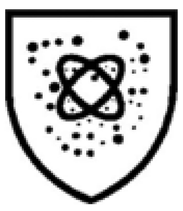
INDUTEX S.p.A. **Presents the new garment line made with the fabric**

Puntiform®

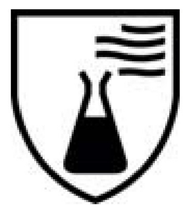
SprayGuarD®

Garments made with over taped seams or welded seams (TOPGUARD® Technology)
cat. 3 type 4-B, 5 and 6
for NBC (nuclear, biological and chemical) protection with antistatic properties



NUCLEAR PROTECTION
(EN 1073-2) non ventilates suits
(EN 1073-1) ventilates suits

BIOLOGICAL PROTECTION
(EN 14126)



CHEMICAL PROTECTION
(EN 14605 type 4-B)
(EN ISO 13982-1 type 5)
(EN 13034 type 6)

ANTISTATIC PROPERTIES
(EN 1149)

For more infomation, please visit:
IndutexUSA.com

Sistema di Gestione Certificato
ANCCP
Organismo Notificato CE 0302
UNI EN ISO 9001:2000

Garments made with over taped seams or welded seams (TOPGUARD® Technology) cat. 3 type 4-B,5 and 6 for NBC (nuclear, biological and chemical) protection made with raw material *Puntiform®*

PHYSICAL PROPERTIES

PROPERTY		METHOD	U.M.	VALUE	CLASS
Weight		ISO 4591	gr/m^2	65	-
Abrasion resistance		EN 530/96	cycles	2000	5
Flex cracking resistance		EN-ISO 7854/99 (B)	cycles	> 100.000	6
Trapezoidal tear resistance	MD	EN-ISO 9073-4/99	N	39,9	2
	XD	EN-ISO 9073-4/99	N	20,1	
Traction resistance	MD	EN-ISO 13934-1/00	N	100	2
	XD	EN-ISO 13934-1/00	N	54	
Puncture resistance		EN 863/95	N	16,9	2
Burst resistance		EN-ISO 13938-2/01	KPa	201	3
Stability to heat	ext./ext	ISO 5978/90	-	no adhesion	-
	ext./int	ISO 5978/90	-	no adhesion	-
	int./int	ISO 5978/90	-	no adhesion	-
Surface resistivity		EN 1149-1/97	Ω	$4.1 \cdot 10^{10}$	-
Hydrostatic head		EN ISO 20811/93	cm H_2O	324	-
			Pa	31800	-
Air permeability	mean	ISO 9237/97	mm/s	1,17±0,05	-
	coeff. of variation		%	5,75	-
MVTR			$gr/m^2/24h$	9.500	-
Ignition resistance		prEN 13274-4/98 (3)	-	Self extinguishing*	-
Seam strength resistance		EN-ISO 13935-2/01	N	130	4

* Auto extinguishable. On both sides no auto combustion is pronounced but the formation of hole is observed without dripping.

PROTECTIVE PROPERTIES

PARTICLE PENETRATION (IOM – Edimburgh)

Particle dimension	% filtration
0,35 – 0,5 µm	99,960
0,5 – 0,6 µm	99,965
0,6 – 1,5 µm	99,970
1,5 – 2,0 µm	99,975
2,0 – 2,5 µm	99,985
> 2,5 µm	99,996

CUMULATIVE PARTICLE RELEASE (Helmke Drum Test – IFTH Lyon)

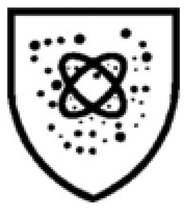
	Micron dimension		
	0,3 µm	**0,5 µm**	**5 µm**
Puntiform®	1567	1024	3

DIFFERENTIAL PARTICLE RELEASE (Helmke Drum Test – IFTH Lyon)

	Micron dimension							
	0,3 µm	**0,5 µm**	**0,7 µm**	**1 µm**	**3 µm**	**5 µm**	**7 µm**	**10 µm**
Puntiform®	543	354	348	307	12	2	1	0

