# DUPONT™ TYVEK® 600 PLUS

## TECHNICAL DATA SHEET

CAT III

T4

T5

T6

EN 1073-2

EN 1149-5

EN 14126



### PRODUCT INFORMATION

DuPont™ Tyvek® 600 Plus. Hooded coverall. Stitched and over-taped seams. Thumb loops. Tunnelled elastication at wrists, ankles and face. Elasticated waist (glued-in). Tyvek® zipper. Self-adhesive zipper and chin flap. White.

### ATTRIBUTES

| | |
|---|---|
| **Full Part Number** | TYCHA5TWH00 |
| **Fabric/Materials** | Tyvek® 600 |
| **Design** | Hooded coverall with elastics and thumb loops |
| **Seam** | Stitched and over-taped, blue |
| **Color** | White |
| **Other Colors** | Green |
| **Sizes** | XS, SM, MD, LG, XL, 2X, 3X, 4X, 5X, 6X, 7X |
| **Quantity/Box** | 100 per box, individually packed. |

### FEATURES

- Certified according to Regulation (EU) 2016/425
- Chemical protective clothing, Category III, Type 4-B, 5-B and 6-B
- EN 14126 (barrier to infective agents)
- Antistatic treatment (EN 1149-5) - on both sides
- Stitched and over-taped seams for protection and strength
- Tyvek® zipper and zipper flap for enhanced protection

### SIZETABLE

| PRODUCT SIZE | ARTICLE NUMBER | ADDITIONAL INFO |
|---|---|---|
| SM | D13495782 | |
| MD | D13395307 | |
| LG | D13395299 | |
| XL | D13395284 | |
| 2X | D13395272 | |
| 3X | D13495752 | |
| 4X | D14981422 | MTO |
| 5X | D14981437 | MTO |
| 6X | D14981445 | MTO |
| 7X | D14981458 | MTO |

### PHYSICAL PROPERTIES

| PROPERTY | TEST METHOD | TYPICAL RESULT | EN |
|---|---|---|---|
| Abrasion Resistance [7] | EN 530 Method 2 | >100 cycles | 2/6 [1] |
| Basis Weight | DIN EN ISO 536 | 41.5 g/m$^2$ | N/A |
| Colour | N/A | White | N/A |
| Exposure to high Temperature | N/A | Melting point ~135 °C | N/A |

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| PROPERTY | TEST METHOD | TYPICAL RESULT | EN |
|---|---|---|---|
| Flex Cracking Resistance [7] | EN ISO 7854 Method B | >100000 cycles | 6/6 [1] |
| Flex Cracking Resistance at -30°C | EN ISO 7854 Method B | >4000 cycles | N/A |
| Puncture Resistance | EN 863 | >10 N | 2/6 [1] |
| Resistance to water penetration | DIN EN 20811 | >10 kPa | N/A |
| Surface Resistance at RH 25%, inside [7] | EN 1149-1 | < 2,5 • $10^9$ Ohm | N/A |
| Surface Resistance at RH 25%, outside [7] | EN 1149-1 | < 2,5 • $10^9$ Ohm | N/A |
| Tensile Strength (MD) | DIN EN ISO 13934-1 | >60 N | 2/6 [1] |
| Tensile Strength (XD) | DIN EN ISO 13934-1 | >60 N | 2/6 [1] |
| Trapezoidal Tear Resistance (MD) | EN ISO 9073-4 | >10 N | 1/6 [1] |
| Trapezoidal Tear Resistance (XD) | EN ISO 9073-4 | >10 N | 1/6 [1] |

1 According to EN 14325 | 2 According to EN 14126 | 3 According to EN 1073-2 | 4 According to EN 14116 | 12 According to EN 11612 | 5 Front Tyvek ® / Back | 6 Based on test according to ASTM D-572 | 7 See Instructions for Use for further information, limitations and warnings | > Larger than | < Smaller than | N/A Not Applicable | STD DEV Standard Deviation |

### GARMENT PERFORMANCE

| PROPERTY | TEST METHOD | TYPICAL RESULT | EN |
|---|---|---|---|
| Nominal protection factor [7] | EN 1073-2 | >50 | 2/3 [3] |
| Seam Strength | EN ISO 13935-2 | >75 N | 3/6 [1] |
| Shelf Life [7] | N/A | 10 years [6] | N/A |
| Type 4: Resistance to Penetration by Liquids (High Level Spray Test) | EN ISO 17491-4, Method B | Pass | N/A |
| Type 5: Inward Leakage [11] | EN ISO 13982-2 | 0.5 % | N/A |
| Type 5: Inward Leakage of Airborne Solid Particulates | EN ISO 13982-2 | Pass | N/A |
| Type 6: Resistance to Penetration by Liquids (Low Level Spray Test) | EN ISO 17491-4, Method A | Pass | N/A |

