

CLEANROOM GARMENTS

UK BROCHURE :: 2024



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WELCOME

Micronclean lead the way in the UK market for cleanroom contamination control, our unique blend of innovation and excellence allows us to deliver quality and efficiency to our customer base across the UK. As leaders in cleanroom laundry, this allows Micronclean to also promote supporting services such as medical devices, cleanroom consumables, cleanroom cleaning and innovative mopping systems which have grown year upon year.

The Sales and Service Team were formed in 2015 and between the team have over 50 years of experience within Micronclean which delivers a knowledgeable, consistent and professional service to all our customers. UK customers are supported dependant on their size by either a Key Account Manager (KAM) or a regionally focussed Business Development Manager(BDM). Alongside this, each customer has an assigned, friendly customer service representative who fully understands the account and can be used as a first point of contact.

My core objective as Associate Sales Director for the business is to review current trends within the marketplace and look for innovative solutions for our customers. My experience within the marketplace and thorough knowledge of the cleanroom industry will allow me to grow the business in this area, working with the passionate and experienced UK team.

Stella Yates
Associate Sales Director

WHERE WE CAN HELP?

THE ROLE OF CLEANROOM GARMENTS

Cleanroom garments play a critical role in cleanroom contamination control; they are designed to contain contamination generated by the greatest source of contamination in a cleanroom – the people.

CLEANROOM CLASSIFICATIONS

Cleanrooms do not entirely remove contamination; instead, they operate at define levels which seek to regulate the contamination to an acceptable level depending on the product that is being manufactured. In cases where operations are likely to cause defects in the final product, a higher degree of cleanliness is required to avoid contamination.

Around the world there are several systems which define the level of cleanliness within a cleanroom but the two most common are EU GMP and ISO 14644-1. Under the GMP requirements, the manufacturing of sterile medicinal products can be distinguished into 4 grades: Grade A, B, C & D. Whereas under ISO requirements the level of a cleanroom cleanliness is designated by 9 levels. A rough guide to the equivalence of the standards is given in the table below along with an indication of the type of activities that might be conducted in that type of environment.

EU GMP	Grade A	Grade B	Grade C	Grade D
Type of Operation	High risk operations such as the filling of ampules or making aseptic connections	Aseptic preparation and filling	Preparation of solutions to be filtered, including weighing	All other operations
ISO Grading (at rest)	5	5	7	8
ISO Grading (in use)	5	7	8	Not defined

CLEANROOM GARMENTS

In any cleanroom the garments requirements needs to reflect not only the classification of the cleanroom but also the product being manufactured. However, as a starting point it is often sensible to consider the following:

Cleanroom Classification	Suggested Non-Sterile Cleanroom Clothing						
	Undergarments	Overgarments	Headwear	Footwear	Gloves	Facemask	Frequency of Changes
Grade A	Yes	Coverall	Hood, Goggles	Socks, Boots	Yes	FaceGuard Masks	Each Entry
Grade B	No	Coverall	Hood	Clogs	No	No Requirement	Daily
Grade C	No	Lab Coat	Mob Cap	Overshoes	No	No Requirement	Three times a week

It should be noted that all cleanrooms are different and as such your garment choices and changing procedures must be validated by you at your site.

GARMENT FABRIC STUDIES

Annex 1 states that all garments and its quality should be appropriate for the process being undertaken, the grade of cleanroom and should always protect the product from contamination.

For reusable cleanroom garments, Annex 1 further states that these garments should undergo qualification studies. These studies should determine the life of the garments, dependant on their processing and use cycles. Additionally Annex 1 states that any garment testing should go beyond visual inspection, as this might not detect all the sources of damage that could affect the garments performance within the cleanroom and so potentially damage the product being manufactured.

Micronclean is the only UK Cleanroom Laundry provider who has undertaken large scale testing of our cleanroom fabrics under typical conditions which cover

- Gamma Sterilised Outer Garments
- Non-Sterilised Outer Garments and
- Non-Sterilised Under Garments

and allows us to determine a safe useful life for all our cleanroom garments. As a result, we are able to design rental service contracts that ensure our customers receive high quality and high performing garments throughout a contract term, as well as good value for money.

