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Last Revised 12/20/2010

North Carolina

This Chemical Resistance Guide incorporates three types of information:

- **Degradation (D)** is a deleterious change in one or more of the glove's physical properties. The most obvious forms of degradation are the loss of the glove's strength and excessive swelling. Several published degradation lists (primarily "The General Chemical Resistance of Various Elastomers" by the Los Angeles Rubber Group, Inc.) were used to determine degradation.
- **Breakthrough time (BT)** is defined as the elapsed time between initial contact of the liquid chemical with the outside surface of the glove and the time at which the permeation rate reaches 0.1 mg/m<sup>2</sup>/sec. **WHEN BREAKTHROUGH OCCURS, THE GLOVE IS NO LONGER PROVIDING ADEQUATE PROTECTION.**
- **Permeation rate (PR)**, measured in milligrams per square meter per second (mg/m<sup>2</sup>/sec) is the measured steady state flow of the permeating chemical through the glove elastomer. Glove thickness plays an important role in resistance to permeation.

The glove styles tested for permeation were the SSG, F101, B174, CS113B, LA102G and PNLB1815. The permeation data in this guide are based on permeation tests performed in accordance with ASTM Standard F 739 under laboratory conditions by North Safety Products or independent AIHA accredited laboratories. Neither North Safety Products nor the independent laboratory assumes any responsibility for the suitability of an end user's selection of gloves based on this guide.

#### General Recommendation:

The Guide also provides a color-coded general recommendation on which gloves should be evaluated and tested first, based on data from multiple sources. (See general recommendation color key).

#### Technical Assistance:

Data on chemicals not listed here can be obtained by calling the North Technical Service Department at

(800) 430-4110. North also offers **ezGuide™**, an interactive software program which is designed to electronically help you select the proper glove for use against specific chemicals. This "user friendly" guide walks you step-by-step through the process to determine what type of glove to wear and its permeation resistance to the selected contaminant. Product features, benefits and ordering information of the suggested products also are included in the program. **ezGuide** can be accessed from the North web site, [www.northsafety.com](http://www.northsafety.com) or ordered by e-mailing us at [marketing@northsafety.com](mailto:marketing@northsafety.com).

The finest chemical handling gloves deserve to be used with the finest respiratory products. Please consult the current North Safety Products Respiratory Protection Catalog and **ezGuide™** for proper respiratory selection.

#### Warning:

Protective gloves and other protective apparel selection must be based on the user's assessment of the workplace hazards. Glove and Apparel materials do not provide unlimited protection against all chemicals. It is the users responsibility to determine before use that the Glove and Apparel will resist permeation and degradation by the chemicals (including chemical mixtures) in the environment of intended use.

#### **Failure by the user to select the correct protective gloves can result in injury, sickness or death**




To obtain maximum life, protective gloves and other protective apparel should have chemicals removed from the surface by washing or other appropriate methods after each use. Protective apparel should be stored away from the contaminating atmosphere.

Punctured, torn or otherwise ruptured apparel must be removed from service; unservicable apparel may be disposed of only in accordance with applicable waste disposal regulations.

#### Key to Degradation and Permeation Ratings

- E - Excellent Exposure has little or no effect. The glove retains its physical properties.
- G - Good Exposure has minor effect with long term exposure.
- F - Fair Exposure causes moderate degradation of the glove with long term exposure but caution should be exercised with exposure.
- P - Poor Short term exposure will result in moderate degradation.
- N/D Permeation was not detected during the test.
- I/D Insufficient data to make a recommendation.

#### General Recommendation Color Key

-  Good for total immersion
-  Good for accidental splash protection and limited immersion
-  Only use with extreme caution. Glove will degrade rapidly.

#### Physical Performance Chart

Physical Characteristics	Silver Shield®	Viton†	Bu
Abrasion Resistance	F	G	C
Cut Resistance	P	G	C
Puncture (Snag) Resistance	P	G	C
Flexibility	E	G	C
Heat Resistance	F	G	C
Ozone Resistance	E	E	E
Tensile Strength	E	G	C
Low Gas Permeability	E	E	E

Note: Products in these categories vary in capabilities. Laboratory tests performed.

† Viton is a Registered Trademark of DuPont Company.

