

Katon[®]



KATON[®] FKM FK2

High Performance Specfluoroelastomer

KATON[®] FKM FK2 Series specfluoroelastomer

KATON[®] FKM FK2 series is a medium viscosity, high fluorine (70%), peroxide curable fluoroelastomer.

KATON[®] FKM FK2 series exhibits superior resistance to a wide variety of chemicals, coupled with excellent processability and optimum compression set.

KATON[®] FKM FK2 series can be cross-linked using organic peroxides in conjunction with a co-agent.

KATON[®] FKM FK2 series can be used for compression, injection and transfer molding of shaft seals, valve seals, O-rings, gaskets or any item requiring superior chemical resistance.

KATON[®] FKM FK2 series can be combined with the cure system and other typical fluoroelastomer compounding ingredients. Mixing can be accomplished with two-roll mills or internal mixers. Finished goods may be produced by a variety of rubber processing methods. This material can be extruded into hoses or profiles and can be calendered to make sheet stocks or belting.

Some of the basic properties of **KATON[®] FKM FK2 series** are :

- Low post cure
- Superior mold flow
- Lack of mold fouling
- Excellent mold release
- Good chemical resistance especially in:
 - Alcohol containing fuels
 - Steam
 - Fluids containing amine additives



General

Material Status	• Commercial: Active		
Availability	• Europe	• North America	• Taiwan
Features	• Alcohol Resistant • Good Flow	• Good Mold Resistance • Low Compression Set	• Crosslinkable • Medium Viscosity
Uses	• Fuel Resistant • Good Chemical Resistance	• Good Processability	• Steam Resistant
Appearance	• Belts/Belt Repair	• Hose	• Seals
Forms	• Gaskets	• Profiles	• Sheet
Processing Method	• Blending • Creamy White/Black/Brown	• Valves/Valve Parts	
Shore A	• Slab	• Calendering	• Compression Molding
FDA	• Compounding • Extrusion	• Resin Transfer Molding	• Injection Molding

Physical

	Typical value unit	Test method
Mooney Viscosity (ML 1+10,121°C)	41MU	No Standard
Fluorine Content	66%	No Standard
Working Temperature	-5°C~220°C	ASTM D573

Notes

Typical properties: these are not to be construed as specifications.

Properties	Specification	
Color		Black
Hardness, Shore A (ASTM D2240)	75+/-5	75
Tensile strength, MPa (ASTM D412)	10.0 min	12
Elongation, % (ASTM D412)	150 min	190

Compression set		
70 hrs @ 200°C	50max	19.1
168 hrs @ 200°C	50max	20.2

Air aging (70 hrs. @250°C)		
Hardness change, points	+10 max	+2
Tensile change, %	-25 max	-18
Elongation change, %	-25 max	-15

ASTM Fuel C (70 hrs. @23°C)		
Hardness change, points	+/-5	-4
Tensile % change	-25 max	-13
Elongation % change	-20 max	+6
Volume % change	0 to +10	+3

