



Versatile Chemical Protection Starts with Microchem®

Working with chemicals, you and your colleagues face hazards every day. Everything from an accidental spill or splash of light liquid to industrial chemicals, warfare agents and radioactive processes.

Permeation is the process by which hazardous liquid chemical moves through a material on a molecular level. Molecules of liquid absorb into the outer surface of the material. They then diffuse across the fabric and are released or desorbed from the inner surface.

The resistance of Microchem fabric to permeation by a hazardous chemical is determined by measuring the breakthrough time and permeation rate of the chemical through the fabric. Permeation tests are carried out to EN ISO 6529, EN369, EN374-3.

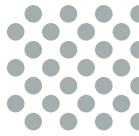
For more information on test methods or to discuss permeation testing of your specific chemical, or chemical mixture, please visit www.microgard.com or contact the tech team on +44 (0) 1482 625444

Microgard® 2000				
Chemical	CAS No.	Synonyms	Normalised Breakthrough Time (NBT)	Classification according to EN14325: 2004
Sodium Hydroxide 10%	1310-73-2	Soda Lye, Caustic Soda,	>480	6
Sodium Hydroxide 30%	1310-73-2	Soda Lye, Caustic Soda	>480	6
Microgard® 2500 Plus				
Carbon Disulfide	75-15-0		5	0
Sodium Hydroxide 50%	1310-73-2	Soda Lye, Caustic Soda,	>480	6
Sulphuric Acid 98+%	7664-93-9	Oil of Vitriol, Oleum (98%), Nordhausen Acid (98%), BOV	>480	6
Microchem® 3000				
2-[Dimethyl Amino] Pyridine 99+%	n/a		57	2
2, Ethylhexanoic Acid	149-57-5		>480	6
2-2 [Amino Ethoxy Ethanol]	n/a		>480	6
2-Chloroethanol 99%	107-07-3		>480	6
Acetic Acid Glacial	64-19-7	Pyroligneous Acid (crude)	>480	6
Acetic Anhydride	108-24-7		>480	6
Acetone	67-64-1	2-Propanone, Pyroacetic Ether, Dimethyl Ketone,	21	0
Acetonitrile	75-05-8	Ethanenitrile, Methyl Cyanide, Cyanomethane,	5	0
Acrylamide	79-06-1		>480	6
Acrylic Acid	79-10-7		>480	6
Ammonia (liquid - 33°C)	1336-21-6		2	0
Ammonia Gas	7664-41-7		2	0
Ammonium Hydrogen Fluoride	1341-49-7		>480	6
Aniline	62-53-3	Aminobenzene, Aniline Oil, Phenylamine, Kyanol,	>480	6
Aqueous bacteria, staphylococcus aureus	n/a		>480	6
Benlate	n/a		>480	6
Benzene	71-43-2	Cyclohexatriene, Benzol,	2	0
Benzene Sulphonyl Chloride (99%)	98-09-9		>480	6
Benzyl Chloride (99w%)	100-44-7		16	1
Butanol n	71-36-3	Propyl Carbinol, Butyl Alcohol,	>480	6
Butyl Acrylate n	141-32-2		15	1
Carbon Disulfide	75-15-0		5	0
Chlorine Water (sat'd 99.9+%)	7782-50-5		2	0
Chloroacetyl Chloride	79-04-9		36	2
Chloroform	67-66-3		Imm	0
Cresol m	100-84-5		>480	6
Dichloroethane 1,2	107-06-2		4	0
Dichloroethylene trans 1,2	n/a		2	0
Dichloromethane	75-09-2	Methylene Bichloride, Methylene Chloride,	Imm	0
Diesel	68334-30-5		15	1
Di-Ethyl Ether	60-29-7		Imm	0
Diethylamine	109-89-7		Imm	0
Difluoroaniline 2,4	367-25-9		>480	6
Dimethyl Sulphate	77-78-1		>480	6
Dimethylamine 40%	124-40-3		>480	6
Dimethylformamide	68-12-2	DMF, DMFA,	>480	6
Epichlorohydrin (99%)	106-89-8		>480	6
Epoxy Hardener WH-6 (960223)	n/a		>480	6
Ethyl Acetate	141-78-6	Acetic Acid Ethyl Ester, Vinegar Naphtha, Acetic Ester,	2	0
Ethylene Chlorohydrin 99%	107-07-3		>480	6
Ethylene Glycol	107-21-1	2-Ethanediol, Glycol,	>480	6
Formaldehyde 37%	50-00-0	Formol, Formalin,	>480	6
Formic Acid 90%	64-18-6		>480	6
Furfural	98-01-1	Pyroligneous Aldehyde, Artificial Oil of Ants,	>480	6
Hexamethylene Diamine	124-09-4		>480	6
Hexane n	110-54-3		Imm	0
Hydrazine monohydrate 98%	n/a		>540	6
Hydrobromic Acid	10035-10-6		>480	6
Hydrochloric Acid 36%	7647-01-0	Muriatic Acid, Hydrogen Chloride,	>480	6

