

JACKSON SAFETY* G80 Nitrile Chemical Resistant Gloves

Chemical Resistance Guide



This guide presents the results of ASTM F739 standard permeation testing and degradation ratings for the JACKSON SAFETY® G80 Nitrile Chemical Resistant Gloves. It is intended as a tool to help you assess the chemicals for which the use of this glove is best suited.

This guide is not designed to consider every possible factor or circumstance relative to safety in every environment. To select the appropriate glove protection, a Hazards Analysis and Risk Assessment should be performed, including identification of the chemicals and chemical hazards related to the worker's task and work environment; determination of the potential for exposure and the type of exposure that is expected (i.e. splash, saturation, spray, immersion, etc.); and determination of the consequences related to exposure.

It is the responsibility of the user to assess the types of hazards and the risks associated with exposure and to make a final decision on the appropriate personal protective equipment needed for his specific circumstance.

Understanding Testing Terminology

Permeation: This is a process by which a chemical can breach a surface in which no perceptible openings are present. In permeation, the chemical's molecules actually slip between the molecules of the glove material and are detected. The results of the permeation process are undetectable by the naked eye.

Breakthrough Time: Measured in minutes, this is the amount of time between the initiation of the permeation test and analytical detection of the chemical on the reverse side of the sample material. Breakthrough times give an indication of how long a

glove, that's totally immersed in the test chemical, can provide resistance to chemical permeation.

Permeation Rate: The maximum rate at which a permeating chemical passes through the fabric as measured by the analyzer. It is reported as micrograms per square centimeter of fabric per minute.

Note: The combination of breakthrough time and permeation rate should be taken into consideration when making a glove selection. The goal is to provide the wearer with the least possible amount of chemical exposure for the duration of the task. Therefore, a long breakthrough time and a low permeation rate results in less chemical exposure over time — compared to a shorter breakthrough time and a higher permeation rate.

Degradation: This is the measurement of changes in the physical properties of a glove material, after contact with a chemical. The changes may include a stiffening of the material, becoming hard or brittle; or the glove material may swell and become softer and weaker.

How to Utilize this Chemical Resistance Guide

Three categories of data are provided for each product and corresponding chemical:

- 1) Permeation *breakthrough time*;
- 2) Permeation *rate*, and
- 3) *Degradation* resistance rating.

Color Code Rating System

A glove/chemical combination receives a **GREEN** rating if either Condition A or B is met.

Condition A

- The permeation breakthrough time is 240 minutes or longer.
- The permeation rate is not specified.
- The degradation rating is Excellent or Good.
OR

Condition B

- The permeation breakthrough time is 30 minutes or longer.
- The permeation rate is Excellent or Good.
- The degradation rating is Excellent or Good.

A glove/chemical combination receives **RED** if: the degradation rating is Not Recommended, regardless of the permeation time or rate; or if the breakthrough time is less than 30 minutes and the degradation rating is poor.

Any glove/chemical combination not meeting either set of conditions required for **GREEN** or **RED** receives a **YELLOW**, or cautionary rating.

Criteria for Chemical Resistance Guide

Permeation Breakthrough Time (PB)

Rating	Minutes
Excellent	> 240
Good	> 30
Poor	≥ 10
Not Rated	< 10

Permeation Rate (PR)

Rating	µg/cm ² /min
Excellent	< 1
Good	< 100
Poor	< 10,000

Degradation (D)

Rating	Key
Excellent (E)	Excellent; fluid has very little degrading effect.
Good (G)	Good; fluid has minor degrading effect.
Poor (P)	Poor; fluid has pronounced degrading effect.
Not Recommended (NR)	NR – Fluid was not tested against this material or the fluid has excessive degrading effects.

GREEN

The results for this specific chemical suggest that the glove would provide adequate barrier for use in most applications.

RED

Not recommended for use.

YELLOW

The results require additional consideration by a safety professional to determine suitability for use.

