

SPITMAAN[®]



COMPRESSED NON-ASBESTOS JOINTING SHEETS

In Pursuit of An Eco-friendly Sealing System



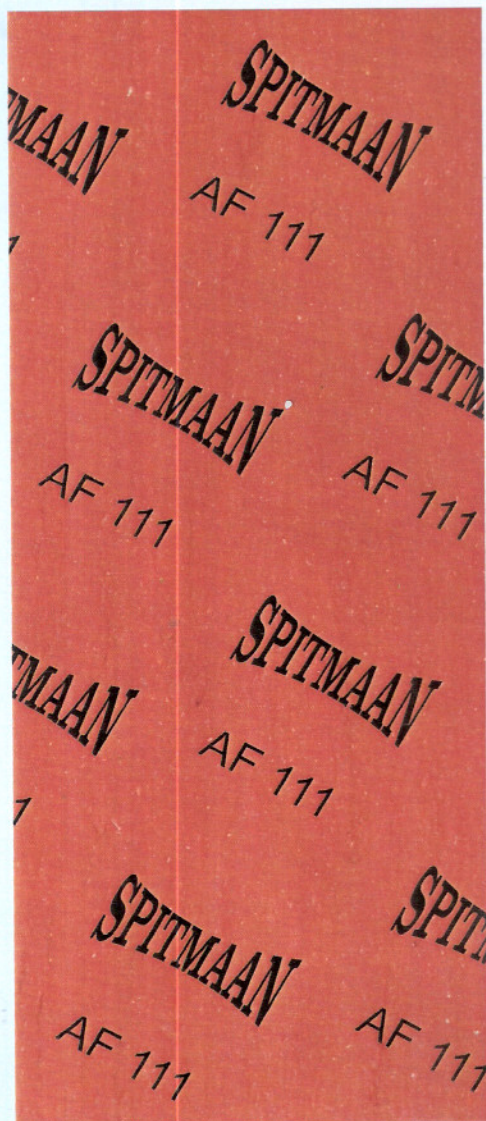
Compliance : Bs7531 Grade y

A cost effective product manufactured from ecofriendly natural cellulosic fibres (Veg. Fibre group) bonded with suitable mix of fillers & elastomer.

Colour : Red & Green

Also available with galvanized metallic wiregauze reinforcement and antistick coating

*** Service Conditions :** General purpose gasket material suitable for use with oils, Solvents, Gases, Water, L.P. Steam and most dilute acids and alkalies (Low service conditions)



	Non. Metallic	Metalic
Max. Short Term Service Temp (°C)	200	240
Max. Continuous Service Temp (°C)	120	140
Max. Operating Pressure (Bar)	25	30

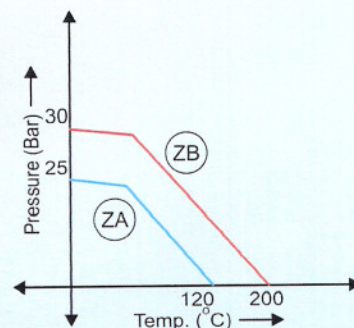
Typical Physical Properties :

Density		1.80 g/cm ³
Tensile Strength	ASTM F 152	≥ 8.5 MPa
Compressibility	ASTM F 36	>12%
Residual Stress (175°C)	DIN 52913	≈ 22 MPa
Gas Permeability	BS 7531 : 1992	≤ 1 ml/Min
(Sealability against Nitrogen)		
Recovery	ASTM F 36	≥ 50 %
Water Absorbion at 100°C	BS 7531:1992	≤ 10 %
Ignition Loss	DIN 52911	≤ 30 %

Fluid Resistance :

	Thickness Increase %	Mass Increase %
ASTM Oil No.3 BS 7531:1992 (at 150°C)	< 10	< 10
Fuel B at Room Temp. ASTM F 146	≤ 12	≤ 12

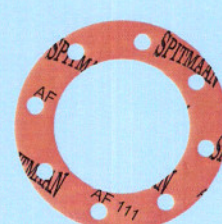
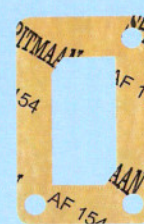
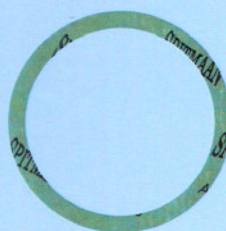
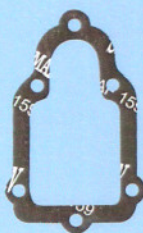
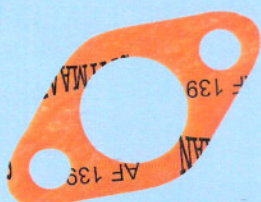
* Indicative "P x T" Zones :



②A Subject to compatibility with the media

②B Limited/restricted to few application only/short service conditions/Metallic versions

* Note : As the company's products are used for a multiplicity of purposes and as the company has no control over the method of their application or use, the company excludes all conditions or warranties, expressed or implied by statute or otherwise, as to their products and or their fitness for any particular purpose. Any technical Co-operation between the company and the customer is given for the customer's assistance only and without liability on the part of the Company.



