

Microgard/Microchem Chemical Permeation Chart

Microgard® 2000 Plus				
Chemical	CAS Number	Synonyms/Comments	EN Result (mins) 1.0µg/cm2/min	Classification According to EN14325: 2004
Sodium Hydroxide (aq., 10 wt%)	1310-73-2	Soda Lye, Caustic Soda	>480	6
Sodium Hydroxide (aq., 40 wt%)	1310-73-2	Soda Lye, Caustic Soda	>480	6

Microgard® 2500 Plus				
Chemical	CAS Number	Synonyms/Comments	EN Result (mins) 1.0µg/cm2/min	Classification According to EN14325: 2004
Carbon Disulfide	75-15-0		5	0
Sodium Hydroxide 50%	1310-73-2	Soda Lye, Caustic Soda,	>480	6
Sulphuric Acid (50 wt%)	7664-93-9		>480	6

Microchem® 3000						
Chemical	CAS Number	Synonyms/Comments	EN Result (mins) 1.0µg/cm2/min	Classification According to EN14325: 2004	ISO 6529 Result (mins) 0.1µg/cm2/min	ASTM Result BT at 0.1µg/cm2/min
Acetic Acid Glacial (99.88 wt%)	64-19-7	Pyroligneous Acid (crude)	>540	6		
Acetic Anhydride (99.5 wt%)	108-24-7		>540	6		
Acetone (> 99wt%)	67-64-1	2-Propanone, Pyroacetic Ether, Dimethyl Ketone,	30	2	4	5
Acetonitrile (>99.98 wt%)	75-05-8	Ethanenitrile, Methyl Cyanide,Cyanomethane,	7	0	Imm	Imm
Acrylamide	79-06-1		>480	6		
Acrylic Acid	79-10-7		>480	6		
Ammonia Gas (> 99.98 wt%) 1 atmos.	7664-41-7		3	0	1	1
Ammonium Hydrogen Fluoride	1341-49-7		>480	6		
Aniline	62-53-3	Aminobenzene, Aniline Oil, Phenylamine, Kyanol,	>480	6		
Benlate	17804-35-2		>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		
Bromine (Pure, Liquid)	7726-95-6		2	0		
Bromine Soln. (Sat'd)	7726-95-6		2	0		
Butanol n	71-36-3	Propyl Carbinol, Butyl Alcohol,	>480	6		
Butyl Acrylate n	141-32-2		15	1		
t-butyl methyl ether	1634-04-4		1	0		
Carbon Disulfide	75-15-0		5	0	Imm	Imm
Chlorine (> 99.8 wt%) Gas, 1 atmos.	7782-50-5		10	1	9	9
Chlorine Water (sat'd 99.9+%)	7782-50-5		2	0		
Chloroacetyl Chloride	79-04-9		36	2		
2-Chloroethanol 99%	107-07-3		>480	6		
Chloroform	67-66-3		Imm	0		
Cresols, mixed	1319-77-3		>480	6		
Dichloroethane 1,2	107-06-2		4	0		
Dichloroethylene trans 1,2	156-60-5		2	0		
Dichloromethane (99.99 wt%)	75-09-2	Methylene Bichloride, Methylene Chloride,	Imm	0	Imm	Imm
Diesel	68334-30-5		15	1		
Di-Ethyl Ether	60-29-7		Imm	0		
Diethylamine (99.9 wt%)	109-89-7		Imm	0	Imm	Imm
Difluoroaniline 2,4	367-25-9		>480	6		
2-(Dimethyl Amino) Pyridine 99+%	5683-33-0		57	2		
Dimethyl Sulphate	77-78-1		>480	6		
Dimethylamine 40%	124-40-3		>480	6		
Dimethylformamide N, N (>99.8 wt%)	68-12-2	DMF, DMFA,	>480	6		
Epichlorohydrin (99%)	106-89-8		>480	6		
2, Ethylhexanoic Acid	149-57-5		>480	6		
Ethyl Acetate (99.98 wt%)	141-78-6	Acetic Acid Ethyl Ester, Vinegar Naphtha, Acetic Ester,	3	0	Imm	Imm
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,	>540	6		
Heptane n (99.8 wt%)	142-82-5		Imm	0	Imm	Imm
Hexamethylene Diamine	124-09-4		>480	6		
Hexane n	110-54-3		Imm	0	Imm	Imm
Hydrazine monohydrate 98% (containing Hydrazine, 64-65 wt%)	7803-57-8		>540	6	>540	>540
Hydrobromic Acid	10035-10-6		>480	6		
Hydrofluoric Acid 37%	7664-39-3	Fluohydric Acid	>480	6		
Hydrofluoric Acid (62-64% in urea)	7664-39-3 (in 57-13-6)		41	2		
Hydrogen Chloride (> 99.0 wt%) Gas, 1 atmos	7647-01-0		8	0	Imm	Imm
Hydrogen Peroxide 35%	7722-84-1	Albone, Peroxide, Hydrogen Dioxide, Hydroperoxide,	>480	6		
Iodine (solid)	7553-56-2		>540	6		
Isopropyl Alcohol	67-63-0	2-Propanol, IPA, Isopropanol, Petrohol, Dimethyl Carbinol,	>480	6		
Mercury	7439-97-6	Quicksilver	>540	6	>540	>540
Methanol (> 99.5 wt%)	67-56-1	Methyl Alcohol, Wood Alcohol, Wood Naphtha, Wood Spirit	>540	6	Imm	Imm
2-Methoxyacetic Acid	625-45-6		>540	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	75747-77-2		>480	6		
Paraffin	92062-35-6		25	1		
Perchloric Acid (30%)	7601-90-3		>540	6	>540	>540
Petrol (unleaded)	8006-61-9	Gasoline, Benzin,	2	0		
Phenol liquid @ 45°C	108-95-2		>480	6		
Phenol/Benzyl Alcohol 25/5	108-95-2 (in 100-51-6)		>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	75-98-9	Trimethyl acetic acid	>480	6		

