



DUPONT PERSONAL PROTECTION

Product Catalogue



Tychem. Tyvek. ProShield.



Chemical Protective Solutions - Product Catalogue **CONTENT OVERVIEW**

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I. INTRODUCTION

DUPONT IS COMMITTED TO WORKER SAFETY

BECAUSE

DuPont Personal Protection is an organisation with a rich heritage and continued commitment to safety. Our goal is simple: combine scientific innovation with material, garment and manufacturing expertise to create the optimum in protective apparel to help the people who wear Personal Protective Equipment (PPE) perform at their best.

DUPONT IS COMMITTED TO PERSONAL PROTECTION

Selecting the appropriate protective garment not only helps to prevent injury, but may also help to prevent long-term occupational illnesses. Your employees may be putting their health at risk. Therefore, they require protection that they can rely on and trust. Here at DuPont, we combine scientific innovation with manufacturing expertise to provide a comprehensive range of protective clothing that helps people perform at their best.

We work very closely with industry to ensure that our product range meets specific industry needs. But our commitment to safety doesn't stop there; we also offer extensive support in garment specification as well as training on the correct use of chemical protective clothing to help ensure that our garments are worn safely.

In this catalogue, you will find a detailed description of our chemical protective clothing product range:



DuPont™ Tychem® for lightweight, comprehensive protection, ranging from low toxic chemicals to highly toxic gases and biological hazards.



DuPont™ Tyvek® for protection against a variety of liquid or solid chemicals, as well as fine particulates and fibres and biological hazards.

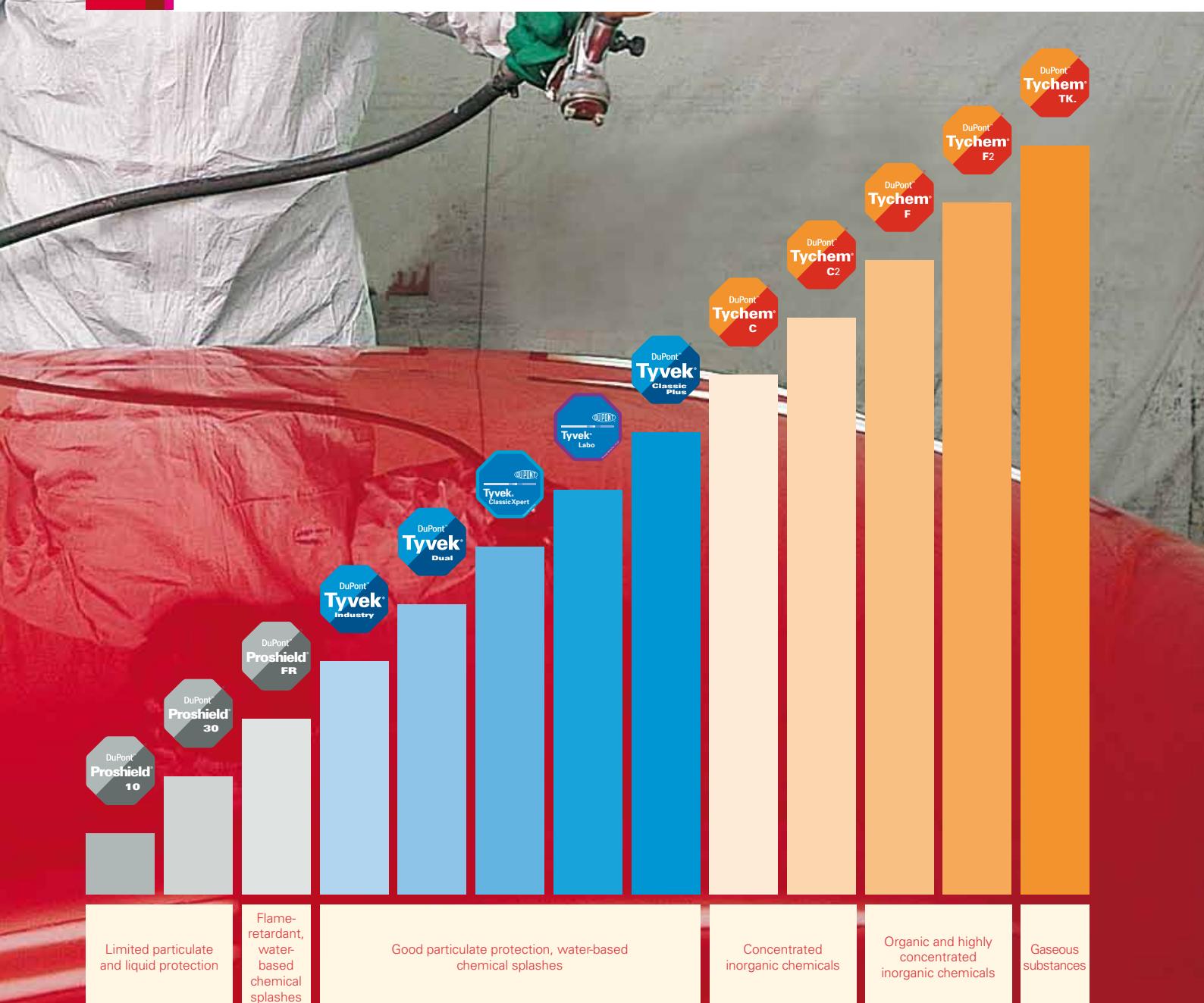


DuPont™ ProShield® for a protective clothing solution that meets less demanding barrier requirements.

- For the latest news and a description of the support services DuPont offers, please visit our website www.chemicalprotection.dupont.co.uk.



DUPONT GARMENTS: LEVELS OF PROTECTION TO MEET YOUR NEEDS



GARMENT SELECTION: A LIFE-SAVING CHOICE

There are many different chemical protective suits commercially available, and although they are CE certified, there are very wide ranging performance differences for products meeting the same certification 'Types'. Faced with a bewildering choice and the complexity of the certification information, what criteria should be used to select the right protective clothing? A short summary of the European standards for chemical protective clothing and a chemical protective clothing selection guide is provided to assist you in this task.

CE Marking

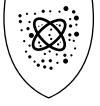
To facilitate the choice of garment, the European Union has defined harmonised product standards for six levels of protection (referred to as 'Types') within Category III Chemical Protective Clothing (see table below). The certification of a suit to a particular protection type represents its tightness against a particular form of exposure (gas, liquid or dust). It should be noted that its certification does not necessarily mean that the suit is 100% impervious to this type of exposure. It only means that the suit meets the minimum requirements. The manufacturer is also obliged to state the performance levels of the material(s) and seams, known as performance 'Classes'.

