Lakeland Chemical Protective Clothing

Chemical Permeation & Penetration Test Database

Table of currently available permeation/penetration test data on ChemMax 1,2,3 and 4, Interceptor and Pyrolon CRFR, CBFR and TPCR






Guidance Notes:-

1. Permeation test "Breakthrough" or "Normalised Breakthrough" is NOT a measure of when a chemical *first* breaks through the fabric, but is measured at the point when the SPEED that permeation is occurring reaches a defined rate. Thus it is not correct to conclude that at the Normalised Breakthrough time none of the chemical has permeated through the fabric. In fact at breakthrough the chemical has already been permeating through at an increasing rate up to the measured rate.

2. The data shows results for both the US ASTM F739 and the European Standard EN 6529 tests. These are very similar but measure "Normalised Breakthrough" at different rates:-

- ASTM F739 measures breakthrough at 0.1µg/minute/cm^2

- EN 6529 provides the option of measuring breakthrough at a rate of either 0.1µg/minute/cm^2 or 1.0µg/minute/cm^2. By convention and for historical reasons 1.0µg/minute/cm^2 is generally used and the results shown here follow this convention.

3. Because the ASTM test measures breakthrough at a rate ten times lower than the EN test, *where no EN test result is available it is reasonable to assume that an EN test result will always be at least as good as the ASTM test*. (This also explains why the results in the two tests may be different)

4. Permeation test breakthrough is suitable for comparison of fabric permeation resistance performance but is not suitable to indicate whether a user is protected against a chemical for any time period or in any application for the following reasons:-

a) It does not measure when the chemical first breaks through the fabric but when permeation reaches the specified rate. Thus at the point of test breakthrough the chemical has already been permeating through the fabric and may have contaminated the wearer. If the chemical is highly toxic this might be critical.

b) It takes no account of the relative toxicity of a chemical, so the amount of chemical that may permeate through the fabric during the time UNTIL breakthrough (i.e., when the permeation rate reaches the defined level) may or may not be hazardous, depending on the chemicals' toxicity. *This problem is exacerbated if the chemical has only long term health effects, such as causing cancers, and no immediate effects, in which case the user may not be aware that he has been contaminated!*

c) It takes no account of temperature variation; to enable effective comparison all tests are done with fabric preconditioned for 24 hrs at a pre-defined temperature (23°C in the EN test, 27°C in the ASTM test). Permeation rate increase with temperature, so at higher working temperatures the rate of permeation may be much higher and test indications will be misleading

d) It takes no account of the variety of other task and environment related factors that may affect the choice of protective coverall

** For more information on assessing safe-use times and garment choice, see the final page of this document or request a copy of the Lakeland "Guide to Chemical Suit Selection"*

5. Most testing on Pyrolon CRFR and TPCR is conducted according to the ASTM F903 Penetration Test. This measures the time until a visible breakthrough of the chemical through the fabric is apparent. Pyrolon CRFR and TPCR combine chemical resistance with FR properties (certified to EN 14116 Index 1: unlike standard chemical suits the fabric will not ignite and burn* and so can be worn OVER Thermal Protective Garments WITHOUT compromising thermal protection. Whilst Pyrolon CRFR and TPCR have a limited permeation barrier, depending on the chemical toxicity, a penetration test result may be a good indication of suitable protection where the fire or flammability risk is of primary or major concern.

* Note that Pyrolon TPCR is also certified to EN 11612 and is a Thermal Protective Garment, providing protection against flames and heat as well as chemicals

6. CE classification is given according to the classes defined in EN 14325 Clause 4.11, as follows:-

Class	Normalised Breakthrough to rate of 1.0µg/min/cm ^{2}	Class	Normalised Breakthrough to rate of 1.0µg/min/cm ^{2}
Class 1	>10 Minutes	Class 4	>120 Minutes
Class 2	>30 Minutes	Class 5	>240 Minutes
Class 3	>60 Minutes	Class 6	>480 Minutes

Abbrevieations:
NT: Not Tested IMM: Immediate (i.e. Normalised Breakthrough <10 Mins)

Fabric	CAS Number	Chemical	Concentration	State	EN 6529 Permeation Normalised Breakthrough Time to Permeation Rate 1.0µg/min/cm2	CE Class Class according to EN 14325- clause 4.11	ASTM F739 Permeation Normalised Breakthrough Time to Permeation Rate 0.1µg/min/cm2	ASTM F903 Penetration Time to Visible Breakthrough
CHEMMAX 1	107-06-2	1,2-DICHLOROETHANE	99%	LIQUID	NT		NT	
CHEMMAX 1	78-87-5	1,2-DICHLOROPROPANE	99%	LIQUID	NT		NT	
CHEMMAX 1	106-99-0	1,3-BUTADIENE	99%	GAS	>480	6	>480	
CHEMMAX 1	123-91-1	1,4-DIOXANE	99%	LIQUID	IMM		IMM	
CHEMMAX 1	115-20-8	2,2,2-TRICHLOROETHANOL	99%	LIQUID	NT		NT	
CHEMMAX 1	107-07-3	2-CHLOROETHANOL	99%	LIQUID	>480		>480	
CHEMMAX 1	5124-30-1	4,4-METHYLENEBIS	90%	LIQUID	NT		>480	
CHEMMAX 1	64-19-7	ACETIC ACID	99%	LIQUID	200	5	IMM	
CHEMMAX 1	108-24-7	ACETIC ANHYDRIDE	99%	LIQUID	>480	6	190	
CHEMMAX 1	67-64-1	ACETONE	99%	LIQUID	NT		>480	
CHEMMAX 1	75-05-8	ACETONITRILE	95%	LIQUID	NT		>480	
CHEMMAX 1	79-10-7	ACRYLIC ACID	99%	LIQUID	120	3	90	
CHEMMAX 1	107-13-1	ACRYLONITRILE	99%	LIQUID	NT		NT	
CHEMMAX 1	7664-41-7	AMMONIA	95%	GAS	IMM		IMM	
CHEMMAX 1	1336-21-6	AMMONIUM HYDROXIDE	29%	LIQUID	NT		NT	
CHEMMAX 1	123456	AMY TEST	100%	LIQUID	>480	6	>480	
CHEMMAX 1	62-53-3	ANILINE	99%	LIQUID	>480	6	IMM	
CHEMMAX 1	71-43-2	BENZENE	99%	LIQUID	NT		NT	
CHEMMAX 1	7726-95-6	BROMINE	99%	LIQUID	NT		NT	
CHEMMAX 1	123-72-8	BUTYRALDEHYDE	99%	LIQUID	NT		NT	
CHEMMAX 1	MIXTURE	CADOC-30 CATALYST	99%	MIXTURE				>60
CHEMMAX 1	75-15-0	CARBON DISULFIDE	95%	LIQUID	NT		>480	
CHEMMAX 1	630-08-0	CARBON MONOXIDE	99%	GAS	NT		NT	
CHEMMAX 1	7782-50-5	CHLORINE	95%	GAS	IMM		IMM	
CHEMMAX 1	79-11-8	CHLOROACETIC ACID	75%	LIQUID	NT		NT	
CHEMMAX 1	78-95-5	CHLOROACETONE	99%	LIQUID	NT		NT	
CHEMMAX 1	7790-94-5	CHLOROSULFONIC ACID	97%	LIQUID	NT		NT	
CHEMMAX 1	4170-30-3	CROTONALDEHYDE	99%	LIQUID	NT		NT	
CHEMMAX 1	3173-53-3	CYCLOHEXYL ISOCYANTE	99%	LIQUID	NT		NT	
CHEMMAX 1	75-78-5	DICHLORODIMETHYISILANE	99%	LIQUID	NT		NT	
CHEMMAX 1	75-09-2	DICHLOROMETHANE	95%	LIQUID	NT		IMM	
CHEMMAX 1	68334-30-5	DIESEL FUEL	100%	LIQUID	NT		NT	
CHEMMAX 1	109-89-7	DIETHYLAMINE	99%	LIQUID	NT		NT	
CHEMMAX 1	127-19-5	DIMETHYLACETAMIDE	99%	LIQUID	NT		NT	
CHEMMAX 1	124-40-3	DIMETHYLAMINE	40%	LIQUID	110		IMM	
CHEMMAX 1	68-12-2	DIMETHYLFORMAMIDE	99%	LIQUID	>480	6	IMM	
CHEMMAX 1	624-48-6	DIMETHYLMALEATE	99%	LIQUID	NT		NT	
CHEMMAX 1	106-89-8	EPICHLOROHYDRIN	99%	LIQUID	NT		NT	
CHEMMAX 1	64-17-5	ETHANOL	99%	LIQUID	NT		NT	
CHEMMAX 1	141-78-6	ETHYL ACETATE	95%	LIQUID	IMM		IMM	
CHEMMAX 1	107-21-1	ETHYLENE GLYCOL	99%	LIQUID	>480	6	>480	
CHEMMAX 1	75-21-8	ETHYLENE OXIDE	99%	GAS	>480	6	>480	
CHEMMAX 1	107-15-3	ETHYLENEDIAMINE	99%	LIQUID	NT		NT	
CHEMMAX 1	7705-08-0	FERRIC CHLORIDE	45%	LIQUID	NT		NT	
CHEMMAX 1	16872-11-0	FLUOBORIC ACID	99%	LIQUID	NT		NT	
CHEMMAX 1	16961-83-4	FLUOROSILICIC ACID	35%	LIQUID	NT		NT	
CHEMMAX 1	50-00-0	FORMALDEHYDE	37%	LIQUID	>480	6	IMM	
CHEMMAX 1	64-18-6	FORMIC ACID	99%	LIQUID	>480	6	15	
CHEMMAX 1	111-30-8	GLUTARALDEHYDE	99%	LIQUID	NT		NT	
CHEMMAX 1	822-06-0	HEXAMETHYLENE DIISOCYANATE	99%	LIQUID	0		310	
CHEMMAX 1	124-09-4	HEXAMETHYLENEDIAMINE	47.50%	LIQUID	>480	6	NT	
CHEMMAX 1	10035-10-6	HYDROBROMIC ACID	48%	LIQUID	>480	6	>480	
CHEMMAX 1	7647-01-0	HYDROCHLORIC ACID	37%	LIQUID	250	5	160	
CHEMMAX 1	7664-39-3	HYDROFLUORIC ACID	70%	LIQUID	60	3	59	
CHEMMAX 1	7664-39-3	HYDROFLUORIC ACID	48%	LIQUID	110	3	100	
CHEMMAX 1	7647-01-0	HYDROGEN CHLORIDE	99%	GAS	IMM		IMM	
CHEMMAX 1	74-90-8	HYDROGEN CYANIDE	95%	GAS	0		>480	
CHEMMAX 1	7664-39-3	HYDROGEN FLUORIDE	70%	GAS	87	3	87	
CHEMMAX 1	7722-84-1	HYDROGEN PEROXIDE	70%	LIQUID	>480	6	>480	
CHEMMAX 1	7722-84-1	HYDROGEN PEROXIDE	50%	LIQUID	>480	6	>480	
CHEMMAX 1	7553-56-2	IODINE	99%	LIQUID	>480	6	>480	
CHEMMAX 1	74-88-4	IODOMETHANE	99%	LIQUID	IMM		IMM	
CHEMMAX 1	123-51-3	ISOAMYL ALCHOL	99%	LIQUID	NT		NT	
CHEMMAX 1	67-63-0	ISOPROPANOL	99%	LIQUID	>480	6	>480	
CHEMMAX 1	7447-41-8	LITHIUM CHLORIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 1	1310-65-2	LITHIUM HYDROXIDE	20%	LIQUID	>480	6	>480	
CHEMMAX 1	7783-34-8	MERCURY II NITRATE	PPM	LIQUID	NT		NT	
CHEMMAX 1	67-56-1	METHANOL	95%	LIQUID	IMM		IMM	
CHEMMAX 1	625-45-6	METHOXYACETIC ACID	98%	LIQUID	>480	6	>480	
CHEMMAX 1	74-83-9	METHYL BROMIDE	99%	LIQUID	NT		NT	
CHEMMAX 1	74-87-3	METHYL CHLORIDE	99%	GAS	NT		320	
CHEMMAX 1	78-93-3	METHYL ETHYL KETONE	99%	LIQUID	NT		NT	
CHEMMAX 1	80-62-6	METHYL METHACRYLATE	99%	LIQUID	NT		NT	
CHEMMAX 1	74-89-5	METHYLAMINE	40%	LIQUID	NT		NT	
CHEMMAX 1	101-77-9	METHYLENE DIANALINE	99%	LIQUID	IMM		IMM	
CHEMMAX 1	71-36-3	n-BUTANOL	99%	LIQUID	>480	6	NT	
CHEMMAX 1	142-82-5	n-HEPTANE	99%	LIQUID	NT		NT	
CHEMMAX 1	7697-37-2	NITRIC ACID	99%	LIQUID	300	5	290	
CHEMMAX 1	98-95-3	NITROBENZENE	95%	LIQUID	NT		45	