1 According to EN 14325 | 3 According to EN 1073-2 | 12 According to EN 11612 | 13 According to EN 11611 | 5 Front Tyvek ® / Back | 6 Based on test according to ASTM D-572 | 7 See Instructions for Use for further information, limitations and warnings | 11 Based on the average of 10 suits, 3 activities, 3 probes | > Larger than | < Smaller than | N/A Not Applicable | * Based on lowest single value |

### COMFORT

| PROPERTY | TEST METHOD | TYPICAL RESULT | EN |
|---|---|---|---|
| Air Permeability (Gurley method) | ISO 5636-5 | Yes | N/A |
| Air Permeability (Gurley method) | ISO 5636-5 | < 45 s | N/A |
| Thermal Resistance, Rct | EN 31092/ISO 11092 | 16.3*$10^{-3}$ $m^2$*K/W | N/A |
| Thermal Resistance, clo value | EN 31092/ISO 11092 | 0.105 clo | N/A |
| Water Vapour Resistance, Ret | EN 31092/ISO 11092 | 11.3 $m^2$*Pa/W | N/A |

2 According to EN 14126 | 5 Front Tyvek ® / Back | > Larger than | < Smaller than | N/A Not Applicable |

### PENETRATION AND REPELLENCY

| PROPERTY | TEST METHOD | TYPICAL RESULT | EN |
|---|---|---|---|
| Repellency to Liquids, Sodium Hydroxide (10%) | EN ISO 6530 | >95 % | 3/3 [1] |
| Repellency to Liquids, Sulphuric Acid (30%) | EN ISO 6530 | >95 % | 3/3 [1] |
| Resistance to Penetration by Liquids, Sodium Hydroxide (10%) | EN ISO 6530 | <1 % | 3/3 [1] |
| Resistance to Penetration by Liquids, Sulphuric Acid (30%) | EN ISO 6530 | <1 % | 3/3 [1] |

1 According to EN 14325 | > Larger than | < Smaller than |

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## TECHNICAL DATA SHEET

### BIOLOGICAL BARRIER

| PROPERTY | TEST METHOD | TYPICAL RESULT | EN |
|---|---|---|---|
| Resistance to Penetration by Biologically Contaminated Aerosols | ISO/DIS 22611 | Pass | 1/3 [2] |
| Resistance to Penetration by Blood and Body Fluids using Synthetic Blood | ISO 16603 | 3,5 kPa | 3/6 [2] |
| Resistance to Penetration by Blood-borne Pathogens using Bacteriophage Phi-X174 | ISO 16604 Procedure C | No classification | No classification [2] |
| Resistance to Penetration by Contaminated Liquids | EN ISO 22610 | ? 15 min | 1/6 [2] |
| Resistance to Penetration by Contaminated Solid Particles | ISO 22612 | Pass | 1/3 [2] |

1 According to EN 14325 | > Larger than | < Smaller than |

### CLEANLINESS

| PROPERTY | TEST METHOD | TYPICAL RESULT | EN |
|---|---|---|---|
| Dry Linting Propensity, inside | BS 6909 | 128 Average particle count/17 liters of air | N/A |
| Dry Linting Propensity, outside | BS 6909 | 56 Average particle count/17 liters of air | N/A |

