

FRONTAIR 2 SUIT

CHEMPROTEX™ 300



RESPIREX™

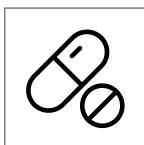
Description

The Frontair 2 in Chemprotex™ 300 is a single-use air-fed chemical protection suit that provides the highest level of protection against particulate contamination with added chemical protection. The suit is designed for use with breathable air supplied from an external positive pressure compressed air source with a low flow warning alarm.

Applications



Nuclear



Pharmaceutical



Performance



TYPE 3 | EN14605:2005+A1:2009
Liquid-Tight Chemical Protective Clothing



TYPE 4 | EN14605:2005+A1:2009
Spray-Tight Chemical Protective Clothing



EN1073-1:1998
Class 5 (50,000) Nominal Protection Factor (NPF)



EN14126:2003
Protective clothing against infective agents

**The Frontair 2 suit has been assessed by a notified body as satisfying Annex II of the PPE regulation (EU) 2016/425 using technical standards EN14605:2005+A1:2009, EN1073-1:1998 and EN14126:2003*

Air Supply

Required Airflow: **265 l/m** (min) to **600 l/m** (max)

The air flowing into the garment must conform to EN 12021:2014 Annex A. In the event that partial contamination may exist in the factory ring main from which the suit draws its air supply, a Respirex in-line filter unit should be fitted to the air system; this will prevent the ingress of contamination down to 5 microns in size from entering the garment.

Product Documentation



The CE Certificate, Declaration of Conformity and user instructions can all be downloaded from the product page on the Respirex website, links are in the downloads tab.

There are also videos on donning procedure and on how to use the PermaSure app.

Key Features

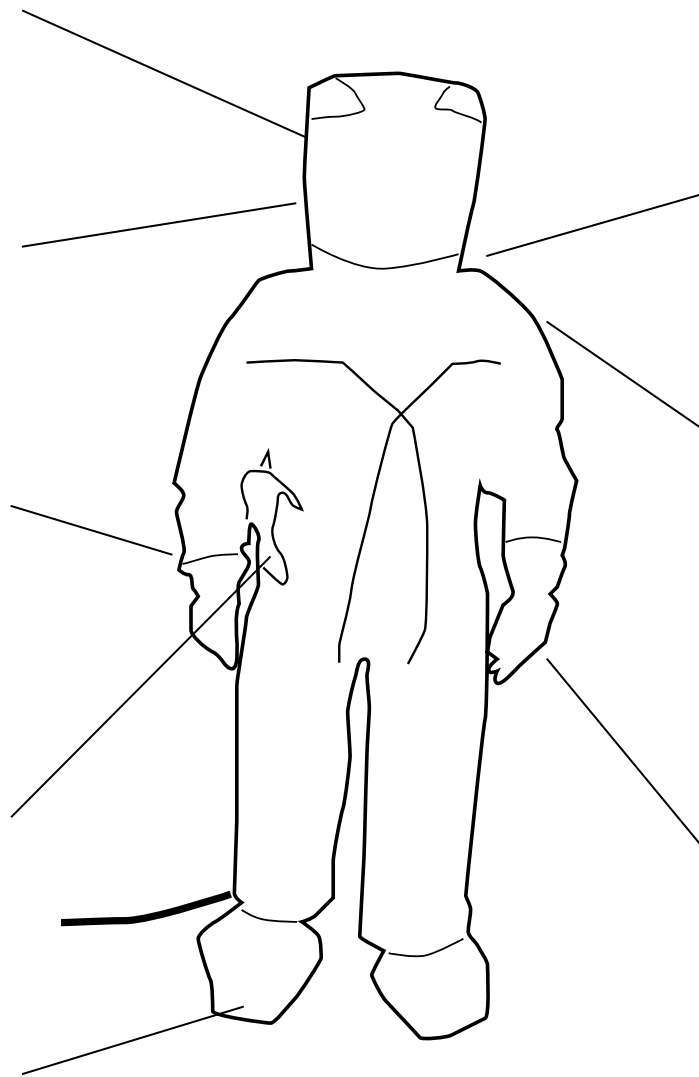
Clear **flexible visor** with wide horizontal and vertical fields of vision

