GASKET SHEETS
Gambit AF-OIL®

The values given in the table refer to gasket sheets with a thickness of 2.0 mm			
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
		1,0 | 1,5 | 2,0 | 2,5	± 10%
		3,0 | 4,0 | 5,0 | 6,0	± 10%
Standard dimensions of sheets /custom dimensions available within the total range of 1500 × 3000 mm/	mm	1500 × 1500	± 10,0

Technical data - typical values for the thickness of 2.0 mm				
Density	± 5%	g/cm³	2	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		

Calculation factors			
ASTM F3149	For gaskets with thickness 1,5 mm		
	Tightness class [mg/(s*m)]	m	y [MPa]
	$L_{1,0}$	2,0	2,0
	$L_{0,1}$	2,0	4,4
EN 13555			

Oil-resistant gasket sheet, recommended for high temperatures and pressures. Designed for application in supervised joints. 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.

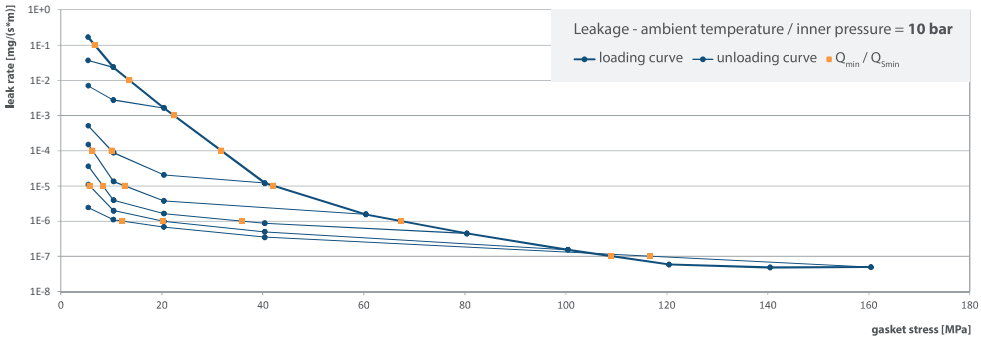
Classification according to DIN 28091-2:
FA-AM1-0

Approvals / Admissions / Certificates:
DVGW
TA Luft (VDI 2200)
BAM
UDT
WRAS
DNV GL
EC 1935/2004

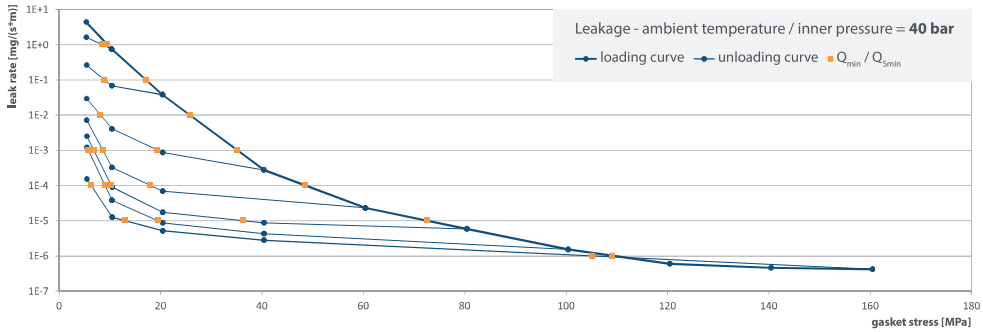
All information provided in this catalog based on many years of experience in the production and usage of these products. Due to the fact that the work of the seal in the flange connection is influenced by many factors resulting from the assembly method, operating parameters of the installation and the sealed medium, the parameters are indicative and do not give grounds for claims, and the specific use of products requires contact with the manufacturer.

Calculation coefficients according to EN 13555 for thickness 1.0 mm

Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{Smin(L)}$ (after off-loading) for p = 10 bar										
L [mg/(s*m)]	$Q_{min(L)}$ [MPa]	$Q_{Smin(L)}$ [MPa]								
		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}	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}										

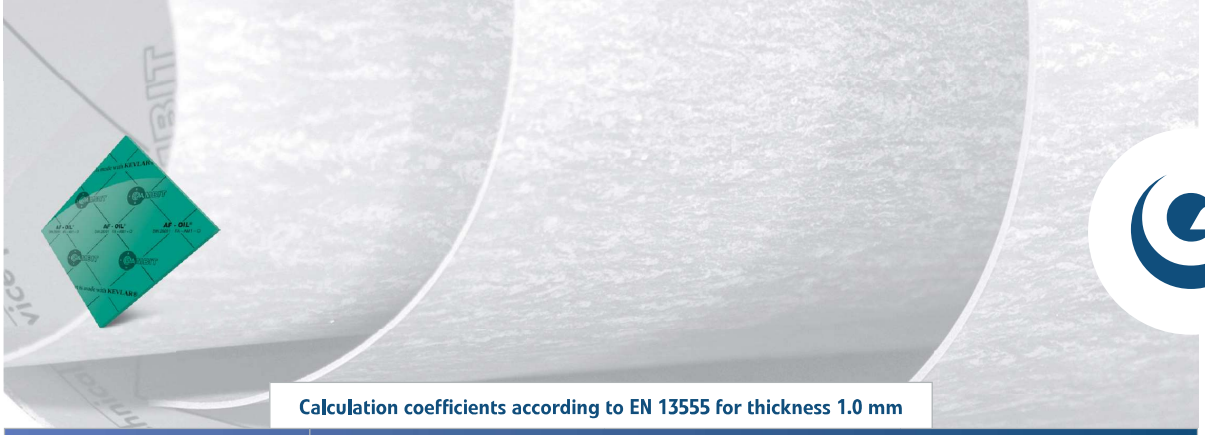


Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{Smin(L)}$ (after off-loading) for p = 40 bar										
L [mg/(s*m)]	$Q_{min(L)}$ [MPa]	$Q_{Smin(L)}$ [MPa]								
		Q_A = 10 MPa	Q_A = 20 MPa	Q_A = 40 MPa	Q_A = 60 MPa	Q_A = 80 MPa	Q_A = 100 MPa	Q_A = 120 MPa	Q_A = 140 MPa	Q_A = 160 MPa
10^{0}	10	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}										