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	Permeation Time (PB) (minutes) <i>ASTM F739</i>	Permeation Rate (PR) (µg/cm ² /min) <i>ASTM F739-99A</i>	Degradation (D)	Color Code Rating	Concentration (%)
Acetonitrile	10	189	Poor		99.9%
Ammonia	361	0.651	Good		99.9%
Ammonia Household Cleaner	>480	ND	Excellent		Mixture
Ammonium Chloride	>480	ND	Excellent		50.0%
Ammonium Hydroxide	344	2.08	Good		30.0%
Ammonium Nitrate	>480	ND	Excellent		50.0%
Ammonium Sulfate	>480	ND	Excellent		50.0%
Benzene	14	627	Poor		99.8%
Brake Fluid	>480	ND	Excellent		Mixture
1, 3-Butadiene	>480	0.065	Good		99.5%
Calcium Carbonate	>480	ND	Excellent		30.0%
Calcium Chloride	>480	ND	Excellent		50.0%
Calcium Sulfate	>480	ND	Excellent		Saturated
Carbon Disulfide	10	50	Poor		99.9%
Carboxymethyl Cellulose (CMC)	>480	ND	Excellent		10.0%
Chlorine Gas	>480	ND	Excellent		99.5%
Chloroform	7.83	10.33	NR		99.0%
Chromic Acid	>480	0.047	Good		50.0%
Citric Acid	>480	ND	Excellent		50.0%
Cumene	104	19.3	Poor		98.0%
Cyclohexane	>480	0.07	Excellent		99.0%
Diesel Fuel, mixture	>480	ND	Excellent		Mixture
Dimethylformamide-n,n	10	586	Poor		99.8%
Diethyl Phthalate	>480	ND	Excellent		99.0%
Ethanol (Ethyl Alcohol)	420	0.137	Excellent		99.7%
Ethylene Glycol	>480	ND	Excellent		99.8%
Ethylene Oxide (liquid)	49	353	Poor		99.5%
Fertilizer	>480	ND	Excellent		30.0%
Formaldehyde	>480	ND	Excellent		37.0%
Fuel Oil	>480	ND	Excellent		Mixture
Gasoline (unleaded)	126	80.2	Excellent		Mixture
Glycerine	>480	ND	Excellent		99.0%
Gunk Cutting Oil	>480	ND	Excellent		Mixture
Heptane	102	0.3	Excellent		100.0%
n-Hexane	>480	0.07	Excellent		100.0%
Hydraulic Brake Fluid	>480	ND	Excellent		Mixture
Hydrochloric Acid (Muriatic Acid)	>480	ND	Excellent		37.0%
Hydrogen Fluoride	21	197	Good		99.5%
Hydrogen Peroxide	>480	ND	Excellent		30.0%
Isobutylene	>480	ND	Excellent		99.0%
Isopropyl Alcohol (Isopropanol, IPA)	>480	0.06	Excellent		99.9%
Jet Fuel (Kerosene)	>480	ND	Excellent		Mixture

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JACKSON SAFETY* G80 Nitrile Chemical Resistant Glove	Permeation Time (PB) (minutes) ASTM F739	Permeation Rate (PR) (µg/cm ² /min) ASTM F739-99A	Degradation (D)	Color Code Rating	Concentration (%)
Methanol	87	0.883	Excellent	Green	99.5%
4,4-Methylene Bisphenyl Isocyanate	>480	ND	Excellent	Green	98%
Methyl Ethyl Ketone	6.5	7.6	NR	Red	100.0%
Methyl Formate (A.K.A. Methyl Methanoate, Methyl Ester or Formic Acid)	6	482	NR	Red	99.9%
Methyl Sulfoxide	102	2.01	Poor	Yellow	99.9%
Mineral Spirits	>480	ND	Excellent	Green	Mixture
Motor Oil	>480	ND	Excellent	Green	Mixture
Nitric Acid	16	197	Poor	Red	70.0%
Nitrobenzene	40	49.4	NR	Red	99.0%
Perchloroethylene	258	21	Good	Green	99.0%
Phenol	115	21.6	Poor	Yellow	50.0%
Phosphoric Acid	>480	ND	Excellent	Green	85.0%
Polyurethane	>480	ND	Excellent	Green	Mixture
Potassium Hydroxide (KOH)	>480	ND	Excellent	Green	45.0%
PVC	>480	ND	Excellent	Green	10.0%
Sodium Bisulphite	>480	ND	Excellent	Green	25.0%
Sodium Hydroxide	>480	ND	Excellent	Green	50.0%
Sodium Hypochlorite	>480	ND	Excellent	Green	50.0%
Sodium Hypochlorite (household bleach)	>480	ND	Excellent	Green	15.0%
Sodium Sulfate	>480	ND	Excellent	Green	25.0%
Sulfuric Acid	>480	ND	Excellent	Green	47%
Sulfuric Acid	173	ND	NR	Red	98.0%
Tetrachloroethylene	258	21	Good	Green	99.0%
Thread Cutting Oil	>480	ND	Excellent	Green	Mixture
Toluene	20.7	1.4	Poor	Yellow	99.5%
Varsol	>480	ND	Excellent	Green	Mixture
Vinyl Acetate	10	691	Poor	Red	99.0%
Xylene	52.7	0.767	Poor	Yellow	98.5%

ND = Not Detected Immed = Immediate NR = Not Recommended

Conditions/Color Codes

GREEN	
Condition 1	
PB	>240
PR	Any
D	E, G
Condition 2	
PB	>30
PR	<100
D	E, G

RED	
Condition 1	
PB	Any
PR	Any
D	NR
Condition 2	
PB	<30
PR	Any
D	P

YELLOW	
Any Other Condition	

TAN	
No Results Reported	

Criteria for Chemical Resistance Guide

Permeation Breakthrough Time (PB)

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Not Rated	< 10

Permeation Rate (PR)

Rating	µg/cm ² /min
Excellent	< 1
Good	< 100
Poor	< 100

Degradation (D)

Rating
Excellent (E)
Good (G)
Poor (P)
Not Recommended (NR)

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