Internal air distribution system provides **breathing and cooling air** to the user

Internal **adjustable waist belt** supports both the airline and the air distribution system, and also holds the suit in the correct wearing position

Variable flow control valve for the air system that can be adjusted by the wearer

Anti-slip feet with ankle ties



Six exhalation valves fitted with covers maintain a comfortable working pressure in the suit

Choice of **rear entry model** with double zip flap and self adhesive tape, or self dress **front entry model** with single zip flap and adhesive tape

Ten year shelf-life

Chemically protective **Kemblok™ laminated glove** welded to the suit material, other glove options available on request

Accessories



Portable Air Filter Cabinet

A portable breathing air system for use by up to four people designed to remove oil, particles and odors. The multi-stage purification includes a coalescence filter with automatic condensate drain, particle filter and activated carbon filter. Validated according to ISO 12500-1, 12500-2 and 12500-3.

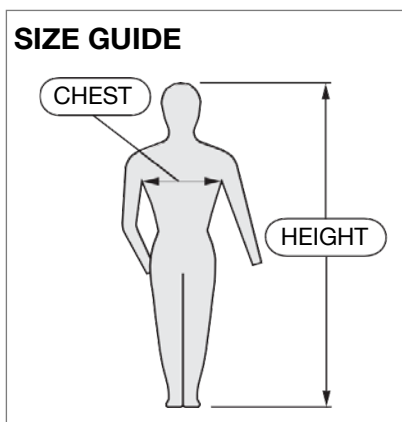


5 Micron Filter

An in-line filter designed to remove dust and particulate contamination down to five microns, with an easy to change filter element.

Sizing Chart

Size	Chest (cm)	Height (cm)
Small	88-96	164-170
Medium	96-104	170-176
Large	104-112	176-182
X-Large	112-124	182-188
XX-Large	124-136	188-194



Specifications

Frontair 2 Suit

Pack Size (max)	8 x 58 x 36 cm
Pack Weight (max)	3.8 kg
Carton Qty	3
Outer Carton Size	84 x 62 x 40 cm
Outer Carton Weight (max)	14.2 kg
Commodity Code	39262000

Specifications are based on an XL sized suit without optional accessories and are for guidance only

Material Properties

Performance Requirement	Test Method	Property value of Chemprotex™ 300	Class
Abrasion Resistance	EN 530:1994 Method 2	2,000 cycles	6
Flex Cracking Resistance (visual assessment)	EN ISO 7854:1997 Method B	1,000 cycles - Pass, 2,500 cycles - Fail	1
Puncture Resistance	EN 863:1995	13.6 Newtons	2
Trapezoidal Tear Resistance	EN ISO 9073-4:1997	Length 76.3 Newtons, Width 53.1 Newtons	3
Tensile strength	EN ISO 13934-1:1999	Length 159.1 Newtons, Width 92.5 Newtons	2
Resistance to ignition	EN 13274-4:2001 Method 3 (single burner test)	No part ignited or continued to burn on removal from the flame	Pass
Resistance to blocking	EN 25978:1993	Slight blocking	2
Seam Strength	EN ISO 13935-2:1999	166.8 Newtons	4
Surface resistance	EN 1149-1:2006	Face $3.6 \times 10^8 \Omega$, Reverse $3.4 \times 10^7 \Omega$	-

Resistance to Penetration by Infective Agents

The material has passed the requirements of EN14126:2003 for protective clothing against infective agents. It is therefore suitable to provide protection against blood, blood-borne pathogens, body fluids, biologically contaminated aerosols and both wet and dry microbial penetration.

