IC446
p. 20

Tyvek® IsoClean® IC458
p. 20

Tyvek® IsoClean® IC447
p. 20

bulk

Tyvek® IsoClean® IC444
p. 20

Tyvek® IsoClean® IC446
p. 20

Tyvek® IsoClean® IC447
p. 20

Tyvek® IsoClean® IC451
p. 20

Tyvek® IsoClean® IC457
p. 20

Tyvek® IsoClean® IC458
p. 20

Tyvek® IsoClean® IC461
p. 20

Tyvek® IsoClean® IC447
p. 20

ProClean® PC444
p. 22

Dura-Trac™ DT440
p. 23

SureStep™ PE440
p. 23

SureStep™ PE444
p. 23

SLEEVES & CUFF TAPE

STERILE

clean

Tyvek® IsoClean® IC501
p. 19

individual packages

Tyvek® IsoClean® IC501
p. 19

gen. purpose DE500
p. 25

Tyvek® IsoClean® 99479
p. 20

NON-STERILE

clean

Tyvek® IsoClean® IC501
p. 19

bulk

Tyvek® IsoClean® IC501
p. 19

gen. purpose QC500
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ProClean® PC500
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How to select the right garments

FROCKS & LAB COATS

STERILE

clean

Tyvek® IsoClean® IC270
p. 19

individual packages

Tyvek® IsoClean® IC262
p. 19

NON-STERILE

clean

Tyvek® IsoClean® IC270
p. 19

bulk

Tyvek® IsoClean® IC224
p. 19

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Tyvek® IsoClean® IC263
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General Environment GE219
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APRONS, GOWNS & SMOCKS

NON-STERILE

bulk

gen. purpose TY273
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MASKS & FACE VEILS

STERILE

individual packages

Sierra™ ML730
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Sierra™ ML736
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Sierra™ ML737
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NON-STERILE

individual packages

Tyvek® IsoClean® IC731
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Sierra™ ML730
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Sierra™ ML731
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Sierra™ ML733
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Sierra™ ML736
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Sierra™ ML737
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gen. purpose PP740
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gen. purpose PP741
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How to interpret product part numbers

