



**FEEL THE SW
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SINGLE-USE CHEMICAL PERMEATION TESTING GUIDE

ANSI, ASTM F739-12

Average Breakthrough Times

Permeation Rates

Performance Levels

Ratings

Chemical Permeation Testing

Chemical permeation is the process by which chemicals migrate through protective glove material at the molecular level. It is important to note that chemical permeation can occur without any physical or observable changes to glove the material. To be better informed about selecting gloves when working with chemicals, it is important to understand how chemical permeation is tested and measured.

TESTING OVERVIEW

Chemical permeation tests are completed in laboratory conditions where a sample of glove material is placed in a 2-sided chamber. One side of the chamber is filled with the test chemical, the other side with collection medium where measurements are taken to determine the level of chemical permeation over a period of time (480 minutes) and at a fixed temperature (~21°C/69°F).

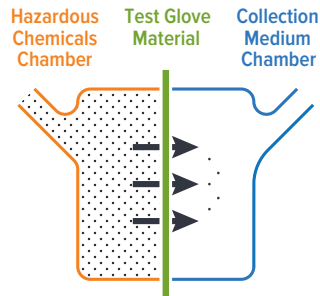


Illustration of chemical testing chamber

Disclaimer: Chemical permeation tests are conducted in controlled laboratory conditions and not in field conditions. Testing cannot replicate specific wear and tear environments under actual application conditions. The information included is provided as a guide only. Using the correct gloves, for specific applications can only be determined by testing in those applications by the purchaser.

TESTING RESULTS KEY

Chemical Permeation (ANSI)		TrueForm®			
Model Number		TF-95RB			
Item Number		N30134X			
Palm Thickness		0.08mm / 3.1mil			
Compliance Requirement		ANSI ISEA 105-2016			
Test Method		ASTM F739-12 e1			
Chemical	CAS Number	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating
ACIDS					
Acetic Acid (Glacial)	64-19-7	8	11.8	0	NR
Citric Acid (50%)	77-92-9	>240	0.0	5	HR
Hydrochloric Acid (37%)	7647-01-0	<5	3.5	0	NR
Hydrochloric Acid (20%)	7647-01-0	>240	0.0	5	HR
Perchloric Acid (70%)	7601-90-3	>30	0.1	2	HR

Breakthrough Times (BTT): The *elapsed time* between initial contact of the test chemical with the outside surface of the glove and the time at which permeation rate reaches 0.1µg/cm2/min (ASTM F739-12). A higher number is better or longer.

Permeation Rate (PR): The *average rate* at which chemicals pass through barrier layer once BTT is achieved. Measured in 0.1µg/cm2/min (ASTM F739-12). A lower number is better.

Performance Level: The ANSI ISEA 105-2016 numerical classification for chemical permeation.

Rating: The destructive change in one or more properties of a material. These are rated on a *color-coded scale* (see table below).

Performance Level is based on Breakthrough Time (BTT)

Average BTT (min)	Performance Level
< 10	0
≥ 10	1
≥ 30	2
≥ 60	3
≥ 120	4
≥ 240	5
≥ 480	6

Ratings are based on Breakthrough Time (BTT) in relation to Permeation Rate (PR)

Average BTT (min)	Permeation Rate (ug/min/cm²)	Rating
> 31	< 10	HR
> 31	> 10	R
11-30	< 10	R
11-30	> 10	F
< 10	< 1	F
< 10	1-100	NR
< 10	> 100	NR
11-30	> 1000	NR

