

DATA SHEETMATERIAL REFERENCE – FLUORINOID® FL031DESCRIPTION CARBON/GRAPHITE/PTFE FILLED PEEK

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

TYPICAL APPLICATIONS

FL031 PEEK is a high performance engineering thermoplastic with good chemical resistance, good wear resistance, high maximum use temperature, low flammability, excellent electrical properties and good radiation resistance. The combination of carbon, graphite and PTFE helps reduce wear and friction. This grade of filled PEEK is for production of plain bearings, low friction valve seats etc.

TYPICAL PHYSICAL PROPERTIES

SPECIFIC GRAVITY	(ISO 1183)	1.42 - 1.48
TENSILE STRENGTH	(H-WI-28)	Min. 55MPa
ELONGATION	(H-WI-28)	Min. 3.0%
WORKING TEMPERATURE		-50°C to 260°C
COEFFICIENT OF FRICTION		0.11
AT 20°C, 30.5m / min, 70Kg LOAD		
LIMITING PV AT 20°C, 30.5m / min		1084 (MPa) (m/min)

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## TEST CERTIFICATE

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This document certifies that

**FL031 PEEK**  
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: 16<sup>th</sup> September 2013

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Element verify that machined tensile specimens of FL031 PEEK supplied by FLUOROCARBON have been exposed in a multi-phase sour fluid at three elevated temperatures.

### **Test Conditions**

#### **Exposure fluid composition and distribution**

<b>Volume (%)</b>	<b>Composition</b>
30	2/3/95 mol% H <sub>2</sub> S/CO <sub>2</sub> /CH <sub>4</sub>
10	Distilled water
60	70% heptane, 20% cyclohexane, 10% toluene

The FL031 PEEK testpieces were placed in the hydrocarbon liquid phase for each exposure test.

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

#### **Exposure test conditions**

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

### **Summary for FL031 PEEK**

<b>Swell<sup>1</sup></b>	<b>Tensile modulus<sup>2</sup></b>	<b>Tensile strength<sup>2</sup></b>	<b>Elongation at break<sup>2</sup></b>	<b>NORSOK acceptable</b>
PASS	PASS	PASS	PASS	YES

<sup>1</sup> <5% overall

<sup>2</sup> changes within ±50% range, from as-received level

FL031 PEEK behaved as expected when immersed in a liquid hydrocarbon oil phase with H<sub>2</sub>S 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 FL031 had been chemically aged by the conditions.

FL031 PEEK meets the requirements of the NORSOK M-710 Rev. 2 standard for sour fluid exposure.

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<sup>1</sup> NORSOK M-710, "Qualification of non-metallic sealing materials and manufacturers", Rev. 2, October 2001