

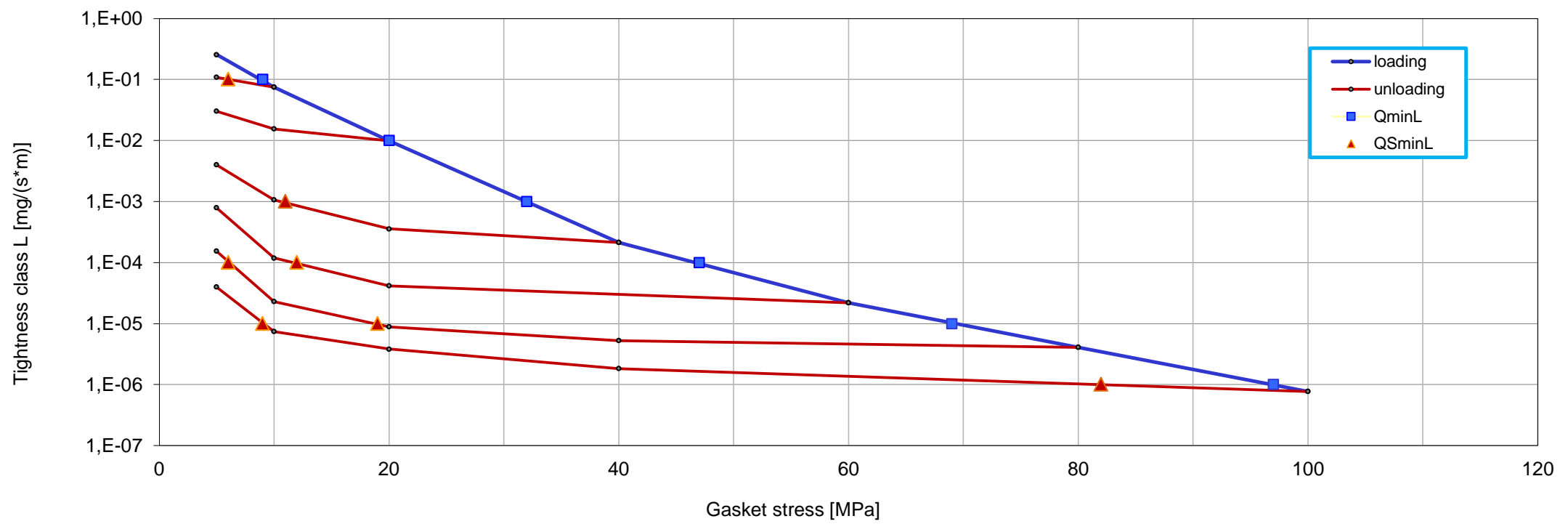
Company	SPETECH sp. z o.o.
Gasket Type	SPETOBAR® BAS® 300
Dimensions [mm]	92 x 49 x 2
Calculation type EN 1591-1	a) flat gasket; EN 1514-1

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)

