

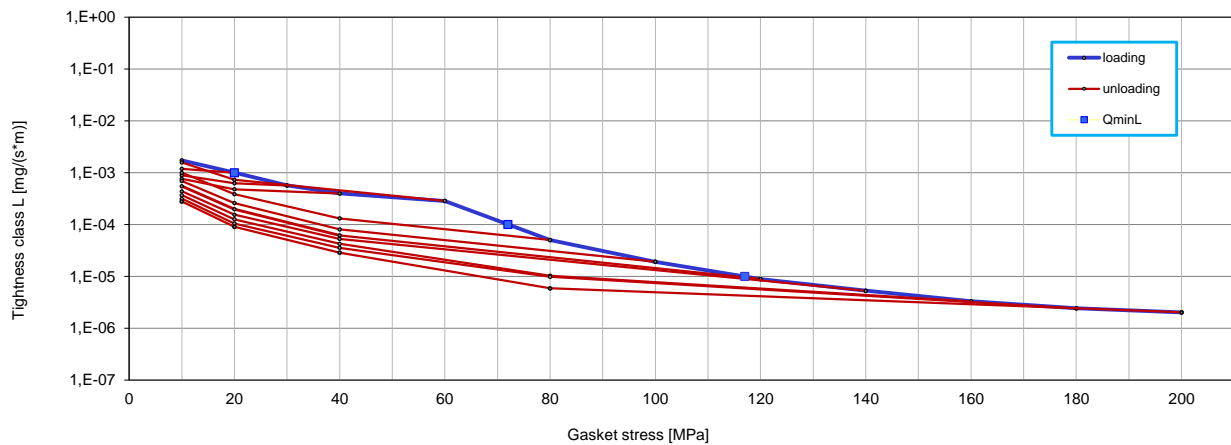
Company	SPETECH sp. z o.o.
Gasket Type	SPETOSPIR S FGC 316L
Dimensions [mm]	75 x 61 x 3,2 mm
Calculation type EN 1591-1	a) flat gasket; EN 1514-2

Factors acc. to EN 13555 to use in calculation standard EN 1591-1:2009/ :2013

Minimum level of surface pressure required for leakage rate class L on assembly Q_{min/L} and after off-loading Q_{Smin/L} at room temperature (RT)

Internal pressure [bar]		10											
L [mg/(s*m)]	Q _{min/L} [MPa]	Q _{Smin/L} [MPa] for effective gasket stress											
		Q _A = 20 [MPa]	Q _A = 30 [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]	Q _A = 180 [MPa]	Q _A = 200 [MPa]	
10 ⁰	10	10	10	10	10	10	10	10	10	10	10	10	10
10 ⁻¹	10	10	10	10	10	10	10	10	10	10	10	10	10
10 ⁻²	10	10	10	10	10	10	10	10	10	10	10	10	10
10 ⁻³	20		10	10	16	10	10	10	10	10	10	10	10
10 ⁻⁴	72					51	36	32	28	24	21	19	
10 ⁻⁵	117							116	112	82	80	67	
10 ⁻⁶													

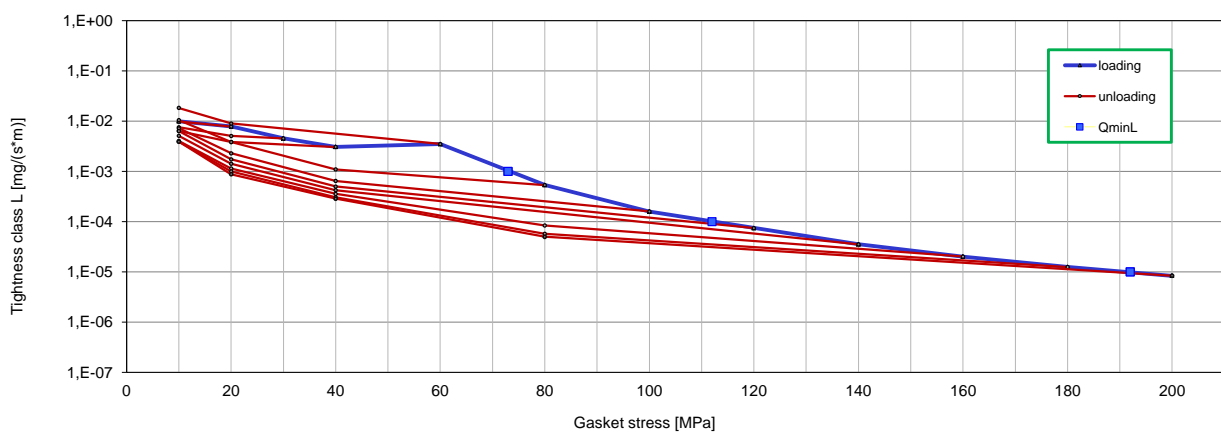
Leakage rate as a function of gasket stress - pressure 10 bar / RT



