



# Chemical Compatibility Guide

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Chemical names and formulas scattered across the page, including:

- $\text{H}_2\text{N}(\text{CH}_2)_2\text{NH}_2$
- Acetic Acid
- Glacial Nitric Acid
- Potassium Hydroxide
- Benzene, MEK
- Trichloroethane
- Tetrahydrofuran
- Ethylenediamine
- Hydrofluoric Acid
- $\text{CH}_2\text{CH}_3$
- Methylamine
- $\text{HNO}_3$
- $\text{H}_2\text{SiF}_6$
- $\text{CoSO}_4$
- $\text{KOH}$
- Ethyl Alcohol, Acetone, Acetic Acid, Glacial Nitric Acid
- Lead Bromide, Mannitol
- Penol, Potassium Hydroxide, Acetic Acid
- Lithium Chloride
- $\text{CH}_3\text{COCH}_2\text{CH}_3$
- $\text{H}_3\text{PO}_4$
- $\text{NH}_2(\text{CH}_2)_2\text{NH}_2$
- Ferrous Iodide
- p-Toluidine
- Acetone
- Acetic Acid
- Ethylenediamine, Hydrofluoric Acid
- $\text{MgCl}_2$
- Bromine Pentafluoride
- Ethylene Glycol
- p-Toluidine
- Sulfolane
- Acetic Acid
- Methyl Chloroformate
- Carbon Disulfide
- Hydrofluoric Acid
- Calcium Arsenate
- Naphtaline
- $\text{C}_2$

# Simrit Sealing Products

Simrit is the industrial sealing products division of Freudenberg–NOK that is dedicated to serving industrial distributors and OEMs. Simrit products are manufactured within the Freudenberg and NOK Group Companies, known for their world-class quality and reliability. Simrit’s manufacturing and design expertise, coupled with exceptional customer service and field engineering support, enables us to provide our customers with superior sealing components and total system sealing solutions that exceed their expectations. The Simrit North America facilities are certified with industry standard certifications including AS9000, QS9000/ISO9001, and BQMS/D1-9000.



# Properties of Commonly Used Elastomers

Material Name	Simriz	Super FKM	Aflas	Fluoro-carbon	Ethylene Propylene	Nitrile	Silicone	Fluoro-silicone
ASTM D1418 Designation	FFKM	ETP	TFE/P	FKM	EPDM	NBR	VMQ	FVMQ
<b>TYPICAL COLORS</b>								
	Black White Clear	Black White	Black	Black White Brown Green	Black Purple	Black	Red White	Blue
<b>OPERATING TEMPERATURE RANGE</b>								
Low Temperature	-20°C -4°F	-20°C -4°F	-10°C +14°F	-40°C -40°F	-55°C -67°F	-50°C -58°F	-75°C -103°F	-65°C -85°F
High Temperature	300°C 572°F	200°C 392°F	200°C 392°F	250°C 482°F	150°C 302°F	120°C 248°F	230°C 446°F	180°C 356°F
<b>PHYSICAL PROPERTIES</b>								
Abrasion Resistance	3	2	2	2	1	2	4	4
Permeation Resistance	2	2	2	1	2	2	4	4
Compression Set Resistance	2	2	2	1	2	1	1	1
Tear Resistance	3	3	3	3	1	2	4	4
<b>CHEMICAL COMPATIBILITY</b>								
<b>Inorganic</b>								
Acids	1	1	1	1	1	2	3	2
Bases	1	2	1	4	1	2	3	3
<b>Organic</b>								
Acids	1	1	1	1	1	2	3	2
Alcohols	1	1	1	3	1	1	1	1
Aldehydes	1	2	4	3	1	3	2	4
Amines	2	2	1	4	1	4	2	4
Aromatic Hydrocarbons	1	1	4	1	4	3	4	1
Ether	1	3	4	4	3	4	4	3
Halogenides	2	1	4	1	4	4	4	4
Ketone	1	3	4	4	1	4	4	4
Water	1	1	1	1	1	1	1	1
Steam (<149°C/300°F)	1	2	2	2	1	4	3	4
Steam (>149°C/300°F)	2	3	3	4	4	4	4	4

# Rating System

Rating	Description	Volume Change	Comments
1	Little or no effect	<10%	Elastomer may exhibit swelling and/or loss of physical properties under severe conditions.
2	Possible loss of physical properties	10–20%	Elastomer may exhibit swelling in addition to a change in physical properties. May be suitable for static applications.
3	Noticeable change	20–40%	Elastomer exhibits a noticeable change in swelling and physical properties. Questionable performance in most applications.
4	Excessive change	>40%	Elastomer not suitable for service.
0	Insufficient information		Insufficient information available for rating.

## Chemical Compatibility Tables

This guide is intended to assist the user in determining the suitability of various elastomers in many different chemical environments. The ratings are based on a combination of published literature, laboratory tests, actual field experience, and informed judgments. As laboratory test do not necessarily predict end-use performance, users of Simrit products should conduct their own evaluations to determine application suitability.

**NOTE:** Volume swell is only one indicator of elastomer fluid compatibility and may be based on the solubility parameter alone. Fluid attack on the backbone of the polymer may show up as change a in physical properties such as Tensile Strength, Elongation at Break, and Hardness.

Elevated temperature and extended exposure times may create more aggressive conditions than cited in this guide. In some cases, specific elastomer compounds within a material family may provide improved compatibility. Please contact Simrit Technical Support Group for assistance in choosing the right elastomer for your application.

**The information given in this chemical compatibility guide is believed to be reliable, but no representation, guarantees or warranties of any kind are made to its accuracy or suitability for any purpose.**

