



M i c a

Mica based sheets for high temperature

FMI is an Italian manufacturing company specialised in the processing of PTFE, graphite and all the main asbestos-free materials used for the production of gasketing materials, gaskets and semi finished products of high technical value.

The company's current structure has resulted from progressive developments over the years which have led to the engineering of unique processing and manufacturing methods.


FMI manufactures leading-edge products and innovative solutions which are protected by international patents.

FMI's underlying goal is to provide the best quality, as certified by all major independent examination institutes.

Our products are our best guarantee suitable for all types of customers and applications, both standard and critical.

For a detailed list of approvals, please visit the dedicated area on our website [www.fmi-spa.com/approvals](http://www.fmi-spa.com/approvals)





FMI has been committed to the development of specialty materials capable of withstanding temperatures from cryogenic up to 1000 ° C and has designed compounds containing mica, a mineral fibre with exceptional physical and chemical resistance properties.

FM-HIGH® and Micatherm are the materials which FMI designed and manufactured with a view to meeting the most demanding sealing requirements.



Thanks to their chemical formulation, these patented materials, which are available as sheets, fillers for spiral wounds and facing for camprofiles, can be used in all critical applications where other materials fail to ensure the required resistance, durability and reliability.

FM-HIGH® and Micatherm are oxidation-free, due to the physical properties of mica, which provides more stability under all conditions than graphite, the latter being sensitive to attacks by oxidising agents at certain temperatures and concentrations.

FM-HIGH® is the best high performance sheet sealing material containing exfoliated mica and bio soluble fibre bonded to a SS316 tanged core. Micatherm is the best high performance sheet sealing material containing flexible mica with special resin bonded to a SS316 tanged core.



# FMI mica-based materials for critical temperature, oxidation-free applications

	<b>FM-HIGH®</b>	<b>MICATHERM S15</b>
Colour		
Composition	Expanded Mica and biosoluble fiber bonded to a SS316L tanged core	Flexible Mica sheet bonded with special resin and tanged insert of SS316L
Density DIN 28090-2 (g/cm <sup>3</sup> )	1,6 - 1,9	1,65 - 1,95
Max recommended Temperature (°C)	950	900
Max operating pressure (bar)	200	60
Leakage DIN 3535-6 (mg*s <sup>-1</sup> *m <sup>-1</sup> )	<0,1*	<0,1*
Creep relaxation DIN 3535-6 (%)	< 18	< 12
Compressibility DIN 3535-6 (%)	> 20	> 16
Recovery DIN 3535-6 (%)	> 2,2	> 3
Availability		
Sheets size (mm)	1.500x1.500 1.000x1.000	1.500x1.500 1.000x1.000
Thickness (mm)	1 to 3	1 to 3
Tolerances		
Sheets size (mm)	+/- 50	+/- 50
Thickness (%)	+/- 10	+/- 10

