

Best[®] Ultimate N-DEX[®] Gloves 9905PF

Technical Specifications and Compliance Information Package



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Technical Information for Ultimate N-DEX 9905PF Glove Regulatory Compliance and Specifications for All Lot Numbers

■ General Description of Best Ultimate N-DEX 9905 Medical Gloves:

The Best Ultimate N-DEX glove SKU 9905PF, all Lot numbers, is an ambidextrous, 11-inch long, 6-mil thick, 100% nitrile medical exam glove. Best® powder free N-DEX® 9905PF gloves feature the patented N-DEX low modulus nitrile formulation that contains no natural rubber proteins and deliver twice the puncture resistance of ordinary natural rubber or vinyl gloves.

■ Regulatory Compliance (applies to all Lot Numbers)

Class I Medical Device: Best Ultimate N-DEX® 9905PF Gloves are Class I medical devices that are manufactured using Good Manufacturing Practices prescribed in 21CFR, part 820. They are registered with the FDA under section 510(K) of the Federal Food, Drug and Cosmetic Act (1991). The registration 510(K) Document Control Number is available upon request.

ISO 9002 Registered:

Best® Ultimate N-DEX® 9905PF gloves are manufactured in the USA, at a facility that meets the requirements for ISO 9002 registration.

OSHA's Bloodborne Pathogens Standard:

Best® N-DEX® 9905PF gloves are recommended for complying with OSHA's Standard for Occupational Exposure to Bloodborne Pathogens 29 CFR 1910.1030.

OSHA's Final Rule for Personal Protective Equipment:

Best® N-DEX® 9905PF gloves are recommended for many applications where PPE is required. Best conducts free glove surveys to help you comply with the hand protection portion of OSHA's Final Rule on PPE in General Industry, 29 CFR 1910.132.

NFPA 1999 Requirements:

Best N-DEX gloves SKUs 9905 and 9905PF (all sizes) meet the performance requirements of the National Fire Protection Association's (NFPA) 1999 Standard on Protective Clothing for Emergency Medical Operations, 1997 Edition.

Food and Pharmaceutical Use:

Best® N-DEX® 9905PF gloves (all sizes) are manufactured using only the materials and levels of materials that are listed in 29CFR, parts 170 to 199. Best N-DEX gloves are acceptable for use in both food and for pharmaceutical applications.

NIOSH Guidelines for Handling Chemotherapeutic Agents:

Best® Ultimate N-DEX® 9905PF meet the requirements for handling of chemotherapeutic agents as outlined by NIOSH. Best Manufacturing Company and Dana Farber Cancer Institute tested a number of chemotherapeutic agents. There was no breakthrough in N-DEX 9905PF using ASTM F739 test methodology.

■ Hypoallergenicity of Best® Ultimate N-DEX® 9905PF Medical Gloves

Hypoallergenicity:

Best N-DEX 9905PF gloves contain absolutely No Natural Rubber Proteins. More and more manufacturers are competing with claims of reduced amounts of natural rubber proteins. Natural rubber proteins have been shown to be potentially fatal allergens. Such claims about Best N-DEX gloves are irrelevant. Best N-DEX gloves are 100% nitrile and do not contain any natural rubber latex proteins



Modified Draize Testing: Best N-DEX 9905 gloves have been found to meet all the requirements for claiming to be hypoallergenic through skin-patch testing. Documentation is available. Call 800-241-0323.

■ **Donning Facilitator:**

Best N-DEX gloves SKU 9905 are lightly dusted with a slight amount of U.S.P. grade corn starch. Best N-DEX gloves are made in the USA under stringent quality control procedures. Best N-DEX gloves SKU 9905 are often mistaken for powder-free gloves because they are so lightly dusted. However, a truly powder-free style, 9905PF, is also available.

Note: U.S.P. grade corn starch is not an allergen in and of itself. However, corn starch can adsorb proteins from natural rubber gloves and may cause allergic reactions in sensitized individuals. This cannot happen with Best N-DEX gloves, because there are no natural rubber proteins present at all.

■ **Phthalates and Silicone:** There are no phthalates or silicones present or added to Best N-DEX gloves.

■ **Viral and Bacteria Penetration Resistance:**

ASTM F 1671-97B Test Method for Viral Penetration Modified for Whole Glove:

Best N-DEX 9905 gloves passed the ASTM F 1671-97b Standard Test Method for Resistance to Materials Used in Protective Clothing to Penetration by Blood-Borne Pathogens Using Phi-X 174 Bacteriophage as a Test System. This model is smaller in size than both the HIV and HBV virus. The test for viral penetration resistance is used in the NFPA 1999 Standard for Protective Clothing for Emergency Medical Operations, 1997 Edition. Ongoing research indicates that viruses can actually pass through vinyl gloves that have been worn for a short period of time. For more information on this Best Customer Service at 800-241-0323.

■ **Storage and Disposal of Best N-DEX 9905 Series**

Optimum Storage Conditions:

The recommended storage conditions for Best N-DEX 9905 gloves for the maximum performance life is cool, dark and dry. The maximum storage time of Best N-DEX gloves is 2.5 years for SKU 9905 and is 1.5 years for SKU 9905PF

Incineration: The Scientific Ecology Group has documented that Best N-DEX 9905 gloves are incinerable.

