

Chemical Compatibility Guide for: SHOWA M7005PF Biodegradable Disposable Nitrile Gloves

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M7005PF Permeation Data

June 14, 2023

Chemical	CAS Number	TTL	TTL	INT
		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Acetaldehyde	75-07-0	< 1	< 1	< 1
Acetic Acid, 5%	64-19-7	>480	>480	>240
Acetic Acid, 10%	64-19-7	>480	>480	>240
Acetic Acid, 25%	64-19-7	248	289	>240
Acetic Acid, 50%	64-19-7	75	95	87
Acetic Acid, 84%	64-19-7	4	10	20
Acetic Acid, 99%	64-19-7	3	4	6
Acetone	67-64-1	< 1	< 1	< 1
Acetonitrile	75-05-8	< 1	< 1	< 1
Acetophenone	98-86-2	< 1	< 1	< 1
Acetoxyacetyl Chloride	13831-31-7	2	2	2
Acetyl Chloride	75-36-5	< 1	< 1	NT
Acetylacetone	123-54-6	< 1	< 1	< 1
Acrylamide (s), > 98%	79-06-1	>480	>480	>240
Acrylamide, 50%	79-06-1	>480	>480	>240
Acrylic Acid	79-10-7	6	8	12
Acrylonitrile	107-13-1	< 1	< 1	< 1
AeroShell Fluid 41	mixture	>480	>480	>240
Allyl Alcohol	107-18-6	4	4	4
Aluminum Chloride (s), > 98%	7446-70-0	>480	>480	>240
Aluminum Chloride, Saturated (> 45%)	7446-70-0	>480	>480	>240
Aluminum Sulfate (s), > 99%	10043-01-3	>480	>480	>240
Aluminum Sulfate, Saturated (> 36%)	10043-01-3	>480	>480	>240
Ammonia, Anhydrous (gas)	7664-41-7	NR	NR	NR
Ammonium Fluoride (s), > 98%	12125-01-8	> 480	> 480	>240
Ammonium Fluoride, 80%	12125-01-8	NT	NT	NT
Ammonium Fluoride, 40%	12125-01-8	>480	>480	>240
Ammonium Hydroxide, 10%	1336-21-6	34	48	NT
Ammonium Hydroxide, 25%	1336-21-6	16	18	NT
Ammonium Hydroxide, 29%	1336-21-6	15	16	NT

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		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Ammonium Hydroxide, 32%	1336-21-6	13	15	NT
Ammonium Nitrate (s), > 98%	6484-52-2	>480	>480	>240
Ammonium Nitrate, Saturated (> 150%)	6484-52-2	>480	>480	>240
Ammonium Phosphate, Dibasic (s), > 98%	7783-28-0	>480	>480	>240
Ammonium Phosphate, Dibasic, Saturated (> 69%)	7783-28-0	>480	>480	>240
Ammonium Phosphate, Monobasic (s), > 98%	7722-76-1	>480	>480	>240
Ammonium Phosphate, Monobasic, Saturated (> 36%)	7722-76-1	>480	>480	>240
Amyl Acetate	628-63-7	2	2	2
Amyl Alcohol	71-41-0	51	75	135
Aniline	62-53-3	3	3	3
Antimony Tributyrates (s), 95%	53856-17-0	>480	>480	>240
Aqua Regia	8007-56-5	NT	NT	NT
Benzaldehyde	100-52-7	1	1	1
Benzene	71-43-2	< 1	< 1	< 1
Benzoic Acid (s), 99%	65-85-0	>480	>480	>240
Benzoic Acid, Saturated, > 4%	65-85-0	>480	>480	>240
Benzotrifluoride	98-08-8	NT	NT	NT
Benzoyl peroxide (s), > 98%	94-36-0	>480	>480	>240
Benzyl Alcohol	100-51-6	< 1	< 1	< 1
Boric acid, Saturated, > 4%	10043-35-3	>480	>480	>240
Boric acid (s), > 99%	10043-35-3	>480	>480	>240
Bromine	7726-95-6	< 1	< 1	< 1
Bromoethyl acetate, 2-	927-68-4	1	1	1
Bromoform	75-25-2	< 1	< 1	< 1
Butadiene-1,3 (gas)	106-99-0	NR	NR	NR
Butanol, 1-	71-36-3	33	45	53
Butyl Acetate	123-86-4	1	1	1
Butyl Acrylate	141-32-2	2	3	2
Butyl Methacrylate	97-88-1	NT	NT	NT
Butyl Toluene, p-tert	98-51-1	7	18	14
Butylamine	109-73-9	< 1	< 1	< 1

