



Your Quick Guide to Nitrile Rubber

By WARCO

Nitrile rubber—also referred to as NBR, Buna-N, or NBR Acrylonitrile Butadiene Rubber—is a synthetic rubber made from acrylonitrile (ACN) and butadiene. It is best known for its **strong resistance to oils, fuels, and many chemicals**, which makes it one of the most widely used sealing and gasketing materials today.

Buna-N Rubber was first patented in Germany in 1934 as part of a project to create synthetic rubbers resistant to oil and fuel. In the U.S., it was labeled GR-N (Government Rubber – Nitrile) and eventually became widely known as Nitrile Rubber or simply NBR.

Despite its high performance, this rubber material remains **surprisingly cost-effective**. These factors have effectively established Buna-N Rubber as a popular choice, particularly for power, oil and gas applications.

Advantages of Nitrile Rubber

Nitrile Rubber (Buna Nitrile) is **often chosen** for applications that require:

- Excellent oil and gasoline resistance
- Strong resistance to petroleum-based hydraulic fluids
- Good resistance to many alkalis and acids
- Ability to be produced in vibrant colors

Disadvantages of Nitrile Rubber

While Buna-N is extremely versatile, it does have some limits.

- Poor flame resistance
 - Poor long-term outdoor durability (ozone and UV resistance)
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Key Properties of NBR Rubber

When deciding if Nitrile Rubber is right for your project, the following properties are useful starting points. Always consult a material specialist for the best fit.

*Nitrile (NBR)'s General **Physical Properties***

Hardness (Shore A)	35 to 90
Tensile Strength (psi)	200 to 3500
Elongation at Break (%)	400 to 600
Compression Set (%)	20 to 50
Temperature Range (°F)	-40 to +250

*Nitrile (NBR)'s General **Chemical Resistances***

Mineral oils and greases	Excellent
Fuels	Outstanding
Hydraulic fluids	Outstanding
Alcohols	Good

Nitrile (NBR)'s General **Characteristics**

Abrasion Resistance	Excellent
Oil Resistance	
Impact Resistance	Good
Rebound Rating	
Tear Resistance	
Flex Cracking Resistance	
Chemical Resistance	
Oxidation Resistance	
Low Temperature Resistance	
Gas Permeability	
Radiation Resistance	
Maximum Service Temperatures	Fair
Weather Resistance	Poor
Ozone Resistance	
Flame Resistance	

While these values represent Buna Nitrile's general performance, with the right compounding partner, material can be optimized for your specific application.

Standard Applications of Nitrile Rubber

Due to its balance of performance and cost, Nitrile Rubber is the industry standard for many applications. Examples include:

- **Oil Field Seals:** Buna Nitrile offers long-lasting durability and fuel resistance in demanding oil and gas applications.
- **Electrical Transformer Gaskets:** Formulations of Buna-N resist transformer oils and reduce static buildup.
- **Food Processing Equipment:** Nitrile o-rings and gaskets withstand oils, fats, and greases while handling a wide temperature range.

- **Automotive Valves and Hoses:** NBR Rubber works well in fuel systems, hydraulic hoses, and sealing components.

From Buna-N Rubber gaskets to custom NBR o-rings, this material continues to be a reliable choice wherever **fuel and oil resistance are essential**.

WARCO Advantage

Unlike many manufacturers that outsource compounding and mixing, WARCO offers complete vertical integration. Our team develops compounds, mixes materials, and manufactures Sheet Rubber, Molded Rubber, and Rubber Extrusions to your exacting specification.

With over 7,000 developed compounds and deep technical expertise, WARCO can deliver standard or fully customized Nitrile Rubber solutions. All products are proudly made in the USA.

Takeaways

Nitrile rubber combines oil resistance, mechanical strength, and affordability in a way that few other rubber polymers can match. Its balance of performance and cost explains why Buna-N Rubber remains so popular across industries worldwide.

If you have any questions after reading this article or would like to learn more about nitrile rubber, feel free to contact our team at **sales@warco.com** or call **(714) 532-3355**.