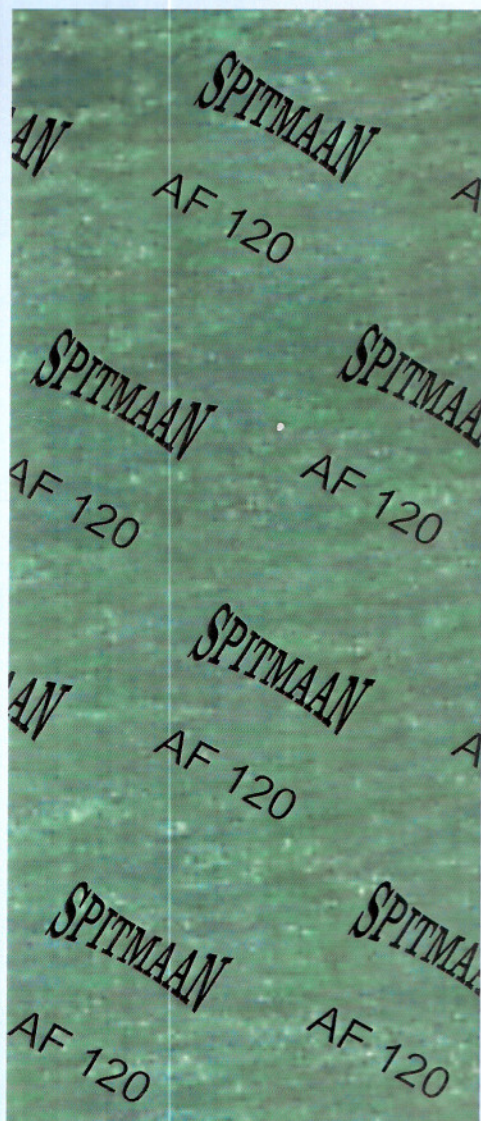
Compliance : Bs7531 Grade y

A compressed synthetic Aramid fibre jointing sheet bonded with a suitable mix of fillers & elastomers to create a matrix of stability

Colour : Green

Also available with galvanized metallic wiregauze reinforcement and antistick coating

*** Service Conditions :** Suitable for light industrial applications Media : Water, Gases, Medium Pressure Steam, Dilute Acids/ Alkalies (Medium Service Conditions)



	Non. Metallic	Metalic
Max. Short Term Service Temp (°C)	250	230
Max. Continuous Service Temp (°C)	180	210
Max. Operating Pressure (Bars)	50	60

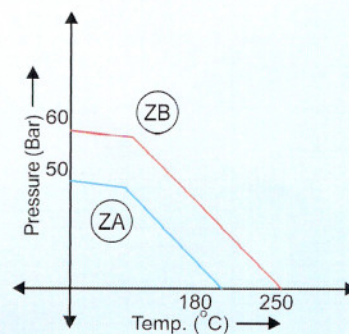
Typical Physical Properties :

Density		1.8 g/cm ³
Tensile Strength	ASTM F 152	≥ 10 MPa
Compressibility	ASTM F 36	> 12 %
Residual Stress	BS 7531:1992	≈ 22 MPa
Gas Permeability (Sealability against Nitrogen)	BS 7531:1992	≤ 1 ml/Min
Recovery	ASTM F 36	≥ 50%
Water Absorbion at 100°C	BS 7531:1992	≤ 7 % (Thickness increase)
Ignition Loss	DIN 52911	≤ 30 %

Fluid Resistance :

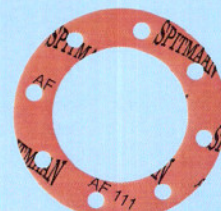
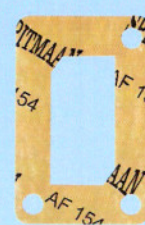
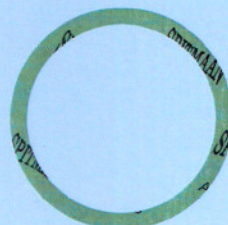
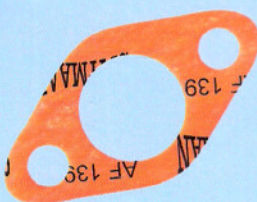
	Thickness Increase %	Mass Increase %
ASTM Oil No.3 BS 7531:1992 (at 150°C)	< 10	< 10
Fuel B at Room Temp. ASTM F 146	≤ 10	≤ 10

*** Indicative "P x T" Zones :**



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Ⓐ Subject to compatibility with the media
Ⓑ Limited/restricted to few application only/short service conditions/Metallic versions



