

SEALING SOLUTIONS

PRELIMINARY DATA

Fusion[®] F07

Performance-Enhanced FKM for SubFab

Developed to withstand common Etch and CVD oxygen / fluorine based gases, Fusion® F07 enhanced FKM lasts longer than standard FKM in subfab vacuum system lines, extending the time between planned maintenance activities. Fusion® F07 remains stable at service temperatures up to 355°F/180°C.



Features & Benefits

- Better plasma performance in Oxygen and Fluorine based chemistries than standard FKM
- Better total cost of ownership where application does not call for an FFKM compound
- Minimum expected lifetime of 6 months
- Form fit replaceable with other industry standard (KF/ISO) seals.
- Blue outer ring allows for easier identification upon installation and replacement
- O-rings available individually or as an assembly

Applications

- ISO-KF vacuum fittings, including typical sizes: KF16, KF25, KF40, KF50, ISO63, ISO80, ISO100, ISO160, and ISO200
- Heated and non-heated lines in vacuum systems

Fusion[®] F07 Typical Properties

Physical Properties	Typical					
Polymer Type	FKM					
Color	Dark Gray					
Manufacturing Method	Compression Molded					
Mechanical Properties						
Hardness Type A, Points	81					
Tensile Strength (psi)	2047					
Elongation @ Break (%)	284					
Modulus @ 100% Elongation (psi)	604					
Compression Set (%) 204°C, 70 Hours, flat plates, -214 O-Rings	29					
Thermal Properties						
CTE (Coefficient of Thermal Expansion), Up to 200°C	0.00034					
Operating Temperature F° (°C)	355°F (180°C)					

Unless otherwise indicated, all tests are performed on -214 o-rings. All test results are preliminary



Fusion[®] F07

Catalog & Part Numbering



Fitting Size	Fitting Size Code	Seal Assembly P/N	O-Ring P/N
KF16	016	SF016-190232-F07	M0500-01800-F07
KF25	025	SF025-190232-F07	M0500-02800-F07
KF40	040	SF040-190232-F07	M0500-04200-F07
KF50	050	SF050-190232-F07	M0500-05500-F07
ISO63	063	SF063-190233-F07	M0500-07600-F07
ISO80	080	SF080-190233-F07	M0500-08900-F07
ISO100	100	SF100-190233-F07	M0500-10800-F07
ISO160	180	SF160-190233-F07	M0500-15600-F07
ISO200	200	SF200-190233-F07	M0500-21600-F07

Seal Assembly Part Number Description							
SF	ххх	-	xx	-	xx	xx	ХХХ
Part Numbering Series	Fitting Sizes	Dash	Inner Ring Designation: • 19: Standard Ring with Flange: 304 SS	Seal Designation: • 02: O-Ring	Outer Ring Designation: • 32: Standard Solid Ring with Flange: 6061-Blue • 33: Split Ring with Spring – No Flange: 6061-Blue	Dash	Greene Tweed Compound 3-Digit Code: F07

O-Ring Part Number Description						
x	x	xxx	-	xxxxx	-	ХХХ
 Part Numbering Series: M: GT Standard Metric Part 	Non-Standard • 0: GT Standard Geometry & Tolerance per AS568	 Cross-Section: Nominal Cross section to two decimals (mm) 	Dash	 Inside Diameter: Minimal Inside diameter to two decimals (mm) 	Dash	Greene Tweed Compound 3-Digit Code: F07