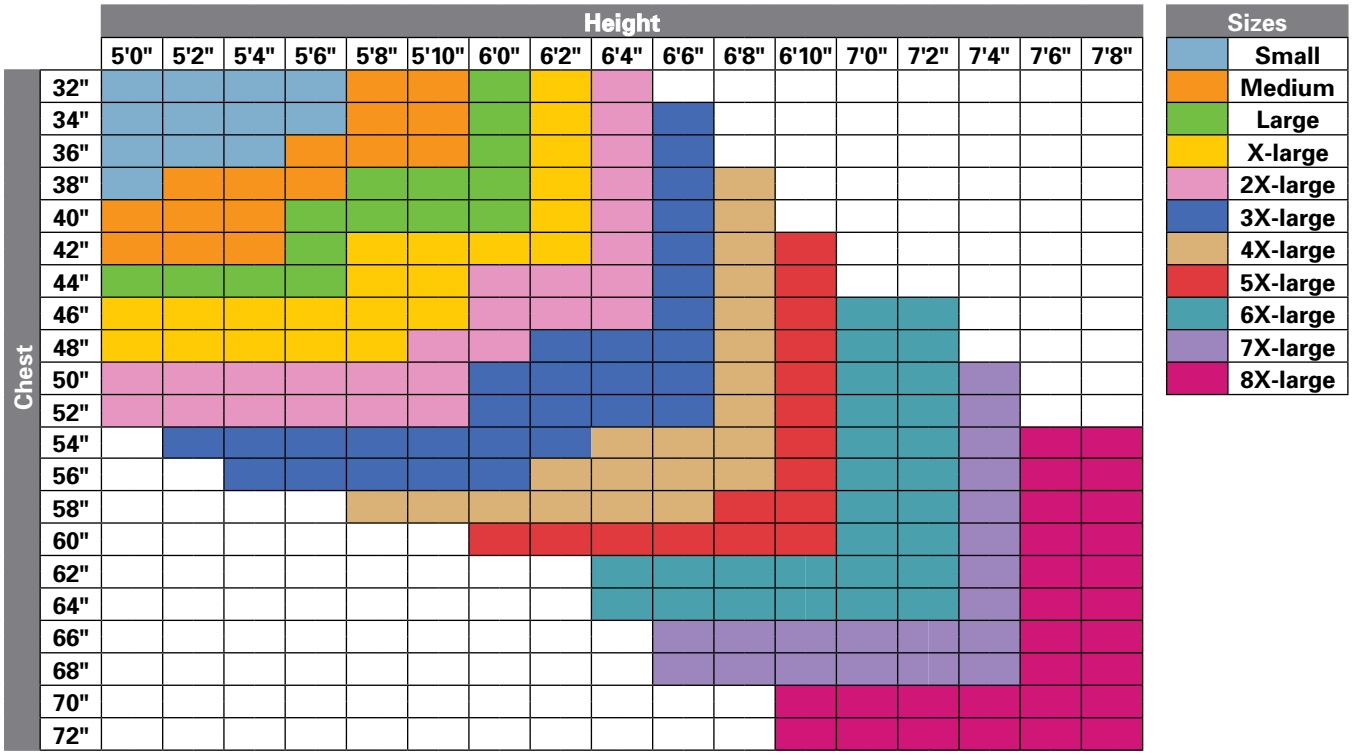
IC253BWHLG0025CS

Our "smart" part numbers are not just a random collection of characters. Each component of the 16-character DuPont part number has meaning. When combined, these components provide a wealth of important product information, as shown here.

IC	253	B	WH	LG	0025	CS
Fabric type The first two characters are the fabric description. **Abbreviations** **TY** = Tyvek® **IC** = IsoClean® **GE** = General Environment **PC** = ProClean® **CC** = Tyvek® Micro-Clean® 2-1-2 **PE** = SureStep™ **DT** = Dura-Trac™ **PP** = Polypropylene **ML** = Sierra™ Mask **QC** = Tychem® QC **DE** = Hydroentangled Polyester & Cellulose **99** = Accessory	**Garment design** DuPont offers a wide array of garment styles—from hoods to frocks and coveralls. Each garment style has a unique three-digit code.	**Seam type** The final character in the base number denotes the seam construction of the garment. **Abbreviations** **B** = bound **S** = serged **F** = fell **0** = no seam	**Color** Several DuPont fabrics are available in color options; refer to catalog descriptions for details. **Abbreviations** **WH** = white **BU** = blue **YL** = yellow	**Size** Many DuPont garments are available in a range of sizes; refer to catalog descriptions for details. **Abbreviations** **SM** = small **MD** = medium **LG** = large **XL** = extra large **2X** = 2 extra large **3X** = 3 extra large **4X** = 4 extra large **5X** = 5 extra large **6X** = 6 extra large **7X** = 7 extra large **8X** = 8 extra large **00** = universal sizing	**Case count** Provides the number of garments per case; refer to catalog descriptions for details.	**Options** For example, **0S** designates sterilized and **PI** designates individually packaged. Not all option codes are available for all products; refer to catalog descriptions for details. **Abbreviations** **CS** = Clean & Sterile **0S** = Sterile **0C** = Clean-Processed **PI** = Individually Packaged **0B** = Bulk **00** = Bulk **BB** = 50/box **BH** = 50/bag **CT** = Conductive Strip

SIZING CHART FOR DUPONT CONTROLLED ENVIRONMENTS GARMENTS

Use this chart to determine what size garment is right for you. Sizes are based on an individual's height and chest size.



hood: **IC668B**
coverall: **IC181S**

DuPont™ Tyvek® IsoClean®

- Made from DuPont™ Tyvek® brand flashspun polyolefin protective material
- Unique, patented flash-spinning process creates an excellent barrier to dry particles, microorganisms and non-hazardous liquids
- Comfortable, lightweight and durable
- Clean-processed garments offer lowest level of particle shedding within DuPont product portfolio
- Garments available gamma sterilized to an SAL of 10^{-6}
- Serged or bound seams with covered elastic options
- Bound seam garments offer highest particle barrier within DuPont product portfolio
- Full traceability on all sterilized apparel
- Gripper™ soles offer a higher level of slip resistance than standard PVC soles

CHOOSE FROM THESE OPTIONS:

- ***CS*** = Clean and Sterile: clean-processed, individually packaged and sterilized by gamma irradiation
- ***0S*** = Sterile: individually packaged and sterilized by gamma irradiation
- ***0C*** = Clean: clean-processed, individually packaged
- ***00*** or ***0B*** = Bulk packaged
- ***PI*** = Individually packaged in an opaque bag