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Polyethylene Glycol 200	25322-68-3		>480	6		
Propionaldehyde	123-38-6		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 Chloride	7647-14-5		>480	6		
Sodium Cyanide (satd soln)	143-33-9		>480	6		
Sodium Fluoride (satd)	7681-49-4		>480	6		
Sodium Hydroxide (aq., 40 wt%)	1310-73-2	Soda Lye, Caustic Soda,	>540	6	>540	>540
Sodium Hydroxide 50%	1310-73-2	Soda Lye, Caustic Soda,	>480	6		
Sodium Hypochlorite	7681-52-9	Bleach	>480	6		
Sodium Methylate 30%	124-41-4		>480	6		
Sodium Silicofluoride (sat'd)	16893-85-9		>480	6		
Styrene	100-42-5	Cinnamol, Styrol, Vinylbenzene, Ethylbenzene, Styrolene,	2	0		
Sulphuric Acid (96 wt%)	7664-93-9		>540	6	>540	>540
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)	306-83-2		251	5		
Tetrahydrofuran (99.98 wt%)	109-99-9	THF	Imm	0	Imm	Imm
Thionyl Chloride	7719-09-07		Imm	0		
Thiourea Dioxide (sat'd)	1758-73-2		>480	6		
Toluene (99.99 wt%)	108-88-3	Toluol, Methacide, Phenylmethane, Methyl Benzene,	Imm	0	Imm	Imm
Toluene 2,4 Diisocyanate	584-84-9	TDI, Nacconate 100	>480	6		
Toluidine o	95-53-4		>480	6		
Trichloroacetic Acid 98%	76-03-9		>480	6		
Trifluoroacetic Acid (99.0 wt%)	76-05-1		>540	6		
Trichloroethylene	79-01-6	Algylen, Westrosol, Trimar, Trilene, Triline, Trielene,	2	0		
Triethylamine	121-44-8		Imm	0		
Vinyl Acrylate	2177-18-6		3	0		
Xylene m	1330-20-7	Xylol, Dimethyl Benzene,	2	0		
Zinc Bromide (sat'd soln)	7699-45-8		>480	6		