5 Front Tyvek ® / Back | > Larger than | < Smaller than | N/A Not Applicable | STD DEV Standard Deviation |

### PERMEATION DATA DUPONT™ TYVEK® 600 PLUS

| HAZARD / CHEMICAL NAME | PHYSICAL STATE | CAS | BT ACT | BT 0.1 | BT 1.0 | EN | SSPR | MDPR | CUM 480 | TIME 150 | ISO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acetic acid (30%) | Liquid | 64-19-7 | imm | imm | imm | | 13.5 | 0.001 | | | |
| Ammonium hydroxide (16%) | Liquid | 1336-21-6 | imm | imm | imm | | 20.3 | 0.005 | | | |
| Ammonium hydroxide (28% - 30%) | Liquid | 1336-21-6 | imm | imm | imm | | 16.7 | 0.014 | | | |
| Carboplatin (10 mg/ml) | Liquid | 41575-94-4 | >240 | >240 | >240 | 5 | <0.001 | 0.001 | | | |
| Carmustine (3.3 mg/ml, 10 % Ethanol) | Liquid | 154-93-8 | imm | imm | >240 | 5 | <0.3 | 0.001 | | | |
| Caustic ammonia (16%) | Liquid | 1336-21-6 | imm | imm | imm | | 20.3 | 0.005 | | | |
| Caustic ammonia (28% - 30%) | Liquid | 1336-21-6 | imm | imm | imm | | 16.7 | 0.014 | | | |
| Caustic soda (10%) | Liquid | 1310-73-2 | >240 | >480 | >480 | 6 | <0.005 | 0.005 | | | |
| Caustic soda (40%) | Liquid | 1310-73-2 | imm | >30 | >240 | 5 | <0.005 | 0.005 | | | |
| Caustic soda (50%) | Liquid | 1310-73-2 | imm | >30 | >240 | 5 | 0.85 | 0.01 | | | |
| Caustic soda (>95%, solid) | Solid | 1310-73-2 | >480 | >480 | >480 | 6 | <0.01 | 0.01 | | | |
| Cisplatin (1 mg/ml) | Liquid | 15663-27-1 | >240 | >240 | >240 | 5 | <0.0002 | 0.0002 | | | |
| Cyclo phosphamide (20 mg/ml) | Liquid | 50-18-0 | >240 | >240 | >240 | 5 | <0.002 | 0.002 | | | |
| Dimethyl sulfate | Liquid | 77-78-1 | imm | imm | imm | | >160 | 0.02 | | | |
| Doxorubicin HCl (2 mg/ml) | Liquid | 25136-40-9 | >240 | >240 | >240 | 5 | <0.003 | 0.003 | | | |
| Ethane 1,2-diol | Liquid | 107-21-1 | imm | imm | imm | | 6.6 | 0.002 | | | |
| Ethylene glycol | Liquid | 107-21-1 | imm | imm | imm | | 6.6 | 0.002 | | | |
| Etoposide (Toposar®, Teva) (20 mg/ml, 33.2 % (v /v) Ethanol) | Liquid | 33419-42-0 | >240 | >240 | >240 | 5 | <0.01 | <0.01 | | | |
| Fluorouracil, 5- (50 mg/ml) | Liquid | 51-21-8 | imm | imm | >30 | 2 | na | 0.001 | | | |
| Formic acid (30%) | Liquid | 64-18-6 | imm | imm | imm | | nm | 0.001 | | | |
| Ganciclovir (3 mg/ml) | Liquid | 82410-32-0 | >240 | >240 | >240 | 5 | <0.005 | 0.005 | | | |
| Gemcitabine (38 mg/ml) | Liquid | 95058-81-4 | imm | >60 | >240 | 5 | <0.4 | 0.005 | | | |
| Glycerine | Liquid | 56-81-5 | >240 | >480 | >480 | 6 | 0.03 | 0.01 | | | |
| Glycerol | Liquid | 56-81-5 | >240 | >480 | >480 | 6 | 0.03 | 0.01 | | | |
| Glycol alcohol | Liquid | 107-21-1 | imm | imm | imm | | 6.6 | 0.002 | | | |