Gases liberated when burned: Liberated gases include: oxides of carbon, nitrogen, sulfur, smoke and water.

■ **Specifications for Best N-DEX Gloves 9905 Series**

Material: Best N-DEX SKUs 9905 and 9905PF are made of patented low modulus nitrile rubber. The US Patent Number is 5014362. Best N-DEX nitrile gloves are designed to relax and conform exactly to the hand within minutes of donning. This eliminates practically all pressure on the hand. Nitrile is referred to as “non-latex” because it contains No Natural Rubber Proteins. It is 100% synthetic polymer.

Freedom From Holes (AQL):

Best N-DEX 9905 gloves are tested to an AQL of 1.5. This assured Quality Level (AQL) is more stringent than the AQL of 4.0 that is required by ASTM standards for natural rubber and vinyl exam gloves. This AQL is also more stringent than the AQL required by the FDA in 21 CFR, part 800.

Residual Chemicals:

◆ <u>Accelerators:</u> Thiurams	none	Carbamates	none
Benzothiazoles	< 50 ppm	Phenylenediamines	none

■ ASTM D 6319-99 standard for thin-gauge nitrile gloves:

The recently adopted ASTM standard D 6319-99 Standard Specification for Nitrile Examination Gloves for Medical Application specifies the performance requirements for thin-gauge nitrile gloves. These requirements include freedom from holes, sizing conformance, physical performance or rubber properties and powder residue limitations. The freedom from holes requirement must meet an inspection level of G-1 and an AQL or Assured Quality Level of 2.5 in accordance with ISO 2859 Sampling Procedures and Tables for Inspection by Attributes. The physical performance requirements before and after accelerated aging are specified by ASTM D 573. The powder level must meet the standard requirements of ASTM 6124 Test Method for Residual Powder on Medical Gloves. N-DEX 9905 gloves meet all of these requirements.

ASTM D 5151 Test Method for Rubber-Detection of Holes in Medical Gloves: Best Ultimate N-DEX 9905, 9905PF, 9005 and 9005PF gloves are tested to an Assured Quality Level (AQL) of 1.5 for freedom from holes. This AQL is more stringent than required by ASTM for this new Nitrile Examination Glove Standard. This AQL also meets the requirements of the FDA in 21 CFR, part 800.

■ **Physical Sizing Specifications for Best N-DEX 9905 Gloves**

<u>Size Parameter:</u>	Small	Med.	Large	X-Large
Spec Range				
1. Weight per Glove(+/-0.5 g)	7.1-8.1	7.7-8.4	8.1-9.3	8.8-10.3
2. Thickness *at fingertip (mils) (+/-0.5 mil)	6.0(0.15mm)	6.0(0.15mm)	6.0(0.15mm)	6.0(0.15mm)
at cuff (mils) (+/-0.5 mil)	6.0(0.15mm)	6.0(0.15mm)	6.0(0.15mm)	6.0(0.15mm)
3. Min. Length (inch) (+/-0.5 inch or +/- 12.5 mm)	11.0 (279mm)	11.0 (279mm)	11.0 (279mm)	11.0 (279mm)
4. Finger Length	3.0" (76.2mm)	3.25" (82.5mm)	3.50" (88.9mm)	3.75" (95mm)
4. Palm Width (inch) (+/-0.5 inch)	3.5	4.0	4.5	5.0
(millimeters) (+/-12.5 mm)	89	102	114	127

■ **Polymer Characteristics and ASTM Tests**

<u>Characteristics</u>	<u>Specification</u>	<u>ASTM Method</u>
1. Tensile Strength	>2000 psi or 12.5 mPa	ASTM D 412
2. Modulus at 500 %	<400 psi or 3 mPa	ASTM D 412
3. Ultimate Elongation	>700 %	ASTM D 412
4. Puncture Resistance	>0.45 Kg	ASTM F 1324

■ Physical Properties After Aging

<u>Physical Property</u>	<u>Before Heat Aging</u>	<u>After Heat Aging</u>
1. Tensile Strength	>2000 psi or 12.5 mPa	>2400 psi or 15 mPa
2. Ultimate Elongation	> 650 %	>400 %

■ Electrostatic Data for N-DEX Gloves

Test Method (Mil-B-81705C/EIA-541)	Results
1. Static Decay 99 % +/-5 kV	2.51 to 3.22 seconds
2. Surface Resistivity	7.7 to 9.8 x10 ¹¹ ohms/square
3. Static Decay (NFPA 99 @ 50 % relative humidity)	0.7 seconds

■ Intermittent Guide to Chemical Resistance of N-DEX Gloves

The “Intermittent Chemical Exposure Guide for Best N-DEX gloves” contains data from degradation studies. Best N-DEX gloves were evaluated for splash and intermittent contact in 85 different chemicals . The data is included as a guideline for determining if the N-DEX is suitable for your application.

Caution: We emphasize that N-DEX gloves are NOT designed for total chemical immersion. They provide protection from splash and intermittent contact only. If you have any questions about the suitability of Best N-DEX gloves for a particular chemical application, please call Best Customer Service at 800-241-0323.

