



PRODUCT DATA

FLEX FUELS & FLUOROELASTOMERS

The changes currently in process in automotive fuels systems are requiring new sealing solutions. Alcohol blends that may cause significant deterioration in traditional rubber seal materials are becoming common. Due to differences in state laws and operating environments, one seal material may not be suitable for all applications. Increasingly, Fluoroelastomers are the best solution for these systems. Precision Associates offers several types of Fluoroelastomers for fuel systems.

The following data are provided to assist engineers in determining a Fluoroelastomer solution for your application. As always, this test data is provided as a guide only. Testing of compounds in the actual application must be performed prior to specification of material.

PAI Compound		8748	9746	8706	8780	8782	8703	8758	9758	608804
Fluoroelastomer Type		A	*	B	F	GF	GLT	GFLT	LTFE	ETP
Durometer		75	75	75	75	75	70	75	75	80
Compression Set: 22 Hrs @ 392°F		12.1%	11.7%	12.1%	36.5%	10.8%	11.8%	13.3%	13.1%	31.7%
Ref Fuel C	Volume Chg	+3.9%	+3.2%	+2.5%	+2.1%	+1.3%	+5.9%	+4.3%	+5.9%	+3.1%
	Duro Chg	-3	-2	-2	0	0	-2	-2	-4	-4
Ethanol	Volume Chg	+2.4%	+2.1%	+1.3%	+8%	+6%	+3.9%	+1.7%	+2.5%	+2%
	Duro Chg	-2	-3	-1	-1	-1	-2	-2	-2	0
Methanol	Volume Chg	+99.1%	+150.8%	+18.6%	+3.6%	+1.7%	+113.9%	+7.2%	+5.0%	+7%
	Duro Chg	-12	-24	-9	-1	-2	-21	-5	-5	-2
15% Ethanol	Volume Chg	+10.1%	+8.8%	+5.9%	+4.1%	+2.6%	+13.0%	+7.4%	+9.5%	+3.6%
85% Fuel C	Duro Chg	-6	-9	-5	-2	-2	-6	-3	-6	-3
85% Ethanol	Volume Chg	+4.2%	+3.8%	+2.1%	+1.6%	+9%	+6.2%	+3.1%	+4.6%	+1.0%
15% Fuel C	Duro Chg	-3	-4	-2	-2	-1	-3	-3	-6	0
50% Methanol	Volume Chg	+69.6%	+95.7%	+19.7%	+8.9%	+4.5%	+74.5%	+13.9%	+11.7%	+3.9%
50% Fuel C	Duro Chg	-11	-24	-9	-6	-5	-14	-5	-9	-4
TR-10		-5°F	-5°F	9°F	19°F	21°F	-30°F	-11°F	-40°F	1°F
Brittle Point		-10°F	-6°F	-25°F	-37°F	-33°F	-48°F	-40°F	-43°F	-25°F
Price		\$	\$	\$\$	\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$\$	\$\$\$\$\$
Polymer Brand Name		Viton®	Fluorel®	Viton®	Viton®	Viton®	Viton®	Viton®	Fluorel®	Viton®
Polymer Fluorine Content		66%	66%	68.5%	69.5%	70%	64%	66.5%	67.1%	67%

Volume swell tests performed for 70 hrs @ 70°F. See reverse for results at extended periods. Contact Precision Associates for complete Product Data Sheets on individual compounds.

* Dyneon does not specify a Type for this material; it is a co-polymer similar to DuPont's Type A.



