

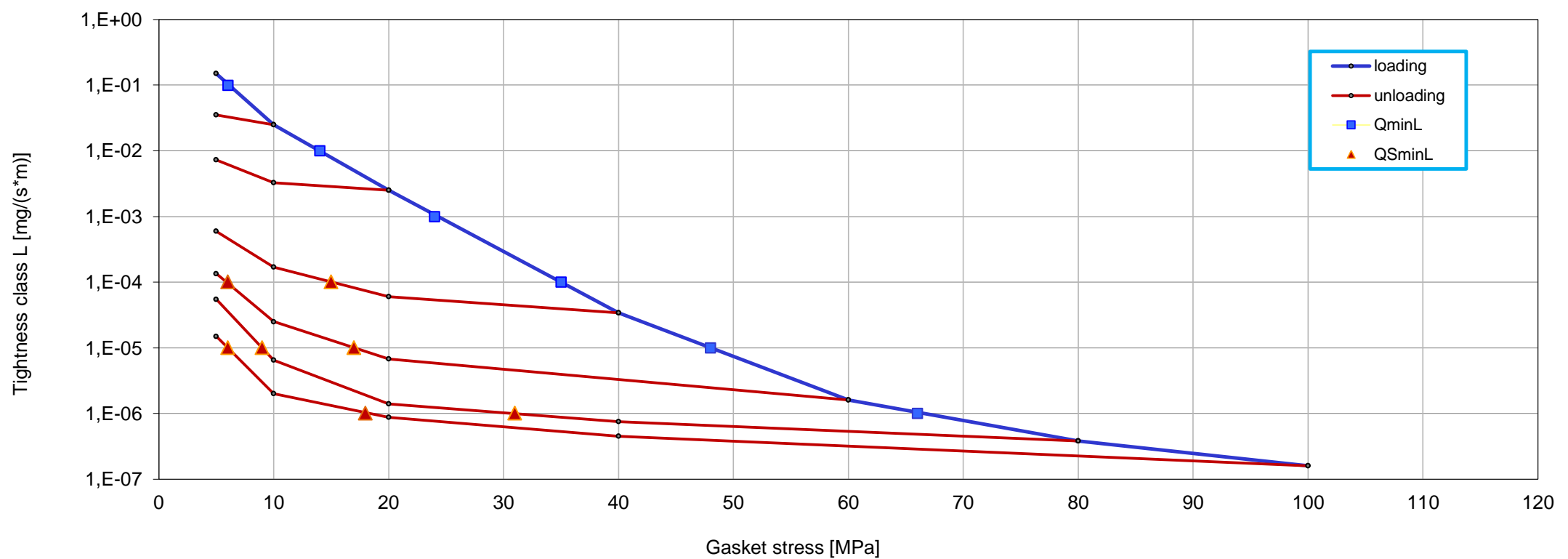
Company	SPETECH sp. z o.o.
Gasket Type	SPETOBAR® BAS® 340
Dimensions [mm]	92 x 49 x 2
Calculation type EN 1591-1	a) flat gasket; EN 1514-1

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)

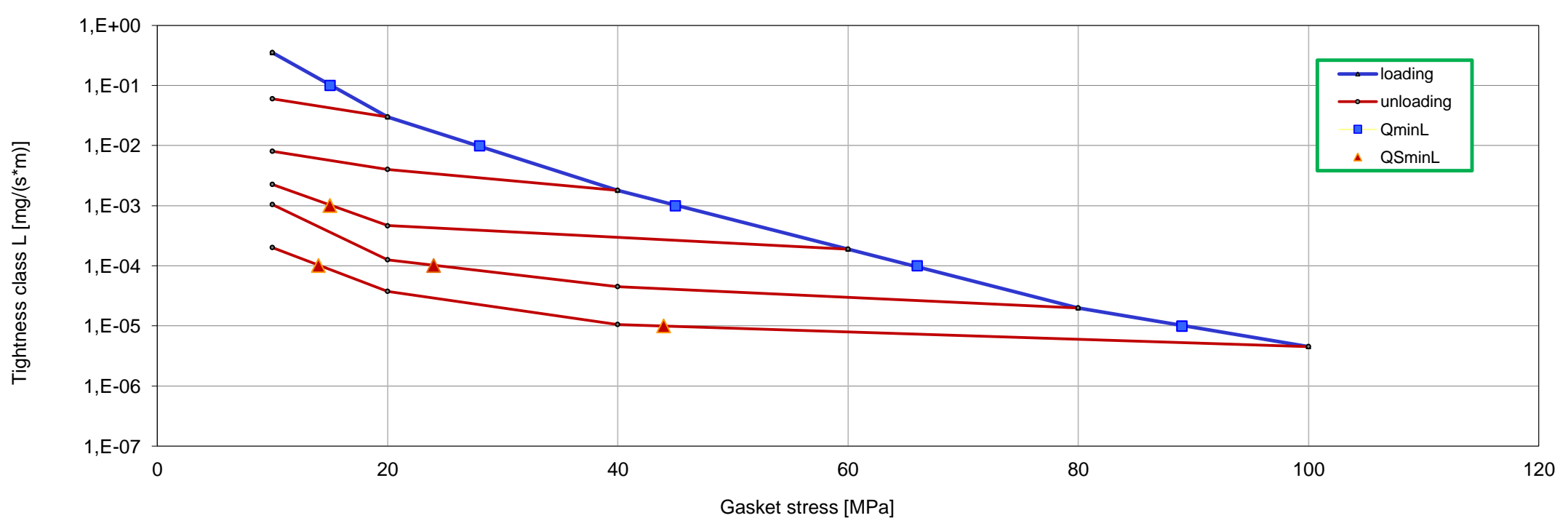
Internal pressure [bar]		10										
L [mg/(s*m)]	$Q_{min/L}$ [MPa]	$Q_{Smin/L}$ [MPa] for effective gasket stress										
		$Q_A = 10$ [MPa]	$Q_A = 20$ [MPa]	$Q_A = 40$ [MPa]	$Q_A = 60$ [MPa]	$Q_A = 80$ [MPa]	$Q_A = 100$ [MPa]	$Q_A = 120$ [MPa]	$Q_A = 140$ [MPa]	$Q_A = 160$ [MPa]		
10^{-0}	5	5	5	5	5	5	5					
10^{-1}	6	5	5	5	5	5	5					
10^{-2}	14		5	5	5	5	5					
10^{-3}	24			5	5	5	5					
10^{-4}	35			15	6	5	5					
10^{-5}	48				17	9	6					
10^{-6}	66					31	18					