NOTE: Please substitute your size for ## when ordering. See p. 17 for full part number description.

coverall

IC253BWH##00250B
IC253BWH##00250S
IC253BWH##00250C
IC253BWH##0025CS
bound seams
bound neck
dolman sleeve
covered elastic wrist, ankle
zipper closure
white
25/cs
SM, MD, LG, XL, 2X, 3X, 4X, 5X

coverall

IC105SWH##002500
IC105SWH##00250C
IC105SWH##0025CS
serged seams
standard hood
elastic hood opening
set sleeve
elastic wrist, ankle
attached thumb loops
zipper closure
attached boots with PVC soles
white
25/cs
MD, LG, XL, 2X, 3X

coverall

IC254BWH##0025CS
bound seams
bound neck
dolman sleeve
covered elastic wrist, ankle
zipper closure
snaps for aseptic donning
white
25/cs
SM, MD, LG, XL, 2X, 3X, 4X

coverall

IC182BWH##002500
IC182BWH##00250C
IC182BWH##0025CS
bound seams
bound neck
raglan sleeve
covered elastic wrist, ankle
zipper closure
white
25/cs
SM, MD, LG, XL, 2X, 3X, 4X

coverall

IC258SWH##00250B
IC258SWH##00250C
serged seams
bound neck
raglan sleeve
elastic wrist, ankle
zipper closure
white
25/cs
SM, MD, LG, XL, 2X, 3X, 4X

coverall

IC181SWH##002500
IC181SWH##00250C
serged seams
standard collar
set sleeve
elastic wrist, ankle
zipper closure
white
25/cs
SM, MD, LG, XL, 2X, 3X, 4X, 5X, 6X, 7X, 8X for 00 option
SM, MD, LG, XL, 2X, 3X, 4X for 0C option

PART NUMBER GUIDE

IC	253	B	WH	LG	0025	CS
fabric type	garment design	seam type	color	size	case count	options

NOTE: All sizes not available in all styles. For universal sizing use 00 in the part number.

Seams and closures have less barrier than fabric.

WARNING: *Cleanroom apparel should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Cleanroom fabrics should have slip-resistant materials on the outer sole of boots, shoe covers or other garment surfaces in conditions where slipping could occur.*

NOTE: Please substitute your size for ## when ordering. See p. 17 for full part number description.

coverall

IC180SWH##002500
serged seams
standard hood
elastic hood opening
set sleeve
elastic wrist, ankle
zipper closure
white
25/cs
MD, LG, XL, 2X, 3X

frock

IC270BWH##003000
IC270BWH##00300C
IC270BWH##0030CS
bound seams
bound neck
set sleeve
covered elastic wrist
snap closure (6 + 1 adjustable)
white
30/cs
SM, MD, LG, XL, 2X, 3X, 4X, 5X, 6X, 7X

frock

IC262SWH##00300B
IC262SWH##00300S
serged seams
high mandarin collar w/adjustable snaps
raglan sleeve
elastic wrist
snap closure (6)
generous cut
white
30/cs
SM, MD, LG, XL, 2X, 3X, 4X for 0B option
MD, LG, XL, 2X, 3X for 0S option

frock

IC263SWH##00300B
serged seams
high mandarin collar w/snap
set sleeve
elastic wrist
snap closure (6)
white
30/cs
SM, MD, LG, XL, 2X, 3X, 4X

frock

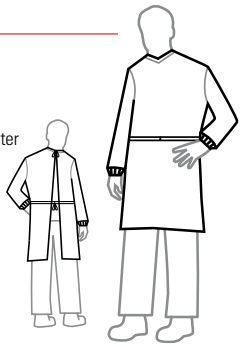
IC264SWH##00300B
IC264SWH##00300C
IC264SWH##00300S
IC264SWH##0030CS
serged seams
bound neck
raglan sleeve
elastic wrist
zipper closure
a-line
white
30/cs
SM, MD, LG, XL, 2X, 3X, 4X, 5X, 6X, 7X

lab coat

IC224SWH##00300B
serged seams
laydown collar
raglan sleeve
snap closure (5)
pockets (1 chest pencil, 2 lower front)
white
30/cs
SM, MD, LG, XL, 2X

gown

IC701SWH##003000
serged seams
bound neck w/ties
knit cuff
bound ties originating at center front waist
white
30/cs
universal sizing (00)