3800 North Washington Ave.
Minneapolis, MN 55412-2142

Toll Free: 1-800-394-6590
612-333-7464
Sales: 612-334-9190
FAX: 612-342-2417

Extended Ageing Results in Various Fuel Mixtures

PAI Compound Fluoroelastomer Type	8748	9746	8706	8780	8782	8703	8758	9758	608804
	A	*	B	F	GF	GLT	GFLT	LTFE	ETP
	Change Vol Duro	Change Vol Duro	Change Vol Duro	Change Vol Duro	Change Vol Duro	Change Vol Duro	Change Vol Duro	Change Vol Duro	Change Vol Duro
ASTM									
70 Hrs	3.9% -3	3.2% -2	2.5% -2	2.1% 0	1.3% 0	5.9% -2	4.3% -2	5.9% -4	3.1% -4
168 Hrs	6.2% -4	5.4% -3	4.0% -4	3.5% -3	2.0% -3	9.4% -4	6.4% -4	8.1% -5	5.1% -6
600 Hrs	11.4% -4	10.0% -7	7.2% -4	6.8% -3	3.9% -3	12.5% -4	9.0% -4	8.7% -6	7.8% -6
1,600 Hrs	14.4% -5	12.2% -8	9.5% -4	9.6% -3	5.8% -3	16.6% -5	9.2% -4	9.0% -6	8.4% -6
Ethanol									
70 Hrs	2.4% -2	2.1% -3	1.3% -1	.8% -1	.6% -1	3.9% -2	1.7% -2	2.5% -2	.2% 0
168 Hrs	4.1% -2	3.5% -3	1.9% -3	1.2% -1	.8% -1	6.2% -3	2.8% -2	3.5% -3	.5% 0
600 Hrs	7.3% -4	6.4% -4	3.8% -4	2.6% -1	1.7% -1	9.5% -3	4.7% -2	4.4% -3	1.0% 0
1,600 Hrs	9.8% -5	8.3% -7	5.3% -4	4.0% -2	2.8% -2	9.5% -3	5.1% -2	4.2% -3	1.7% 0
Methanol									
70 Hrs	99.1% -12	150.8% -24	18.6% -9	3.6% -1	1.7% -2	113.9% -21	7.2% -5	5.0% -5	.7% -2
168 Hrs	98.7% -12	149.6% -28	24.0% -11	5.6% -4	2.9% -4	111.6% -21	9.9% -6	6.2% -6	1.3% -2
600 Hrs	98.9% -13	148.1% -28	23.6% -11	9.9% -5	4.7% -4	107.6% -21	9.9% -6	6.1% -6	2.3% -2
1,600 Hrs	97.4% -14	144.3% -28	21.3% -11	11.7% -5	5.2% -4	103.9% -21	9.2% -6	5.7% -6	3.1% -1
15% Ethanol									
70 Hrs	10.1% -6	8.8% -9	5.9% -5	4.1% -2	2.6% -2	13.0% -6	7.4% -3	9.5% -6	3.6% -3
168 Hrs	16.4% -7	14.1% -12	9.2% -6	6.9% -6	4.3% -4	18.7% -8	11.1% -3	10.9% -9	5.9% -4
600 Hrs	21.7% -7	18.8% -14	13.9% -7	12.3% -7	8.0% -5	19.3% -8	12.3% -4	11.0% -8	8.7% -6
1,600 Hrs	21.9% -7	18.8% -14	14.2% -7	13.8% -9	9.1% -6	19.2% -7	12.3% -4	11.2% -9	7.4% -6
85% Fuel C									
70 Hrs	4.2% -3	3.8% -4	2.1% -2	1.6% -2	.9% -1	6.2% -3	3.1% -3	4.6% -6	1.0% 0
168 Hrs	6.9% -5	6.0% -6	3.3% -3	2.8% -4	1.7% -3	9.9% -4	5.0% -4	6.2% -6	1.5% -2
600 Hrs	12.6% -4	10.7% -9	6.5% -4	5.2% -5	3.3% -3	13.3% -5	7.4% -4	6.9% -7	2.8% -3
1,600 Hrs	14.2% -4	12.0% -10	8.1% -4	7.1% -5	4.8% -4	12.8% -5	7.3% -5	6.5% -6	3.8% -3
50% Methanol									
70 Hrs	69.6% -11	95.7% -24	19.7% -9	8.9% -6	4.5% -5	74.5% -14	13.9% -5	11.7% -9	3.9% -4
168 Hrs	68.6% -10	94.2% -24	25.1% -10	14.3% -8	7.4% -7	73.1% -15	17.0% -8	13.3% -11	5.9% -6
600 Hrs	67.5% -12	91.3% -26	24.8% -13	18.6% -11	10.8% -8	70.0% -15	16.6% -7	13.1% -10	9.5% -7
1,600 Hrs	64.3% -12	84.4% -26	23.6% -13	18.5% -11	10.6% -8	65.6% -14	16.4% -7	13.0% -11	10.6% -7

Volume swell tests performed at 70°F