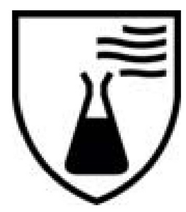
Garments made with over taped seams or welded seams

(TOPGUARD® Technology) cat. 3 type 4-B,5 and 6
for NBC (nuclear, biological and chemical) protection
made with raw material *Puntiform®*

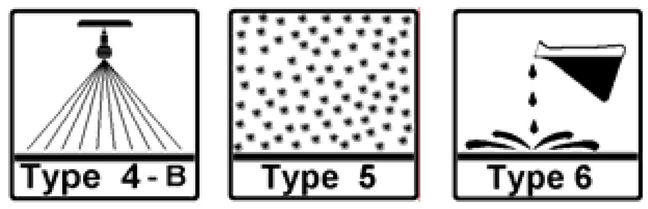


NUCLEAR PROTECTION
(EN 1073-2) non ventilated suits
(EN 1073-1) ventilated suits

BIOLOGICAL PROTECTION
(EN 14126)



CHEMICAL PROTECTION



ANTISTATIC PROPERTIES
(EN 1149)

AVAILABLES MODELS

- Shirt neck, hooded OVERALL
- Hooded and eventually incorporated boots OVERALL
- GOWNS, JACKETS
- ACCESSORIES
- VENTILATED SUITS A.R. and A.M.
  CERTIFIED ALSO FOR BREATHING WAY PROTECTION
- SPECIAL GARMENTS on customer need

MOST COMMON WORKING AREAS

- Medical applications, biomedical research, coroners
- Terrain decontamination
- Pest control
- Lead elimination processes
- Mineral fibres (asbestos) and glass fibres
- Emergency interventions after accidents with loss of chemicals
- Pharmaceutical and petrochemical companies
- Maintenance work
- Mining
- Production, treatment and shipment of chemicals
- Industrial cleaning
- Wood powder, etc.
- Surface refinishing
- Army, scientific police, crime lab
- Waste treatment
- Water treatment
- Painting and refinishing operation
- Transformation, preparation and store of food products
- Nuclear power plant
- Veterinary services

PROTECTIVE PROPERTIES: Chemical Protection

Liquid chemical penetration resistance (EN 368 –EN ISO 6530)

Chemical	Penetration (%)	Repellence (%)
Sulphuric acid 30% (H_2SO_4)	**0,00**	**88,3**
Sodium hydroxide 10% (NaOH)	**0,00**	**99,3**
p-xylene	**0,00**	**95,1**
Butan-1-ol	**0,00**	**97,1**

ANTIBLASTIC and CHEMIOTERAPIC DRUGS Resistance

Chemotherapeutic and antiblastic chemicals	EN 369 EN 374-3
Cyclofosfamide monohydrate	60 min.
Doxorubicina HCL (Adriamicina)	45 min.
Fluorouracile	30 min.
Methotrexate	45 min.
Vincristina Sulfato	90 min.
Daumorubicina HCL	60 min.

Permeation resistance (EN 369 – ISO 6529: 1 µg/min/cm^2)

Chemical	*n° CAS*	*Real Permeation (minutes)*	*Permeation ASTM F 739 (minutes)*	*Permeation EN 369 (minutes)*	*480th minute Permeation (µg/min/cm2)*	*Accuracy (µg/min/cm2)*
Sulphuric acid 16%	7664-93-9	34	44	> 480	0,05	0,001
Sulphuric acid 30%	7664-93-9	207	208	> 480	0,08	0,001
Sulphuric acid 50%	7664-93-9	54	62	> 480	0,19	0,001
Nitric acid 30%	7697-37-2	46	208	> 480	0,20	0,001
Hydrochloric acid 30%	7647-01-0	97	113	> 480	0,41	0,001
Potassium hydroxide 40%	1310-58-3	50	61	> 480	0,27	0,001
Ammonium hydroxide 30%	1336-21-6	189	>480	>480	0,018	0,001
Sodium hydroxide 40%	1310-73-2	87	>480	>480	0,004	0,001
Phosphoric acid 50%	7664-38-2	>480	>480	>480	<0,001	0,001
Formic acid 30%	64-18-6	11	313	>480	0,172	0,001
Acetic acid 30%	64-19-7	1	>480	>480	0,076	0,001
Sodium acetate sol. sat.	127-09-3	107	>480	>480	0,025	0,001

