



# **Technical Data Package**

## **DuPont™ Tychem® 6000**

### **TF611**

**Garments Compliant with**

**NFPA 1992, 2018 Edition**

(Certified as a garment and not as an  
ensemble per NFPA 1992 Standard)

**Consult DuPont™ Tychem® User Manual**  
**of Non-Encapsulated Garments**  
**for Instructions on Use**

THIS INFORMATION PACKET MAY NOT BE  
REMOVED EXCEPT BY THE END USER.

## **Sizes**

This NFPA 1992 compliant DuPont™ Tychem® 6000 (TF611) garment is available in the following sizes: SM, MD, LG, XL, 2X, 3X, 4X and 5X. The non-encapsulating garment sizing chart found in the Tychem® User Manual applies to these garments.

## **Components**

The chemical barrier garment element of the DuPont™ Tychem® 6000 (TF611) garment is made from a proprietary multi-layer chemical barrier fabric. The chemical protective garment seams are sewn with a serge stitch with polyester thread and sealed with hot-air welded chemical barrier tape outside.

There is a butyl interface (face seal) between the respirator face piece and the hood. This interface is not evaluated in this certification and for liquid tight performance.

These garments must be worn with separate, user-supplied boots and gloves.

The rear-entry zipper is 36 inches long. The zipper is horizontally mounted. The zipper elements are plastic and are mounted in a polyester tape that is sewn to the chemical barrier garment. The closures are covered by two flaps made of primary garment material. The flaps are fastened with plastic snaps then double-folded and fastened with opposing hook-and-loop tapes.

The head protection device that meet ANSI/ISEA Z89.1 (Type 1, Class G) requirements was utilized during the testing for compliance with the requirements of NFPA 1992.

## NFPA 1992 (2018 Edition) – Chapter 7 – Performance Requirements

|         |                                                                                                                                                                                                                     |                                                                                  |                                                                         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 7.1     | Protective Garment Elements and Items                                                                                                                                                                               |                                                                                  |                                                                         |
| 7.1.1   | Garments shall be tested for liquid tight integrity and shall allow no liquid penetration. <u>Note:</u> The interface between the hood and respirator are not evaluated in this garment.                            |                                                                                  | PASS                                                                    |
|         | Garments shall be tested for overall function and integrity and:                                                                                                                                                    | Shall allow the test subject to complete all tasks within 15 minutes,            | PASS                                                                    |
|         |                                                                                                                                                                                                                     | Shall allow no liquid penetration in subsequent liquid tight integrity testing   | PASS                                                                    |
|         |                                                                                                                                                                                                                     | Garment closure shall remain engaged during the entire garment function testing. | PASS                                                                    |
| 7.1.1.1 | Where hoods are provided, garments shall accommodate head protection devices meeting the dimensional requirements for Type I, Class G helmets of ANSI/ ISEA Z89.1, <i>Standard for Industrial Head Protection</i> . |                                                                                  | PASS                                                                    |
| 7.1.1.2 | Where hoods with visors are provided, garments shall permit the test subject to see with a visual acuity of 20/35 or better through the combination of both the hood visor and the respirator face piece lens.      |                                                                                  | Not Applicable                                                          |
| 7.1.1.3 | Where a protective flap is used over the closure system, it shall remain closed for the duration of the overall garment function test.                                                                              |                                                                                  | PASS                                                                    |
| 7.1.2   | Garment material chemical penetration resistance                                                                                                                                                                    |                                                                                  | PASS<br>See separate table                                              |
| 7.1.3   | Garment materials shall be tested for bursting strength and shall have a bursting strength $\geq 135$ N.                                                                                                            |                                                                                  | 233 N                                                                   |
| 7.1.4   | Garment materials shall be tested for puncture propagation tear resistance and shall have a puncture propagation tear resistance $\geq 25$ N MD & CD                                                                |                                                                                  | 42 N MD<br>37 N CD                                                      |
| 7.1.5   | Garment material cold temperature performance test at $-13^{\circ}$ F and $60^{\circ}$ angular deflection.<br>$\leq 0.057$ Nm MD & CD                                                                               |                                                                                  | 0.000 N/m MD<br>0.000 N/m CD                                            |
| 7.1.6   | Garment Visor Requirements                                                                                                                                                                                          |                                                                                  | Not Applicable                                                          |
| 7.1.7   | Garment Seam Requirements                                                                                                                                                                                           |                                                                                  |                                                                         |
| 7.1.7.1 | Garment seams chemical penetration resistance                                                                                                                                                                       |                                                                                  | PASS<br>See separate table                                              |
| 7.1.7.2 | Garment seams, and visor seams where visors are provided, shall be tested for seam strength and shall have a breaking strength $\geq 33$ N/ 25 mm                                                                   |                                                                                  | Garment Seams<br>124 N/ 25mm<br>Elastomeric/Garment Seam<br>155 N /25mm |