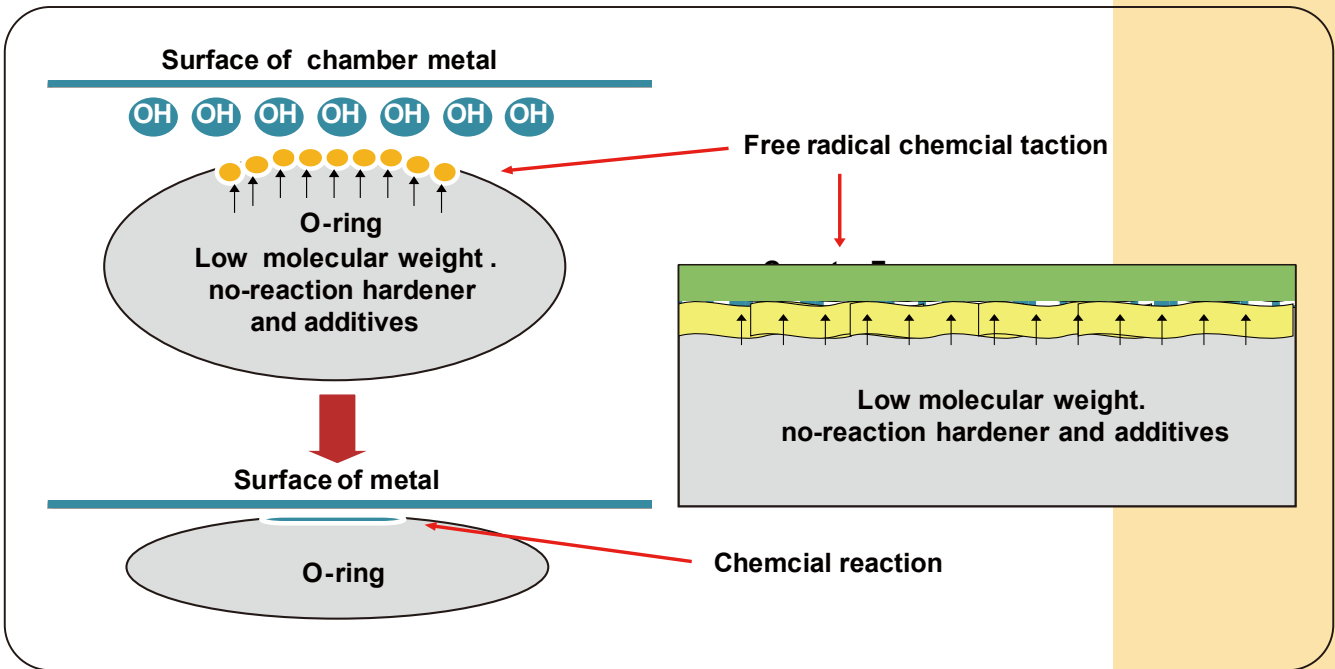
Methanol (70 hrs. @23°C)		
Hardness Change, points	-10 to 0	-4
Tensile Change,%	-40 max	-20
Elongation Change,%	-25 max	+5
Volume Change,%	0 to +10	+7

Low temperature D2137		
Brittleness at -25 °C	Pass	Pass

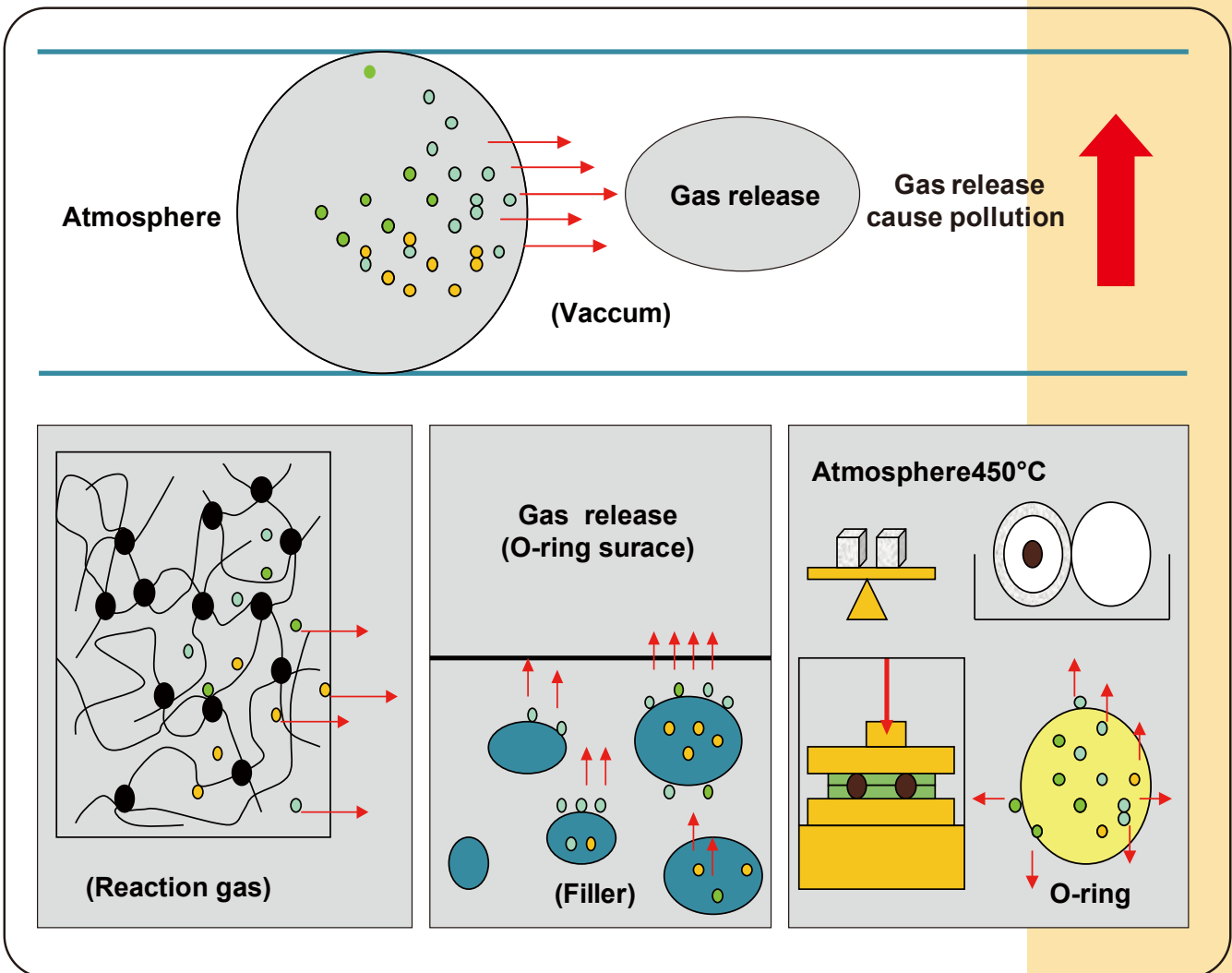
Spec FKM ASTM D1418
D2240 Designation: FKM-FK2
ISO 1629 Designation: FKM
ASTM D2000/SAE J200
Type Class: HK



