Hydrogenated Nitrile Rubber (HNBR)

Classification

Hydrogenated nitrile elastomer compounds allow the manufacture of items offering peculiar and interesting properties:

- ✓ excellent mechanical characteristics
- ✓ high tensile strength, tear resistance and excellent abrasion resistance
- ✓ good heat resistance (up to 150˚C) and elasticity at low temperatures
- ✓ good ozone and atmospheric agents resistance
- ✓ good compression set
- ✓ excellent lubricating oil resistance mainly with amine addatives
- ✓ good resistance to the liquids and lubricants for cooling circuits

Polymer type

Hydrogenated nitrile rubbers derive from standard NBR on which a hydrogenation of the double residual bond of the butadiene is effected. As NBR therefore they are available materials with different acrilonitrile content (17%-49%) while they have been differentiating since last from the insaturation degree. The choice essentially depends on oil resistance and the low temperature characteristics.

% ACN (insaturation)		43-45 (High)	34-36 (High)	22-24 (High)	16-18 (High)
Hardness ShA	Pti	71	73	68	65
Tensile strength	Mpa	25	22	23	18
Elongation	%	270	280	250	240
Tear	KN/m	32	32	30	22
Compression set D-395/B 70 H @ 150ºC	%	+19	+20	+21	+21
Gehman/T10	ºC	-20	-25	-30	-31
Hot Air 70 H @ 150ºC					
Hardness ShA	Pti	+6	+2	+5	+6
Tensile strength	%	+5	+5	0	+2
Elongation	%	-5	-8	-10	-7
Fuel B, 70 H @ 150˚C					
Hardness ShA	Pti	-15	-16	-15	-18
Tensile strength	%	-28	-42	-60	-68
Elongation	%	-20	-30	-60	-62
Volume	%	+24	+33	+51	+81
ASTM #3 70 H @ 150ºC					
Hardness ShA	Pti	-5	-10	-15	-22
Tensile strength	%	+15	+10	+20	+22
Elongation	%	+15	+15	-15	-200
Volume	%	+5	+15	+28	+50
ATF oil Dexron III 70 H @ 150˚C					
Hardness ShA	Pti	0	-3	-15	-10
Tensile strength	%	+5	-10	-10	-13
Elongation	%	+5	+10	-10	-13
Volume	%	0	+2	+10	+20

Applications

The interesting characteristics of these elastomers allow their employment in the most varied application fields where high mechanical properties an oil resistance and oil resistance are required. The more common field are:

- oil drilling
- static & dynamic gaskets
- engine motor oil
- components for brake circuits
- air conditioning systems
- cables
- pump components
- transmission belts
- shaft seals
- gaskets for gas plants