

TEST REPORT

This document certifies that

E1003 [FKM-LT 95A]

from

FCS Fluoro Carbon Seals Private Limited

has been tested according to the requirements of

**ISO 10423 Appendix F.1.13.5.2/API 6A (Appendix F) in respect of
sour fluid (FF/HH) resistance**

Test fluid: 10% Hydrogen sulphide/hydrocarbon oil/water

Test pressure: 1,000 psi

Passed by: Dr Michael Lewan

Date: 8th July 2020

Element Hitchin has been assessed to BS EN ISO 9001 by the British Standards Institution (BSI) and is a registered firm under the BSI Quality Assurance scheme for the provision of professional and technical services



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Element Hitchin verify that tensile specimens of E1003 (FKM-LT 95A) by FCS Fluoro Carbon Seals Private Limited have been tested according to ISO 10423:2009, annex F.1.13.5.2 (immersion).

Test Conditions

Five replicate tensile dumbbells of E1003 (FKM-LT 95A) were exposed in the hydrocarbon liquid phase to the following conditions for 160 hours. The test was run between 16th and 24th June 2020.

Temperature	180 ± 2 °C
Pressure	1000 psi (69 bar)
Gas phase (35%)	10/80/10 mol% H ₂ S/CO ₂ /CH ₄
Liquid phases (65%)	60% vessel volume 70/20/10 heptane/cyclohexane/toluene 5% vessel volume water

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 altered by the exposure conditions.

The acceptance criteria given in section 8.2.2 of the NORSOK M-710 standard¹ were applied. The results are tabulated below.

PROPERTY	ACCEPTABLE CHANGE RANGE	ACTUAL CHANGE AFTER IMMERSION
Volume change (swelling)	-5%/+25%	+12%
Hardness	-20/+5 units	-11
Modulus at 50% Elongation	±50%	-35%
Modulus at 100% Elongation	±50%	-23%
Tensile Strength	±50%	-30%
Elongation at Break	±50%	-12%

FCS Fluoro Carbon Seals Private Limited elastomeric grade E1003 meets the acceptance criteria applied after an immersion test undertaken according to ISO 10423:2009, annex F.1.13.5.2.

Element report reference number C5195-1 issued dated on 8th July 2020 covers all work undertaken.

¹ NORSOK M-710, “Qualification of Non-Metallic Sealing Materials and Manufacturers”, Edition 3, September 2014.

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