Chemical Protective Clothing, Category III		
Type and Pictogram*	Definition and Exposure Level	Product Standard and Year of publication
 TYPE 1	Gas-Tight Protective clothing against liquid and gaseous chemicals, including liquid aerosols and solid particles.	EN 943-1:2002**
 TYPE 1 - ET	Performance requirements for emergency teams.	EN 943-2:2002
 TYPE 2	Non-Gas-Tight Protective clothing against liquid and gaseous chemicals, including liquid aerosols and solid particles.	EN 943-1:2002**
 TYPE 3	Liquid Tight Protective clothing against liquid chemicals. Exposure to pressurized jet of liquid.	EN 14605:2005/A1:2009
 TYPE 4	Spray Tight Protective clothing against liquid chemicals. Exposure to a liquid spray aerosol (unpressurized).	EN 14605:2005/A1:2009
 TYPE 5	Solid Particulates Protective clothing against solid-airborne particulates.	EN ISO 13982-1:2004/A1:2010
 TYPE 6	Limited protective performance against liquid chemicals Potential exposure to small quantities of fine spray/mist or accidental low volume splashes and where wearers are able to take timely adequate action in case of contamination.	EN 13034:2005/A1:2009

* DuPont Pictogram.

** amended in 2005.

Other Relevant Standards

Pictogram	Definition	Standard and Year*
 **	Protective Clothing with Electrostatic properties - material performance and design requirements.	EN 1149-5:2008
 ***	Protective clothing against radioactive contamination.	EN 1073-2 :2002
	Protective Clothing with protection against heat and flame- Limited flame spread materials, material assemblies and clothing. Three “index” (levels) of protection are defined Index 1/o/o → Index 1 performance, single use and no pre-cleaning or laundering. INDEX 1 materials limit the flame spread, but will melt and must always be worn on top of Index 2 or 3 garments.	EN ISO 14116:2008
	Protective clothing (fabrics) against infective agents (indicate by a “B” e.g. Type 3-B) and comprising several protection tests.	EN 14126:2003

* As standards are continuously revised the year of publication is subject to change.

** Antistatic treatments on DuPont Chemical Protective Clothing are only effective in relative humidity >25% and when the garment and wearer are continuously and correctly grounded.

*** Does not protect against ionizing radiation.





THE 9-STEP GUIDE FROM DUPONT TO GARMENT SELECTION

Even when they are CE certified, the same certification “Types” can provide wide differences in performance. To help select the right chemical protective clothing, DuPont proposes using a step-by-step guide. Using the simplified guide below as part of the risk assessment process - as well as the summary table for DuPont garments - can help facilitate the process of garment selection.

Step 1: Hazard identification

What is the chemical hazard? Is it gas, liquid, vapour or particle? Can the hazard change state (e.g. from liquid to vapour)? What are the levels of concentration, humidity and temperature? Are there any additional hazards, such as heat, flame, explosion, radiation, electrostatic, biological substances, or sharp or abrasive surfaces? Are there special requirements for visibility or mobility?

Step 2: Determine minimum levels of protection needed

When choosing protective clothing, take into account the Type classification and examine the results obtained from the Type and material test as indicated in the manufacturer’s product documentation. Only by taking these detailed results into consideration is it possible to make conclusions on the levels of protection the garment provides.

Step 3: Assess hazard toxicity

Knowing the toxicity or consequences of short or long-term exposure to the hazard is essential. Assess whether a suit that just passes a certain Type is sufficient protection. For example, a suit designed to have higher exposure Type performance, such as a Type 3 or 4, is likely to offer a much lower amount of particle inward leakage, particularly if additional taping is used, and will be a significantly better barrier than certain Type 5 suits that in some cases may just meet the standard.

Step 4: Determine protective performance requirements of the fabric and seam

Consider that liquid chemical penetration tests are conducted over a time period of just 60 seconds. In order to assess whether a fabric protects the wearer for longer exposure periods, the permeation data (gathered from tests lasting up to 8 hours) should be consulted.

Tip: refer to the DuPont permeation guide for a detailed explanation and examples of permeation data.

Having determined the performance level of the fabric, double check and ensure the seams have been tested and demonstrated to offer the same level of barrier.

Step 5: Determine mechanical performance requirements

An excellent barrier is only worthwhile if it withstands working conditions and remains intact for the duration of the task. In addition, selecting the right size is essential to ensuring proper protection. Avoid oversized or undersized suits, and ensure correct sizes are available.

Step 6: Comfort considerations

Protection is important, and so is comfort. Identifying the appropriate protective and mechanical performance, while also maximising wearer comfort, can contribute to wearer satisfaction and productivity. Key comfort factors frequently cited in wearer trials include ample freedom of movement when bending/stretching, weight, feel on the skin, and breathability (in terms of both air and moisture vapour) of the garment.

Step 7: Supplier selection

Protection, performance in use, and comfort are key criteria, as is a manufacturer's brand reputation for consistent quality. DuPont is ISO 9001 and ISO 14001 certified, and our protective coveralls and fabrics are manufactured with rigorous statistical quality controls that go beyond the minimum requirements.

Step 8: Identify the correct usage of the product

Be aware of product limitations, as these can be a useful source of information on the correct use of the product. They may also raise important questions, such as whether additional taping is required, whether grounding requirements should be considered, performance when exposed to temperatures, and whether a doffing procedure is required that necessitates training to avoid contamination.

Step 9: Wear test

Once you've made a safe selection, why not put the coverall to the test and evaluate its performance in use? Putting a product to the test via wear trials is a wise step in the selection process. DuPont offers a user wear trial program - try it!

Additional support: customised assessment and testing services

DuPont offers a range of support tools to assist with risk assessment and garment selection: ranging from web-based tools and on-site risk assessment support with DuPont Personal Protection specialists and chemists, to chemical permeation barrier testing for your specific chemicals. DuPont specialists are also available to assist with wearer training for safe use and product performance explanations to promote wearer acceptance. Please visit www.dpp-europe.com/technicalsupport.

New DuPont™ SafeSPEC

Available in Europe as from 2013, DuPont™ SafeSPEC is an easy-to-use, interactive tool that provides the information you need to make informed decisions about choosing the appropriate protective apparel against chemical hazards. It provides detailed garment descriptions and specifications to help you select the most appropriate garment for your chemical hazards. SafeSPEC can be easily accessed through our website at www.SafeSPEC.DuPont.co.uk.

DUPONT GARMENT PRODUCT RANGE - OVERVIEW BY HAZARD

Garment	Fabric	Seam construction	Workwear: Dirt and Grime (Non-hazardous)	Particle Barrier			Protection from radioactive contamination **** (EN 1073-2)	Liquid Penetration / Repellency
				Particulates < 1 micron	Particulates 1-3 micron	Particulates > 3 micron		
Tychem® TK.	Tychem® TK.	Stitched and overtaped* (inside and outside)	●	■	■	■	■	■
Tychem® F2	Tychem® F + reinforcement	Stitched and overtaped*	●	■	■	■	■	■
Tychem® F	Tychem® F	Stitched and overtaped*	●	■	■	■	■	■
Tychem® C2	Tychem® C + reinforcement	Stitched and overtaped*	●	●	■	■	■	■
Tychem® C	Tychem® C	Stitched and overtaped*	●	●	■	■	■	■
Tyvek® Classic Plus	Tyvek® L1431N	Stitched and overtaped*	■	●	●	●	●	● * **
Tyvek® Classic Xpert	Tyvek® L1431N	Stitched	■	●	●	●	●	● **
Tyvek® Labo and Industry	Tyvek® L1431N	Stitched	■	●	●	●	●	● **
Tyvek® Dual	Tyvek® L1431N (front) SMS - back	Stitched	■	●	●	●	●	● **
ProShield® FR	Flame retardant SMS	Stitched	■	●	●	●	●	● **
ProShield® 30	Microporous film	Stitched	■	●	●	●	●	● **
ProShield® 10	SMS	Stitched	■	●	●	●	●	● **
Tempo***	Flame retardant Polyester nonwoven	Stitched	●	●	●	●	●	●
ProShield® Proper	Grey Ultra tough nonwoven with micro perforations for comfort	Stitched	●	●	●	●	●	●
ProShield® Polyclean	Nonwoven	Stitched	●	●	●	●	●	●

* Overtaped with barrier tape of equivalent performance as the fabric.