How o-ring thermal degradation happens?



How gas release?



FK1 and FK2 characteristic comparison

Characteristics	FK2 (Bisphenol cure)	FK1 (Peroxide cure)
Elongation		○
Impact resistance		○
Compression set		○
Low temperature	○	
Chemical resistance	○	
Corrosion resistance	○	

Application in fuel tube

	Previously material	Current material	New material
Steam control tube	NBR	NBR / FK1	FK2
Snorkels	NBR	NBR / FK1	FK2
Refueling pipe	NBR	NBR / FK1	FK2
Fuel tube coffin	FK1	FK1	FK2
Fuel tube (backflow)	FK1	FK1	FK2
Orvr tube	NBR	NBR / FK1	FK2

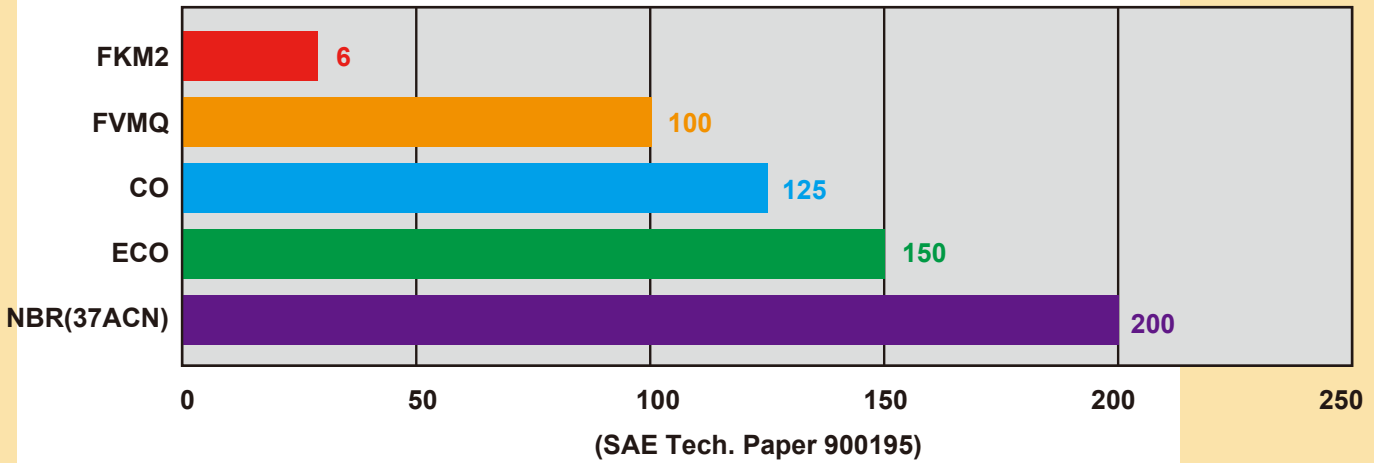
Chemical resistance in variety compound

	HNBR	FK1	FK2	FK3	AFLAS	FK5	FFKM
H2S	3	3	1	1	1	1	1
Steam	3	3	2	2	1	1	1
Aromatics	3	1	1	1	1	1	1
Amine	1	3	3	3	3	2	1
Fuel oil	1	1	1	1	1	1	1
Methanol	2	3	2	3	1	1	1
Sealants	3	1	1	1	1	2	1
TR 10C	-37/-30	-17	-15	-30	-7	-7	-2

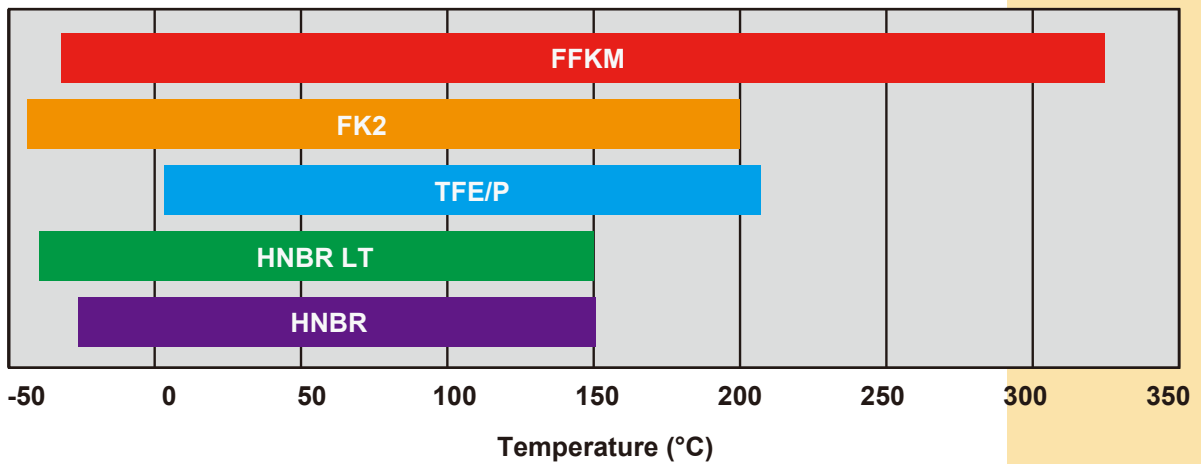
1=Great
2=Good
3= Not Good

The Permeability of rubber

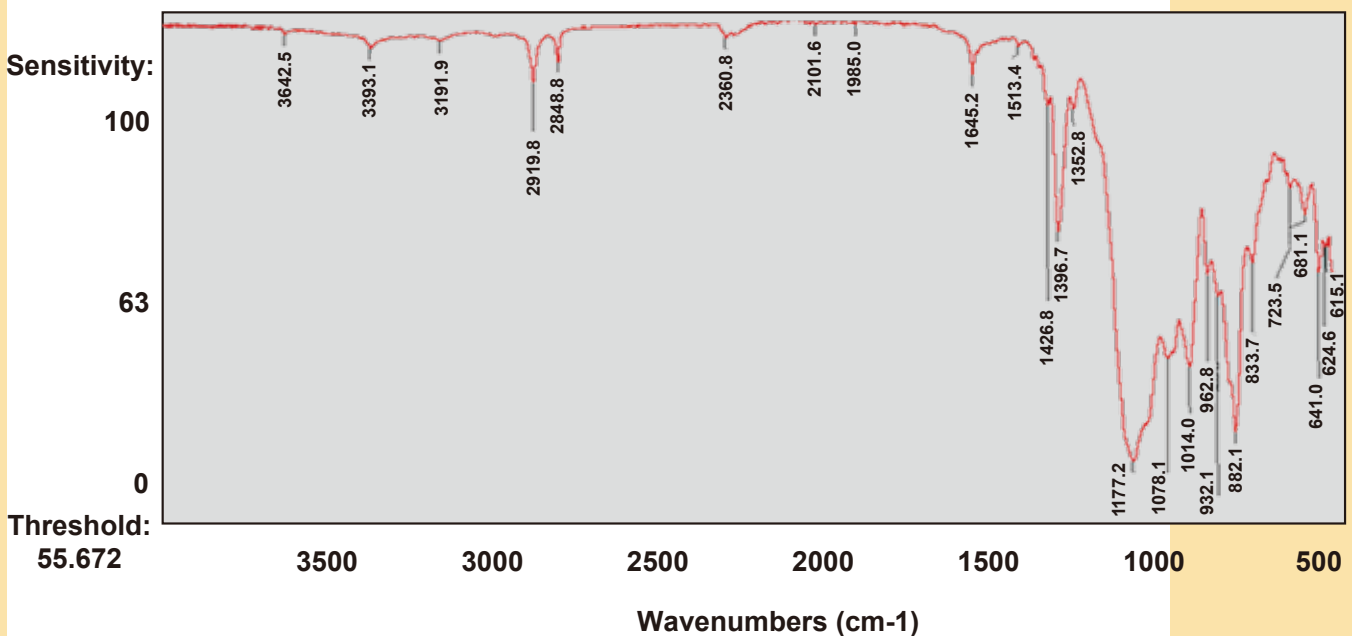
Fuel-C Permeability (g/m²/day)