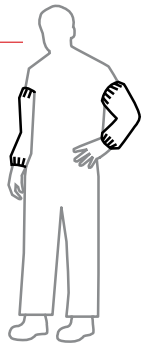


smock

IC226SWH##00300B
serged seams
bound neck
set sleeve
elastic wrist
wrap around (ties at waist)
pockets (1 chest pencil, 2 lower front)
white
30/cs
SM, MD, LG, XL

sleeves

IC501BWH##01000B
IC501BWH##01000C
IC501BWH##01000S
IC501BWH##0100CS
bound seams
covered elastic wrist, bicep
18" length
white
100/cs
universal sizing (00)

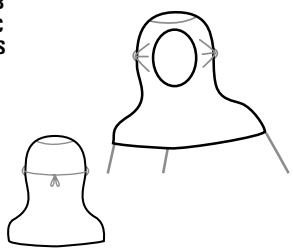


bouffant

IC729SWH##02500B
IC729SWH##02500C
IC729SWH##0250CS
serged seams
elastic headband
21.5" diameter
white
250/cs
universal sizing (00)

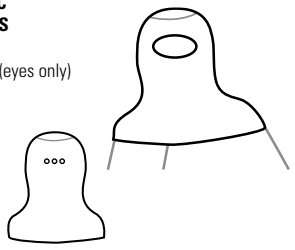
hood

IC668BWH##01000B
IC668BWH##01000C
IC668BWH##0100CS
bound seams
full face opening
bound hood opening
ties with loops for fit
white
100/cs
universal sizing (00)



hood

IC666BWH##010000
IC666BWH##01000C
IC666BWH##0100CS
bound seams
bound hood opening (eyes only)
snaps for fit
bound bottom
white
100/cs
MD, LG



PART NUMBER GUIDE

IC	253	B	WH	LG	0025	CS
fabric type	garment design	seam type	color	size	case count	options

NOTE: All sizes not available in all styles. For universal sizing use 00 in the part number.

Seams and closures have less barrier than fabric.

WARNING: *Cleanroom apparel should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Cleanroom fabrics should have slip-resistant materials on the outer sole of boots, shoe covers or other garment surfaces in conditions where slipping could occur.*

mask

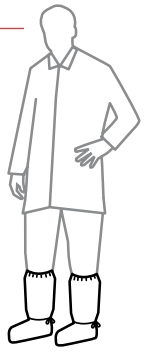
IC7310BU##03000B
bound Tyvek® ties
pleated
polyethylene outer
PBT filter
metal nose piece
blue
300/cs
7"
universal sizing (00)

cuff tape

994790WH##04000S
made of Tyvek® IsoClean®
20" long x 3" wide
white
400/cs
universal sizing (00)

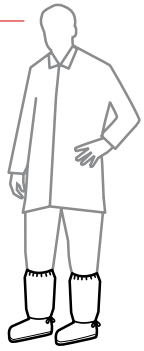
boot cover

IC458BWH##01000B
IC458BWH##01000C
IC458BWH##0100CS
bound seams
covered elastic opening
ties at ankle
Gripper™ sole
18" high
white
100/cs
MD, LG, XL



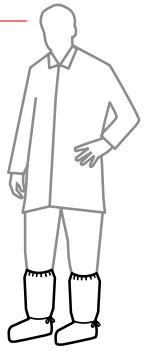
boot cover

IC446SWH##010000
IC446SWH##01000C
IC446SWH##0100CS
serged seams
elastic opening
bound Tyvek® ties at ankle
Gripper™ sole
18" high
white
100/cs
MD, LG, XL



boot cover

IC457SWH##01000B
IC457SWH##01000S
serged seams
covered elastic opening
ties at ankle
PVC sole
18" high
white
100/cs
SM, MD, LG, XL



boot cover

IC444SWH##02000B
serged seams
elastic opening
elastic ankle
PVC sole
15" high
white
200/cs
MD, LG, XL

boot cover

IC447SWH##01000B
IC447SWH##01000C
IC447SWH##0100CS
serged seams
elastic opening
elastic ankle
Gripper™ sole
18" high
white
100/cs
MD, LG, XL for 0B and 0C options
MD, LG, XL, 2X for CS option only

shoe cover

IC451SWH##01000B
serged seams
elastic opening
Gripper™ sole
5" high
white
100/cs
MD, LG, XL

shoe cover

IC461SWH##03000B
serged seams
elastic opening
PVC sole
elastic toe
5" high
white
300/cs
SM, MD, LG, XL

PART NUMBER GUIDE

IC	253	B	WH	LG	0025	CS
fabric type	garment design	seam type	color	size	case count	options

NOTE: All sizes not available in all styles. For universal sizing use 00 in the part number.