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										
		$Q_A = 10$ [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		10	10	10	10	10					
10^{-1}	15		10	10	10	10	10					
10^{-2}	28			10	10	10	10					
10^{-3}	45				15	10	10					
10^{-4}	66					24	14					
10^{-5}	89						44					
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 Δe_{Gc}	Maximum surface pressure Q_{smax}	Static friction factor μ_G		
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]		
1		1,900			230	0,25		
20	1528	1,810						
30	1839	1,782	0,96	0,010				
40	2309	1,760						
50	2851	1,742	0,97	0,013				
60	3501	1,728						
80	4836	1,709						
100	5988	1,695	0,98	0,017				
120	6928	1,683						
140	7654	1,672						
160	8252	1,662						
180	8616	1,652						
200	9091	1,642						
220	9402	1,631						
230	9083	1,619	0,99	0,019				
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 Δe_{Gc}	Maximum surface pressure Q_{smax}	Static friction factor μ_G		
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]		
1		1,901			230	0,25		
20	1803	1,775						
30	2296	1,756	0,85	0,038				
40	2757	1,738						
50	3675	1,725	0,91	0,038				
60	3935	1,711						
80	4852	1,680						
100	5449	1,641	0,85	0,126				
120	5577	1,599						
140	6394	1,549						
160	6464	1,488						
180	7149	1,426						
200	7573	1,368						
220	7280	1,313						
230	6748	1,267	0,88	0,232				
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]	[-]		
1		1,885			180	0,25		
20	2230	1,738						
30	2734	1,725	0,83	0,043				
40	3084	1,711						
50	3334	1,696	0,84	0,067				
60	4551	1,681						
80	4681	1,637						
100	4976	1,581	0,77	0,193				
120	5429	1,504						
140	5732	1,404						
160	5981	1,298	0,77	0,347				
180	5936	1,173						
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 Δe_{Gc}			Maximum surface pressure Q_{smax}	Static friction factor μ_G
	[MPa]	[mm]	[-]	[mm]			[MPa]	[-]
1		1,886			100	0,25		
20	2183	1,739						
30	2920	1,729	0,81	0,048				
40	3390	1,714						
50	3537	1,695	0,77	0,097				
60	3943	1,673						
80	4248	1,605						
100	4672	1,478	0,74	0,218				
Parameters at 250°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]	[-]		
1		1,878			60	0,25		
20	2713	1,720						
30	3204	1,704	0,69	0,078				
40	3132	1,684						
50	3785	1,654	0,70	0,126				
60	3661	1,599	0,69	0,156				

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 _i /P	g _c	c ₁
0...20	35	80	500	20	1,6	-	0,05
100	-	70	500	20	1,6	-	-
200	-	60	500	20	1,6	-	-
b _{Gref} [mm]	19,5		e _{Gref} [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	4400	30,3

[σ_{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 _θ [N/mm]
20*b _D	2*b _D	

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

Factors acc. to:

WUDT-UC-WO-O/19

σ _m [MPa]	σ _r [MPa]	b [1]		
		20°C	100°C	200°C
26,5	4*p ₀	1,0	1,4	1,8

[σ_{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 [%]
5	70

Factors acc. to:

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

Temperature [°C]	Creep Relaxation [%]
20	14
100	49
200	86

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=100V	[Ω]	3,13 E+11
Volume resistance R _v at U=100V	[Ω]	9,13 E+10
Surface resistivity ρ _s at U=100V	[Ω]	3,17 E+12
Volume resistivity ρ _v at U=100V	[Ωm]	6,78E+10