

## Material test report HNBR 90

Colour **Black** Temp. range **-35°C / +160°C**  
(-40°C / +170°C short time)

Property	Unit	Test method	Testparameter	Value
Hardness	Shore A	ASTM D 2240		90±5
Specific gravity	g/cm <sup>3</sup>	ASTM D 297		1,28 ±0,03
Tensile strength	MPa	ASTM D 412		26,2
Modulus at 100%	MPa	ASTM D 412		19,2
Ultimate elongation	%	ASTM D 412		144
Tear resistance	N/mm	ASTM D 624 B		42
Tear resistance	N/mm	ISO 34-1		9,2
Compression set	%	ASTM D 395 B/1	168h / 100°C	19
Compression set	%	ASTM D 395 B/1	24h / 150°C	11
Compression set	%	ASTM D 395 B/1	70h / 125°C	18,5
Compression set	%	ASTM D 395 B/1	70h / 150°C	30
Low temp. TR10	°C	ISO 2921	TR10	-18
Low temp. DSC glass transition	°C	DIN 53765	DSC glass trans.	-21
Low temp. brittle point	°C	ASTM D 2137 A	brittle point	-35

### Changes of properties after ageing

Medium	Test method	Time	Temperature	Hardness	Tensile strength	Ultimate elongation	Weight	Volume
		H	°C	Points	%	%	%	%
Air	ASTM D 573	94	150	+5	+8	-25		
Pentosin	ASTM D 471	96	140	-2	-8	-12	+7	+10
EN 14141:2003 (annex B) tested – Cerisie 565/2011								
Water	ISO 1817	24	23	-2	-2,44	-2,32	+0,19	+0,53
Water	ISO 1817	72	23	-0,1	-3,36	-3,02	+0,32	+0,46
Methanol	ISO 1817	24	23	-1,8	-20,63	-12,29	+5,59	+10,25
Methanol	ISO 1817	72	23	-7,6	-18,97	-8,81	+5,6	+10,79
Diesel	ISO 1817	24	23	-11,3	-12,3	-7,74	+12,87	+19,16
Diesel	ISO 1817	72	23	-18	-15,33	-13,28	+19,39	+28,99
Oil SAE 15W40	ISO 1817	24	23	-1,6	+1,15	-3,02	+0,16	+0,89
Oil SAE 15W40	ISO 1817	72	23	+0,3	-1,19	-3,02	+0,05	+0,25
N ethylene glycol / water (50/50)	DIN 53521	94	120	+0,3	-5	-4	+0,8	+1,2
Pentane	ASTM D 471	70	23	-9				+7,5

Specifications: OIL/GAS APPLICATIONS - ANTI EXPLOSIVE DECOMPRESSION -  
( NORSOK M710 - Annex A Approved - Sour Fluid Resistance 23/02/2012 )  
( NORSOK M710 - Annex B Approved - RGD 5,33 mm -  
( EN 14141:2003 - Annex B Approved - Fluid Resistance 26/09/2011 )  
( NACE TM0187 TESTED - SOUR FLUID TEST ) - 2% - 5% - 20 % H2S  
( Sour Fluid test Arrhenius ISO23936-2 / Norsok M710 ) - SAUDI ARAMCO 06-SAMSS-001

The above indicated data were determined to the best knowledge according to modern laboratory standards on standardised test specimen. If these data are compared with data which were determined on finished parts it may come to variations.