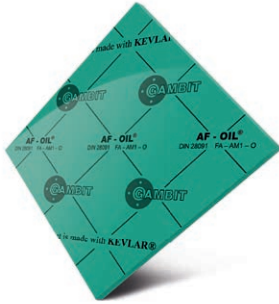


GAMBIT AF-OIL® gasket sheet

AF-OIL® is a registered trademark of Gambit Lubawka Sp. z o.o. or its affiliates.



Oil-resistant gasket sheet, recommended for high temperatures and pressures. Designed for application in supervised joints. Suitable for natural gas and drinking water installations. Also recommended for applications with water, steam, fuels, oils, brine, natural gas, propane butane.

The GAMBIT AF-OIL gasket sheet is based on Kevlar® aramide fibres, mineral fibres, and fillers bound with NBR rubber-based binder.

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

ADMISSIONS / CERTIFICATES

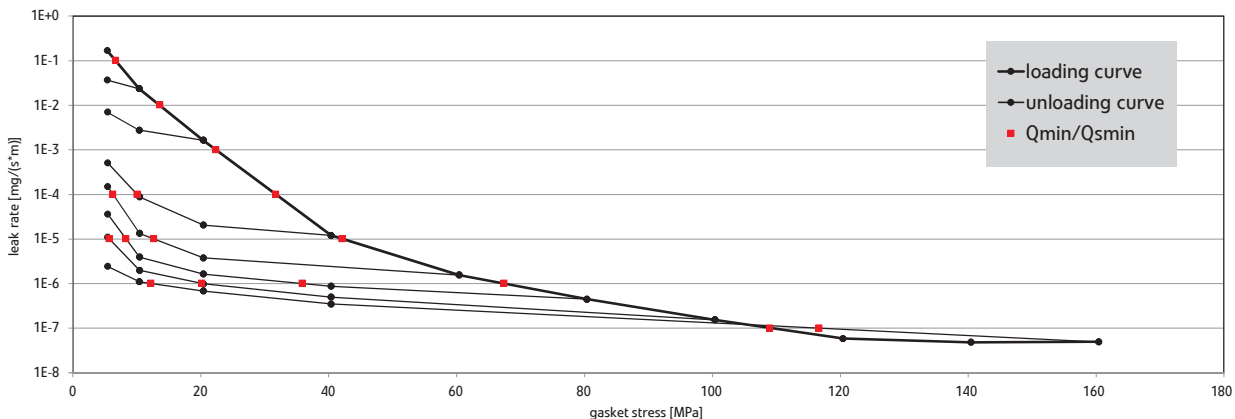
DVGW, Germanischer Lloyd, TA Luft (VDI 2200), BAM, GOST R, DVGW VP 401

Maximum working conditions			
Peak temperature	°C	350	
Temperature under continuous operation	°C	300	
Temperature under continuous operation with steam	°C	230	
Minimum temperature	°C	-60	
Pressure	MPa	10	
Dimensions			
Standard thicknesses of sheets /thicknesses above 5.0 mm are produced by gluing/	mm	0,3; 0,5; 0,8	± 0,1
	mm	1,0; 1,5; 2,0; 2,5	± 10%
	mm	3,0; 4,0; 5,0; 6,0	± 10%
Standard dimensions of sheets /custom dimensions available within the total range of 1500x3000 mm/	mm	1500x1500	± 10,0
Physical and Chemical Properties (for thicknesses 2mm)			
FA-AM1-0		DIN 28091-2	
Density ± 5%	g/cm ³	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	35	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		green	