\*Please contact FMI application engineers

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expanded vermiculite

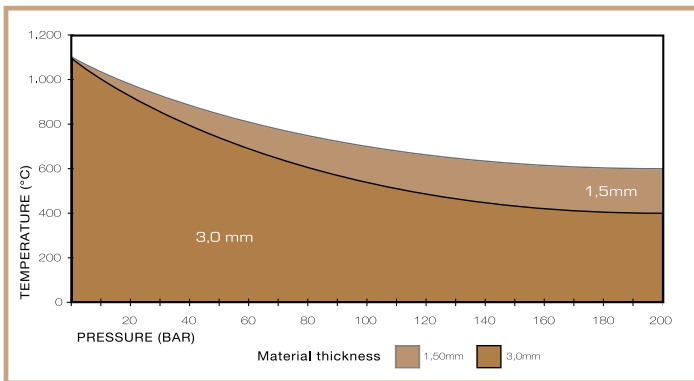
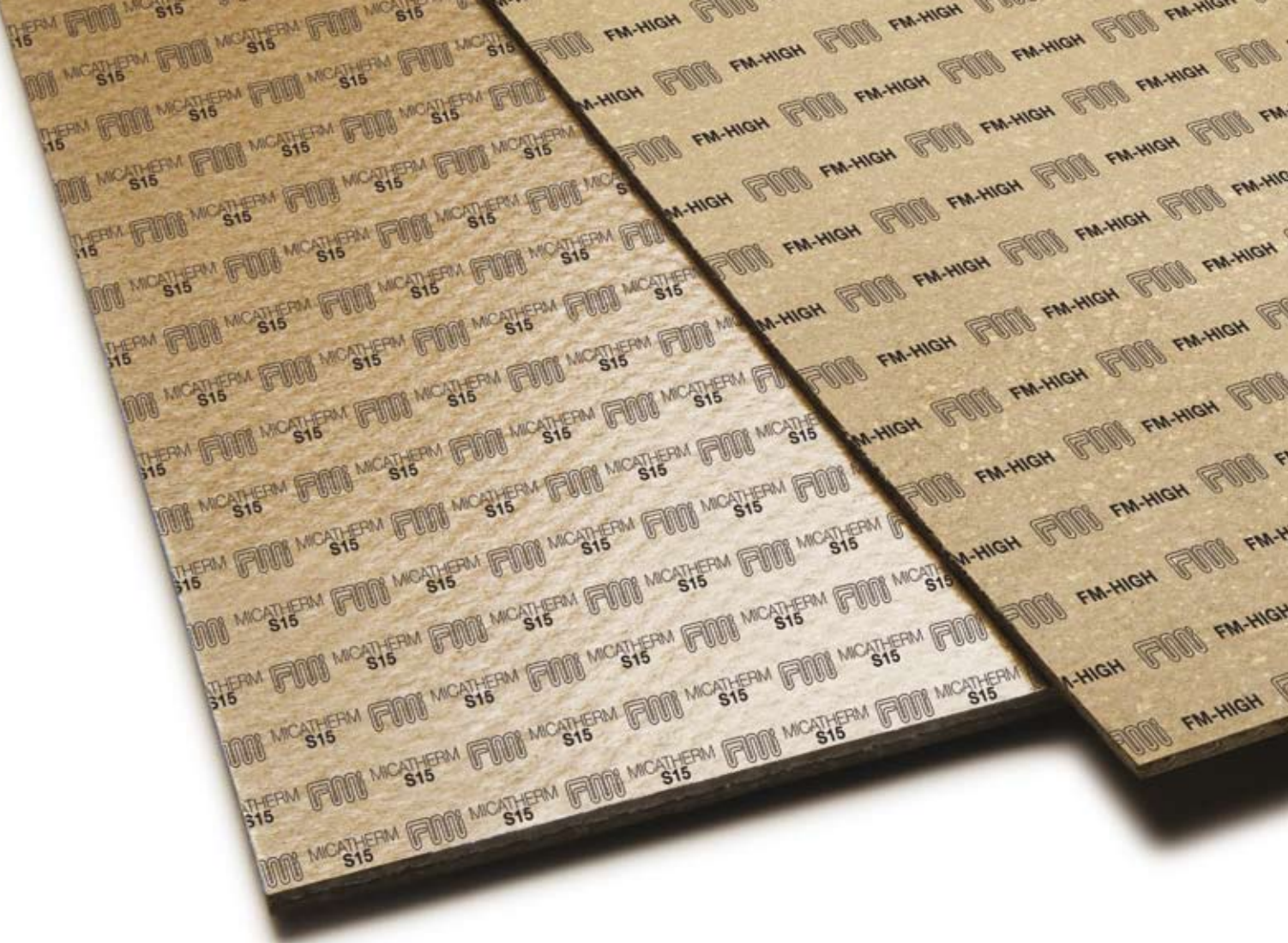