Microgard/Microchem Chemical Permeation Chart

Microchem® 4000						
Chemical	CAS Number	Synonyms/Comments	EN Result (mins) 1.0µg/cm2/min	Classification According to EN14325: 2004	ISO 6529 Result (mins) 0.1µg/cm2/min	ASTM Result BT at 0.1µg/cm2/min
Acetic Acid Glacial (99.88 wt%)	64-19-7	Pyroligneous Acid (crude)	>540	6		
Acetic Anhydride (99.5 wt%)	108-24-7		>540	6		
Acetone (> 99wt%)	67-64-1	2-Propanone, Pyroacetic Ether, Dimethyl Ketone,	>540	6	127	131
Acetonitrile (>99.98 wt%)	75-05-8	Ethanenitrile, Methyl Cyanide,Cyanomethane,	>540	6	>540	>540
Acrylamide	79-06-1		>480	6		
Acrylic Acid	79-10-7		>480	6		
Acrylonitrile	107-13-1		>480	6		
2-Aminoethanol (98 wt%)	141-43-5		>480	6		
Ammonia (liquid - 33°C)	7664-41-7		2	0		
Ammonia Gas (> 99.98 wt%) 1 atmos.	7664-41-7		60	3	18	18
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		
Arsenic Dust	7440-38-2		>480	6		
Benlate	17804-35-2		>480	6		
Benzene	71-43-2	Cyclohexatriene, Benzol,	>540	6	157	161
Benzyl Chloride (99w%)	100-44-7		>480	6		
Bis(3-aminopropyl)amine	56-18-8		>480	6		
Bromine (Pure, Liquid)	7726-95-6		10	1		
Bromine Soln. (Sat'd)	7726-95-6		10	1		
Butanol n	71-36-3	Propyl Carbinol, Butyl Alcohol,	>480	6		
Butyl Acrylate n	141-32-2		>480	6		
t-butyl methyl ether	1634-04-4		>480	6		
Carbon Disulfide	75-15-0		2	0	2	2
Chlorine (> 99.8 wt%) Gas, 1 atmos.	7782-50-5		>540	6	430	>540
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%)	105-39-5		>480	6		
Chloroacetyl Chloride	79-04-9		>480	6		
2-ChloroAcrylonitrile	920-37-6		>480	6		
4-Chloroaniline 75°C	106-47-8		>480	6		
Chlorobenzene	108-90-7		>480	6		
Chloroform	67-66-3		11	1		
2-Chloro-5-chloromethylpyridine	70258-18-3	Tested at 60 deg C	>540	6		
Chlorosulphonic Acid	7790-94-5		69	3		
Chlorotoluene o	95-49-8		>480	6		
Chlorotoluene p	106-43-4		>480	6		
Chromium trioxide (50 wt%)	1333-82-0	Chromium (VI) oxide, Chromic Acid	>540	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%)	108-91-8	Aminocyclohexane, Cyclohexanamine	83	3	55	
Di (aminopropyl) Amine (Diamine)	56-18-8	Bis(3-aminopropyl)amine	>480	6		
Dichloroacetone 1,1	513-88-2	1,1-dichloro-2-propanone	>480	6		
Dichloroacetone 1,3	534-07-6	1,3-dichloro-2-propanone	>480	6		
1,2 Dichloro-4-(trifluoromethyl)benzene	328-84-7	3,4 Dichlorobenzotrifluoride (Liquid)	>480	6		
2,2-Dichlorodiethylether	111-44-4		>540	6		
Dichloroethane 1,2	107-06-2		>480	6		
Dichloromethane (99.99 wt%)	75-09-2	Methylene Bichloride, Methylene Chloride,	12	1	Imm	Imm
Diesel	68334-30-5		>480	6		
Diethanolamine (99wt%)	111-42-2		>480	6		
Di-Ethyl Ether	60-29-7		2	0		
Diethylamine (99.9 wt%)	109-89-7		Imm	0	Imm	Imm
Diethylenetriamine	111-40-0		>480	6		
Difluoroaniline 2,4	367-25-9		>480	6		
N,N-Dimethylacetamide (liquid)	127-19-5		>480	6		
Dimethyl Dicarboxylate	4525-33-1	DMDC, dimethyl pyrocarbonate, Velcorin	>540	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 N, N (>99.8 wt%)	68-12-2	DMF, DMFA,	>540	6	>540	
Dipropylene Glycol Methyl Ether	34590-94-8		>480	6		
Di-tert-butyl peroxide (98 wt%)	110-05-4		>540	6	>540	
Epichlorohydrin (99%)	106-89-8		>480	6		
Ethanol	64-17-5	Absolute Alcohol, methylated spirits, ethyl alcohol	>540	6	>540	>540
Ethanolamine (98wt%)	141-43-5		>480	6		
Ethion	563-12-2		>480	6		
2, Ethylhexanoic Acid	149-57-5		>480	6		
Ethyl Acetate (99.98 wt%)	141-78-6	Acetic Acid Ethyl Ester, Vinegar Naphtha, Acetic Ester,	>540	6	40	43
Ethyl Benzene	100-41-4		>480	6		
Ethyl Parathion	56-38-2		>480	6		
Ethylene Diamine	107-15-3		>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		>540	6	>540	>540
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	Pyroligneous Aldehyde, Artificial Oil of Ants,	>480	6		
Fyfanon (malathion)	121-75-5		>480	6		
Gas Oil (SHELL "Heizöl HVS 300 CST")	68476-33-5		>540	6		
Heptane n (99.8 wt%)	142-82-5		>540	6	>540	>540

