

# O-Ring Chemical Compatibility Guide

Instant compatibility ratings for NBR, FKM, EPDM, VMQ and PTFE against 50+ industrial fluids and chemicals.

## Overview

Chemical compatibility is the second most important factor in O-ring selection after temperature. An otherwise suitable elastomer will fail rapidly if exposed to an incompatible fluid. This guide provides A/B/C/D compatibility ratings for the most common industrial chemicals and fluids across the five primary O-ring materials.

Rating definitions: A = Excellent (minor or no effect, suitable for long-term service) B = Good (minor swelling or hardness change, acceptable for most applications) C = Fair (moderate effect, limited service life or restricted temperature) D = Not Recommended (severe swelling, degradation, or chemical attack)

Always confirm critical applications with ASTM D471 immersion testing under actual operating conditions.

## Compatibility Ratings

Fluid	NBR	FKM	EPDM	VMQ	PTFE
Mineral Oil (HLP)	A	A	D	D	A
Hydraulic Oil (Phosphate Ester)	D	A	A	C	A
Gasoline (unleaded)	B	A	D	D	A
Diesel Fuel	B	A	D	D	A
Water (fresh)	B	A	A	A	A
Steam (>120C)	D	C	A	B	A
Concentrated Sulfuric Acid	D	A	C	D	A
Sodium Hydroxide (50%)	C	D	A	B	A
Acetone (Ketone)	D	D	A	C	A
Methyl Ethyl Ketone (MEK)	D	D	A	C	A

## Material Notes

Material	Guidance
NBR	NBR resists petroleum oils and aliphatic hydrocarbons but is attacked by ketones, esters, ozone, and strong oxidizing acids.
FKM	FKM offers broad chemical resistance to fuels, acids, and oils. Avoid strong bases (pH >11), hot steam above 120C, and low-molecular-weight ketones.
EPDM	EPDM is the choice for water, steam, polar solvents, and brake fluid. It is completely incompatible with petroleum oils and hydrocarbon fuels.
VMQ	VMQ handles dry heat, steam, and polar solvents. It swells severely in petroleum oils and most hydrocarbons.
PTFE	PTFE is nearly universally chemically inert but lacks elastomeric recovery. It is often used as a backup ring or in spring-energized seals.

## Rating legend

- A = Excellent
- B = Good
- C = Fair

- D = Not Recommended