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Calcium Carbonate (s), > 99%	471-34-1	>480	>480	>240
Calcium Chloride (s), > 96%	10043-52-4	>480	>480	>240
Calcium Chloride, Saturated (> 75%)	10043-52-4	>480	>480	>240
Calcium Gluconate, Anhydrous (s), > 98%	299-28-5	>480	>480	>240
Calcium Gluconate, Saturated (> 3%)	299-28-5	>480	>480	>240
Calcium Hydroxide (s), >95%	1305-62-0	>480	>480	>240
Calcium Magnesium Carbonate (s), > 98%	16389-88-1	>480	>480	>240
Calcium Oxide (s), >99%	1305-78-8	>480	>480	>240
Calcium Phosphate Dibasic (s), > 98%	7757-93-9	>480	>480	>240
Calcium Phosphate Dibasic Dihydrate (s), > 98%	7789-77-7	>480	>480	>240
Calcium Sulfate (s), > 97%	7778-18-9	>480	>480	>240
Calcium Sulfate, Saturated (> 2%)	7778-18-9	>480	>480	>240
Carbon, mesoporous (s), > 99%	1333-86-4	>480	>480	>240
Carbon Disulfide	75-15-0	< 1	< 1	< 1
Carbon Tetrachloride	56-23-5	9	10	26
Charcoal, activated (s), > 99%	7440-44-0	>480	>480	>240
Chlorine (gas)	7782-50-5	NR	NR	NR
Chloroacetic Acid, 70%	79-11-8	52	59	NT
Chloroacetic Acid, 80%	79-11-8	50	56	NT
Chloroacetyl Chloride	79-04-9	NT	NT	NT
Chlorobenzene	108-90-7	< 1	< 1	< 1
Chlorobenzotrifluoride, 4-	98-56-6	NT	NT	NT
Chloroform	67-66-3	< 1	< 1	< 1
Chromic Acid, 50%	1333-82-0	< 1	< 1	NT
Chromium (VI) oxide (s), 99%	1333-82-0	>480	>480	>240
Citric Acid (s), 99%	77-92-9	>480	>480	>240
Citric Acid, 30%	77-92-9	>480	>480	>240
Citric Acid, 50%	77-92-9	>480	>480	>240
Citric Acid, Saturated, >75%	77-92-9	>480	>480	>240
Cobalt Sulfate, Heptahydrate (s), > 99%	10026-24-1	>480	>480	>240

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		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Cobalt Sulfate, Saturated (> 36%)	10026-24-1	>480	>480	>240
Copper Sulfate, Anhydrous (s), >98%	7758-98-7	>480	>480	>240
Copper Sulfate, Saturated (> 20%)	7758-98-7	>480	>480	>240
Copper Sulfate, Monohydrate (s), >98%	10257-54-2	>480	>480	>240
Copper Sulfate, Saturated (> 20%)	10257-54-2	>480	>480	>240
Copper Sulfate, Pentahydrate (s), >98%	7758-99-8	>480	>480	>240
Copper Sulfate, Saturated (> 20%)	7758-99-8	>480	>480	>240
Corn Oil	8001-30-7	NT	NT	NT
Coolanol 25R	Mixture	>480	>480	>240
Cresols	1319-77-3	< 1	< 1	< 1
Cumene	98-82-8	1	1	1
Cyclohexane	110-82-7	88	158	> 240
Cyclohexanol	108-93-0	54	61	157
Cyclohexanone	108-94-1	1	1	1
Cyclohexyldimethylamine	98-94-2	4	NT	13
Decane	124-18-5	>480	>480	>240
Denacol EX-521	118549-88-5	>480	>480	>240
Diacetone Alcohol	123-42-2	6	7	7
Dibutyl Phthalate	84-74-2	50	60	55
Dichlorobenzene, 1,2-	95-50-1	< 1	< 1	< 1
Dichloroethylene, 1,1-	75-35-4	< 1	< 1	< 1
Dichloropropane, 1,2-	78-87-5	< 1	< 1	< 1
Dichlorobenzotrifluoride, 3,4-	328-84-7	NT	NT	NT
Diesel Fuel #2	68476-34-6	> 480	> 480	> 240
Diesel Oil	68334-30-5	> 480	> 480	> 240
Diestone DLS	mixture	NT	NT	NT
Diethanolamine	111-42-2	15	21	18
Diethyl Ether	60-29-7	< 1	< 1	< 1
Diethylamine	109-89-7	< 1	< 1	< 1
Diethylene Glycol	111-46-6	>480	>480	> 240
Diethylene Glycol Monobutyl Ether	112-34-5	NT	NT	NT

