

BARRIER® Clean Air Suit

Proven to help maintain ultra-clean air in the OR¹

BARRIER® Clean Air Suit can help maintain ultra-clean air in the operating room¹ (OR). It's a single-use clothing system proven to have a better protective effect than reusable systems made of cotton/polyester¹.



People in the OR are a main source of airborne microorganisms that can cause surgical site infections³. Our BARRIER Clean Air Suit can contribute to infection control by reducing contamination of the operating room air². The following evidence summaries explain how.

Kasina P et al, 2016³

Prospective study/clinical setting

Key findings:

- The BARRIER Clean Air Suit achieved a significant reduction in colony forming units (CFU/m³) compared to the olefin suit, and also compared to the laminar air flow-assisted Mertex suit (p=0.009)

Objective:

To investigate if BARRIER Clean Air Suit alone can achieve similar air quality in the OR to reusable clothing systems assisted by mobile laminar air flow.

Methods:

- Setting: OR (hip and knee arthroplasties)
- No. of procedures: 37
- Outcome measure: CFU/m³ of air

Products tested:

- BARRIER Clean Air Suit (n=11)
- Olefin suit (n=13): reusable suit made out of olefin fabric (woven polypropylene). Test was done without laminar air flow devices
- Mertex P-3477 suit (n=13): reusable suit made out of mixed material (cotton/polyester). Test was done with using 2 TOUL mobile laminar air flow devices

Tammelin A et al, 2013¹

Prospective studies/clinical and laboratory settings

Key findings:

- BARRIER Clean Air Suit maintained significantly lower counts of CFU/m³ compared to a reusable clothing system (Mertex) both in the OR and in an air chamber (p<0.05)
- BARRIER Clean Air Suit maintained air quality (<10 CFU/m³) even when ordinary ventilation was used in the OR
- The results show that clean air suits of different materials that are meeting the requirements of the EN 13795 standard may still exhibit significant differences in their protection capacity (bacterial penetration)
- BARRIER Clean Air Suit has a better protective effect than a reusable system made of cotton/polyester

Objective:

To investigate if there is a difference in protective efficacy between BARRIER Clean Air Suit and a reusable clothing system.

Methods:

- Settings: OR/dispersal chamber
- No. of procedures: OR, n=10; dispersal chamber, n=5
- Outcome measure: CFU/m³ of air

Products tested:

- BARRIER Clean Air Suit
- Mertex P-3477 suit – reusable, mixed material (cotton/polyester/carbon fibre)

Ljungqvist B and Reinmuller B, 2012²

Laboratory study

Key findings:

- The BARRIER Clean Air Suits significantly reduces both CFU (>75% more reduction) and particle count (>90% more reduction) compared to re-usable clean air suit systems
- When low concentrations of airborne bacteria-carrying particles are necessary to avoid hospital infections to patients, surgical clothing systems of evaluated disposable non-woven material are preferable

Objective:

To evaluate and compare the protective efficiency of a single-use and a reusable clothing system in a laboratory setting.

Methods:

- Setting: dispersal chamber
- No. of procedures: 5 per product (4 measurements per individual)
- Outcome measures: source strength – total particulates (numbers); bacteria-carrying particles (CFU)

Products tested:

- Older version of BARRIER Clean Air Suit (shirt tucked in)
- New BARRIER Clean Air Suit, antistatic-treated (shirt outside pants)
- New BARRIER Clean Air Suit, not antistatic-treated (shirt outside pants)
- Reusable clothing system (cotton/polyester): Mertex P-3477 clean air suit. Reusable, laundered up to 50 times (shirt tucked in)

Definitions

Colony forming units (CFUs): Number of particles that carry bacteria and can give rise to a colony on a culture plate.

Laminar air flow device: Instrument that creates a streamlined air flow in the operating room. This makes all particles move in the same direction.

Dispersal chamber: Test chamber with HEPA-filtered air supply and with exhaust air in which the concentration of the total number of particles and bacteria-carrying particles from the test subjects are measured in order to calculate the source strength.

What is needed to limit the levels of airborne bacteria?

- A Clean Air suit that helps to maintain Ultra-clean air in the OR¹
- Laminar airflow



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References: 1. Tammelin A et al, Single-use surgical clothing system for reduction of airborne bacteria in the operating room. Journal of Hospital Infection 2013;83(3) : 245-247. 2. Ljungqvist, B., Reinmüller, B.: PEOPLE AS A CONTAMINATION SOURCE. Surgical clothing systems for operating rooms—a comparison between disposable non-woven and reusable mixed material. Technical Report from Chalmers University of Technology, Gothenburg, Sweden 2012. 3. Kasina P et al, 2016: Comparison of three distinct clean air suits to decrease the bacterial load in the operating room: an observational study. Patient Safety in Surgery 2016; 10(1) : 1-6. 4. Howorth FH. Prevention of airborne infection during surgery. Lancet, 1985; 1(8425): 386-8.

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Find out more at www.molnlycke.com

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