

VITON® O-RING OVERVIEW

MATERIAL: Fluorocarbon Rubber

MATERIAL DESCRIPTION

Fluorocarbon is a well known high performance rubber that has excellent resistance to high temperature, ozone, weather, oxygen, mineral oil, fuels, hydraulic fluids, aromatics and many organic solvents and chemicals.

FLUORINE CONTENT

Viton® variations include: general type (A: 66% fluorine), middle fluorine content type (B, GBL: 67 to 68.5% fluorine), high fluorine content type (F, GF: 70% fluorine), improving low temperature flexibility type (GLT, GFLT) and excellent resistance to more chemicals and solvents (Viton® ETP Extreme). We also can supply excellent acid and alkali resistance parts made by VITON® TBR.

CURE SYSTEM: BISPHENOL-CURED

Standard FKM compounds are Bisphenol cured. FKM compounds with peroxide cured possess better acid solution resistance than the bisphenol cured and can replace litharge cured applied in acid solutions. In some lubricants, adding a few organic amide or amine, or choosing peroxide cured system Viton® will be better than bisphenol curing systems.

OTHER COMMON VARIATIONS

- FKM can also be submitted for approval to Underwriters Laboratories (UL) for use in applications as prescribed in UL157.
- FKM has excellent resistance to high temperature, oil, solvent, flame, chemical and weather, and is usually applied in automotive, chemical processing, aerospace and many other industries.
- Viton® GLT is broadly used in thermal range of 40°C to 250°C (40°F to 482°F) and has outstanding resistance to aggressive HTS type oils which are commonly used in aerospace industries.
- Viton® ETP is usually applied in chemical industries.
- In some fuels, adding several methanols, Viton® F and B type are more usable than A type, especially F type. If it requires lower temperature, GFLT and GBLT will be available.
- Viton® TBR 605C (TFE/propylene polymer) is better base and steam resistant than other general Viton®. It can be used in amine, amide and some bases.

GENERAL INFORMATION

ASTM D1418 DESIGNATION	FKM	STANDARD COLOR	Black
ISO/DIN 1629 DESIGNATION	FKM	HARDNESS RANGE	50 to 90 Shore A
ASTM D2000/ SAE J 200 CODES	HK	RELATIVE COST	High

SERVICE TEMPERATURES

STANDARD LOW TEMPERATURE	-15°F -26°C	SPECIAL COMPOUND LOW TEMPERATURE	-40°F -40°C
STANDARD LOW TEMPERATURE	232°F 450°C	SPECIAL COMPOUND HIGH TEMPERATURE	525°F 275°C

PERFORMS WELL IN

- Petroleum products
- Fuel or blend with methanol or ethanol
- Diesel or blend with biodiesel
- Mineral oil and grease
- Silicone oil and grease
- High vacuum
- Ozone, weather and very high temperature air
- Strong acid

DOESN'T PERFORM WELL IN

- Ketones
- Low molecular weight organic acids (formic and acetic acids)
- Superheat steam
- Low molecular weight esters and ethers
- Phosphate ester based hydraulic fluids Skydrol®

VITON®-75 O-RING

TEST REPORT FOR COMPOUND V75

DUROMETER: 75

COLOR: BLACK

ASTM* D2000, M2HK810, A1-10, B38, EF31, E078, Z1, Z2

SECTION OF SPEC.	PROPERTIES	REQUIREMENTS	RESULTS	ASTM TEST METHOD
Z1	ORIGINAL PHYSICAL PROPERTIES			
	Hardness, Shore A	75 ± 5	75	D2240-05
	Tensile Strength	1450 PSI (min)	2273 PSI (15.6 MPa)	D412-06a
	Elongation	150% (min)	203%	D412-06a
	Modulus at 100%		932 PSI (6.4 MPa)	D412-06a
	Specific Gravity		1.85 g/cm ³	
A1-10	HEAT AGE: 70 hours at 250°C (482°F)			
	Hardness Change	± 10 points	+2 points	D573-04
	Tensile Strength Change	-25% (max)	-1%	
	Elongation Change	-25% (max)	-3%	
Weight Change		-1.7%		
B38	COMPRESSION SET: 22 hours at 200°C (392°F)	50% (plied) (max)	11%	D395-03, Method B
EF31	FUEL C RESISTANCE: 70 hours at 23°C (73.4°F)			
	Hardness Change	± 5 points	-2 points	D471-06
	Tensile Strength Change	-25% (max)	-7%	
	Elongation Change	-20% (max)	-10%	
Volume Change	0% to +10%	+3.4%		
E078	NO. 101 OIL: 70 hours at 200°C (392°F)			
	Hardness Change	-15 to +5 points	-9 points	D471-06
	Tensile Strength Change	-40% (max)	-30%	
	Elongation Change	-20% (max)	-6%	
Volume Change	0% to +15%	+13.3%		

*American Society for Testing and Materials



VITON®-90 O-RING

TEST REPORT FOR COMPOUND V90

DUROMETER: 75

COLOR: BLACK

ASTM* D2000, M2HK810, A1-10, B38, EF31, E078, Z1, Z2

SECTION OF SPEC.	PROPERTIES	REQUIREMENTS	RESULTS	ASTM TEST METHOD
	ORIGINAL PHYSICAL PROPERTIES			
	Hardness, Shore A	90 ± 5	90	D2240-05
	Tensile Strength	1450 PSI (min)	2256 PSI (15.56 MPa)	D412-06a
	Elongation	100% (min)	137%	D412-06a
	Modulus at 100%		1656 PSI (11.42 MPa)	D412-06a
	Specific Gravity		1.837 g/cm ³	
	HEAT AGE: 70 hours at 250°C (482°F)			
A1-10	Hardness Change	± 10 points	+3 points	D573-04
	Tensile Strength Change	-25% (max)	-11%	
	Elongation Change	-25% (max)	-12%	
	Weight Change		-1.7%	
B38	COMPRESSION SET: 22 hours at 200°C (392°F)	50% (plied) (max)	20.4%	D395-03, Method B
	FUEL C RESISTANCE: 70 hours at 23°C (73.4°F)			
EF31	Hardness Change	± 5 points	-1 points	D471-06
	Tensile Strength Change	-25% (max)	-14%	
	Elongation Change	-20% (max)	-10%	
	Volume Change	0% to +10%	+2.7%	
	NO. 101 OIL: 70 hours at 200°C (392°F)			
E078	Hardness Change	-15 to +5 points	-8 points	D471-06
	Tensile Strength Change	-40% (max)	-24%	
	Elongation Change	-20% (max)	-1%	
	Volume Change	0% to +15%	+10.9%	
	7700/SAE OIL: 70 hours at 200°C (392°F)			
EF31	Hardness Change	-15 to +5 points	-11 points	D471-06
	Tensile Strength Change	-40% (max)	-16%	
	Elongation Change	-20% (max)	-8%	
	Volume Change	+25%	+15.3%	

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