

**MEDIQ**

# KLINION PROTECTION Chemical permeation table

Breakthrough time

The following guide was developed from information gathered from several sources. Many factors affect the breakthrough time of glove materials, such as chemical concentration and length of time the glove is exposed to it. The information's are based on published data and not on individually tests.

There is little information available for vinyl gloves, as it is easily permeated by organic solvents, and not in the past considered an alternative where high protection is required, most literature on vinyl describes it as best for short procedures not involving body fluids or harsh chemicals.

Immersed at room temp in minutes

EN 374 Chemical Permeation	Nitrile	Vinyl	Latex
5-Fluorouracil 50.000 ppm	240		
Acetaldehyde	4		4
Acetic Acid	5		21
Acetic Anhydride			3
Acetone	3	12	2,4
Acetonitrile (Methyl Cyanide)	5	30	0,6
Acrolein	4,2		
Acrylic Acid			80
Acrylonitrile	5		
Aldehyde	4		
Allylamine			1,2
Ammonium Fluoride	360		360
Ammonium Hydroxide	360		90
Amyl Acetate (Isoamyl Acetate)	5		5,4
Amyl Alcohol	30		7,2
Amyl Nitrile	176		
Aniline	18		25
Benzaldehyde	5		10
Benzene	4,2		0,6
Benzethonium Chloride		480	480
Benzonitrile (Phenyl Cyanide)			0,6
Bisphthalate	260		360
Boric Acid	480		
Bromoacetonitrile			0,6
Bromobenzene	13,2		
Bromoethanol			1,2
Bromopropanol			1,2
Bromopropionic Acid			190
Butadiene			1,2
Butanol (Isobutanol)	30		1,2
Butyl Acetate	5		1,8
Butyl Acrylate	68		
Butylamine	19,8		1,2
Butyl Cellosolve (Butoxyethanol)	9		45
Butyl Chloride (Chlorobutane)	12		
Butyl Nitrite	98		
Butyltoluene	360		
Butyrolactone			60
Carbon Disulfide	1		1
Carbon Tetrachloride	5		3,6
Carmustine 3.300 ppm	80		

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Cellosolve (Ethoxyethanol)			25
Cellosolve Acetate (Ethoxyethyl Acetate)	5		10
Chloroacetonitrile			0,6
Chlorobenzene	5		5
Chlorobutadiene (Chlorophrene)	3,6		
Chloroform	2,4		0,6
Chloronaphthalene	174		5
Chloronitropropane			1,2
Chloropropanol			0,6
Chlorotoluene (Benzyl Chloride)	15		
Chromic Acid	240		70
Cisplatin 1.000 ppm	240		
Citric Acid			360
Cresol	5		13,8
Cyclohexane	360		1,8
Cyclohexanol	360	480	10
Cyclohexanone	5		
Cyclohexylamine			1,2
Cyclophosphamide 20.000 ppm	240		
Dacarbazine 10.000 ppm	240		
Diacetone Alcohol (Hydroxy Methyl Pentanone)			15
Diamylamine	480		
Dibromoethane (Ethylene Dibromide)	27		1,2
Dibutylamine	480		
Dibutyl Phthalate (Butyl Phthalate)	30		16,8
Dichlorobenzene	5		
Dichlorobutene	2,4		
Dichloroethane (Ethylene Dichloride)	2,4		0,6
Dichloroethylene	7,2		
Dichloromethane	6		2
Diesel	240		
Diethanolamine	480		
Diethylamine	5		4
Diethylaminoethanol	480		
Diethylenedioxide (Dioxane)	5		2,4
Diisobutylamine	480		
Diisobutyl Ketone	120		15
Diisopropylamine	195		
Dimethylacetamide	5		15
Dimethylamine			1,8
Dimethylaminopropylamine			0,6
Dimethylbutylamine	81		
Dimethylethanolamine (Dimethylaminoethanol)	480		4,8
Dimethylformamide	5		25
Dimethylhydrazine	6		3,6
Dimethylmercury			0,25
Dimethylsulfoxide	28		80
Dimethylvinylchloride	9		