■ International Customer Support Services:

United States	Canada	Europe
Best Manufacturing Company	Best Glove Manufacturing Company Ltd.	Best Manufacturing Europe N.V.
Edison Street	253 Michaud Street	Kontichsesteenweg 67/1
Menlo, GA 30731	Coaticook, Quebec	2630 Aartselaar
Phone: 800-241-0323	J1A 1A9	Belgium
Fax: 706-862-2666	Phone: 819-849-6381	Phone: 32.3.458.33.33
	Fax: 819-849-6120	Fax: 32.3.458.34.57

■ Ultimate N-DEX 9905 Non-Latex Degradation & Permeation Data

Best Ultimate N-DEX Gloves are the highest quality. They are supported with the most up-to-date chemical resistance data available. Using both ASTM F 739 Test Method for Total Immersion and ASTM F 1383 for Intermittent Contact were used to determine the chemical resistance properties of the glove. For more data, contact Best Technical Services at 800-241-0323 or visit Best's Web Site on the Internet at: <http://www.bestglove.com>

■ ASTM F739 and F1383 Permeation Test Results for Ultimate N-DEX® 9905

Chemical Name	CAS Number	Degradation Rating				Total Immersion			Intermittent Contact		
		Time in Minutes				BDT	Rate	CPC	BDT	Rate	CPC
		5	30	60	240	Minutes	ug/cm ² /min	Index	Minutes	ug/cm ² /min	Index
1. Acetaldehyde	75-07-0	NR	NR	NR	NR	NR	NR	5	NT	NT	NA
2. Acetic Acid 84%	64-19-7	E	P	P	NR	NR	NR	5	NT	NT	NA
3. Acetone	67-64-1	NR	NR	NR	NR	NR	NR	5	6	53	4
4. Acetonitrile	75-05-8	P	P	P	P	7	21	4	15	32	3
5. Acrylic Adhesive	NA	NT	NT	NT	NT	18	6	3	NT	NA	NA
6. Acrylonitrile	107-13-1	NR	NR	NR	NR	NR	NR	5	NT	NT	NT
7. Aeroshell Grease 22	NA	E	E	E	E	>480	ND	0	>240	ND	0
8. Alkaline Cleaner 3	Mixture	F	P	NR	NR	138	210	4	NT	NT	NA
9. Alkasol 27	Mixture	E	E	G	F	>480	ND	0	>240	ND	0
10. Alodine 1000 Solution	NA	NT	NT	NT	NT	>480	ND	0	>240	ND	0
11. Alodine 1200S Solution	NA	NT	NT	NT	NT	>480	ND	0	>240	ND	0
12. Alvania Grease 3	NA	E	E	E	E	>480	ND	0	>240	ND	0
13. Ammonium Hydroxide 29%	1336-21-6	E	E	E	E	>480	ND	0	>240	ND	0
14. Amyl Acetate	628-63-7	NR	NR	NR	NR	NR	NR	5	NR	NR	NA
15. Amyl Alcohol	71-41-0	E	G	G	G	72	27	3	2	149	3
16. Aniline	62-53-3	G	NR	NR	NR	NR	NR	5	3	14	4
17. Antimony Tributylrate	5386-17-0	E	E	E	E	>480	ND	0	>240	ND	0
18. Barsol Solvent	Mixture	NT	NT	NT	NT	13	NA	NA	NT	NT	NA
19. Battery Acid	7664-93-9	E	E	E	E	>480	ND	0	>240	ND	0
20. Benzaldehyde	100-52-7	NR	NR	NR	NR	NR	NR	5	31	42	3
21. Benzene	71-43-2	NR	NR	NR	NR	2	409	5	3	206	5
22. Blasocut 2000 Universal	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
23. Blasocut 4000 Universal	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
24. Bromoform	75-25-2	NR	NR	NR	NR	NR	NR	5	11	122	5
25. Butanol	71-36-3	E	E	G	G	24	33	3	NT	NT	NA
26. Butoxyethanol-2	111-76-2	NT	NT	NT	NT	NT	NT	NA	NT	NT	NA
27. Butoxypropanol	5131-66-8	E	E	E	E	>480	ND	0	>240	ND	0
28. Butoxytriglycol	143-22-6	E	E	E	E	>480	ND	0	>240	ND	0
29. Butyl Acetate	123-86-4	NR	NR	NR	NR	NR	NR	5	NR	NR	5
30. Butyl Acrylate	141-32-2	NR	NR	NR	NR	NR	NR	5	6	34	4
31. Butyl Carbitol Solvent	112-34-5	E	E	E	E	>480	ND	0	>240	ND	0
32. Butyl Cellosolve Acetate	112-07-2	E	E	E	E	>480	ND	0	>240	ND	0
33. Butyl Cellosolve Solvent	111-76-2	E	E	E	E	>480	ND	0	>240	ND	0
34. Butyl Dipropasol Solvent	29911-28-2	E	E	E	E	>480	ND	0	>240	ND	0
35. Butylamine	109-73-9	E	F	NR	NR	NR	NR	5	NR	NR	5

■ ASTM F739 and F1383 Permeation Test Results for Ultimate N-DEX® 9905- continued

