

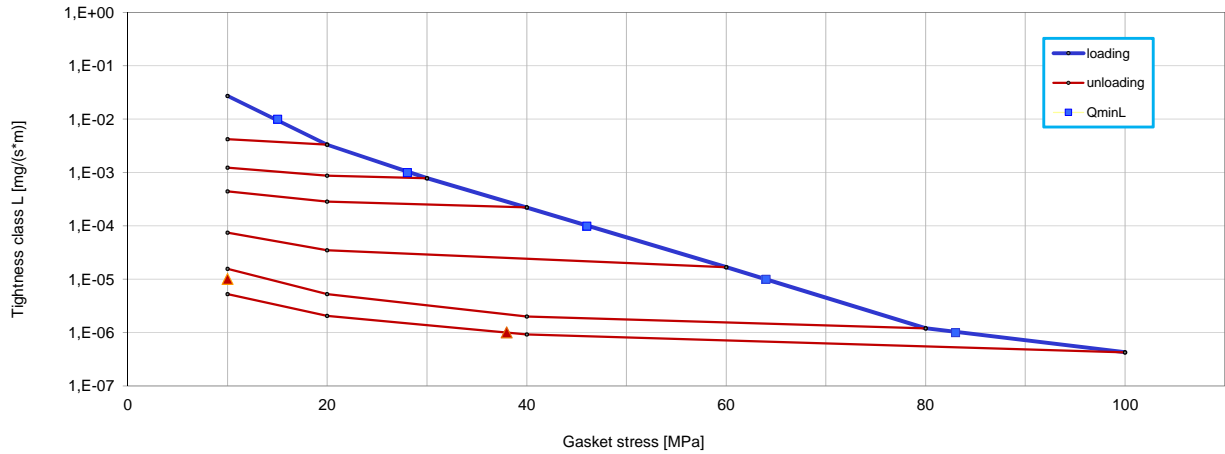
Company	SPETECH sp. z o.o.
Gasket Type	SPETOBAR® BAS 370
Dimensions [mm]	92 x 49 x 2
Calculation type EN 1591-1	a) flat gasket; EN 1514-1

**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					
$10^{-1}$	10	10	10	10	10	10	10					
$10^{-2}$	15	10	10	10	10	10	10					
$10^{-3}$	28		16	10	10	10	10					
$10^{-4}$	46				10	10	10					
$10^{-5}$	64					14	10					
$10^{-6}$	83						38					

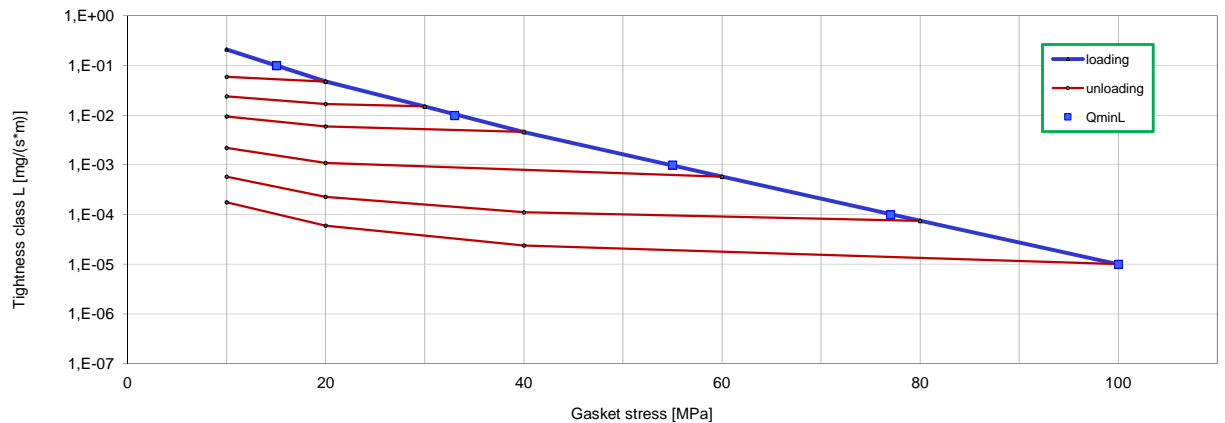
Leakage rate as a function of gasket stress - pressure 10 bar / RT



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					
$10^{-1}$	15	10	10	10	10	10	10					
$10^{-2}$	33			10	10	10	10					
$10^{-3}$	55				26	10	10					
$10^{-4}$	77					51	15					
$10^{-5}$	100											
$10^{-6}$												