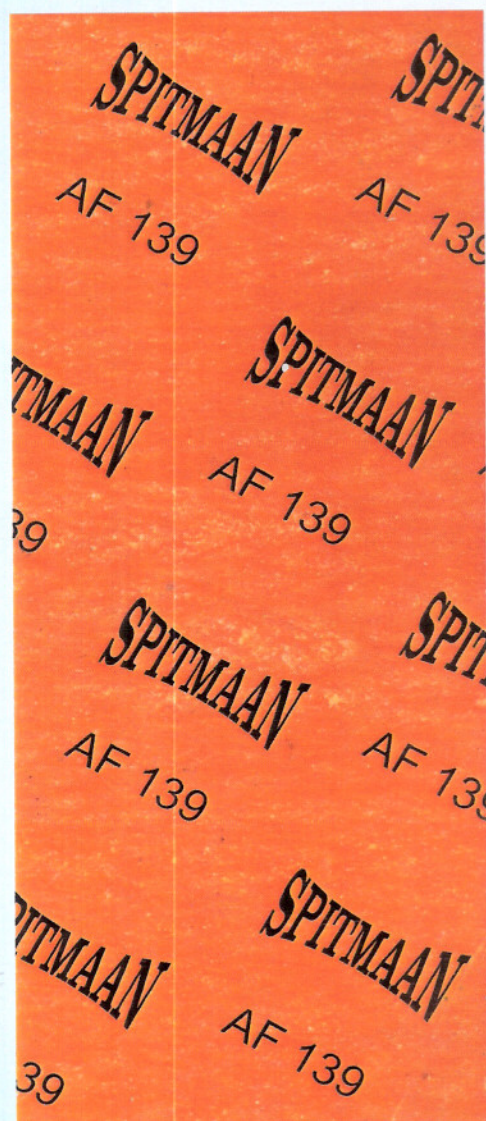
Compliance : Bs7531 Grade y

A high quality jointing sheet based on synthetic Aramid fibres bonded with mix of suitable fillers & elastomer.

Colour : Orange

Also available with galvanized metallic wiregauze reinforcement and antistick coating

*** Service Conditions :** Suitable for use in applications involving hydrocarbons such as oils and solvents, steam, gases, glycols and aqueous solutions. (Medium Service Conditions)



	Non. Metallic	Metalic
Max. Short Term Service Temp (°C)	300	350
Max. Continuous Service Temp (°C)	200	240
Max. Operating Pressure (Bars)	80	95

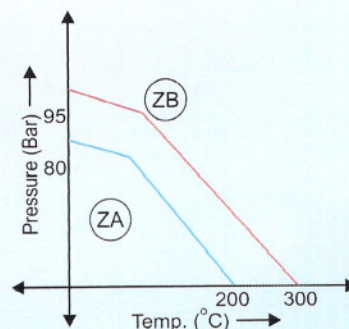
Typical Physical Properties :

Density		1.80 g/cm ³
Tensile Strength	ASTM F 152	≥ 12 MPa
Compressibility	ASTM F 36	> 12%
Residual Stress	BS 7531:1992	≈ 22 MPa
Gas Permeability	BS 7531:1992	≤ 0.8 ml/min
(Sealability against Nitrogen)		
Recovery	ASTM F 36	≥ 50 %
Water Absorption at 100°C	BS 7531:1992	≤ 7% (Thickness increase)
Ignition Loss	DIN52911	≤ 30 %

Fluid Resistance :

	Thickness Increase %	Mass Increase %
ASTM Oil No.3 BS 7531:1992 (at 150°C)	< 10	< 10
Fuel B at Room Temp. ASTM F 146	≤ 10	≤ 10

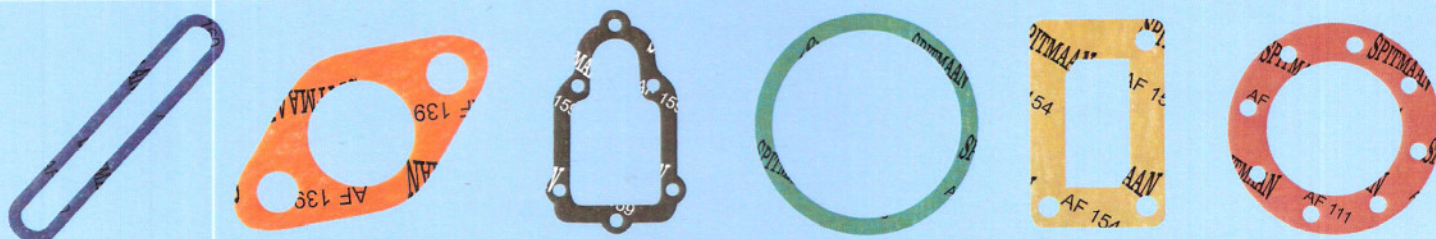
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(ZB) Subject to compatibility with the media

(ZA) Limited/restricted to few application only/short service conditions/Metallic versions

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Compliance : Bs7531 Grade x

A superior performance compressed jointing sheet incorporating a blend of special heat resisting Aramid fibres with a high quality nitrile elastomer binder

Colour : Yellow

Also available with galvanized metallic wire guaze reinforcement and anti stick coating.

