materials engineering research laboratory

TEST CERTIFICATE

This document certifies that

FFKM compound Perlast® G92E

from

PRECISION POLYMER ENGINEERING LTD.

meets the requirements of

NORSOK M-710 in respect of sour fluid resistance

Test fluid:	2% hydrogen sulphide/hydrocarbon oil/water
Test pressure:	100 bar
Passed by :	Barry Thomson
Date:	18th October 2012

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MERL verify that specimens of the PPE FFKM compound Perlast® G92E have been subjected to a series of sour multi-phase fluid exposures at three elevated temperatures.

Test Conditions

Exposure fluid composition and distribution

VOLUME (%)	COMPOSITION
30	2/3/95 mol% $H_2S/CO_2/CH_4$
10	Distilled water
60	70% heptane, 20% cyclohexane, 10% toluene

The FFKM tensile testpieces were placed in the hydrocarbon oil phase for the exposure tests.

Test temperatures and exposure periods used in the NORSOK M-710 programme are shown in the table below; test pressure was 100 bar.

Exposure test conditions

TEMPERATURE (°C)	SAMPLING INTERVALS (days)
150	7, 14, 28, 46, 56
175	7, 14, 28, 43, 54
200	7, 14, 27, 47

Summary for Perlast® G92E

TYPE	Swell[1]	50/100% modulus[2]	Tensile strength[2]	Elongation at break[2]	NORSOK acceptable
FFKM	PASS	PASS	PASS	PASS	YES

[1] <25%
[2] changes within ±50% range, from oil-soaked level

FFKM grade Perlast® G92E behaves as expected when when immersed in a liquid hydrocarbon oil phase with H_2S present. Swelling is low and tensile property levels do not show evidence of chemical ageing having occurred. The tensile test results do not discriminate sufficiently between the influence of exposure time and temperature, excluding their use in life estimation calculations. The changes in room temperature tensile property levels are within the allowable range after exposure periods at 150-200 °C of up to 8 weeks.

FFKM grade Perlast® G92E meets the requirements of the NORSOK M-710 standard for sour fluid exposure.