Normalised Breakthrough is not suitable for assessing Safe-Use Time! Safe Use Time should be calculated.
See last page

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CHEMMAX 1	MIXTURE	OLEUM	40%	LIQUID	30	1	30	
CHEMMAX 1	144-62-7	OXALIC ACID	10%	LIQUID	182		IMM	
CHEMMAX 1	7601-90-3	PERCHLORIC ACID	30%	LIQUID	>480	6	>480	
CHEMMAX 1	108-95-2	PHENOL	80%	LIQUID	>480	6	>480	
CHEMMAX 1	7664-38-2	PHOSPHORIC ACID	85%	LIQUID	>480	6	>480	
CHEMMAX 1	7719-12-2	PHOSPHORUS TRICHLORIDE	95%	LIQUID	NT		NT	
CHEMMAX 1	MIXTURE	POLYLITE TLP RESIN	99%	MIXTURE				>60
CHEMMAX 1	127-08-2	POTASSIUM ACETATE	SAT	LIQUID	NT		NT	
CHEMMAX 1	7789-00-6	POTASSIUM CHROMATE	SAT	LIQUID	NT		NT	
CHEMMAX 1	1310-58-3	POTASSIUM HYDROXIDE	30%	LIQUID	>480	6	NT	
CHEMMAX 1	1310-58-3	POTASSIUM HYDROZIDE	86%	LIQUID	>480	6	>480	
CHEMMAX 1	7722-64-7	POTASSIUM PERMANGANATE	99%	SAT.	>480	6	>480	
CHEMMAX 1	123-38-6	PROPIONALDEHYDE	99%	LIQUID	>480	6		
CHEMMAX 1	107-12-0	PROPIONITRILE	99%	LIQUID	>480	6	>480	
CHEMMAX 1	107-10-8	PROPYLAMINE	99%	LIQUID	IMM		IMM	
CHEMMAX 1	106-42-35	p-XYLENE	99%	LIQUID	IMM		IMM	
CHEMMAX 1	7681-38-1	SODIUM BISULPHATE	40%	LIQUID	>480	6	>480	
CHEMMAX 1	497-19-8	SODIUM CARBONATE	5%	LIQUID	>480	6	>480	
CHEMMAX 1	7647-14-5	SODIUM CHLORIDE	35%	LIQUID	>480	6	>480	
CHEMMAX 1	7681-49-4	SODIUM FLUORIDE	SAT	LIQUID	>480	6	>480	
CHEMMAX 1	1310-73-2	SODIUM HYDROXIDE	50%	LIQUID	>480	6	>480	
CHEMMAX 1	7681-52-9	SODIUM HYPOCHLORITE	99%	LIQUID	>480	6	N/A	
CHEMMAX 1	16893-85-9	SODIUM SILICOFLUORIDE	SAT	LIQUID	>480		>480	
CHEMMAX 1	143-33-9	SODIUM CYANIDE	35%	LIQUID	>480	6	>480	
CHEMMAX 1	143-33-9	SODIUM CYANIDE	SAT	LIQUID	>480	6	>480	
CHEMMAX 1	7446-09-5	SULFUR DIOXIDE	99%	GAS	NT		NT	
CHEMMAX 1	7446-11-9	SULFUR TRIOXIDE	99%	LIQUID	NT		NT	
CHEMMAX 1	7664-93-9	SULFURIC ACID	30%	LIQUID	0		>480	
CHEMMAX 1	7664-93-9	SULFURIC ACID	96%	LIQUID	>480	6	315	
CHEMMAX 1	1634-04-4	t-BUTYL METHYL ETHER	99%	LIQUID	IMM		IMM	
CHEMMAX 1	79-34-5	TETRACHLOROETHANE	99%	LIQUID	NT		NT	
CHEMMAX 1	127-18-4	TETRACHLOROETHYLENE	95%	LIQUID	IMM		IMM	
CHEMMAX 1	109-99-9	TETRAHYDROFURAN	99%	LIQUID	NT		NT	
CHEMMAX 1	110-01-0	TETRAHYDROTHIOPHENE	99%	LIQUID	IMM		IMM	
CHEMMAX 1	7550-45-0	TITANIUM TETACHLORIDE	99%	LIQUID	NT		NT	
CHEMMAX 1	108-88-3	TOLUENE	99%	LIQUID	NT		NT	
CHEMMAX 1	584-84-9	TOLUENE-2,4-DIISOCYANATE	95%	LIQUID	73	3	59	
CHEMMAX 1	76-03-9	TRICHLOROACETIC ACID	99%	LIQUID	>480	6		
CHEMMAX 1	79-01-6	TRICHLOROETHYLENE	100%	LIQUID	NT		NT	
CHEMMAX 1	75-94-5	TRICHLOROVINYLSILANE	99%	LIQUID	NT		NT	
CHEMMAX 1	76-05-1	TRIFLUOROACETIC ACID	99%	LIQUID	NT		NT	
CHEMMAX 1	75-01-4	VINYL CHLORIDE	99%	GAS	NT		NT	
CHEMMAX 1	7699-45-8	ZINC BROMIDE	99%	LIQUID	>480	6		
CHEMMAX 2	107-06-2	1,2-DICHLOROETHANE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	78-87-5	1,2-DICHLOROPROPANE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	106-99-0	1,3-BUTADIENE	99%	GAS	>480	6	>480	
CHEMMAX 2	123-91-1	1-4-DIOXANE	99%	LIQUID	>480	6	19	
CHEMMAX 2	115-20-8	2,2,2-TRICHLOROETHANOL	99%	LIQUID	>480	6	>480	
CHEMMAX 2	5124-30-1	4,4-METHYLENEBIS	90%	LIQUID	NT		>480	
CHEMMAX 2	64-19-7	ACETIC ACID	99%	LIQUID	>480	6	325	
CHEMMAX 2	108-24-7	ACETIC ANHYDRIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	67-64-1	ACETONE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	75-05-8	ACETONITRILE	99%	LIQUID	>480	6	390	
CHEMMAX 2	107-02-8	ACROLEIN	90%	LIQUID			5	
CHEMMAX 2	79-10-7	ACRYLIC ACID	99%	LIQUID	>480	6	250	
CHEMMAX 2	107-13-1	ACRYLONITRILE	99%	LIQUID	>480	6	45	
CHEMMAX 2	7664-41-7	AMMONIA	99%	GAS	15	1	IMM	
CHEMMAX 2	1336-21-6	AMMONIUM HYDROXIDE	29%	LIQUID	>480	6	>480	
CHEMMAX 2	62-53-3	ANILINE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	71-43-2	BENZENE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	100-51-6	BENZYL ALCOHOL	95%	LIQUID			>480	
CHEMMAX 2	7726-95-6	BROMINE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	123-72-8	BUTYRALDEHYDE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	MIXTURE	CADOC-30 CATALYST	99%	MIXTURE				>60
CHEMMAX 2	75-15-0	CARBON DISULFIDE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	630-08-0	CARBON MONOXIDE	99%	GAS	>480	6	IMM	
CHEMMAX 2	7782-50-5	CHLORINE	99%	GAS	>480	6	>480	
CHEMMAX 2	79-11-8	CHLOROACETIC ACID	75%	LIQUID	>480	6	>480	
CHEMMAX 2	78-95-5	CHLOROACETONE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	7790-94-5	CHLOROSULFONIC ACID	97%	LIQUID	>480	6	>480	
CHEMMAX 2	4170-30-3	CROTONALDEHYDE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	110-82-7	CYCLOHEXANE	99%	LIQUID	>480	6	79	
CHEMMAX 2	108-94-1	CYCLOHEXANONE	99%	LIQUID	167	4	86	
CHEMMAX 2	3173-53-3	CYCLOHEXYL ISOCYANTE	99%	LIQUID	5		5	
CHEMMAX 2	75-78-5	DICHLORODIMETHYISILANE	99%	LIQUID	53	2	31	
CHEMMAX 2	75-09-2	DICHLOROMETHANE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	MIXTURE	DIESEL FUEL	NEAT	LIQUID	>480	6	>480	
CHEMMAX 2	109-89-7	DIETHYLAMINE	99%	LIQUID	15	1	IMM	