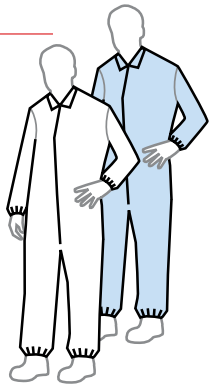
Seams and closures have less barrier than fabric.

WARNING: *Cleanroom apparel should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Cleanroom fabrics should have slip-resistant materials on the outer sole of boots, shoe covers or other garment surfaces in conditions where slipping could occur.*

NOTE: Please substitute your size for ## when ordering. See p. 17 for full part number description.

coverall

GE181SWH##00250B
GE181SBU##00250B
serged seams
laydown collar
set sleeve
elastic wrist, ankle
zipper closure
white, blue
25/cs
SM, MD, LG, XL, 2X, 3X, 4X

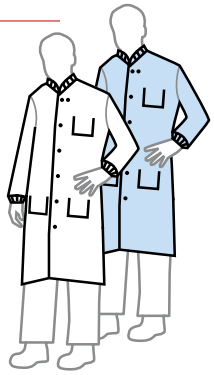


frock

GE267SWH##00300B
serged seams
mandarin collar
set sleeve
enclosed elastic wrist
snap closure (6 + 1 adjustable)
white
30/cs
SM, MD, LG, XL, 2X, 3X, 4X

lab coat

GE219SBU##00300B
GE219SWH##00300B
serged seams
knit collar
set sleeve
knit cuff
snap closure (6 + 1 adjustable)
pockets (1 left chest pencil, 2 lower front)
white, blue
30/cs
SM, MD, LG, XL, 2X, 3X, 4X



DuPont™ General Environment

- Made from polypropylene SMS fabric
- Fabric resists non-hazardous dry particle penetration
- Air permeability helps keep wearer comfortable
- Antistatic treated
- Serged seams
- Available in blue and white

OPTION:

- ***OB*** = Bulk packaged

PART NUMBER GUIDE

IC	253	B	WH	LG	0025	CS
fabric type	garment design	seam type	color	size	case count	options

NOTE: All sizes not available in all styles. For universal sizing use 00 in the part number.

Seams and closures have less barrier than fabric.

WARNING: *Cleanroom apparel should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Cleanroom fabrics should have slip-resistant materials on the outer sole of boots, shoe covers or other garment surfaces in conditions where slipping could occur.*

coverall:
PC122S

DuPont™ ProClean®

- Microporous composite fabric
- Non-hazardous liquid and dry particulate barrier protection for cleanroom applications
- Serged seams

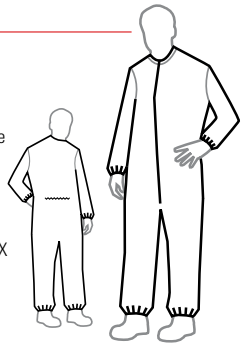
OPTION:

- ***OB*** = Bulk packaged

NOTE: Please substitute your size for ## when ordering. See p. 17 for full part number description.

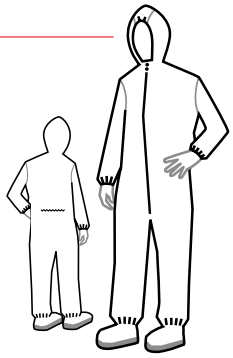
coverall

PC143SWH##00250B
serged seams
bound neck
set sleeve
covered elastic wrist, ankle
zipper closure
enclosed elastic at back
white
25/cs
SM, MD, LG, XL, 2X, 3X, 4X



coverall

PC122SWH##00250B
serged seams
attached hood
covered elastic gusset with bound face opening
set sleeve
covered elastic wrist, ankle
zipper closure
enclosed elastic at back
attached boots with slip-resistant covers
white
25/cs
SM, MD, LG, XL, 2X, 3X, 4X



frock

PC270SWH##00300B
serged seams
bound neck
set sleeve
covered elastic wrist
snaps (5)
white
30/cs
SM, MD, LG, XL, 2X, 3X, 4X