EN Class	Normalised Breakthrough Time in minutes
0	Immediate (no class)
1	≥ 10
2	≥ 30
3	≥ 60
4	≥ 120
5	≥ 240
6	≥ 480 (or >540)

For more information or guidance on specific chemicals, and details of test methods used for permeation testing, visit www.microgard.com or contact the Microgard tech team on +44 (0) 1482 625444.

All chemical tests and breakthrough times quoted relate to laboratory tests on fabrics only. Seams and closures may have lower breakthrough times - particularly when worn or damaged. The final determination of suitability is always the user's responsibility.



Microgard®/Microchem® Chemical Permeation Chart

Microchem® 3000				
Chemical	CAS No.	Synonyms	Normalised Breakthrough Time (NBT)	Classification according to EN14325: 2004
Hydrofluoric Acid 40%	7664-39-3	Fluohydric Acid	>480	6
Hydrogen Peroxide 35%	7722-84-1	Albone, Peroxide, Hydrogen Dioxide, Hydroperoxide,	>480	6
Isopropyl Alcohol	67-63-0	2-Propanol, IPA, Isopropanol, Petrohol, Dimethyl Carbinol	>480	6
Mercury	7439-97-6		>480	6
Methanol	67-56-1	Methyl Alcohol, Wood Alcohol, Wood Naphtha, Wood Spirit	>480	6
Methyl Iodide	74-88-4		>480	6
N. Methyl Pyrrolidone	872-50-4		>480	6
Nitric Acid Conc (70%)	7697-37-2	Aquafortis,	>480	6
Nitrobenzene	98-95-3	Oil of Mirbane, Nitrobenzol,	>480	6
Octave	n/a		>480	6
Paraffin	8002-74-2		25	1
Petrol (unleaded)	8006-61-9	Gasoline, Benzin,	2	0
Phenol liquid @45°C	108-95-2		>480	6
Phenol/Benzyl Alcohol 25/5	n/a		>480	6
Phosphoric Acid o 85+%	7664-38-2	Orthophosphoric Acid	>480	6
Phosphoric Pentachloride	10026-13-8		>480	6
Phosphorous Oxychloride	10025-87-3		9	0
Phthalic Anhydride (135°C)	85-44-9		>480	6
Pivalic Acid	3377-92-2		>480	6
Polyethylene Glycol 200	n/a		>480	6
Pro-set 125M Resin (960217)	n/a		>480	6
Pro-set 226pf Hardener (960228)	n/a		>480	6
Propionitrile	107-12-0		70	3
Reglone	85-00-7		>480	6
Ripcord	52315-07-8		>480	6
Round-Up	38641-94-0		>480	6
Sodium Bisulphate 40%	7681-38-1		>480	6
Sodium Cyanide (satd soln)	143-33-9		>480	6
Sodium Fluoride (satd)	7681-49-4		>480	6
Sodium Hydroxide 50%	1310-73-2	Soda Lye, Caustic Soda,	>480	6
Sodium Hypochlorite	7681-52-9	Bleach	>480	6
Sodium Methlyate 30%	124-41-4		>480	6
Sodium Monochloride	n/a		>480	6
Sodium Silicofluoride (sat'd)	16893-85-9		>480	6
Styrene	100-42-5	Cinnamol, Styrol, Vinylbenzene, Ethylbenzene, Styrolene,	2	0
Sulphuric Acid 98+%	7664-93-9	Oil of Vitriol, Oleum (98%), Nordhausen Acid (98%), BOV	>480	6
SUVA HCFC-123 (1,1 Dichloro-2,2,2 Trifluoroethane)	n/a		251	5
TEGO 51	n/a		>480	6
Tetrahydrofuran (THF)	109-99-9		Imm	0
Thionyl Chloride	779-19		Imm	0
Thiourea Dioxide (sat'd)	1758-73-2		>480	6
Titanium Chloride	10049-06-6		2	0
Toluene	108-88-3	Toluol, Methacide, Phenylmethane, Methyl Benzene,	3	0
Toluene 2,4 Diisocyanate	584-84-9	TDI, Nacconate 100	>480	6
Toluidine o	95-53-4		>480	6
Transformer Oil	n/a		60	3
Trichloroacetic Acid 98%	76-03-9		>480	6
Trichloroethylene	79-01-6	Algylen, Westrosol, Trimar, Trilene, Triline, Trielene,	2	0
Triethylamine	121-44-8		Imm	0
Xylene m	1330-20-7	Xylol, Diethyl Benzene,	2	0
Zinc Bromide (sat'd soln)	7699-45-8		>480	6