*** Service Conditions :** Suitable for use with Oils, Solvents, Gases, Steam, Dilute Acids and alkalis.
(High Service Conditions)



	Non. Metallic	Metallic
Max. Short Term Service Temp (°C)	350	400
Max. Continuous Service Temp (°C)	250	300
Max. Operating Pressure (Bars)	150	160

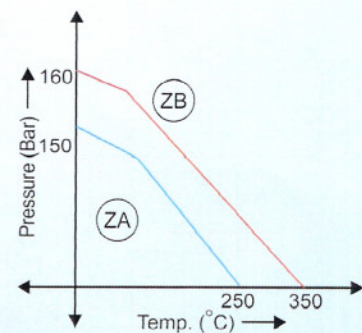
Typical Physical Properties :

Density		1.8 g/cm ³
Tensile Strength	ASTM F 152	≥ 13.5 MPa
Compressibility	ASTM F 36	> 12 %
Residual Stress	BS 7531:1992	≈ 25 MPa
Gas Permeability (Sealability against Nitrogen)	BS 7531:1992	≤ 0.5 ml/min
Recovery	ASTM F 36	≥ 60 %
Water Absorbtion at 100°C	BS 7531:1992	≤ 5 % (Thickness increase)
Ignition Loss	DIN52911	≤ 30 %

Fluid Resistance :

	Thickness Increase %	Mass Increase %
ASTM Oil No.3 BS 7531:1992 (at 150°C)	≤ 5	≤ 5
Fuel B at Room Temp. ASTM F 146	≤ 10	≤ 10

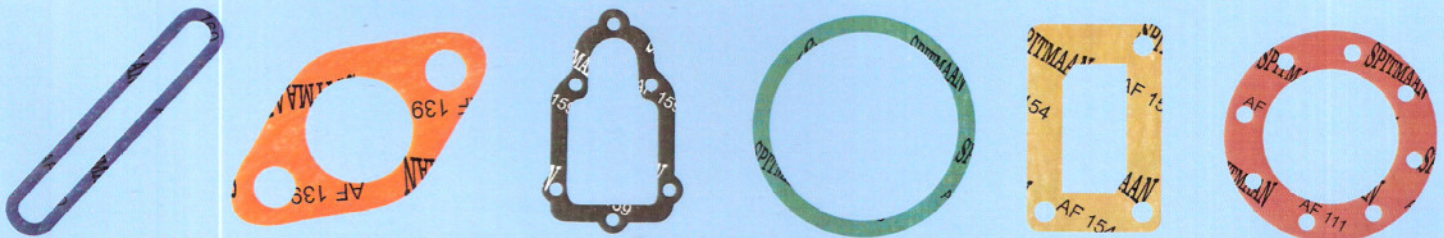
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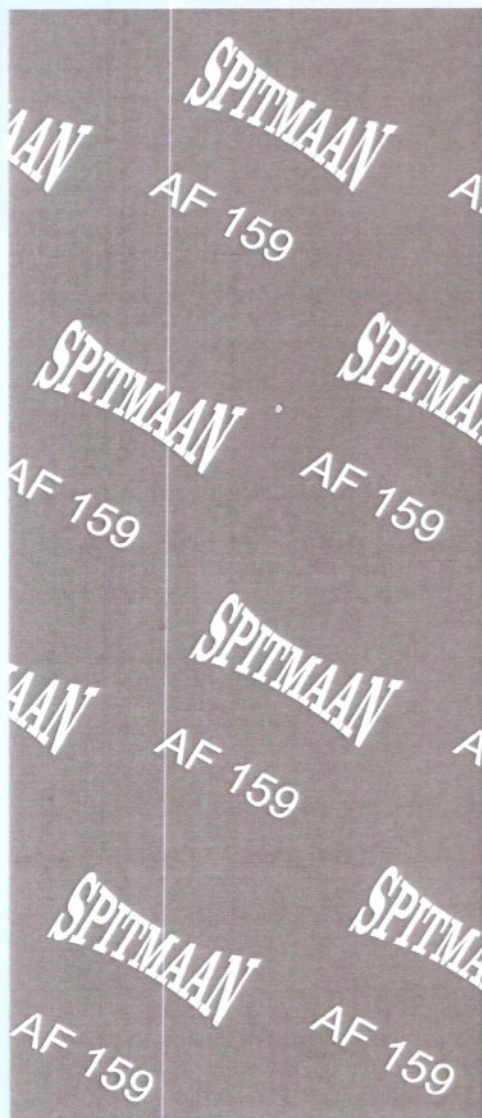
Compliance : Bs7531 Grade x

A Premium grade jointing sheet based on special synthetic Aramid fibres bonded with nitrile elastomer

Colour : Grey

Also Available with galvanized metallic wire gauze reinforcement and antistick coating

*** Service Conditions :** A universal grade suitable for many industrial sealing applications. Media : Hot oils, fuels, Hydrocarbons and refrigerants. (High Service Conditions)



	Non. Metallic	Metallic
Max. Short Term Service Temp (°C)	450	450
Max. Continuous Service Temp (°C)	250	300
Max. Operating Pressure (Bars)	150	160

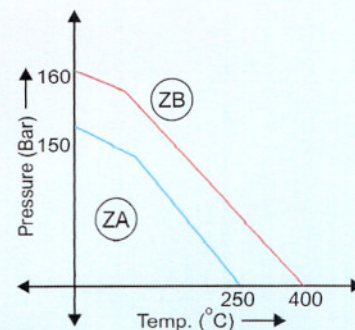
Typical Physical Properties :