Chemical Name	CAS Number	Degradation Rating				Total Immersion			Intermittent Contact		
		Time in Minutes				BDT	Rate	CPC	BDT	Rate	CPC
		5	30	60	240						
37. Caprinus U Multigrade Railroad Oil Mixture		E	E	E	E	>480	ND	0	>240	ND	0
38. Carbitol Acetate	112-15-2	E	E	E	E	>480	ND	0	>480	ND	0
39. Carbon Tetrachloride	56-23-5	F	NR	NR	NR	NR	NR	5	24	100	3
40. Cellsolve Acetate	110-80-5	P	NR	NR	NR	NR	NR	5	NT	NT	NA
41. Chevron HYJET IV-A plus	Mixture	F	NR	NR	NR	NT	NT	NA	NT	NT	NA
42. Chevron JET Fuel A	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
43. Chlorobenzene	108-90-7	NR	NR	NR	NR	NR	NR	5	6	131	5
44. Chloroform	67-66-3	NR	NR	NR	NR	NR	NR	5	NR	NR	5
45. Chromic Acid 50%	1338-82-0	E	E	E	E	>480	ND	0	>240	ND	0
46. Citra-Safe Deodorized	Mixture	F	P	P	P	25	122	4	NT	NT	NA
47. Citric Acid 30%	77-92-9	E	E	E	E	>480	ND	0	>240	ND	0
48. Citrus Terpenes Mixture	68956-56-9	E	P	P	NR	259	7	2	>240	ND	0
49. Cresols	1319-77-3	P	NR	NR	NR	NR	NR	5	NT	NT	NA
50. Cumene	98-82-8	NR	NR	NR	NR	9	48	4	14	18	4
51. Cyclohexane	110-82-7	E	E	E	E	38	11	3	>240	ND	0
52. Cyclohexanol	108-93-0	E	E	E	G	275	1	2	NT	NT	NA
53. Cyclohexanone	108-94-1	NR	NR	NR	NR	NR	NR	5	NT	NT	NA
54. Daraclean 282	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
55. Deoxidizer 16 Replenisher	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
56. Desoclean 45	Mixture	P	NR	NR	NR	3	704	5	NT	NT	NA
57. Dexter Corp. 454-4-1	Mixture	NR	NR	NR	NR	7	198	5	NT	NT	NA
58. Diacetone Alcohol	123-42-4	NR	NR	NR	NR	NR	NR	5	NR	NR	5
59. Dibutyl Phthalate-n	84-74-2	G	F	P	NR	>480	ND	0	>240	ND	0
60. Dichloroethane- 1,2	107-06-2	NR	NR	NR	NR	NR	NR	5	NR	NR	5
61. Dichloromethane	75-09-2	NR	NR	NR	NR	NR	NR	5	4	186	5
62. Diesel Fuel	77650-28-3	E	E	G	G	88	29	3	>240	ND	0
63. Diethanolamine	111-42-2	E	E	E	E	>480	ND	0	>240	ND	0
64. Diethylamine	109-89-7	P	P	P	NR	NR	NR	5	10	123	5
65. Diethylene Glycol Monobutyl Ether	112-34-5	E	E	E	E	>480	ND	0	>240	ND	0
66. Diethylene Glycol Monoethyl Ether	112-59-4	E	E	E	E	>480	ND	0	>240	ND	0
67. Diethylene Glycol Dimethyl Ether	111-77-3	E	E	E	E	>480	ND	0	>240	ND	0
68. Diethylene Glycol Monopropyl Ether	6881-94-3	E	E	E	E	>480	ND	0	>240	ND	0
69. Diethylene Oxide	123-91-1	NR	NR	NR	NR	7	391	5	14	106	5
70. Diisobutyl Ketone	108-83-8	E	E	E	E	NT	NT	NA	NT	NT	NA
71. Dimethyl Sulfate	77-78-1	G	F	P	NR	30	99	3	40	74	3
72. Dimethyl-2,6-Heptanone	108-83-8	E	E	E	E	74	21	3	>240	ND	0
73. Dimethylacetamide	127-19-5	NR	NR	NR	NR	NR	NR	5	NT	NT	NA
74. Dimethylformamide	68-12-2	NR	NR	NR	NR	NR	NR	5	NT	NT	NA

■ ASTM F739 and F1383 Permeation Test Results for Ultimate N-DEX® 9905

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Degradation Rating Total Immersion

Intermittent Contact

CAS Number Time in Minutes BDT Rate CPC BDT Rate CPC
 5 30 60 240 in Minutes ug/cm²/min Index in Minutes ug/cm²/min Index