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CHEMMAX 2	127-19-5	DIMETHYLACETAMIDE	99%	LIQUID	45	2	37	
CHEMMAX 2	124-40-3	DIMETHYLAMINE	40%	LIQUID	>480	6	33	
CHEMMAX 2	68-12-2	DIMETHYLFORMAMIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	624-48-6	DIMETHYLMALEATE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	106-89-8	EPICHLOROHYDRIN	99%	LIQUID	260	5	140	
CHEMMAX 2	64-17-5	ETHANOL	99%	LIQUID	>480	6	>480	
CHEMMAX 2	141-78-6	ETHYL ACETATE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	100-41-4	ETHYL BENZENE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	107-21-1	ETHYLENE GLYCOL	99%	LIQUID	>480	6	>480	
CHEMMAX 2	75-21-8	ETHYLENE OXIDE	99%	GAS	>480	6	>480	
CHEMMAX 2	75-21-8	ETHYLENE OXIDE	10%	GAS	>480	6	>480	
CHEMMAX 2	107-15-3	ETHYLENEDIAMINE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	7705-08-0	FERRIC CHLORIDE	45%	LIQUID	>480	6	NT	
CHEMMAX 2	16872-11-0	FLUOBORIC ACID	99%	LIQUID	321	5	10	
CHEMMAX 2	16961-83-4	FLUOROSILICIC ACID	35%	LIQUID	>480	6	>480	
CHEMMAX 2	50-00-0	FORMALDEHYDE	37%	LIQUID	>480	6	>480	
CHEMMAX 2	64-18-6	FORMIC ACID	99%	LIQUID	>480	6	>480	
CHEMMAX 2	MIXTURE	GASOLINE	NEAT	LIQUID	81	3	>480	
CHEMMAX 2	111-30-8	GLUTARALDEHYDE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	999-97-3	HEXAMETHYLDISILAZANE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	7647-01-0	HYDROCHLORIC ACID	37%	LIQUID	>480	6	>480	
CHEMMAX 2	7664-39-3	HYDROFLUORIC ACID	70%	LIQUID	>480	6	>480	
CHEMMAX 2	7664-39-3	HYDROFLUORIC ACID	48%	LIQUID	>480	6	>480	
CHEMMAX 2	7647-01-0	HYDROGEN CHLORIDE	99%	GAS	410	6	410	
CHEMMAX 2	7664-39-3	HYDROGEN FLUORIDE	70%	GAS	>480	6	>480	
CHEMMAX 2	7664-39-3	HYDROGEN FLUORIDE	99%	GAS	>480	6	390	
CHEMMAX 2	7722-84-1	HYDROGEN PEROXIDE	50%	LIQUID	>480	6	>480	
CHEMMAX 2	74-88-4	IODOMETHANE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	123-51-3	ISOAMYL ALCHOL	99%	LIQUID	>480	6	>480	
CHEMMAX 2	67-63-0	ISOPROPANOL	99%	LIQUID	51	2	51	
CHEMMAX 2	67-56-1	METHANOL	99%	LIQUID	>480	6	>480	
CHEMMAX 2	74-83-9	METHYL BROMIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	74-87-3	METHYL CHLORIDE	99%	GAS	>480	6	>480	
CHEMMAX 2	78-93-3	METHYL ETHYL KETONE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	80-62-6	METHYL METHACRYLATE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	74-89-5	METHYLAMINE	40%	LIQUID	>480	6	IMM	
CHEMMAX 2	101-77-9	METHYLENE DIANALINE	99%	LIQUID			IMM	
CHEMMAX 2	101-68-8	METHYLENE DIPHENYLDIISOCYANATE	99%	LIQUID			>480	
CHEMMAX 2	71-36-3	n-BUTANOL	99%	LIQUID	>480	6	>480	
CHEMMAX 2	142-82-5	n-HEPTANE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	110-54-3	N-HEXANE (HEXANE)	99%	LIQUID	>480	6	>480	
CHEMMAX 2	7697-37-2	NITRIC ACID	70%	LIQUID	>480	6	>480	
CHEMMAX 2	98-95-3	NITROBENZENE	99%	LIQUID	150	4	45	
CHEMMAX 2	10102-44-0	NITROGEN DIOXIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	MIXTURE	OLEUM		LIQUID				
CHEMMAX 2	108-95-2	PHENOL	99%	LIQUID	>480	6	>480	
CHEMMAX 2	7664-38-2	PHOSPHORIC ACID	85%	LIQUID	>480	6	>480	
CHEMMAX 2	7719-12-2	PHOSPHORUS TRICHLORIDE	95%	LIQUID	IMM		IMM	
CHEMMAX 2	127-08-2	POTASSIUM ACETATE	SAT	LIQUID	>480	6	>480	
CHEMMAX 2	7789-00-6	POTASSIUM CHROMATE	SAT	LIQUID	>480	6	>480	
CHEMMAX 2	1310-58-3	POTASSIUM HYDROZIDE	88%	LIQUID	NT		NT	
CHEMMAX 2	79-09-4	PROPIONIC ACID	99%	LIQUID	>480	6	>480	
CHEMMAX 2	107-10-8	PROPYLAMINE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	106-42-3	P-XYLENE	99%	LIQUID	>480	6	iMM	
CHEMMAX 2	497-19-8	SODIUM CARBONATE	5%	LIQUID	>480	6	>480	
CHEMMAX 2	1310-73-2	SODIUM HYDROXIDE	50%	LIQUID	>480	6	>480	
CHEMMAX 2	7681-52-9	SODIUM HYPOCHLORITE	15%	LIQUID	>480	6	>480	
CHEMMAX 2	124-41-4	SODIUM METHOXIDE	30%	LIQUID	>480	6	>480	
CHEMMAX 2	16893-85-9	SODIUM SILICOFLUORIDE	SAT	LIQUID	N/A		N/A	
CHEMMAX 2	143-33-9	SODIUM CYANIDE	35%	LIQUID	>480	6	>480	
CHEMMAX 2	143-33-9	SODIUM CYANIDE	SAT	LIQUID	>480	6	>480	
CHEMMAX 2	100-42-5	STYRENE	98%	LIQUID	12	1	8	
CHEMMAX 2	7446-09-5	SULFUR DIOXIDE	99%	GAS	>480	6	>480	
CHEMMAX 2	7446-11-9	SULFUR TROXIDE	99%	LIQUID	120	4	35	
CHEMMAX 2	7664-93-9	SULFURIC ACID	30%	LIQUID	>480	6	>480	
CHEMMAX 2	7664-93-9	SULFURIC ACID	96%	LIQUID	>480		>480	
CHEMMAX 2	1634-04-4	t-BUTYL METHYL ETHER	99%	LIQUID	IMM		IMM	
CHEMMAX 2	79-34-5	TETRACHLOROETHANE	99%	LIQUID	270	5	45	
CHEMMAX 2	127-18-4	TETRACHLOROETHYLENE	99%	LIQUID	>480	6	>480	
CHEMMAX 2	109-99-9	TETRAHYDROFURAN	99%	LIQUID	81	3	IMM	
CHEMMAX 2	110-01-0	TETRAHYDROTHIOPHENE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	7550-45-0	TITANIUM TETACHLORIDE	99%	LIQUID	>480	6	270	
CHEMMAX 2	108-88-3	TOLUENE	99%	LIQUID	IMM		IMM	
CHEMMAX 2	76-01-6	TRICHLOROETHYLENE	100%	LIQUID	IMM		IMM	
CHEMMAX 2	75-94-5	TRICHLOROVINYLSILANE	99%	LIQUID	70	3	70	
CHEMMAX 2	76-05-1	TRIFLUOROACETIC ACID	99%	LIQUID	>480	6	>480	
CHEMMAX 2	MIXTURE	UNLEADED PETROL	99%	LIQUID	IMM		IMM	
CHEMMAX 2	108-05-4	VINYL ACETATE	95%	LIQUID	IMM		7	
CHEMMAX 2	75-01-4	VINYL CHLORIDE	99%	GAS	>480	6	>480	