GAMMA STERILISED OUTER GARMENTS

The full report can be downloaded from our website ([here](#)) and is available in a peer reviewed external journal ([here](#)) but the key finding can be summarised as

- The current Micronclean fabric (WF55) outperformed all the other fabrics that were tested.
- After extensive testing, we would generally recommend that our gamma sterilised outer garments are replaced after 50 process cycles to ensure that they maintain their effectiveness.

NON-STERILISED OUTER GARMENTS

The full report can be downloaded from our website ([here](#)), but the key findings can be summarised as

- After extensive testing, we would generally recommend that our non-sterile outer garments are replaced after 100 process cycles to ensure that they maintain their effectiveness.

NON-STERILISED UNDER GARMENTS

The full report can be downloaded from our website ([here](#)), but the key findings can be summarised as

- After extensive testing, we would generally recommend that our non-sterile undergarments are replaced after the following number of process cycles
 - Buxton 60 cycles
 - Carsington 100 cycles
 - Sandwash 100 cycles

The recommendations from the testing will be discussed with existing customers when their contract comes up for renewal or with new customers during the initial discussions.

GARMENT SERVICE CYCLE

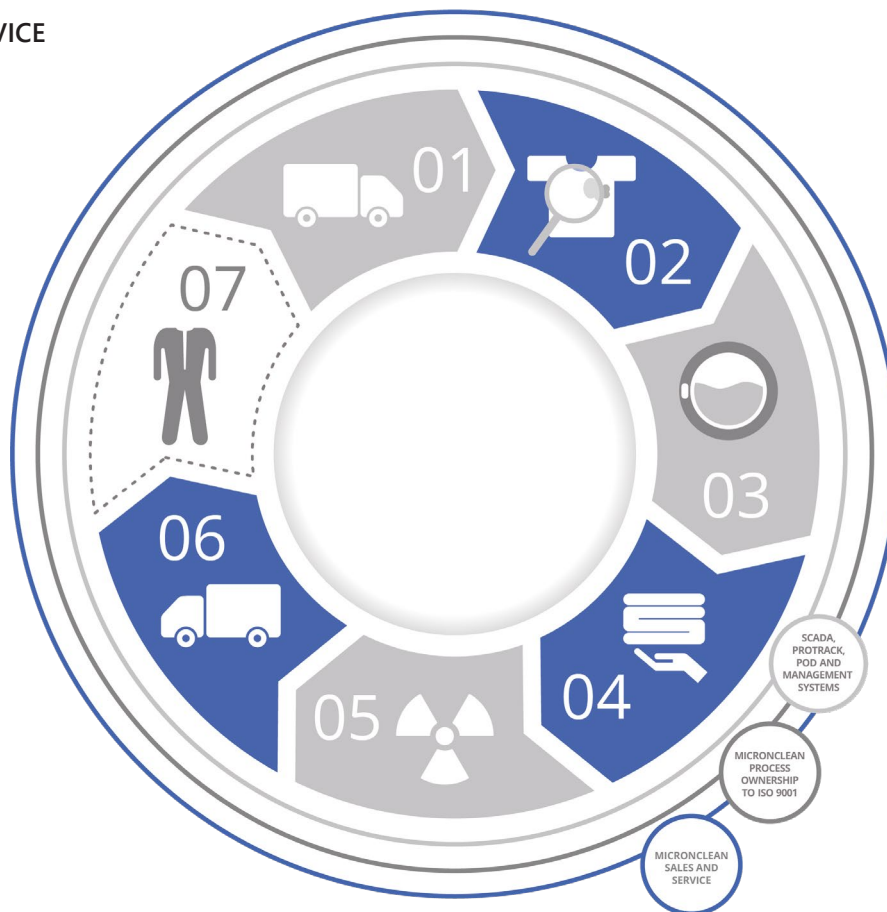
CLEANROOM SERVICE OFFERING

From the start, Micronclean put our customers at the heart of everything we do. This means as well as a dedicated KAM or BDM who will be your primary contact, you have access to an office-based customer service representative who will be able to answer your questions quickly and efficiently. From before installation through to scheduled processing we have systems and processes that track your cleanroom items through ordering and installation into routine operation which includes collection, inspection, validated repair (if allowed by your contract), decontamination, drying, packing, sterilisation (if required) and delivery ready for use.