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Hexachloro-1, 3-butadiene	87-68-3	HCBD	>540	6	>540	>540
Hexamethyl Disilazane	999-97-3		>480	6		
Hexane n	110-54-3		>540	6	>540	>540
Hydrazine monohydrate 98% (containing Hydrazine, 64-65 wt%)	7803-57-8		>540	6	>540	>540
Hydrobromic Acid	10035-10-6		>540	6	>540	>540
Hydrochloric Acid 37%	7647-01-0	Muriatic Acid, Hydrogen Chloride,	>480	6		
Hydrofluoric Acid 37%	7664-39-3	Fluohydric Acid	>480	6		
Hydrofluoric Acid (71-75 wt%)	7664-39-3		>540	6	175	175
Hydrogen Chloride (> 99.0 wt%) Gas, 1 atmos	7647-01-0		>540	6	125	125
Hydrogen Fluoride (anhydrous) Gas	7664-39-3		58	2		
Hydrogen Peroxide 35%	7722-84-1	Albone, Peroxide, Hydrogen Dioxide, Hydroperoxide,	>480	6		
Hydrogen Sulphide (>99wt%)	7783-06-4		>540	6	>540	>540
Iodine (solid)	7553-56-2		>540	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	Quicksilver	>480	6		
Methanol (> 99.5 wt%)	67-56-1	Methyl Alcohol, Wood Alcohol, Wood Naphtha, Wood Spirit	>540	6	>540	>540
Methyl Chloroformate	79-22-1		>540	6		
Methyl Chloride	74-87-3		>480	6		
Methyl Ethyl Ketone	78-93-3	MEK, Ethyl Methyl Ketone	>540	6	53	
Methyl methacrylate (>99.0 wt%)	80-62-6		>540	6	>540	
Methyl Parathion	298-00-0	dimethyl-4-nitrophenyl, phosphorothionate	>480	6		
N-Methyl Pyrrolidone	872-50-4		>480	6		
Nicotine (>99.0 wt%)	54-11-5		>540	6		
Nitric Acid Conc (70%)	7697-37-2	Aquafortis,	>540	6	>540	>540
Nitric Acid (≥ 99.5 %)	7697-37-2	(White) Fuming Nitric Acid	>540	6	>540	>540
Nitrobenzene	98-95-3	Oil of Mirbane, Nitrobenzol,	>480	6		
Paraffin	92062-35-6		>480	6		
Perchloroethylene	127-18-4	Ankilostin, Tetropil, Tetrachloroethylene, Tetracap, Didkene	>480	6		
Petrol (unleaded)	8006-61-9	Gasoline, Benzin,	>480	6		
Phenol (Liquified, approx 90 wt% with water)	108-95-2	Phenylic Acid, Pehnic Acid, Phenyl Hydroxide, Oxybenzene	>540	6	>540	
Phenol liquid @ 45°C	108-95-2		>480	6		
Phenol/Benzyl Alcohol 25/5 (in 100-51-6)	108-95-2 (in 100-51-6)		>480	6		
Phosgene (COCl2)	75-44-5		387	5		
Phosphoric Acid o 85+%	7664-38-2	Orthophosphoric Acid	>480	6		
Phosphoric Pentachloride	10026-13-8		>480	6		
Phosphorus Trichloride	7719-12-2		>540	6		
Pivalic Acid	75-98-9	Trimethyl acetic acid	>480	6		
P-Nitrochlorobenzene 88°C	100-00-5		>480	6		
Polyethylene Glycol 200	25322-68-3		>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		17	1	3	5
Reglone	85-00-7		>480	6		