# DUPONT™ TYVEK® 600 PLUS

## TECHNICAL DATA SHEET

| HAZARD / CHEMICAL NAME | PHYSICAL STATE | CAS | BT ACT | BT 0.1 | BT 1.0 | EN | SSPR | MDPR | CUM 480 | TIME 150 | ISO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hydrochloric acid (16%) | Liquid | 7647-01-0 | imm | imm | imm | | na | 0.05 | | | |
| Hydrochloric acid (32%) | Liquid | 7647-01-0 | imm | imm | imm | | na | 0.05 | | | |
| Hydrogen peroxide (10%) | Liquid | 7722-84-1 | >10 | >10 | >480 | 6 | <0.01 | 0.01 | | | |
| Hydrogen peroxide (30%) | Liquid | 7722-84-1 | imm | imm | imm | | >0.11 | 0.04 | | | |
| Ifosfamide (50 mg/ml) | Liquid | 3778-73-2 | imm | imm | >240 | 5 | <0.5 | 0.003 | | >480 | 6 |
| Irinotecan (20 mg/ml) | Liquid | 100286-90-6 | imm | >240 | >240 | 5 | <0.1 | 0.0028 | | | |
| Methotrexate (25 mg/ml, 0.1 N NaOH) | Liquid | 59-05-2 | >240 | >240 | >240 | 5 | <0.001 | 0.001 | | | |
| Mitomycin (0.5 mg/ml) | Liquid | 50-07-7 | >240 | >240 | >240 | 5 | <0.0009 | 0.0009 | | | |
| Nicotine (9 mg/ml) | Liquid | 54-11-5 | >480 | >480 | >480 | 6 | <0.08 | 0.08 | | | |
| Nitric acid (10%) | Liquid | 7697-37-2 | >60 | >120 | >480 | 6 | na | 0.05 | | >477 | 5 |
| Nitric acid (30%) | Liquid | 7697-37-2 | imm | imm | imm | | 4.6 | 0.001 | | | |
| Oxaliplatin (5 mg/ml) | Liquid | 63121-00-6 | imm | imm | imm | | na | 0.006 | | | |
| Paclitaxel (Hospira) (6 mg /ml, 49.7 % (v/v) Ethanol) | Liquid | 33069-62-4 | >240 | >240 | >240 | 5 | <0.01 | <0.01 | | | |
| Phosphoric acid (50%) | Liquid | 7664-38-2 | >480 | >480 | >480 | 6 | <0.05 | 0.05 | | | |
| Potassium chromate (sat) | Liquid | 7789-00-6 | >480 | >480 | >480 | 6 | <0.005 | 0.005 | | | |
| Potassium hydroxide (40%) | Liquid | 1310-58-3 | imm | imm | >30 | 2 | 0.7 | 0.001 | | | |
| Propane -1,2,3-triol | Liquid | 56-81-5 | >240 | >480 | >480 | 6 | 0.03 | 0.01 | | | |
| Sodium acetate (sat) | Liquid | 127-09-3 | imm | >480 | >480 | 6 | <0.1 | 0.05 | | >480 | 6 |
| Sodium chloride (9 g/l) | Liquid | 7647-14-5 | >240 | >240 | >240 | 5 | <0.02 | 0.02 | | | |
| Sodium hydroxide (10%) | Liquid | 1310-73-2 | >240 | >480 | >480 | 6 | <0.005 | 0.005 | | | |
| Sodium hydroxide (40%) | Liquid | 1310-73-2 | imm | >30 | >240 | 5 | <0.005 | 0.005 | | | |
| Sodium hydroxide (50%) | Liquid | 1310-73-2 | imm | >30 | >240 | 5 | 0.85 | 0.01 | | | |
| Sodium hydroxide (>95%, solid) | Solid | 1310-73-2 | >480 | >480 | >480 | 6 | <0.01 | 0.01 | | | |
| Sodium hypochlorite (10-15 % active chlorine) | Liquid | 7681-52-9 | >240 | >240 | >480 | 6 | <0.6 | 0.05 | | | |
| Sodium hypochlorite (5.25-6%) | Liquid | 7681-52-9 | >480 | >480 | >480 | 6 | <0.025 | 0.025 | | | |
| Sulfuric acid (18%) | Liquid | 7664-93-9 | >240 | >240 | >480 | 6 | <0.05 | 0.05 | | | |
| Sulfuric acid (30%) | Liquid | 7664-93-9 | >10 | >240 | >240 | 5 | <0.05 | 0.05 | | | |
| Sulfuric acid (50%) | Liquid | 7664-93-9 | imm | >30 | >60 | 3 | 38 | 0.01 | | | |
| Sulfuric acid dimethyl ester | Liquid | 77-78-1 | imm | imm | imm | | >160 | 0.02 | | | |
| Thiotepa (10 mg/ml) | Liquid | 52-24-4 | imm | imm | imm | | na | 0.001 | | | |
| Vincristine sulfate (1 mg /ml) | Liquid | 2068-78-2 | >240 | >240 | >240 | 5 | <0.001 | 0.001 | | | |
| Vinorelbine (0.1 mg/ml) | Liquid | 71486-22-1 | >240 | >240 | >240 | 5 | <0.0209 | 0.00209 | | | |

