

Classification

The nitrile elastomers are polymers butadiene-acrylonitrile. The base manufactured articles of such rubbers show an elevated fuel, aliphatic solvent, oil and vegetable fats, mineral and synthetic oil resistance. The nitrile rubber confer besides the vulcanized items excellent mechanical characteristics, low compression set, elevated abrasion resistance and low permeability to gases. Such manufactured articles can bear temperatures that vary from -50 to +125°C.

Polymer type

Nitrile elastomers are classified according acrylonitrile content that can change from 19% to 50%. The different combinations influence mainly the low temperature flexibility and chemical resistance.

Acrylonitrile %		19-21	27-29	32-34	37-39	45-47	NBR/PVC
Hardness ShA	pti	70	72	73	75	78	85
Tensile strength	Mpa	15	17	17	16	17	18
Elongation	%	350	380	360	380	380	200
Compression set 22 H @ 100°C	%	13	13	12	15	25	35
Heat resistance 72H @ 120°C							
Tensile strength	%	-15	+7	+4	+5	+1	+10
Elongation	%	-35	-25	-27	-30	-35	-40
Hardness ShA	pti	+5	+4	+6	+4	+3	+5
ASTM N.3 70 H @ 120°C							
Tensile strength	%	-35	-30	-20	-11	-5	+6
Elongation	%	-35	-30	-21	-2	-24	-15
Hardness ShA	pti	-18	-15	-11	-8	-8	-7
Volume	%	+55	+27	+16	+8	+6	+10
ASTM Fuel B 48 H @ 40°C							
Tensile strength	%	-65	-60	-60	-40	-30	-25
Elongation	%	-60	-55	-50	-38	-25	-19
Hardness ShA	pti	-18	-15	-13	-13	-11	-15
Volume	%	+70	+43	+28	+20	+16	+18

Applications

Nitrile rubber is used for a wide range of applications where the needs are high oil and fuel resistance. Such application sectors are the most different and they involve the chemical industry and oil, automotive, housing construction, and food industry. The compounds based on NBR can be transformed using the typical rubber technologies: compression, injection molding, extrusion, calendaring and using hot air, steam, UHF or LCM vulcanization. Designing tailor made compounds is possible for particular applications and specifications.

The articles and fields involved are:

- ✓ Molded and extruded parts for the automotive, chemical, mining, home construction and agricultural industry
- ✓ Printing rolls and paper industry
- ✓ Conveyor belts for construction and mining industry
- ✓ Industrial and military footwear
- ✓ Gasoline and oil hoses
- ✓ Seals and gaskets
- ✓ Brakes and friction pads
- ✓ Foam lines for thermal isolation

Nitrile rubber is also used in plastic field (PVC, ABS etc.) as polymeric plasticizers.