frock

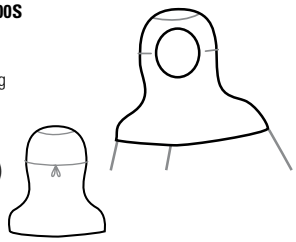
PC271SWH##00300B
serged seams
bound neck
set sleeve
covered elastic wrist
zipper closure
white
30/cs
SM, MD, LG, XL, 2X, 3X, 4X

sleeve

PC500SWH##02000B
serged seams
covered elastic wrist, bicep
18" length
white
200/cs
universal sizing (00)

hood

PC663SWH##01000S
serged seams
full face
bound hood opening
bound ties
white
100/cs
universal sizing (00)



boot cover

PC444SWH##01000B
serged seams
covered elastic opening
elastic ankle
PVC sole
18" height
white
100/cs
MD, LG, XL

PART NUMBER GUIDE

IC	253	B	WH	LG	0025	CS
fabric type	garment design	seam type	color	size	case count	options

NOTE: All sizes not available in all styles. For universal sizing use 00 in the part number.

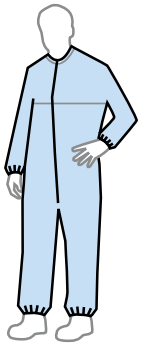
Seams and closures have less barrier than fabric.

WARNING: *Cleanroom apparel should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Cleanroom fabrics should have slip-resistant materials on the outer sole of boots, shoe covers or other garment surfaces in conditions where slipping could occur.*

DuPont™ Tyvek® Micro-Clean® 2-1-2

NOTE: Please substitute your size for ## when ordering. See p. 17 for full part number description.

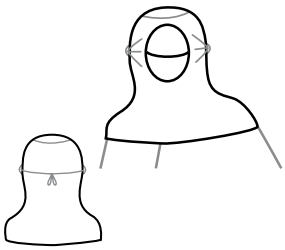
coverall
CC252BBU##00250S
CC252BBU##0025PI
bound seams
bound neck with loop at center back
dolman sleeve
covered elastic wrist, ankle
zipper closure
blue
25/cs
SM, MD, LG, XL, 2X, 3X, 4X, 5X



coverall:
CC252B

hood/mask

9820
bound seams
bound head openings
ties with loops for fit
hood—white
face mask—blue
pleated
polyethylene outer
7"
individually packaged
100/cs
universal sizing (00)



DuPont™ Tyvek® Micro-Clean® 2-1-2

- Made from DuPont™ Tyvek® brand flashspun polyolefin protective material
- Unique, patented flash-spinning process creates an excellent barrier to dry particles and microorganisms
- Coated on both sides with proprietary 2-1-2 blue polymeric resin
- Antistatic treated
- Outstanding particle filtration efficiency
- Garments available gamma sterilized to an SAL of 10^{-6}
- Cloth-like aesthetics
- Full traceability on all sterilized apparel

CHOOSE FROM THESE OPTIONS:

- ***0S*** = Sterile: individually packaged and sterilized by gamma irradiation
- ***PI*** = Individually packaged in opaque bag

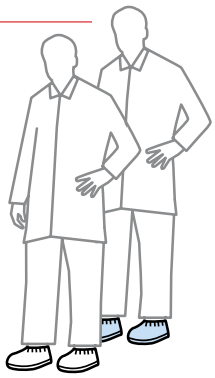
DuPont™ SureStep™/DuPont™ Dura-Trac™

boot cover

PE444SWH##010000
serged seams
elastic opening
elastic ankle
13" height
white
100/cs
LG, XL

shoe cover

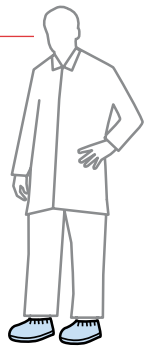
PE440SWH##020000
PE440SBU##020000
PE440SWH##0200CT
serged seams
elastic opening
5.5" height
white, blue
200/cs
MD, LG, XL
MD only available in white & bulk packaged.



shoe cover:
PE440S

shoe cover

DT440SBU##03000B
serged seams with heat seal
elastic opening
elastic toe, heel
6.5" height
blue
300/cs
LG, XL



DuPont™ SureStep™/ DuPont™ Dura-Trac™

- Spunbonded polypropylene with polyethylene film coating
- High slip resistance—both wet and dry
- Low linting
- SureStep™ available with a conductive strip

CHOOSE FROM THESE OPTIONS:

