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
Continuous Service Temp. F° (°C)	355°F (180°C)
Excursion Service Temp. F° (°C)	428°F (220°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	**XXX**	**-**	**XX**	**XX**	**XX**	**-**	**XXX**
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**	**-**	**XXX**
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**

Chemical Guide

Chemical Name	Chemical Formula	Fusion® F07	Chemical Name	Chemical Formula	Fusion® F07
Ammonia	NH3	Medium Risk	Hydrogen Bromide	HBr	✓
Argon	Ar	✓	Hydrogen Chloride	HCl	✓
Arsine	AsH3	✓	Hydrogen Fluoride	HF	Not Recommended
Bis(tertiary-butylamino) silane	BTBAS	Not Recommended	Hydrogen Sulfide	H2S	Not Recommended
Boron Trichloride	BCl3	✓	Methane	CH4	✓
Boron Trifluoride	BF3	✓	Methylsilane	CH3SiH3	Medium Risk
Carbon Dioxide	CO2	✓	Nitrogen	N2	✓
Carbon Monoxide	CO	✓	Nitrogen Trifluoride	NF3	✓
Carbon Tetrafluoride	CF4	✓	Nitrous Oxide	N2O	✓
Carbonyl Sulfide	COS	✓	Oxygen	O2	✓
Chlorine	Cl2	✓	Ozone	O3	✓
Chlorine Trifluoride	ClF3	✓	Pentakis Dimethyl Amino Titanium	PDMAT	Not Recommended
Diazene	N2H2	Not Recommended	Perfluorocyclobutane	C4F8	Low Risk
Diborane	B2H6	✓	Phosphine	PH3	✓
DichloroSilane	DCS	✓	Silane	SiH4	✓
Difluoromethane	CH2F2	✓	Silicon Tetrachloride	SiCl4	✓
Dimethylamine	DMA	Not Recommended	Silicon Tetrafluoride	SiF4	✓
Dimethyldimethoxysilane	DMDMOS	Medium Risk	Sulfur Dioxide	SO2	✓
DiSilane	Si2H6	✓	Sulfur Hexafluoride	SF6	✓
Fluorine	F2	✓	Tetraethyl Orthosilicate	TEOS	✓
Fluoroform	CHF3	✓	Tetrafluoroethylene	C2F4	✓
Fluoromethane	CH3F	✓	Tetrakis Dimethyl Amino Titanium	TDMAT	Not Recommended
Germane	GeH4	✓	Tetramethylsilane	TMS	✓
Germanium Tetrafluoride	GeF4	Medium Risk	Titanium Tetrachloride	TiCl4	✓
Hafnium Tetrachloride	HfCl4	NA	Trimethylaluminum	C6H18Al2	Medium Risk
Helium	He	✓	Trimethylamine	TMA	Not Recommended
Hexachlorodisilane	HCD	Medium Risk	Trisilylamine	TSA	Not Recommended
Hexafluorobutadiene	C4F6	✓	Tungsten Hexafluoride	WF6	✓
Hexafluoroethane	C2F6	Low Risk	Water	H2O	✓
Hydrogen	H2	✓	Xenon	Xe	✓

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.

SEALING SOLUTIONS

Fusion® F07

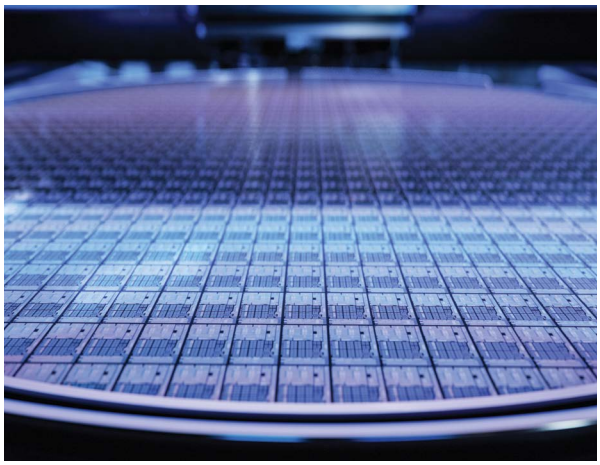
Purity & Plasma Performance

Type	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.



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