HR	Highly Recommended
R	Recommended
F	Fair
NR	Not Recommended



Chemical Permeation (ANSI)		TrueForm®				TrueForm®				TrueForm®			
Model Number		TF-95RB				TF-12LG				TF-95NT			
Item Number		N30134X				N02740X				L00620X			
Palm Thickness		0.08mm / 3.1mil				0.16mm / 6.3mil				0.14mm / 5.5mil			
Compliance Requirement		ANSI ISEA 105-2016				ANSI ISEA 105-2016				ANSI ISEA 105-2016			
Test Method		ASTM F739-12 e1				ASTM F739-12 e1				ASTM F739-12 e1			
Chemical	CAS Number	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating
ACIDS													
Acetic Acid (Glacial)	64-19-7	8	11.8	0	NR	15	129.1	1	F	23	11.0	1	F
Citric Acid (50%)	77-92-9	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Hydrochloric Acid (37%)	7647-01-0	<5	3.5	0	NR	20	0.6	1	R	25	0.2	1	R
Hydrochloric Acid (20%)	7647-01-0	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Perchloric Acid (70%)	7601-90-3	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR
Nitric Acid (70%)	7697-37-2	5	0.3	0	F	13	0.2	1	R	45	11.2	2	HR
Sulfuric Acid (96%)	7664-93-9	<5	112.5	0	NR	11	196.8	1	F	8	2.4	0	NR
Sulfuric Acid (50%)	7664-93-9	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Phosphoric acid (85%)	7664-38-2	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Hydrogen Peroxide (30%)	7722-84-1	>10	0.1	1	R	>10	0.1	1	R	>10	0.1	1	R
ALKALIS/BASES													
Ammonium Hydroxide (25%)	1336-21-6	97	0.1	3	HR	95	0.1	3	HR	25	0.2	1	R
Sodium Hydroxide (40%)	1310-73-2	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Sodium Hypochlorite	7681-52-9	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Ethidim Bromide (5%)	1239-45-8	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
AROMATICS & HYDROCARBONS													
Chloroform	67-66-3	<5	48384.5	0	NR	<5	99765.9	0	NR	<5	76315.2	0	NR
DMSO	67-68-5	<5	55.6	0	NR	<5	218.0	0	NR	<5	158.1	0	NR
DMSO (10%)	67-68-5	>10	0.1	2	R	>10	0.1	2	R	>10	0.1	2	R
Heptane	142-82-5	37	0.8	2	HR	79	0.9	3	HR	<5	18123.0	0	NR
Hexane	110-54-3	22	0.8	1	R	49	1.0	2	HR	<5	51611.2	0	NR
Petroleum ether	8032-32-4	17	0.3	1	R	37	0.3	2	HR	<5	8453.5	0	NR
Stoddard Solvent	8052-41-3	<5	3.1	0	NR	21	1.6	1	R	<5	1.2	0	NR
Phenol (0.5%)	108-95-2	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR
Xylene	1330-20-7	<5	182.2	0	NR	<5	503.6	0	NR	<5	432.5	0	NR
CARBONYLS													
Acetone	67-64-1	<5	7862.6	0	NR	<5	17110.6	0	NR	<5	6338.1	0	NR
Acetonitrile	75-05-8	<5	4104.4	0	NR	<5	4716.4	0	NR	<5	72.7	0	NR
Formalin / Formaldehyde 37%	50-00-0	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
ALCOHOLS													
2-butoxyethanol	111-76-2	<5	11.6	0	NR	27	9.1	1	R	9	6.8	0	NR
Diacetone alcohol	123-42-2	11	47.4	1	F	15	100.9	1	F	11	63.0	1	F
Ethyl alcohol / Ethanol (99%)	64-17-5	<5	1060.2	0	NR	<10	383.1	0	NR	<10	3.6	0	NR
Ethyl alcohol / Ethanol (70%)	64-68-5	5	5856.0	0	R	>10	0.1	1	R	>10	0.1	1	R
Isopropanol / IPA (99%)	67-63-0	<5	364.7	0	NR	53	2.1	2	HR	<5	382.1	0	NR
Methanol	67-56-1	<5	364.7	0	NR	<5	184.5	0	NR	<5	1413.1	0	NR