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Fabric	CAS Number	Chemical	Concentration	State	EN 6529 Permeation Normalised Breakthrough Time to Permeation Rate 1.0µg/min/cm2	CE Class Class according to EN 14325- clause 4.11	ASTM F739 Permeation Normalised Breakthrough Time to Permeation Rate 0.1µg/min/cm2	ASTM F903 Penetration Time to Visible Breakthrough
CHEMMAX 3	107-06-2	1,2-DICHLOROETHANE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	78-87-5	1,2-DICHLOROPROPANE	99%	LIQUID	NT		NT	
CHEMMAX 3	106-99-0	1,3-BUTADIENE	99%	GAS	>480	6	>480	
CHEMMAX 3	123-91-1	1,4-DIOXANE	99%	LIQUID	50	2	22	
CHEMMAX 3	115-20-8	2,2,2-TRICHLOROETHANOL	99%	LIQUID	NT		NT	
CHEMMAX 3	120-83-2	2,4-DICHLOROPHENOL	99%	LIQUID	>480	6	>480	
CHEMMAX 3	94-75-7	2,4-DICHLOROPHENOXY ACETIC ACID	99%	LIQUID	>480	6	>480	
CHEMMAX 3	5124-30-1	4,4-METHYLENEBIS	90%	LIQUID	NT		NT	
CHEMMAX 3	64-19-7	ACETIC ACID	99%	LIQUID	>480	6	95	
CHEMMAX 3	108-24-7	ACETIC ANHYDRIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	67-64-1	ACETONE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	75-05-8	ACETONITRILE	99%	LIQUID	>480	6	160	
CHEMMAX 3	107-02-8	ACROLEIN	98%	LIQUID	>480	6	>480	
CHEMMAX 3	79-10-7	ACRYLIC ACID	99%	LIQUID	>480	6	240	
CHEMMAX 3	107-13-1	ACRYLONITRILE	99%	LIQUID	>480	6	115	
CHEMMAX 3	107-18-6	ALLYL ALCOHOL	99%	LIQUID	>480	6	>480	
CHEMMAX 3	107-05-1	ALLYL CHLORIDE	98%	LIQUID	>480	6	>480	
CHEMMAX 3	7664-41-7	AMMONIA	99%	GAS	>480	6	>480	
CHEMMAX 3	1336-21-6	AMMONIUM HYDROXIDE	29%	LIQUID	120	3	120	
CHEMMAX 3	628-63-7	AMYL ACETATE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	62-53-3	ANILINE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	71-43-2	BENZENE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	7726-95-6	BROMINE	99%	LIQUID	IMM		IMM	
CHEMMAX 3	123-72-8	BUTYRALDEHYDE	99%	LIQUID	NT		NT	
CHEMMAX 3	MIXTURE	CADOC-30 CATALYST	99%	MIXTURE				>60
CHEMMAX 3	75-15-0	CARBON DISULFIDE	99%	LIQUID	>480	6	178	
CHEMMAX 3	630-08-0	CARBON MONOXIDE	99%	GAS	320	5	IMM	
CHEMMAX 3	7782-50-5	CHLORINE	99%	GAS	>480	6	>480	
CHEMMAX 3	79-11-8	CHLOROACETIC ACID	75%	LIQUID	NT		NT	
CHEMMAX 3	78-95-5	CHLOROACETONE	99%	LIQUID	NT		NT	
CHEMMAX 3	108-90-7	CHLOROBENZENE	95%	LIQUID	9		3	
CHEMMAX 3	7790-94-5	CHLOROSULFONIC ACID	97%	LIQUID	NT		NT	
CHEMMAX 3	4170-30-3	CROTONALDEHYDE	99%	LIQUID	NT		NT	
CHEMMAX 3	108-94-1	CYCLOHEXANONE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	3173-53-3	CYCLOHEXYL ISOCYANTE	99%	LIQUID	NT		NT	
CHEMMAX 3	75-78-5	DICHLORODIMETHYISILANE	99%	LIQUID	NT		NT	
CHEMMAX 3	75-09-2	DICHLOROMETHANE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	MIXTURE	DIESEL FUEL	NEAT	LIQUID	>480	6	>480	
CHEMMAX 3	60-29-7	DIETHYL ETHER	99%	LIQUID	>480	6	>480	
CHEMMAX 3	109-89-7	DIETHYLAMINE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	67-68-5	DIMETHYL SULFOXIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	127-19-5	DIMETHYLACETAMIDE	99%	LIQUID	NT		NT	
CHEMMAX 3	124-40-3	DIMETHYLAMINE	40%	LIQUID	NT		NT	
CHEMMAX 3	68-12-2	DIMETHYLFORMAMIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	624-48-6	DIMETHYLMALEATE	99%	LIQUID	NT		NT	
CHEMMAX 3	88-85-7	DINOSEB	PPM	LIQUID			>480	
CHEMMAX 3	106-89-8	EPICHLOROHYDRIN	99%	LIQUID	>480	6	>480	
CHEMMAX 3	64-17-5	ETHANOL	99%	LIQUID	NT		NT	
CHEMMAX 3	141-43-5	ETHANOL AMINE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	141-78-6	ETHYL ACETATE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	74-85-1	ETHYLENE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	106-93-4	ETHYLENE DIBROMIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	107-21-1	ETHYLENE GLYCOL	99%	LIQUID	>480	6	>480	
CHEMMAX 3	75-21-8	ETHYLENE OXIDE	99%	GAS	>480	6	>480	
CHEMMAX 3	75-21-8	ETHYLENE OXIDE	10%	GAS	>480	6	>480	
CHEMMAX 3	107-15-3	ETHYLENEDIAMINE	99%	LIQUID	NT		NT	
CHEMMAX 3	7705-08-0	FERRIC CHLORIDE	45%	LIQUID	>480			
CHEMMAX 3	16872-11-0	FLUOBORIC ACID	99%	LIQUID	NT		NT	
CHEMMAX 3	462-06-6	FLUOROBENZENE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	16961-83-4	FLUOROSILICIC ACID	35%	LIQUID	NT		NT	
CHEMMAX 3	50-00-0	FORMALDEHYDE	37%	LIQUID	>480	6	>480	
CHEMMAX 3	64-18-6	FORMIC ACID	95%	LIQUID	>480	6	>480	
CHEMMAX 3	MIXTURE	GASOLINE	NEAT	LIQUID	>480	6	>480	
CHEMMAX 3	111-30-8	GLUTARALDEHYDE	99%	LIQUID	NT		NT	
CHEMMAX 3	822-06-0	HEXAMETHYLENE DIISOCYANATE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	7647-01-0	HYDROCHLORIC ACID	37%	LIQUID	>480	6	>480	
CHEMMAX 3	7664-39-3	HYDROFLUORIC ACID	30%	LIQUID			>480	
CHEMMAX 3	7664-39-3	HYDROFLUORIC ACID	48%	LIQUID	>480	6	>480	
CHEMMAX 3	7664-39-3	HYDROFLUORIC ACID	50%	LIQUID	>480	6	>480	
CHEMMAX 3	7647-01-0	HYDROGEN CHLORIDE	99%	GAS	>480	6	>480	
CHEMMAX 3	74-90-8	HYDROGEN CYANIDE	95%	GAS			>480	
CHEMMAX 3	7664-39-3	HYDROGEN FLUORIDE	99%	GAS	>480	6	>480	
CHEMMAX 3	7722-84-1	HYDROGEN PEROXIDE	50%	LIQUID	>480	6	>480	
CHEMMAX 3	74-88-4	IODOMETHANE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	123-51-3	ISOAMYL ALCHOL	99%	LIQUID	NT		NT	
CHEMMAX 3	67-63-0	ISOPROPANOL	99%	LIQUID	>480	6	>480	
CHEMMAX 3	N/A	JET FUEL JP-8	NEAT	LIQUID			>480	
CHEMMAX 3	7783-34-8	MERCURY II NITRATE	PPM	LIQUID			NT	

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CHEMMAX 3	67-56-1	METHANOL	99%	LIQUID	>480	6	180	
CHEMMAX 3	74-83-9	METHYL BROMIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	74-87-3	METHYL CHLORIDE	99%	GAS	>480	6	>480	
CHEMMAX 3	78-93-3	METHYL ETHYL KETONE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	74-93-1	METHYL MERCAPTAN	99%	LIQUID	>480	6	>480	
CHEMMAX 3	80-62-6	METHYL METHACRYLATE	99%	LIQUID	NT		NT	
CHEMMAX 3	74-89-5	METHYLAMINE	40%	LIQUID	>480	6	163	
CHEMMAX 3	101-77-9	METHYLENE DIANALINE	99%	LIQUID			>480	
CHEMMAX 3	101-68-8	METHYLENE DIPHENYLDIISOCYANATE	99%	LIQUID			>480	
CHEMMAX 3	3268-49-3	METHYLTHIOPROPIONALDEHYDE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	71-36-3	n-BUTANOL	99%	LIQUID	NT		NT	
CHEMMAX 3	142-96-1	N-BUTYL ETHER (DI-N-BUTYL ETHER)	99%	LIQUID	>480	6	58	
CHEMMAX 3	142-82-5	n-HEPTANE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	110-54-3	N-HEXANE (HEXANE)	99%	LIQUID	>480	6	>480	
CHEMMAX 3	7697-37-2	NITRIC ACID	70%	LIQUID	>480	6	>480	
CHEMMAX 3	98-95-3	NITROBENZENE	99%	LIQUID	170	4	45	
CHEMMAX 3	872-50-4	N-METHYL PYRROLIDONE	99%	LIQUID	>480	6	>480	
CHEMMAX 3		OLEUM		LIQUID				
CHEMMAX 3	108-95-2	PHENOL	40%	LIQUID	>480	6	>480	
CHEMMAX 3	75-44-5	PHOSGENE	99%	GAS			432	
CHEMMAX 3	7664-38-2	PHOSPHORIC ACID	85%	LIQUID	>480	6	>480	
CHEMMAX 3	7719-12-2	PHOSPHORUS TRICHLORIDE	95%	LIQUID	20	1	IMM	
CHEMMAX 3	MIXTURE	POLYLITE TLP RESIN	99%	MIXTURE				>60
CHEMMAX 3	127-08-2	POTASSIUM ACETATE	SAT	LIQUID	NT		NT	
CHEMMAX 3	7789-00-6	POTASSIUM CHROMATE	SAT	LIQUID	>480	6	>480	
CHEMMAX 3	1310-58-3	POTASSIUM HYDROZIDE	88%	LIQUID	NT		NT	
CHEMMAX 3	107-10-8	PROPYLAMINE	99%	LIQUID	IMM		IMM	
CHEMMAX 3	75-56-9	PROPYLENE OXIDE	99%	LIQUID	>480	6	IMM	
CHEMMAX 3	106-42-3	p-XYLENE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	110-86-1	PYRIDINE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	497-19-8	SODIUM CARBONATE	5%	LIQUID	>480	6	>480	
CHEMMAX 3	1310-73-2	SODIUM HYDROXIDE	50%	LIQUID	>480	6	>480	
CHEMMAX 3	7681-52-9	SODIUM HYPOCHLORITE	15%	LIQUID	>480	6	>480	
CHEMMAX 3	143-33-9	SODIUM CYANIDE	35%	LIQUID	>480	6	>480	
CHEMMAX 3	143-33-9	SODIUM CYANIDE	45%	LIQUID	>480	6	>480	
CHEMMAX 3	143-33-9	SODIUM CYANIDE	SAT	LIQUID	>480	6	>480	
CHEMMAX 3	7446-09-5	SULFUR DIOXIDE	99%	GAS	>480	6	>480	
CHEMMAX 3	10025-67-9	SULFUR MONOCHLORIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	7446-11-9	SULFUR TRIOXIDE	99%	LIQUID	80	3	50	
CHEMMAX 3	7664-93-9	SULFURIC ACID	97%	LIQUID	>480	6	>480	
CHEMMAX 3	7664-93-9	SULFURIC ACID	30%	LIQUID	>480	6	>480	
CHEMMAX 3	7791-25-5	SULFURYL CHLORIDE	99%	LIQUID	15	1	15	
CHEMMAX 3	1634-04-4	t-BUTYLMETHYL ETHER	99%	LIQUID	>480	6	>480	
CHEMMAX 3	79-34-5	TETRACHLOROETHANE	99%	LIQUID	NT		NT	
CHEMMAX 3	127-18-4	TETRACHLOROETHYLENE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	109-99-9	TETRAHYDROFURAN	99%	LIQUID	>480	6	320	
CHEMMAX 3	110-01-0	TETRAHYDROTHIOPHENE	99%	LIQUID	>480	6	IMM	
CHEMMAX 3	7719-09-7	THIONYL CHLORIDE	99%	LIQUID	IMM		IMM	
CHEMMAX 3	7550-45-0	TITANIUM TETACHLORIDE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	108-88-3	TOLUENE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	76-02-9	TRICHLOROACETIC	70%	LIQUID			>480	
CHEMMAX 3	87-61-6	TRICHLOROBENZENE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	12002-48-1	TRICHLOROBENZENE	99%	LIQUID	>480	6	>480	
CHEMMAX 3	79-01-6	TRICHLOROETHYLENE	100%	LIQUID	>480	6	IMM	
CHEMMAX 3	75-94-5	TRICHLOROVINYLSILANE	99%	LIQUID	NT		NT	
CHEMMAX 3	76-05-1	TRIFLUOROACETIC ACID	99%	LIQUID	>480	6	>480	
CHEMMAX 3	MIXTURE	UNLEADED PETROL	99%	LIQUID	>480	6	>480	
CHEMMAX 3	108-05-4	VINYL ACETATE	95%	LIQUID	>480	6	>480	
CHEMMAX 3	75-01-4	VINYL CHLORIDE	99%	GAS	>480	6	>480	
CHEMMAX 3	1330-20-7	XYLENE	99%	LIQUID			>480	
ChemMax 4 +	106-99-0	1,3-Butadiene	99%	Liquid	>480	6	>480	
ChemMax 4 +	115-20-8	2,2,2-Trichloroethanol	99%	Liquid	>480	6	>480	
ChemMax 4 +	78-88-6	2,3 Dichloro- 1Propene	98%	Liquid	>480	6	>480	
ChemMax 4 +	120-83-2	2,4-Dichlorophenol	99%	Liquid	>480	6	>480	
ChemMax 4 +	94-75-7	2,4-dichlorophenoxy Acetic Acid	99%	Liquid	>480	6	>480	
ChemMax 4 +	460-00-4	4-Bromofluorobenzene	99%	Liquid	>480	6	>480	
ChemMax 4 +	64-19-7	Acetic Acid	99%	Liquid	>480	6	>480	
ChemMax 4 +	67-64-1	Acetone	99%	Liquid	>480	6	>480	
ChemMax 4 +	75-05-8	Acetonitrile	99%	Liquid	>480	6	>480	
ChemMax 4 +	75-36-5	Acetyl Chloride	98%	Liquid	>480	6	>480	
ChemMax 4 +	107-02-8	Acrolein	98%	Liquid	>480	6	>480	
ChemMax 4 +	79-10-7	Acrylic Acid	99%	Liquid	>480	6	>480	
ChemMax 4 +	107-13-1	Acrylonitrile	99%	Liquid	>480	6	>480	
ChemMax 4 +	107-05-1	Allyl Chloride	99%	Liquid	>480	6	>480	
ChemMax 4 +	7664-41-7	Ammonia	99%	Liquid	>480	6	>480	
ChemMax 4 +	12125-01-8	Ammonium Fluoride	40%	Liquid	>480	6	>480	
ChemMax 4 +	71-43-2	BENZENE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	100-47-0	BENZONITRILE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7726-95-6	BROMINE	99%	LIQUID	10		9	