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Diethylene Glycol Monobutyl Ether Acetate	124-17-4	NT	NT	NT
Diethylene Glycol Monoethyl Ether	111-90-0	NT	NT	NT
Diethylene Glycol Monoethyl Ether Acetate	112-15-2	NT	NT	NT
Diethylene Glycol Monohexyl Ether	112-59-4	NT	NT	NT
Diethylene Glycol Monomethyl Ether	111-77-3	NT	NT	NT
Diisobutyl Ketone	108-83-8	9	10	11
Dimethyl Sulfate	77-78-1	2	5	2
Dimethylacetamide, N,N-	127-19-5	1	1	1
Dimethylamine, 40%	124-40-3	1	1	1
Dimethylamine (gas), >99%	124-40-3	NR	NR	NR
Dimethylaniline	121-69-7	4	4	4
Dimethylformamide-N, N	68-12-2	1	1	1
Dimethylpiperazine	106-58-1	8	NT	25
Dimethylsulfoxide	67-68-5	6	11	7
Dioxane, 1,4-	123-91-1	1	1	1
Dipropyl Ketone	123-19-3	NT	NT	NT
Dipropylene Glycol Monobutyl Ether	29911-28-2	NT	NT	NT
Dipropylene Glycol Monomethyl Ether	34590-94-8	NT	NT	NT
Dipropylene Glycol Monopropyl Ether	29911-27-1	NT	NT	NT
Disodium Ethylenediaminetetraacetic Acid (s), > 97%	6381-92-6	>480	>480	>240
Disodium Ethylenediaminetetraacetic Acid, Saturated (> 10%)	6381-92-6	>480	>480	>240
Divinylbenzene	1321-74-0	2	2	2
Embalming Fluid Maryland	mixture	7	14	7
Epichlorohydrin	106-89-8	< 1	< 1	< 1
Ethanol	64-17-5	8	12	15
Ethanolamine	141-43-5	2	2	2
Ethidium bromide (s), 95%	1239-45-8	>480	>480	>240
Ethidium bromide, 1%	1239-45-8	>480	>480	>240
Ethidium bromide, 10%	1239-45-8	>480	>480	>240

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Ethidium bromide, 5%	1239-45-8	>480	>480	>240
Ethyl Acetate	141-78-6	< 1	< 1	< 1
Ethyl Butanol	97-95-0	66	90	106
Ethyl Propyl Ketone	589-38-8	NT	NT	NT
Ethylamine (gas), > 97%	75-04-7	NR	NR	NR
Ethylamine solution, 70%	75-04-7	< 1	< 1	< 1
Ethylbenzene	100-41-4	1	1	1
Ethylene Dichloride	107-06-2	< 1	< 1	< 1
Ethylene Glycol	107-21-1	>480	>480	>240
Ethylene Glycol Monobutyl Ether	111-76-2	16	16	22
Ethylene Glycol Monobutyl Ether Acetate	112-07-2	NT	NT	NT
Ethylene Glycol Monoethyl Ether	110-80-5	< 1	NT	2
Ethylene Glycol Monopropyl Ether	2807-30-9	6	NT	8
Ethylene Oxide (gas)	75-21-8	NR	NR	NR
Ethylenediamine, 99%	107-15-3	< 1	1	< 1
Ethylenediaminetetraacetic acid (s), > 98%	60-00-4	>480	>480	>240
Everest 3.0 AG Herbicide	mixture	12	12	12
Fluoboric Acid, 49%	16872-11-0	10	NT	NT
Formaldehyde, 37%	50-00-0	18	241 to 360	21
Formic Acid, 90%	64-18-6	< 1	< 1	< 1
Furfural	98-01-1	1	1	1
Gasoline (Premium Unleaded)	8032-32-4	176	>480	>240
Gasoline (Regular Unleaded)	8006-61-9	161	>480	>240
Glutaraldehyde solution, 50%	111-30-8	30	45	100
Glycerol, > 99%	56-81-5	>480	>480	>240
Glycerol Solution, > 70%	56-81-5	>480	>480	>240
Glyphosate (s), 95%	1071-83-6	>480	>480	>240
Graphite (s), > 98%	7782-42-5	>480	>480	>240
Heptane	142-82-5	222	356	> 240
Hexamethyldisilazane	999-97-3	> 480	> 480	> 240
Hexane	110-54-3	79	127	> 240
Hexene	592-41-6	8	9	15