Microchem® 4000 Chemical Permeation Chart



Microchem® 4000				
Chemical	CAS No.	Synonyms	Normalised Breakthrough Time (NBT)	Classification according to EN14325: 2004
2-[2 Amino Ethoxy Ethanol]	n/a		>480	6
2, Ethyhexanoic Acid	149-57-5		>480	6
2,4 Difluoroaniline	367-25-9		>480	6
2-2 (Amino Ethoxy Ethanol)	n/a		>480	6
2-Aminoethanol (98wt%)	96-80-0		>480	6
2-Chloro-Acryl-Nitrile	n/a		>480	6
3,4-Dichlorobenzotrifluoride (Liquid)	526-84-7		>480	6
3-N, N-Diethylenetriamine	111-40-0		>480	6
4-Chloroaniline 75°C	106-47-8		>480	6
Acetic Acid Glacial	64-19-7	Pyroligneous Acid (crude)	>480	6
Acetic Anhydride	108-24-7		>480	6
Acetone	67-64-1	2-Propanone, Pyroacetic Ether, Dimethyl Ketone,	>480	6
Acetonitrile	75-05-8	Ethanenitrile, Methyl Cyanide, Cyanomethane,	>480	6
Acrylamide	79-06-1		>480	6
Acrylic Acid	79-10-7		>480	6
Acrylonitrile	75-05-8		>480	6
Ammonia (liquid - 33°C)	1336-21-6		2	0
Ammonia Gas	7664-41-7		2	0
Ammonium Hydrogen Fluoride	1341-49-7		>480	6
Ammonium Hydroxide 20% v/v	1336-21-6		145	4
Amylacetate	628-63-7	Isoamyl Acetate, Banana Oil, Amylacetate Ester,	>480	6
Aniline	62-53-3	Aminobenzene, Aniline Oil, Phenylamine, Kyanol,	>480	6
Aqueous bacteria, staphylococcus aureus	n/a		>480	6
Arsenic Dust	7440-38-2		>480	6
Benlate	n/a		>480	6
Benzene	71-43-2	Cyclohexatriene, Benzol,	>480	6
Benzyl Chloride (99w%)	100-44-7		>480	6
Bromine (Pure, Liquid)	7726-95-6		2	0
Bromine Soln. (Sat'd)	n/a		10	1
Butanol n	71-36-3	Propyl Carbinol, Butyl Alcohol,	>480	6
Butyl Acrylate n	141-32-2		>480	6
Chlorine (gas)	7782-50-5		>480	6
Chlorine Water (sat'd 99.9+%)	7782-50-5		>480	6
Chloroacetic Acid (99wt%) [Solid-vap perm.]	79-11-8		>480	6
Chloroacetic Acid Ethyl Ester (99wt%)	n/a		>480	6
Chloroacetyl Chloride	79-04-9		>480	6
Chlorobenzene	108-90-7		>480	6
Chloroform	67-66-3		11	1
Chlorosulphonic Acid	7790-94-5		69	3
Chlorotoluene o	n/a		>480	6
Chlorotoluene p	106-43-4		>480	6
Cresol-m in Water Solution (20g/l)	108-39-4		>480	6
Cresol-o in Water Solution (20g/l)	95-48-7		>480	6
Cresol-p in Water Solution (20g/l)	106-44-5		>480	6
Cyclohexylamine (>99.5% wt%)	n/a		83	3
Di (aminopropyl) Amine	n/a		>480	6
Dichloroacetone 1,1	n/a		>480	6
Dichloroacetone 1,3	n/a		>480	6
Dichloroethane 1,2	107-06-2		>480	6
Dichloromethane	75-09-2	Methylene Bichloride, Methylene Chloride,	12	1
Diesel	68334-30-5		>480	6
Diethanolamine (99wt%)	111-42-2		>480	6
Di-Ethyl Ether	60-29-7		2	0
Diethylamine	109-89-7		4	0
Diethylenetriamine	111-40-0		>480	6
Dimethyl Sulphate	77-78-1		>480	6
Dimethyl Sulphoxide (99+%)	67-68-5	DMSO	>480	6
Dimethylamine 40%	124-40-3		>480	6
Dimethylformamide	68-12-2	DMF, DMFA,	>540	6
Dipropylene Glycol Methyl Ether	34590-94-8		>480	6
Di-tert-butyl peroxide (98 wt%)	n/a		>540	6
Epichlorohydrin (99%)	106-89-8		>480	6
Epoxy Hardener WH-6 (960223)	n/a		>480	6
Ethanol	64-17-5	Absolute Alcohol, methylated spirits, ethyl alcohol	>480	6
Ethanolamine (98wt%)	141-43-5		>480	6
Ethyl Acetate	141-78-6	Acetic Acid Ethyl Ester, Vinegar Naphtha, Acetic Ester,	>480	6
Ethyl Benzene	100-41-4		>480	6
Ethyl Chloroacetate (99wt%)	105-39-5		>480	6
Ethylene Diamine	n/a		>480	6
Ethylene Dibromide	106-93-4		>480	6
Ethylene Glycol	107-21-1	2-Ethanediol, Glycol,	>480	6
Ethylene Oxide (gas at ca.1 Atmos)	75-21-8		>480	6