electron microscope image

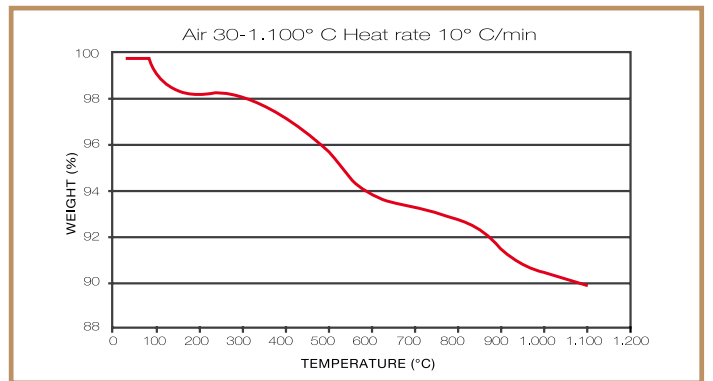
SICHEM® S59	SICHEM® S93
	
Modified PTFE with Mica filler	Microcellular Modified PTFE with Mica filler
2,1	1,2
260	260
80	50
<0.005	<0.001
<42	<16
>4,8	>50
>3,2	>5
1.500x1.500 1.750x1.750	1.500x1.500 1.750x1.750
0,75 to 6	0,75 to 6
+/- 50 +/- 10	+/- 50 +/- 10

Other sheet sizes and thicknesses available upon request.  
 Maximum temperature and pressure values cannot be used simultaneously.  
 Typical parameters of 2 mm thickness jointing.

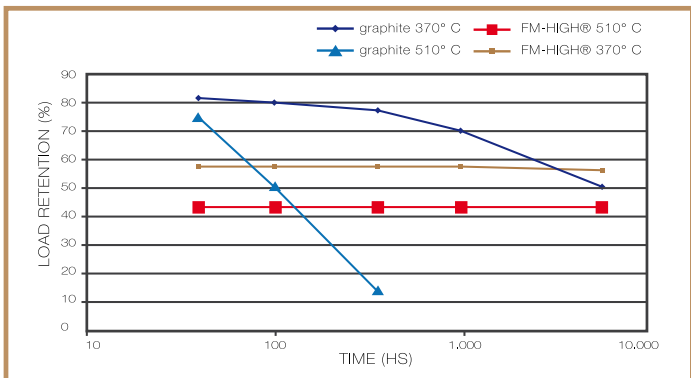




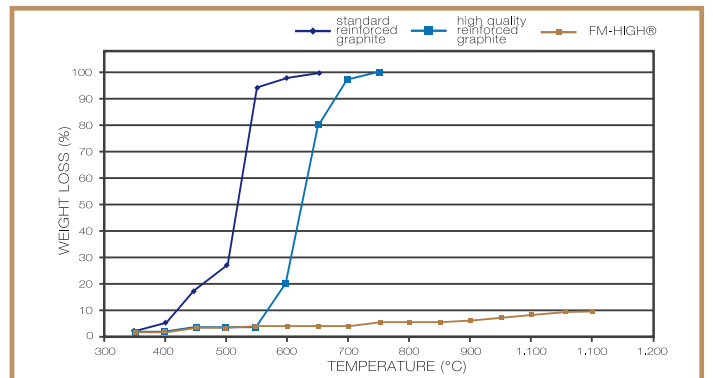
TXP DIAGRAM



TGA



LOAD RETENTION VS TIME



CUMULATIVE WEIGHT LOSS

All technical data is based on laboratory tests.

FMI spa reserves the right to modify the characteristics of its entire product range without obligation to anyone.