In addition, the seamless integration of the tracking systems with process data from our process control systems ensures that we log your cleanroom items' full history ensuring your regulatory compliance.

This level of detail and service is available to all our cleanroom customers who take our ISO Class 4 and ISO Class 6 cleanroom offering.

CLEANROOM SERVICE



01. Collection of used Cleanroom items
02. Full individual item inspection
03. Decontamination and drying to specific programs, using a barrier washer with Thermal Disinfection
04. Folding and Packing in ISO Class 4 (GMP Grade B) or ISO Class 6 (GMP Grade C) facility
05. Terminally Sterilised using Gamma irradiation (if required)
06. Delivery of processed Cleanroom Items
07. Cleanroom Items ready for use

FACILITIES

CLEANROOM FACILITIES

To provide a fully managed Cleanroom Garment Service, Micronclean operates two discrete cleanroom laundries.

ISO CLASS 4

Micronclean operates the largest dedicated ISO Class 4 (GMP Grade B) Cleanroom Laundry in the UK which has a capacity of more than 70,000 garments a week. Using Micronclean's validated cleanroom wash programs, items are decontaminated using barrier washing machines before transferring into our ISO Class 4 cleanroom. Cleanroom items are then placed into positive pressure, HEPA filtered air tumble dryers to complete the process and aid final particulate removal. The cleanroom items are then packaged and prepared for sterilisation (if required) before batch information for full traceability is added.

ISO CLASS 6

In Louth, Micronclean operates one of the most technically advanced ISO Class 6 (GMP Grade C) Cleanroom Laundries in Europe, with the capacity to process in excess of 120,000 items a week. The Louth plant is highly automated and was purpose-built to exploit the power within our Protrack garment tracking system. Using Micronclean's approved wash programs, garments are decontaminated using barrier washing machines before being transferred into our ISO Class 6 cleanroom, where they are individually bagged before being transferred to the warehouse prior to automatic final sorting and dispatch to the customer.





SERVICES

CLEANROOM CLEANING

Micronclean is able to offer a dedicated cleanroom cleaning service which is segmented into two distinct offerings:

Decontamination Cleans which can be employed at during or after any cleanroom construction or renovation project and

Routine Cleans which can be carried out at regular intervals be it weekly, bi-weekly, monthly, bimonthly, etc.

ON-SITE SERVICE

Depending on the size and complexity of your cleanroom Micronclean are also able to offer three bands of onsite service which are:

Bronze

The collation of soiled garments from collectors and distribution of clean garments into lockers or dispensers

