FLUOROCARBON

Issue 1

DATA SHEET

NORSOK DATA SHEET

MATERIAL REFERENCE – **FLUORINOID® FL014**

DESCRIPTION CARBON FILLED PTFE

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

TYPICAL APPLICATIONS

FL014 has been developed for sealing applications. The carbon filler gives good compression and wear resistance. The carbon gives improved thermal conductivity so this is particularly suited to higher speed applications, particularly with aqueous media. The use of carbon also reduces permeability compared to glass filled PTFE's.

TYPICAL PHYSICAL PROPERTIES

SPECIFIC GRAVITY	(BS EN ISO 13000-2)	2.1 – 2.15
TENSILE STRENGTH	(BS EN ISO 13000-2)	min. 18MPa
ELONGATION	(BS EN ISO 13000-2)	min. 230%
SHORE D HARDNESS	(BS EN ISO 13000-2)	60 - 70
MAXIMUM WORKING TEMPERATURE		260ºC

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TEST CERTIFICATE

This document certifies that

FL014 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 FL014 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 FL014 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 FL014 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

FL014 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 reductions in tensile modulus and break 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 FL014 had been chemically aged by the conditions.

FL014 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