Density		1.8 g/cm ³
Tensile Strength	ASTM F 152	≥ 13.5 MPa
Compressibility	ASTM F 36	> 12 %
Residual Stress	BS 7531:1992	≈ 25 MPa
Gas Permeability (Sealability against Nitrogen)	BS 7531:1992	≤ 0.5 ml/Min
Recovery	ASTM F 36	≥ 60 %
Water Absorbtion at 100°C	BS 7531:1992	≤ 5 % (Thickness increase)
Ignition Loss	DIN52911	≤ 30 %

Fluid Resistance :

	Thickness Increase %	Mass Increase %
ASTM Oil No.3 BS 7531:1992 (at 150°C)	≤ 5	≤ 5
Fuel B at Room Temp. ASTM F 146	≤ 5	≤ 5

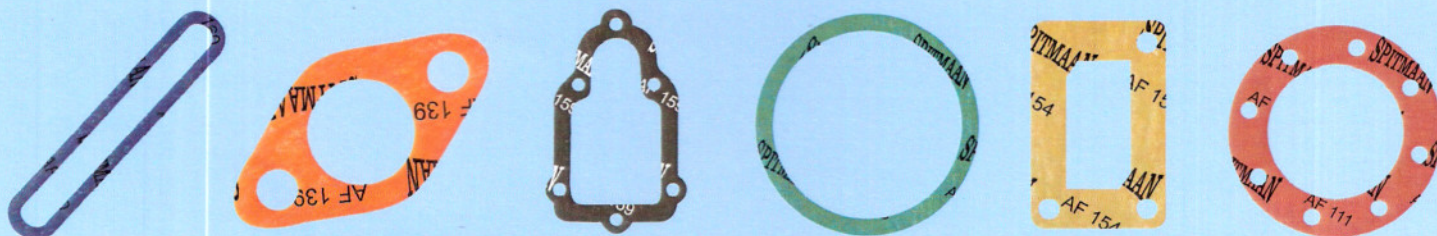
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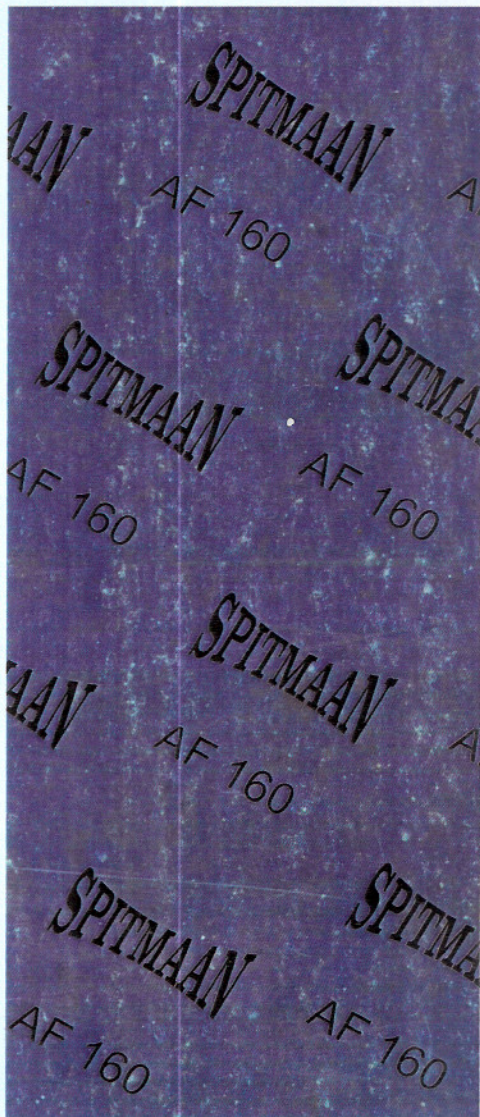
Compliance : Bs7531 Grade x

A top quality acid resistant compressed synthetic Aramid fibre jointing sheet bonded with special binders.

Colour : Blue

Available with antistick coating.

*** Service Conditions :** Acid resistant grade. Recommended for use against hot, Concentrated Organic/ inorganic/ mineral acids.



	Non. Metallic	Metalic
Max. Short Term Service Temp (°C)	250	Not
Max. Continuous Service Temp (°C)	210	Suggested
Max. Operating Pressure (Bars)	120	in Mettalic version

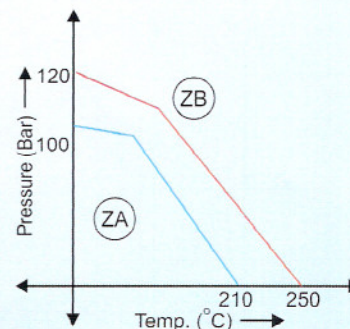
Typical Physical Properties :

Density		1.8 g/cm ³
Tensile Strength	ASTM F 152	≥ 13.5 MPa
Compressibility	ASTM F 36	> 12 %
Residual Stress	BS 7531:1992	≈ 22 MPa
Gas Permeability (Sealability against Nitrogen)	BS 7531:1992	≤ 0.5 ml/min
Recovery	ASTM F 36	≥ 60 %
Water Absorbion at 100°C	BS 7531:1992	≤ 5 %
		(Thickness increase)
Ignition Loss	DIN52911	≤ 30%

Fluid Resistance :