Ripcord	52315-07-8		>480	6		
Round-Up	38641-94-0		>480	6		
Sodium Chloride	7647-14-5		>480	6		
Sodium Cyanide (satd soln)	143-33-9		>480	6		
Sodium Fluoride (satd)	7681-49-4		>480	6		
Sodium Hydroxide (aq., 40 wt%)	1310-73-2	Soda Lye, Caustic Soda,	>540	6	>540	>540
Sodium Hydroxide 50%	1310-73-2	Soda Lye, Caustic Soda,	>480	6		
Sodium Hypochlorite	7681-52-9	Bleach	>480	6		
Sodium Silicofluoride (sat'd)	16893-85-9		>480	6		
Styrene	100-42-5	Cinnamol, Styrol, Vinylbenzene, Ethylbenzene, Styrolene,	>480	6		
Sulphur Dioxide Gas	7446-09-5		170	4		
Sulphuric Acid (50 wt%)	7664-93-9		>540	6	>540	>540
Sulphuric Acid (96 wt%)	7664-93-9		>540	6	>540	>540
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)	306-83-2		380	5		
Tetrahydrofuran (99.98 wt%)	109-99-9	THF	5	0	Imm	Imm
Tetramethyl Ammonium Hydroxide (Sat'd)	75-59-2		>480	6		
Thionyl Chloride	7719-09-07		2	0		
Thiourea Dioxide (sat'd)	1758-73-2		>480	6		
Toluene (99.99 wt%)	108-88-3	Toluol, Methacide, Phenylmethane, Methyl Benzene,	>540	6	<10	<10
Toluene 2,4 Diisocyanate	584-84-9	TDI, Nacconate 100	>480	6		
Toluidine o	95-53-4		>480	6		
Triacetonediamine	36768-62-4		>540	6		
Trichloroacetic Acid 98%	76-03-9		>480	6		
Trichloroethylene	79-01-6	Algylen, Westrosol, Trimar, Trilene, Triline, Trielene,	7	0		
Triethylamine	121-44-8		5	0		
Vinyl Acrylate	2177-18-6		>480	6		
Vinyl Benzyl Chloride	57458-41-0		>480	6		
Xylene m	1330-20-7	Xylol, Dimethyl Benzene,	>480	6		
m-Xylylenediamine	1477-55-0		>540	6		

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 technical@microgard.com	EN Class	Normalised Breakthrough Time in minutes
	0	Immediate (no class)
Safety Note: All chemical tests and breakthrough times given relate to laboratory tests on fabrics only. Seams and closures may have lower breakthrough times, particularly when worn or damaged. It is the user's responsibility to select an appropriate garment, gloves, boots and other equipment for the particular use. The user shall be responsible for determining how long the garment can be worn for the particular use and whether it can be suitably cleaned for re-use. Microgard Limited does not give any warranties or make any representations about its garments other than those contained in the official literature supplied by Microgard Limited with each garment.	1	≥ 10
	2	≥ 30
	3	≥ 60
	4	≥ 120
	5	≥ 240
	6	≥ 480