Requirement	Test Method	Level of Performance	EN14126:2003 Class
Resistance to wet microbial penetration	ISO 22610:2006	> 75 min	6
Resistance to penetration by blood and body fluids using synthetic blood	ISO 16603:2004	Pass	N/A
Resistance to penetration by blood-borne pathogens using bacteriophage Phi-X174	ISO 16604:2004	20 kPa	6
Resistance to penetration by biologically contaminated aerosols	ISO/DIS 22611:2003	Log > 5	3
Resistance to dry microbial penetration	ISO 22612:2005	<1 Log cfu	3

Chemical Warfare Agent Protection

Agent	Breakthrough time (hours)	Temperature (°C)
Mustard agent (HD)	>48	37
Sarin (GB)	>48	37
Soman (GD)	>48	37
VX	>48	37

The Chemprotex™ 300 material has been tested for resistance to permeation by chemical warfare agents in accordance with FINABEL O.7.C methods at the respected TNO laboratories. Both the material and seams were found to offer an extremely high level of protection against the following agents:

Chemical Permeation & Permasure®



The Frontair 2 suit is compatible with the **Permasure** toxicity modelling app, available for Android and IOS devices. Permasure calculates safe working times for a database of over 4,000 common industrial and toxic chemicals, basing its calculations of the actual working conditions at the time. For full details visit www.respirex.com/permasure

All chemical permeation tests are carried out under laboratory conditions by independent accredited laboratories in accordance with EN 374-3 unless otherwise stated.