Note: the content of darkened cells was not determined respectively is unnecessary	Rev – No: 1	Creation date of this sheet: 18.09.2014

The measurement results were confirmed by GASKETDATA.ORG

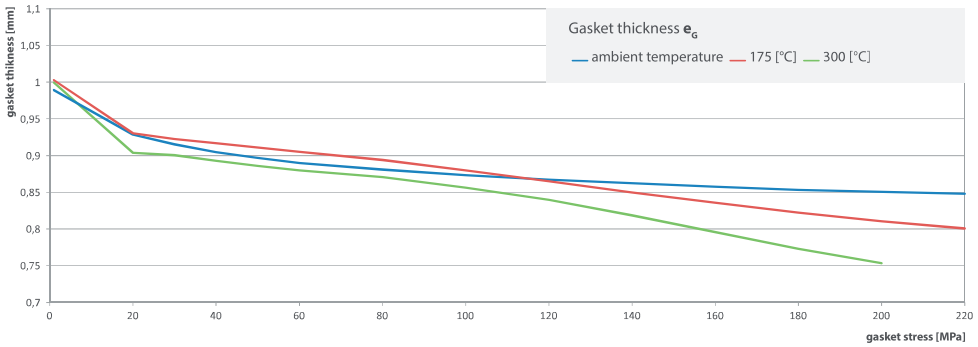


Calculation coefficients according to EN 13555 for thickness 1.0 mm

Company Address	Gambit-Lubawka Sp. z o.o., ul. Wojska Polskiego 16, 58-420 Lubawka, Poland		
Gasket Type	AF-OIL®		
Sealing element dimensions [mm]	92 × 49 × 1		
Relaxation ratio P_{QR} 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 Q_{Smax}	1,00 at 220 MPa	0,93 at 220 MPa	0,86 at 20 MPa

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

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)	
	E_G [MPa]	e_G [mm]	E_G [MPa]	e_G [mm]	E_G [MPa]	e_G [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		

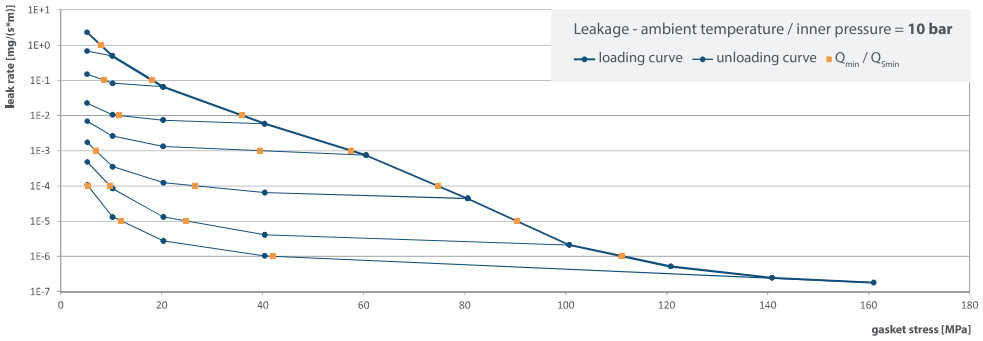


Note: the content of darkened cells was not determined respectively is unnecessary	Rev – No: 1	Creation date of this sheet: 18.09.2014

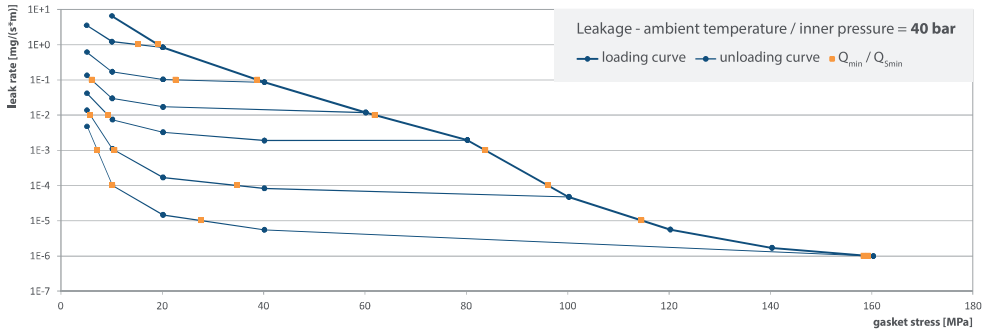
The measurement results were confirmed by GASKETDATA.ORG

Calculation coefficients according to EN 13555 for thickness 2.0 mm

Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{Smin(L)}$ (after off-loading) for p = 10 bar										
L [mg/(s*m)]	$Q_{min(L)}$ [MPa]	$Q_{Smin(L)}$ [MPa]								
		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}										



Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{Smin(L)}$ (after off-loading) for p = 40 bar									
L [mg/(s*m)]	$Q_{min(L)}$ [MPa]	$Q_{Smin(L)}$ [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}	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			7
10^{-4}	96					35			10
10^{-5}	115								28
10^{-6}	159								158
10^{-7}									
10^{-8}									



Note: the content of darkened cells was not determined respectively is unnecessary	Rev – No: 1	Creation date of this sheet: 16.04.2014

The measurement results were confirmed by GASKETDATA.ORG