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		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Hydrobromic Acid, 48%	10035-10-6	>480	>480	>240
Hydrochloric Acid, 10%	7647-01-0	>480	>480	>240
Hydrochloric Acid, 20%	7647-01-0	>480	>480	>240
Hydrochloric Acid, 32%	7647-01-0	>480	>480	>240
Hydrochloric Acid, 37%	7647-01-0	116	124	>240
Hydrofluoric Acid, 10%	7664-39-3	48	97	NT
Hydrofluoric Acid, 20%	7664-39-3	26	53	NT
Hydrofluoric Acid, 30%	7664-39-3	16	33	NT
Hydrofluoric Acid, 40%	7664-39-3	9	9	NT
Hydrofluoric Acid, 48%	7664-39-3	5	5	NT
Hydrogen Chloride, 99% (gas)	7647-01-0	NR	NR	NR
Hydrogen Fluoride, 99% (gas)	7664-39-3	NR	NR	NR
Hydrogen peroxide solution, 3%	7722-84-1	61 to 90	181 to 240	NT
Hydrogen peroxide solution, 6%	7722-84-1	61 to 90	121 to 180	NT
Hydrogen peroxide solution, 10%	7722-84-1	31 to 45	61 to 90	NT
Hydrogen peroxide solution, 30%	7722-84-1	11 to 30	31 to 45	NT
Hydrogen peroxide solution, 50%	7722-84-1	1 to 5	11 to 30	NT
Hydroxylamine, 50%	7803-49-8	>480	>480	>240
HyJet IV-A Plus	mixture	24	28	43
HyJet V	mixture	30	30	43
Iron (II) Chloride (s), 98%	7758-94-3	>480	>480	>240
Iron (II) Chloride Solution, 45%	7758-94-3	>480	>480	>240
Iron (II) Chloride Solution, Saturated, >68%	7758-94-3	>480	>480	>240
Iron (III) Chloride (s), >97%	7705-08-0	>480	>480	>240
Iron (III) Chloride Solution, 45%	7705-08-0	>480	>480	>240
Iron (III) Chloride Solution, Saturated, >91%	7705-08-0	>480	>480	>240
Iron Oxide (s), 99%	1309-37-1	>480	>480	>240
Iron (II) Sulfate (s), 99%	7782-63-0	>480	>480	>240
Iron (II) Sulfate, Saturated (> 29%)	7782-63-0	>480	>480	>240
Iron (III) Sulfate (s), 97%	15244-10-7	>480	>480	>240
Iron (III) Sulfate, Saturated (> 25%)	15244-10-7	>480	>480	>240
Isoamyl Acetate	123-92-2	< 1	< 1	< 1

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		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Isoamyl Alcohol	123-51-3	63	123	195
Isobutanol	78-83-1	44	74	71
Isooctane	540-84-1	103	166	> 240
Isopropyl Acetate	108-21-4	1	1	1
Isopropyl Alcohol	67-63-0	24	32	63
Jet A	mixture	>480	>480	>240
Jet A-1	mixture	>480	>480	>240
Kaolin (s), 98%	1332-58-7	>480	>480	>240
Kerosene (Fuel Oil # 2)	68476-30-2	>480	>480	>240
Kerosene (odorless)	8008-20-6	>480	>480	>240
Kerosine (hydrodesulfurized)	64742-81-0	> 480	> 480	> 240
Lactic Acid, 85%	50-21-5	> 480	> 480	> 240
Limonene, D-	5989-27-5	3	3	3
Limestone, Argillaceous (s), > 98%	1317-65-3	>480	>480	>240
Magnesium Carbonate (s), 95%	23389-33-5	>480	>480	>240
Magnesium Chloride (s), > 97%	7786-30-3	>480	>480	>240
Magnesium Chloride, Saturated (> 54%)	7786-30-3	>480	>480	>240
Magnesium Hydroxide (s), > 95%	1309-42-8	>480	>480	>240
Magnesium Oxide (s), > 95%	1309-48-4	>480	>480	>240
Magnesium Sulfate (s), > 95%	10034-99-8	>480	>480	>240
Magnesium Sulfate, Saturated (> 35%)	10034-99-8	>480	>480	>240
Methacrylic Acid, 99%	79-41-4	5	10	NT
Methanol	67-56-1	2	3	3
Methyl Acetate	79-20-9	< 1	< 1	< 1
Methyl Chloride (gas)	74-87-3	NR	NR	NR
Methyl Ethyl Ketone	78-93-3	< 1	< 1	< 1
Methyl Ethyl Ketoxime	96-29-7	38	45	40
Methyl Iodide	74-88-4	< 1	< 1	< 1
Methyl Isobutyl Ketone	108-10-1	<1	1	1
Methyl Isopropyl Ketone	563-80-4	1	1	1
Methyl Methacrylate	80-62-6	2	2	2
Methyl Propyl Ketone	107-87-9	< 1	< 1	< 1

