

# NBR

**Color - black**

NBR is an elastomer based on acrylonitrile-butadiene rubber. This material has a high resistance to mineral oils and lubricants, HFA, HFB and HFC hydraulic fluids. NBR is not resistant to glycol based brake fluids, to aromatic hydrocarbons (for example, toluene, benzol), esters, ketones, amines and concentrated acids. This elastomer has low ozone, weather and ageing resistance. Swelling in mineral oils is low, but depends very much on the composition of the oil.

## **NBR filled with soot and is not suitable for electrical insulation**

NBR possess high hardness and for rubber elastomer has a very high resistance to abrasion (90mm<sup>3</sup>). Temperature limit: from -30°C up to +100°C (short time up to +120°C). At high temperatures the process of ageing speeds up, therefore the material becomes hard and fragile. The process of ageing starts in the atmosphere at 80°C, the ageing considerably slows down when reducing the inflow of hot air (for example, in hot oil).

## **Resistance**

Good resistance	Medium resistance	Low resistance
Mineral oils	40% aromat. fuels (leaded fuels)	Aromatic hydrocarbon (toluene, benzol)
Aliphatic hydrocarbons (propane, butane)	Biodegradable hydraulic fluid	Chlorinated hydrocarbons (trichloroethylene)
Water	–	Brake fluids based on glycol
Fire-resistant pneumatic fluids HFA, HFB, HFC	Silicone oil and grease (oils can cause the decrease)	Fire-resistant pneumatic fluids HFD
Adipose and vegetable oils	–	Acetone, acetic acid ethyl esters
Diesel, petrol	–	–
Big amount of dilute acids and bases, salt solutions at room temperature.	-	-

## Application

NBR can be used for production of rod seals, piston seals, non-standard seals (special seals) and other components. NBR is mainly used in cases, where high fuel and mineral oil resistance, high elasticity and low residual strain are required, i.e. in sealing technologies, where «soft seal» is required, but NBR has a lower hardness than TPU, thus sealing out of this material have a lower resistance to extrusion with the same design. To operate at high pressures, seals NBR should be complemented by protection (supporting) elements, named "Back-up Rings". Seals out of NBR, compared with seals of the TPU, allow a short "run dry" and can work in a more abrasive work environments, such as in high dust content in cement production. Rotary seals out of NBR may be used at higher shaft speeds than seals out of TPU, approximately doubled.

## Mainly used

- Wipers for special instance
- Piston and rod seals
- Rotary seals
- O-Rings

## NBR Material Data Sheet

Properties	Value	Unit	Standard
Hardness	85 +/-3	Sh A	DIN 53505
Density	1,317	g/cm <sup>3</sup>	DIN 53479 or DIN EN ISO 1183-1
Compression set 23°C / 72 h	6,4	%	DIN 53517 or DIN ISO 815-1
Compression set 70°C / 24 h	6,2	%	DIN 53517 or DIN ISO 815-1
Compression set 100°C / 24 h	12	%	DIN 53517 or DIN ISO 815-1
100 % modulus	8,8	MPa	DIN 53504
Rebound resilience	25	%	DIN 53512
Tensile strength	15,2	MPa	DIN 53504
Elongation at break	226	%	DIN 53504
Tear strength	5,4	N/mm	DIN 53515 or DIN ISO 34-1 A
Abrasion	90	mm <sup>3</sup>	DIN 53516
Min. service temperature	-30	°C	
Max. service temperature	+100	°C	