EN Class	Normalised Breakthrough Time in minutes
0	Immediate (no class)
1	≥ 10
2	≥ 30
3	≥ 60
4	≥ 120
5	≥ 240
6	≥ 480 (or >540)

For more information or guidance on specific chemicals, and details of test methods used for permeation testing, visit www.microgard.com or contact the Microgard tech team on +44 (0) 1482 625444.

All chemical tests and breakthrough times quoted relate to laboratory tests on fabrics only. Seams and closures may have lower breakthrough times - particularly when worn or damaged. The final determination of suitability is always the user's responsibility.



Microchem® 4000 Chemical Permeation Chart

Microchem® 4000				
Chemical	CAS No.	Synonyms	Normalised Breakthrough Time (NBT)	Classification according to EN14325: 2004
Fluorobenzene	462-06-6		105	3
Formaldehyde 37%	50-00-0	Formol, Formalin,	>480	6
Formic Acid 90%	64-18-6		>480	6
Furfural	98-01-1	Pyroigneous Aldehyde, Artificial Oil of Ants,	>480	6
Hexamethylene Disilazane (1,1,1,3,3,3)	n/a		>480	6
Hexane n	110-54-3		>480	6
Hydrazine monohydrate 98%	n/a		>540	6
Hydrobromic Acid	10035-10-6		>480	6
Hydrochloric Acid 36%	7647-01-0	Muriatic Acid, Hydrogen Chloride,	>480	6
Hydrofluoric Acid 40%	7664-39-3	Fluohydric Acid	>480	6
Hydrofluoric Acid 60%	7663-39-3		>480	6
Hydrogen Peroxide 35%	7722-84-1	Albone, Peroxide, Hydrogen Dioxide, Hydroperoxide,	>480	6
Hydrogen sulphide	04/06/7783		>480	6
Isopropyl Alcohol	67-63-0	2-Propanol, IPA, Isopropanol, Petrohol, Dimethyl Carbinol	>480	6
Maleic Anhydride	108-31-6		>480	6
Mercury	7439-97-6		>480	6
Methanol	67-56-1	Methyl Alcohol, Wood Alcohol, Wood Naphtha, Wood Spirit	>480	6
Methyl Chloride	74-87-3		>480	6
Methyl Ethyl Ketone	78-93-3	MEK, Ethyl Methyl Ketone	>540	6
Methyl methacrylate (>99.0 wt%)	n/a		>540	6
Methyl Parathion	298-00-0	dimethyl-4-nitrophenyl, phosphorothionate	>480	6
N,N-Dimethylacetateamide (liquid)	526-84-7		>480	6
N. Methyl Pyrrolidone	872-50-4		>480	6
Nitric Acid Conc (70%)	7697-37-2	Aquafortis,	>480	6
Nitrobenzene	98-95-3	Oil of Mirbane, Nitrobenzol,	>480	6
Paraffin	8002-74-2		>480	6