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Methyl Tert-Butyl Ether	1634-04-4	9	10	6
Methylene Chloride	75-09-2	< 1	< 1	< 1
Mineral Oil - Light	8042-47-5	>480	>480	>240
Mineral Spirits (Dearomatized)	64742-47-8	> 480	> 480	>240
Mineral Spirits (odorless)	68551-17-7	> 480	> 480	>240
Mineral Spirits (White Spirits Type 0)	64742-88-7	> 480	> 480	>240
Mineral Spirits (White Spirits Type 1)	64475-85-0	> 480	> 480	>240
Mineral Spirits (White Spirits Type 3)	64742-48-9	>480	>480	>240
Morpholine	110-91-8	< 1	< 1	< 1
Naphtha, heavy aromatic	64742-94-5	< 1	< 1	< 1
Naphtha, light aromatic	64742-95-6	4	4	4
Nicotine, 1% solution	54-11-5	NT	NT	NT
Nicotine, 2% solution	54-11-5	NT	NT	NT
Nicotine, 7% solution	54-11-5	NT	NT	NT
Ninhydrin (s)	485-47-2	> 480	> 480	>240
Nitric Acid, 10%	7697-37-2	> 480	> 480	>240
Nitric Acid, 23%	7697-37-2	288	297	>240
Nitric Acid, 35%	7697-37-2	167	171	167
Nitric Acid, 50%	7697-37-2	9	14	29
Nitric Acid, 65%	7697-37-2	1	2	1
Nitric Acid, 70%	7697-37-2	< 1	1	< 1
Nitrobenzene	98-95-3	1	1	1
Nitromethane	75-52-5	< 1	< 1	< 1
Nitropropane	79-46-9	< 1	< 1	< 1
N-Methyl-2-pyrrolidone	872-50-4	3	3	3
Octane	111-65-9	285	>480	>240
Octanol	111-87-5	66	90	106
Oleic Acid, 98%	112-80-1	> 480	> 480	> 240
Oleum (20% Free SO ₃)	8014-95-7	< 1	< 1	< 1
Olive Oil	8001-25-0	NT	NT	NT
Oxalic Acid, Saturated, >10%	144-62-7	>480	>480	>240
Oxalic Acid (s), 99%	144-62-7	> 480	> 480	>240
Paraffin Oil	8012-95-1	>480	>480	>240

