



CWA (CHEMICAL WARFARE AGENTS) PERMEATION RESISTANCE (NATO Test)

AVAILABLE MODELS

- ENCAPSULATED SUIT B.O.
- SPECIAL GARMENTS on customer need.

MOST COMMON WORKING AREAS

- Emergency interventions after accidents with loss of chemicals
- Firebrigades
- Army
- Petrochemical companies
- Production, treatment and shipment of chemicals



NUCLEAR PROTECTION
(EN 1073-1) ventilated suits



BIOLOGICAL PROTECTION
(EN 14126)



CHEMICAL PROTECTION





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

Eptaform[®]



Garments made with double over taped seams
(**TOPGUARD**[®] Technology)
cat. 3 type 1a-B-ET
for NBC (nuclear, biological and chemical) protection



NUCLEAR PROTECTION
(EN 1073-1) ventilated suits



BIOLOGICAL PROTECTION
(EN 14126)



CHEMICAL PROTECTION
(EN 943-1 type 1)
(EN 943-2 type 1-ET)
(EN 943-1 type 2)
(EN 14605 type 3)
(EN 14605 type 4)
(EN ISO 13982-1 type 5)
(EN 13034 type 6)

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**GRUPO
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15:30 a 18:30

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de 1 Julio a 10 de Sep
de 08:00 a 15:00

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PHYSICAL PROPERTIES

PROPERTY		METHOD	U.M.	VALUE	CLASS
Abrasion resistance		EN 530/96	cycles	> 2000	6
Flex cracking resistance		EN-ISO 7854/99 (B)	cycles	> 2500	2
Trapezoidal tear resistance	MD	EN-ISO 9073-4/99	N	123	5
	XD	EN-ISO 9073-4/99	N	90,7	4
Traction resistance	MD	EN-ISO 13934-1/00	N	370	4
	XD	EN-ISO 13934-1/00	N	360	4
Puncture resistance		EN 863/95	N	71,1	3
Burst resistance		EN-ISO 13938-2/01	KPa	365	4
Stability to heat	ext./ext	ISO 5978/90	-	no adhesion	-
	ext./int	ISO 5978/90	-	few adhesion	-
	int./int	ISO 5978/90	-	no adhesion	-
Surface resistivity		EN 1149-1/97	Ω	ND	-
Hydrostatic head		EN ISO 20811/93	cm H ₂ O	> 1000	-
			Pa	> 98000	-
Ignition resistance		prEN 13274-4/98 (3)	-	Self extinguishing*	-
Seam strength resistance		EN-ISO 13935-2/01	N	670	6



PROTECTIVE PROPERTIES: Chemical Protection

Total tight ness for any particle dimension

Permeation resistance (EN 369 – ISO 6529: 1 µg/min/cm²)

Chemical	n° CAS	Real Permeation (min.)	Permeation ASTM F 739 (min.)	Permeation EN 369 (min.)	480 th minute Permeation (µg/min/cm ²)
Methanol	67-56-1	> 480	> 480	> 480	< 0,1
Sodium Hydroxide 40%	1310-73-2	> 480	> 480	> 480	< 0,001
Sulphuric Acid 96%	7664-93-9	> 480	> 480	> 480	< 0,001
Ammonium Hydroxide (30%)	1336-21-6	> 480	> 480	> 480	< 0,001
Hydrogen Chloride	7647-01-0	180	> 480	> 480	0,004
Acetone	67-64-1	> 480	> 480	> 480	< 0,1
Chlorine	7782-50-5	200	> 480	> 480	0,008
n-Heptane	142-82-5	> 480	> 480	> 480	< 10,0
Toluene	108-88-3	> 480	> 480	> 480	< 10,0
Acetonitrile	75-05-8	> 480	> 480	> 480	< 0,01
Ethyl acetate	141-78-6	> 480	> 480	> 480	< 1,0
Diethylamine	109-89-7	47	62	> 480	0,28
Carbon disulphide	75-15-0	> 480	> 480	> 480	< 0,1
Tetrahydrofuran	109-99-9	> 480	> 480	> 480	< 10,0
Dichloromethane	75-09-2	146	146	146	20



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<i>Chemical</i>	<i>Permeation NATO - Quantity 4 h. $\mu\text{g}/\text{cm}^2$</i>	<i>Permeation FINABEL (h:min.)</i>	<i>Accuracy FINABEL $\mu\text{g}/\text{cm}^2$</i>
Mustard (HD)	< 0,05	>6:00 <24:00	0,1
Soman (GD)	0,08	> 24:00	0,05
Sarin (GB)	not testable	> 24:00	0,05
Tabun (GA)	not testable	> 24:00	0,05
VX	< 0,05	> 24:00	0,05
Lewisite	not testable	>6:00 <24:00	0,5

All the garments are in conformity with the following norms:

- EN 340 General requirements
- EN 943-1:2002 Performance requirements for ventilated and non-ventilated “gas-tight” (Type 1) and “non-gas-tight” (Type 2) chemical protective suits
- EN 943-2:2002 Performance requirements for “gas-tight” (Type 1) chemical protective suits for emergency teams (ET)
- EN 14605 Liquid jet tight chemical protective garments (Type 3)
- 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)



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 1073-1)

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