	Thickness Increase %	Mass Increase %
ASTM Oil No.3 BS 7531:1992 (at 150°C)	≤ 5	≤ 5
Fuel B at Room Temp. ASTM F 146	≤ 5	≤ 5

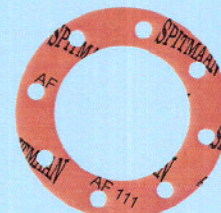
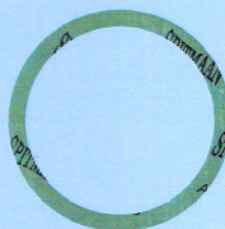
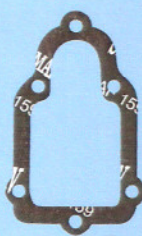
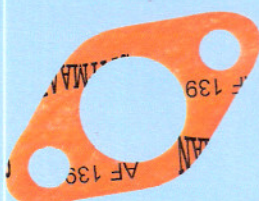
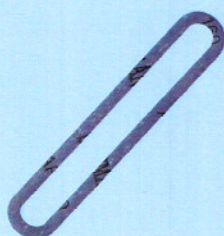
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Compliance : Bs7531 Grade x

The unique blend of special Heat resistant Fibres, Graphite and high quality elastomers, which demonstrate excellent Thermal and Mechanical Properties

Colour : Black

Also available with galvanized metallic wire gauze re-inforcemat and antistick coating

*** Service Conditions :** Due to the universal character of the material, "SPITMAAN" AF-170 has excellent resistance to oils, solvents, fuels, refrigerants, salt solutions, gas, water & steam



Non. Metallic Metallic

Max. Short Term Service Temp (°C)	600	650
Max. Continuous Service Temp (°C)	450	500
Max. Operating Pressure (Bar)	150	170

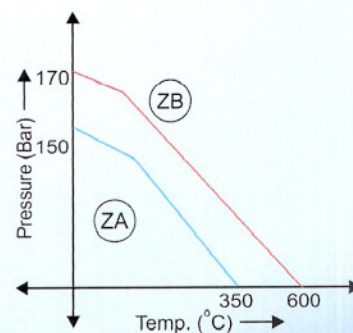
Typical Physical Properties :

Density		1.80 g/cm ³
Tensile Strength	ASTM F 152	≥ 11 MPa
Compressibility	ASTM F 36	> 12 %
Residual Stress	BS 7531:1992	≈ 20 MPa
Gas Permeability (Sealability against Nitrogen)	BS 7531:1992	≤ 0.8 ml/min
Recovery	ASTM F 36	≥ 50 %
Water Absorbtion at 100°C	BS 7531:1992	≤ 5 % (Thickness increase)
Ignition Loss	DIN52911	≥ 28%

Fluid Resistance :

	Thickness Increase %	Mass Increase %
ASTM Oil No.3 BS 7531:1992 (at 150°C)	≤ 8	≤ 8
Fuel B at Room Temp. ASTM F 146	≤ 8	≤ 8

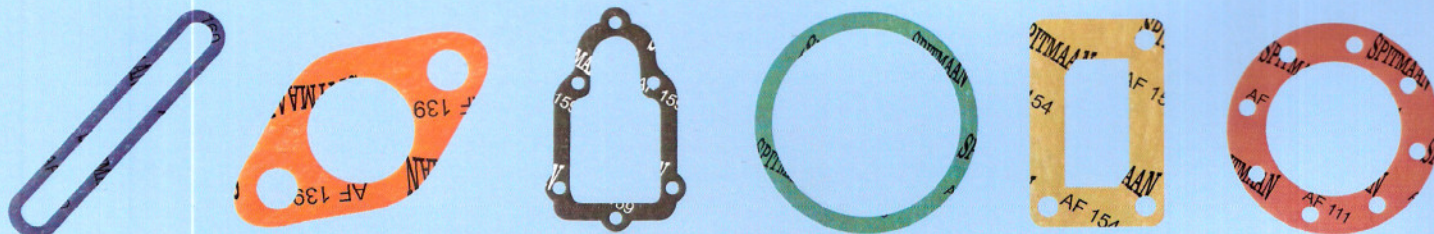
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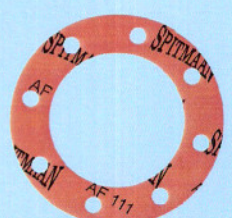
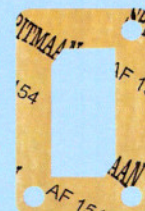
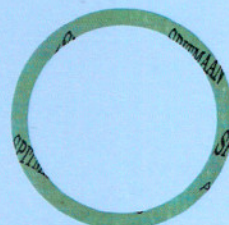
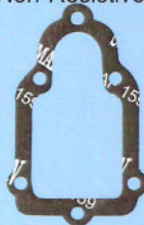
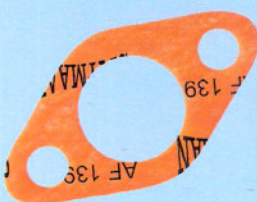
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Media Compatibility Chart

