GASKET SHEETS

TECHNICAL SPECIFICATION

Gasket sheet Gambit AF-MF

Material

Gambit **AM-MF** gasket sheet is based on bio-soluble mineral fibres, Kevlar® fibres and fillers bonded with an NBR - based binder.

Designation according to DIN 28091-2: **FA-MA1-0**

Kevlar® is a registered trademark of E. I. du Pont de Nemours and Company or its affiliates.

General properties and applications

High-parameter, oil-resistant gasket sheet, thanks to the bio-soluble mineral fibres features higher thermal resistance, especially while working with steam. Highly recommended to applications with water, steam, kerosene, fuels and oils.

Maximum working conditions

Peak temperature	**°C**	400
Temperature under continuous operation	**°C**	350
Temperature under continuous operation with steam	**°C**	280
Pressure	**MPa**	12

Dimensions

Standard thicknesses of sheets /thicknesses above 5.0 mm are produced by gluing/	**mm**	0,3; 0,5; 0,8; 1,0; 1,5; 2,0; 2,5; 3,0; 4,0; 5,0; 6,0	± 0,1 ± 10% ± 10%
Standard dimensions of sheets /custom dimensions available within the total range of 1500x3000 mm/	**mm**	1500x1500	± 10,0

Non-standard thicknesses, graphiting of sheet surfaces, and reinforcement with metallic mesh available upon request.

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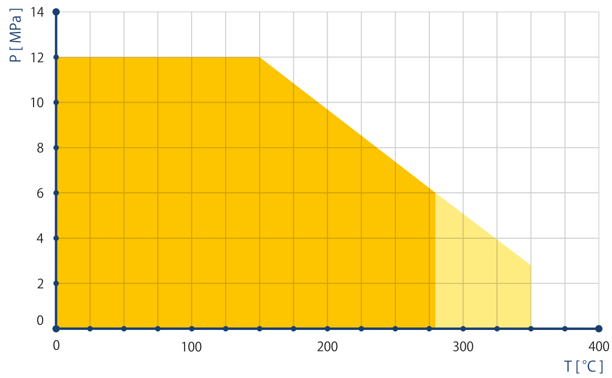
Physical and chemical properties

Density ± 5%	**g/cm³**	2,0	DIN 28090-2
Transverse tensile strength min.	**MPa**	9	DIN 52910
Compressibility typical value	**%**	10	ASTM F36
Elastic recovery min.	**%**	55	ASTM F36
Residual stresses 50 MPa/16 h/300 °C min.	**MPa**	29	DIN 52913
Residual stresses 50 MPa/16 h/175 °C min.	**MPa**	34	DIN 52913
INCREASE IN THICKNESS			
Oil IRM 903 150 °C/5 h max.	**%**	6	ASTM F146
Model fuel B 20 °C/5 h max.	**%**	6	ASTM F146
Colour	sand		

(Values as detailed in the table refer to 2.0 mm thick gasket sheets)



It is not recommended that maximum temperature and pressure are applied simultaneously. Pressure to temperature correlation for sheet thickness 2.0 mm is shown in the diagram.

- There is no requirement for trials.
- Trials should be run if the application involves steam.

Test Results of GAMBIT AF-MF Published on Gasketdata.org

The below tests were run according to EN 13555, the most up-to-date norm in this domain. The results confirm the quality of our products and assist the design of flanges according to norm EN 1591-1+A1:2009/AC:2011.

The tests have been carried out by the Center of Sealing Technologies CST at Münster University of Applied Sciences (FH Münster) and published on www.gasketdata.org together with the datasheets of the world's leading manufacturers of sealing materials.

CST is an independent laboratory focused on the research and development in the field of sealing materials in order to assist both the producers and the users.

Gasket characteristics acc. EN 13555 (05/2005) required for design calculations acc. EN 1591-1+A1:2009/AC:2011
Sealing element dimensions [mm] 92 x 49 x 2

Relaxation ratio P_{QR} for stiffness C = 500 kN/mm				
Gasket stress, MPa	**Ambient temperature**	**Temperature 1 (175 °C)**	**Temperature 2 (300 °C)**	**Temperature 3 (350 °C)**
Stress level 1 (30 MPa)	0,97	0,84	0,69	0,64
Stress level 2 (50 MPa)	0,97	0,89	0,73	0,67
P_{QR} at Q_{Smax} (220/220/80 MPa)	0,99	0,83	0,66	0,62

Maximal applicable gasket stress Q_{Smax}, MPa			
Q_{Smax}, MPa – ambient temperature	**Q_{Smax}, MPa – temperature 1 (175 °C)**	**Q_{Smax}, MPa – temperature 2 (300 °C)**	**Q_{Smax}, MPa – temperature 2 (350 °C)**
220	200	120	80