CALCULATING COEFFICIENTS acc. to EN 13555 Thickness 1mm

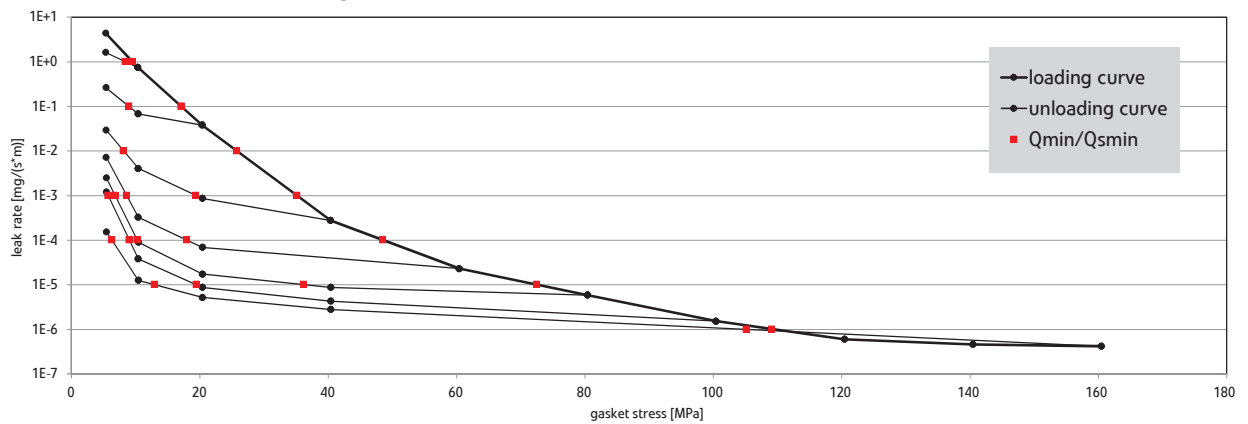
L [mg/(s*m)]	Qmin/L [MPa]	Minimum stress to seal Qmin/L (at assembly), QSmin/L (after off-loading) for p = 10 bar									
		QA= 10 MPa	QA= 20 MPa	QA= 40 MPa	QA= 60 MPa	QA= 80 MPa	QA= 100 MPa	QA= 120 MPa	QA= 140 MPa	QA= 160 MPa	
10 ⁻⁰	5	5	5	5	5	5	5			5	
10 ⁻¹	7	5	5	5	5	5	5			5	
10 ⁻²	14		5	5	5	5	5			5	
10 ⁻³	22			5	5	5	5			5	
10 ⁻⁴	32			10	6	5	5			5	
10 ⁻⁵	42				13	8	6			5	
10 ⁻⁶	67					36	20			12	
10 ⁻⁷	109									117	
10 ⁻⁸											

Leakage - ambient temperature / inner pressure = 10 bar



L [mg/(s·m)]	Qmin/L [MPa]	Minimum stress to seal Qmin/L (at assembly). QSmin/L (after off-loading) for p = 40 bar QSmin/L [MPa]								
		QA= 10 MPa	QA= 20 MPa	QA= 40 MPa	QA= 60 MPa	QA= 80 MPa	QA= 100 MPa	QA= 120 MPa	QA= 140 MPa	QA= 160 MPa
10 ⁻⁰	10	8	5	5	5	5	5			5
10 ⁻¹	17		9	5	5	5	5			5
10 ⁻²	26			8	5	5	5			5
10 ⁻³	35			19	9	7	6			5
10 ⁻⁴	49				18	10	9			6
10 ⁻⁵	73					36	19			13
10 ⁻⁶	109									105
10 ⁻⁷										
10 ⁻⁸										

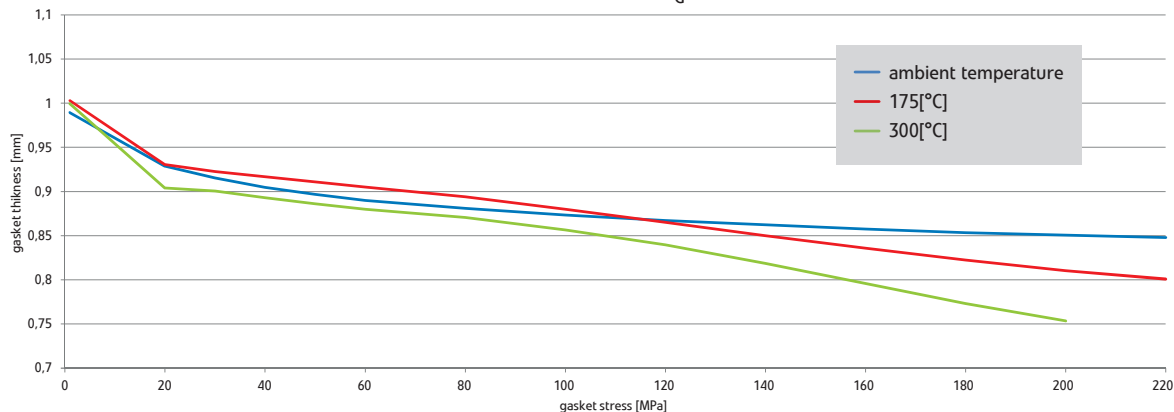
Leakage - ambient temperature / inner pressure = 40 bar