- ***00, 0B*** = Bulk packaged
- ***CT*** = Conductive strip

DuPont™ Sierra™

NOTE: Please substitute your size for ## when ordering. See p. 17 for full part number description.

mask:
ML7360

DuPont™ Sierra™

- Excellent balance of bacteria and particle filtration efficiency and breathability
- Available in 7" and 9" sizes
- Available in blue and white

CHOOSE FROM THESE OPTIONS:

- ***OS*** = Sterile: individually packaged and sterilized by gamma irradiation
- ***BB*** = 50/box
- ***BH*** = 50/bag

controlled environment mask

ML7360WH##0250BH
ML7360WH##02500S
9" size
bound Tyvek® ties
pleated
rayon outer facing
metal nose piece
white
250/cs
universal sizing (00)

anti-fog mask

ML7370WH##0250BH
ML7370WH##02500S
9" size
bound Tyvek® ties
pleated
rayon outer facing
metal nose piece
adhesive at nose
white
250/cs
universal sizing (00)

anti-fog mask

ML7300WH##0250BB
ML7300WH##0250BH
ML7300WH##02500S
7" size
bound Tyvek® ties
pleated
rayon outer facing
metal nose piece
adhesive at nose
white
250/cs
universal sizing (00)

controlled environment mask

ML7390WH##0300BH
7" size
bound Tyvek® ties
pleated
rayon outer facing
metal nose piece
white
300/cs
universal sizing (00)

comfort mask

ML7310BU##0300BB
7" size
bound polypropylene ties
pleated
rayon outer facing
metal nose piece
blue
300/cs
universal sizing (00)

general mask

ML7330BU##0300BB
ML7330BU##0500BH
7" size
stretch ear loops
pleated
polypropylene outer facing
metal nose piece
blue
300 & 500/cs
universal sizing (00)

PART NUMBER GUIDE

IC	253	B	WH	LG	0025	CS
fabric type	garment design	seam type	color	size	case count	options

NOTE: For universal sizing use 00 in the part number.

Not for respiratory protection.

WARNING: *Cleanroom apparel should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Cleanroom fabrics should have slip-resistant materials on the outer sole of boots, shoe covers or other garment surfaces in conditions where slipping could occur.*

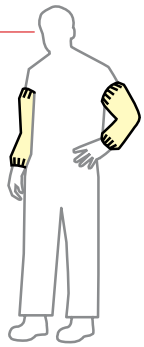
NOTE: Please substitute your size for ## when ordering. See p. 17 for full part number description.

apron

TY273BWH##010000
bound seams
bound neck
ties closure
Tyvek® ties at waist
white
100/cs
universal sizing (00)

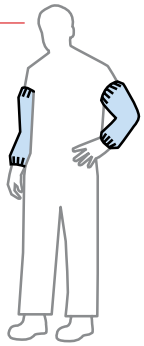
sleeve

QC500BYL##02000B
bound seams
tunneled elastic wrist
Tychem® QC
21" length
yellow
200/cs
universal sizing (00)



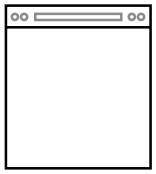
sleeve

DE500SBU##01000S
serged seams
covered elastic wrist and bicep
hydroentangled polyester and cellulose
18" length
blue
100/cs
universal sizing (00)



cleanroom face veil

PP7400WH##0150BH
stainless steel snaps
metal nose piece
white
150/cs
universal sizing (00)



cleanroom face veil

PP7410WH##0150BH
elastic head band
metal nose piece
white
150/cs
universal sizing (00)

apron:
TY273B

PART NUMBER GUIDE

IC	253	B	WH	LG	0025	CS
fabric type	garment design	seam type	color	size	case count	options

NOTE: All sizes not available in all styles. For universal sizing use 00 in the part number.

Seams and closures have less barrier than fabric.

WARNING: *Cleanroom apparel should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Cleanroom fabrics should have slip-resistant materials on the outer sole of boots, shoe covers or other garment surfaces in conditions where slipping could occur.*

DuPont™ Sontara® wipes

DUPONT™ SONTARA® MICRO-LEVEL CLEANING WIPES

DuPont™ Sontara® micro-level cleaning fabrics are high-performance, absorbent wipes for cleanrooms. Because they are made using the DuPont hydroentangling process, where needle-like water jets form a strong, nonwoven fabric without any binders, these fabrics are ideally suited for cleanroom use.