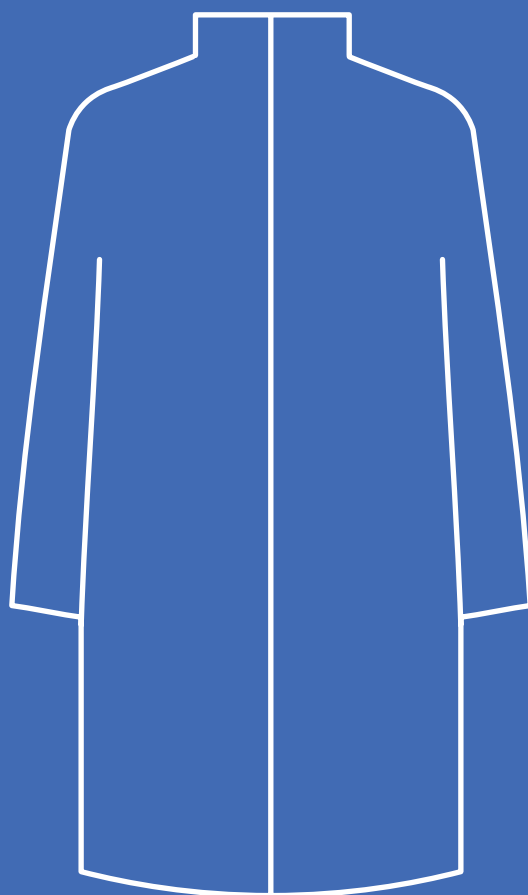
Silver

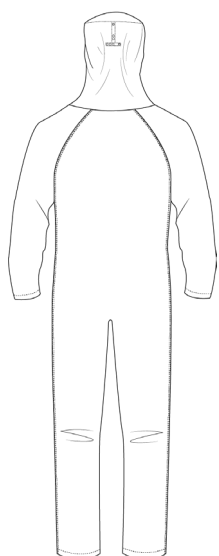
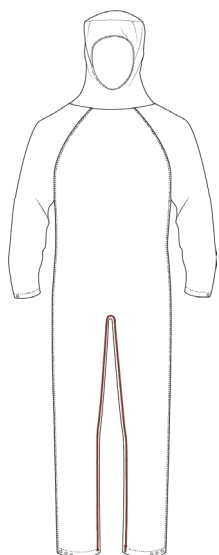
As for the bronze service with the addition of distribution of consumables around site, dealing with new starters and garment surgeries

Gold

As for the silver service with the addition of consumable stock management, updating wearer lists and providing a first point of contact for Micronclean issues

CLEANROOM GARMENTS





BEMICRON



FEATURES

Gusset single zip fastening coverall with integral hood
 Suitable for autoclaving and gamma irradiation
 Stud adjustments for hood sizing and ankles
 Knitted cuffs for comfort
 Full cleanroom construction
 Heat sealed edges
 Seams are twin needle stitched

FABRIC

98% polyester filament yarn
 2% anti-static grid

WEIGHT

105gsm

STD SIZE RANGE

SML - 2XL

NON-STD SIZE RANGE

Non-standard sizes are available, please contact us for more information, availability and lead times.

STD COLOUR | PROTRACK CODE

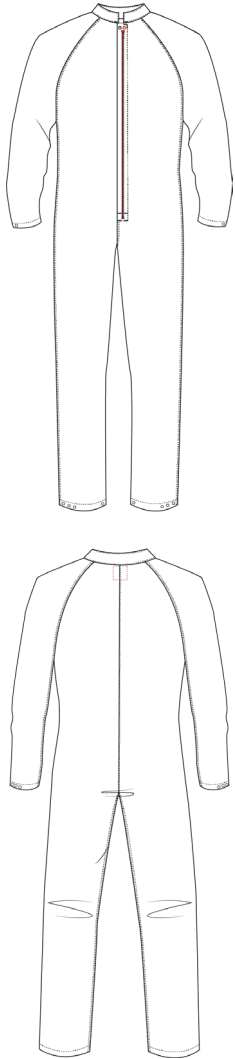
 Light Blue | BM1

NON STD COLOURS

 Navy

 Green

 White



STANDARD CLEANROOM COVERALL



FEATURES

- Suitable for autoclaving and gamma irradiation
- Centre front zip fastening coverall
- Stud adjustments at neck, wrist and ankles
- Raglan sleeves
- Mandarin collar
- Full cleanroom construction
- Heat sealed edges
- Seams are twin needle stitched

FABRIC

- 98% polyester filament yarn
- 2% anti-static grid

WEIGHT

105gsm

STD SIZE RANGE

SML - 2XL
Regular





NON-STD SIZE RANGE

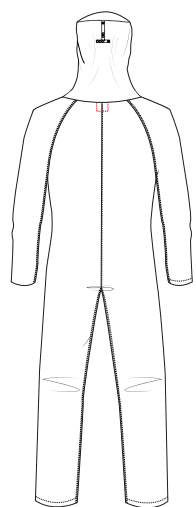
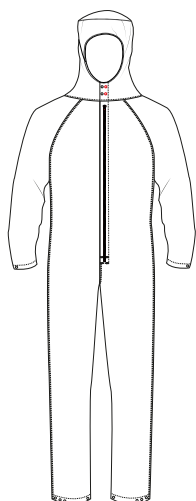
Non-standard sizes are available, please contact us for more information, availability and lead times.

