

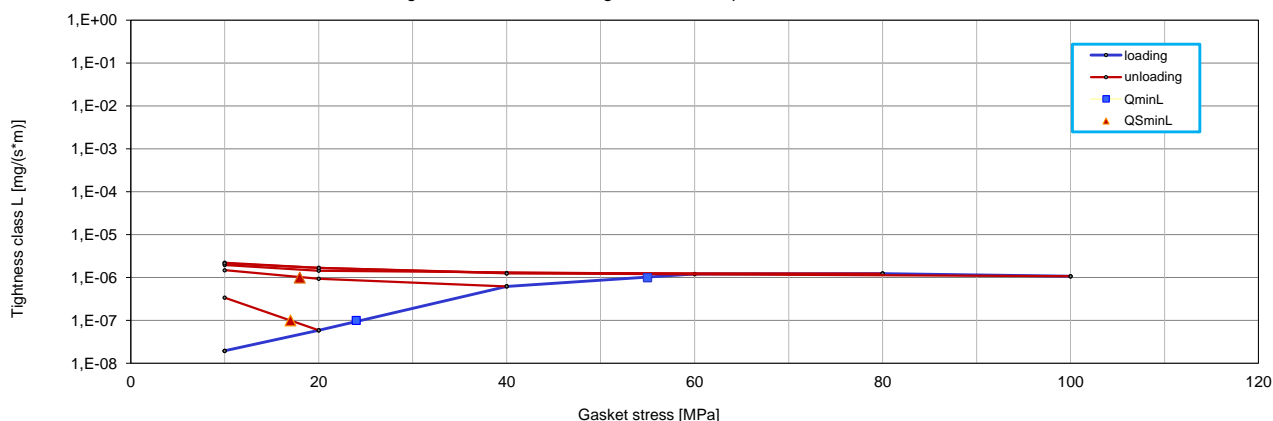
Company	<b>SPETECH sp. z o.o.</b>
Gasket Type	<b>SPETOFLON® FU MPL® 12</b>
Dimensions [mm]	<b>92 x 50 x 2</b>
Calculation type EN 1591-1	<b>a) flat gasket; EN 1514-3</b>

**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<sub>min/L</sub> and after off-loading Q<sub>Smin/L</sub> at room temperature (RT)

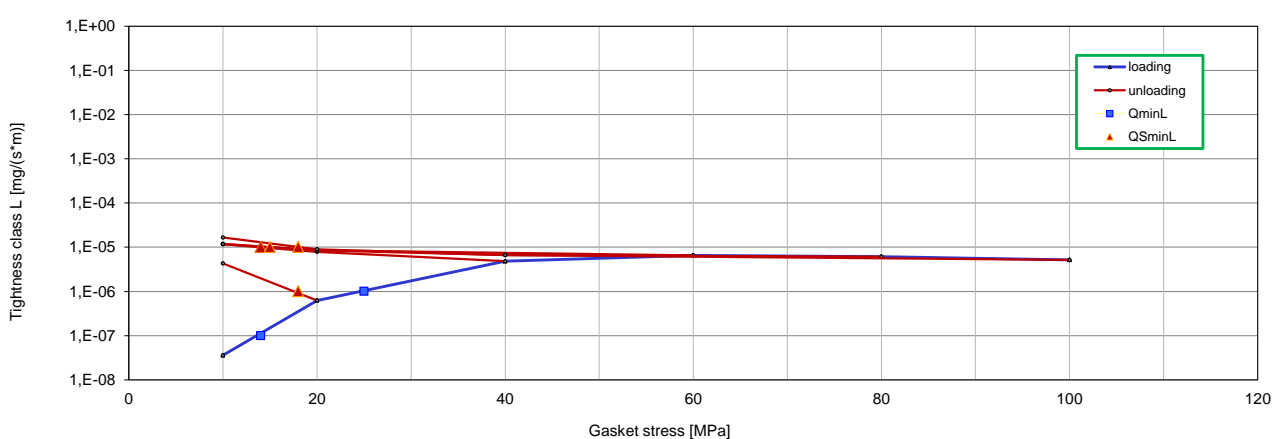
Internal pressure [bar]		10											
L [mg/(s*m)]	Q <sub>min/L</sub> [MPa]	Q <sub>Smin/L</sub> [MPa] for effective gasket stress											
		Q <sub>A</sub> = 10 [MPa]	Q <sub>A</sub> = 20 [MPa]	Q <sub>A</sub> = 40 [MPa]	Q <sub>A</sub> = 60 [MPa]	Q <sub>A</sub> = 80 [MPa]	Q <sub>A</sub> = 100 [MPa]	Q <sub>A</sub> = 120 [MPa]	Q <sub>A</sub> = 140 [MPa]	Q <sub>A</sub> = 160 [MPa]			
10 <sup>-0</sup>	10		10	10	10	10	10						
10 <sup>-1</sup>	10		10	10	10	10	10						
10 <sup>-2</sup>	10		10	10	10	10	10						
10 <sup>-3</sup>	10		10	10	10	10	10						
10 <sup>-4</sup>	10		10	10	10	10	10						
10 <sup>-5</sup>	10		10	10	10	10	10						
10 <sup>-6</sup>	55		10	18									
10 <sup>-7</sup>	24												

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<sub>min/L</sub> and after off-loading Q<sub>Smin/L</sub> at room temperature (RT)

