



Parker Hannifin Corporation
 O-Ring & Engineered Seals Division
 2360 Palumbo Drive
 Lexington, KY 40509

Office 859 269 2351
 Fax 859 335 5128



Contact Us

RESEARCH & DEVELOPMENT LABORATORY REPORT REPORT NUMBER

TITLE

Evaluation of FF156-75 (LV1901-05 Batch 40003788)

DATE

March 2, 2017

REFERENCE

PREPARED BY:

Brian Hogston
 Brian Hogston
 Laboratory Technician III

CONCURRENCE:

S. Frank Stewart 3/2/17
 S. Frank Stewart
 R&D Manager

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Research & Development Laboratory Report Evaluation of FF156-75

March 2, 2017

- TITLE:** Evaluation of FF156-75 (LV1901-05 Batch 40003788)
- OBJECTIVE:** To evaluate FF156-75 as a low cost FFKM with improved compression set and chemical resistance.
- METHOD:** A batch of FF156-75 was processed into 2-214 o-rings per Parker Hannifin's guidelines. The o-rings were then tested for original physical properties; various compression sets and various immersions. The results are shown in the table below.
- DISCUSSION:** Parker FFKM compound FF156-75 offers excellent compression set and good chemical resistance. Steam and strong amines, such as ethylene diamine, are very aggressive and can cause severe degradation of some types of FFKM compounds. In all three of the media tested (water, steam, and ethylene diamine), the volume swell was less than 10% and the tensile strength loss was less than 20%.



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CONCLUSIONS:

Results Table:

	Test Method	Test Results
<u>Original Physical Properties</u>		
Hardness, Shore A, pts.	ASTM D2240	75
Tensile Strength, psi	ASTM D1414	1239
Ultimate Elongation, %	ASTM D1414	144
Modulus at 50% Elongation, psi	ASTM D1414	360
Modulus at 100% Elongation, psi	ASTM D1414	855
Specific Gravity	ASTM D297	1.87
<u>Compression Set</u>		
<u>70 hrs. @ 200°C (392°F)</u>	ASTM D395 Method B	10
<u>70 hrs. @ 230°C (446°F)</u>	Method B	14
<u>70 hrs. @ 250°C (482°F)</u>		18
<u>168 hrs. @ 200°C (392°F)</u>		19
<u>168 hrs. @ 230°C (446°F)</u>		33
Percent of Deflection, max		
<u>Fluid Immersion</u>		
<u>UPDI H2O, (70 hrs. @ 500°F)</u>		
Hardness Change, Shore A pts.	ASTM D471	-3
Tensile Strength Change, %		-8
Ultimate Elongation Change, %		+15
Modulus at 50% Elongation Change, %		-24
Modulus at 100% Elongation Change, %		-22
Volume Change, %		+8
<u>Fluid Immersion</u>		
<u>UPDI Steam, (70 hrs. @ 500°F)</u>		
Hardness Change, Shore A pts.	ASTM D471	-1
Tensile Strength Change, %		-18
Ultimate Elongation Change, %		-17
Modulus at 50% Elongation Change, %		-11
Modulus at 100% Elongation Change, %		+3
Volume Change, %		+2
<u>Fluid Immersion</u>		
<u>Ethylene Diamine, (70 hrs. @ 194°F)</u>		
Hardness Change, Shore A pts.	ASTM D471	-1
Tensile Strength Change, %		-19
Ultimate Elongation Change, %		+38
Modulus at 50% Elongation Change, %		-23
Modulus at 100% Elongation Change, %		-35
Volume Change, %		+9

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