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Diethylphthalate			5
Divinylbenzene	60		
Doxorubicin Hydrochloride 2.000 ppm	240		
Epichlorohydrin	19,8		1,2
Ethanol	240		12
Ethanolamine	360		210
Ether (Ethyl Ether, Diethyl Ether)	13,8		10,2
Ethyl Acetate	5	20	4,8
Ethylamine	66		66
Ethylbenzene	5		
Ethyl Cellosolve (Ethoxyethanol)	92		0,6
Ethyl Cyanide			0,6
Ethylenediamine			4,8
Ethylene Glycol	360		360
Ethylglycol Ether			25
Ethylhexanoic Acid	240		
Ethyl Methacrylate	22,8		
Etoposide 20.000 ppm	240		
Formaldehyde	480	60	6
Formic Acid	5		120
Freon (Dichlorodifluoromethane)	10,2		2,4
Furaldehyde (Furfural)	5		15
Furfuryl Alcohol	28		28
Gasoline	30		5
Glutaraldehyde	240	240	480
Heptane	360		1,2
Hexachlorocyclopentadiene	480		
Hexamethyldisilazane			15
Hexamethylphosphoramide	90		
Hexane	79		4,8
Hydraulic Fluid	240		5
Hydrazine	480		150
Hydrochloric Acid (Muriatic Acid)	360		290
Hydrofluoric Acid	120		90
Hydrogen Peroxide	360		480
Hydrogen Phosphide			30
Hydroquinone	360		360
Iminobispropylamine			6
Isoprene	52		
Kerosene	360		5
Lactic Acid	360		
Lauric Acid	360		360
Maleic Acid	360		360
Methacrylic Acid	10,2		
Methacrylonitrile	7		1,2
Methanesulfonic Acid			
Methanol	10,8	45	1,8
Methyl Acetate			1,2

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Methyl Acrylate			1,2
Methylamine	480		25
Methylaminopropylamine			3
Methyl Bromide			5
Methyl Butyl Ether	5		5
Methyl Cellosolve	40		20
Methyl Chloride			0,6
Methylene Dichloride (Methylene Chloride)	1,8		4
Methyl Ethyl Ketone	3,6		1,2
Methyl Ethyl Ketone Peroxide			45
Methyl Glycol Ether			20
Methylhexanone (Methyl Isoamyl Ketone)	5		
Methyl Iodide	0,6		1,8
Methyl Isobutyl Ketone	12		6
Methyl Isocyanate			0,6
Methyl Methacrylate	5		1,2
Methylpyrrolidone	5		75
Mineral Oil	240		
Mineral Spirits	360		5
Monoethanolamine	360		50
Monoethylamine	66		
Morpholine	5		20
Naphtha	360		5
Nitric Acid	5		5
Nitrobenzene	5		4,8
Nitroethane			1,8
Nitrohydrochloric Acid (Aqua Regia)			5
Nitromethane	30		1,2
Nitropropane	12		1,8
Octane (Isoctane)	360		5
Octanol	360		30
Oleic Acid	360		30
Oxalic Acid	360		360
Paclitaxel (Taxol) 6.000 ppm	240		
Palmitic Acid	30		4,8
Pentachlorophenol	480		5
Pentane	1,8		0,6
Perchloric Acid	360		360
Perchloroethylene			5
Petroleum Ether	240		
Phenol	32		16,2
Phenolphthalein	480		480
Phosphoric Acid	360		360
Picric Acid			5
Polychlorinated Biphenyl			4,8
Potassium Hydroxide	360		80
Promethazine Hydrochloride	480		
Propanol (Isopropanol)	30	2	7,2

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Propanolamine (Monoisopropanolamine)			30
Propiolactone			19,8
Propylacetate	16,8		4,8
Propylenediamine (Diaminopropane)			3
Propyleneglycol			360
Propylene Oxide			0,6
Propyl Ether (Isopropyl Ether)	60		3,6
Propylmethacrylate	60		
Pyridine	5,4		2,4
Rubber Solvent			5
Silicon Etch			5
Sodium Hydroxide	360		360
Sodium Hypochlorite	360		360
Stoddard Solvent	240		5
Styrene	30		10,2
Sulfuric Acid (Oleum)	5		5
Tannic Acid	360		360
Tetrachloroethane	13,2		1,8
Tetrachloroethylene	5		1,2
Tetraethylenepentamine			106
Tetrahydrofuran	0,6		1,2
Tetramethylenediamine	108		
Thio-Tepa 10.000 ppm	240		
Toluene	5		0,6
Toluene Diisocyanate	222		7
Triallylamine	480		
Trichlorobenzene	5		4,8
Trichloroethane	1,8		1,2
Trichloroethylene	5		0,6
Trichloropropane	21		
Tricresylphosphate	60		45
Triethanolamine	480		60
Triethylamine	480		
Triethylene Tetramine	480		
Trifluoroethanol	7,2		60
Tripropylamine	480		
Turpentine	30		5
Valeronitrile			1,8
Vinyl Chloride	342		342
Vinylcyclohexane	392		
Vinylidene fluoride			1,2
Xylene	5		1,2