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33278 Central Avenue, Unit 102, Union City, CA 94587, USA
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Chemical Permeation (ANSI)			PowerForm®				PowerForm®				PowerForm®				PowerForm®				PowerForm®							
Model Number			PF-95BK				PF-95TL				PF-95GW				PF-95BL				PF-95GY				PF-95OR			
Item Number			N71688X				N20036X				N18947X				N10655X				N26050X				N99175X			
Palm Thickness			0.13mm / 5mil				0.13mm / 5mil				0.12mm / 4.9mil				0.16mm / 6.1mil				0.16mm / 6.2mil				0.14mm / 5.5mil			
Compliance Requirement			ANSI ISEA 105-2016				ANSI ISEA 105-2016				ANSI ISEA 105-2016				ANSI ISEA 105-2016				ANSI ISEA 105-2016							
Test Method			ASTM F739-12 e1				ASTM F739-12 e1				ASTM F739-12 e1				ASTM F739-12 e1				ASTM F739-12 e1							
Chemical	CAS Number		Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating				
ACIDS																										
Acetic Acid (Glacial)	64-19-7		15	13.0	1	F	20	36.7	1	F	3	29.3	0	NR	15	1.8	1	R	3	16000.0	0	NR	13	0.1	1	R
Citric Acid (50%)	77-92-9		>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Hydrochloric Acid (37%)	7647-01-0		14	0.1	1	R	23	0.1	1	R	5	1.1	0	NR	32	0.1	2	HR	17	0.1	1	R	20	0.4	1	R
Hydrochloric Acid (20%)	7647-01-0		>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Perchloric Acid (70%)	7601-90-3		>60	0.1	3	HR	>60	0.1	3	HR	>60	0.1	3	HR	>60	0.1	3	HR	>60	0.1	3	HR	>60	0.1	3	HR
Nitric Acid (70%)	7697-37-2		9	1.0	0	F	20	4.2	1	R	5	3.8	0	NR	28	5.8	1	R	12	0.6	1	R	20	6.0	1	R
Sulfuric Acid (96%)	7664-93-9		8	10.5	0	NR	15	19037.1	1	NR	<5	30.4	0	NR	21	26359.1	1	NR	10	13.0	1	NR	16	20501.0	1	F
Sulfuric Acid (50%)	7664-93-9		>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Phosphoric Acid (85%)	7664-38-2		>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Hydrogen Peroxide (30%)	7722-84-1		>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR
ALKALIS/BASES																										
Ammonium Hydroxide (25%)	1336-21-6		77	1.0	3	HR	70	1.4	3	HR	47.5	0.1	2	HR	97	2.0	3	HR	23	0.1	1	R	17.5	0.1	1	R
Sodium Hydroxide (40%)	1310-73-2		>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Sodium Hypochlorite	7681-52-9		>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
Ethidim Bromide (5%)	1239-45-8		>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
AROMATICS & HYDROCARBONS																										
Chloroform	67-66-3		<5	58622.8	0	NR	<5	103940.7	0	NR	<5	61045.0	0	NR	<5	143917.8	0	NR	<5	72151.1	0	NR	<5	119000.0	0	NR
DMSO	67-68-5		<5	1676.0	0	NR	9	201.0	0	NR	<5	202.0	0	NR	12	251.3	0	NR	<5	206.2	0	NR	5	210.0	0	NR
DMSO (10%)	67-68-5		>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR
Heptane	142-82-5		60	0.5	3	HR	68	1.8	3	HR	65	0.2	3	HR	63	2.5	3	HR	60	0.7	3	HR	65	2.0	3	HR
Hexane	110-54-3		27	1.0	1	R	21	8.7	1	R	15	100.0	1	F	19	2.9	1	R	7	77.2	0	NR	10	200.0	1	F
Petroleum ether	8032-32-4		50	0.3	2	HR	19	0.3	1	R	28	0.3	1	R	26	0.4	1	R	61	0.3	3	HR	20	0.3	1	F
Stoddard Solvent	8052-41-3		20	2.0	1	R	5	3.6	0	NR	5	2.2	0	NR	7	5.0	0	NR	24	2.5	1	R	5	1.0	0	NR
Phenol (0.5%)	108-95-2		>60	0.1	3	HR	>60	0.1	3	HR	>60	0.1	3	HR	>60	0.1	3	HR	>60	0.1	3	HR	>60	0.1	3	HR
Xylene	1330-20-7		<5	683.7	0	NR	<5	376.1	0	NR	<5	845.0	0	NR	<5	520.8	0	NR	<5	841.5	0	NR	<5	605.0	0	NR
CARBONYLS																										
Acetone	67-64-1		<5	9978.4	0	NR	<5	23929.6	0	NR	<5	15003.0	0	NR	<5	33133.2	0	NR	<5	12281.1	0	NR	<5	25000.0	0	NR
Acetonitrile	75-05-8		<5	4085.2	0	NR	<5	23847.8	0	NR	<5	4305.0	0	NR	<5	33020.1	0	NR	<5	5028.0	0	NR	<5	8506.0	0	NR
Formalin / Formaldehyde 37%	50-00-0		>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR	>240	0.0	5	HR
ALCOHOLS																										
2-butoxyethanol	111-76-2		40	3.2	2	HR	49	8.8	2	HR	40	3.0	2	HR	68	12.1	3	R	49	3.9	2	HR	45	3.5	2	R
Diacetone alcohol	123-42-2		35	33.5	2	R	18	131.4	1	F	30	36.0	2	F	25	181.9	1	F	44	41.2	2	R	11	102.0	1	F
Ethyl alcohol / Ethanol (99%)	64-17-5		11	200.0	1	NR	17	6.4	1	R	11	200.0	1	F	24	8.9	1	R	11	208.0	1	F	12	6.9	1	R
Ethyl alcohol / Ethanol (70%)	64-68-5		>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR	>30	0.1	2	HR
Isopropanol / IPA (99%)	67-63-0		15	144.9	1	F	63	2.5	3	HR	24	2.0	1	R	61	2.9	3	HR	25	25.0	1	R	18	10.0	1	R
Methanol	67-56-1		<5	121.7	0	NR	7	1088.7	0	NR	<5	150.0	0	NR	10	1507.5	0	NR	<5	149.8	0	NR	<5	1503.0	0	NR



