

# DuPont Contamination Control

## PROTECTIVE CLOTHING AND OSHA'S BLOODBORNE PATHOGENS RULE

### TECHNICAL BULLETIN

*"No garment satisfies the OSHA Bloodborne Pathogens rule under all situations."*

Occupational exposure to bloodborne pathogens is governed in the United States by Occupational Safety and Health Administration's (OSHA) Bloodborne Pathogens regulation – 29 CFR 1910.1030. It is misleading to claim that any garment meets the requirements of the OSHA bloodborne pathogens regulations under all conditions. The selection of the proper garment depends on the situation. In addition to garments, protection from bloodborne pathogens requires additional personal protective equipment.

The OSHA Bloodborne Pathogen regulation requires employers provide appropriate personal protective equipment at no cost to the employee when it is *"reasonably anticipated skin, eye, mucous membrane or parenteral contact with blood or other potentially infectious materials may result from the performance of an employee's duties."*

The regulations states that *"personal protective equipment will be considered 'appropriate' only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used."*

This standard does not mandate or recommend any specific testing for PPE against bloodborne pathogens. OSHA does not recommend or endorse specific products for this use. This standard explicitly requires the employer to make the determination based on the conditions of use and duration of time for their specific applications.

DuPont Personal Protection and DuPont Contamination Control can provide a wide range of protective fabrics along with their specifications to meet a broad spectrum of needs. We believe these garments, when used properly as part of a protocol which includes other protective

equipment and thorough personal hygiene practices, may help reduce the opportunity for contamination of workers skin and clothing by potentially infectious pathogens.

Garments made of Tyvek® and Tychem® are not appropriate for all situations. Tyvek® protective clothing fabric blocks viral penetration from synthetic body fluids at 2kPa demonstrating that Tyvek® offers some degree of protection. The use of surrogate virus testing is an accepted practice when dealing with other serious infectious agents such as HIV and hepatitis.

However, the sewn seams and closures of typical Tyvek® garments may provide less barrier protection than the Tyvek® fabric. Several seam options are available in most styles.

If exposure to moderate-to-large volumes of body fluids is expected, sealed-seam protective garments made of Tychem® fabrics, which are liquid impervious materials, should be considered along with techniques that help reduce the risk and volume of body fluid contact.

Surgical and isolation gowns used in healthcare facilities are considered medical devices in the United States and must be registered with the FDA. DuPont does not currently offer a medical gown made of Tyvek®, however there are gowns made of DuPont Medical Fabrics that meet these FDA requirements that are available from a number of DuPont customers.

ASTM F 1670 or ASTM F 1671 are not necessary pre-requisite tests for the selection of blood-borne pathogens protective clothing. ASTM F 1670 is a pass/fail test for visual penetration of a synthetic blood solution at 2 psi applied pressure. This test does not use a viral surrogate and is intended as a screening test for ASTM F 1671.

ASTM F 1671 is a more expensive and more sensitive pass/fail test incorporating a viral surrogate solution at 2 psi applied pressure. The 2 psi applied pressure utilized in ASTM F 1671 is an arbitrary value and not substantiated in actual use situations. It was chosen during a research project at Kansas State University because that value “differentiated” products when exposed to synthetic blood. There are blood-borne exposure situations during which the applied pressure may be considerably less than or may significantly exceed this 2 psi value. In other words, even a garment that passes ASTM F 1671 may not provide adequate viral barrier under all conditions. In addition, the construction of seams and closures may have considerable less barrier than the garment fabric, somewhat obviating the protection of the garment. Certain garment materials will pass ASTM F 1670 but not ASTM F 1671, in other words, while they appear to prevent visible blood penetration, they are not capable of preventing fluid-borne viral penetration.

The use of ASTM F1671 is also cited in AAMI PB70:2003, “Liquid barrier performance and classification of protective apparel and drapes intended for use in health care facilities” as the criterion required to obtain Level 4 protection which is the highest level of protection. However, since exposures to bloodborne pathogens is not expected in the vast majority of routine medical activities, the majority of garments worn do not meet the specific requirement of passing ASTM F1601.

For further assistance on protective clothing contact DuPont Personal Protection at 800-931-3456 or visit the website at <http://personalprotection.dupont.com>.

It is the user's responsibility to determine the level of toxicity and the proper personal protective equipment needed for the user's application. This information is intended for informational use by experienced persons having technical skill for evaluation under their 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. If fabric becomes torn, abraded or punctured, and user should discontinue use of garment to avoid potential exposure to chemical. **SINCE CONDITIONS OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTIES OF MERCHANTABILITY OF 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 or technical information of DuPont or others covering any material or its use.

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