		Silver Shield			Viton			Butyl			Chemsoft			N
Chemical Name	CAS No.	D	BT	PR	D	BT	PR	D	BT	PR	D	BT	PR	D
Acetaldehyde	75-07-0	E	>8 hrs	N/D	P	0 min	281.9	E	>8 hrs	0.066	I/D	I/D	I/D	P
Acetic Acid (100%) (Glacial)	64-19-7	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	F	37 min	13.3	F
Acetic Aldehyde	75-07-0	E	>8 hrs	N/D	P	0 min	281.9	E	>8 hrs	0.066	I/D	I/D	I/D	P
Acetic Ester	141-78-6	E	>8 hrs	N/D	I/D	I/D	I/D	E	7.6 hrs	3.4	I/D	I/D	I/D	P
Acetone	67-64-1	E	>8 hrs	N/D	P	2 min	383	E	>8 hrs	N/D	P	1 min	42.3	P
Acrylic Acid	79-10-7	E	>8 hrs	N/D	G	5.9 hrs	0.23	E	>8 hrs	N/D	I/D	I/D	I/D	F
Acrylonitrile	107-13-1	E	>8 hrs	N/D	F	14 min	28	E	>8 hrs	N/D	P	4 min	42	P
Ammonia (99%)	7664-41-7	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
Ammonium Hydroxide (29%)	1336-21-6	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	F	2 hrs	0.115	F
Aniline	62-53-3	E	>8 hrs	N/D	P	6 min	18.7	E	>8 hrs	N/D	I/D	I/D	I/D	F
Aniline Oil	62-53-3	E	>8 hrs	N/D	P	6 min	18.7	E	>8 hrs	N/D	I/D	I/D	I/D	F
Benzaldehyde	100-52-7	I/D	I/D	I/D	E	>8 hrs	4	E	>8 hrs	N/D	I/D	I/D	I/D	P
Benzene	71-43-2	E	>8 hrs	N/D	E	5.9 hrs	0.012	P	31 min	32.3	P	I/D	I/D	P
Bromoacetonitrile	590-17-0	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
Bromobenzene	108-86-1	E	I/D	I/D	E	>8 hrs	N/D	P	32 min	39.8	I/D	I/D	I/D	P
1,3-Butadiene	106-99-0	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D
Butyl Acetate	123-86-4	E	>8 hrs	N/D	P	I/D	I/D	G	1.8 hrs	7.61	I/D	I/D	I/D	P
Butyraldehyde	123-72-8	I/D	I/D	I/D	P	54 min	9	E	>8 hrs	N/D	I/D	I/D	I/D	P
Carbon Bisulfide	75-15-0	E	>8 hrs	N/D	E	>8 hrs	N/D	P	3 min	98.4	I/D	I/D	I/D	P
Carbon Disulfide	75-15-0	E	>8 hrs	N/D	E	>8 hrs	N/D	P	3 min	98.4	I/D	I/D	I/D	P
Carbon Tetrachloride	56-23-5	E	>8 hrs	N/D	E	>13 hrs	N/D	P	I/D	I/D	F	1.3 hrs	3.45	G
Caustic Soda (50%)	1310-73-2	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E
Chlorine	7782-50-5	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
2-Chloroethanol	107-07-3	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
Chloroform	67-66-3	E	>8 hrs	N/D	E	9.5 hrs	0.46	P	I/D	I/D	I/D	I/D	I/D	P
3-Chloroprene	107-05-1	E	>4 hrs	N/D	F	31 min	16	P	50 min	281	I/D	I/D	I/D	I/D
Curing Agent Z	N/A	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
Cyclohexane	110-82-7	E	>4hrs	N/D	E	>7 hrs	N/D	P	50 min	103.8	E	>8 hrs	N/D	G
Cyclohexanol	108-93-0	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>11 hrs	N/D	E	>6 hrs	N/D	E
Cyclohexanone	108-94-1	E	>8 hrs	N/D	P	29 min	86.3	E	>16 hrs	N/D	I/D	I/D	I/D	P
Di(2-ethylhexyl) phthalate	117-81-7	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E
Dibutylphthalate	84-74-2	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>16 hrs	N/D	E	>8 hrs	N/D	E
1,2-Dichloroethane	107-06-2	E	>8 hrs	N/D	E	>8 hrs	N/D	P	2.9 hrs	53	I/D	I/D	I/D	P
Dichloromethane	75-09-2	E	>8 hrs	N/D	F	1 hr	7.32	I/D	I/D	I/D	I/D	I/D	I/D	P
Diethyl Ether	60-29-7	E	>8 hrs	N/D	P	12 min	21.5	P	8 min	92.2	I/D	I/D	I/D	P

