Test Certificate

This document certifies that

thermoplastic material **HiMod 550** from

TRELLEBORG SEALING SOLUTIONS

has been tested according to

ISO 10423:2009
Annex F.1.13.5.2 (immersion test).

Assessed by: **Dr Keyur Somani and Dr Barry Thomson**
Date: **20th November 2012**

MERL Ltd. (Hitchin, England) confirms that the TRELLEBORG SEALING SOLUTIONS thermoplastic material, which is intended to be used for sealing applications, has been tested according to ISO 10423:2009, annex F.1.13.5.2 (immersion testing).

Five replicate tensile specimens of HiMod 550 (PAEK type[1], 201012100227) were exposed in the hydrocarbon liquid phase to the following conditions for 160 hours.

Temperature	$(200 \pm 2)°C$
Pressure	(1000 ± 100) psig
Gas	FF/HH: 10/80/10 mol% $H_2S/CO_2/CH_4$
Liquids	5 volume% water (deionised water) 60 volume% NORSOK oil (70/20/10 volume% heptane/cyclohexane/toluene)

Changes in physical and mechanical property levels were measured at room temperature, with non-exposed material serving as the point of reference. The material was not visible altered by the exposure conditions.

The acceptance criteria given in section 8.2.2 of the NORSOK M-710 standard[2] were applied. The results are tabulated below.

PROPERTY	ACCEPTABLE CHANGE RANGE	ACTUAL CHANGE (%)
Volume change (swelling)	-1%/+5%	+3
Tensile modulus	±50%	+3
Tensile strength	±50%	-5
Strain at break (nominal)	±50%	+22

TRELLEBORG SEALING SOLUTIONS material grade HiMod 550 meets the acceptance criteria applied after an immersion test undertaken according to ISO 10423:2009, annex F.1.13.5.2.

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[1] Polyaryletherketone.
[2] NORSOK M-710, "Qualification of Non-Metallic Sealing Materials and Manufacturers", Rev. 2, October 2001.