** Check permeation data or change upon contamination.

*** Fabric meets Index 1 as per EN ISO 14116 classification when tested according to EN ISO 15025 method A. Verify contaminant particle size to determine if protection is adequate.

**** Does not provide protection from ionising radiation.

The solutions provided here are only general recommendations. It is the user's responsibility to determine the level of protection needed according to the hazards and the applications. Always verify the chemical permeation data.

● Not recommended ● Adequate ● Preferred ■ Potentially over-specified

DUPONT GARMENT PRODUCT RANGE - OVERVIEW BY APPLICATION

Level of hazards	Applications	Tychem® TK. Type 1a-ET	Tychem® F/F2 Type 3-B	Tychem® C/C2 Type 3-B	Tyvek® Classic Plus Type 4-B
Non Hazardous	General dirt and grime	■	■	■	■
	Process protection / Food industry	■	■	■	■
Aerosol	General paint spraying applications	■	■	■	■
	Automotive paint spraying	■	■	■	■
Light liquid splash and fine spray/mist	Lubricants	■	●	■	■
	Sewage	■	■	●	●
	Remediation and Decontamination	■	■	■	●
	Water-based Chemicals	■	■	■	●
Particles	Sanding and grinding waste	■	■	■	●
	Electronics / Optical	■	■	■	●
	Pharma chemicals and Laboratories	■	■	■	●
	Cleanroom	■	■	■	●
	Fiberglass	■	■	■	●
	Asbestos	■	■	■	●
	Nuclear	■	●	●	●
	Railway	■	■	■	●
	Utilities	■	■	■	●
	Welding	■	■	■	●
	Petrochemicals	●	●	●	●
Sparks	Ex-Zones**	●	●	●	●
Moderate Liquid splash and Aerosol	Inorganic acids and bases	■	●	●	●
	Organic solvents (see permeation data)	●	●	●	●
Heavy liquid chemical splash (toxic and corrosive)	Known carcinogens	●	●	●	●
ChemBio and warfare agents	Bloodborne pathogens and biohazards (blood, saliva, human excrements)	■	■	●	●
	Sarin, mustard, VX nerve agent, Lewisite, Tabun, Soman***.	●	●	●	●
Chemical vapour and Gases (toxic and corrosive)	Chlorine, Ammonia	●	●	●	●

* Meets Index 1 as per EN ISO 14116 classification when tested according to EN ISO 15025 method A.

** Refer to details in Instructions for Use.

*** Finabel qualitative method 0.7.C. Contact DuPont for breakthrough data.

The solutions provided here are only general recommendations. It is the user's responsibility to determine the level of protection needed according to the hazards and the applications. Always verify the chemical permeation data.

● Not recommended ● Adequate ● Preferred ■ Potentially over-specified

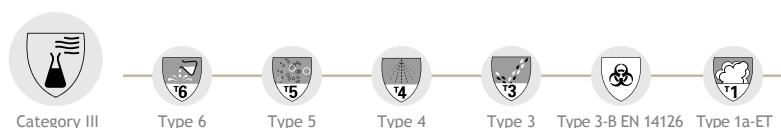


TYCHEM®

TYCHEM® IS AN INNOVATIVE FABRIC RANGE COMPRISING MULTIPLE BARRIER LAYERS THAT HELP PROVIDE PROTECTION FROM CHEMICAL AND BIOLOGICAL HAZARDS. LAMINATED TO TYVEK® FOR STRENGTH, IT OFFERS A ROBUST SOLUTION WITH A HIGH LEVEL OF CHEMICAL BARRIER AT UNCHARACTERISTICALLY LOW WEIGHT. THE TYCHEM® RANGE HAS BEEN INDEPENDENTLY PERMEATION-TESTED WITH OVER 180 CHEMICALS.

APPLICATIONS:

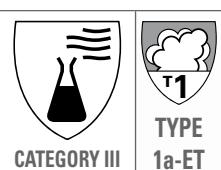
- Chemical industry
- Oil handling, oil tanker cleaning
- Petrochemical industry
- Pharmaceutical industry
- Tank cleaning, inspection and maintenance
- Nuclear industry
- Agrochemical handling
- Bio engineering
- Civil protection
- Decommissioning of production plants
- Decontamination of contaminated land
- Disease and disaster management
- Disposal of hazardous materials
- Emergency response services, spill clean-up and accident interventions
- Industrial cleaning and maintenance
- Medical applications and exposure to biological hazards
- Military applications



Protection against numerous toxic corrosive gases, liquids and solid chemicals	Tychem® TK.	✓	✓	✓	✓	✓	✓	✓
Protection against numerous organic and highly concentrated inorganic chemicals and biohazards	Tychem® F2	✓	✓	✓	✓	✓	✓	✓
	Tychem® F	✓	✓	✓	✓	✓	✓	✓
Protection against numerous concentrated inorganic chemicals and biohazards	Tychem® C2	✓	✓	✓	✓	✓	✓	✓
	Tychem® C	✓	✓	✓	✓	✓	✓	✓



TYCHEM® TK.



Valves. According to EN 943-1

Double glove system
Special design for cuff fitting. No extra tools needed for glove exchange

Integral socks
to be worn inside your own chemical protective boots

SIZE: S to XXL



TYCHEM® TK.