**D = Degradation**      **E = Excellent**      **N/D = None Detected**  
**BT = Breakthrough Time**      **G = Good**      **I/D = Insufficient Data**  
**PR = Permeation Rate**      **F = Fair**  
**P = Poor**

Good for total immersion  
 Good for accidental splash  
 Only use with extreme care

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		Silver Shield			Viton			Butyl			Chemsoft			N
Chemical Name	CAS No.	D	BT	PR	D	BT	PR	D	BT	PR	D	BT	PR	D
Diethyl Oxide	60-29-7	E	>8 hrs	N/D	P	12 min	21.5	P	8 min	92.2	I/D	I/D	I/D	P
Diethylamine	109-89-7	E	>8 hrs	N/D	P	35 min	852	P	47 min	46	I/D	I/D	I/D	F
Diethylaminoethanol	100-37-8	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>7.8 hrs	0.02	E
1,4-Diethylene Dioxide	123-91-1	I/D	I/D	I/D	P	23 min	26.8	E	>20 hrs	N/D	I/D	I/D	I/D	P
Diethylene Ether	123-91-1	I/D	I/D	I/D	P	23 min	26.8	E	>20 hrs	N/D	I/D	I/D	I/D	P
Diethylene Oxide	123-91-1	I/D	I/D	I/D	P	23 min	26.8	E	>20 hrs	N/D	I/D	I/D	I/D	P
Diethylenetriamine	111-40-0	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	P
Diisobutyl Ketone (80%)	108-83-8	E	>8 hrs	N/D	F	1.1 hrs	90.6	G	3.3 hrs	41.2	I/D	I/D	I/D	F
Dimethyl Acetamide	127-19-5	F	1.5 hrs	0.728	P	25 min	3	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
Dimethyl Formamide	68-12-2	E	>8 hrs	N/D	P	8 min	6.5	E	>8 hrs	N/D	I/D	I/D	I/D	F
Dimethyl Mercury	593-74-8	E	>4 hrs	<0.017	P	<15 min	3.1	P	<15 min	46.7	I/D	I/D	I/D	I/D
Dimethyl Sulfoxide	67-68-5	G	I/D	I/D	F	1.5 hrs	5	E	>8 hrs	N/D	F	41 min	3.7	F
Dimethylketone	67-64-1	E	>8 hrs	N/D	P	2 min	383	E	>8 hrs	N/D	P	1 min	42.3	P
Diocetyl Phthalate	117-81-7	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E
1,4-Dioxane	123-91-1	I/D	I/D	I/D	P	23 min	26.8	E	>20 hrs	N/D	I/D	I/D	I/D	P
Dioxyethylene Ether	123-91-1	I/D	I/D	I/D	P	23 min	26.8	E	>20 hrs	N/D	I/D	I/D	I/D	P
Divinyl Benzene	1321-74-0	E	>8 hrs	N/D	E	>17 hrs	N/D	F	2.2 hrs	238	I/D	I/D	I/D	P
Epichlorohydrin	106-89-8	I/D	I/D	I/D	P	2 hrs	4	E	>8 hrs	N/D	I/D	I/D	I/D	P
1,2-Epoxypropane	75-56-9	I/D	I/D	I/D	P	1 min	1790	F	2.2 hrs	7	I/D	I/D	I/D	P
Ethanal	75-7-0	E	>8 hrs	N/D	P	0 min	281.9	E	>8 hrs	0.066	I/D	I/D	I/D	P
Ethanol	64-17-5	E	>8 hrs	N/D	I/D	I/D	I/D	E	>8 hrs	N/D	F	1.2 hrs	3.3	I/D
Ether	60-29-7	E	>8 hrs	N/D	P	12 min	21.5	P	8 min	92.2	I/D	I/D	I/D	P
Ethyl Acetate	141-78-6	E	>8 hrs	N/D	P	I/D	I/D	G	7.6 hrs	3.4	I/D	I/D	I/D	P
Ethyl Alcohol	64-17-5	E	>8 hrs	N/D	I/D	I/D	I/D	E	>8 hrs	N/D	F	1.2 hrs	3.3	I/D
Ethyl Aldehyde	75-07-0	E	>8 hrs	N/D	P	0 min	281.9	E	>8 hrs	0.066	I/D	I/D	I/D	P
Ethyl Ether	60-29-7	E	>8 hrs	N/D	P	12 min	21.5	P	8 min	92.2	I/D	I/D	I/D	P
Ethylamine (70% in water)	75-04-7	F	51 min	0.65	P	I/D	I/D	E	>12 hrs	N/D	I/D	I/D	I/D	F
Ethylene Dichloride	107-06-2	E	>8 hrs	N/D	E	>8 hrs	N/D	F	2.9 hrs	53	I/D	I/D	I/D	P
Ethylene Glycol	107-21-1	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	E	>8 hrs	N/D	I/D
Ethylene Oxide	75-21-8	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
Formaldehyde (37% in water)	50-00-0	E	>8 hrs	N/D	E	>16 hrs	N/D	E	>16 hrs	N/D	E	>8hrs	0.007	E
Furfural	98-01-1	E	>8 hrs	N/D	F	3.5 hrs	14.8	E	>16 hrs	N/D	I/D	I/D	I/D	P
Glutaraldehyde (25%)	111-30-8	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	P
Heptane	142-82-5	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	E	>6 hrs	N/D	I/D
Hexahydrobenzene	110-82-7	E	>4hrs	N/D	E	>7 hrs	N/D	F	50 min	103.8	E	>8 hrs	N/D	F

