

Nitrile Rubber (NBR)

General:

Nitrile rubber, also known as nitrile butadiene rubber, NBR, Buna-N, and acrylonitrile butadiene rubber, is a synthetic rubber elastomer derived from acrylonitrile (ACN) and butadiene.

NBR is used in the automotive and aeronautical industry to make fuel and oil handling hoses, seals, grommets, and self-sealing fuel tanks. It is also used in the food service, medical, and nuclear industries to make protective gloves. NBR's stability at temperatures from -40 to $108\text{ }^{\circ}\text{C}$ (-40 to $226\text{ }^{\circ}\text{F}$) makes it an ideal material.

Benefits:

Nitrile offers the following advantages:

- Excellent abrasion resistance.
- Good rebound.
- Good tear resistance.
- Good non-polar solvent resistance.
- Good water resistance.
- Good oil resistance.
- Cheaper than fluoro-elastomers.

Limitations:

Nitrile suffers from the following disadvantages:

- Poor ozone, sunlight, and weather resistance.
- Limited high temperature resistance.
- Poor flame resistance.

ASMPT (DEK) Applications:

- O-Rings
- Flexible molded parts

Material Assignment in PLM (TC & NX):

Engineers must specify the exact Shore Hardness of NBR to be used for the part.

The appropriate DSM 3.9.21 material variant shall be selected and copied into the 'Materials' folder for the part in TeamCenter before being assigned to the NX MODELL Reference Set.

i.e. DSM 3.9.21 Shore A 40 ...
DSM 3.9.21 Shore A 90 etc

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ENGINEERING DATA SHEET

DSM 3.9.21

ASMPT

The following values are representative of NBR properties & hardness grades.
For critical applications, refer to manufacturers' specifications.

MECHANICAL PROPERTIES				
MATERIAL DETAILS	TENSILE STRENGTH:	ELONGATION BREAK:	HARDNESS:	DENSITY:
NBR 40	10 MPa	450%	40 Shore A ± 5	1.19 g/cm ³
NBR 50	7 MPa	350%	50 Shore A ± 5	1.23 g/cm ³
NBR 60	10 MPa	300%	60 Shore A ± 5	1.22 g/cm ³
NBR 70	10 MPa	250%	70 Shore A ± 5	1.28 g/cm ³
NBR 80	14 MPa	125%	80 Shore A ± 5	1.29 g/cm ³
NBR 90	10 MPa	100%	90 Shore A ± 5	1.43 g/cm ³

Alternatives:

Alternative elastomers are allowed only with the express written permission of ASMPT. Please email details of your request to engineering_enquiries@asmpt.com

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