STD COLOUR | PROTRACK CODE

-  Light Blue | SC2

NON STD COLOURS

-  Navy
-  Green
-  White
-  Grey



CLEANROOM COVERALL WITH INTEGRAL HOOD



FEATURES

Centre front zip fastening coverall with integral hood
Suitable for autoclaving and gama irradiation
Stud adjustments for hood sizing and ankles
Raglan sleeves
Full cleanroom construction
Heat sealed edges
Seams are twin needle stitched

FABRIC

98% polyester filament yarn
2% anti-static grid

WEIGHT

105gsm

STD SIZE RANGE

SML - 2XL

NON-STD SIZE RANGE

Non-standard sizes are available,
please contact us for more
information, availability and lead times.

STD COLOUR | PROTRACK CODE

 Light Blue | F11

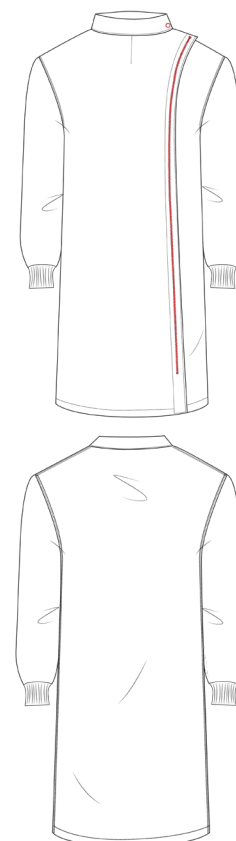
NON STD COLOURS

 Navy

 Green

 White

 Grey



CLEANROOM COAT LANCER STYLE



FEATURES

Suitable for autoclaving and gamma irradiation
 Concealed side zip
 Mandarin collar
 Internal patch pocket
 Raglan sleeves
 Stud poppers at neck for adjustment
 Elasticated cuff detail
 All edges are heat sealed before sewing
 Seams are twin needle stitched

FABRIC

98% polyester filament yarn
 2% anti-static grid

WEIGHT

105gsm

STD SIZE RANGE

XSM - 2XL

NON-STD SIZE RANGE

Non-standard sizes are available,
 please contact us for more
 information, availability and lead times.

STD COLOUR | PROTRACK CODE

 Light Blue | C91

NON STD COLOURS

 Navy

 Green

 White

 Grey



CLEANROOM COAT WITH CENTRE FASTENING



FEATURES

Suitable for autoclaving and gamma irradiation
 Concealed centre zip
 Mandarin collar
 Internal patch pocket
 Raglan sleeves
 Stud poppers at neck and wrist for adjustment
 All edges are heat sealed before sewing
 Seams are twin needle stitched

FABRIC

98% polyester filament yarn
 2% anti-static grid

WEIGHT

105gsm

STD SIZE RANGE

XSM - 2XL

NON-STD SIZE RANGE

Non-standard sizes are available,
 please contact us for more
 information, availability and lead times

STD COLOUR | PROTRACK CODE

 Light Blue | 4N1

NON STD COLOURS

 Navy

 Green

 White

 Grey



STANDARD CLEANROOM BOOTS AND HOOD



FEATURES

CLEANROOM BOOT

Suitable for autoclaving and gamma irradiation
Calf length boot with elasticated top hem
Two stud adjustment at the front and two ties attached to the heel to ensure a comfortable fit
Dissipative flat sole
All edges are heat sealed before sewing
Seams are twin needle stitched

CLEANROOM HOOD

Suitable for autoclaving and gamma irradiation
Adjustable stud front fastening
Stud adjustment at the back for improved fit
All edges are heat sealed before sewing
Seams are twin needle stitched