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ChemMax 4 +	123-86-4	BUTYL ACETATE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	75-15-0	CARBON DISULFIDE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7782-50-5	CHLORINE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	108-90-7	CHLOROBENZENE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7790-94-5	CHLOROSULFONIC ACID	99%	LIQUID	>480	6	>480	
ChemMax 4 +	98-82-8	CUMENE	98%	LIQUID	>480	6	>480	
ChemMax 4 +	108-94-1v	CYCLOHEXANONE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	75-09-2	DICHLOROMETHANE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	109-89-7	DIETHYLAMINE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	111-40-0	DIETHYLENETRIAMINE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	111-96-6	DIMETHYL ETHER	99%	LIQUID	>480	6	>480	
ChemMax 4 +	127-19-5	DIMETHYLACETAMIDE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	124-40-3	DIMETHYLAMINE	40%	LIQUID	>480	6	>480	
ChemMax 4 +	68-12-2	DIMETHYLFORMAMIDE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	77-78-1	DIMETHYLSULFATE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	67-68-5	DIMETHYLSULFOXIDE	99%	LIQUID	>480	6	NT	
ChemMax 4 +	64-17-5	ETHANOL	99%	LIQUID	>480	6	>480	
ChemMax 4 +	141-78-6	ETHYL ACETATE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	140-88-5	ETHYL ACRYLATE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	541-41-3	ETHYL CHLOROFORMATE	97%	LIQUID	>480	6	>480	
ChemMax 4 +	60-29-7	ETHYL ETHER (DIETHYL ETHER)	99%	LIQUID	>480	6	>480	
ChemMax 4 +	75-21-8	ETHYLENE OXIDE	99%	GAS	>480	6	>480	
ChemMax 4 +	462-06-6	FLUOROBENZENE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	16961-83-4	FLUOROSILICIC ACID	25%	LIQUID	>480	6	>480	
ChemMax 4 +	64-18-6	FORMIC ACID	96%	LIQUID	>480	6	>480	
ChemMax 4 +	142-82-5	HEPTANE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	87-68-3	HEXACHLORO-1,3 BUTADIENE	96%	LIQUID	>480	6	>480	
ChemMax 4 +	110-54-3	HEXANE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7647-01-0	HYDROCHLORIC ACID	37%	LIQUID	>480	6	>480	
ChemMax 4 +	7664-39-3	HYDROFLUORIC ACID	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7647-01-0	HYDROGEN CHLORIDE	99%	GAS	>480	6	>480	
ChemMax 4 +	7664-39-3	HYDROGEN FLUORIDE	99%	GAS	>480	6	>480	
ChemMax 4 +	10034-85-2	HYDROIODIC ACID	58%	LIQUID	>480	6	>480	
ChemMax 4 +	67-56-1	METHANOL	99%	LIQUID	>480	6	>480	
ChemMax 4 +	74-87-3	METHYL CHLORIDE	99%	GAS	>480	6	>480	
ChemMax 4 +	74-88-4	METHYL IODIDE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	74-89-5	METHYLAMINE	40%	Liquid	>480	6	>480	
ChemMax 4 +	121-69-7	N,N-DIMETHYLANILINE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	142-96-1	N-DIBUTYL ETHER	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7697-37-2	NITRIC ACID	90%	LIQUID	>480	6	>480	
ChemMax 4 +	98-95-3	NITROBENZENE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	108-95-2	PHENOL	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7664-38-2	PHOSPHORIC ACID	85%	LIQUID	>480	6	>480	
ChemMax 4 +	10026-13-8	PHOSPHOROUS PENTACHLORIDE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	1310-58-3	POTASSIUM HYDROXIDE	88%	LIQUID	>480	6	>480	
ChemMax 4 +	107-10-6	PROPYLAMINE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	497-19-8	SODIUM CARBONATE	5%	LIQUID	>480	6	>480	
ChemMax 4 +	7647-14-5	SODIUM CHLORIDE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7681-49-4	SODIUM FLUORIDE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	1310-73-2	SODIUM HYDROXIDE	50%	LIQUID	>480	6	>480	
ChemMax 4 +	7446-09-05	SULFUR DIOXIDE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7664-93-9	SULFURIC ACID	98%	LIQUID	>480	6	>480	
ChemMax 4 +	7791-25-5	SULFURYL CHLORIDE	98%	LIQUID	>480	6	>480	
ChemMax 4 +	7446-09-5	SULPHUR DIOXIDE	97%	LIQUID	>480	6	>480	
ChemMax 4 +	79-34-5	TETRACHLOROETHANE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	127-18-4	TETRACHLOROETHYLENE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	109-99-9	TETRAHYDROFURAN	99%	LIQUID	>480	6	>480	
ChemMax 4 +	7719-09-7	THIONYL CHLORIDE	99%	LIQUID	37	1	26	
ChemMax 4 +	108-88-3	TOLUENE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	584-84-9	TOLUENE-2,4-DIISOCYANATE	98%	LIQUID	>480	6	>480	
ChemMax 4 +	79-01-6	TRICHLOROETHYLENE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	76-05-1	TRIFLUOROACETIC ACID	99%	LIQUID	>480	6	>480	
ChemMax 4 +	108-05-4	VINYL ACETATE	99%	LIQUID	>480	6	>480	
ChemMax 4 +	75-01-4	VINYL CHLORIDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	106-88-7	1,2 BUTYLENE OXIDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	107-06-2	1,2-DICHLOROETHANE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	78-87-5	1,2-DICHLOROPROPANE	99%	LIQUID	NT		NT	
INTERCEPTOR	106-99-0	1,3-BUTADIENE	99%	GAS	>480	6	>480	
INTERCEPTOR	115-20-8	2,2,2-TRICHLOROETHANOL	99%	LIQUID	>480	6	>480	
INTERCEPTOR	78-88-6	2,3-DICHLORO-1-PROPENE	98%	LIQUID	>480	6	>480	
INTERCEPTOR	118-79-6	2,4,6-TRIBROMOPHENOL	98%	SAT.	>480	6	>480	
INTERCEPTOR	920-37-6	2-CHLOROACRYLONITRILE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	101-77-9	4,4-METHYLENE DIANILINE	97%	SAT.	320	5	210	
INTERCEPTOR	5124-30-1	4,4-METHYLENEBIS	90%	LIQUID	NT		NT	
INTERCEPTOR	460-00-4	4-BROMOFLUOROBENZENE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	64-19-7	ACETIC ACID	99%	LIQUID	470	5	360	
INTERCEPTOR	108-24-7	ACETIC ANHYDRIDE	99%	LIQUID	NT		NT	
INTERCEPTOR	67-64-1	ACETONE	99%	LIQUID	>480	6	>480	