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 33278 Central Avenue, Unit 102, Union City, CA 94587, USA
 Tel: +1.510.429.8692 | Fax: +1.510.487.5347

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Chemical Permeation (ANSI)		PowerForm®				PowerForm®			
Model Number		PF-12TL				PF-12WG			
Item Number		N12736X				N18817X			
Palm Thickness		0.16mm / 6.2mil				0.15mm / 6.0mil			
Compliance Requirement		ANSI ISEA 105-2016				ANSI ISEA 105-2016			
Test Method		ASTM F739-12 e1				ASTM F739-12 e1			
Chemical	CAS Number	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating
ACIDS									
Acetic Acid (Glacial)	64-19-7	8	0.5	0	F	13	1000.0	1	F
Citric Acid (50%)	77-92-9	>240	0.0	5	HR	>240	0.0	5	HR
Hydrochloric Acid (37%)	7647-01-0	19	0.1	1	R	30	2.0	2	R
Hydrochloric Acid (20%)	7647-01-0	>240	0.0	5	HR	>240	0.0	5	HR
Perchloric Acid (70%)	7601-90-3	>60	0.1	3	HR	>60	0.1	3	HR
Nitric Acid (70%)	7697-37-2	13	10.7	1	F	20	2.2	1	R
Sulfuric Acid (96%)	7664-93-9	11	14.6	1	F	10	10.1	1	F
Sulfuric Acid (50%)	7664-93-9	>240	0.0	5	HR	>240	0.0	5	HR
Phosphoric acid (85%)	7664-38-2	>240	0.0	5	HR	>240	0.0	5	HR
Hydrogen Peroxide (30%)	7722-84-1	>30	0.1	2	HR	>30	0.1	2	HR
ALKALIS/BASES									
Ammonium Hydroxide (25%)	1336-21-6	107	0.2	3	HR	37.5	0.1	2	R
Sodium Hydroxide (40%)	1310-73-2	>240	0.0	5	HR	>240	0.0	5	HR
Sodium Hypochlorite	7681-52-9	>240	0.0	5	HR	>240	0.0	5	HR
Ethidim Bromide (5%)	1239-45-8	>240	0.0	5	HR	>240	0.0	5	HR
AROMATICS & HYDROCARBONS									
Chloroform	67-66-3	<5	81170.0	0	NR	<5	85023.0	0	NR
DMSO	67-68-5	<5	232.0	0	NR	<5	167.0	0	NR
DMSO (10%)	67-68-5	>30	0.1	2	HR	>30	0.1	2	HR
Heptane	142-82-5	67	0.7	3	HR	60	0.8	3	HR
Hexane	110-54-3	40	1.7	2	HR	41	10.0	2	R
Petroleum ether	8032-32-4	69	0.4	3	HR	65	0.2	3	HR
Stoddard Solvent	8052-41-3	27	2.8	1	HR	30	2.0	2	R
Phenol (0.5%)	108-95-2	>60	0.1	3	HR	>60	0.1	3	HR
Xylene	1330-20-7	<5	946.7	0	NR	<5	1015.0	0	NR
CARBONYLS									
Acetone	67-64-1	<5	13816.3	0	NR	<5	15005.0	0	NR
Acetonitrile	75-05-8	<5	5656.5	0	NR	<5	6503.0	0	NR
Formalin / Formaldehyde 37%	50-00-0	>240	0.0	5	HR	>240	0.0	5	HR
ALCOHOLS									
2-butoxyethanol	111-76-2	55	4.4	2	HR	50	3.2	2	HR
Diacetone alcohol	123-42-2	49	46.4	2	R	50	36.0	2	R
Ethyl alcohol / Ethanol (99%)	64-17-5	11	234.0	1	F	12	200.0	1	F
Ethyl alcohol / Ethanol (70%)	64-68-5	>30	0.1	2	HR	>30	0.1	2	HR
Isopropanol / IPA (99%)	67-63-0	23	10.0	1	R	53	2.8	3	HR
Methanol	67-56-1	<5	168.5	0	NR	<5	201.0	0	NR