FABRIC

98% polyester filament yarn
2% anti-static grid

WEIGHT

105gsm

BOOT SIZE

STD SIZE RANGE SML - 2XL

NON-STD SIZE RANGE XSM to 3XL

HOOD SIZE

STD SIZE RANGE SML - 2XL

NON-STD SIZE RANGE XSM to 3XL

STD COLOUR | PROTRACK CODE

CLEANROOM BOOT

 Light Blue | TO1

CLEANROOM HOOD

 Light Blue | 400

NON STD COLOURS

 Navy

 Green

 White

 Grey



CLEANROOM LAUNDERED REUSABLE GOGGLES

FEATURES

Lightweight and durable construction
 Compatible with wearers of prescription glasses
 Superior peripheral vision
 Oversized indirect air vents to limit fogging alongside in process
 addition of 'anti-fog' agent
 Gamma irradiation compatible

USAGE

ISO 14644-1:2015 Cleanrooms Class 6 and above
 GMP Grade A - D Environments
 Anti-static controlled environments

MATERIALS

Goggle Lens

Co-polyester resin

Body

Polypropylene/ dynamically vulcanised
 EPDM rubber

Strap (Inner)

26 gauge rubber covered
 Semi-dull polyester


Strap (Cover)

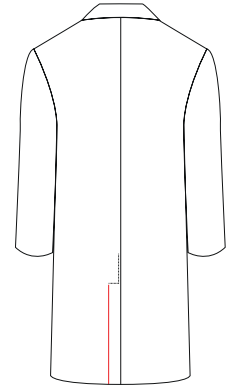
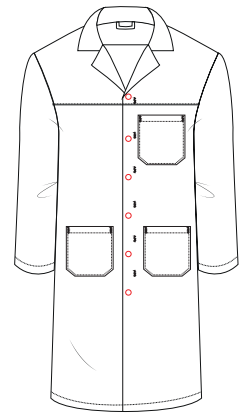
99% high density polyester 1% Carbon

SIZE

One Size

STD COLOUR | PROTRACK CODE

 Blue | GG1



STANDARD LABCOAT

FEATURES

Concealed stud front fastening
Single breast patch pocket
2 lower patch pockets
Plain hemmed sleeves
Back vent
Twin stitching

FABRIC

Polyester|Cotton

WEIGHT

245gsm

SIZE RANGE

S - 4XL
Regular

STD COLOUR | PROTRACK CODE

 Blue Shadow | 20M

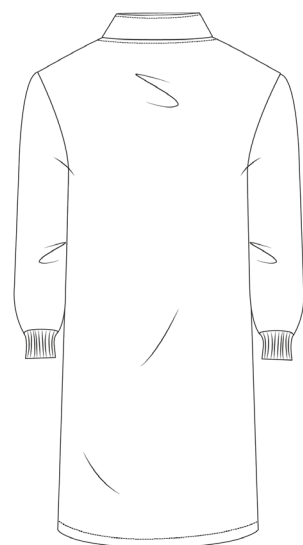
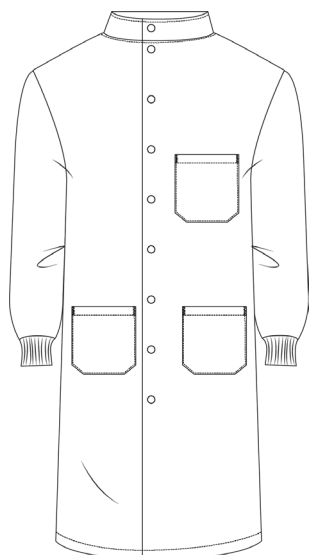
 Bottle Green

 Super White | 20P

 Convoy Grey

 Royal Blue

 Smokeberry | 20P



LABCOAT HOWIE STYLE

FEATURES

Exposed stud front fastening
Stand collar
Single breast patch pocket
2 lower patch pockets
Long sleeves with knitted cuffs

