



INDUTEX

Garments Lines made with fabric

Tessaform®

JetGuard® PLUS

- Garments made with welded over taped seams (**TOPGUARD®** Technology)
 - cat. 3 type 3-B, (also Type 4, 5 and 6)
 - for NBC (nuclear, biological and chemical) protection
 - with antistatic properties
- Accessories with welded over taped seams (**TOPGUARD®** Technology)
 - cat. 3 type PB [3]-B
 - with antistatic properties



NUCLEAR PROTECTION
(EN 1073-2) non ventilated suits



BIOLOGICAL PROTECTION
(EN 14126)



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



ANTISTATIC PROPERTIES
(EN 1149)

Jetguard® PLUS and garments have good electrical characteristics and does not generate electrostatic charges. The time taken to decline for the potential residue is neither too fast or too slow.

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

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Tessaform[®]

Data sheet

PHYSICAL PROPERTIES

Property		Norm/Method	U.M.	Value	Class
Weight		ISO 4591	gr/m ²	160	n.a.*
Abrasion resistance		EN 530/96	cycles	>2.000	6
Flex cracking resistance		EN-ISO 7854/99 (B)	cycles	>5.000	3
Trapezoidal tear resistance	MD	EN-ISO 9073-4/99	N	25,7	2
	XD	EN-ISO 9073-4/99	N	46,1	3
Traction resistance	MD	EN-ISO 13934-1/00	N	150	3
	XD	EN-ISO 13934-1/00	N	150	3
Puncture resistance		EN 863/95	N	32,2	2
Burst resistance		EN-ISO 13938-2/01	KPa	360	4
Stability of heat	ext/ext	ISO 5978/90	-	Slight adhesion	n.a.*
	ext/int.	ISO 5978/90	-	No adhesion	n.a.*
	int./int.	ISO 5978/90	-	No adhesion	n.a.*
Surface resistivity		EN 1149-1/97	Ω	Conform	n.a.*
Hydrostatic head	EN ISO 20811/93		cm H ₂ O	646	n.a.*
			Pa	63.340	n.a.*
Ignition resistance		prEN 13274-4/98 (3)	-	Self extinguishing**	n.a.*
Over taped seam strength resistance		EN ISO 13935-2/01	N	250	4

* n.a. : not applicable.

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

PROTECTIVE PROPERTIES

Particle penetration

Total barrier against any particle dimension



Chemical Protection

Permeation resistance EN ISO 6529 (ex. EN 369)

Chemical n° CAS		Permeation EN ISO 6529		Permeation at 480 minutes (µg/min/cm ²)	Accuracy (µg/min/cm ²)
		min	Class		
Acetaldehyde	75-07-0	>480	6	0,011	0,001
Acetone	67-64-1	478	5	1,0	0,1
Acetonitrile	75-05-8	>480	6	<0,01	0,01
Acetic acid (glacial)	64-19-7	>480	6	<0,001	0,001
Acrolein	107-02-8	>480	6	<0,1	0,1
Acrylamide (50%)	79-06-1	>480	6	<0,001	0,001
Acrylonitrile	107-13-1	>480	6	<0,01	0,01

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Chemical n° CAS		Permeation EN ISO 6529		Permeation at 480 minutes ($\mu\text{g}/\text{min}/\text{cm}^2$)	Accuracy ($\mu\text{g}/\text{min}/\text{cm}^2$)
		min	Class		
Allyl alcohol	107-18-6	>480	6	<0,01	0,01
Allyl chloride	107-05-1	>480	6	<0,001	0,001
Amyl acetato n-	628-63-7	>480	6	<1	1
Ammonia	7664-41-7	>480	6	0,025	0,001
Ammonium hydroxide (30%)	1336-21-6	>480	6	0,017	0,001
Aniline	62-53-3	>480	6	<0,8	0,8
Antimony pentachloride	7647-18-9	>480	6	<1	1
Anthracene (sat'd in toluene)	120-12-7	>480	6	<1	1
Benzene	71-43-2	>480	6	<1	1
Benzonitrile	100-47-0	>480	6	0,1	0,1
Bromine	7726-95-6	150	4	6,3	0,05
Butyl ether n-	142-96-1	>480	6	<1	1
Carbon disulphide	75-15-0	>480	6	0,22	0,01
Carbon tetrachloride	56-23-5	>480	6	<1	1
Chlorine	7782-50-5	>480	6	<0,001	0,001
Chloroacetic acid	79-11-8	>480	6	0,015	0,001
Chlorobenzene	108-90-7	90	3	9,2	0,05
Chloroethanol 2-	107-07-3	>480	6	<0,001	0,001
Chloroform	67-66-3	360	5	1,5	0,05
Chloromethyl methyl ether	107-30-2	>480	6	<1	1
Chromic acid – saturated solution of chromium oxide VI in sulphuric acid at 96%	1333-82-0	>480	6	n.d.	0,1
Cresol -o	95-48-7	>480	6	<1	1
Creosote	8001-58-9	>480	6	<1	1
Cyclohexane	110-82-7	>480	6	<1	1
Di(2-ethylhexyl)	117-81-7	>480	6	<1	1
Dichloromethane	75-09-2	270	5	2,3	0,05
Diesel flue	70892-10-3	>480	6	<0,1	0,1
Diethylamine	109-89-7	>480	6	0,009	0,001
Dimethylacetamide N,N-	127-19-5	>480	6	<0,001	0,001
Dimethylformamide N,N-	68-12-2	>480	6	<0,001	0,001
Dimethyl nitrosamine	62-75-9	>480	6	<0,01	0,01
Dimethyl sulphide	75-18-3	>480	6	<0,01	0,01
Dioxane 1,4-	123-91-1	>480	6	<1	1
Epichlorhydrin	106-89-8	>480	6	<0,1	0,1
EPO 3 Harder and Epox AF bi component glue	-	>480	6	0,011	0,001
Ethanolamine	141-43-5	360	5	2,2	0,05
Ethyl acetate	141-78-6	>480	6	<1,0	1,0
Ethyl cellosolve® acetato	111-15-9	>480	6	<0,01	0,01
Ethylenediamine	107-15-3	>480	6	<0,01	0,01
Ethylene dibromide	106-93-4	>480	6	<1	1
Ethylene glycol	107-21-1	>480	6	<0,6	0,6
Formaldehyde (37%)	50-00-0	>480	6	<0,1	0,1
Formic acid (96%)	64-18-6	>480	6	0,03	0,03
Fluorobenzene	462-06-6	>480	6	<1	1
Furaldehyde 2-	98-01-1	398	5	1,46	0,01
Hexamethylene diisocyanate	822-06-0	>480	6	<1	1
Hexane n-	110-54-3	>480	6	<0,1	0,1
Hydrazine	302-01-2	>480	6	0,002	0,001
Hydrochloric acid (37%)	7647-01-0	>480	6	0,012	0,001