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		Silver Shield			Viton			Butyl			Chemsoft			N
Chemical Name	CAS No.	D	BT	PR	D	BT	PR	D	BT	PR	D	BT	PR	D
Hexahydrophenol	108-93-0	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>11 hrs	N/D	E	>6 hrs	N/D	E
Hexamethylene	110-82-7	E	>4hrs	N/D	E	>7 hrs	N/D	F	50 min	103.8	E	>8 hrs	N/D	F
Hexanaphthene	110-82-7	E	>4hrs	N/D	E	>7 hrs	N/D	F	50 min	103.8	E	>8 hrs	N/D	F
Hexane	110-54-3	E	>8 hrs	N/D	E	>8 hrs	N/D	P	I/D	I/D	E	>6 hrs	N/D	E
Hydrochloric Acid (37%)	7647-01-0	E	>8 hrs	N/D	E	I/D	I/D	E	I/D	I/D	E	>6 hrs	N/D	E
Hydrofluoric Acid (48%)	7664-39-3	E	>8 hrs	0.013	G	I/D	I/D	F	I/D	I/D	I/D	I/D	I/D	G
Hydrogen Chloride (gas)	7647-01-0	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
Iodomethane	74-88-4	P	4 min	0.026	E	6.3 hrs	0.7	F	55 min	82	I/D	I/D	I/D	I/D
Isobutyl Alcohol	78-83-1	E	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E
Isopropyl Alcohol	67-63-0	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	E	>6 hrs	N/D	E
Ketohexamethylene	108-94-1	E	>8 hrs	N/D	P	29 min	86.3	E	>16 hrs	N/D	I/D	I/D	I/D	P
Methacrylic Acid	79-41-4	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	F
Methacrylonitrile	126-98-7	E	I/D	I/D	F	4 min	462	E	>8 hrs	N/D	I/D	I/D	I/D	P
Methanol	67-56-1	E	6 hrs	0.02	F	3 hrs	1	E	>8 hrs	N/D	I/D	I/D	I/D	F
Methenyl Trichloride	67-66-3	E	>8 hrs	N/D	E	9.5 hrs	0.46	I/D	I/D	I/D	I/D	I/D	I/D	P
Methyl Alcohol	67-56-1	E	6 hrs	0.02	F	3 hrs	1	E	>8 hrs	N/D	I/D	I/D	I/D	F
1-Methyl-4-tert-butylbenzene	98-51-1	E	>8 hrs	N/D	E	>8 hrs	N/D	F	1.78 hrs	8	I/D	I/D	I/D	P
Methyl Cellosolve	109-86-4	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	F
Methyl Chloride	74-87-3	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	0.0013	I/D
Methyl Chloroform	71-55-6	E	>8 hrs	N/D	E	>15 hrs	N/D	P	I/D	I/D	I/D	I/D	I/D	P
Methyl Iodide	74-88-4	P	4 min	0.026	E	6.3 hrs	0.7	F	55 min	82	I/D	I/D	I/D	I/D
Methylamine (40% in water)	74-89-5	F	46 min	1.28	E	>16 hrs	N/D	E	>15 hrs	N/D	F	1.7 hr	7	E
Methylbenzene	108-88-3	E	>8 hrs	N/D	E	>16 hrs	N/D	P	6 min	511	I/D	I/D	I/D	P
Methylene Chloride	75-09-2	E	>8 hrs	N/D	F	1 hr	7.32	P	I/D	I/D	P	I/D	I/D	P
4,4-Methylene Dianiline	101-77-9	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	F
Monoethanolamine	141-43-5	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D
Morpholine	110-91-8	E	>8 hrs	N/D	G	1.9 hrs	97	E	>16 hrs	N/D	I/D	I/D	I/D	P
Naphtha	8052-41-3	E	>8 hrs	N/D	I/D	I/D	I/D	I/D	I/D	I/D	E	>8 hrs	N/D	E
n-Hexane	110-54-3	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	E	>6 hrs	N/D	I/D
Nitrobenzene	98-95-3	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	F
Nitromethane	75-52-5	I/D	I/D	I/D	I/D	I/D	I/D	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
1-Nitropropane	108-03-2	E	>8 hrs	N/D	P	17 min	26.1	E	>8 hrs	N/D	I/D	I/D	I/D	P
n-Methyl-2-Pyrrolidone	872-50-4	I/D	I/D	I/D	I/D	I/D	I/D	E	8 hrs	N/D	I/D	I/D	I/D	F
n-Propyl Acetate	109-60-4	E	>8 hrs	N/D	I/D	I/D	I/D	F	2.7 hrs	2.86	I/D	I/D	I/D	P
Oxalic Acid	144-62-7	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	G