SEALING SOLUTIONS

Fusion[®] F07 Chemical Guide

Chemical Name	Chemical Formula	Fusion [®] F07 Chemical Name		Chemical Formula	Fusion [®] F07
Ammonia	NH3	Medium Risk	Risk Hydrogen Bromide		\checkmark
Argon	Ar	\checkmark	✓ Hydrogen Chloride		\checkmark
Arsine	AsH3	\checkmark	Hydrogen Fluoride	HF	Not Recommended
Bis(tertiary-butylamino) silane	BTBAS	Not Recommended	Hydrogen Sulfide	H2S	Not Recommended
Boron Trichloride	BCI3	\checkmark	Methane	CH4	\checkmark
Boron Trifluoride	BF3	\checkmark	Methylsilane	CH3SiH3	Medium Risk
Carbon Dioxide	CO2	\checkmark	Nitrogen	N2	\checkmark
Carbon Monoxide	СО	\checkmark	Nitrogen Trifluoride	NF3	\checkmark
Carbon Tetrafluoride	CF4	\checkmark	Nitrous Oxide	N2O	\checkmark
Carbonyl Sulfide	COS	\checkmark	Oxygen	02	\checkmark
Chlorine	Cl2	\checkmark	Ozone	03	\checkmark
Chlorine Trifluoride	CIF3	\checkmark	Pentakis Dimethyl Amino Titanium	PDMAT	Not Recommended
Diazene	N2H2	Not Recommended	Perfluorocyclobutane	C4F8	Low Risk
Diborane	B2H6	✓	Phosphine	PH3	\checkmark
DichloroSilane	DCS	\checkmark	Silane	SiH4	\checkmark
Difluoromethane	CH2F2	\checkmark	Silicon Tetrachloride	SiCl4	\checkmark
Dimethylamine	DMA	Not Recommended	Silicon Tetrafluoride	SiF4	\checkmark
Dimethyldimethoxysilane	DMDMOS	Medium Risk	Sulfur Dioxide	SO2	\checkmark
DiSilane	Si2H6	\checkmark	Sulfur Hexafluoride	SF6	\checkmark
Fluorine	F2	✓	Tetraethyl Orthosilicate	TEOS	\checkmark
Fluoroform	CHF3	\checkmark	Tetrafluoroethylene	C2F4	\checkmark
Fluoromethane	CH3F	~	Tetrakis Dimethyl Amino Titanium	TDMAT	Not Recommended
Germane	GeH4	✓	Tetramethylsilane	TMS	\checkmark
Germanium Tetrafluoride	GeF4	Medium Risk	Titanium Tetrachloride	TiCl4	\checkmark
Hafnium Tetrachloride	HfCl4	NA	Trimethylaluminum	C6H18AI2	Medium Risk
Helium	He	\checkmark	Trimethylamine	ТМА	Not Recommended
Hexachlorodisilane	HCD	Medium Risk Trisilylamine		TSA	Not Recommended
Hexafluorobutadiene	C4F6	 ✓ 	Tungsten Hexafluoride	WF6	\checkmark
Hexafluoroethane	C2F6	Low Risk	Water	H2O	\checkmark
Hydrogen	H2		Xenon	Xe	\checkmark

Statements and recommendations in this publication are based on our experience and knowledge of typical applications of this product and shall not constitute a guarantee of performance nor modify or alter our standard warranty applicable to such products.

Low Risk: <15% volumetric swell, little to no softening or surface deterioration.

Medium Risk: <30% volumetric swell, minor to little softening or surface deterioration

Not Recommended: Severe attack, swelling, softening or dissolved.



Fusion[®] F07

Purity & Plasma Performance

Туре	Description	Greene Tweed: Fusion® F07
Purity	Outgassing(boilers) 200C, 30 min, ppmw	4.3
	Helium Permeability, 15 PSI, 23C cm2/sec/atm	5.4 E-07
	Extractables in DI Water (ppb), 80C, 7 Day Soak	2941
	T.O.C.'s (ppb), 80C 7 Day Soak. UPW	19000
Plasma Performance	NF3 Etch Rate (% Wt. Loss 90 min. Direct Exposure)	6.8
	O2 Etch Rate (% Wt. Loss 90 min. Direct Exposure)	1.3
	CF4 Etch Rate (% Wt. Loss 90 min. Direct Exposure)	4.6
	SF6 Etch Rate (% Wt. Loss 90 min. Direct Exposure)	4.3
	NF3 Remote Plasma Clean, 200C % Wt. Loss	11.4
	O2 Remote Plasma Clean, 200C % Wt. Loss	5.1

Contact Us!

With over 200 engineers working throughout North America, Europe, and Asia, Greene Tweed delivers exceptional responsiveness to our customers around the world.

From design through manufacture, we are committed to delivering innovative and customized material solutions that drive your technological advances. And with our vast network of technical and manufacturing resources, we have the support you require for your most critical applications. Please contact your local Greene Tweed representative for more information about our comprehensive elastomer and thermoplastic offerings.





1684 South Broad Street, Lansdale, PA 19446 Phone: (+1) (215) 256-9521

gtweed.com

Statements and recommendations in this publication are based on our experience and knowledge of typical applications of this product and shall not constitute a guarantee of performance nor modify or alter our standard warranty applicable to such products. © 2023, Greene Tweed all rights reserved. All trademarks are property of their respective owners. 08/23-GT BR-US-SSY-FUSF07-004