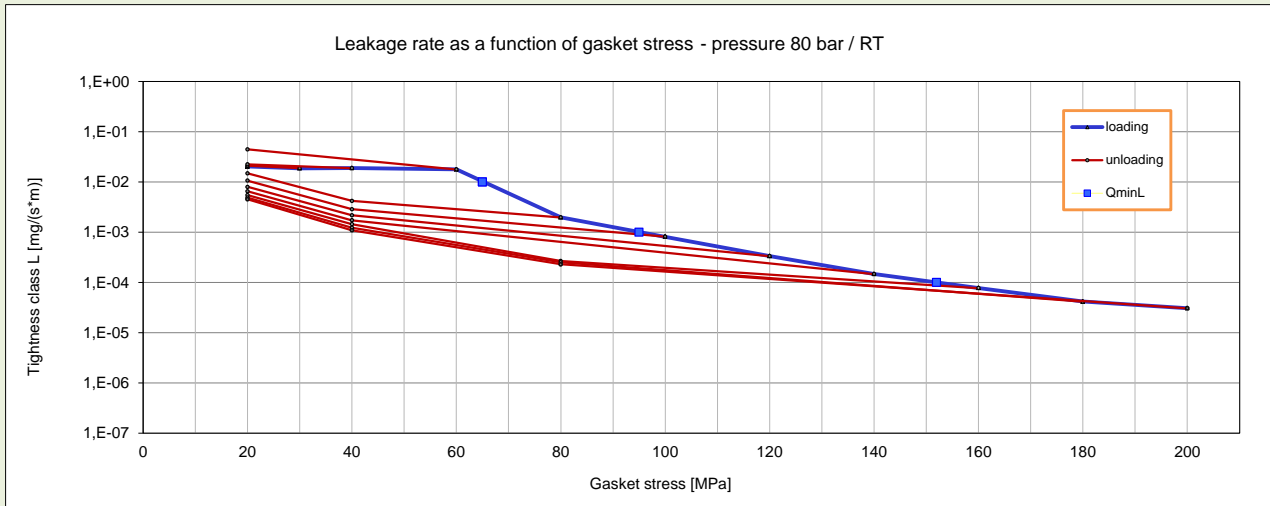
Minimum level of surface pressure required for leakage rate class L on assembly Q_{min/L} and after off-loading Q_{Smin/L} at room temperature (RT)

Internal pressure [bar]		40											
L [mg/(s*m)]	Q _{min/L} [MPa]	Q _{Smin/L} [MPa] for effective gasket stress											
		Q _A = 20 [MPa]	Q _A = 30 [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]	Q _A = 180 [MPa]	Q _A = 200 [MPa]	
10 ⁰	10	10	10	10	10	10	10	10	10	10	10	10	10
10 ⁻¹	10	10	10	10	10	10	10	10	10	10	10	10	10
10 ⁻²	10	10	10	10	19	11	10	10	10	10	10	10	10
10 ⁻³	73					45	33	29	26	22	20	19	
10 ⁻⁴	112							108	98	76	67	64	
10 ⁻⁵	192												189
10 ⁻⁶													