Chemical Name	State	CAS Number	Actual (min.)	ASTM (min.)	EN374-3 (min.)	EN Class	SSPR $\mu\text{g}/(\text{min.cm}^2)$	MDPR $\mu\text{g}/(\text{min.cm}^2)$	Observation
acetaldehyde	L	75-07-0	>480	>480	>480	6	<0.05	0.05	No degradation
acetic acid (30%)	L	64-19-7	>480	>480	>480	6	<0.001	0.001	No degradation
acetic acid (glacial)	L	64-19-7	>480	>480	>480	6	<0.001	0.001	No degradation
acetic anhydride	L	108-24-7	>480	>480	>480	6	<0.001	0.001	No degradation
acetone	L	67-64-1	>480	>480	>480	6	<0.02	0.02	No degradation
acetonitrile	L	64047	>480	>480	>480	6	<0.05	0.05	No degradation
acetophenone	L	98-86-2	>480	>480	>480	6	<0.05	0.05	No degradation
acrylamide (50%)	L	65532	>480	>480	>480	6	<0.10	0.10	No degradation
acrylic acid	L	65660	>480	>480	>480	6	<0.005	0.005	Discolouration
acrylonitrile	L	107-13-1	>480	>480	>480	6	<0.05	0.05	No degradation
allyl alcohol	L	107-18-6	>480	>480	>480	6	<0.05	0.05	No degradation
ammonia	G	7664-41-7	32	49	>480	6	0.17	0.005	No degradation
ammonium hydroxide (35% NH ₃ in water)	L	1336-21-6	>480	>480	>480	6	<0.001	0.001	No degradation
amyl acetate-n	L	628-63-7	>480	>480	>480	6	<0.02	0.02	No degradation
aniline	L	62-53-3	>480	>480	>480	6	<0.05	0.05	No degradation
aviation fuel	L	-	>480	>480	>480	6	<0.05	0.05	No degradation
benzene	L	71-43-2	28	35	58	2	3.0	0.05	No degradation
benzonitrile	L	100-47-0	>480	>480	>480	6	<0.05	0.05	No degradation
benzoyl chloride	L	98-88-4	>480	>480	>480	6	<0.05	0.05	No degradation
benzyl alcohol	L	100-51-6	>480	>480	>480	6	<0.05	0.05	No degradation
benzyl chloride	L	100-44-7	>480	>480	>480	6	<0.05	0.05	No degradation
bromine	L	7726-95-6	imm	7	8	0	high	0.001	Discolouration
butadiene 1,3	G	106-99-0	>480	>480	>480	6	<0.02	0.02	No degradation
butane	G	106-97-8	>480	>480	>480	6	<0.05	0.05	No degradation
butanol n-	L	71-36-3	>480	>480	>480	6	<0.05	0.05	No degradation
Butyl aldehyde	L	123-72-8	>480	>480	>480	6	<0.05	0.05	No degradation
Butyl ether n-	L	142-96-1	>480	>480	>480	6	<0.05	0.05	No degradation
carbon disulphide	L	75-15-0	>480	>480	>480	6	<0.05	0.05	No degradation
chlorine	G	7782-50-5	>480	>480	>480	6	<0.001	0.001	No degradation
chloroacetic acid (68%)	L	79-11-8	>480	>480	>480	6	<0.001	0.001	No degradation
chlorobenzene	L	108-90-7	120	145	291	5	1.5 (max)	0.05	No degradation
chloroethanol 2-	L	107-07-3	>480	>480	>480	6	<0.02	0.02	No degradation
chloroform	L	67-66-3	3	6	9	0	22.5	0.01	No degradation
cresol m-	L	108-39-4	>480	>480	>480	6	<0.05	0.05	No degradation
cyclohexane	L	110-82-7	>480	>480	>480	6	<0.05	0.05	No degradation
cyclohexanone	L	108-94-1	7	13	>480	6	0.23	0.05	No degradation
dichlorodimethylsilane	L	75-78-5	>480	>480	>480	6	<0.001	0.001	Slight blistering
dichloromethane	L	75-09-2	>480	>480	>480	6	<0.05	0.05	No degradation
diesel fuel	L	-	>480	>480	>480	6	<0.10	0.10	No degradation
diethylamine	L	109-89-7	7	8	11	1	2.1	0.05	Slight swelling
di(2-ethylhexyl)phthalate	L	117-81-7	nt	nt	>480	6	nm	1.0	No degradation
dimethylacetamide N,N	L	127-19-5	223	>480	>480	6	0.08	0.05	No degradation
dimethylformamide N,N	L	68-12-2	>480	>480	>480	6	<0.01	0.01	No degradation
dimethyl sulphate	L	77-78-1	>480	>480	>480	6	<0.02	0.02	No degradation
dimethyl sulphide	L	75-18-3	7	12	29	1	2.6	0.05	No degradation
dimethyl sulphoxide	L	67-68-5	>480	>480	>480	6	<0.02	0.02	No degradation
dioxane 1,4-	L	123-91-1	26	>480	>480	6	0.05	0.01	No degradation