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Fabric	CAS Number	Chemical	Concentration	State	EN 6529 Permeation Normalised Breakthrough Time to Permeation Rate 1.0µg/min/cm2	CE Class Class according to EN 14325- clause 4.11	ASTM F739 Permeation Normalised Breakthrough Time to Permeation Rate 0.1µg/min/cm2	ASTM F903 Penetration Time to Visible Breakthrough
INTERCEPTOR	75-05-8	ACETONITRILE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	75-36-5	ACETYL CHLORIDE	98%	LIQUID	210	4	150	
INTERCEPTOR	107-02-8	ACROLEIN	98%	LIQUID	>480	6	>480	
INTERCEPTOR	79-10-7	ACRYLIC ACID	99%	LIQUID	430	5	370	
INTERCEPTOR	107-13-1	ACRYLONITRILE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	107-05-1	ALLYL CHLORIDE	98%	LIQUID	>480	6	>480	
INTERCEPTOR	7664-41-7	AMMONIA	99%	GAS	>480	6	>480	
INTERCEPTOR	12125-01-8	AMMONIUM FLUORIDE	40%	LIQUID	>480	6	>480	
INTERCEPTOR	1336-21-6	AMMONIUM HYDROXIDE	29%	LIQUID	NT		NT	
INTERCEPTOR	62-53-3	ANILINE	99%	LIQUID	NT		NT	
INTERCEPTOR	71-43-2	BENZENE	99%	LIQUID	NT		NT	
INTERCEPTOR	98-88-4	BENZOYL CHLORIDE	98%	LIQUID	>480	6	>480	
INTERCEPTOR	7726-95-6	BROMINE	98%	LIQUID	120	3	120	
INTERCEPTOR	74-97-5	BROMOCHLOROMETHANE	98%	LIQUID	NT		>480	
INTERCEPTOR	123-72-8	BUTYRALDEHYDE	99%	LIQUID	NT		NT	
INTERCEPTOR	75-15-0	CARBON DISULFIDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	630-08-0	CARBON MONOXIDE	99%	GAS	NT		NT	
INTERCEPTOR	7782-50-5	CHLORINE	99%	GAS	>480	6	>480	
INTERCEPTOR	79-11-8	CHLOROACETIC ACID	75%	LIQUID	NT		NT	
INTERCEPTOR	78-95-5	CHLOROACETONE	99%	LIQUID	NT		NT	
INTERCEPTOR	79-04-9	CHLOROACETYL CHLORIDE	98%	LIQUID	>480	6	>480	
INTERCEPTOR	108-90-7	CHLOROBENZENE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	7790-94-5	CHLOROSULFONIC ACID	97%	LIQUID	>480	6	190	
INTERCEPTOR	4170-30-3	CROTONALDEHYDE	99%	LIQUID	NT		NT	
INTERCEPTOR	108-94-1	CYCLOHEXANONE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	3173-53-3	CYCLOHEXYL ISOCYANTE	99%	LIQUID	NT		NT	
INTERCEPTOR	108-91-8	CYCLOHEXYLAMINE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	75-78-5	DICHLORODIMETHYISILANE	99%	LIQUID	NT		NT	
INTERCEPTOR	75-09-2	DICHLOROMETHANE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	64-67-5	DIETHYL SULFATE	98%	LIQUID	>480	6	>480	
INTERCEPTOR	109-89-7	DIETHYLAMINE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	111-96-6	DIETHYLENE GLYCOL (DIMETHYL ETHER)	99%	LIQUID	NT		>480	
INTERCEPTOR	111-40-0	DIETHYLENETRIAMINE	98%	LIQUID	>480	6	>480	
INTERCEPTOR	624-92-0	DIMETHYL DISULFIDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	115-10-6	DIMETHYL ETHER	99%	GAS	>480	6	>480	
INTERCEPTOR	77-78-1	DIMETHYL SULFATE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	67-68-5	DIMETHYL SULFOXIDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	127-19-5	DIMETHYLACETAMIDE	99%	LIQUID	NT		NT	
INTERCEPTOR	124-40-3	DIMETHYLAMINE	40%	LIQUID	NT		NT	
INTERCEPTOR	68-12-2	DIMETHYLFORMAMIDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	624-48-6	DIMETHYLMALEATE	99%	LIQUID	NT		NT	
INTERCEPTOR	141-78-6	ETHYL ACETATE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	140-88-5	ETHYL ACRYLATE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	60-29-7	ETHYL ETHER (DIETHYL ETHER)	98%	LIQUID	>480	6	>480	
INTERCEPTOR	97-63-2	ETHYL METHACRYLATE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	75-04-7	ETHYLAMINE	97%	GAS	>480	6	>480	
INTERCEPTOR	107-21-1	ETHYLENE GLYCOL	99%	LIQUID	NT		NT	
INTERCEPTOR	75-21-8	ETHYLENE OXIDE	99%	GAS	>480	6	>480	
INTERCEPTOR	107-15-3	ETHYLENEDIAMINE	99%	LIQUID	NT		NT	
INTERCEPTOR	7705-08-0	FERRIC CHLORIDE	SAT	LIQUID	>480	6	>480	
INTERCEPTOR	16872-11-0	FLUOBORIC ACID	99%	LIQUID	NT		NT	
INTERCEPTOR	462-06-6	FLUOROBENZENE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	16961-83-4	FLUOROSILICIC ACID (25WT% AQUEOUS SOL.)	25%	LIQUID	>480	6	>480	
INTERCEPTOR	50-00-0	FORMALDEHYDE	37%	LIQUID	NT		NT	
INTERCEPTOR	64-18-6	FORMIC ACID	99%	LIQUID	>480	6	>480	
INTERCEPTOR	111-30-8	GLUTARALDEHYDE	99%	LIQUID	NT		NT	
INTERCEPTOR	87-68-3	HEXACHLORO-1,3 BUTADIENE	99%	LIQUID			>480	
INTERCEPTOR	10217-52-4	HYDRAZINE HYDRATE (64% HYDRAZINE)	100%	LIQUID	>480	6	410	
INTERCEPTOR	7647-01-0	HYDROCLORIC ACID	37%	LIQUID	>480	6	>480	
INTERCEPTOR	7664-39-3	HYDROFLUORIC ACID	99%	LIQUID	>480	6	>480	
INTERCEPTOR	7664-39-3	HYDROFLUORIC ACID	52%	LIQUID	>480	6	>480	
INTERCEPTOR	7647-01-0	HYDROGEN CHLORIDE	99%	GAS	>480	6	>480	
INTERCEPTOR	7664-39-3	HYDROGEN FLUORIDE	99%	GAS	>480	6	>480	
INTERCEPTOR	10034-85-2	HYDROIODIC ACID	58%	LIQUID	>480	6	>480	
INTERCEPTOR	123-51-3	ISOAMYL ALCHOL	99%	LIQUID	NT		NT	
INTERCEPTOR	75-28-5	ISOBUTANE	99%	GAS	>480	6	>480	
INTERCEPTOR	538-93-2	ISOBUTYLBENZENE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	78-79-5	ISOPRENE	98%	LIQUID	>480	6	>480	
INTERCEPTOR	110-16-7	MALEIC ACID	SAT	LIQUID	>480	6	>480	
INTERCEPTOR	108-31-6	MALEIC ANHYDRIDE	SAT	LIQUID	>480	6	>480	
INTERCEPTOR	79-41-4	METHACRYLIC ACID	99%	LIQUID	>480	6	>480	
INTERCEPTOR	67-56-1	METHANOL	99%	LIQUID	>480	6	>480	
INTERCEPTOR	74-83-9	METHYL BROMIDE	99%	LIQUID	NT		NT	
INTERCEPTOR	74-87-3	METHYL CHLORIDE	99%	GAS	>480	6	>480	
INTERCEPTOR	79-22-1	METHYL CHLOROFORMATE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	78-93-3	METHYL ETHYL KETONE	99%	LIQUID	NT		NT	
INTERCEPTOR	107-31-3	METHYL FORMATE	97%	LIQUID	>480	6	>480	

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Fabric	CAS Number	Chemical	Concentration	State	EN 6529 Permeation Normalised Breakthrough Time to Permeation Rate 1.0µg/min/cm2	CE Class Class according to EN 14325- clause 4.11	ASTM F739 Permeation Normalised Breakthrough Time to Permeation Rate 0.1µg/min/cm2	ASTM F903 Penetration Time to Visible Breakthrough
INTERCEPTOR	74-88-4	METHYL IODIDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	74-93-1	METHYL MERCAPTAN	99%	GAS	>480	6	>480	
INTERCEPTOR	80-62-6	METHYL METHACRYLATE	99%	LIQUID	NT		NT	
INTERCEPTOR	74-89-5	METHYLAMINE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	121-69-7	N,N-DIMETHYLANILINE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	71-36-3	n-BUTANOL	99%	LIQUID	NT		NT	
INTERCEPTOR	123-86-4	N-BUTYL ACETATE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	142-96-1	N-BUTYL ETHER (DI-N-BUTYL ETHER)	99%	LIQUID	>480	6	>480	
INTERCEPTOR	142-82-5	n-HEPTANE	99%	LIQUID	NT		NT	
INTERCEPTOR	110-54-3	N-HEXANE (HEXANE)	99%	LIQUID	>480	6	>480	
INTERCEPTOR	7697-37-2	NITRIC ACID	90%	LIQUID	>480	6	>480	
INTERCEPTOR	10102-43-9	NITRIC OXIDE	99%	SOLID/ POWDER	>480	6	>480	
INTERCEPTOR	98-95-3	NITROBENZENE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	201-854-9	NITROCHLORO BENZENE (ETHANOL SOLUTION)	SAT	LIQUID	>480	6	>480	
INTERCEPTOR	10102-44-0	NITROGEN TETROXIDE	99%	LIQUID/ GAS MIX.	>480	6	>480	
INTERCEPTOR	10544-72-6	NITROGEN TETROXIDE (<10 C)	99%	LIQUID/GAS	>480	6	>480	
INTERCEPTOR	112-20-9	NONYLAMINE	98%	LIQUID	>480	6	>480	
INTERCEPTOR	Mixture	OLEUM	98%	LIQUID	>480	6	>480	
INTERCEPTOR	144-62-7	OXALIC ACID	SAT	SOLID	>480	6	>480	
INTERCEPTOR	108-95-2	PHENOL	90%	LIQUID	>480	6	>480	
INTERCEPTOR	7664-38-2	PHOSPHORIC ACID	85%	LIQUID	>480	6	>480	
INTERCEPTOR	7719-12-2	PHOSPHORUS TRICHLORIDE	95%	LIQUID	NT		NT	
INTERCEPTOR	127-08-2	POTASSIUM ACETATE	SAT	LIQUID	NT		NT	
INTERCEPTOR	7789-00-6	POTASSIUM CHROMATE	SAT	LIQUID	NT		NT	
INTERCEPTOR	1310-58-3	POTASSIUM HYDROXIDE	88%	LIQUID	>480	6	>480	
INTERCEPTOR	123-38-6	PROPIONALDEHYDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	79-09-4	PROPIONIC ACID	99%	LIQUID	>480	6	>480	
INTERCEPTOR	110-86-1	PYRIDINE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	497-19-8	SODIUM CARBONATE	5%	LIQUID	>480	6	>480	
INTERCEPTOR	7681-49-4	SODIUM FLUORIDE (FLUORINE)	99%	LIQUID	>480	6	>480	
INTERCEPTOR	1310-73-2	SODIUM HYDROXIDE	50%	LIQUID	>480	6	>480	
INTERCEPTOR	7681-52-9	SODIUM HYPOCHLORITE	15%	LIQUID	>480	6	>480	
INTERCEPTOR	7446-09-5	SULFUR DIOXIDE	99%	GAS	NT		NT	
INTERCEPTOR	7446-11-9	SULFUR TRIOXIDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	7664-93-9	SULFURIC ACID	98%	LIQUID	>480	6	>480	
INTERCEPTOR	79-34-5	TETRACHLOROETHANE	99%	LIQUID	NT		NT	
INTERCEPTOR	127-18-4	TETRACHLOROETHYLENE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	109-99-9	TETRAHYDROFURAN	99%	LIQUID	>480	6	>480	
INTERCEPTOR	7719-09-7	THIONYL CHLORIDE	99%	LIQUID	30	1	30	
INTERCEPTOR	7550-45-0	TITANIUM TETACHLORIDE	99%	LIQUID	NT		NT	
INTERCEPTOR	108-88-3	TOLUENE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	584-84-9	TOLUENE-2,4-DIISOCYANATE	98%	LIQUID	>480	6	>480	
INTERCEPTOR	79-01-6	TRICHLOROETHYLENE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	75-94-5	TRICHLOROVINYLSILANE	99%	LIQUID	NT		NT	
INTERCEPTOR	998-30-1	TRIETHOXYSILANE	95%	LIQUID	>480	6	>480	
INTERCEPTOR	76-05-1	TRIFLUOROACETIC ACID	99%	LIQUID	NT		NT	
INTERCEPTOR	354-32-5	TRIFLUOROACETYL CHLORIDE	100%	LIQUID	>480	6	>480	
INTERCEPTOR	108-05-4	VINYL ACETATE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	593-60-2	VINYL BROMIDE	99%	LIQUID	>480	6	>480	
INTERCEPTOR	75-01-4	VINYL CHLORIDE	99%	GAS	NT		NT	