Specially developed to help protect against toxic corrosive gases, vapours and liquid chemicals, DuPont™

Tychem® TK. is a limited-life, gas-tight suit for use with self-contained breathing apparatus

- ✓ Helps provide high-level protection against a broad range of toxic, corrosive gases, liquid and solid chemicals according to EN 943-2
- ✓ Alternative to conventional reusables and is lightweight, easy-to-wear and supple

Visor. Large visor with good visibility. Like the fabric, visor offers class 6 permeation resistance for all chemicals of the test battery of EN 943-2

Bat wing design allows the wearer to pull back their arm easily from the sleeve

Internal waist belt

Boot flap to cover your chemical boots

Option: Attached HazMat chemical boots

COLOUR/REFERENCE:

Lime green: TYK GEVJD YL 00



TYCHEM® F AND F2



Tychem®



CATEGORY III

PROTECTION AGAINST NUMEROUS ORGANIC AND HIGHLY CONCENTRATED INORGANIC CHEMICALS AND BIOHAZARDS



TYPE 3



TYPE 4



TYPE 5



TYPE 6



TYPE 3-B
EN 14126



EN 1149-5



EN 1073-2*

Protection

- Mechanically resists pressures of up to 5 bar
- Biological protection - meets EN 14126 requirements in the highest performance class
- Particle-tight fabric
- Protection against particulate radioactive contamination*
- Suitable for use in Ex-Zones (see instructions for use)
- Stitched and overtaped seams: robust seams offering equal barrier as fabric

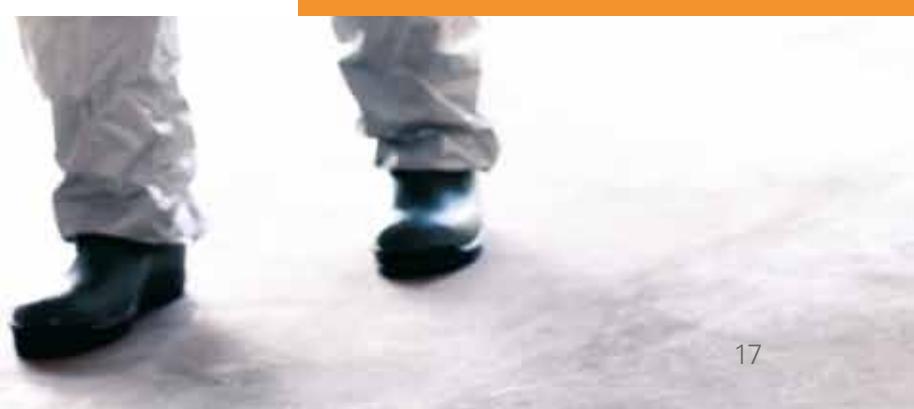
Comfort

- Lightweight yet strong garment < 500g for Tychem® F and < 850g for Tychem® F2 suit**
- Ease of movement and correct fit

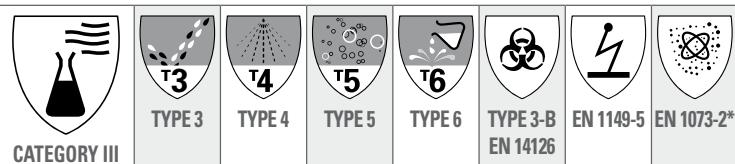
Environmentally friendly garment

- Tychem® coveralls do not contain halogen compounds, so can be disposed of via standard means

* Does not protect against ionizing radiation.
** model CHZ5 size XL.



TYCHEM® F



SIZE: S to XXXL

TYCHEM® F

Model CHA5



Protection against numerous organic and highly concentrated inorganic chemicals and biohazards



- Elasticated thumb loop ideally suited for overhead work when extreme arm movements are required. It prevents the suit sleeve from riding up

ALSO AVAILABLE WITH INTEGRATED SOCKS, **MODEL CHA6:**

Socks attached to the ankle: to be worn inside safety boots or shoes with additional knee-length boot flap to ensure a high protection level.



Size: M-XXXL
Grey: TYF CHA5T GY 16



COLOUR/REFERENCE:

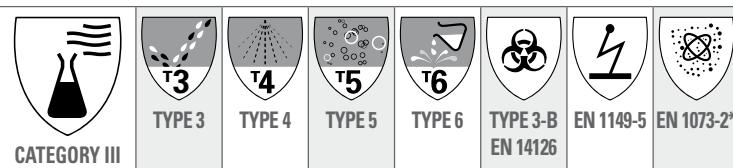
Size: S-XXXL
Grey: TYF CHA5T GY 00



Size: M-XXL
Orange: TYF CHA5T OR 00



TYCHEM® F2



Hood design allows free movement of head without disturbing the view as well as tight fit around the mask

Elasticated waist for optimum fit to body

Elasticated double-cuff system for improved protection

Robust and protective seams (stitched and overtaped with barrier-tape). Seam barrier equal to that of the fabric

Efficient system for garment closure: self-adapting elastics on cuffs and ankles significantly improve the fit and reduce risk of leakage at critical closure points

SIZE: M to XXXL

TYCHEM® F2

Model CHZ5



Barrier of Tychem® F, with higher mechanical strength and resealable design

- ✓ Robust yet lightweight (< 850 g)
- ✓ Innovative resealable double zip and flap
- ✓ Comfortable, textile-like touch of inside fabric thanks to the new multi-layer system
- ✓ Efficient system for garment closure
- ✓ Elasticated double-cuff

● Innovative double zipper and flap system, provides enhanced protection, easier donning and doffing and is resealable



COLOUR/REFERENCE:

Grey: TF2 CHZ5T GY 00



* Does not protect against ionizing radiation.

TYCHEM® F ACCESSORIES

TYCHEM® F ACCESSORIES IN COMBINATION WITH CHEMICAL PROTECTIVE CLOTHING CAN OFFER ENHANCED PROTECTION OF BODY PARTS THAT ARE MORE EXPOSED TO HAZARDOUS SUBSTANCES



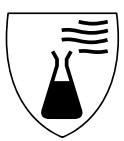
NEW CERTIFICATION!
PARTIAL BODY
CHEMICAL PROTECTIVE
CLOTHING
CATEGORY III

	Product description	Category and Type	Reference	Size
	Apron made of Tychem® F grey, model PA30LO Neck and waist ties. Shin length.	Cat. III Type PB [3]*	TYF PA30S GY 00	One Size
	Slip retardant overboot made of Tychem® F grey, model POBA Knee-length overboot with slip retardant sole. Sole partially stitched: splash proof, not fully liquid tight.	Cat. III Type PB [3]*	TYF POBAS GY 00	One Size
	Sleeves made of Tychem® F grey, model PS32LA Wide elastics (at cuffs and upper arm) 50 cm length.	Cat. III Type PB [3]*	TYF PS32S GY 00	One Size
	Gown made of Tychem® F grey, model PL50 Gown style apparel for front protection with closure in back. Elastic cuffs. Shin length.	Cat. III Type PB [3]*	TYF PL50S GY 00	S/M L/XXL

TYCHEM® C AND C2



Tychem®



CATEGORY III

PROTECTION AGAINST CONCENTRATED INORGANIC CHEMICALS AND BIOHAZARDS



TYPE 3



TYPE 4



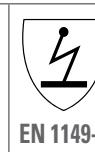
TYPE 5



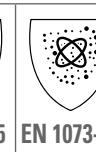
TYPE 6



TYPE 3-B
EN 14126



EN 1149-5



EN 1073-2*

Protection

- Protection against numerous inorganic chemicals
- Biological protection - meets EN 14126 requirements in the highest performance class
- Mechanically resists pressures of up to 2 bar: type 3 protection
- Particle-tight fabric
- Protection against particulate radioactive contamination*
- Suitable for use in Ex-Zones (see instructions for use)
- Stitched and overtaped seams: robust seams offering equal barrier as fabric

Comfort

- Lightweight yet strong garment < 450g for Tychem® C and < 650g for Tychem® C2 suit**

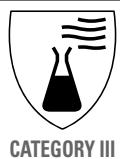
Environmentally friendly garment

- Tychem® coveralls do not contain halogen compounds, so can be disposed of via standard means

* Does not protect against ionizing radiation.