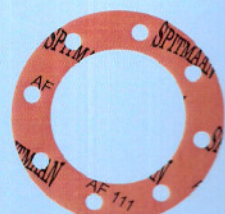
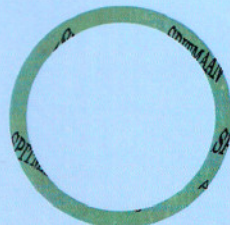
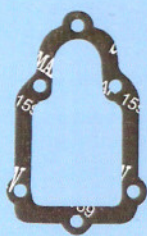
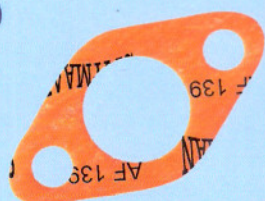
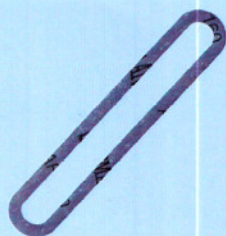
Medium	AF-111	AF-120	AF-139	AF-154	AF-159	AF-160	AF-170
Acetic Acid 100 %	A	A	A	A	A	A	A
Acetone	C	A	A	A	A	A	A
Acetylene	A	A	A	A	A	A	A
Alum	A	A	A	A	A	A	A
Aluminum Chloride	A	A	A	A	A	A	A
Alumnum Fluoride	A	A	A	A	A	A	A
Ammonia	A	A	A	A	A	A	A
Ammonium bicarbonate	A	A	A	A	A	A	A
Ammonium hydroxide	A	A	A	A	A	A	A
Amyl Acetate	C	C	C	C	C	A	C
Asphalt	C	C	A	A	A	A	A
ASTM Oil No. 3	A	A	A	A	A	A	A
Aviation Fuel	A	A	A	A	A	A	A
Barium Chloride	A	A	A	A	A	A	A
Barium Hydroxide	A	A	A	A	A	A	A
Barium Sulfide	A	A	A	A	A	A	A
Benzene	A	A	A	A	A	A	A
Benzoic Acid	X	C	C	C	C	A	C
Blast Furnace Gas	A	A	A	A	A	A	A
Boiler Feed Water	A	A	A	A	A	A	A
Borax	A	A	A	A	A	A	A
Boric Acid	C	A	A	A	A	A	A
Brine	A	A	A	A	A	A	A
Butane	A	A	A	A	A	A	A
Butyl Acetate	X	C	C	C	C	A	C
Butyl Alcohol	A	A	A	A	A	A	A
Butyric Acid	A	A	A	A	A	A	A
Calcium Chloride	A	A	A	A	A	A	A
Calcium Hydroxide	A	A	A	A	A	A	A
Calcium Hydrochloride	A	A	A	A	A	A	A
Calcium Sulphate	A	A	A	A	A	A	A
Carbolic Acid 100%	X	X	C	C	C	A	C
Carbon Dioxide	A	A	A	A	A	A	A
Carbon Disulphide	X	X	X	X	X	C	X
Carbon Monoxide	C	C	C	C	C	C	C
Carbon Tetrachloride	C	C	C	C	C	C	C
Chlorine Wet	X	X	X	C	C	A	C
Chloroform	C	C	A	A	A	A	A
Chloromethane	C	C	A	A	A	A	A
Chromic Acid	X	C	C	C	C	A	C
Citric Acid	A	A	A	A	A	A	A
Copper Chloride	C	C	C	C	C	A	C
Cresol	C	C	C	C	C	C	C
Cyclohexanol	A	A	A	A	A	A	A
Di Benzyl Ether	X	X	C	C	C	C	C
Di Butyl Phthalate	A	A	A	A	A	A	A
Diesel Oil	A	A	A	A	A	A	A
Dimethyl Formamide	X	X	X	X	X	X	X
Ethane	A	A	A	A	A	A	A
Ethyl Alcohol	A	A	A	A	A	A	A
Ethyl Chloride	C	C	C	C	C	C	C
Ethylene Glycol	A	A	A	A	A	A	A
Ethyl Ether	A	A	A	A	A	A	A
Ferric Chloride	A	A	A	A	A	A	A
Formaldehyde	A	A	A	A	A	A	A
Formamide	C	C	C	C	C	C	C
Formic Acid 85%	X	C	C	C	C	A	C
Gasoline (Non Leaded)	X	X	X	C	X	C	X
Gelatine	A	A	A	A	A	A	A
Glycerine	A	A	A	A	A	A	A
Heptane	A	A	A	A	A	A	A