Chemical Permeation (ANSI)		PowerChem®				PowerChem®			
Model Number		PF-95GR				PF-045-095GR			
Item Number		K00140X				K00040X			
Palm Thickness		0.12mm / 4.7mil				0.07mm / 2.7mil			
Compliance Requirement		ANSI ISEA 105-2016				ANSI ISEA 105-2016			
Test Method		ASTM F739-12 e1				ASTM F739-12 e1			
Chemical	CAS Number	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating
ACIDS									
Acetic Acid (Glacial)	64-19-7	15	13.0	1	F	10	19.7	1	F
Citric Acid (50%)	77-92-9	>240	0.0	5	HR	>240	0.0	5	HR
Hydrochloric Acid (37%)	7647-01-0	25	0.4	1	HR	16	0.6	1	R
Hydrochloric Acid (20%)	7647-01-0	>240	0.0	5	HR	>240	0.0	5	HR
Perchloric Acid (70%)	7601-90-3	>60	0.1	3	HR	>30	0.1	2	HR
Nitric Acid (70%)	7697-37-2	22	15.0	1	F	15	22.7	1	F
Sulfuric Acid (96%)	7664-93-9	16	20501.5	1	NR	11	31082.9	1	NR
Sulfuric Acid (50%)	7664-93-9	>240	0.0	5	HR	>240	0.0	5	HR
Phosphoric acid (85%)	7664-38-2	>240	0.0	5	HR	>240	0.0	5	HR
Hydrogen Peroxide (30%)	7722-84-1	>30	0.1	2	HR	>10	0.1	1	R
ALKALIS/BASES									
Ammonium Hydroxide (25%)	1336-21-6	45	0.1	2	HR	30	0.5	2	R
Sodium Hydroxide (40%)	1310-73-2	>240	0.0	5	HR	>240	0.0	5	HR
Sodium Hypochlorite	7681-52-9	>240	0.0	5	HR	>240	0.0	5	HR
Ethidim Bromide (5%)	1239-45-8	>240	0.0	5	HR	>240	0.0	5	HR
AROMATICS & HYDROCARBONS									
Chloroform	67-66-3	<5	11936.1	0	NR	<5	169709.6	0	NR
DMSO	67-68-5	10	195.5	1	NR	7	296.4	0	NR
DMSO (10%)	67-68-5	>30	0.1	2	HR	>10	0.1	2	HR
Heptane	142-82-5	41	2.0	2	HR	27	3.0	1	R
Hexane	110-54-3	23	9.4	1	F	15	14.3	1	F
Petroleum ether	8032-32-4	20	0.3	1	R	13	0.5	1	R
Stoddard Solvent	8052-41-3	5	1.9	0	NR	<5	2.9	0	NR
Phenol (0.5%)	108-95-2	>60	0.1	3	HR	>30	0.1	2	HR
Xylene	1330-20-7	<5	405.1	0	NR	<5	614.2	0	NR
CARBONYLS									
Acetone	67-64-1	<5	25770.3	0	NR	<5	39071.1	0	NR
Acetonitrile	75-05-8	<5	25682.3	0	NR	<5	38937.7	0	NR
Formalin / Formaldehyde 37%	50-00-0	>240	0.0	5	HR	>240	0.0	5	HR
ALCOHOLS									
2-butoxyethanol	111-76-2	53	9.4	2	HR	35	14.3	2	R
Diacetone alcohol	123-42-2	19	141.5	1	F	13	214.5	1	F
Ethyl alcohol / Ethanol (99%)	64-17-5	18	6.9	1	R	12	10.5	1	F
Ethyl alcohol / Ethanol (70%)	64-68-5	>30	0.1	2	HR	>10	0.1	1	R
Isopropanol / IPA (99%)	67-63-0	49	3.4	2	HR	32	5.2	2	HR
Methanol	67-56-1	8	1172.5	0	NR	5	1777.7	0	NR