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		min	Class		
Hydrofluoric acid (50%)	7664-39-3	>480	6	0,008	0,001
Hydrofluoric acid (70%)	7664-39-3	>480	6	0,0052	0,0001
Hydrogen peroxide (70%)	7722-84-1	90	3	9,2	0,1
Idrazine monohydrate	7803-57-8	>480	6	0,036	0,001
Isophthaloyldichloride (45°C)	99-63-8	>480	6	<0,1	0,1
Isopropyl alcohol	67-63-0	>480	6	0,016	0,001
Javel (50°C)	7681-52-9	330	5	2,4	0,01
Kerosene (Jet A fuel)	8008-20-8	>480	6	<0,1	0,1
Mercuric chloride (sat'd)	7487-94-7	>480	6	<0,03	0,03
Mercury	7439-97-6	270	5	2,8	0,02
Methanol	67-56-1	>480	6	0,43	0,1
Methyl-2-pentanone 4-	108-10-1	>480	6	0,6	0,1
Methylene bromide	74-95-3	312	5	24	1
Methylene chloride	75-09-2	>480	6	<1	1
Methyl ethyl ketone	78-93-3	>480	6	<0,01	0,01
Methyl isocyanate	624-83-9	>480	6	0,7	0,1
Methyl-t-butyl-ether	1634-04-4	>480	6	<0,1	0,1
Methyl vinyl ketone	78-94-4	>480	6	<0,01	0,01
Naphthalene	91-20-3	>480	6	<1	1
Nitric acid (70%)	7697-37-2	>480	6	<0,001	0,001
Nitric acid (> 90%, fuming)	7697-37-2	>480	6	<0,001	0,001
Nitrobenzene	98-95-3	>480	6	<0,1	0,1
Nitrogen dioxide	10102-44-0	>480	6	<0,001	0,001
Petrol, leaded	86290-81-5	>480	6	<0,1	0,1
Petrol, unleaded	8006-61-9	>480	6	<0,1	0,1
Phenol (85%)	108-95-2	>480	6	<0,5	0,5
Phosphoric acid (85%)	7664-38-2	>480	6	<0,001	0,001
Phosphorous oxytrichloride	10025-87-3	>480	6	<1	1
Phosphorous trochloride	7719-12-2	>480	6	<0,01	0,01
Polychlorinated biphenyl (PCB) in transformer oil	11097-69-1	>480	6	<0,1	0,1
Potassium carbonate	584-08-7	330	5	3,3	0,01
Potassium chloride	7447-40-7	360	5	1,5	0,005
Potassium chromate (sat'd)	7789-00-6	>480	6	<0,015	0,015
Potassium hydroxide (23%)	1310-58-3	270	5	2,6	0,01
Potassium hydroxide (50%)	1310-58-3	270	5	2,0	0,01
Propylene oxide 1,2-	75-56-9	>480	6	<0,01	0,01
Sodium cyanide (45%)	143-33-9	>480	6	<0,001	0,001
Sodium hydroxide (50%)	1310-73-2	>480	6	<0,001	0,001
Sodium hydroxide (conc.)	1310-73-2	>480	6	<0,001	0,001
Sodium hypochlorite (30% Chlorine)	7681-52-9	>480	6	<0,001	0,001
Sodium sulfide	1313-82-2	180	4	5,8	0,01
Styrene oxide	96-09-3	>480	6	<0,1	0,1
Sulphuric acid (93%)	7664-93-9	>480	6	<0,001	0,001
Sulphuric acid (95%)	7664-93-9	>480	6	<0,001	0,001
Sulphuric acid (96%)	7664-93-9	210	4	2,6	0,1
Sulphur anhydride	7446-09-5	>480	6	<0,001	0,001
Tetrachlorobiphenol 2,2',6,6'-	79-95-8	>480	6	<1	1
Tetrachloroethylene 1,1,2,2-	127-18-4	>480	6	<1	1