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Chemical Name	CAS No.	D	BT	PR	D	BT	PR	D	BT	PR	D	BT	PR	D
p-Dioxane	123-91-1	I/D	I/D	I/D	P	23 min	26.8	E	>20 hrs	N/D	I/D	I/D	I/D	P
Perchloric Acid (70%)	7601-90-3	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	E	>8 hrs	N/D	E
Perchloroethylene	127-18-4	E	>8 hrs	N/D	E	>17 hrs	N/D	P	I/D	I/D	F	1 hr	3.8	F
Perchloromethane	56-23-5	E	>8 hrs	N/D	E	>13 hrs	N/D	I/D	I/D	I/D	F	1.3 hrs	3.45	F
Phenol (85% in water)	108-95-2	E	>8 hrs	N/D	E	>15 hrs	N/D	E	>20 hrs	N/D	I/D	I/D	I/D	P
Phenylamine	62-53-3	E	>8 hrs	N/D	P	6 min	18.7	E	>8 hrs	N/D	I/D	I/D	I/D	F
Phosphoric Acid (85%)	7664-38-2	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	E	>8 hrs	N/D	E
Pimelic Ketone	108-94-1	E	>8 hrs	N/D	P	29 min	86.3	E	>16 hrs	N/D	I/D	I/D	I/D	I/D
2-Propanone	67-64-1	E	>8 hrs	N/D	P	2 min	383	E	>8 hrs	N/D	P	1 min	42.3	P
Propyl Acetate	109-60-4	E	>8 hrs	N/D	P	I/D	I/D	G	2.7 hrs	2.86	I/D	I/D	I/D	P
Propyl Alcohol	71-23-8	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	I/D	G	3.8 hrs	0.35	E
Propylene Oxide	75-56-9	I/D	I/D	I/D	P	1 min	1790	F	2.2 hrs	7	I/D	I/D	I/D	P
p-tert-Butyltoluene	98-51-1	E	>8 hrs	N/D	E	>8 hrs	N/D	F	1.78 hrs	8	I/D	I/D	I/D	P
Pyridine	110-86-1	I/D	I/D	I/D	P	38 min	74	E	>8 hrs	N/D	I/D	I/D	I/D	P
Sodium Hydroxide 50%	1310-73-2	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	E
Stoddard Solvent	8052-41-3	E	>8 hrs	N/D	I/D	I/D	I/D	I/D	I/D	I/D	E	>8 hrs	N/D	E
Styrene	100-42-5	E	>6 hrs	N/D	E	>6 hrs	N/D	F	35 Mins	0.19	P	16 min	39	P
Sulfuric Acid (50%)	7664-93-9	E	>6 hrs	N/D	E	I/D	I/D	E	I/D	I/D	G	>8 hrs	N/D	G
Sulfuric Acid (93%)	7664-93-9	E	>8 hrs	N/D	E	>8 hrs	N/D	E	>8 hrs	N/D	P	2 min	N/D	F
Tetrachloroethylene	127-18-4	E	>8 hrs	N/D	E	>17 hrs	N/D	P	I/D	I/D	F	1 hr	3.8	F
Tetrachloromethane	56-23-5	E	>8 hrs	N/D	E	>13 hrs	N/D	I/D	I/D	I/D	F	1.3 hrs	3.45	F
Tetrahydrofuran	109-99-9	E	>8 hrs	N/D	P	0 min	327	F	27 min	112	P	I/D	I/D	P
Thioglycolic Acid	68-11-1	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D	I/D	I/D	I/D
Toluene	108-88-3	E	>8 hrs	N/D	E	>16 hrs	N/D	P	6 min	511	P	I/D	I/D	P
Toluene Diisocyanate	584-84-9	E	>8 hrs	N/D	I/D	I/D	I/D	E	I/D	I/D	F	1 hr	2.52	G
1,1,1-Trichloroethane	71-55-6	E	>8 hrs	N/D	E	>15 hrs	N/D	P	I/D	I/D	I/D	I/D	I/D	F
Trichloroethylene	79-01-6	E	>8 hrs	N/D	E	7.4 hrs	0.24	P	14 min	550	I/D	I/D	I/D	P
Trichloromethane	67-66-3	E	>8 hrs	N/D	E	9.5 hrs	0.46	I/D	I/D	I/D	I/D	I/D	I/D	P
Triethanolamine	102-71-6	I/D	I/D	I/D	I/D	I/D	I/D	E	>8 hrs	N/D	E	>8 hrs	N/D	I/D
Triethylamine	121-44-8	I/D	I/D	I/D	E	>8 hrs	N/D	P	I/D	I/D	E	5.8 hrs	0.18	E
Vinegar Naphtha	141-78-6	E	>8 hrs	N/D	P	I/D	I/D	E	7.6 hrs	3.4	I/D	I/D	I/D	P
Vinylstyrene	1321-74-0	E	>8 hrs	N/D	E	>17 hrs	N/D	F	2.2 hrs	238	I/D	I/D	I/D	P
Xylene	1330-20-7	E	>8 hrs	N/D	E	>8 hrs	N/D	P	I/D	I/D	P	I/D	I/D	P