Chemical Name	State	CAS Number	Actual (min.)	ASTM (min.)	EN374-3 (min.)	EN Class	SSPR $\mu\text{g}/(\text{min}\cdot\text{cm}^2)$	MDPR $\mu\text{g}/(\text{min}\cdot\text{cm}^2)$	Observation
epichlorohydrin	L	106-89-8	>480	>480	>480	6	<0.05	0.05	No degradation
ethanol	L	64-17-5	>480	>480	>480	6	<0.02	0.02	No degradation
ethanolamine	L	141-43-5	>480	>480	>480	6	<0.001	0.001	No degradation
ethyl acetate	L	141-78-6	>480	>480	>480	6	<0.01	0.01	No degradation
ethyl cellosolve acetate	L	111-15-9	>480	>480	>480	6	<0.01	0.01	No degradation
ethylene diamine	L	107-15-3	>480	>480	>480	6	<0.001	0.001	No degradation
ethylene dibromide	L	106-93-4	>480	>480	>480	6	<0.05	0.05	No degradation
ethylene glycol	L	107-21-1	>480	>480	>480	6	<0.05	0.05	No degradation
ethylene oxide	G	75-21-8	>480	>480	>480	6	<0.05	0.05	No degradation
formaldehyde (37%)	L	50-00-0	>480	>480	>480	6	<0.001	0.001	No degradation
formic acid (96%)	L	64-18-6	>480	>480	>480	6	<0.001	0.001	Discolouration
furaldehyde 2-	L	98-01-1	7	16	>480	6	0.50	0.02	No degradation
glutaraldehyde (5%)	L	111-30-8	>480	>480	>480	6	<0.10	0.10	No degradation
heptane	L	142-82-5	>480	>480	>480	6	<0.02	0.02	No degradation
hexane	L	110-54-3	>480	>480	>480	6	<0.05	0.05	No degradation
hydrazine monohydrate	L	7803-57-8	>480	>480	>480	6	<0.001	0.001	No degradation
hydrochloric acid (37%)	L	7647-01-0	>480	>480	>480	6	<0.001	0.001	No degradation
hydrofluoric acid (48%)	L	7664-39-3	>480	>480	>480	6	<0.02	0.02	No degradation
hydrofluoric acid (73%)	L	7664-39-3	30	267	>480	6	0.18	0.01	No degradation
hydrogen chloride	G	7647-01-0	>480	>480	>480	6	<0.001	0.001	No degradation
hydrogen fluoride (anhydrous gas)	G	7664-39-3	132	244	304	5	nm	0.01	Degraded and discoloured
hydrogen fluoride (anhydrous liquid)	L	7664-39-3	52	125	228	4	1.5	0.01	Degraded and discoloured
hydrogen peroxide (30%)	L	7722-84-1	>480	>480	>480	6	<0.001	0.001	No degradation
kerosene	L	8008-20-8	>480	>480	>480	6	<0.05	0.05	No degradation
mercuric chloride (sat. solution)	L	7487-94-7	>480	>480	>480	6	<0.001	0.001	No degradation
methacrylic acid	L	79-41-4	>480	>480	>480	6	<0.001	0.001	No degradation
methanol	L	67-56-1	46	57	>480	6	0.54	0.02	No degradation
methyl acrylate	L	96-33-3	118	231	>480	6	0.15	0.02	No degradation
methyl-t-Butyl-ether	L	1634-04-4	145	248	>480	6	0.16	0.05	No degradation
methyl chloride	G	74-87-3	>480	>480	>480	6	<0.05	0.05	No degradation
methyl ethyl ketone	L	78-93-3	>480	>480	>480	6	<0.05	0.05	No degradation
methyl mercaptan	G	74-93-1	>480	>480	>480	6	<0.001	0.001	No degradation
methyl methacrylate	L	80-62-6	58	97	>480	6	0.42	0.02	No degradation
methyl vinyl ketone	L	78-94-4	>480	>480	>480	6	<0.05	0.05	No degradation
Methyl -2-pyrrolidone n-	L	872-50-4	6	12	>480	6	0.74	0.05	No degradation
methylene bromide	L	74-95-3	28	39	>480	6	0.45	0.05	No degradation
nicotine	L	54-11-5	nt	nt	>480	6	nm	0.10	No degradation
nitric acid (70%)	L	7697-37-2	>480	>480	>480	6	<0.001	0.001	No degradation
nitric acid (>90% fuming)	L	7697-37-2	>480	>480	>480	6	<0.01	0.01	Discolouration
nitrobenzene	L	98-95-3	>480	>480	>480	6	<0.05	0.05	No degradation
nitromethane (96%)	L	75-52-5	>480	>480	>480	6	<0.05	0.05	No degradation
oleum (15% free SO3)	L	8014-95-7	>480	>480	>480	6	<0.001	0.001	No degradation
perchloric acid	L	7601-90-3	>480	>480	>480	6	<0.001	0.001	No degradation
petrol, leaded	L	-	>480	>480	>480	6	<0.10	0.10	No degradation
petrol, unleaded	L	8006-61-9	>480	>480	>480	6	<0.05	0.05	No degradation
phenol (85%)	L	108-95-2	>480	>480	>480	6	<0.05	0.05	No degradation
phosphoric acid (85%)	L	7664-38-2	>480	>480	>480	6	<0.001	0.001	No degradation
phosphorus oxytrichloride	L	10025-87-3	373	437	440	5	5.7 (max)	0.001	No degradation
potassium chromate (sat. solution)	L	7789-00-6	>480	>480	>480	6	<0.05	0.05	No degradation
propan-2-ol	L	67-63-0	>480	>480	>480	6	<0.05	0.05	No degradation
propylene oxide 1,2-	L	75-56-9	75	91	>480	6	0.55 (max)	0.05	No degradation
pyridine	L	110-86-1	19	22	>480	6	0.50 (max)	0.05	No degradation
'Roundup' weedkiller	L	-	>480	>480	>480	6	<0.001	0.001	No degradation
sodium cyanide (45%)	L	143-33-9	>480	>480	>480	6	<0.001	0.001	No degradation
sodium hydroxide (40%)	L	1310-73-2	>480	>480	>480	6	<0.001	0.001	No degradation

