

# Difference Between Buna N and Viton

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## Key Difference – Buna N vs Viton

Buna N and Viton are commercial names for butadiene-acrylonitrile ([nitrile rubber](#)) and vinylidene fluoride-hexafluoropropylene copolymer, respectively. Both these [elastomers](#) are widely used synthetic elastomers that possess a unique set of physical and chemical properties. The key difference between Buna N and Viton is that **Buna N is a copolymer of butadiene and acrylonitrile, whereas Viton is a copolymer that contains a high amount of [fluorine](#)-containing units**. Due to the difference in the chemical structure of these two materials, they exhibit a different set of properties, which will be discussed in this article.

## What is Buna N?

Buna N<sup>®</sup> is the registered trademark of Pittway Corporation, Chicago for nitrile rubber or NBR, which is produced by the [polymerization](#) of two [monomer](#) units: acrylonitrile and butadiene. The monomer ratio varies depending on the desired properties of the end-product. Usually, cyanide group in acrylonitrile group enhances the oil and solvent resistance; thus, the amount of acrylonitrile determines the oil resistance level of Buna N.

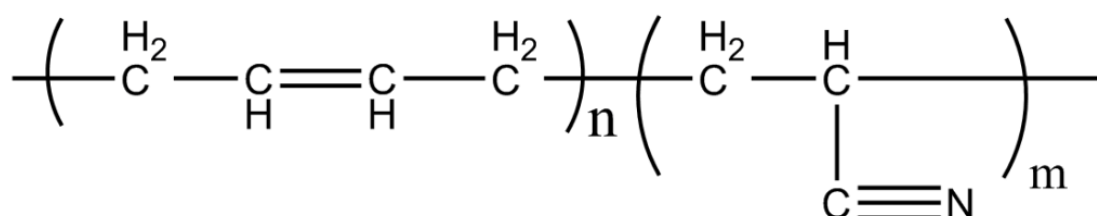


Figure 01: Nitrile Butadiene Rubber

Buna N can operate in a wide range of temperature from – 40 °C to 120 °C; this enables Buna N to be used in extreme automotive applications including hoses, seals, belts, oil seals, etc. Since, Buna N is resistant to hydrocarbon solvents, [esters](#), [ketones](#), and [aldehydes](#); it is widely used to make laboratory gloves. Buna N is also used to form adhesives, foams, floor mats, synthetic leather, and footwear.

## What is Viton?

Viton<sup>®</sup> is the registered trademark of DuPont DOW Elastomers L.L.C, Wilmington for specialty fluoroelastomer, which contains a high amount of fluorine-containing units. Viton has excellent chemical resistance to acids and alkalis, high-temperature resistance (up to 275-300 °C for a short period), excellent oxidation resistance, and

good resistance to fuel containing about 30% of aromatics. There are various grades of Viton in the market for general purposes and special purposes. General-purpose Viton grades are Viton® A, Viton® B, and Viton® F, and special-purpose Viton grades include GB, GBL, GF, GLT, and GFLT. All these grades can cover various manufacturing processes such as injection and transfer molding, compression molding, calendaring, and extrusion. Viton A is produced by the polymerization of vinylidene fluoride (VF<sub>2</sub>) and hexafluoropropylene (HFP). It is used for general molded o-rings, gaskets, and other simple and complex shaped molded products. Viton B is polymerized from three monomers, including vinylidene, hexafluoropropylene, and tetrafluoroethylene. Viton B offers better fluid resistance properties than Viton A. Viton F is also made by the polymerization of three monomers vinylidene, hexafluoropropylene, and tetrafluoroethylene and has better fluid resistant properties of all other Viton grades; thus it is useful in fuel permeation resistant applications. Viton GBL is resistance to steam, acid and engine oils, and Viton GLT shows high heat and chemical resistance, and low-temperature flexibility. Viton GFLT has high heat and superior chemical resistance and is used in high-performance applications. Both Viton GLT and GFLT have low glass transition temperature compared to general-purpose Viton grades.



Figure 02: Viton Seals

## What is the difference between Buna N and Viton?

### Buna N vs Viton

Buna N is the commercial name for nitrile rubber/ NBR.

Viton is the commercial name for fluoroelastomer.

Monomers used in Manufacturing	
Acrylonitrile and butadiene are used to manufacture Buna N.	Vinylidene fluoride, hexafluoropropylene, and tetrafluoroethylene are used to manufacture Viton.
Properties	
Buna N is oil and solvent resistant.	Viton has high-temperature resistance and chemical resistance.
Temperature Resistance	
Buna N has a temperature resistance up to about 120 °C.	Viton has a temperature resistance up to about 300 °C.
Special Applications	
Buna N is used to manufacture oil seals, laboratory gloves, fuel pumps, etc.	Viton is used in extreme automotive applications such as gaskets, seals, kitchen utensils, etc.

## Summary – Buna N vs Viton

Both Buna N and Viton are trademarks of two important synthetic elastomers: nitrile rubber and fluoroelastomer, respectively. Buna N is made from copolymerization of acrylonitrile and butadiene, and has excellent oil resistant properties, whereas Viton is made from copolymers of vinylidene fluoride-hexafluoropropylene, and has excellent high temperature, chemical and oxidative resistant properties. This is the difference between Buna N and Viton.

### References:

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