Chemical Name

Chemical Name	CAS Number	Degradation Rating				Total Immersion			Intermittent Contact		
		5	30	60	240	BDT	Rate	CPC	BDT	Rate	CPC
						in Minutes	ug/cm ² /min	Index	in Minutes	ug/cm ² /min	Index
75. Diethylene Glycol	11-46-6	E	G	G	G	>480	ND	0	>240	ND	0
76. Dimethylsulfoxide	67-68-5	E	F	F	P	>480	ND	0	>240	ND	0
77. Dinitrol AV30	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
78. Dinitrol AV8	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
79. Dinitrotoluene-2,4 (40% in ROH)	121-14-2	P	NR	NR	NR	NR	NR	5	21	79	3
81. Diphenylmethane Diisocyanate	NA	NT	NT	NT	NT	>480	ND	0	>240	ND	0
82. Dipropasol Glycol Monobutyl Ether	29911-28-2	E	E	E	E	>480	ND	0	>240	ND	0
83. Dipropylene Glycol Monobutyl Ether	29911-28-2	E	E	E	E	>480	ND	0	>240	ND	0
84. Divinyl Benzene	1321-74-0	G	P	NR	NR	NR	NR	5	66	14	3
85. Donax TG Transmission Fluid	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
86. Dubl-Check Penetrants HM406	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
87. Dubl-Check Penetrants HM604	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
88. Ethanol	64-17-5	E	E	E	G	24	32	3	>240	ND	0
89. Ethanolamine	141-43-5	E	E	E	E	>480	ND	0	>240	ND	0
90. Ethoxyethanol-2	110-80-5	P	NR	NR	NR	NR	NR	5	9	179	5
91. Ethoxytriglycol	112-50-5	E	E	E	E	>480	ND	0	>240	ND	0
92. Ethyl Acetate	141-78-6	NR	NR	NR	NR	NR	NR	5	14	81	4
93. Ethyl Benzene	100-41-4	NR	NR	NR	NR	2	364	5	4	59	4
94. Ethyl Butanol	97-95-0	G	NR	NR	NR	NR	NR	5	11	122	5
95. Ethyl Ether	60-29-7	G	G	G	G	2	232	5	3	59	4
96. Ethylene Glycol	107-21-1	E	E	E	E	>480	ND	0	>240	ND	0
97. Ethylene Glycol Ether	110-80-5	P	NR	NR	NR	NR	NR	5	9	179	5
98. Ethylene Glycol Monobutyl Ether	111-76-2	E	E	E	E	>480	ND	0	>240	ND	0
99. Ethylene Glycol Monohexyl Ether	112-25-4	E	E	E	E	82	10	3	>240	ND	0
100. Ethylene Glycol Monopropyl Ether	2807-30-9	E	E	E	E	25	196	4	35	16	3
101. Ethylenediamine	107-15-3	E	G	G	G	102	9	2	>240	ND	0
102. FCC-55 (Proprietary)	NA	NR	NR	NR	NR	6	247	NT	NT	NT	NA
103. Fire & Ice 2000 10W40 Motor Oil	NA	E	E	E	E	>480	ND	0	>240	ND	0
104. Fluoboric Acid	16872-11-0	E	E	E	E	>480	ND	0	>240	ND	0
105. Formaldehyde 37%	50-00-0	E	E	E	E	>480	ND	0	>240	ND	0
106. Formic Acid 90%	64-18-6	G	NR	NR	NR	NR	NR	5	30	220	5
107. Freon 113	76-13-1	E	G	P	P	12	15	4	>240	ND	0
108. Furfural	98-01-1	P	NR	NR	NR	NR	NR	5	9	4	4
109. Gasoline (unleaded)	8006-61-9	E	G	P	NR	NR	NR	5	20	375	4
110. Genetron 123	NA	NT	NT	NT	NT	18	549	4	NT	NT	NA
111. Gloss HS Epoxy Catalyst	NA	P	NR	NR	NR	17	2178	5	NT	NNT	NA
112. Glutaraldehyde 50%	111-30-8	E	E	E	E	>480	ND	0	>240	ND	0
113. Heptane	142-82-5	E	E	E	E	>480	ND	0	>240	ND	0
114. Hexane	110-54-3	E	E	E	E	20	51	3	85	0.2	1
115. Hexene	592-41-6	G	F	NR	NR	NR	NR	5	NR	NR	5