All the garments are in conformity with the following norms:

- EN 340 General requirements
- EN 14605 Liquid aerosols tight chemical protective garments (Type 4)
- EN ISO 13982 Particle tight chemical protective garments (Type 5)
- EN 13034 Liquid limited splash tight chemical protective garments (Type 6)

All the garments are antistatic properties

PROTECTIVE PROPERTIES: Biological Protection (EN 14126)

Test	EN 14126:2003	
	Value	class
Synthetic blood under hydrostatic pressure	20 KPa	6 of 6
Blood born infective agents (Phi-X 174 bacteriophage)	20 KPa	6 of 6
Penetration of infecting agents by contact	> 75 min.	6 of 6
Biologically contaminated aerosols	0 micro organisms	3 of 3
Biologically contaminated powders	0 micro organisms	3 of 3

PROTECTIVE PROPERTIES: Nuclear Protection (EN 1073-2 and EN 1073-1)

These garments passed all the tests included in EN 1073-2 norm (non ventilated suits) and EN 1073-1 norm (ventilated suits) for the protection against nuclear contaminated particles.

INDUTEX S.p.A.

Puntiform®
Permeation Test Datasheet

Norms: ASTM F739; EN ISO 6529 (ex EN369)

Garments:

PartiGuarD®

SprayGuarD®

CleanGuarD®

Legenda:

Real: Time between the first contact and the minimum permeation detectable tax

ASTM: Time between the first contact and the minute in which 0,1 microgram is detected

EN: Time between the first contact and the minute in which 1 microgram is detected

TPC: Permeation tax at 480th minute

TPM: Minimum detectable tax

Chemical	*CAS*	*State*	*Real*	*ASTM*	*EN*	*Class*	*TPC*
Acetic acid (30%)	64-19-7	L	1	>480	>480	6	0,076
Ammonium hydroxide (30%)	1336-21-6	L	189	>480	>480	6	0,018
Ethylene glycol	107-21-1	L	6	6	9	0	16,4
Formic acid (30%)	64-18-6	L	11	313	>480	6	0,172
Glycerol	56-81-5	L	71	71	74	3	9,4
Hydrochloric acid (30%)	7647-01-0	L	97	113	>480	6	0,41
Hydrogen peroxide (30%)	7722-84-1	L	400	400	400	5	47,2
Isophorone Diamine	2855-13-2	L	98	>480	>480	6	0,2
Mercuric chloride (sat'd)	7487-94-7	L	>480	>480	>480	6	0,08
Nitric acid (30%)	7697-37-2	L	46	208	>480	6	0,2
Phosphoric acid (50%)	7664-38-2	L	>480	>480	>480	6	<0,001
Potassium chromate (sat'd)	7789-00-6	L	107	107	>480	6	0,56
Potassium cyanide (sat'd)	151-50-8	L	>480	>480	>480	6	<0,001
Potassium hydroxide (40%)	1310-58-3	L	50	61	>480	6	0,27
Sodium acetate (sat'd)	127-09-3	L	107	>480	>480	6	0,025
Sodium fluoride (sat'd)	7681-49-4	L	>480	>480	>480	6	<0,001
Sodium hydroxide (40%)	1310-73-2	L	87	>480	>480	6	0,004
Sodium hypochlorite (12% Ch	7681-52-9	L	>480	>480	>480	6	<0,001
Sulphuric acid (16%)	7664-93-9	L	34	44	>480	6	0,57

Chemical	*CAS*	*State*	*Real*	*ASTM*	*EN*	*Class*	*TPC*
Sulphuric acid (30%)	7664-93-9	L	207	208	>480	6	0,08
Sulphuric acid (50%)	7664-93-9	L	54	62	>480	6	0,19