FLUOROCARBON

Issue 2

DATA SHEET

NORSOK DATA SHEET

MATERIAL REFERENCE – **FLUORINOID® FL020**

DESCRIPTION MODIFIED PTFE

Material approved in accordance with **NORSOK M-710** Annex C, by Element Materials Technology Report No. C3014-1

TYPICAL APPLICATIONS

N020 modified PTFE offers lower deformation, increased fatigue resistance and lower permutation when compared with PTFE. Typically used for static seals of low molecular weight gases.

TYPICAL PHYSICAL PROPERTIES

SPECIFIC GRAVITY	(BS EN ISO 13000-2)	2.16
TENSILE STRENGTH	(BS EN ISO 13000-2)	min. 25MPa
ELONGATION	(BS EN ISO 13000-2)	min. 375 %
SHORE D HARDNESS	(BS EN ISO 13000-2)	56
OPERATING TEMPERATURE RANGE		-200 to 260°C

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TEST CERTIFICATE

This document certifies that

FL020 PTFE

from

FLUOROCARBON

meets the requirements of

NORSOK M-710 Rev. 2 in respect of sour fluid resistance

Test fluid: 2% hydrogen sulphide/hydrocarbon oil/water

Test pressure: 100 bar (10 MPa)

Passed by: Jeanne BABALOLA

Date: 16th September 2013

Element verify that machined tensile specimens of FL020 PTFE supplied by FLUOROCARBON have been exposed in a multi-phase sour fluid 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 FL020 PTFE testpieces were placed in the hydrocarbon liquid phase for each exposure test.

Test temperatures and sampling intervals used in the NORSOK M-710[1] programme are shown in the table below; test pressure was 100 bar.

Exposure test conditions

Temperature (°C)	Intervals (days)
190	5, 10, 20, 50
205	5, 10, 20, 35
220	5, 10, 20, 35

Summary for FL020 PTFE

Swell[1]	Tensile modulus[2]	Tensile strength[2]	Elongation at break[2]	NORSOK acceptable
PASS	PASS	PASS	PASS	YES

[1] <5% overall
[2] changes within ±50% range, from as-received level

FL020 PTFE behaved as expected when immersed in a liquid hydrocarbon oil phase with H_2S gas present: the material absorbed a small quantity of liquid early in the exposure period and this caused moderate changes in mechanical property levels. The changes in room temperature tensile property levels are within the allowable range after exposure periods at 190-220 °C of up to 7 weeks. All exposed specimens were intact and there was no evidence that FL020 had been chemically aged by the conditions.

FL020 PTFE meets the requirements of the NORSOK M-710 Rev. 2 standard for sour fluid exposure.

[1] NORSOK M-710, “Qualification of non-metallic sealing materials and manufacturers”, Rev. 2, October 2001