D = Degradation

E = Excellent

N/D = None Detected

BT = Breakthrough Time

G = Good

I/D = Insufficient Data

PR = Permeation Rate

F = Fair

P = Poor

 Good for total immersion

 Good for accidental splash

 Only use with extreme caution

Last Revised 12/20/2010

North® Nitrile Gloves

## Viton® - Unsupported Gloves

Excellent chemical resistance to chlorinated and aromatic solvents. Can be used in water based solvents without dissolving. Superior resistance to PCBs. Curved finger and hand design provides better fit for greater worker comfort.

Viton® is a registered trademark of the DuPont company.



Part No.	Description	Sizes	Grip/Cuff	Length/Gauge	Inner Pack	Case Pack
F101	Black, sanitized interior	8-11	Smooth/straight	11"/10 mil	1 pair	10 pair
F124	Black, sanitized interior	8-11	Smooth/straight	14"/12 mil	1 pair	10 pair

## Silver Shield®/4H® Gloves

Resistant to over 280 different chemicals: alcohols, aliphatic, aromatics, chlorines, ketones, esters. Low cost, disposable gloves do not have to be recycled and can be readily available to workers. Does not contain chemical accelerators that can cause allergic reactions. Can be used as a secondary inner glove. Allows worker maximum protection in heavy-duty jobs where the dangers of mechanical damage to gloves are high.



Part No.	Description	Sizes	Grip/Cuff	Length/Gauge	Inner Pack	Case Pack
SSG	Silver, unlined	6, 7, 8	Smooth/straight	14.5"/2.7 mil	10 pair	50 pair
		9, 10, 11	Smooth/straight	16"/2.7 mil	10 pair	50 pair
SSG29/10	Silver, unlined	10	Smooth/straight	29"/2.7 mil	10 pair	50 pair

## NitriGuard Unsupported Nitrile Gloves

100% nitrile content offers superior resistance to cuts, snags, abrasions and punctures. Gloves are free of latex proteins which can cause allergic reactions. Comply with USDA and FDA regulations, 21 CFR, for use in food processing. Available with unlined or flocked interior.