■ ASTM F739 and F1383 Permeation Test Results for Ultimate N-DEX® 9905

- continued
Intermittent Contact

Degradation Rating

Total Immersion

Chemical Name

CAS Number

Time in Minutes

BDT

Rate

CPC

BDT

Rate

CPC

5

30

60

240

Minutes ug/cm²/min Index

Minutes ug/cm²/min Index

116. Hexyl Carbitol Solvent	112-59-4	E	E	E	E	>480	ND	0	>240	ND	0
117. HFC-245fa	460-73-1	NT	NT	NT	NT	95	313	4	NT	NT	NA
118. Hydrochloric Acid 37%	7647-01-0	E	E	E	E	>480	ND	0	>240	ND	0
119. Hydrofluoric Acid 48%	7664-39-3	E	G	P	NR	45	7	3	50	3	3
120. Hydrogen Peroxide 30%	7722-84-1	E	E	E	E	>480	ND	0	>240	ND	0
121. H.S. Epoxy BAC 702 Off White Mixture		F	P	NR	NR	20	234	4	NT	NT	NA
122. Iodomethane	74-88-4	E	F	NR	NR	NR	NR	5	2	391	5
122. Isoamyl Acetate	123-92-2	G	F	P	NR	3	149	5	7	61	3
123. Isoamyl Alcohol	123-51-3	G	F	F	P	5	179	5	6	61	3
124. Isobutanol	78-83-1	E	F	P	P	NR	NR	5	70	0.43	1
125. Isooctane	540-84-1	E	E	E	G	389	0.21	1	>240	ND	0
126. Isopropanol	67-63-0	E	E	E	F	11	138	5	>240	ND	0
127. Isopropyl Acetate	108-21-4	NR	NR	NR	NR	5	345	5	10	55	4
128. Jet Fuel JP-8	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
128. JP-4	Mixture	E	E	G	NR	33	143	4	NT	NT	NA
129. Kerosene	8008-20-6	E	E	E	E	>480	ND	0	>240	ND	0
130. Limonene-d	5989-27-5	E	G	F	F	31	102	4	>240	ND	0
131. Madrella P 150	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
132. MEK/SBA	Mixture	NR	NR	NR	NR	7	383	5	NT	NT	NA
133. Methanol	67-56-1	E	G	G	F	7	150	5	13	29	4
134. Methoxytriglycol	112-35-6	E	E	E	E	>480	ND	0	>240	ND	0
135. Methyl Acetate	79-20-9	E	E	P	P	3	132	5	3	122	5
136. Methyl Carbitol Solvent	111-77-3	E	E	E	E	>480	ND	0	>240	ND	0
137. Methyl Cellosolve	110-80-5	P	NR	NR	NR	NR	NR	5	9	179	5
138. Methyl Chloroform	71-55-6	NR	NR	NR	NR	NR	NR	5	8	37	4
139. Methyl Ethyl Ketone	78-93-3	NR	NR	NR	NR	NR	NR	5	5	126	5
140. Methyl Ethyl Ketoxime	96-29-7	E	G	G	NR	76	35	3	NT	NT	3
141. Methyl Iodide	74-88-4	E	F	NR	NR	NR	NR	5	2	391	5
142. Methyl Isobutyl Ketone	108-10-1	NR	NR	NR	NR	NR	NR	5	8	37	4
143. Methyl Isobutyl Ketoxime	105-44-2	NT	NT	NT	NT	>480	ND	0	>240	ND	0
144. Methyl Methacrylate	80-62-6	NR	NR	NR	NR	9	143	5	3	141	5
145. Methyl Propasol Solvent	107-98-2	E	E	E	E	>480	ND	0	>240	ND	0
146. Methylamine 40%	74-89-5	E	E	E	G	>480	ND	0	>240	ND	0
147. Methylene Chloride	75-09-2	NR	NR	NR	NR	NR	NR	5	4	186	5
148. Methyl-Tert-Butyl Ether	1634-04-4	G	P	P	P	NR	NR	5	NR	NR	5
149. Microcut 26	Mixture	E	E	G	F	>480	ND	0	>240	ND	0
150. Mineral Spirits	64475-85-0	E	E	G	F	69	77	2	3	1	2
151. Morpholine	110-91-8	NR	NR	NR	NR	NR	NR	5	NR	NR	5
152. m-Toluenediamine (liquid form)	NA	NT	NT	NT	NT	285	NA	NA	NT	NT	NA
153. m-Toluenediamine (solid form)	NA	NT	NT	NT	NT	>480	ND	0	>240	ND	0

■ ASTM F739 and F1383 Permeation Test Results for Ultimate N-DEX® 9905 - continued

Chemical Name	CAS Number	Degradation Rating				Total Immersion			Intermittent Contact		
		5	30	60	240	BDT	Rate	CPC	BDT	Rate	CPC
154. Muriatic Acid	7647-01-0	E	E	E	E	>480	ND	0	>240	ND	0
155. Naphtha (Petroleum)	8032-32-4	E	E	E	E	39	14	3	>240	ND	0
156. Naphtha, VM&P	64475-85-0	E	E	G	F	69	77	2	3	1	4
157. Nitric Acid 23%	7697-37-2	E	E	E	E	>480	ND	0	>240	ND	0
158. Nitric Acid 70%	7697-37-2	G	P	NR	NR	NR	NR	5	NR	NR	5
159. Nitric/Hydrofluoric Pickle Solution Mixture		E	E	E	E	>480	ND	0	>240	ND	0
160. Nitrobenzene	98-95-3	NR	NR	NR	NR	NR	NR	5	9	8	4
161. Nitromethane	75-52-5	F	P	P	P	3	257	5	5	156	5
162. Nitropropane-2	79-46-9	NR	NR	NR	NR	NR	NR	5	NR	NR	5
163. N-Methyl Pyrrolidone	872-50-4	NR	NR	NR	NR	NR	NR	5	NR	NR	5
164. n-Octanol	111-87-5	E	E	E	G	>480	ND	0	>240	ND	0
165. n-Propanol	71-23-8	G	F	P	P	15	29	3	48	17	3
166. n-Propyl Cellosolve	NA	E	E	E	E	25	196	5	NT	NT	NA
167. Nycote 7-11	Mixture	P	NR	NR	NR	5	196	5	NT	NT	NA
168. o-Dichlorobenzene	95-50-1	NR	NR	NR	NR	NR	NR	5	NT	NT	NA
169. Oleic Acid 98%	112-80-1	E	E	E	G	>480	ND	0	>240	ND	0
170. O-Toluidine	95-53-4	G	P	NR	NR	NR	NR	5	14	0.66	3
171. OxyBisbenzene,1,1-(Dowtherm)	101-84-8	NR	NR	NR	NR	NR	NR	5	NR	NR	5
172. Pentane	109-66-0	E	E	E	E	21	20	3	59	3	3
173. Pentanone-2 (MIBK)	108-10-1	NR	NR	NR	NR	NR	NR	5	15	65	3
174. Perchlorethylene	127-18-4	F	NR	NR	NR	9	296	5	11	50	4
175. Petroleum Ether	8032-32-4	E	E	E	E	39	10	3	NT	NT	NA
176. Phenol	108-95-2	NR	NR	NR	NR	8	44	4	10	39	4
177. Phosphoric Acid 85%	7664-38-2	E	E	E	E	>480	ND	0	>240	ND	0
178. Potassium Hydroxide 45%	1310-58-3	E	E	E	E	>480	ND	0	>240	ND	0
179. Propanol-2	67-63-0	E	E	E	E	37	13	3	NT	NT	NA
180. Propoxy Diethylene Glycol	6881-94-3	E	E	E	E	>480	ND	0	>240	ND	0
181. Propoxypropanol	1569-01-3	E	E	E	E	>480	ND	0	>240	ND	0
182. Propyl Acetate	109-60-4	E	G	F	P	7	483	5	15	141	3
183. Propyl Carbitol Solvent	6881-94-3	E	E	E	E	>480	ND	0	240	ND	0
184. Propyl Cellosolve Solvent	2807-30-9	E	E	E	E	25	196	4	35	16	3
185. Propyl Dipropasol Solvent	2807-30-9	E	E	E	E	25	196	4	35	16	3
186. Propyl Propasol Solvent	1569-01-3	E	E	E	E	>480	ND	0	240	ND	0
187. Propylene Glycol	57-55-6	E	E	E	E	>480	ND	0	240	ND	0
188. Propylene Glycol Monobutyl Ether	5131-66-8	E	E	E	E	>480	ND	0	>240	ND	0
189. Propylene Glycol Monomethyl Ether	107-98-2	E	E	E	E	>480	ND	0	>240	ND	0
190. Propylene Glycol Monopropyl Ether	1569-01-3	E	E	E	E	>480	ND	0	>240	ND	0
191. Propylene Oxide	75-56-9	NR	NR	NR	NR	NR	NR	5	7	192	5
192. Psuedocumene	95-63-6	P	NR	NR	NR	13	150	5	84	34	4