Perchloroethylene	127-18-4	Ankilostin, Tetropil, Tetrachloroethylene, Tetracap, Didkene	>480	6
Petrol (unleaded)	8006-61-9	Gasoline, Benzin,	>480	6
Phenol liquid (90%)	108-95-2	Phenylic Acid, Phenic Acid, Phenyl Hydroxide, Oxybenzene	>540	6
Phenol liquid @45°C	108-95-2		>480	6
Phenol/Benzyl Alcohol 25/5	n/a		>480	6
Phosphoric Acid o 85+%	7664-38-2	Orthophosphoric Acid	>480	6
Phosphoric Pentachloride	10026-13-8		>480	6
Pivalic Acid	3377-92-2		>480	6
P-Nitrochlorobenzene 88°C	100-00-5		>480	6
Polyethylene Glycol 200	n/a		>480	6
Pro-set 125M Resin (960217)	n/a		>480	6
Pro-set 226pf Hardener (960228)	n/a		>480	6
Propionaldehyde	123-38-6		>480	6
Propionic Acid	79-09-4		>480	6
Propionitrile	107-12-0		>480	6
Propylene Oxide 99%	75-56-9		30	2
Reglone	85-00-7		>480	6
Ripcord	52315-07-8		>480	6
Round-Up	38641-94-0		>480	6
Sodium Cyanide (satd soln)	143-33-9		>480	6
Sodium Fluoride (satd)	7681-49-4		>480	6
Sodium Hydroxide 50%	1310-73-2	Soda Lye, Caustic Soda,	>480	6
Sodium Hypochlorite	7681-52-9	Bleach	>480	6
Sodium Monochloride	n/a		>480	6
Sodium Silicofluoride (sat'd)	16893-85-9		>480	6
Styrene	100-42-5	Cinnamol, Styrol, Vinylbenzene, Ethylbenzene, Styrolene,	>480	6
Sulphuric Acid 95+%	7664-93-9		>480	6
Sulphuric Acid 98+%	7664-93-9	Oil of Vitriol, Oleum (98%), Nordhausen Acid (98%), BOV	>480	6
SUVA HCFC-123 (1,1 Dichloro-2,2 Trifluoroethane)	n/a		380	5
TEGO 51	n/a		>480	6
Tetrabutyl Methyl Ether	1634-04-4		73	3
Tetracloroethylene	79-01-6		>480	6
Tetrahydrofuran (THF)	109-99-9		19	2
Tetramethyl Ammonium Hydroxide (Sat'd)	75-59-2		>480	6
Thionyl Chloride	07/09/7719		2	0
Thiourea Dioxide (sat'd)	1758-73-2		>480	6
Toluene	108-88-3	Toluol, Methacide, Phenylmethane, Methyl Benzene,	>480	6
Toluene 2,4 Diisocyanate	584-84-9	TDI, Naconate 100	>480	6
Toluidine o	95-53-4		>480	6
Transformer Oil	n/a		>480	6
Trichloroacetic Acid 98%	76-03-9		>480	6
Trichloroethylene	79-01-6	Algyten, Westrosol, Trimar, Trilene, Triline, Trielene,	7	0
Triethylamine	121-44-8		5	0
Vinyl Acrylate	n/a		>480	6
Vinyl Benzyl Chloride	n/a		>480	6
Xylene m	1330-20-7	Xytol, Diethyl Benzene,	>480	6