Relaxation ratio PQR for stiffness C = 500 kN/mm			
Gasket stress [MPa]	ambient temperature	temperature 1 [175 °C]	temperature 2 [300 °C]
Stress level 1 [30 MPa]	0,97	0,91	0,83
Stress level 2 [50 MPa]	0,98	0,94	0,82
PQR at QSmax	1,00 at 220 MPa	0,93 at 220 MPa	0,86 at 200 MPa

Sekant unloading modulus of the gasket. EG [MPa] and gasket thickness eG [mm]						
Gasket stress [MPa]	ambient temperature		temperature 1 [175 °C]		temperature 2 [300 °C]	
	EG [MPa]	eG [mm]	EG [MPa]	eG [mm]	EG [MPa]	eG [mm]
0		1,013		1,007		1,020
1		0,990		1,003		1,000
20	1204	0,929	2308	0,930	2916	0,904
30	1849	0,915	2377	0,923	7607	0,901
40	2612	0,905	3239	0,917	5218	0,893
50	3536	0,897	3841	0,911	5171	0,886
60	4264	0,890	4115	0,905	4904	0,880
80	5695	0,881	4586	0,894	5312	0,871
100	6659	0,873	4474	0,880	5411	0,857
120	6945	0,867	4979	0,865	5809	0,840
140	7487	0,862	4783	0,850	5732	0,819
160	7829	0,858	5084	0,836	6142	0,796
180	8164	0,854	5323	0,822	6313	0,773
200	9198	0,851	5581	0,810	7572	0,753
220	10405	0,848	6337	0,801		

Gasket thickness e_G

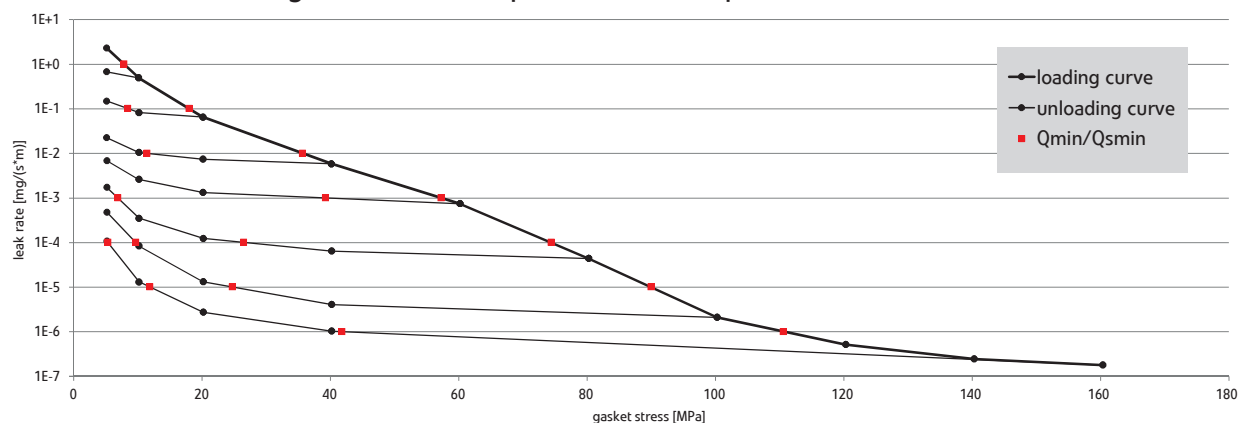


Maximal applicable gasket stress Q_{Smax}		
Q_{Smax} [MPa]	ambient temperature	temperature 1 [175 °C]
ambient temperature	Q_{Smax} [MPa] – temperature 1 [175 °C]	Q_{Smax} [MPa] – temperature 2 [300 °C]
220	220	200