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Chemical n° CAS		Permeation EN ISO 6529		Permeation at 480 minutes ($\mu\text{g}/\text{min}/\text{cm}^2$)	Accuracy ($\mu\text{g}/\text{min}/\text{cm}^2$)
		min	Class		
Tetrahydrofuran	109-99-9	>480	6	<10	10
Tin chloride, Mono-n-butyl	1118-46-3	>480	6	0,002	0,001
Tin chloride, Tri-n-butyl	1461-22-9	>480	6	0,001	0,002
Titanium tetrachloride	7550-45-0	150	4	4,9	0,02
Toluene	108-88-3	360	5	3,3	0,01
Toluene-2,4-diisocyanate	584-84-9	>480	6	<0,001	0,001
Toluidine o-	95-53-4	>480	6	<0,05	0,05
Trichloroacetic acid	76-03-9	>480	6	0,002	0,001
Trichlorobenzene 1,2,4-	120-82-1	300	5	2	0,05
Trifluoroacetic acid	76-05-1	>480	6	<0,001	0,001
Trimethyl chinon	935-92-2	>480	6	<1	1
Vynil acetate	108-05-4	>480	6	<0,001	0,001

CWA (Chemical Warfare Agents) permeation resistance

Chemical	NATO Permeation Quantity after 4 h. $\mu\text{g}/\text{cm}^2$	Permeation FINABEL (h:min.)	Accuracy FINABEL $\mu\text{g}/\text{cm}^2$
Mustard (HD)	0,13	3:00	0,1
Soman (GD)	< 0,05	> 24:00	0,005
Sarin (GB)	not testable	> 24:00	0,005
Tabun (GA)	not testable	> 24:00	0,005
VX	< 0,05	> 24:00	0,005
Lewisite	not testable	3:15	0,005

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Biological Protection (EN 14126:2003)

Test	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	∞ Log R	3 of 3
Biologically contaminated powders	0 Log u.f.c	3 of 3

NB To guarantee the biological protection all garments must be made with welded over taped seams.



Nuclear Protection (EN 1073-2)

Garments made with raw material *Tessaform*[®] passed all the tests included in EN 1073-2 norm (non ventilated suits) for the protection against nuclear contaminated particles.



Garments made with welded over taped seams (**TOPGUARD**® Technology) with NBC (nuclear, biological and chemical) protection made with raw material **Tessaform**® in grey colour (available in military green colour)



NUCLEAR PROTECTION
(EN 1073-2) non ventilated suits



BIOLOGICAL PROTECTION
(EN 14126)



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



ANTISTATIC PROPERTIES
(EN 1149)

Garments have antistatic properties following these norms:

- Surface resistance and volume resistance – EN 1149-1 Par. 5-4-2 e 5-4-3 – EN 1149-2 Rv Par. 7
- Triboelectric compatibility – EN 1149-1 Par. 4.1-4.2 App. 1-2-3 – EN 1149.3 Par. 4.2-4.2.1 – EIA IS 5 A
- Time decay of charge – EN 1149-3 Par. 3.5-3.6 –pr EN 1149-5 – EIA IS 541 A STD Fed. TM N° 101 C Method 4046/1
- Electric safety ground resistance of model of the human body – CEI 64-8/4 Par. 6.12.5
- Time decay of the charge on a model of the human body – IEC 61340-4-1 TR/2

Jetguard® Plus garments have good electrical characteristics and does not generate electrostatic charges. The time taken to decline for the potential residue is neither too fast or too slow.

AVAILABLES MODELS

CATEGORY 3 TYPE 3-B (also 4, 5 and 6) - All the garments are in conformity with the following norms:



- EN 340 Protection Garments: General requirements
- 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)

- OVERALL with hood
- OVERALL with hood and incorporated boots
- SPECIAL GARMENTS on customer need

CATEGORY 3 TYPE PB[3]-B - ACCESSORIES

- GOWN rear entry
- JACKET + TROUSER
- HOOD
- APRON
- SLEEVES
- BOOTS with pvc and antislid sole
- OTHER ACCESSORIES on customer need





MOST COMMON WORKING AREAS

- Emergency interventions after accidents with loss of chemicals
- Petrochemical companies
- Metal works
- Mining
- Production, treatment and shipment of chemicals
- Tank and reservoirs clean
- Army
- Waste treatment
- Water treatment
- Plating works
- PCB removal