Sekant unloading modulus of the gasket E_G, MPa and gasket thickness e_G, mm								
Gasket stress, MPa	**Ambient temperature**		**Temperature 1 (175 °C)**		**Temperature 2 (300 °C)**		**Temperature 3 (350 °C)**	
	E_G, MPa	**e_G, mm**	**E_G, MPa**	**e_G, mm**	**E_G, MPa**	**e_G, mm**	**E_G, MPa**	**e_G, mm**
0	-	2,126	-	2,123	-	2,125	-	2,127
1	-	2,085	-	2,089	-	2,079	-	2,071
20	2142	2,007	2178	1,964	5954	1,937	4861	1,925
30	2818	1,987	2442	1,948	5096	1,923	3801	1,900
40	3556	1,970	2897	1,933	5604	1,910	4343	1,888
50	4339	1,954	3328	1,918	5667	1,898	4922	1,877
60	5089	1,940	3991	1,905	6361	1,888	5203	1,865
80	6395	1,919	4629	1,879	6147	1,871	6345	1,840
100	7401	1,901	4905	1,838	7118	1,855	-	-
120	8094	1,886	5231	1,781	7690	1,834	-	-
140	8694	1,872	5561	1,739	-	-	-	-
160	9018	1,858	5666	1,695	-	-	-	-
180	9307	1,845	5854	1,653	-	-	-	-
200	9812	1,832	6897	1,614	-	-	-	-
220	10324	1,819	-	-	-	-	-	-

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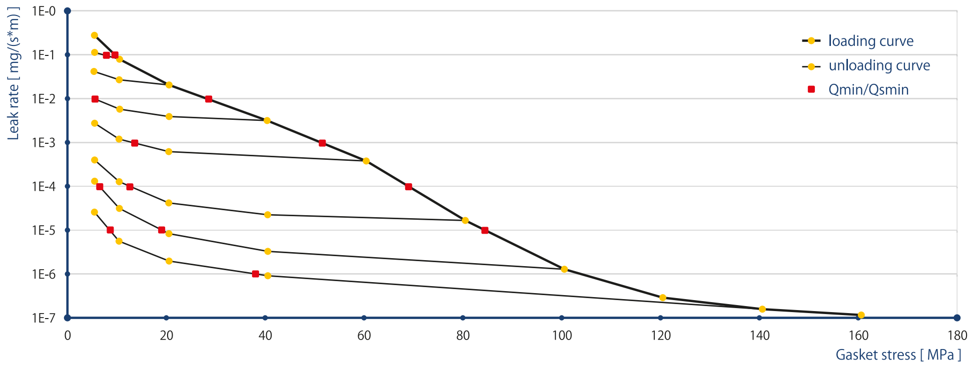
Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{Smin(L)}$ (after off-loading) for inner pressure 10 bar										
Tightness class	$Q_{min(L)}$	$Q_{Smin(L)}$, MPa								
mg/(s x m)	MPa	Q_A 10MPa	Q_A 20 MPa	Q_A 40 MPa	Q_A 60 MPa	Q_A 80 MPa	Q_A 100 MPa	Q_A 120 MPa	Q_A 140 MPa	Q_A 160 MPa
10^0	5	5	5	5	5	5	5	-	-	5
10^{-1}	10	8	5	5	5	5	5	-	-	5
10^{-2}	29	-	-	5	5	5	5	-	-	5
10^{-3}	51	-	-	-	13	5	5	-	-	5
10^{-4}	69	-	-	-	-	13	6	-	-	5
10^{-5}	84	-	-	-	-	-	19	-	-	9
10^{-6}	104	-	-	-	-	-	-	-	-	38

Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{Smin(L)}$ (after off-loading) for inner pressure 40 bar										
Tightness class	$Q_{min(L)}$	$Q_{Smin(L)}$, MPa								
mg/(s x m)	MPa	Q_A 10MPa	Q_A 20 MPa	Q_A 40 MPa	Q_A 60 MPa	Q_A 80 MPa	Q_A 100 MPa	Q_A 120 MPa	Q_A 140 MPa	Q_A 160 MPa
10^0	14	-	5	5	5	5	5	-	-	5
10^{-1}	31	-	-	9	5	5	5	-	-	5
10^{-2}	52	-	-	-	17	6	5	-	-	5
10^{-3}	68	-	-	-	-	15	8	-	-	5
10^{-4}	80	-	-	-	-	79	18	-	-	9
10^{-5}	101	-	-	-	-	-	-	-	-	25
10^{-6}	139	-	-	-	-	-	-	-	-	137

Leakage - ambient temperature / inner pressure = 10 bar



Leakage - ambient temperature / inner pressure = 40 bar