CALCULATING COEFFICIENTS acc. to EN 13555 Thickness 2mm

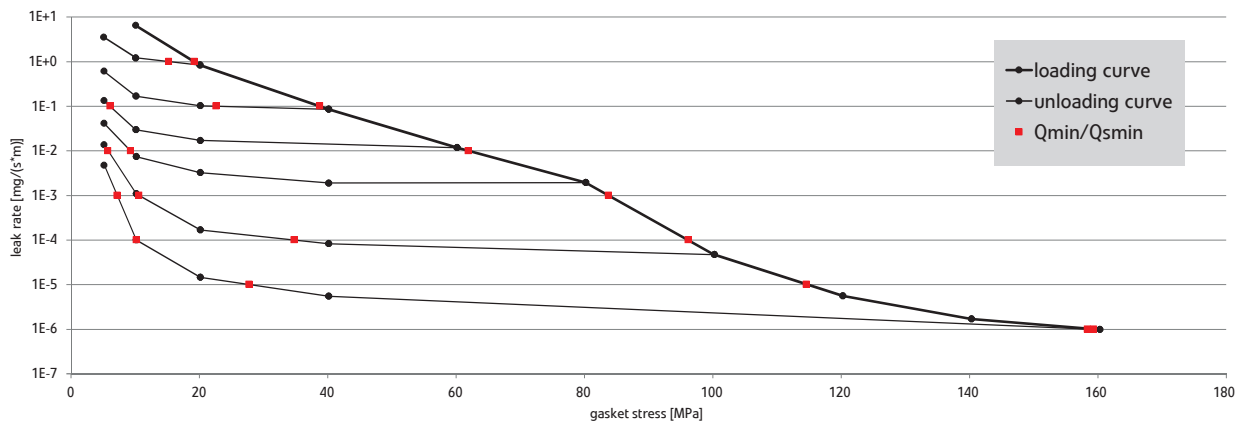
L [mg/(s·m)]	Q_{min}/L [MPa]	Minimum stress to seal Q_{min}/L (at assembly), Q_{Smin}/L (after off-loading) for $p = 10$ bar								
		$Q_A = 10$ MPa	$Q_A = 20$ MPa	$Q_A = 40$ MPa	$Q_A = 60$ MPa	$Q_A = 80$ MPa	$Q_A = 100$ MPa	$Q_A = 120$ MPa	$Q_A = 140$ MPa	$Q_A = 160$ MPa
10^0	8	5	5	5	5	5	5			5
10^{-1}	18		8	5	5	5	5			5
10^{-2}	36			11	5	5	5			5
10^{-3}	57				39	7	5			5
10^{-4}	74					27	10			5
10^{-5}	90						25			12
10^{-6}	111									42
10^{-7}										
10^{-8}										

Leakage - ambient temperature / inner pressure = 10 bar



L [mg/(s·m)]	Qmin/L [MPa]	Minimum stress to seal Qmin/L (at assembly), QSmin/L (after off-loading) for p = 40 bar QSmin/L [MPa]								
		QA= 20 MPa	QA= 30 MPa	QA= 60 MPa	QA= 80 MPa	QA= 100 MPa	QA= 120 MPa	QA= 140 MPa	QA= 160 MPa	
10 ⁻⁰	19	15	5	5	5	5			5	
10 ⁻¹	39		23	6	5	5			5	
10 ⁻²	62				9	6			5	
10 ⁻³	84					11			5	
10 ⁻⁴	96					35			6	
10 ⁻⁵	115								13	
10 ⁻⁶	159								105	
10 ⁻⁷										
10 ⁻⁸										

Leakage - ambient temperature / inner pressure = 40 bar



Relaxation ratio PQR for stiffness C = 500 kN/mm			
Gasket stress [MPa]	ambient temperature	temperature 1 [175 °C]	temperature 2 [300 °C]
Stress level 1 [30 MPa]	0,94	0,82	0,61
Stress level 2 [50 MPa]	0,97	0,90	0,69
PQR at QSmax	0,99 at 220 MPa	0,86 at 220 MPa	0,67 at 80 MPa

Sekant unloading modulus of the gasket EG [MPa] and gasket thickness eG [mm]						
Gasket stress [MPa]	ambient temperature		temperature 1 [175 °C]		temperature 2 [300 °C]	
	EG [MPa]	eG [mm]	EG [MPa]	eG [mm]	EG [MPa]	eG [mm]
0						
1		2,083		2,086		2,085
20	1133	1,955	1680	1,922	9216	1,890
30	1766	1,925	2311	1,909	5235	1,873
40	2457	1,903	2660	1,895	4853	1,859
50	3186	1,885	3369	1,883	5285	1,847
60	3982	1,871	3678	1,871	5453	1,834
80	5399	1,851	4440	1,845	6179	1,808
100	6535	1,835	4784	1,815		
120	7345	1,821	5132	1,784		
140	8098	1,808	5521	1,751		
160	8523	1,796	5870	1,720		
180	8926	1,785	6238	1,690		
200	9383	1,774	6468	1,663		
220	9739	1,763	6772	1,638		

