



materials engineering research
laboratory

TEST CERTIFICATE

This document certifies that

Xplor H9T20

from

Trelleborg Sealing Solutions

passed the requirements of

**NORSOK M-710 in respect of sour fluid resistance
in operating conditions to 150°C in 2% H₂S**

and

**NORSOK M-710 in respect of rapid gas decompression
resistance in 97/3% CH₄/CO₂ at 150 bar and 100°C,
with high groove fill (ca90%).**

Passed by :
Date:

S M G Munch (Dipl. Ing., PhD)
05/03/2009

Sour fluid resistance

MERL has subjected Xplor H9T20, an HNBR grade produced by Trelleborg, to a series of sour fluid exposures to the conditions specified by Norsok M-710¹ and detailed below. Tensile properties, hardness and fluid swelling in sour conditions were determined. The results indicate that the oil-saturated material will not undergo a 50% change in tensile strength over the long term² at 150°C.

Test Conditions

Ageing fluid

Volume (%)	Composition
30	2% H ₂ S, 3% CO ₂ , 95% CH ₄
10	Distilled water (conductivity < 5 µS)
60	70% heptane, 20% cyclohexane, 10% toluene

The elastomer samples were placed in the hydrocarbon phase for the exposures.

Test temperatures and exposure periods used in the Norsok programme are shown in the table.

Exposure conditions

Temperature (°C)	Sampling intervals (days)
150	5, 11, 22, 36
165	4, 7, 25, 35
175	5, 11, 20, 35

Summary

Compound	Type	Hardness	% swell	Change within ±50% ³			NORSOK-acceptable
				50% modulus	Tensile strength	Elongation at break	
Xplor H9T20	HNBR	PASS	12-19	PASS	PASS	PASS	YES

¹ Norsok M-710, "Qualification of non-metallic sealing materials and manufacturers", Rev. 2, October 2001.

² Greater than 100 years.

³ Taking reference as oil-soaked material.

Rapid gas decompression

MERL has subjected Xplor H9T20 O-rings manufactured by Trelleborg Sealing Solutions to a multi-cycle rapid gas decompression test according to Norsok M-710⁴, and detailed below. After 10 cycles, all of the seals met the acceptance criterion of the standard. The results indicate that Xplor H9T20 elastomer can be considered for use at temperatures and pressure up to the test limits, with high groove fill.

O-ring details

Compound	Xplor H9T20
Size	312 (BS 1806)
Section diameter, nominal	5.33 mm
Internal diameter	15.24 mm

Test Conditions

Groove fill	90%
Temperature	100°C
Pressure	150 bar
Gas	97/3 mol% CH ₄ /CO ₂
Total cycles	10
Soak period	24 hours (initial exposure period; 72 hrs)
Depressurisation rate	20 bar per minute
Dwell at ambient pressure	1 hour

Summary

O-ring	NORSOK rating	Overall NORSOK rating	PASS /FAIL
1	3331	3331	PASS
2	1000		
3	1000		

⁴ Norsok M-710, "Qualification of non-metallic sealing materials and manufacturers", Rev. 2, October 2001.