** Model CHZ5 size XL.

TYCHEM® C



CATEGORY III



TYPE 3



TYPE 4



TYPE 5



TYPE 6



TYPE 3-B

EN 14126



EN 1149-5



EN 1073-2*



SIZE: S to XXXL

TYCHEM® C

Model CHA5



Protection against numerous concentrated inorganic chemicals and biohazards



Elasticated thumb loop ideally suited for overhead work when extreme arm movements are required. It prevents the suit sleeve from riding up

ALSO AVAILABLE WITH INTEGRATED SOCKS, MODEL CHA6:

Socks attached to the ankle: to be worn inside safety boots or shoes with additional knee-length boot flap to ensure a high protection level.



Size: M-XXXL
Yellow: TYC CHA5TYL16

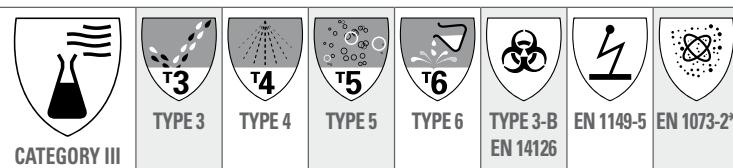


COLOUR/REFERENCE:

Yellow: TYC CHA5TYL00



TYCHEM® C2



Hood design allows free movement of head without disturbing the view as well as tight fit around the mask

Elasticated waist for optimum fit to body

Elasticated double-cuff system for improved protection

Robust and protective seams (stitched and overtaped with barrier-tape). Seam barrier equal to that of the fabric

Efficient system for garment closure: self adapting elastics on cuffs and ankles significantly improve the fit and reduce risk of leakage at critical closure points

SIZE: M to XXXL

TYCHEM® C2 Model CHZ5



Barrier of Tychem® C with higher mechanical strength and resealable design

- ✓ Robust yet lightweight (< 650 g)
- ✓ Innovative resealable double zip and flaps
- ✓ Comfortable, textile-like touch of inside fabric thanks to the new multi-layer system
- ✓ Efficient system for garment closure
- ✓ Elasticated double-cuff



Innovative double zipper and flap system, provides enhanced protection, easier donning and doffing and is resealable



COLOUR/REFERENCE:

Yellow: TC2 CHZ5T YL 00



* Does not protect against ionizing radiation.

TYCHEM® C ACCESSORIES

TYCHEM® ACCESSORIES IN COMBINATION WITH CHEMICAL PROTECTIVE CLOTHING CAN OFFER ENHANCED PROTECTION OF BODY PARTS THAT ARE MORE EXPOSED TO HAZARDOUS SUBSTANCES

**NEW CERTIFICATION!
PARTIAL BODY
CHEMICAL PROTECTIVE
CLOTHING
CATEGORY III**

	Product description	Category	Reference	Size
	Apron made of Tychem® C yellow, model PA30LO Neck and waist ties. Shin length.	Cat. III Type PB [3]*	TYC PA30S YL 00	One Size
	Slip retardant overboot made of Tychem® C yellow, model POBA Knee-length overboot with slip retardant sole. Sole partially stitched: splash proof, not fully liquid tight.	Cat. III Type PB [3]*	TYC POBAS YL 00	One Size
	Sleeves made of Tychem® C yellow, model PS32LA Wide elastics (at cuffs and upper arm) 50 cm length.	Cat. III Type PB [3]*	TYC PS32S YL 00	One Size
	Gown style made of Tychem® C yellow, model PL50 Gown style apparel for front protection with closure in back. Elastic cuffs. Shin length.	Cat. III Type PB [3]*	TYC PL50S YL 00	S/M L/XXL

TYCHEM® C/C₂/F/F₂ FABRICS - PERMEATION DATA

Permeation is the process by which a potentially hazardous chemical moves through a material on a molecular level.

**Here is a shortlist of permeation data for selected chemicals. For the complete list of chemical permeation data and the most recent updates, please visit our website:
www.dpp-europe.com/technicalsupport**

The DuPont permeation guide provides an extensive guide to permeation, interpreting data and includes helpful examples.

			Tychem® F/F ₂		
Chemical Name	Physical State	CAS-No.	Normalized Breakthrough Time at 0.1 µg/(cm ² .min) [minutes]	Normalized Breakthrough Time at 1.0 µg/(cm ² .min) [minutes]	Classification according to EN 14325
Acetic acid (glacial)	L	64-19-7	> 480	> 480	6
Acetone	L	67-64-1	> 480	> 480	6
Acetonitrile	L	75-05-8	> 480	> 480	6
Chlorobenzene	L	108-90-7	> 480	> 480	6
Diethylamine	L	109-89-7	> 480	> 480	6
Ethanol	L	64-17-5	> 480	> 480	6
Ethyl acetate	L	141-78-6	> 480	> 480	6
Hexane n-	L	110-54-3	> 480	> 480	6
Kerosene	L	8008-20-6	> 480	> 480	6
Toluene	L	108-88-3	> 480	> 480	6

			Tychem® C/C ₂		
Chemical Name	Physical State	CAS-No.	Normalized Breakthrough Time at 0.1 µg/(cm ² .min) [minutes]	Normalized Breakthrough Time at 1.0 µg/(cm ² .min) [minutes]	Classification according to EN 14325
Hydrochloric acid (32%)	L	7647-01-0	> 480	> 480	6
Hydrofluoric acid (48%)	L	7664-39-3	> 480	> 480	6
Hydrogen peroxide (50%)	L	7722-84-1	> 480	> 480	6
Nitric Acid (70%)	L	7697-37-2	> 480	> 480	6
Phosphoric acid (85%)	L	7664-38-2	> 480	> 480	6
Sodium hydroxide (50%)	L	1310-73-2	> 480	> 480	6
Sodium hypochlorite (13% active chlorine)	L	7681-52-9	> 480	> 480	6
Sulphuric acid (98%)	L	7664-93-9	> 480	> 480	6

The permeation data published in this document has been generated for DuPont by independent accredited testing laboratories according to EN 369, ASTM F739, EN 374-3 or EN ISO 6529 (method A and B). The measurements have been conducted under laboratory conditions at room temperature. A different temperature may have a significant influence on the breakthrough time. Breakthrough time is not equal to safe wear time. Please use the permeation data as a part of the risk assessment. More detailed information are given in the DuPont Permeation Guide.



TYVEK®

TYVEK® MAXIMISES PROTECTION, MINIMISES CONTAMINATION OF PROCESSES AND OFFERS A COMFORT THROUGH BREATHABILITY AND FIT FOR WEARER ACCEPTANCE AND WELL-BEING. THE PROTECTION IS BUILT INTO THE TOUGH, BREATHABLE NONWOVEN FABRIC ITSELF, AND IS NOT EASILY ABRADED OR WORN AWAY. TYVEK® IS BOTH AIR AND WATER VAPOUR PERMEABLE, YET REPELS WATER-BASED LIQUIDS AND AEROSOLS, AND RESISTS LOW-PRESSURISED WATER-BASED LIQUID CHEMICAL SPLASHES.

