

### DEGRADATION & PERMEATION TEST DATA

CHEMICAL	NEOPRENE GLOVES		NEO-400	
	EN 374 Class Index	Avg. BTT/Min	Avg. Max Detectable Pmt rate / $\mu\text{g} / \text{cm}^2 / \text{Min}$	Avg. Degrd Rate
1. Acetaldehyde, 99.5%	0	8	785	P
2. Acetic Acid, 99+%	4	152	7.4	E
3. Acetone, 99.5%	1	11	72.9	F
4. Acetonitrile, 99%	1	15	8	E
5. Acrylic Acid, 99%	3	66	24.2	P
6. Ammonium Fluoride, 40%	6	>480	<0.016	E
7. Ammonium Hydroxide, 85%	5	>440	0.13	E
8. Amyl Alcohol, 99+%	4	138	3.8	E
9. Aniline, 99+%	3	89	26.4	P
10. Aqua Regia	6	>480	<0.016	E
11. Bromopropionic Acid, Sat.	6	>480	<0.016	E
12. Butyl Alcohol, 99%	4	135	1.6	E
13. Butyl Cellosolve, 99+%	3	63	303*	G
14. Butyrolactone, 99+%	4	170	0.99	E
15. Cellosolve Acetate, 99+%	2	37	103	NR
16. Cellosolve Solvent(2-ethoxy ethanol), 99+%	2	58	31	E
17. Citric Acid, 10%	6	>480	<0.016	E
18. Cyclohexanol, 98%	5	392	0.3	E
19. Diacetone Alcohol, 99%	3	96	260*	E
20. Dibutyl Phthalate, 99%	6	>480	<0.002	G
21. Dimethylformamide, 99+%	2	38	59.2	F
22. Dimethyl Sulfoxide, 99+%	5	243	1.3	E
23. Dioctyl Phthalate, 99%	6	>480	<0.03	G
24. Ethyl Acetate, 99+%	0	10	23	NR
25. Ethyl Alcohol, 90+%	3	73	4.9	E
26. Ethyl Ether, 99+%	0	4	*	NR
27. Ethyl Glycol Ether, 99%	3	68	33.4	E
28. Ethylene Glycol, 99+%	6	>480	>0.001	E
29. Formaldehyde, 99%	6	>480	<0.03	E
30. Formic Acid, 95+%	6	>480	<0.016	E
31. Freon TF, 99+%	4	160	31.6	NR
32. Furfural, 99%	2	35	543	F
33. Hexamethyldisilazine, 97%	4	153	16.2*	P
34. Hexane, 99+%	1	16	27.7	NR
35. Hydrazine, 65%	4	205	8.0*	E

\* Catastrophic Breakthrough  
 Avg. Average  
 BTT Breakthrough Time  
 Pmt Permeation  
 Degrd Degradation  
 EN 374 Class European Classification  
 Min Minutes  
 - Not Tested  
 \* These rates may be artificially lower due to detector saturation

EN 374 Class	Permeation Time (Minutes)
0	<10 min
1	>10 min
2	>20 min
3	>30 min
4	>120 min
5	>240 min
6	>480 min

#### KEY TO DEGRADATION RATING

% Weight Change (Gain)	Degradation Rating
0 to 10	Excellent E
11 to 20	Good G
21 to 30	Fair F
31 to 50, or small loss	Poor P
Above 50	Not Recommended NR

\*NR - Avoid use of the gloves with this chemical



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36. Hydrochloric Acid, 10%	6	>480	<0.082	E
37. Hydrochloric Acid, 37%	5	>460	>5	E
38. Hydrofluoric Acid, 48%	6	>480	<0.082	E
39. Hydrogen Peroxide, 30%	6	>480	<0.03	E
40. Hydroquinone, Sat.	6	>480	<0.03	E
41. Isobutyl Alcohol, 99+%	4	183	0.6	E
42. Iso-Octane, 99%	3	92	23.8	NR
43. Isopropyl Alcohol, 99+%	4	142	1.5	E
44. Kerosene, 100%	3	100	23.5	NR
45. Lactic Acid, 85%	6	>480	<0.016	E
46. Lauric Acid, 36%	6	>480	<0.05	G
47. Maleic Acid, Sat.	6	>480	<0.03	E
48. Methyl Alcohol, 99.9+%	2	40	4.5	E
49. Methylamine, 40%	3	79	51.4	E
50. Methyl Cellosolve, 99%	3	75	5.6	E
51. Mineral Spirits, Rule 66, 100%	3	67	32.8	NR
52. Monoethanolamine, 99+%	6	>480	<0.006	E
53. Naphtha VM & P, 100%	2	35	102*	NR
54. Nitric Acid, 10%	6	>480	<0.082	E
55. Nitric Acid, 70%	5	370	>16	G
56. Nitromethane, 95.5%	1	22	5.8	E
57. Nitropropane, 95.5%	1	26	30.7	P
58. Octyl Alcohol, 99+%	5	275	1.7	E
59. Oleic Acid, 99+%	6	>480	<0.005	E
60. Oxalic Acid, 12.5%	6	>480	<0.034	E
61. Palmitic Acid, Sat.	6	>480	<0.05	E
62. Pentachlorophenol, 36% in ethanol	6	>480	<0.03	E
63. Pentane, 96%	1	13	209	NR
64. Perchloric Acid, 60%	6	>480	<0.016	E
65. Phenol, 90%	3	108	19.2	G
66. Phosphoric Acid, 85%	6	>480	<0.082	E
67. Potassium Hydroxide, 50%	6	>480	<0.082	E
68. Propyl Alcohol, 96+%	3	75	4.6	E
69. Rubber Solvent, 100%	1	15	117	NR
70. Sodium Hydroxide, 50%	6	>480	<0.016	G
71. Stoddard Solvent, 99%	3	62	57.6	NR
72. Sulfuric Acid, 47%	6	>480	<0.016	E
73. Sulfuric Acid, 95%	5	260	>10	E
74. Tannic Acid, 65%	6	>480	<0.016	E
75. Tricresyl Phosphate, 90%	-	-	-	G

Data shown from the following charts are the results of laboratory test as per ASTM / EN standards and are intended to serve as a guide only. The permeation rate and breakthrough time are arrived at the average data obtained from the testing of newly produced glove samples selected on a random basis. The permeation break through time is correlated with the class index of the EN 374.

This test data is not an absolute basis for glove selection as testing was done strictly in controlled laboratory conditions. Actual working conditions may dictate the performance of the product. Factors such as glove reuse, thermal conditions, chemical mixtures, the products resistance to abrasion, cuts and punctures may also affect the performance of the glove.

It is also noted that permeation and degradation do not always correlate. A glove may have a good result in permeation breakthrough time but it may degrade (swell, gets weaker or softer) easily, thus rated P / NR. There are cases whereby a glove may be badly damaged by the chemical, in this case permeation breakthrough time is not applicable as the glove will not offer any protection to the end-user. Therefore, when selecting a glove for its specific application, you must do your own evaluation based on actual working conditions. Rubberex (M) Sdn. Bhd. will provide a glove sample for the testing of its suitability in a specific job upon request.

This chart does not act as a warranty for the performance of the glove in any specific work application.



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**FILREX MALAYSIA SDN. BHD.** [214395-X]

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