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Pentachloropropane	23153-23-3	3	4	4
Pentane	109-66-0	52	84	173
Peracetic acid solution, 39%	79-21-0	< 1	< 1	NT
Perchloric Acid, 70%	7601-90-3	NT	NT	NT
Petroleum Benzene	64742-49-0	104	168	>240
Petroleum Ether	68476-50-6	69	112	230
Phenol (s), ~100%	108-95-2	10	16	10
Phenol, > 89%	108-95-2	3	3	3
Phenol, 10%	108-95-2	3	3	3
Phosphoric Acid, 5%	7664-38-2	>480	>480	>240
Phosphoric Acid, 10%	7664-38-2	>480	>480	>240
Phosphoric Acid, 15%	7664-38-2	>480	>480	>240
Phosphoric Acid, 20%	7664-38-2	>480	>480	>240
Phosphoric Acid, 25%	7664-38-2	>480	>480	>240
Phosphoric Acid, 30%	7664-38-2	>480	>480	>240
Phosphoric Acid, 35%	7664-38-2	>480	>480	>240
Phosphoric Acid, 40%	7664-38-2	>480	>480	>240
Phosphoric Acid, 45%	7664-38-2	>480	>480	>240
Phosphoric Acid, 50%	7664-38-2	>480	>480	>240
Phosphoric Acid, 55%	7664-38-2	>480	>480	>240
Phosphoric Acid, 60%	7664-38-2	>480	>480	>240
Phosphoric Acid, 65%	7664-38-2	>480	>480	>240
Phosphoric Acid, 70%	7664-38-2	>480	>480	>240
Phosphoric Acid, 75%	7664-38-2	>480	>480	>240
Phosphoric Acid, 80%	7664-38-2	>480	>480	>240
Phosphoric Acid, 85%	7664-38-2	>480	>480	>240
Phosphoric Acid (s), 99%	7664-38-2	>480	>480	>240
Polyethylene Glycol (s), > 98%	25322-68-3	>480	>480	>240
Polyethylene Glycol, Saturated (> 67 %)	25322-68-3	>480	>480	>240
Potassium Bicarbonate (s), > 99%	298-14-6	>480	>480	>240
Potassium Bicarbonate, Saturated (> 36%)	298-14-6	>480	>480	>240
Potassium Bisulfite (s), > 95%	7773-03-7	>480	>480	>240

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**M7005PF Permeation Data**

<u>Chemical</u>	<u>CAS Number</u>	TTL	TTL	INT
		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Potassium Bisulfite, Saturated (> 49%)	7773-03-7	>480	>480	>240
Potassium Carbonate (s), >98%	584-08-7	>480	>480	>240
Potassium Carbonate, Saturated (> 138%)	584-08-7	>480	>480	>240
Potassium Chloride (s), 99%	7447-40-7	> 480	> 480	>240
Potassium Chloride, Saturated (> 35%)	7447-40-7	>480	>480	>240
Potassium Hydroxide (s), 99%	1310-58-3	> 480	> 480	>240
Potassium Hydroxide, 5%	1310-58-3	>480	>480	>240
Potassium Hydroxide, 10%	1310-58-3	> 480	> 480	>240
Potassium Hydroxide, 15%	1310-58-3	>480	>480	>240
Potassium Hydroxide, 20%	1310-58-3	>480	>480	>240
Potassium Hydroxide, 25%	1310-58-3	>480	>480	>240
Potassium Hydroxide, 30%	1310-58-3	>480	>480	>240
Potassium Hydroxide, 35%	1310-58-3	>480	>480	>240
Potassium Hydroxide, 40%	1310-58-3	>480	>480	>240
Potassium Hydroxide, 45%	1310-58-3	> 480	> 480	>240
Potassium Hydroxide, 50%	1310-58-3	>480	>480	>240
Potassium Hydroxide, 54%	1310-58-3	>480	>480	>240
Potassium Permanganate (s), > 99%	7722-64-7	>480	>480	>240
Potassium Permanganate, Saturated (> 76%)	7722-64-7	>480	>480	>240
Propanediamine, N,N'-Dimethyl	109-55-7	5	7	5
Propanol, 1-	71-23-8	19	28	28
Propyl Acetate	109-60-4	< 1	< 1	< 1
Propylene Glycol	57-55-6	> 480	> 480	> 240
Propylene Glycol Monobutyl Ether	5131-66-8	37	38	37
Propylene Glycol Monomethyl Ether	107-98-2	8	9	12
Propylene Glycol Monomethyl Ether Acetate	108-65-6	4	4	4
Propylene Glycol Monopropyl Ether	1569-01-3	10	13	13
Propylene Oxide	75-56-9	< 1	< 1	< 1
Pyridine	110-86-1	< 1	< 1	< 1
Quartz (s), 99%	14808-60-7	>480	>480	>240