Part No.	Description	Sizes	Grip/Cuff	Length/Gauge	Inner Pack	Case Pack
LA102G	Green, sanitized interior	7-11	Sandpatch/straight	13"/11 mil	1 dz pair	12 dz pair
LA142G	Green, sanitized interior	7-11	Sandpatch/straight	13"/15 mil	1 dz pair	12 dz pair
LA225G	Green, sanitized interior	7-11	Sandpatch/straight	15"/22 mil	1 dz pair	6 dz pair
LA258G	Green, sanitized interior	7-11	Sandpatch/straight	18"/25 mil	1 dz pair	6 dz pair
LA111EB	Blue, sanitized interior	7-11	Sandpatch/straight	13"/11 mil	1 dz pair	12 dz pair
LA132G	Green, flock interior	7-11	Sandpatch/straight	13"/15 mil	1 dz pair	12 dz pair
LA172G	Green, flock interior	7-11	Sandpatch/straight	13"/17 mil	1 dz pair	12 dz pair
LA111EBFL	Blue, flock interior	7-11	Sandpatch/straight	13"/15 mil	1 dz pair	12 dz pair

## Butyl - Unsupported Gloves

Highest permeation resistance to gas and water vapor for greater work especially when handling toxic substances. Flexible and sensitive, temperatures. Curved finger and hand design provides a better fit for comfort. Available with "Grip-Saf" palm for wet applications.

Part No.	Description	Sizes	Grip/Cuff
B131	Black, sanitized interior	7-11	Smooth/rolled
B131R	Black, sanitized interior	7-11	Rough Grip-Saf
B161	Black, sanitized interior	7-11	Smooth/rolled
B161R	Black, sanitized interior	7-11	Rough Grip-Saf
B174	Black, sanitized interior	7-11	Smooth/rolled
B174R	Black, sanitized interior	7-11	Rough Grip-Saf
B324	Black, sanitized interior	7-11	Smooth/rolled
B324R	Black, sanitized interior	7-11	Rough Grip-Saf
B074GI	Black, sanitized interior	XS-XL	Smooth/rolled
B074RGI	Black, sanitized interior	XS-XL	Rough/rolled
B144GI	Black, sanitized interior	XS-XL	Smooth/rolled
B144RGI	Black, sanitized interior	XS-XL	Rough/rolled
B174GI	Black, sanitized interior	XS-XL	Smooth/rolled
B174RGI	Black, sanitized interior	XS-XL	Rough/rolled
B254GI	Black, sanitized interior	XS-XL	Smooth/rolled
B254RGI	Black, sanitized interior	XS-XL	Rough/rolled
B224G	Black, sanitized interior cotton liner	XS-XL	Smooth/rolled

## Chemsoft® Industrial Glove

Unique patented 100% nitrile formulation is 59% stretchier<sup>1</sup> than the light weight nitrile gloves. Gives wearer dexterity required to pick up small comparable nitrile gloves on the market, without hand fatigue. Comply with FDA regulations, 21 CFR, for use in food processing. Free of latex proteins cause allergic reactions.

<sup>1</sup> Based on an independent scientific comparison between the new North Chemsoft Industrial Glove and the current North Chemsoft Industrial Glove. Edmont Sol-Vex brand conducted by the Akron Rubber Development Laboratory.

Part No.	Description	Sizes	Grip/Cuff
CS113B	Blue, sanitized interior	7-11	Sandpatch/straight
CS153B	Black, flock interior	7-11	Sandpatch/straight

## Unsupported Premium Natural Rubber

100% high natural rubber has excellent dexterity, elasticity, and tensile strength for long wear and comfort. Embossed palm and fingers have a better work edge prevents cuff from tearing. Chlorinated for more comfort and durability. Complies with USDA and FDA regulations, 21 CFR, for use in food processing.

<sup>1</sup> CAUTION: This product contains natural rubber latex proteins which may cause allergic reactions.

Part No.	Description	Sizes	Grip/Cuff
PNLB1815	Orange, sanitized interior	7-11	Diamond embossed