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

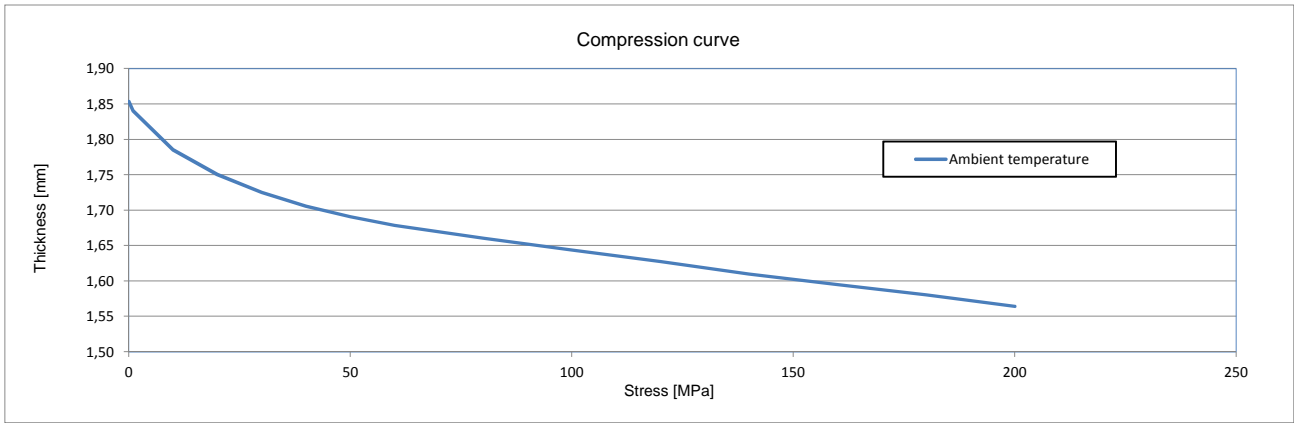


Parameters at RT						
Gasket stress [MPa]	Unloading modulus of elasticity EG	Gasket or sealing element thickness $e_g$	Creep relaxation factor $P_{QR}$	Gasket thickness change due to creep $\Delta e_{Gc}$	Maximum surface pressure $Q_{smax}$	Static friction factor $\mu_G$
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
0		1,854			200	0,25
1		1,841				
10	775	1,786				
20	1208	1,750				
30	1765	1,725	0,97	0,008		
40	2365	1,706				
50	3067	1,691	0,97	0,012		
60	3714	1,679				
80	4682	1,660				
100	5415	1,644	0,98	0,014		
120	6241	1,628				
140	6749	1,610				
160	6958	1,595				
180	7747	1,580				
200	8166	1,564	0,99	0,025		

Parameters at 100°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 $\Delta e_{Gc}$	Maximum surface pressure $Q_{smax}$	Static friction factor $\mu_G$
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
0		1,861			200	0,25
1		1,843				
10	755	1,787				
20	1326	1,753				
30	1927	1,728	0,91	0,024		
40	2591	1,709				
50	3092	1,692	0,91	0,039		
60	3515	1,676				
80	4065	1,637				
100	4636	1,591	0,88	0,102		
120	5222	1,542				
140	5744	1,492				
160	6195	1,449				
180	6730	1,413				
200	7225	1,382	0,87	0,222		

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 $\Delta e_{Gc}$	Maximum surface pressure $Q_{smax}$	Static friction factor $\mu_G$
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
0		1,870			200	0,25
1		1,846				
10	952	1,785				
20	1298	1,756				
30	1779	1,732	0,92	0,022		
40	2291	1,711				
50	2735	1,691	0,88	0,049		
60	3073	1,671				
80	3639	1,622				
100	4190	1,565	0,82	0,154		
120	4730	1,505				
140	5280	1,453				
160	5768	1,413				
180	6229	1,380				
200	6779	1,354	0,83	0,283		

Parameters at 200°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 $\Delta e_{Gc}$	Maximum surface pressure $Q_{smax}$	Static friction factor $\mu_G$
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
0		1,876			140	0,25
1		1,850				
10	971	1,794				
20	1390	1,766				
30	1938	1,743	0,86	0,036		
40	2454	1,722				
50	2810	1,702	0,83	0,073		
60	3159	1,682				
80	3682	1,636				
100	4234	1,584	0,77	0,192		
120	4740	1,531				
140	5237	1,485	0,78	0,264		



**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	35	80	500	20	1,6	-	0,05
100	-	70	500	20	1,6	-	0,05
200	-	60	500	20	1,6	-	0,05
bGref [mm]		19,5		eGref [mm]		1,9	

**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]
2,0	3600	24,8

[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]
18,0*b <sub>D</sub>	1,4*b <sub>D</sub>	*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

σ <sub>m</sub> [MPa]	σ <sub>r</sub> [MPa]	b [1]		
		20°C	100°C	200°C
25,5	4,0*p <sub>0</sub>	1,0	1,4	1,8

[Q<sub>max</sub> - see maximal applicable gasket stress Q<sub>smax</sub> 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 [%]
8	69

**Factors acc. to:**  
 ASTM F38-00 Standard Test Methods for Creep Relaxation of a Gasket Material (Method B)

Temperature [°C]	Creep Relaxation [%]
20	13
100	45
200	77

**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 <sub>s</sub> at U=100V	[Ω]	2,66E+09
Volume resistance R <sub>v</sub> at U=100V	[Ω]	2,25E+09
Surface resistivity ρ <sub>s</sub> at U=100V	[Ω]	2,69E+10
Volume resistivity ρ <sub>v</sub> at U=100V	[Ωm]	1,67E+09