■ ASTM F739 and F1383 Permeation Test Results for Ultimate N-DEX® 9905

- continued

Chemical Name	CAS Number	Degradation Rating				Total Immersion			Intermittent Contact		
		Time in Minutes				BDT	Rate	CPC	BDT	Rate	CPC
		5	30	60	240	in Minutes	ug/cm ² /min	Index	in Minutes	ug/cm ² /min	Index
193. Pyridine	7291-22-7	P	NR	NR	NR	NR	NR	5	6	212	5
194. Rotella T Multigrade Motor Oil	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
195. Round-Up (concentrated)	1071-83-6	E	G	G	G	>480	ND	0	>240	ND	0
196. Rubber Solvent	8032-32-4	E	E	E	E	39	14	3	>240	ND	0
197. Shell Diala Oil AX Base Oil	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
198. Shell HVI 100 Neutral MQ Base Oil Mix		E	E	E	E	>480	ND	0	>240	ND	0
199. Shell Turbo T 68 Hydraulic Oil	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
200. Shellwax 100	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
201. Simple Green	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
202. Skydrol 500 B-4	126-73-8	F	NR	NR	NR	>480	ND	0	>240	ND	0
203. Skydrol LD-4	2528-36-1	F	NR	NR	NR	31	0.02	2	NT	NT	NT
204. Sodium Hydroxide 50%	1310-73-2	E	E	E	E	>480	ND	0	>240	ND	0
205. Solvent Oxygenated Hydrocarbon Blend		NR	NR	NR	NR	6	1399	5	NT	NT	NA
206. Spirax S 85W-140	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
207. Stoddard Solvnet	8052-41-3	E	E	E	E	>480	ND	0	>240	ND	0
208. Styrene	100-42-5	NR	NR	NR	NR	NR	NR	5	6	215	5
209. Sulfuric Acid 47%	7664-93-9	E	E	E	E	>480	ND	0	>240	ND	0
210. Sulfuric Acid 97%	7664-93-9	G	P	NR	NR	NR	NR	5	NR	NR	5
211. Tannic Acid	1401-55-4	E	E	E	E	>480	ND	0	>240	ND	0
212. Tetrachloroethylene	127-18-4	E	E	E	E	9	286	5	11	50	4
213. Tetrahydrofuran	109-99-9	NR	NR	NR	NR	NR	NR	5	NR	NR	5
214. Toluene	108-88-3	NR	NR	NR	NR	NR	NR	5	NR	NR	5
215. Toluene / MEK (65:35)	Mixture	NR	NR	NR	NR	7	197	5	NT	NT	NA
216. Trichlorobenzene-1,2,4	120-82-1	NR	NR	NR	NR	NR	NR	5	NT	NT	NA
217. Trichloroethane-1,1,1	71-55-6	NR	NR	NR	NR	NR	NR	5	8	37	4
218. Trichloroethylene	79-01-6	NR	NR	NR	NR	NR	NR	5	11	148	5
219. Trichlorotrifluoroethane	76-13-1	E	G	P	P	12	15	4	>240	ND	0
220. Tricresyl Phosphate	1330-78-5	E	E	G	P	>480	ND	0	>240	ND	0
221. Triethanolamine	120-71-6	E	E	E	E	>480	ND	0	>240	ND	0
222. Turco 5351	Mixture	F	NR	NR	NR	5	338	5	NT	NT	NA
223. Turco 6709	Mixture	G	F	P	P	34	72	3	NT	NT	NA
224. Turpentine	8006-64-2	E	E	E	G	>480	ND	0	>240	ND	0
225. Ucon Quenchant A-RO @ 22%	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
226. Ucon Quenchant A-RO @ 34%	Mixture	E	E	E	E	>480	ND	0	>240	ND	0
227. Vegetable Oil	8001-30-7	E	E	E	E	NT	NT	NA	NT	NT	NA
228. Vinyl Acetate	108-05-4	NR	NR	NR	NR	5	141	5	14	106	5
229. Vinyl Benzene	100-42-5	NR	NR	NR	NR	NR	NR	5	6	215	5
230. Vinyl Styrene	1321-74-0	G	P	NR	NR	NR	NR	5	66	44	3
231. Vinylidene Chloride	75-35-4	P	NR	NR	NR	NR	NR	5	6	44	4
232. Xylene	1330-20-7	NR	NR	NR	NR	5	203	5	11	121	5