THOUGH DURABLE, THE VERSATILE FABRIC IS EXTREMELY LIGHT AND SOFT. MADE FROM PURE, ULTRAFINE AND CONTINUOUS HIGH-DENSITY POLYETHYLENE FIBRES, TYVEK® IS ANTISTATIC TREATED, EXTREMELY LOW-LINTING AND DOES NOT CONTAIN FILLERS, BINDERS OR SILICON, SO IT IS FREE OF INHERENT CONTAMINANTS.





DUPONT®

Tyvek.

APPLICATIONS:

- Chemical industry
- Nuclear industry
- Pharmaceuticals
- Agrochemical handling
- Asbestos
- Automotive industry
- Cleanroom applications
- Contaminated land clean-up
- Electronics
- Emergency response services
- Food processing
- Decontamination of contaminated land and work sites
- Disease management
- Disposal of hazardous materials
- Industrial cleaning and maintenance
- Medical applications and exposure to biological hazards

Tyvek®



TYVEK® CLASSIC PLUS



	TYPE 4	TYPE 5	TYPE 6	EN 14126 TYPE 4-B	EN 1073-2* Class 2	EN 1149-5
CATEGORY III						



SIZE: S to XXXL

TYVEK® CLASSIC PLUS

Model CHA5a

Combines performance of a Type 4 with the comfort of a nonwoven suit

- ✓ Stitched and overtaped seams, offering equal barrier as fabric
- ✓ Elasticated thumb loops attached to the end of the sleeve prevents the suit from riding up
- ✓ Also available with integrated socks

Elasticated waist (glued-in) for optimum fit to the body and maximizing protection



ALSO AVAILABLE WITH INTEGRATED SOCKS, MODEL CHA6 WITH:

Socks attached to the ankle: to be worn inside safety boots or shoes with additional knee-length boot flap to ensure a high protection level.



White: TYV CHA5T WH 16



COLOUR/REFERENCE:

White: TYV CHA5T WH 00



Green: TYV CHA5T GR 00



TYVEK® CLASSIC XPERT



Category III	Type 5	Type 6	EN ISO 1149-5 on both sides	EN 1073-2*	EN 14126

New test method:
EN ISO 17491-4 Method A
NEW

Class 2
NEW

NEW



NEW!

NEW! Hood shape to perfectly follow head movements and mask fit

NEW! Larger zipper puller; easier to fasten and unfasten when wearing gloves

Glued-in (not stitched) waist elastic for protection and good fit

Elasticated hood, cuffs and ankles for perfect fit



NEW! Overall ergonomic shape for perfect fit and protection when moving



SIZE: S to XXXL

TYVEK® CLASSIC XPERT

Model CHF5



Redefining protection in every detail

- ✓ Xtra liquid protection
- ✓ Xtra particulate protection
- ✓ Xceptional design and comfort
- ✓ Good breathability thanks to air and moisture vapour permeability



COLOUR/REFERENCE:

White: TYV CHF5S WH 00



Green: TYV CHF5S GR 00



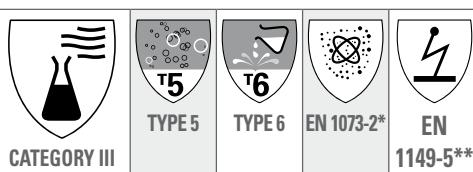
Blue: TYV CHF5S BU 00



*Fabric only.

* Does not protect from ionizing radiation.

NEW!



3-piece hood, half-elasticated with tunneled elastics for optimum facial fit ●

Internal seams to help reduce contamination from the inside to the outside ●

Tyvek® zipper and zipper flap for increased wearer and process protection ●

Tunneled elastics help ● to reduce the risk of contamination

Integral slip-retardant shoe covers ●



SIZE: S to XXXL

TYVEK® LABO

Model CHF7



Protect you and your processes in laboratories and the pharmaceutical industry

- ✓ New innovative "feel good effect" shape for greater comfort and flexibility
- ✓ Extremely high garment production quality control specifications
- ✓ New innovative packaging
- ✓ Applications: Pharmaceutical industry, laboratories, cosmetics, optical and electronics

● New Tyvek® logo

Glued-in elasticated waist for optimum fit to body and maximizing protection (less stitch holes) ●



Slip-retardant soles ●

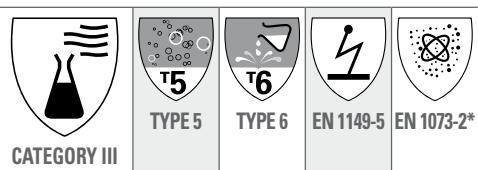


COLOUR/REFERENCE:

White: TYV CHF7S WH 00



TYVEK® DUAL



TYVEK® DUAL

Model CHF5a



Tyvek® protection where you most need it and comfort overall

- ✓ Protection, durability and comfort of a TYVEK® suit on the front side complimented with a breathable SMS back

Ergonomic 3-piece hood

A tight seal at the critical points

Elasticated cuffs and ankles for good fit

External stitched seams for enhanced protection against penetration from the outside to the inside of the garment



Ergonomic 3-piece hood allowing easy movement of head - the back-piece of the hood is made of SMS to help air and water vapour permeability

Large breathable SMS back panel from head to ankle for optimised comfort

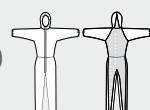
Waist elastification



SIZE: S to XXXL

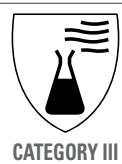
COLOUR/REFERENCE:

White: TYV CHF5 WH 00



* Does not protect from ionizing radiation.

TYVEK® INDUSTRY



CATEGORY III

TYPE 5

TYPE 6

EN 1149-5

EN 1073-2*

TYVEK® INDUSTRY

Model CCF5



The garment that helps to protect processes and products against human contamination

- ✓ Internal stitched seams reducing risk of contamination from garment by reducing particle penetration from inside the garment to outside



SIZE: S to XXXL

Elasticated waist
for optimum
fit to body



COLOUR/REFERENCE:

White: TYV CCF5S WH 00



Tyvek®

TYVEK® ACCESSORIES



	Product description	Size	Reference
	Labcoat made of Tyvek® white, model PL309 Collar, zip, 2 pockets. Elasticated cuffs (tunneled).	S to XXL	TYV PL30S WH 09
	Labcoat made of Tyvek® white, model PL30NP Collar, 5 snappers, without pockets. Elasticated cuffs (not tunneled).	M to XXL	TYV PL30S WH NP
	Labcoat made of Tyvek® white, model PL30 Collar, 5 snappers, 3 pockets.	M to XXL	TYV PL30S WH 00
	Trousers made of Tyvek® white, model PT31LO Without pockets - Elasticated waist.	M to XXL	TYV PT31S WH L0
	Jacket made of Tyvek® white, model PP33 With hood.	M to XXL	TYV PP33S WH 00