FK2 works in fuel temperature range



TGA Analysis





TEST REPORT – FDA

測試報告

Test Report

號碼(No.) : CY/2012/82037 日期(Date) : 2012/09/07 頁數(Page) : 1 of 3

科頓聚合物股份有限公司
MAXMOLD POLYMER CO., LTD.

CY/2012/82037

以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as) :

樣品材質(Sample Material) : 氟素橡膠 (FKM FK2 RUBBER)
收件日期(Sample Receiving Date) : 2012/08/29
測試期間(Testing Period) : 2012/08/29 TO 2012/09/07

測試需求(Test Requested) : 依據客戶指定，參考美國聯邦法規之藥物暨食品管理(FDA)-21 CFR 177.2600所規定之要求做測試。 / As specified by client, selected parts of the submitted sample(s) for compliance with American Food and Drug Administration (FDA) 21 CFR 177.2600.

測試結果(Test Results)

測試部位(PART NAME)No. 1 : 黑色橡膠圈 (BLACK RUBBER RING)

通過(PASS)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	法規 限值 (Limit)
				No. 1	
總萃取物 (水, 迴流, 前7小時) / Total extractives (D.I.-Water, reflux, first 7 hours)	mg/in ²	參考美國聯邦法規(CFR) Title 21, Pt 177.2600 / With reference to CFR Title 21, Pt 177.2600.	-	0.7	20
總萃取物 (水, 迴流, 接續2小時) / Total extractives (D.I.-Water, reflux, succeeding 2 hours)	mg/in ²	參考美國聯邦法規(CFR) Title 21, Pt 177.2600 / With reference to CFR Title 21, Pt 177.2600.	-	0.2	1
總萃取物 (正己烷, 迴流, 前7小時) / Total extractives (n-Hexane, reflux, first 7 hours)	mg/in ²	參考美國聯邦法規(CFR) Title 21, Pt 177.2600 / With reference to CFR Title 21, Pt 177.2600.	-	0.3	175
總萃取物 (正己烷, 迴流, 接續2小時) / Total extractives (n-Hexane, reflux, succeeding 2 hours)	mg/in ²	參考美國聯邦法規(CFR) Title 21, Pt 177.2600 / With reference to CFR Title 21, Pt 177.2600.	-	0.2	4

備註(Note) :

- 0.1wt% = 1000ppm ; mg/kg = ppm ; mg/L = ppm
- MDL = Method Detection Limit (方法偵測極限值)
- "-" = Not Regulated (無規格值)

Maxmold Polymer Co., LTD

ADD No. 18, Ln. 434, Sec. 4, Zhonghua Rd., Xiangshan Dist., Hsinchu City 30094, Taiwan
TEL 886-3-538-0817
FAX 886-3-538-0827
E-mail service@maxmold.com
Wed www.mamxold.com

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