|              |                                                                                                                                           |                            |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <b>7.1.8</b> | <b>Garment Closure Assembly Requirements</b>                                                                                              |                            |
| 7.1.8.1      | Closure Penetration testing against specified chemicals (Fuel H, Methyl isobutyl ketone and 93.1% sulfuric acid) if no protective flap    | Not Applicable             |
| 7.1.8.2      | Garment closure assemblies shall be tested for closure strength and shall have a breaking strength $\geq 33$ N/ 25mm                      | 68 N/ 25mm                 |
| <b>7.1.9</b> | <b>Elastomeric Interface (Butyl Elastomeric Face Seal) Material Requirements</b>                                                          |                            |
| 7.1.9.1      | Elongation at rupture $\geq 125\%$                                                                                                        | 392.3%                     |
| 7.1.9.2      | Elastomeric Interface material chemical penetration resistance                                                                            | PASS<br>See separate table |
| 7.1.9.3      | Elastomeric Interface materials shall be tested for cut resistance and shall have a blade travel distance $\geq 20$ mm (0.8 inch) at 50 g | 39 mm                      |
| 7.1.9.4      | Elastomeric Interface materials shall be tested for puncture resistance and shall have a puncture resistance of $\geq 7$ N (1.6 lbf).     | 16 N                       |
| 7.1.9.5      | Ultimate tensile strength $\geq 4$ MPa (580 psi).                                                                                         | 9.64 MPa                   |
| 7.1.9.6      | Garment material cold temperature performance test at $-13^{\circ}$ F and $60^{\circ}$ angular deflection.<br>$\leq 0.057$ Nm MD & CD     | 0.002 Nm                   |
| <b>7.2</b>   | <b>Protective Glove Elements and Items Performance Requirements</b>                                                                       |                            |
| <b>7.3</b>   | <b>Protective Footwear Element Performance Requirements</b>                                                                               |                            |
| <b>7.4</b>   | <b>Non-encapsulating Protective Ensemble Performance Requirements</b>                                                                     |                            |
| <b>7.5</b>   | <b>Encapsulating Protective Ensemble Performance Requirements</b>                                                                         |                            |
| <b>7.6</b>   | <b>Optional Chemical Flash Fire Escape Protective Performance Requirements</b>                                                            |                            |

## Chemical Penetration Test Data

| Chemical<br>(concentration)                                             | Minimum<br>Requirement* | Garment<br>Material | Garment<br>Visor  | Garment<br>Seam | Garment<br>Closure | Interface<br>(Face Seal)<br>Material | Interface<br>(Face Seal)<br>and<br>Fabric<br>Seam | Glove<br>Material | Glove<br>Seam     | Footwear<br>Upper<br>Material | Hood<br>Material  |
|-------------------------------------------------------------------------|-------------------------|---------------------|-------------------|-----------------|--------------------|--------------------------------------|---------------------------------------------------|-------------------|-------------------|-------------------------------|-------------------|
| Butyl acetate (> 95%)<br>CAS No. 123-86-4                               | Pass                    | Pass                | Not<br>Applicable |                 |                    | Pass                                 |                                                   | Not<br>Applicable |                   | Not<br>Applicable             | Not<br>Applicable |
| Dimethylformamide,<br>(> 95%)<br>CAS No. 68-12-2                        | Pass                    | Pass                | Not<br>Applicable |                 |                    | Pass                                 |                                                   | Not<br>Applicable |                   | Not<br>Applicable             | Not<br>Applicable |
| Fuel H (42.5% toluene,<br>42.5% isooctane, 15%<br>ethanol mixture, v/v) | Pass                    | Pass                | Not<br>Applicable | Pass            | Not<br>Applicable  | Pass                                 | Pass                                              | Not<br>Applicable | Not<br>Applicable | Not<br>Applicable             | Not<br>Applicable |
| Isopropyl alcohol<br>(> 91%)<br>CAS No. 67-63-0,                        | Pass                    | Pass                | Not<br>Applicable |                 |                    | Pass                                 |                                                   | Not<br>Applicable |                   | Not<br>Applicable             | Not<br>Applicable |
| Methyl isobutyl ketone<br>(> 95%)<br>CAS No. 108-10-1                   | Pass                    | Pass                | Not<br>Applicable | Pass            | Not<br>Applicable  | Pass                                 | Pass                                              | Not<br>Applicable | Not<br>Applicable | Not<br>Applicable             | Not<br>Applicable |
| Nitrobenzene (> 95%)<br>CAS No. 98-95-3                                 | Pass                    | Pass                | Not<br>Applicable |                 |                    | Pass                                 |                                                   | Not<br>Applicable |                   | Not<br>Applicable             | Not<br>Applicable |
| Sodium hydroxide (50%)<br>CAS No. 1310-73-2                             | Pass                    | Pass                | Not<br>Applicable |                 |                    | Pass                                 |                                                   | Not<br>Applicable |                   | Not<br>Applicable             | Not<br>Applicable |
| Sodium hypochlorite<br>(10%)                                            | Pass                    | Pass                | Not<br>Applicable |                 |                    | Pass                                 |                                                   | Not<br>Applicable |                   | Not<br>Applicable             | Not<br>Applicable |
| Sulfuric acid (93.1%)<br>CAS No. 7664-93-9                              | Pass                    | Pass                | Not<br>Applicable | Pass            | Not<br>Applicable  | Pass                                 | Pass                                              | Not<br>Applicable | Not<br>Applicable | Not<br>Applicable             | Not<br>Applicable |
| Tetrachloroethylene<br>(95%)<br>CAS No. 127-18-4                        | Pass                    | Pass                | Not<br>Applicable |                 |                    | Pass                                 |                                                   | Not<br>Applicable |                   | Not<br>Applicable             | Not<br>Applicable |

Note: Shaded areas indicate no requirement for testing.

**\*A pass result indicates no liquid penetration through the tested specimens after a 1-hour exposure with 1-minute of the exposure at 13.8 kPa hydrostatic pressure.**

**Product safety information is available upon request.** This information corresponds to our current knowledge on the subject. It is offered solely to provide possible suggestions for your own determinations. It is not intended, however, to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. It is the user's responsibility to determine the level of risk and the proper protective equipment needed for the user's particular purposes. This information may be subject to revision as new knowledge and experience becomes available. Since we cannot anticipate all variations in actual end-use conditions, DUPONT MAKES NO WARRANTIES AND ASSUMES NO LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any trademark or patent right.

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