Chemical Name	State	CAS Number	Actual (min.)	ASTM (min.)	EN374-3 (min.)	EN Class	SSPR $\mu\text{g}/\text{cm}^2/\text{min}$	MDPR $\mu\text{g}/\text{cm}^2/\text{min}$	Observation
sodium hypochlorite (12% chlorine)	L	7681-52-9	>480	>480	>480	6	<0.001	0.001	No degradation
styrene	L	100-42-5	157	208	>480	6	0.51 (max)	0.05	No degradation
sulphur dioxide	G	2025884	>480	>480	>480	6	<0.001	0.001	No degradation
sulphuric acid (50%)	L	7664-93-9	>480	>480	>480	6	<0.001	0.001	No degradation
sulphuric acid (95-98%)	L	7664-93-9	>480	>480	>480	6	<0.001	0.001	No degradation
tetrachloroethylene	L	127-18-4	>480	>480	>480	6	<0.05	0.05	No degradation
tetrahydrofuran	L	109-99-9	23	27	41	2	4.1	0.05	No degradation
toluene	L	108-88-3	39	79	173	4	2.0	0.04	No degradation
toluene 2,4-diisocyanate	L	584-84-9	>480	>480	>480	6	<0.10	0.10	No degradation
toluidine o-	L	95-53-4	>480	>480	>480	6	<0.05	0.05	No degradation
trichloroacetic acid (80%)	L	650-51-1	>480	>480	>480	6	<0.001	0.001	No degradation
trichlorobenzene 1,2,4-	L	120-82-1	>480	>480	>480	6	<0.05	0.05	No degradation
trichloroethylene	L	79-01-6	12	14	21	1	12.1	0.05	No degradation
trifluoroacetic acid	L	76-05-1	>480	>480	>480	6	<0.001	0.001	No degradation
triethylamine	L	121-44-8	59	71	168	4	1.7	0.05	No degradation
vinyl acetate	L	108-05-4	>480	>480	>480	6	<0.05	0.05	No degradation
xylene (iso-mix)	L	1330-20-7	377	399	>480	6	0.35 (max)	0.05	No degradation

Key:

State	L-Liquid, G-Gas	>	Larger than
CAS Number	Chemical abstracts service registry number	<	Smaller than
ASTM (min.)	Normalized breakthrough time at a rate of 0.1 μg per cm^2 per minute, in minutes.	imm	Immediate (< 10 min)
EN374-3 (min.)	Normalized breakthrough time at a rate of 1.0 μg per cm^2 per minute, in minutes.	nm	Not measured
EN Class	Performance classification according to EN 14325	nt	Not tested
SSPR $\mu\text{g}/\text{cm}^2/\text{min}$	Steady state permeation rate in μg per cm^2 per minute	max	Maximum Permeation Rate (SSPR not reached)
MDPR $\mu\text{g}/\text{cm}^2/\text{min}$	Minimum detectable permeation rate in μg per cm^2 per minute		

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RESPIREX™

Living + Breathing Personal Protection

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