A = Resistive, C = Conditionally Resistive X = Non-Resistive



Media Compatibility Chart

Medium	AF-111	AF-120	AF-139	AF-154	AF-159	AF-160	AF-170
Hydraulic Oil	A	A	A	A	A	A	A
Hydrazine Hydrate	A	A	A	A	A	A	A
Hydrochloric Acid 35%	X	X	X	X	X	A	X
Hydrogen	A	A	A	A	A	A	A
Hydrogen Chloride Dry	A	A	A	A	A	A	A
Hydrogen Peroxide	A	A	A	A	A	A	A
Iso-Octane	A	A	A	A	A	A	A
Kerosene	A	A	A	A	A	A	A
Latic Acid 50 %	A	A	A	A	A	A	A
Lead Acetate	A	A	A	A	A	A	A
Lime Water	A	A	A	A	A	A	A
Linseed Oil	A	A	A	A	A	A	A
Lubricating Oil	A	A	A	A	A	A	A
Magnesium Chloride	A	A	A	A	A	A	A
Magnesium Hydroxide	A	A	A	A	A	A	A
Magnesium Sulphate	A	A	A	A	A	A	A
Malic Acid	A	A	A	A	A	A	A
Methane	A	A	A	A	A	A	A
Methyl Chloride	C	C	C	C	C	C	C
Methylene Chloride	X	X	X	X	X	A	X
Methyl Ethyl Ketone	C	C	A	A	A	A	A
Mercury	A	A	A	A	A	A	A
Natural Gas	A	A	A	A	A	A	A
Nitric Acid < 50 %	X	X	X	X	X	A	X
Nitric Acid > 50 %	X	X	X	X	X	C	X
Nitrobenzene	C	C	C	C	C	C	C
Nitrogen	A	A	A	A	A	A	A
Octane	A	A	A	A	A	A	A
Oxalic Acid	C	C	C	C	C	A	C
Oxygen	A	A	A	A	A	A	A
Pentane	A	A	A	A	A	A	A
Perchloroethylene	C	C	C	C	C	C	C
Phenol	A	A	A	A	A	A	A
Potassium Acetate	A	A	A	A	A	A	A
Potassium Carbonate	A	A	A	A	A	A	A
Potassium Chlorate	A	A	A	A	A	A	A
Potassium Chloride	A	A	A	A	A	A	A
Potassium Chromium Sulphate	A	A	A	A	A	A	A
Potassium Cyanide	A	A	A	A	A	A	A
Potassium Dichromate	A	A	A	A	A	A	A
Potassium Hydroxide	X	X	C	C	C	C	C
Producer Gas	A	A	A	A	A	A	A
Propane	A	A	A	A	A	A	A
Sodium Carbonate	A	A	A	A	A	A	A
Sodium Aluminate	A	A	A	A	A	A	A
Sodium Bicarbonate	A	A	A	A	A	A	A
Sodium Bisulphide	A	A	A	A	A	A	A
Sodium Chloride	A	A	A	A	A	A	A
Sodium Hydroxide	X	X	X	X	X	X	X
Sodium Sulphate	A	A	A	A	A	A	A
Steam	A	A	A	A	A	A	A
Stearic Acid	A	A	A	A	A	A	A
Sulphuric Acid 50 %	X	X	X	C	X	A	C
Sulphuric Acid 96 %	X	X	X	X	X	A	X
Tartaric Acid	A	A	A	A	A	A	A
Tetrachloroethane	X	C	C	C	A	C	C
Toluene	A	A	A	A	A	A	A
Transformer Oil	A	A	A	A	A	A	A
Turpentine	A	A	A	A	A	A	A
Urea	A	A	A	A	A	A	A
Vinyl Acetate	A	A	A	A	A	A	A
White Spirit	A	A	A	A	A	A	A
Zinc Sulphate	A	A	A	A	A	A	A



STD. SHEET SIZES : {(W) X (L)} :

1600 mm X 1500/4500mm, 2000 mm X 2000 mm / 6000mm,

1500 mm X 3000 mm / 6000mm & 3000 mm X 3000 mm*

{Sheet size variation (W) X (L) : $\pm 5\%$ }

Nominal Sheet Thickness Approx : 0.4, 0.5, 0.75, 1.0, 1.5, 2.0, 3.0 mm & above

Gasket Selection :

Gaskets must maintain a seal for an acceptable period against all of the operational forces involved and to achieve this, there are eight important properties which any good gasket should possess:

- ❖ The gasket should not be porous to the fluid being sealed.
- ❖ The gasket should compress into the imperfections on the flange to create initial seal on application of sealing force.
- ❖ The gasket should not show significant creep under the influence of load and temperature. Such flow will allow the bolts to relax, reduce gasket surface stress and cause leakage.
- ❖ The gasket should be capable of catering to slight distortion between the flanges
- ❖ The gasket should withstand chemical attack from the media being handled
- ❖ The gasket has to be easily dismantled after use.
- ❖ The gasket should be able to withstand effects of temperature of the confined media.
- ❖ The gasket should not cause corrosion of the flange faces.

(Please visit our website for the questionnaire form, to be filled and sent to us for our guidance on appropriate style selection for any new/existing applications)

Spitmaan Asbestos free jointing sheets are manufactured on latest factory equipments and developed with the aid of research and scientific facts to take care of one and all of above factors combined with highly specialised technical knowledge of Engineers with experience of a life time. Our products meet with the increasingly exacting requirements in Engineering and chemical industries for contact gaskets on fixed sealing faces. **Spitmaan** Asbestos- free jointing sheets are manufactured to international quality standards, which our customers can depend upon. The operating temperature for Asbestos-free jointing sheet material is related to the thickness selected. Thinner materials offer better temperature and pressure properties.

Proper Bolting Procedure

The sequence in which bolts are tightened has a substantial bearing upon the distribution of contact area stress. Improper bolting may cock the flange out of parallel.

It is important for proper sealability that the flanges are clean and free from any serious defect.