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**M7005PF Permeation Data**

<u>Chemical</u>	<u>CAS Number</u>	TTL	TTL	INT
		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Salicylic acid (s), 99%	69-72-7	>480	>480	>240
Screen Wash Universal (ZT639)	mixture	NT	NT	NT
Selenium Sulfide (s), 99%	7488-56-4	>480	>480	>240
Skydrol 500B-4	mixture	> 480	> 480	> 240
Skydrol LD-4	mixture	21	> 480	> 240
Silicon Dioxide (s), 99%	7631-86-9	>480	>480	>240
Sodium Bicarbonate (s), 99%	144-55-8	>480	>480	>240
Sodium Bicarbonate, Saturated (> 10%)	144-55-8	>480	>480	>240
Sodium Bisulfite (s), > 95%	7631-90-5	>480	>480	>240
Sodium Bisulfite, Saturated (> 42%)	7631-90-5	>480	>480	>240
Sodium Tetraborate Decahydrate (s), > 99%	1303-96-4	> 480	> 480	>240
Sodium Tetraborate Decahydrate, Saturated (> 49%)	1303-96-4	> 480	> 480	>240
Sodium Carbonate (s), 99%	497-19-8	>480	>480	>240
Sodium Carbonate, Saturated (> 9%)	497-19-8	>480	>480	>240
Sodium Chloride (s), 99%	7647-14-5	>480	>480	>240
Sodium Chloride, Saturated (> 36%)	7647-14-5	>480	>480	>240
Sodium Lauryl Sulfate (s), > 90%	151-21-3	> 480	> 480	>240
Sodium Lauryl Sulfate, Saturated (> 15%)	151-21-3	> 480	> 480	>240
Sodium Fluoride (s), > 99%	7681-49-4	>480	>480	>240
Sodium Fluoride, Saturated (> 4%)	7681-49-4	>480	>480	>240
Sodium Gluconate (s), > 98%	527-07-1	>480	>480	>240
Sodium Gluconate, Saturated (> 59%)	527-07-1	>480	>480	>240
Sodium Hydroxide (s), 98%	1310-73-2	>480	>480	>240
Sodium Hydroxide, 5%	1310-73-2	>480	>480	>240
Sodium Hydroxide, 10%	1310-73-2	>480	>480	>240
Sodium Hydroxide, 15%	1310-73-2	>480	>480	>240
Sodium Hydroxide, 20%	1310-73-2	>480	>480	>240
Sodium Hydroxide, 25%	1310-73-2	>480	>480	>240
Sodium Hydroxide, 30%	1310-73-2	>480	>480	>240
Sodium Hydroxide, 35%	1310-73-2	>480	>480	>240

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**M7005PF Permeation Data**

<u>Chemical</u>	<u>CAS Number</u>	TTL	TTL	INT
		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Sodium Hydroxide, 40%	1310-73-2	>480	>480	>240
Sodium Hydroxide, 45%	1310-73-2	>480	>480	>240
Sodium Hydroxide, 50%	1310-73-2	>480	>480	>240
Sodium Hypochlorite, 12%	7681-52-9	>480	>480	>240
Sodium Hypochlorite, 6%	7681-52-9	>480	>480	>240
Sodium Metabisulfite (s), > 97%	7681-57-4	>480	>480	>240
Sodium Metasilicate (s), > 98%	6834-92-0	>480	>480	>240
Sodium Metasilicate, Saturated (> 21%)	6834-92-0	>480	>480	>240
Sodium Nitrite (s), > 97%	7632-00-0	> 480	> 480	>240
Sodium Nitrite, Saturated (> 82%)	7632-00-0	> 480	> 480	>240
Sodium Permanganate (s), > 95%	10101-50-5	>480	>480	>240
Sodium Permanganate Solution, 40%	10101-50-5	>480	>480	>240
Sodium Selenite (s), > 98%	10102-18-8	>480	>480	>240
Sodium Selenite, Saturated (> 89%)	10102-18-8	>480	>480	>240
Sodium Sulfate (s), > 99%	7757-82-6	>480	>480	>240
Sodium Sulfate, Saturated (> 28%)	7757-82-6	>480	>480	>240
Sodium Sulfite (s), > 98%	7757-83-7	>480	>480	>240
Sodium Sulfite, Saturated (> 27%)	7757-83-7	>480	>480	>240
Sodium Thiosulfate (s), > 98%	7772-98-7	>480	>480	>240
Sodium Thiosulfate, Saturated (> 70%)	7772-98-7	>480	>480	>240
Soybean oil	8001-22-7	NT	NT	NT
Stoddard Solvent	8052-41-3	109	250	> 240
Styrene	100-42-5	< 1	< 1	< 1
Sulfuric Acid, 10%	7664-93-9	> 480	> 480	>240
Sulfuric Acid, 15%	7664-93-9	>480	>480	>240
Sulfuric Acid, 18%	7664-93-9	>480	>480	>240
Sulfuric Acid, 25%	7664-93-9	> 480	> 480	>240
Sulfuric Acid, 30%	7664-93-9	>480	>480	>240
Sulfuric Acid, 39%	7664-93-9	>480	>480	>240
Sulfuric Acid, 47%	7664-93-9	> 480	> 480	>240
Sulfuric Acid, 50%	7664-93-9	> 480	> 480	>240