Internal pressure [bar]		40											
L [mg/(s*m)]	Q <sub>min/L</sub> [MPa]	Q <sub>Smin/L</sub> [MPa] for effective gasket stress											
		Q <sub>A</sub> = 10 [MPa]	Q <sub>A</sub> = 20 [MPa]	Q <sub>A</sub> = 40 [MPa]	Q <sub>A</sub> = 60 [MPa]	Q <sub>A</sub> = 80 [MPa]	Q <sub>A</sub> = 100 [MPa]	Q <sub>A</sub> = 120 [MPa]	Q <sub>A</sub> = 140 [MPa]	Q <sub>A</sub> = 160 [MPa]			
10 <sup>-0</sup>	10		10	10	10	10	10						
10 <sup>-1</sup>	10		10	10	10	10	10						
10 <sup>-2</sup>	10		10	10	10	10	10						
10 <sup>-3</sup>	10		10	10	10	10	10						
10 <sup>-4</sup>	10		10	10	10	10	10						
10 <sup>-5</sup>	10		10	14	15	15	18						
10 <sup>-6</sup>	25		18										
10 <sup>-7</sup>	14												

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



Parameters at RT						
Gasket stress [MPa]	Unloading modulus of elasticity EG [MPa]	Gasket or sealing element thickness e <sub>G</sub> [mm]	Creep relaxation factor P <sub>QR</sub> [-]	Gasket thickness change due to creep Δe <sub>Gc</sub> [mm]	Maximum surface pressure Q <sub>smax</sub> [MPa]	Static friction factor μ <sub>G</sub> [-]
1		2,177			100	0,05
15			0,89	0,014		
20	881	1,578				
30	1712	1,554	0,97	0,008		
40	2383	1,540				
50	2915	1,522	0,94	0,025		
60	3377	1,483				
80	4352	1,367				
100	4241	1,277	0,90	0,084		

Parameters at 100°C						
Gasket stress [MPa]	Unloading modulus of elasticity EG [MPa]	Gasket or sealing element thickness e <sub>G</sub> [mm]	Creep relaxation factor P <sub>QR</sub> [-]	Gasket thickness change due to creep Δe <sub>Gc</sub> [mm]	Maximum surface pressure Q <sub>smax</sub> [MPa]	Static friction factor μ <sub>G</sub> [-]
1		2,182			50	0,05
15			0,69	0,039		
20	1774	1,396				
30	2454	1,250	0,52	0,121		
40	2856	1,131				
50	3144	1,039	0,43	0,239		

Parameters at 175°C						
Gasket stress [MPa]	Unloading modulus of elasticity EG [MPa]	Gasket or sealing element thickness e <sub>G</sub> [mm]	Creep relaxation factor P <sub>QR</sub> [-]	Gasket thickness change due to creep Δe <sub>Gc</sub> [mm]	Maximum surface pressure Q <sub>smax</sub> [MPa]	Static friction factor μ <sub>G</sub> [-]
1		2,185			40	0,05
15			0,45	0,069		
20	1214	1,115				
30	1528	0,995	0,33	0,169		
40	1796	0,931	0,30	0,235		

Parameters at 250°C						
Gasket stress [MPa]	Unloading modulus of elasticity EG [MPa]	Gasket or sealing element thickness e <sub>G</sub> [mm]	Creep relaxation factor P <sub>QR</sub> [-]	Gasket thickness change due to creep Δe <sub>Gc</sub> [mm]	Maximum surface pressure Q <sub>smax</sub> [MPa]	Static friction factor μ <sub>G</sub> [-]
1		2,145			30	0,05
15			0,31	0,087		
20	813	0,969				
30	1026	0,888	0,23	0,194		

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

T [°C]	Q <sub>min</sub> [MPa]	Q <sub>max, ref</sub> [MPa]	E <sub>0</sub> [MPa]	K <sub>1</sub>	Q/P	g <sub>c</sub>	c <sub>1</sub>
0...20	10	50	600	20	1,3	1,0	
100	-	35	500	20	1,3	0,9	
200	-	20	400	20	1,3	0,8	
bGref [mm]		19,0		eGref [mm]		2,2	

**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]
2,50	2100	14,5

[Q<sub>max</sub> - see maximal applicable gasket stress Q<sub>smax</sub> acc. EN 1591-1:2009/2013](#)

**Factors acc. to:**

AD 2000-Merkblatt B7 August 2007

k <sub>0</sub> k <sub>D</sub> [N/mm]	k <sub>1</sub> [mm]	k <sub>0</sub> k <sub>Ø</sub> [N/mm]
18*b <sub>D</sub>	2*b <sub>D</sub>	

[Q<sub>max</sub> - see maximal applicable gasket stress Q<sub>smax</sub> acc. EN 1591-1:2009/2013](#)

**Factors acc. to:**

WUDT-UC-WO-O/19

$\sigma_m$ [MPa]	$\sigma_r$ [MPa]	b [1]		
		20oC	100oC	200oC
13,5	5*p <sub>0</sub>	1,1	1,8	2,6

[omax - see maximal applicable gasket stress Qsmax 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 [%]
-	-

**Factors acc. to:**

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

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

**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	[ $\Omega$ ]	> 1,00E+12
Volume resistance $R_v$ at U=10V	[ $\Omega$ ]	> 1,00E+12
Surface resistivity $\rho_s$ at U=10V	[ $\Omega$ ]	> 1,01E+13
Volume resistivity $\rho_v$ at U=10V	[ $\Omega m$ ]	> 4,02E+11