Institute of Environmental Sciences and Technology

IEST-RP-CC003.5

Contamination Control Division

Recommended Practice 003.5

Garment System Considerations for Cleanrooms and Other Controlled Environments

IEST

[illegible] Golden Office Square, Suite 400
Schaumburg, IL 60173
Phone: (847) 981-0100 • Fax: (847) 981-4130
E-mail: information@iest.org • Web: www.iest.org

This Recommended Practice was prepared by and is under the jurisdiction of Working Group 003 of the IEST Contamination Control Division (WG-CC003). The following WG voting members contributed to the development of this edition of this Recommended Practice.

Mike Rataj, ARAMARK Cleanroom Services
WG-CC003 Chair

Blanca Compton, Cintas

Roger Diener, RBD Associates

Gordon Ely, LexaMed Ltd.

Jan Eudy, Jan E. Eudy Consulting

Pedro Godoy, Teilch, LLC

Greg Heiland, Valutek

Nate King, ARAMARK Cleanroom Services

Marco Moncayo, Lockheed Martin Space

Susan Routt, Uniform Technology

Chin Siang Tay, Suzhou TA&A Ultra Clean Tech Co., Ltd.

Dalia Taylor, DuPont

Nathaniel Terry, Burlington Industries

Yitzhak Vanek, Persys Engineering

Greg Winn, White Knight Engineered Products

The Working Group also wishes to acknowledge the contributions of members who prefer to remain anonymous.

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Institute of Environmental Sciences and Technology
1827 Walden Office Square, Suite 400
Schaumburg, IL 60173
Phone: (847) 981-0100 • Fax: (847) 981-4130
E-mail: information@iest.org • Web: www.iest.org

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IN THIS EDITION: Garments used in cleanrooms are essential to the success of maintaining a clean environment to protect products and processes. Poor implementation of a garment program results in a degraded cleanroom and can potentially cause adulteration of product. This IEST Recommended Practice has long been recognized as the industry document that covers all aspects of managing a cleanroom garment program, from selection of the proper materials and garment construction to proper care and laundering. IEST-RP-CC003 Appendices are the go-to resource for testing garments for cleanliness, performance, and construction. This RP is referenced in cleanroom standards and documents worldwide including the ISO/Technical Committee 209 Cleanrooms and associated controlled environments' ISO 14644 cleanroom series.

This 2023 update includes:

• A newly developed section on establishing an Arc-Rated (Flame Retardant) garment program in response to recent regulatory attention to this subject.

• All Supplements are now incorporated into the main document to ensure that users of the RP have all garment program information in one centralized document.

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1 SCOPE AND LIMITATIONS

1.1 Scope

This Recommended Practice (RP) addresses the gowning of personnel as an important aspect of cleanroom contamination control. It provides non-mandatory guidance for the selection, specification, maintenance, and testing of apparel and accessories appropriate for use in non-aseptic and aseptic cleanrooms and other controlled environments.

Included with this RP are the following supplements as Appendixes:

— APPENDIX A. *Recommended Garment System Configurations Applicable to Various Air Cleanliness Environments*, which identifies garment system configurations for different classes of air cleanliness

— APPENDIX B. *Guide to Measuring Cleanroom Garments*, which provides recommended garment measurement specifications

— APPENDIX C. *Recommended Requirements for Garments That Protect in Short Duration Fires and Arc Flash Hazards,* which provides considerations for adapting flame resistant (FR) garments for use in cleanrooms or other controlled environments

— APPENDIX D. *Testing*, which provides test recommendations and methods that allow for meaningful evaluation of the efficacy of garment system contamination control procedures

— APPENDIX E. *Bibliography*

1.2 Limitations

This RP does not prescribe design or performance requirements for garments, or control limits for specific cleanroom applications, such as food processing. It does not address personal protection or health and safety requirements as related to cleanroom apparel and accessories. Limitations, applicability, precision, and interpretation of data obtained from recommended testing as presented in Appendix D should be considered.

2 REFERENCES

The cited editions of the following documents are incorporated into this RP to the extent specified herein. Users should apply the most recent editions of the references.

2.1 American Association of Textile Chemists and Colorists (AATCC)

AATCC Test Method 22: Water Repellency: Spray Test

AATCC Test Method 118: Oil Repellency: Hydrocarbon Resistance Test

AATCC Test Method 127: Water Resistance: Hydrostatic Pressure Test

2.2 Association of the Nonwoven Fabrics Industry (INDA)

INDA Standard Test Method: IST 80.8—Alcohol Repellency

2.3 ASTM International

ASTM D737: Standard Test Method for Air Permeability of Textile Fabrics

ASTM D2261: Standard Test Method for Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure (Constant-Rate-of-Extension Tensile Testing Machine)

ASTM D3776: Standard Test Methods for Mass per Unit Area (Weight) of Fabric

ASTM D3786/D3786M - 09: Standard Test Method for Bursting Strength of Textile Fabrics—Diaphragm Bursting Strength Tester Method

ASTM D3884: Standard Guide for Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)