

## SEMICONDUCTOR/MICROELECTRONICS PRODUCT PROTECTION SELECTION

The semiconductor and microelectronics industries require clean, controlled environments for successful manufacturing and packaging. Electrostatic discharge (ESD), if not contained or controlled, can be the cause of major disruption and damage to microelectronic components or be the cause of ignition during powder processing, so it's imperative that the PPE worn by workers is static-dissipative. Ansell offers a range of solutions needed to control electrostatic, eliminate particulate matter, reduce outgassing and control other contaminants.

### CLEANROOM CLASSIFICATION

The FED-STD-209, Airborne Particulate Cleanliness Classes in Cleanrooms & Clean Zones was first published as FS 209 in 1963 by the Institute of Environmental Science and Technology (IEST). It became the foundation of the ISO 14644-1 standard:

#### Cleanrooms and associated controlled environments –

Part 1: *Classification of air cleanliness by particle concentration* which is used today. The FS 209 was replaced by ISO 14644 in 1999 within the EU and in 2001 in the USA.

The ISO 14644 standard defines the classification number of a cleanroom dependent on the maximum allowable concentration of certain size particles per m<sup>3</sup>. The lower the ISO classification number, the lower concentration of particles measured and the 'cleaner' the cleanroom.

ISO classification number (N)	Maximum allowable concentrations (particles/m <sup>3</sup> ) for particles equal to and greater than the considered sizes shown below						FED-STD-209E
	0.1 µm	0.2 µm	0.3 µm	0.5 µm	1.0 µm	1.5 µm	
ISO Class 1	10						
ISO Class 2	100	24	10				
ISO Class 3	1,000	237	102	35			Class 1
ISO Class 4	10,000	2,370	1,020	352	83		Class 10
ISO Class 5	100,000	23,700	10,200	3,520	832		Class 100
ISO Class 6	1,000,000	237,000	102,000	35,200	8,320	293	Class 1,000
ISO Class 7				352,000	83,200	2,930	Class 10,000
ISO Class 8				3,520,000	832,000	29,300	Class 100,000
ISO Class 9				35,200,000	8,320,000	293,000	



## CLEANROOM CONSUMABLES SELECTION

Things to consider:



Cleanliness based upon data provided by the manufacturer



Sterility requirements



Anti-static needs



Donning procedures  
(or Gowning with protective sleeves or aprons)



PPE needed, i.e., gloves, coveralls, goggles, etc.



Sizing and materials



Material/construction



Colour



Level of chemical protection needed

## Cleanroom Gloves

### Disposable Protection



#### Nitrilite® 93-401

Cleanroom class	Class 10/ISO 4
Material	Nitrile
Glove length (mm/in)	300/12



#### BioClean™ Synergy BSAN

Cleanroom class	Class 10/ISO 4
Material	Nitrile
Glove length (mm/in)	300/12



#### BioClean™ Vector BVA-E

Cleanroom class	Class 100/ISO 5
Material	Vinyl
Glove length (mm/in)	300/12



#### BioClean™ Cut Resistant Liner S-BCRL

Cleanroom class	ISO Class 4
Material	Ultra high molecular weight polyethylene
Glove length (mm)	160-200

### Chemical Protection



#### MICROFLEX® 93-360

Cleanroom class	Class 100/ISO 5 & Class 1000/ISO 6
Material	Nitrile and Neoprene
Glove length (mm/in)	≥ 285/11.2

## Veils



### BioClean™ Microflow Face Veil with Headloop BFV05

<b>Standard</b>	ISO 2859, ISO 9001:2015
<b>Material</b>	Apertured polyethylene film
<b>Length (± 5 mm)</b>	375-390



### BioClean™ Microflow Face Veil with Studs BFV06

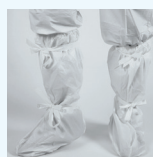
<b>Standard</b>	ISO 2859, ISO 9001:2015
<b>Material</b>	Apertured polyethylene film
<b>Length (± 5 mm)</b>	375

## Overboots



### BioClean-D™ Overboots BDOB

<b>Cleanroom class</b>	Class 10/ISO 4
<b>Material</b>	Polyethylene/Non-woven Polypropylene Laminate
<b>Length (mm)</b>	Universal



### BioClean-D™ (Longer Length) Overboots BDOB-L

<b>Cleanroom class</b>	Class 10/ISO 4
<b>Material</b>	Polyethylene/Non-woven Polypropylene Laminate
<b>Length (mm)</b>	500 (Longer length)

## Goggles



### BioClean™ Clearview Panoramic Autoclavable Goggles BCAP

<b>Cleanroom class</b>	Class 10/ISO 4 & EU GMP Grade A
<b>Material</b>	Thermoplastic Rubber, Polycarbonate, Silicone, Polypropylene
<b>Overall Dimensions</b>	Lens Thickness (± 0.3 mm): 2.1 mm, Bridge Width (± 0.5 mm): 50 mm, Bridge Height (± 0.5 mm): 25 mm, Overall Width (Hinge To Hinge) (± 3 mm): 160 mm, Overall Height (± 3 mm): 85 mm, Overall Weight: 103 g



## Body Protection



### BioClean-D™ Coverall with Hood and Integrated Boots BDFC

<b>Cleanroom class</b>	Class 10/ISO 4
<b>Material</b>	Polyethylene/Non-Woven Polypropylene Laminate
<b>Size</b>	S-4XL



### BioClean-D™ Coverall with Collar BDCCT

<b>Cleanroom class</b>	ISO Class 4
<b>Material</b>	CleanTough™
<b>Size</b>	S-7XL



### BioClean-D™ Hood BDHD-L

<b>Cleanroom class</b>	Class 10/ISO 4
<b>Material</b>	Polyethylene/Non-Woven Polypropylene Laminate
<b>Seam type</b>	Bound seams

For more information, contact your ansell representative or visit [www.ansell.com](http://www.ansell.com)

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