	Product description	Size	Reference
	Apron made of Tyvek® white, <i>model PA30LO</i> Two ties to be tied in the back. Length 108 cm.	One size	TYV PA30S WH L0
	Sleeves made of Tyvek® white, <i>model PS32LA</i> 50 cm, blue stitches on the upper arm opening. Adjustable.	One size	TYV PS32S WH LA
	Hood made of Tyvek® white, <i>model PH30LO</i> Hood and flange, elastic around the neck and the face.	One size	TYV PH30S WH L0
	Shoe covers made of Tyvek® white, <i>model POS0</i> L 40 cm, with elastics on the ankle.	One size	TYV POS0S WH 00
	Shoe covers made of Tyvek® white, <i>model POSA</i> With slip retardant sole.	36 to 42 42 to 46	TYV POSAS WH 00
	Boot covers made of Tyvek® white, <i>model POBO</i> Elastic on the top. Leg ties.	One size	TYV POB0S WH 00
	Boot covers made of Tyvek® white, <i>model POBA</i> Slip retardant sole. Leg ties.	One size	TYV POBAS WH 00

Tyvek®



PROSHIELD®

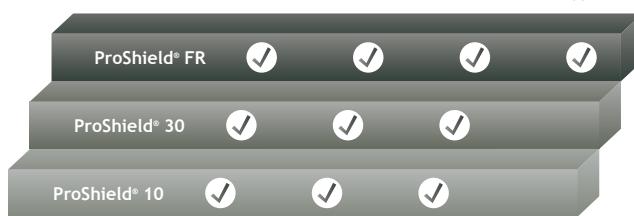
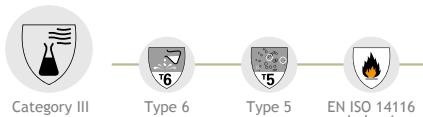
THE PROSHIELD® RANGE, BASED ON SMS OR MICROPOROUS FILM TECHNOLOGY, IS ENGINEERED FOR APPLICATIONS THAT REQUIRE LOWER LEVELS OF PROTECTION. PROSHIELD® GARMENTS ARE AFFORDABLE AND EXTREMELY PRACTICAL, PROVIDING A NEW DIMENSION IN COMFORT AT A LIMITED LEVEL OF PROTECTION.



ProShield®

APPLICATIONS:

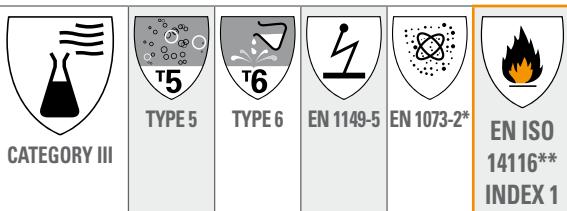
- Limited level of exposure as defined by Type 5 and Type 6
- Petrochemicals
- Utilities
- Railway
- Welding
- Gas industry
- Metal industry
- Visitors
- Do-it-yourself
- Maintenance
- Cleaning
- Factory visits
- Building industry
- Manufacturing applications



PROSHIELD® FR



NEW!



3-piece hood
for optimum facial fit ●

Orange colour-coded seams
enabling easy identification
of the garment*** ●

Zipper flap for
increased protection ●

Elasticated waist
(stitched-in) ●

Elasticated cuffs,
ankles and hood ●

Generous cut
allowing freedom
of movement
when working ●

● Antistatic treatment
on both sides****



How to wear the garment:



SIZE: M to XXXL

PROSHIELD® FR

Model CHF5



**The new solution to protect
you and your flame-resistant
garment underneath**

- ✓ Hooded protective coverall made from a flame retardant polypropylene non-woven fabric that provides limited protection against heat, flames and chemicals (index 1)
- ✓ Maximising wearer comfort: thanks to the open structure of its breathable non-woven SMS fabric
- ✓ **Non-halogenated** flame-retardant non-woven fabric, free of substances of very high concern to conform to REACH compliance
- ✓ Applications: Petrochemicals, Utilities, Railway, Welding, Oil and Gas industry, Metal industry



● Limited flame
spread coverall -
Index 1

COLOUR/REFERENCE:
White with orange seams:

PFR CHF5S WH 00



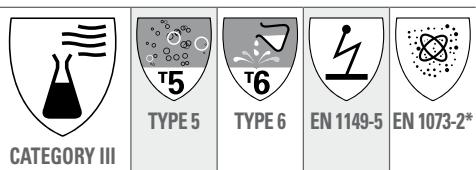
* Does not protect from ionizing radiation.

** EN ISO 14116:2008 requires a tensile strength of >150N. This garment has a tensile strength of >30N only.

*** The seams, elastics and zipper components are not made of flame-retardant materials and may burn if exposed to heat and flame.

**** Test conducted on certain FR fabrics and FR garments have demonstrated that antistatic properties reduce overtime. In the interests of safety, that's why we initially limit the shelf-life for the antistatic property of ProShield® FR to 18 months.

PROSHIELD® 30



PROSHIELD® 30

Model CHF5a

**Based on Microporous Film
Laminate technology, ProShield® 30
offers high repellency to liquids**

- ✓ Good liquid repellency
- ✓ Medium durability
- ✓ Water vapour permeable



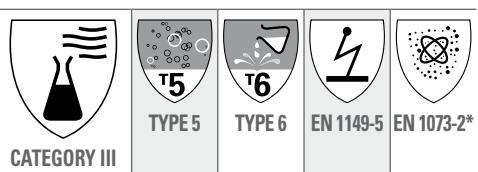
SIZE: S to XXXL

COLOUR/REFERENCE:

White: P30 CHF5S WH 00



PROSHIELD® 10



Hood

Nylon zipper
with zipper flap

Elasticated waist
(stitched-in)

Elasticated
cuffs and ankles



PROSHIELD® 10

Model CHF5a



**Based on SMS Technology,
ProShield® 10 combines
limited particle protection
with high comfort level**

- ✓ Limited particle protection
- ✓ High comfort level: high air and water vapour permeability

COLOUR/REFERENCE:

White: S10 CHF5S WH 00



Blue: S10 CHF5S BU 00



WORKWEAR



APPLICATIONS:

- Do-it-yourself
- General maintenance
- General cleaning
- Manufacturing applications

WORKWEAR



PROSHIELD® PROPER



PROSHIELD® PROPER

Model CCF5

A versatile ultra-tough protective garment for non hazardous substances

- ✓ Microperforated non-woven polyethylene fabric (60g/m^2)
- ✓ Antistatic treated on the inside (for comfort)
- ✓ Keep yourself clean with the suit, typical for maintenance and repair
- ✓ Washable up to 7 times
- ✓ Smart design
- ✓ Ultra tough: economic and long lasting coverall



Collar

Nylon zipper

Elasticated
waist

Elasticated
cuffs

2 Pockets

SIZE: S to XXL

COLOUR/REFERENCE:

Grey: PRF CCF5S GY 00



PROSHIELD® POLYCLEAN



Hood ●

Elasticated wrist,
ankles and face opening ●

Nylon zipper
with zipper flap ●



PROSHIELD® POLYCLEAN

Model CHF5

Stay clean when there is dirty work to be done!