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33278 Central Avenue, Unit 102, Union City, CA 94587, USA
Tel: +1.510.429.8692 | Fax: +1.510.487.5347

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Chemical Permeation (ANSI)		MegaMan®			
Model Number		MM-11BK			
Item Number		N26088X / N26488X (VP)			
Palm Thickness		0.22mm / 8.5mil			
Compliance Requirement		ANSI ISEA 105-2016			
Test Method		ASTM F739-12 e1			
Chemical	CAS Number	Average BTT (min)	Permeation Rate (ug/min/cm²)	Performance Level	Rating
ACIDS					
Acetic Acid (Glacial)	64-19-7	15	0.26	1	R
Citric Acid (50%)	77-92-9	>240	0.0	5	HR
Hydrochloric Acid (37%)	7647-01-0	8	7.3	0	NR
Hydrochloric Acid (20%)	7647-01-0	>240	0.0	5	HR
Perchloric Acid (70%)	7601-90-3	>60	0.1	3	HR
Nitric Acid (70%)	7697-37-2	15	105.9	1	F
Sulfuric Acid (96%)	7664-93-9	13	11543.6	1	NR
Sulfuric Acid (50%)	7664-93-9	>240	0.0	5	HR
Phosphoric acid (85%)	7664-38-2	>240	0.0	5	HR
Hydrogen Peroxide (30%)	7722-84-1	>30	0.1	2	HR
ALKALIS/BASES					
Ammonium Hydroxide (25%)	1336-21-6	93	0.2	3	HR
Sodium Hydroxide (40%)	1310-73-2	>240	0.0	5	HR
Sodium Hypochlorite	7681-52-9	>240	0.0	5	HR
Ethidim Bromide (5%)	1239-45-8	>240	0.0	5	HR
AROMATICS & HYDROCARBONS					
Chloroform	67-66-3	<5	88412.9	0	NR
DMSO	67-68-5	<5	269.5	0	NR
DMSO (10%)	67-68-5	>30	0.1	2	HR
Heptane	142-82-5	65	0.8	3	HR
Hexane	110-54-3	21	3.7	1	R
Petroleum ether	8032-32-4	39	0.5	2	HR
Stoddard Solvent	8052-41-3	25	0.6	1	R
Phenol (0.5%)	108-95-2	>60	0.1	3	HR
Xylene	1330-20-7	<5	177.0	0	NR
CARBONYLS					
Acetone	67-64-1	<5	24792.0	0	NR
Acetonitrile	75-05-8	<5	2230.1	0	NR
Formalin / Formaldehyde 37%	50-00-0	>240	0.0	5	HR
ALCOHOLS					
2-butoxyethanol	111-76-2	37	5.0	2	HR
Diacetone alcohol	123-42-2	11	179.2	1	F
Ethyl alcohol / Ethanol (99%)	64-17-5	11	200.0	0	F
Ethyl alcohol / Ethanol (70%)	64-68-5	>30	0.1	2	HR
Isopropanol / IPA (99%)	67-63-0	63	2.5	3	HR
Methanol	67-56-1	<5	108.0	0	NR



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