PYROLON CRFR	107-06-2	1,2-DICHLOROETHANE	99%					>60
PYROLON CRFR	64-19-7	ACETIC ACID	98%	LIQUID	45	2	40	NT
PYROLON CRFR	8006-64-2	ACETONE		LIQUID			12	>60
PYROLON CRFR	75-05-8	ACETONITRILE	90%				IMM	>60
PYROLON CRFR	75-05-8	ACETONITRILE	99%					45
PYROLON CRFR	Mixture	ACID MIXTURE	100%					>60
PYROLON CRFR	107-13-1	ACRYLONITRILE	99%					>60
PYROLON CRFR	1336-21-6	AMMONIA SOLUTION	29%					<1
PYROLON CRFR	628-63-7	AMYL ACETATE	99%					>60
PYROLON CRFR	71-43-2	BENZENE	99%	LIQUID	IMM			>60
PYROLON CRFR	75-15-0	CARBON DISULFIDE	99%				9	>60
PYROLON CRFR	8002-05-9	CRUDE OIL					9	>60
PYROLON CRFR	74-95-3	DIBROMOMETHANE	99%					>60
PYROLON CRFR	75-09-2	DICHLOROMETHANE	100%					<2
PYROLON CRFR	N/A	DIESEL FUEL	NEAT				15	>60
PYROLON CRFR	109-89-7	DIETHYLAMINE	98%				IMM	
PYROLON CRFR	756-79-6	DIMETHYL METHYLPHOSPHONATE	97%					>60
PYROLON CRFR	68-12-2	DIMETHYLFORMAMIDE	99%					>1
PYROLON CRFR	64-17-5	ETHANOL	95%					>60
PYROLON CRFR	141-78-6	ETHYL ACETATE	99%				16	>60
PYROLON CRFR	75-21-8	ETHYLENE OXIDE	99%					>60
PYROLON CRFR	64-18-6	FORMIC ACID	10%					>60
PYROLON CRFR	64-18-6	FORMIC ACID	99%	LIQUID	120	4	120	
PYROLON CRFR	124-09-4	HEXAMETHYLENEDIAMINE	99%					<2

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Fabric	CAS Number	Chemical	Concentration	State	EN 6529 Permeation Normalised Breakthrough Time to Permeation Rate 1.0µg/min/cm2	CE Class Class according to EN 14325- clause 4.11	ASTM F739 Permeation Normalised Breakthrough Time to Permeation Rate 0.1µg/min/cm2	ASTM F903 Penetration Time to Visible Breakthrough
PYROLON CRFR	110-54-3	HEXANE	99%					>60
PYROLON CRFR	2493-44-9	n-HEXANE			>480	6		>60
PYROLON CRFR	10034-85-2	HYDRIODIC ACID	55%					>60
PYROLON CRFR	7647-01-0	HYDROCHLORIC ACID	12%					<1
PYROLON CRFR	7647-01-0	HYDROCHLORIC ACID	36%					<55
PYROLON CRFR	7664-39-3	HYDROFLUORIC ACID	3%	LIQUID				>60
PYROLON CRFR	7664-39-3	HYDROFLUORIC ACID	48%	LIQUID	20	1		>60
PYROLON CRFR	2885-13-2	ISOPHORONE DIAMINE	99%					>604
PYROLON CRFR	67-63-0	ISOPROPYL ALCOHOL	99%					>60
PYROLON CRFR	MIXTURE	JET FUEL A	NEAT					>60
PYROLON CRFR	Mixture	JP8 JET FUEL	NEAT					>60
PYROLON CRFR	67-56-1	METHANOL	99%					>60
PYROLON CRFR	67-56-1	METHANOL	50%		>480	6		>60
PYROLON CRFR	110-43-0	METHYL AMYL KETONE	99%					>60
PYROLON CRFR	88917-22-0	METHYL ETHER ACETATE (ACETATE)	99%					>60
PYROLON CRFR	78-93-3	METHYL ETHYL KETONE	99%					>60
PYROLON CRFR	108-10-1	METHYL ISOBUTYL KETONE	99%					N. T.
PYROLON CRFR	74-93-1	METHYL MERCAPTAN	99%					>60
PYROLON CRFR	107-87-9	Methyl Propyl Ketone	99%					>60
PYROLON CRFR	1761-71-3	METHYLENEBISCYCLOHEXYLAMINE	95%					>60
PYROLON CRFR	75-04-7	MONOACETHYLAMINE	70%					<4
PYROLON CRFR	108-90-7	MONOCHLOROBENZENE PM	99%					>60
PYROLON CRFR	123-86-4	N-BUTYL ACETATE	99%					>60
PYROLON CRFR	7697-37-2	NITRIC ACID	70%				129	>60
PYROLON CRFR	98-95-3	NITROBENZENE	100%				4	<3
PYROLON CRFR	95-50-1	ORTHODICHLOROBENZENE, GRADE F	99%					>60
PYROLON CRFR	106-46-7	PARA-DICHLOROBENZENE	99%					<4
PYROLON CRFR	109-66-0	PENTANE	99%					>60
PYROLON CRFR	108-95-2	PHENOL	99%					>60
PYROLON CRFR	MIXTURE	PHOSPORIC ACID	85%		>480	6		>60
PYROLON CRFR	7775-09-9	SODIUM CHLORATE SOLUTION	52%					>60
PYROLON CRFR	1310-73-2	SODIUM HYDROXIDE	50%					<60
PYROLON CRFR	1310-73-2	SODIUM HYDROXIDE	40%		>480	6	>480	>60
PYROLON CRFR	100-42-5	STYRENE	99%					>60
PYROLON CRFR	10025-67-9	SULFUR MONOCHLORIDE	98%					>60
PYROLON CRFR	7664-93-9	SULFURIC ACID	60%		>480	6		
PYROLON CRFR	7664-93-9	SULFURIC ACID	96%		45	2	38	45
PYROLON CRFR	MIXTURE	SURROGATE GASOLINE	100%					>60
PYROLON CRFR	127-18-4	TETRACHLOROETHYLENE	100%					>60
PYROLON CRFR	109-99-9	TETRAHYDROFURAN	99%					>60
PYROLON CRFR	108-88-3	TOLUENE	99%				6	>60
PYROLON CRFR	MIXTURE	TRICHLOROBENZENE MIXTURE	99%					>60
PYROLON CRFR	121-44-8	TRIETHYLAMINE	99%					>60
PYROLON CRFR	1330-20-7	XYLENE	99%					N/A

PYROLON CBFR	106-99-0	1,3-Butadiene	99%	Gas	>480	6	>480	
PYROLON CBFR	67-64-1	Acetone	99%	Liquid	>480	6	>480	
PYROLON CBFR	108-88-3	Acetone	99%	Liquid	>480	6	>480	
PYROLON CBFR	75-05-8	Acetonitrile	99%	Liquid	>480	6	>480	
PYROLON CBFR	107-13-1	Acrylonitrile	99%	Liquid	>480	6	>480	
PYROLON CBFR	7664-41-7	Ammonia	99%	Gas	>480	6	>480	
PYROLON CBFR	71-43-2	Benzene	99%	Liquid	>480	6	>480	
PYROLON CBFR	75-15-0	Carbon Disulfide	99%	Liquid	>480	6	>480	
PYROLON CBFR	7782-50-5	Chlorine	99%	Gas	>480	6	>480	
PYROLON CBFR	1333-82-0	Chromic Acid	60%	Liquid	>480	6	>480	
PYROLON CBFR	N/A	Crude Oil	NEAT	Liquid	>480	6	58	
PYROLON CBFR	75-09-2	Dichloromethane	99%	Liquid	>480	6	>480	
PYROLON CBFR	MIXTURE	Diesel Fuel	NEAT	Liquid	>480	6	>480	
PYROLON CBFR	109-89-7	Diethylamine	99%	Liquid	309	5	130	
PYROLON CBFR	68-12-2	Dimethylformamide	99%	Liquid	>480	6	>480	
PYROLON CBFR	141-78-6	Ethyl Acetate	99%	Liquid	>480	6	>480	
PYROLON CBFR	141-78-6	Ethyl Acetate	99%	Liquid	>480	6	>480	
PYROLON CBFR	100-41-4	Ethyl Benzene	99%	Liquid	>480	6	>480	
PYROLON CBFR	107-21-1	Ethylene Glycol	99%	Liquid	>480	6	>480	
PYROLON CBFR	75-21-8	Ethylene Oxide	99%	Gas	>480	6	>480	
PYROLON CBFR	MIXTURE	Gasoline	NEAT	Liquid	>480	6	138	
PYROLON CBFR	7647-01-0	Hydrochloric Acid	37%	Liquid	>480	6	>480	
PYROLON CBFR	7664-39-3	Hydrofluoric Acid	48%	Liquid	>480	6	>480	
PYROLON CBFR	7647-01-0	Hydrogen Chloride	99%	Gas	>480	6	182	
PYROLON CBFR	7664-39-3	Hydrogen Fluoride	99%	Gas	96	3	94	
PYROLON CBFR	67-56-1	Methanol	99%	Liquid	33	2	25	
PYROLON CBFR	74-87-3	Methyl Chloride	99%	Gas	>480	6	>480	
PYROLON CBFR	110-54-3	n-Hexane	Liquid	Liquid	>480	6	>480	
PYROLON CBFR	7697-37-2	Nitric Acid	70%	Liquid	>480	6	>480	
PYROLON CBFR	98-95-3	Nitrobenzene	99%	Liquid	>480	6	>480	
PYROLON CBFR	1310-58-3	Potassium Hydroxide	99%	Liquid	>480	6	>480	
PYROLON CBFR	1310-73-2	Sodium Hydroxide	50%	Liquid	>480	6	>480	
PYROLON CBFR	7664-93-9	Sulfuric Acid	98%	Liquid	>480	6	>480	
PYROLON CBFR	127-18-4	Tetrachloroethylene	99%	Liquid	>480	6	>480	