BTAct (Actual) Breakthrough time at MDPR [mins] | BT0.1 Normalized breakthrough time at 0.1 µg/cm²/min [mins] | BT1.0 Normalized breakthrough time at 1.0 µg/cm²/min [mins] | EN Classification according to EN 14325 | SSPR Steady state permeation rate [µg/cm²/min] | MDPR Minimum detectable permeation rate [µg/cm²/min] | CUM480 Cumulative permeation mass after 480 mins [µg/cm²] | Time150 Time to reach cumulative permeation mass of 150 µg/cm² [mins] | ISO Classification according to ISO 16602 | CAS Chemical abstracts service registry number | min Minute | > Larger than | < Smaller than | imm Immediate (< 10 min) | nm Not tested | sat Saturated solution | N/A Not Applicable | na Not attained | GPR grade General purpose reagent grade | * Based on lowest single value | 8 Actual breakthrough time; normalized breakthrough time is not available | DOT5 Degradation after 5 min | DOT30 Degradation after 30 min | DOT60 Degradation after 60 min | DOT240 Degradation after 240 min | BT1383 Normalized breakthrough time at 0.1 µg/cm²/min [mins] acc. ASTM F1383 |

**Important Note**

# DUPONT™ TYVEK® 600 PLUS

## TECHNICAL DATA SHEET

The permeation data published have been generated for DuPont by independent accredited testing laboratories according to the test method applicable at that time (EN ISO 6529 (method A and B), ASTM F739, ASTM F1383, ASTM D6978, EN369, EN 374-3) The data is typically the average of three fabrics samples tested. All chemicals have been tested at an assay of greater than 95 (w/w) % unless otherwise stated. The tests were performed between 20 °C and 27 °C and at environmental pressure unless otherwise stated. A different temperature may have significant influence on the breakthrough time. Permeation typically increases with temperature. Cumulative permeation data have been measured or have been calculated based on minimum detectable permeation rate. Cytostatic drugs testing has been performed at a test temperature of 27°C according to ASTM D6978 or ISO 6529 with the additional requirement of reporting a normalized breakthrough time at 0.01 µg/cm²/min. Chemical warfare agents (Lewisite, Sarin, Soman, Mustard, Tabun and VX Nerve Agent) have been tested according to MIL-STD-282 at 22°C or according to FINABEL 0.7 at 37°C. Permeation data for Tyvek® is applicable to white Tyvek® 500 and Tyvek® 600 only and is not applicable for other Tyvek® styles or colours. Permeation data are usually measured for single chemicals. The permeation characteristics of mixtures can often deviate considerably from the behaviour of the individual chemicals. The permeation data for gloves published have been generated according to ASTM F739 and to ASTM F1383. The degradation data for gloves published have been generated based on a gravimetric method. This degradation testing exposes one side of the glove material to the test chemical for four hours. The percent weight change after exposure is measured at four time intervals: 5, 30, 60 and 240 minutes.

Degradation Ratings:

- E: EXCELLENT (0-10% Weight Change)
- G: GOOD (11-20% Weight Change)
- F: FAIR (21-30% Weight Change)
- P: POOR (31-50% Weight Change)
- NR: NOT RECOMMENDED (Above 50% Weight Change)
- NT: NOT TESTED

Degradation is the physical change in a material after chemical exposure. Typical observable effects may be swelling, wrinkling, deterioration, or delamination. Strength loss may also occur.

Please use the permeation data provided as a part of the risk assessment to assist with the selection of a protective fabric, garment, glove or accessory suitable for your application. Breakthrough time is not the same as safe wear time. Breakthrough times are indicative of the barrier performance, but results can vary between the test methods and laboratories. Breakthrough time alone is insufficient to determine how long a garment may be worn once the garment has been contaminated. Safe user wear time may be longer orshorter than the breakthrough time depending on the permeation behaviour of the substance, the toxicity of the substance, working conditions and the exposure conditions (e.g. temperature, pressure, concentration, physical state).

Latest Update Permeation Data: 3/25/2022

The information provided herein corresponds to our knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relate only to the specific material designated; these data may not be valid for such material used in combination with any other materials or additives or in any process, unless expressly indicated otherwise. The data provided should not be used to establish specification limits or used alone as the basis of design; they are not intended to substitute for any testing you may need to conduct to determine for yourself the suitability of a specific material for your particular purposes. Since DuPont 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 patent rights.

**WARNING**

MTO: Made to order terms & conditions apply. The garment does not protect against ionizing radiation.

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This garment and/or fabric are not flame resistant and should not be used around heat, open flame, sparks or in potentially flammable environments.


### DuPont™ SafeSPEC™ - We're here to help

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**CREATED ON: APRIL 11, 2022**

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