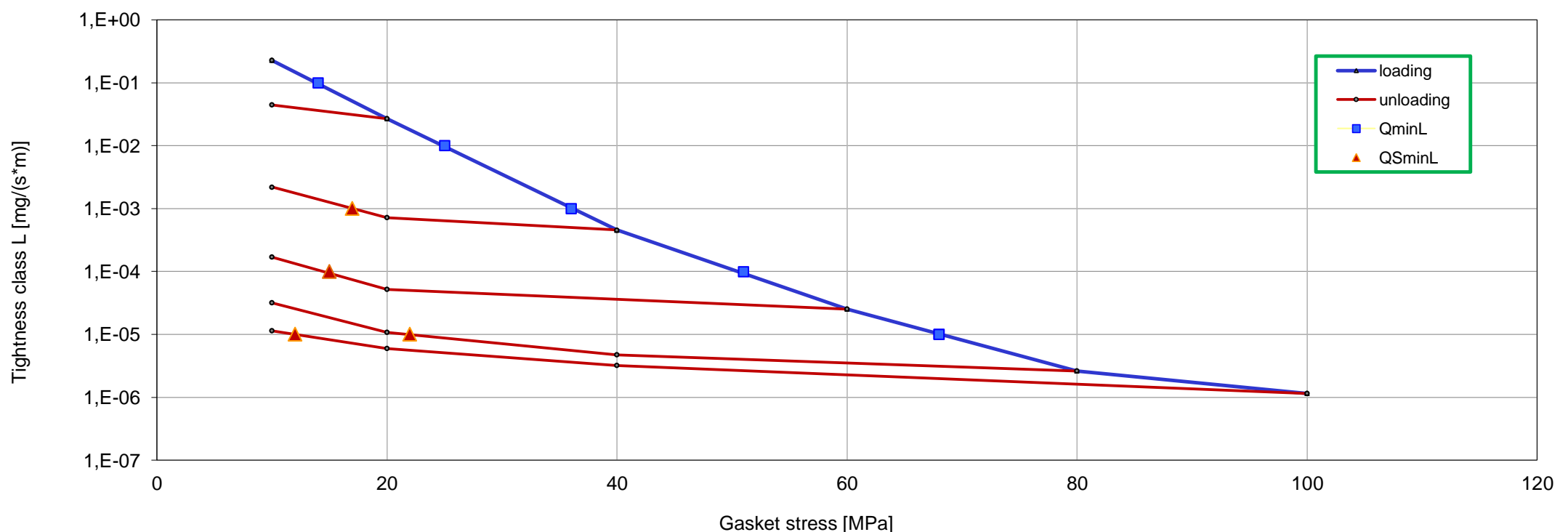
Internal pressure [bar]		10										
L [mg/(s*m)]	$Q_{min/L}$ [MPa]	$Q_{Smin/L}$ [MPa] for effective gasket stress										
		$Q_A = 10$ [MPa]	$Q_A = 20$ [MPa]	$Q_A = 40$ [MPa]	$Q_A = 60$ [MPa]	$Q_A = 80$ [MPa]	$Q_A = 100$ [MPa]	$Q_A = 120$ [MPa]	$Q_A = 140$ [MPa]	$Q_A = 160$ [MPa]		
10^0	5	5	5	5	5	5	5					
10^{-1}	9	6	5	5	5	5	5					
10^{-2}	20			5	5	5	5					
10^{-3}	32			11	5	5	5					
10^{-4}	47				12	6	5					
10^{-5}	69					19	9					
10^{-6}	97						82					

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}	14		10	10	10	10	10					
10^{-2}	25			10	10	10	10					
10^{-3}	36			17	10	10	10					
10^{-4}	51				15	10	10					
10^{-5}	68					22	12					
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]	[-]
0		1,918			200	0,25
1		1,877				
20	969	1,764				
30	1493	1,736	0,96	0,010		
40	1936	1,711				
50	2500	1,691	0,97	0,012		
60	3021	1,673				
80	4018	1,650				
100	4891	1,634	0,99	0,013		
120	5561	1,621				
140	6112	1,609				
160	6720	1,598				
180	7186	1,587				
200	7795	1,576	0,99	0,023		

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]	[-]
0		1,928			200	0,25
1		1,908				
20	1125	1,760				
30	1608	1,734	0,85	0,038		
40	2099	1,710				
50	2626	1,690	0,90	0,042		
60	3108	1,673				
80	3811	1,638				
100	4440	1,600	0,87	0,105		
120	5094	1,558				
140	5617	1,512				
160	6137	1,465				
180	6594	1,419				
200	7103	1,376	0,85	0,253		

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		1,925			160	0,25
1		1,886				
20	1366	1,734				
30	1797	1,712	0,82	0,045		
40	2151	1,688				
50	2557	1,665	0,86	0,060		
60	2961	1,643				
80	3591	1,588				
100	4224	1,522	0,80	0,167		
120	4779	1,445				
140	5293	1,371				
160	5833	1,307	0,77	0,310		
180						
200						

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]	[-]
0		1,932			80	0,25
1		1,909				
20	1471	1,756				
30	2025	1,734	0,78	0,056		
40	2417	1,708				
50	2805	1,679	0,78	0,094		
60	3033	1,648				
80	3559	1,566	0,74	0,175		
100						
120						
140						
160						
180						
200						

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	-	-
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

[σ_{max} - see maximal applicable gasket stress Q_{smax} 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]
18*b _D	1,4*b _D	*b _D

[σ_{max} - see maximal applicable gasket stress Q_{smax} 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
25,5	4,0*p ₀	1,0	1,4	1,8

[σ_{max} - see maximal applicable gasket stress Q_{smax} 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 [%]
7	67

Factors acc. to:

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

Temperature [°C]	Creep Relaxation [%]
20	18
100	47
200	85

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]	2,43E+09
Volume resistance R _v at U=100V	[Ω]	3,04E+09
Surface resistivity ρ _s at U=100V	[Ω]	2,46E+10
Volume resistivity ρ _v at U=100V	[Ωm]	2,26E+09