■ Explanation of Degradation, Permeation Testing and CPC Rating of Best Gloves

■ **Degradation:** *Degradation is a physical change in a glove material that occurs after exposure to chemicals. Typical degradation effects may include swelling, wrinkling, deterioration or delamination. There are no accepted standards for measuring degradation. Best gloves were tested for degradation using a protocol considered by the American Society for Testing and Materials (ASTM) F23 Protective Clothing Committee. The percent weight change was measured gravimetrically at four time intervals: 5, 30, 60, and 240 minutes. The ratings were assigned as follows:*

*E = Excellent for a 0 - 10% weight change.
G = Good for an 11 - 20% weight change.
F = Fair for a 21 - 30% weight change.
P = Poor for a 31 - 50% weight change.
NR = Not Recommended for more than 50% weight change.*

■ Chemical Protective Clothing (CPC) Index Ratings:

The Simplified selection system of Forsberg and Keith (1989) relies on actual breakthrough times and permeation rates. CPC Index Ratings for chemical protective clothing provide a quick, easy method of selecting appropriate hand protection based on laboratory data.

Key to CPC Index Ratings:

*0 = Best selection
1 = Next Best Selection
2 = Sometimes satisfactory, change when exposed
3 = Poor choice, change quickly when exposed
4 = Very poor, splashes only, change quickly
5 = Not recommended, dangerous choice*

■ Permeation

Permeation: ASTM F 739-91 test method for permeation of chemicals through chemical protective clothing under conditions of total immersion was followed. The units for reporting test results specified by ASTM F 739 include:

- 1. Minimum Detection Limit (MDL in ppm): the smallest amount of chemical that is detectable using the analytical system that is being employed to measure the permeation of the chemical being tested.*
- 2. Breakthrough Detection Time (BDT): is the time in minutes after initial exposure of the glove to the test chemical to the time when the chemical is first detected on the inside of the glove.*
- 3. Permeation Rate: is the steady state rate of a chemical in micrograms / minute permeating an area (cm²) of glove material. The units of ug/cm²/min are clearly specified by ASTM F 739 for reporting permeation rates at steady state.*

Code used for reporting data: The code used for these test results is as follows:

ND = No detectable breakthrough of chemical after eight hours of total immersion.

NR = Not Recommended because of severe degradation.

NA = Not applicable.

NT = Not Tested. Code used for reporting data: The code used for these test results is as follows:

ND = No detectable breakthrough of chemical after eight hours of total immersion.

NR = Not Recommended because of severe degradation.

NA = Not applicable.

NT = Not Tested.

■ Chemotherapeutic Drug Testing in N-Dex Non-Latex Medical Gloves

Drug Name	Brand	Maker	Pharmacy	Nurses	Staff	BDT in Min.	Rate ug/cm ² /min
1. Cisplatin AQ	Platinol AQ	Briston Squibb	1 mg/kg	0.2 mg/kg	0.02 mg/kg	>480	ND
2. Mitoxantrone HCL	Novantrone	Lederle	2 mg/kg	0.3 mg/kg	0.04 mg/kg	>480	ND
3. Duxorubicin HCL	Cetus	Cetus Labs	2 mg/kg	Same	0.04 mg/kg	>480	ND
4. Vincristine Sulfate	Oncovin	Lilly	1 mg/kg	Same	0.04 mg/kg	>480	ND
5. Ifosfamide	Ifex	Briston Squibb	50 mg/kg	1.5 mg/kg	0.02 mg/kg	>480	ND
6. Fluorouracil	5—FU	Solopak Labs	50 mg/kg	1.0 mg/kg	1.0 mg/kg	>480	ND
7. Carmustine	BiCNU	Briston Squibb	3.3 mg/kg	1.2 mg/kg	.1 mg/kg	>480	ND
8. Etoposide	VePesid	Briston Squibb	20 mg/kg	0.004 mg/kg	0.004 mg/kg	>480	ND
9. Dacarbazine	DTIC	Miles	10 mg/kg	0.5 mg/kg	0.05 mg/kg	>480	ND
10. Methotrexate	Mexate	Lederle	100 mg/kg	10 mg/kg	0.1 mg/kg	>480	ND
11. Mitomycin	Mutamycin	Briston Myers	0.5 mg/kg	Same	0.05 mg/kg	>480	ND