DuPont™ Sontara® micro-level cleaning fabrics have low particle generation and are inherently absorbent. With low extractables and ion content properties, as well as strength and resistance to solvents, wipes made of DuPont™ Sontara® are a good solution for your cleanroom requirements.

Wiping needs and required levels of cleanliness differ—even in the same cleanroom—therefore, DuPont created a range of Sontara® micro-level cleaning fabrics. It's best to find a match between application and the wipe fabric for efficiency and cost effectiveness. To determine which Sontara® micro-level cleaning fabric best meets your controlled environment application, visit www.Sontara.com or call 1.888.4.Sontara (1.888.476.6827).

Supply and service

Supply and Distribution

With global manufacturing sites and a vast network of the top national and regional distributors in the scientific markets, DuPont Controlled Environments offers an uninterrupted, continuous supply of validated sterile garments. These distributors are experts in supply chain management and offer you flexibility and consistency with a global reach.

You can work with the DuPont authorized distributor of your choice. For a list of authorized distributors of DuPont garments for Controlled Environments, please visit www.ControlledEnvironments.DuPont.com

Service and Support

DuPont is committed to providing service excellence to all of our customers. This commitment includes a renewed focus on customer service, on-time delivery, sales/technical support and immediate access to product information.

If you have any questions, you can contact a DuPont Controlled Environments Specialist by calling 1.800.931.3456 (Monday through Friday, 8:30 a.m. to 5:30 p.m., Eastern Standard Time). We are more than happy to help you with your cleanroom apparel evaluation and discuss a variety of contamination control issues. You can also visit our website at www.ControlledEnvironments.DuPont.com

Please be advised that certain garments contained in this catalog description are subject to U.S. Export Control laws. Purchasing these garments subjects your company to those laws for export. For more information, contact us at 1.800.931.3456.

LATEX STATEMENT: *As of January 1, 2006, DuPont production specifications exclude use of components containing natural rubber latex in the manufacture of DuPont™ Tyvek® IsoClean®, General Environment and ProClean® garments. Notwithstanding, DuPont™ Tyvek® Micro-Clean® 2-1-2 produced by Cardinal Health prior to May 2008 may contain dry crumb natural rubber latex.*

DuPont production specifications for Gripper™ PVC exclude use of latex. Notwithstanding, DuPont cannot guarantee the absence of latex in these shoe or boot covers.

Anyone who begins to exhibit allergic response during the use of DuPont products should immediately cease using these products. The incident should also be reported to DuPont at 1.800.441.3637.

SILICONE STATEMENT: *In the past, DuPont has found that threads and zippers can be the most significant source of silicone oil contamination in garments. DuPont specifies that threads and zippers used in Tyvek® IsoClean®, General Environment and ProClean® garments be manufactured without the use of silicone oils. Notwithstanding, DuPont cannot guarantee the absence of silicone oils on these garments nor can DuPont confirm silicone oil prohibition in DuPont™ Tyvek® Micro-Clean® 2-1-2 produced by Cardinal Health prior to May 2008.*

For end users with concerns about contamination with silicone oils or any other contaminants, the best practice is to audit inbound materials, including garments, for those contaminants.

This information is based upon technical data that DuPont believes reliable. It is subject to revision as additional knowledge and experience are gained. DuPont makes no guarantee of results and assumes no obligation or liability in connection with this information. It is the user's responsibility to determine the level of toxicity and the proper personal protective equipment needed. The information set forth herein reflects laboratory performance of fabrics, not complete garments, under controlled conditions. It is intended for information use by persons having technical skill for evaluation under the specific end-use conditions, at their own discretion and risk.

Anyone intending to use this information should first verify that the garment selected is suitable for the intended use. In many cases, seams and closures may provide less barrier than the fabric. If the fabric becomes torn, abraded or punctured, end user should discontinue use of garment to avoid compromising the barrier protection. ***SINCE CONDITIONS OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE AND ASSUME NO LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION.*** *This information is not intended as a license to operate under or a recommendation to infringe any patent, trademark or technical information of DuPont or others covering any material or its use.*

WARNINGS: 1) *DuPont garments and accessories for controlled environments are not flame-resistant and should not be used around heat, flame, sparks or in potentially flammable or explosive environments.* ***2)*** *Garments made of Tyvek® should have slip-resistant or antislip materials on the outer surface of boots, shoe covers or other garment surfaces in conditions where slipping could occur.*

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