Fabric	CAS Number	Chemical	Concentration	State	EN 6529 Permeation Normalised Breakthrough Time to Permeation Rate 1.0µg/min/cm2	CE Class Class according to EN 14325- clause 4.11	ASTM F739 Permeation Normalised Breakthrough Time to Permeation Rate 0.1µg/min/cm2	ASTM F903 Penetration Time to Visible Breakthrough
PYROLON CBFR	109-99-9	Tetrahydrofuran	99%	Liquid	21	1	IMM	
PYROLON CBFR	75-01-4	Vinyl Chloride	99%	Gas	>480	6	>480	
PYROLON TPCR	107-06-2	1,2-DICHLOROETHANE	99%					>60
PYROLON TPCR	64-19-7	ACETIC ACID	98%	LIQUID	45	2	40	NT
PYROLON TPCR	8006-64-2	ACETONE		LIQUID			12	>60
PYROLON TPCR	75-05-8	ACETONITRILE	90%				IMM	>60
PYROLON TPCR	75-05-8	ACETONITRILE	99%					45
PYROLON TPCR	Mixture	ACID MIXTURE	100%					>60
PYROLON TPCR	107-13-1	ACRYLONITRILE	99%					>60
PYROLON TPCR	1336-21-6	AMMONIA SOLUTION	29%					<1
PYROLON TPCR	628-63-7	AMYL ACETATE	99%					>60
PYROLON TPCR	71-43-2	BENZENE	99%	LIQUID	IMM			>60
PYROLON TPCR	75-15-0	CARBON DISULFIDE	99%				9	>60
PYROLON TPCR	8002-05-9	CRUDE OIL					9	>60
PYROLON TPCR	74-95-3	DIBROMOMETHANE	99%					>60
PYROLON TPCR	75-09-2	DICHLOROMETHANE	100%					<2
PYROLON TPCR	N/A	DIESEL FUEL	NEAT				15	>60
PYROLON TPCR	109-89-7	DIETHYLAMINE	98%				IMM	
PYROLON TPCR	756-79-6	DIMETHYL METHYLPHOSPHONATE	97%					>60
PYROLON TPCR	68-12-2	DIMETHYLFORMAMIDE	99%					>1
PYROLON TPCR	64-17-5	ETHANOL	95%					>60
PYROLON TPCR	141-78-6	ETHYL ACETATE	99%				16	>60
PYROLON TPCR	75-21-8	ETHYLENE OXIDE	99%					>60
PYROLON TPCR	64-18-6	FORMIC ACID	10%					>60
PYROLON TPCR	64-18-6	FORMIC ACID	99%	LIQUID	120	4	120	
PYROLON TPCR	124-09-4	HEXAMETHYLENEDIAMINE	99%					<2
PYROLON TPCR	110-54-3	HEXANE	99%					>60
PYROLON TPCR	2493-44-9	n-HEXANE			>480	6		>60
PYROLON TPCR	10034-85-2	HYDRIODIC ACID	55%					>60
PYROLON TPCR	7647-01-0	HYDROCHLORIC ACID	12%					<1
PYROLON TPCR	7647-01-0	HYDROCHLORIC ACID	36%					<55
PYROLON TPCR	7664-39-3	HYDROFLUORIC ACID	3%	LIQUID				>60
PYROLON TPCR	7664-39-3	HYDROFLUORIC ACID	48%	LIQUID	20	1		>60
PYROLON TPCR	2885-13-2	ISOPHORONE DIAMINE	99%					>604
PYROLON TPCR	67-63-0	ISOPROPYL ALCOHOL	99%					>60
PYROLON TPCR	MIXTURE	JET FUEL A	NEAT					>60
PYROLON TPCR	Mixture	JP8 JET FUEL	NEAT					>60
PYROLON TPCR	67-56-1	METHANOL	99%					>60
PYROLON TPCR	67-56-1	METHANOL	50%		>480	6		>60
PYROLON TPCR	110-43-0	METHYL AMYL KETONE	99%					>60
PYROLON TPCR	88917-22-0	METHYL ETHER ACETATE (ACETATE)	99%					>60
PYROLON TPCR	78-93-3	METHYL ETHYL KETONE	99%					>60
PYROLON TPCR	108-10-1	METHYL ISOBUTYL KETONE	99%					N. T.
PYROLON TPCR	74-93-1	METHYL MERCAPTAN	99%					>60
PYROLON TPCR	107-87-9	Methyl Propyl Ketone	99%					>60
PYROLON TPCR	1761-71-3	METHYLENEBISCYCLOHEXYLAMINE	95%					>60
PYROLON TPCR	75-04-7	MONOACETHYLAMINE	70%					<4
PYROLON TPCR	108-90-7	MONOCHLOROBENZENE PM	99%					>60
PYROLON TPCR	123-86-4	N-BUTYL ACETATE	99%					>60
PYROLON TPCR	7697-37-2	NITRIC ACID	70%				129	>60
PYROLON TPCR	98-95-3	NITROBENZENE	100%				4	<3
PYROLON TPCR	95-50-1	ORTHODICHLOROBENZENE, GRADE F	99%					>60
PYROLON TPCR	106-46-7	PARA-DICHLOROBENZENE	99%					<4
PYROLON TPCR	109-66-0	PENTANE	99%					>60
PYROLON TPCR	108-95-2	PHENOL	99%					>60
PYROLON TPCR	MIXTURE	PHOSPORIC ACID	85%		>480	6		>60
PYROLON TPCR	7775-09-9	SODIUM CHLORATE SOLUTION	52%					>60
PYROLON TPCR	1310-73-2	SODIUM HYDROXIDE	50%					<60
PYROLON TPCR	1310-73-2	SODIUM HYDROXIDE	40%		>480	6	>480	>60
PYROLON TPCR	100-42-5	STYRENE	99%					>60
PYROLON TPCR	10025-67-9	SULFUR MONOCHLORIDE	98%					>60
PYROLON TPCR	7664-93-9	SULFURIC ACID	60%		>480	6		
PYROLON TPCR	7664-93-9	SULFURIC ACID	96%		45	2	38	45
PYROLON TPCR	MIXTURE	SURROGATE GASOLINE	100%					>60
PYROLON TPCR	127-18-4	TETRACHLOROETHYLENE	100%					>60
PYROLON TPCR	109-99-9	TETRAHYDROFURAN	99%					>60
PYROLON TPCR	108-88-3	TOLUENE	99%				6	>60
PYROLON TPCR	MIXTURE	TRICHLOROBENZENE MIXTURE	99%					>60
PYROLON TPCR	121-44-8	TRIETHYLAMINE	99%					>60
PYROLON TPCR	1330-20-7	XYLENE	99%					N/A

Normalised Breakthrough is not suitable for assessing Safe-Use Time! Safe Use Time should be calculated.
See last page

Assessment of Safe Use Times and Chemical Suit Selection

Permeation test "Normalised Breakthrough" is suitable for comparison of permeation performance of fabrics but is not intended nor should be used as an indication of how long a garment can be safely used against any specific chemical in any specific application. (see introductory guidance notes).

So how do you select a chemical suit and assess how long it can be safely used?

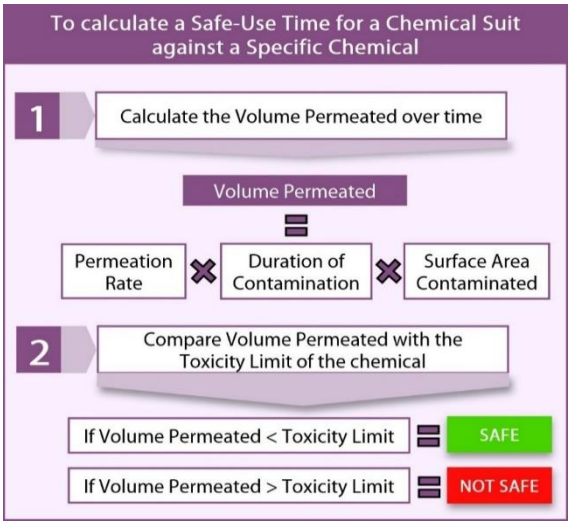
1. Permeation is a natural phenomenon occurring at a molecular level as the molecules of a chemical pass between those of a barrier suit fabric. Permeation is an inevitable process that cannot be prevented by chemical suit fabric - only delayed and slowed by the use of combinations of barrier polymer films.

2. Permeation testing measures the rate of permeation and "normalised Breakthrough" data from tests is useful for comparison of fabric performance, but not to indicate whether a suit is safe to use for any time period.

3. Selection of the best chemical suit for the task should be based on a risk assessment involving more than just the chemical. Various task and environmental factors, which may indicate required strength, design or other properties, may all influence the selection. Lakeland's "Guide to Chemical Suit Selection" provides a guide to the types of factors that may be important, under the general headings of The Chemical, the Task & Hazard Type and Environmental Factors.

4. A critical issue is the chemical and its effects; does it have immediate or long term effects? Will a user be aware of contamination when it occurs? How toxic is it? How much of it will cause harm?

5. Safe Use Times for chemical suits - an indication of how long a garment can be safely used - can be calculated manually using a simple two-part formula:-



Permasure®

Easy Access to Safe Use Times for over 4000 chemicals

The difficulty with manual calculation of Safe-Use Times is the availability of information such as permeation rates and chemical toxicity.

Permasure® is Lakeland's on-Line tool for easy calculation of safe use times for Lakeland chemical suits. It uses established molecular modelling of chemical and fabric polymers to calculate permeation rates (including accounting for the effect of temperature) and volumes permeated over time, then compares this with chemical toxicity limits to indicate whether the user is safe or not within a specified task duration.

It is simple to use, works on any browser-enabled device including lap-tops, tablets and smart-phones and in seconds provides usable, real-world information on over 4000 chemicals.

Contact your local Lakeland regional office or distributor for a copy of the Lakeland Guide to Chemical Suit Selection or for more information on Permasure or Lakeland Protective Clothing

Use the chemical search tool at www.lakeland.com for the latest information on chemical permeation tests

USA: info@lakeland.com Europe: sales-europe@lakeland.com Canada: sales-canada@lakeland.com Mexico: Servicioaclientes@lakeland.com

Asia-Pacific: sales-ap@lakeland.com Latin-America: latinoamerica@lakeland.com Australia: nastevenson@lakeland.com India: sales-india@lakeland.com

Russia: Rusinfo@lakeland.com

www.lakeland.com

Version 3: Updated August 2019

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