DUPONT™

Effective protection for people and products

Tyvek® and Tychem® garments offer effective protection against a range of cytostatic drugs

Personnel working with cytostatic compounds need protection from these drugs, many of which are potent carcinogens, mutagens or reproductive toxins. At the same time, it is important to protect pharmaceutical products against human contamination.

Protection for employees and products

Employees who handle cytostatics during receipt, transport, compounding and disposal need access to appropriate personal protective equipment (PPE). Hazards include dusts during preparation (e.g., defective injection vials containing dry solids), liquids during transfer and dispensing, aerosol formation, and when containers are inadvertently dropped.

The National Institute for Occupational Safety and Health (NIOSH)[1] provides the following guidelines for PPE for employees working with hazardous drugs:

- Wear gowns whenever there is a possibility of splash or spill.
- If no permeation information is available for the gowns you use, change them every two to three hours or immediately after a spill or splash (ASHP 2006)[2].
- To avoid spreading drug contamination, do not wear gowns outside the compounding or administration area.
- Dispose of gowns after each use. Reuse increases the likelihood of chemical exposure.

Tyvek® and Tychem® for cytostatic hazards

DuPont™ Tyvek® 600, Tyvek® 800, DuPont™ Tychem® 2000 and Tychem® 6000 all may be suitable for use for activities related to receiving, transporting, compounding and disposing of potent compounds such as cytostatics. Accessories made of Tychem® 2000 and Tychem® 6000 may also provide additional protection for parts of the body subjected to particularly high levels of exposure.

Thanks to its unique material structure, Tyvek® fabric provides a high level of barrier protection against airborne particles greater than one micron, along with abrasion resistance and a low-linting surface.

Tychem® 2000 consists of a Tyvek® substrate with a polymer barrier coating. Tychem® 2000 garments provide protection against a wide range of inorganic chemicals. Tychem® 6000 consists of a barrier film laminated to a Tyvek® substrate. Tychem® 6000 garments help provide protection against numerous organic and highly concentrated inorganic chemicals and biological hazards.

Results from permeation tests on Tyvek® and Tychem® products with typical cytostatic drugs

Hazard name	Tyvek® 600	Tyvek® 800	Tychem® 2000	Tychem® 6000
Carmustine (3.3 mg/ml, 10% ethanol)	imm.*	>240**	>240**	>240
Cyclophosphamide (20 mg/ml)	>240	>240	>240	
Doxorubicin HCl (2 mg/ml)	>240	>240	>240	
Etoposide (20 mg/ml, 33.2% [v/v] ethanol)	>240	>240	>240	
Fluorouracil, 5- (50 mg/ml)	imm.*	>240	>240	
Paclitaxel (6 mg/ml, 49.7% [v/v] ethanol)	>240	>240	>240	
Thiotepa (10 mg/ml)	imm.*	>240**	>240**	>240**

*imm=immediate (<10 minutes)
**Under the conditions of the test, an actual breakthrough time of <60 minutes.
For additional permeation test details, please refer to the footnote at the end of this document.

Tyvek® 600

Tyvek® 600 type 4/5/6 coveralls offer the following safety and comfort benefits:

- Fabric and seams offer chemical permeation barrier to low-concentration water-based inorganic chemicals
- Serged and over-taped seams for protection and strength
- Self-adhesive chin flap for tight seal of suit to the mask
- Elastic face, wrists and ankles, as well as glued-in elastic waist
- Elastic thumb loops keep sleeves in place

Color: White with blue seams
Sizes: SM–7X

Tyvek® 800

Tyvek® 800 type 4/5/6 coveralls offer the following safety and comfort benefits:

- Fabric and seams offer chemical permeation barrier to low-concentration water-based inorganic chemicals
- Serged and over-taped seams for protection and strength
- Self-adhesive chin flap for tight seal of suit to the mask
- Elastic face, wrists and ankles, as well as glued-in elastic waist
- Elastic thumb loops keep sleeves in place

Color: White with orange seams
Sizes: SM–7X

Tychem® 2000

QC275 & QC278

- Knee- and calf-length aprons/gowns with attached sleeves
- Provides enhanced frontal protection
- Tightly sewn seam is covered with garment fabric to reinforce seam and reduce potential for particle penetration
- Ties at waist

Color: Yellow
Sizes: QC275, SM–4X
QC278, one size

Tychem® 2000

QC273

- Knee-length apron
- Provides enhanced frontal protection
- Open back for wearer comfort
- Ties at waist

Color: Yellow
Size: One size

Tychem® 2000

QC500

- Elastic at both ends for enhanced arm protection
- 18" long to cover from bicep to wrist

Color: Yellow
Size: One size

DuPont™ SafeSPEC™—we're here to help

Our powerful web-based tool can assist you with finding the appropriate DuPont garments for chemical, controlled environment, thermal, and mechanical hazards.

safespec.dupont.com

Certified Industrial Hygienist team

A DuPont Certified Industrial Hygienist can conduct a job hazard assessment to help you determine the best DuPont garment for a specific hazard.

1. NIOSH [2004]. NIOSH alert: preventing occupational exposure to antineoplastic and other hazardous drugs in health care settings. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2004–165.

2. ASHP (American Society of Health-System Pharmacists) [2006]. ASHP guidelines on handling hazardous drugs. Am J Health-Syst Pharm 63:1172–1193.

Permeation claims footnote:
The fabric permeation data was generated for DuPont by independent testing laboratories using ASTM F739, EN369, EN 374-3, EN ISO 6529 (method A and B) or ASTM D6978 test methods. Normalized breakthrough time (the time at which the permeation rate is equal to 0.1 µg/cm²/min) is reported in minutes. All liquid chemicals have been tested between approximately 20°C and 27°C unless otherwise stated. A different temperature may have significant influence on the breakthrough time; permeation rates typically increase with temperature. All chemicals have been tested at a concentration of greater than 95% unless otherwise stated. Unless otherwise stated, permeation was measured for single chemicals. The permeation characteristics of mixtures can deviate considerably from the permeation behavior of the individual chemicals.

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