Leakage rate as a function of gasket stress - pressure 40 bar / RT



Minimum level of surface pressure required for leakage rate class L on assembly Q _{min} /L and after off-loading Q _{Smin} /L at room temperature (RT)												
Internal pressure [bar]	80											
L [mg/(s*m)]	Q _{min} /L [MPa]	Q _{Smin} /L [MPa] for effective gasket stress										
		Q _A = 20 [MPa]	Q _A = 30 [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]	Q _A = 180 [MPa]	Q _A = 200 [MPa]
10 ⁰	20		20	20	20	20	20	20	20	20	20	20
10 ⁻¹	20		20	20	20	20	20	20	20	20	20	20
10 ⁻²	65					26	21	20	20	20	20	20
10 ⁻³	95						91	74	63	49	45	42
10 ⁻⁴	152									144	131	130
10 ⁻⁵												
10 ⁻⁶												



Parameters at RT						
Gasket stress [MPa]	Unloading modulus of elasticity EG [MPa]	Gasket or sealing element thickness e _G [mm]	Creep relaxation factor P _{QR} [-]	Gasket thickness change due to creep Δe _{ec} [mm]	Maximum surface pressure Q _{smax} [MPa]	Static friction factor μ _G [-]
0		3,464				
1		3,432				
10	3059	3,381				
20	4165	3,354				
30	5661	3,327				
40	6255	3,292				
50	4269	3,051	0,97	0,005		
60	4549	2,899				
80	6156	2,760				
100	7316	2,642	0,98	0,005		
120	8380	2,558				
140	9564	2,498				
160	10696	2,450				
180	11847	2,410				
200	13009	2,377	1,00	0,004		
220	14207	2,348			500	0,10
240	15514	2,326				
260	17042	2,308				
280	18397	2,293				
300	19658	2,279				
320	21143	2,267				
340	22516	2,256				
360	24018	2,247				
380	25425	2,238				
400	26748	2,230				
420	27991	2,223				
440	29137	2,216				
460	30474	2,209				
480	31633	2,202				
500	32821	2,196	1,00	0,007		

Parameters at 150°C						
Gasket stress [MPa]	Unloading modulus of elasticity EG	Gasket or sealing element thickness e _G	Creep relaxation factor P _{QR}	Gasket thickness change due to creep Δe _{Gc}	Maximum surface pressure Q _{smax}	Static friction factor μ _G
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
0		3,463			500	0,10
1		3,434				
10	3151	3,385				
20	4482	3,356				
30	5286	3,325				
40	4662	3,171				
50	4749	3,045	0,88	0,018		
60	5220	2,904				
80	6974	2,747				
100	8833	2,643	0,93	0,020		
120	10423	2,569				
140	11933	2,510				
160	13271	2,463				
180	14395	2,426				
200	15565	2,394	0,96	0,024		
220	16667	2,367				
240	17613	2,344				
260	18920	2,324				
280	19976	2,307				
300	21211	2,292				
320	22310	2,279				
340	23306	2,266				
360	24420	2,255				
380	25449	2,245				
400	26377	2,235				
420	27590	2,226				
440	28533	2,217				
460	29800	2,209				
480	30786	2,201				
500	31877	2,193	0,98	0,024		

Parameters at 300°C						
Gasket stress [MPa]	Unloading modulus of elasticity EG	Gasket or sealing element thickness e _G	Creep relaxation factor P _{QR}	Gasket thickness change due to creep Δe _{Gc}	Maximum surface pressure Q _{smax}	Static friction factor μ _G
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
0		3,465			400	0,10
1		3,436				
10	4032	3,389				
20	5163	3,366				
30	5901	3,339				
40	7192	3,305				
50	6458	3,127	0,87	0,019		
60	6740	2,987				
80	8463	2,804				
100	10099	2,690	0,90	0,030		
120	11873	2,612				
140	13380	2,552				
160	14584	2,504				
180	16024	2,467				
200	17356	2,436	0,95	0,031		
220	18506	2,409				
240	19577	2,386				
260	20694	2,364				
280	21857	2,345				
300	22934	2,328				
320	23803	2,313				
340	24848	2,300				
360	25722	2,288				
380	27076	2,277				
400	27917	2,266	0,97	0,032		