- ✓ Nonwoven polypropylene fabric (50g/m²)

COLOUR/REFERENCE:

White: P50 CHF5S WH 00



TEMPO



SIZE: M to XXXL

TEMPO

Model TM127

- ✓ Highly breathable limited flame-spread garment
- ✓ Dust and liquid repellency
- ✓ Protection against dirt, grime and non-hazardous particles and aerosols
- ✓ To be worn over primary thermal protection, such as DuPont™ Nomex® coveralls
- ✓ Fabric meets Index 1 as per EN ISO 14116¹ classification when tested according to EN ISO 15025² method A
- ✓ Fabric: cellulose / polyester nonwoven designed to not contribute to additional burn injury in the event of an industrial fire

● Elasticated cuffs, ankles and face opening

Note:

This garment is only recommended to prevent stains of non hazardous products. Be careful: this garment does not comply with the category III CE certification. It is not chemical protective clothing. An Index 1 garment should never be worn in direct contact to the skin, but on top of an Index 2 or Index 3 garment. Unsuitable for usage in Ex-Zones.

COLOUR/REFERENCE:

Blue: TM 127S BU 00



DUPONT SERVICES - BECAUSE OUR SERVICES AND TRAINING MAKE THE DIFFERENCE

They Enable You to Choose Safe and Reliable Protection

Tyvek® and Tychem® protective clothing are backed by a comprehensive package of technical services, safety information and advice.

Techline service: Expertise in one call!

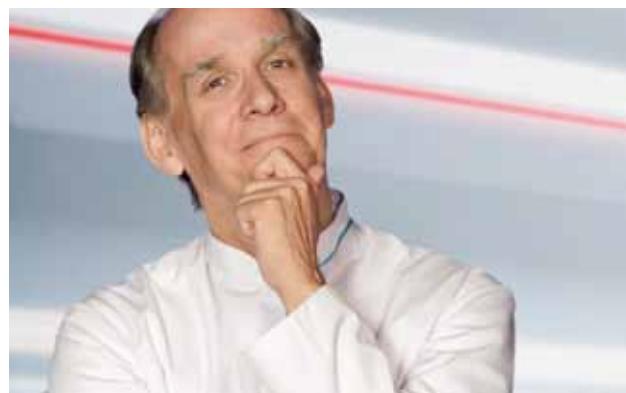
Do you have a question regarding a product recommendation? Product use? Or any other technical question? Please feel free to benefit from our FREE technical hotline, the 'Techline', that will guide you and ensure your safety is not put at risk.

+352 621 164 043
www.dpp-europe.com/technicalsupport

CLOTHING SEMINAR

Protective clothing seminars are held regularly by DuPont Personal Protection Experts. Seminar topics include: understanding barrier effect and protection performances, garment selection, CE-marking and their relevance to end-users.

PROFESSOR TYTONIUS



<http://www.differentprotection.tyvek.com>

Are you wondering what protection really means? Are you sure your chemical protective clothing is really protecting you?

Finally these questions have been conclusively answered by professor Victor Tytonius, a passionate scientist who specialises in worker protection and chemical protective clothing and materials. In a series of videos, he leads you through some revealing experiments on the three most common materials: Tyvek®, Microporous Film and SMS.

Should you have any further questions, then please call our toll-free number +800 3666 6666 or email personal.protection@lux.dupont.com.



OTHER DUPONT SAFETY OFFERING

PROTECTION AND NOMEX®



Nomex.

"DuPont™ Nomex® is an **inherently** flame-resistant, high temperature resistant meta-aramid fibre that doesn't melt and drip or support combustion in the air. As this thermal behaviour is obtained by its **specific molecular structure** and not by applying a flame retardant chemical substance to the fabric, yarn, fibre or polymer, Nomex® offers permanent, inherent protection, which cannot be washed out or worn away.

Nomex® was invented by DuPont in 1967. During the past 45 years, DuPont has continuously enhanced the Nomex® solutions to meet the ever increasing demand for superior protection, comfort and durability.

Emergency services and workers in hazardous industries (such as electrical utilities, racing, petrochemical...) over 80 countries around the world have found reliable and trusted Nomex® solutions, whether their hazards are fire, explosion, electric arc, molten metal splashes, static discharge, or low visibility.

DUPONT™ NOMEX® PARTNER PROGRAM

DuPont Protection Technologies has carefully selected value chain partners who are committed to delivering controlled quality products to the wearers.



For further information, including where to purchase apparel made of Nomex® in Europe, visit www.nomex.co.uk.

PROTECTION AND KEVLAR®



Kevlar.

Gloves, sleeves and other protective garments made from DuPont™ Kevlar® brand fibre offer an ideal combination of superior cut resistance, flexibility and lightweight comfort for workers in the automotive, steel, glass and metal, aerospace and electronics industries, among others. The newest offerings include:

- **KEVLAR® Armor Technology**
- **KEVLAR® Comfort Technology**
- **KEVLAR® Clean Technology**

The innovative solutions are available exclusively for licensed manufacturers.

For further information, including where to purchase apparel made of Kevlar® in Europe, visit www.kevlar.co.uk.

DUPONT SUSTAINABLE SOLUTIONS

DuPont Sustainable Solutions (DSS) is a catalyst for transformation. We offer collaborative consulting and solutions-driven technologies that can help organisations transform their workplaces and work cultures to become safer, more efficient, and environmentally sustainable. DSS helps clients succeed by applying over 200 years of accumulated firsthand knowledge and experience in safety, engineering, environmental stewardship and operations management.

For further information, please visit our website at www.sustainablesolutions.dupont.co.uk or call + 41 22 717 59 20.

DISCLAIMER

This information is based upon technical data that DuPont believes to be reliable. It is subject to revision as additional knowledge and experience becomes available. DuPont does not guarantee results and assumes no obligation or liability in connection with this information.

It is the user's responsibility to determine the level of toxicity and the proper personal protective equipment needed. This information is intended for use by persons having the technical expertise to undertake evaluation under their own specific end-use conditions, at their own discretion and risk.

Anyone intending to use this information should first check that the garment selected is suitable for the intended use. The end-user should discontinue use of garment if fabric becomes torn, worn or punctured, to avoid potential chemical exposure. Since conditions of use are beyond our control, we make no warranties, expressed or implied, including but not limited to warranties of merchantability or fitness for a particular purpose 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 other persons covering any material or its use.

DuPont reserves its right to make minor changes to the products featured in this catalogue.



FROM TYVEK® CLASSIC TO... **TYVEK® CLASSIC XPERT**

Decades of experience in the field have made Tyvek® Classic a point of reference in chemical protective clothing.

By continuing to improve, to fine-tune and to innovate, DuPont has pushed the Tyvek® Classic to a new level of protection:

Tyvek® Classic Xpert, setting a new standard of protection in the type 5/6 category.

REDEFINING PROTECTION IN EVERY DETAIL

DuPont Solutions for Personal Protection

DuPont Personal Protection
www.chemicalprotection.dupont.co.uk

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Fax: +352 3666 5071
E-mail: personal.protection@lux.dupont.com



The miracles of science™