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**M7005PF Permeation Data**

<u>Chemical</u>	<u>CAS Number</u>	TTL	TTL	INT
		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Sulfuric Acid, 70%	7664-93-9	61	74	201
Sulfuric Acid, 93%	7664-93-9	8	9	10
Sulfuric Acid, 96%	7664-93-9	8	9	10
Talc (s), >99%	14807-96-6	>480	>480	>240
Tannic Acid (s), 95%	1401-55-4	> 480	> 480	>240
Tetrachloroethylene	127-18-4	1	1	1
Tetrachloropropene	10436-39-2	1	1	1
Tetrahydrofuran	109-99-9	< 1	< 1	< 1
Tetramethylammonium Hydroxide, 25%	75-59-2	221	224	NT
Titanium Dioxide (s), > 99%	13463-67-7	>480	>480	>240
Toluene	108-88-3	< 1	< 1	< 1
Toluene-2,4-diisocyanate	584-84-9	NT	NT	NT
Toluene-2,6-diisocyanate	91-08-7	NT	NT	NT
Toluidine, O-	95-53-4	< 1	< 1	< 1
Tricalcium Phosphate (s), > 95%	7758-87-4	>480	>480	>240
Trichlorobenzene, 1,2,4-	120-82-1	< 1	< 1	< 1
Trichloroethylene	79-01-6	< 1	< 1	< 1
Tricresyl Phosphate	1330-78-5	63	74	64
Triethanolamine	102-71-6	7	13	21
Triethylamine	121-44-8	7	15	23
Triethylene Glycol Monobutyl Ether	143-22-6	5	7	6
Triethylene Glycol Monoethyl Ether	112-50-5	2	2	2
Triethylene Glycol Monomethyl Ether	112-35-6	1	1	1
Trimethyl Phosphate	512-56-1	2	3	NT
Trimethylbenzene	95-63-6	1	1	1
Turpentine	8006-64-2	55	143	148
Urea Solution, 30 to 35%	57-13-6	>480	>480	>240
Urea, Saturated Solution, >62%	57-13-6	>480	>480	>240
Urea (s), 99%	57-13-6	>480	>480	>240
Vinyl Acetate	108-05-4	< 1	< 1	< 1
Vinyl Pyrrolidinone	88-12-0	1	1	1
VM&P Naphtha	8030-30-6	64	>480	212

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M7005PF Permeation Data

Chemical	CAS Number	TTL	TTL	INT
		ASTM F739 BT (minutes)	EN 374 BT (minutes)	ASTM F1383 BT (minutes)
Xylene	1330-20-7	1	1	1
Zinc (s), >98%	7440-66-6	>480	>480	>240
Zinc Oxide (s), >99%	1314-13-2	>480	>480	>240
Zinc Sulfate, Heptahydrate (s), >99%	7446-20-0	>480	>480	>240
Zinc Sulfate, Saturated (> 96%)	7446-20-0	>480	>480	>240
Zinc Sulfate, Monohydrate (s), >99%	7446-19-7	>480	>480	>240
Zinc Sulfate, Saturated (> 35%)	7446-19-7	>480	>480	>240

Permeation Legend and Explanation

Permeation is the act of a chemical passing through a solid material, such as personal protective clothing, on a molecular level.

TTL : Total immersion chemical permeation breakthrough time (maximum test duration of 480 minutes).

INT : Intermittent contact chemical permeation breakthrough time, one minute immersion out of every ten minutes repeatedly, up to maximum test duration of 240 minutes.

The information provided in this chart is intended to help you determine the general suitability of SHOWA gloves in the end-user's particular application. It is the responsibility of the purchaser and/or user to determine the level of toxicity of the materials to be handled and to select the proper glove suitable for a particular application. The information provided reflects laboratory performance of gloves under carefully controlled conditions. SHOWA makes no guarantee of results and assumes no obligation or liability in connection with this information.