Parameters at 400°C						
Gasket stress [MPa]	Unloading modulus of elasticity EG	Gasket or sealing element thickness e _G	Creep relaxation factor P _{QR}	Gasket thickness change due to creep Δe _{Gc}	Maximum surface pressure Q _{smax}	Static friction factor μ _G
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
0		3,473			300	0,10
1		3,444				
10	3564	3,398				
20	5411	3,377				
30	6077	3,352				
40	6859	3,315				
50	6919	3,222	0,78	0,031		
60	6887	3,052				
80	8778	2,886				
100	10630	2,777	0,88	0,035		
120	12219	2,690				
140	13337	2,623				
160	14727	2,569				
180	15816	2,525				
200	17021	2,489	0,94	0,037		
220	18201	2,460				
240	19291	2,435				
260	20373	2,413				
280	21576	2,394				
300	22658	2,375	0,95	0,044		

Parameters at 500°C						
Gasket stress [MPa]	Unloading modulus of elasticity EG	Gasket or sealing element thickness e _G	Creep relaxation factor P _{QR}	Gasket thickness change due to creep Δe _{Gc}	Maximum surface pressure Q _{smax}	Static friction factor μ _G
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
0		3,469			200	0,10
1		3,450				
10	2944	3,402				
20	4750	3,381				
30	5636	3,352				
40	6160	3,298				
50	5366	3,109	0,80	0,029		
60	5726	2,982				
80	7031	2,794				
100	9194	2,679	0,88	0,035		
120	10631	2,598				
140	11583	2,543				
160	12869	2,499				
180	13819	2,461				
200	14857	2,430	0,93	0,042		

Factors acc. to EN 13555 to use in calculation standard EN 1591-1:2001

T [°C]	Q _{min} [MPa]	Q _{max, ref} [MPa]	E ₀ [MPa]	K ₁	Q/P	g _c	c ₁
0...20	-	-	-	-	-	-	-
100	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-
b _{Gref} [mm]		7,0		e _{Gref} [mm]		3,5	

Factors acc. to:

EN 13445-3 : Unfired pressure vessels - Part 3: Design
 EN 13480-3:2002 Metallic industrial piping - Part 3: Design and calculation
 ASME Code s. VIII Boiler & Pressure Vessel Code

m	y [psi]	y [MPa]
1,9	4700	32,4

[Q_{max} - see maximal applicable gasket stress Q_{max} acc. EN 1591-1:2009/2013](#)

Factors acc. to:

AD 2000-Merkblatt B7 August 2007

k ₀ k _D [N/mm]	k ₁ [mm]	k ₀ k _δ [N/mm]
45*b _D	1,3*b _D	*b _D

[Q_{max} - see maximal applicable gasket stress Q_{max} acc. EN 1591-1:2009/2013](#)

Factors acc. to:

WUDT-UC-WO-0/19

σ _m [MPa]	σ _r [MPa]	b [1]				
		20°C	100°C	200°C	300°C	400°C
21,4	3,9*p ₀	1,0	1,1	1,1	1,1	1,1

[Q_{max} - see maximal applicable gasket stress Q_{max} acc. EN 1591-1:2009/2013](#)

Factors acc. to:

ASTM F36-2003 Standard Test Method for Compressibility and Recovery of Gasket Materials
 Procedure J

Compressibility [%]	Recovery [%]
NDA	NDA

Factors acc. to:

ASTM F38-00 Standard Test Methods for Creep Relaxation of a Gasket Material (Method B)

Temperature [°C]	Creep Relaxation [%]
20	NDA
100	NDA
200	NDA

Factors acc. to:

EN 61340-2-3 Electrostatics - Part 2-3: Methods of test for determining the resistance and resistivity of solid planar materials used to avoid electrostatic charge accumulation

Surface resistance R _s at U=10V	[Ω]	<	1,00E+03
Volume resistance R _v at U=10V	[Ω]	<	1,00E+03
Surface resistivity ρ _s at U=10V	[Ω]	<	1,01E+04
Volume resistivity ρ _v at U=10V	[Ωm]	<	3,72E+02