FABRIC

Polyester/Cotton

WEIGHT

245gsm

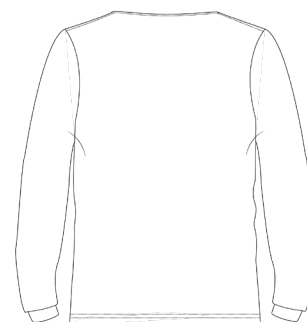
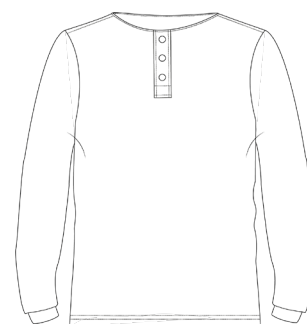
SIZE RANGE

SML to 3XL
Regular

STD COLOUR | PROTRACK CODE



Super White | MD40



UNDERGARMENT TUNIC LONG SLEEVE

FEATURES

Relaxed 'tracksuit' fit
Front neck closure with three studs
Two side vents
No pocket
No collar and edge bound neck

FABRIC

100% polyester

WEIGHT

85gsm

STD SIZE RANGE

XS - 2XL Regular

NON-STD SIZE RANGE

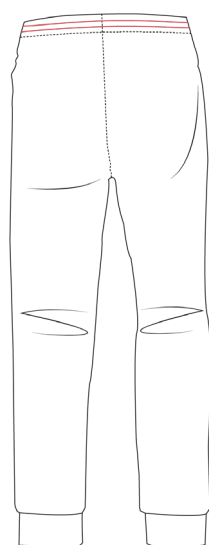
Non-standard sizes are available, please contact us for more information, availability and lead times.

STD COLOUR | PROTRACK CODE

 Navy | MW9

NON STD COLOURS

 Green



UNDERGARMENT TROUSERS

FEATURES

Relaxed 'tracksuit' fit
Tie waist
Lycra ankle cuffing
Three division accessory loop to outside right leg
No pockets

FABRIC

100% polyester

WEIGHT

85gsm

STD SIZE RANGE

XS - 2XL Regular

NON-STD SIZE RANGE

Non-standard sizes are available, please contact us for more information, availability and lead times.

STD COLOUR | PROTRACK CODE

 Navy | MS9

NON STD COLOURS

 Green



REUSABLE CLEANROOM SOCKS

FEATURES

Designed Specifically for the Cleanroom Environment;
Padded soles for increased wearer comfort;

Colour coded sizing;

Technical fabric (COOLMAX ®) offering:

- Soft Material
- Cooling Performance
- High Levels of Breathability
- Moisture Wicking

FABRIC

100% Synthetic Fabric

SIZE

Small, Medium and Large

STD COLOUR | PROTRACK CODE

 White | SO5

microngreen

our environmental future

Our Microngreen Strategy firmly supports Micronclean's commitment to protecting the environment.

At Micronclean, we are deeply committed to sustainability and protecting the environment. In our Cleanroom Textiles division, we have proved that reusable garments have a lower environmental impact than disposable ones. Extensive testing of our cleanroom garments has provided us with a validated garment life of over fifty process cycles which generates major reductions in environmental impact compared to disposable garments which can be summarised as:

58%
reduction in
carbon footprint

59%
reduction in
process energy

70%
reduction in
water footprint

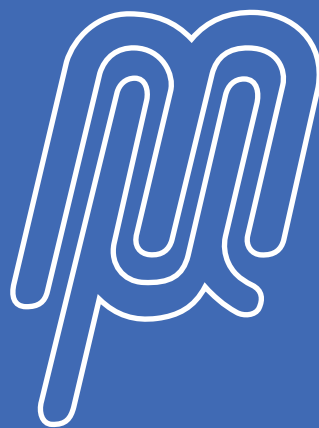
93%
reduction in solid
waste to landfill

Full details of the [cleanroom garment life study](#) and the [environmental benefits](#) that this delivers can be found on our website.

Our strategy for Cleanroom Textiles focuses on extending the life of textiles and prioritising reusables, including cleanroom socks, goggles, and gauntlets. We continue to work with our Research & Development (R&D) team to make circularity a reality, ensuring that our products contribute to a more sustainable future.



NOTES



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