Suitable ●

Unsuitable ●

Depends on operating conditions ●

# Chemical compatibility guide for FM-HIGH® and Micatherm S15®

Acetic acid glacial	●	Dye Liquor	●	Methyl alcohol	●	Sulphur dioxide	●
Acetone	●	Ethyl acetate	●	Methyl isobutyl ketone	●	Sulphur trioxide	●
Acetylene	●	Ethyl alcohol	●	Methyl methacrylate	●	Sulphuric acid (concentrated)	●
Acrylic acid	●	Ethylene glycol	●	Methylene chloride	●	Sulphuric acid (fuming)	●
Acrylonitrile	●	Ethylene oxide	●	Mineral oil	●	Tar	●
Air	●	Ethyl ether	●	Mobiltherm	●	Turpentine	●
Alkaline lye	●	Ethylene	●	Naphthalene	●	Toluene	●
Aluminum chloride	●	Ethylene chloride	●	Natural gas	●	Town's gas	●
Ammonia gas	●	Fatty acids	●	Nitric acid (concentrated 50%)	●	Transformer oil	●
Ammonia	●	Ferric chloride	●	Nitric acid (fuming 95%)	●	Tributyl phosphate	●
Amyl acetate	●	Fluorine	●	Nitrogen	●	Triethanolamine	●
Amyl alcohol	●	Fluorosilicic acid	●	Oleum	●	Urea	●
Aniline	●	Formaldehyde	●	Oxygen	●	Vegetable Oil	●
Aviation fuel	●	Formic acid 85%	●	Paraffin	●	Vinyl acetate	●
Beer	●	Formic acid 10%	●	Pentachlorophenol	●	Vinyl chloride	●
Benzene	●	Freons	●	Perchloric acid	●	Vinylidene chloride	●
Benzoyl chloride	●	Gas oil	●	Petroleum	●	Water	●
Biphenyl	●	Gasoline	●	Phenol	●	Water condensate	●
Blast furnace gas	●	Heating oil	●	Phosgene	●	Water distilled	●
Bleach (solution)	●	Hydraulic oil (glycol)	●	Phosphoric acid (concentrated)	●	Whisky	●
Boiler feed water	●	Hydraulic oil (mineral)	●	Phosphoric acid (dilute)	●	Wine	●
Brine	●	Hydraulic oil (phosphate ester)	●	Phosphorous	●	White Spirit	●
Bromine	●	Hydrazine	●	Phthalic anhydride	●	Zylene	●
Calcium chlorate	●	Hydrocarbons (aromatic)	●	Potassium hydroxide	●		
Capro-lactam	●	Hydrocarbons aliphatic (sat.)	●	Potassium nitrate	●		
Carbolic Acid	●	Hydrocarbons aliphatic (unsat.)	●	Potassium permanganate	●		
Carbon dioxide	●	Hydrochloric acid (37% HCl)	●	Producer gas	●		
Carbon disulphide	●	Hydrofluoric acid	●	Pyridine	●		
Carbon monoxide	●	Hydrogen	●	Sea water	●		
Carbon tetrachloride	●	Hydrogen chloride	●	Silicone oil	●		
Chile saltpetre	●	Hydrogen fluoride	●	Soda ash	●		
Chlorine, dry	●	Hydrogen peroxide	●	Sodium bi-carbonate	●		
Chlorine, wet	●	Hydrogen sulfide	●	Sodium carbonate	●		
Chlorinated hydrocarbons	●	Isopropyl acetate	●	Sodium cyanide	●		
Chloroacetic acid	●	Isopropyl alcohol	●	Sodium hydroxide (40%)	●		
Chloro benzene	●	Kerosene	●	Sodium hydroxide (dilute)	●		
Chromic acid	●	Lime	●	Sodium hypochlorite	●		
Copper sulphate	●	Lubrication oil	●	Sodium nitrate	●		
Creosote	●	Machine oil	●	Starch	●		
Cresol	●	Magnesium sulphate	●	Steam	●		
Crude oil	●	Malic acid	●	Steam condensate	●		
Cyclohexanol	●	Methane	●	Styrene	●		
Dichlorobenzene	●	Methyl acrylate	●	Sulphur	●		

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