

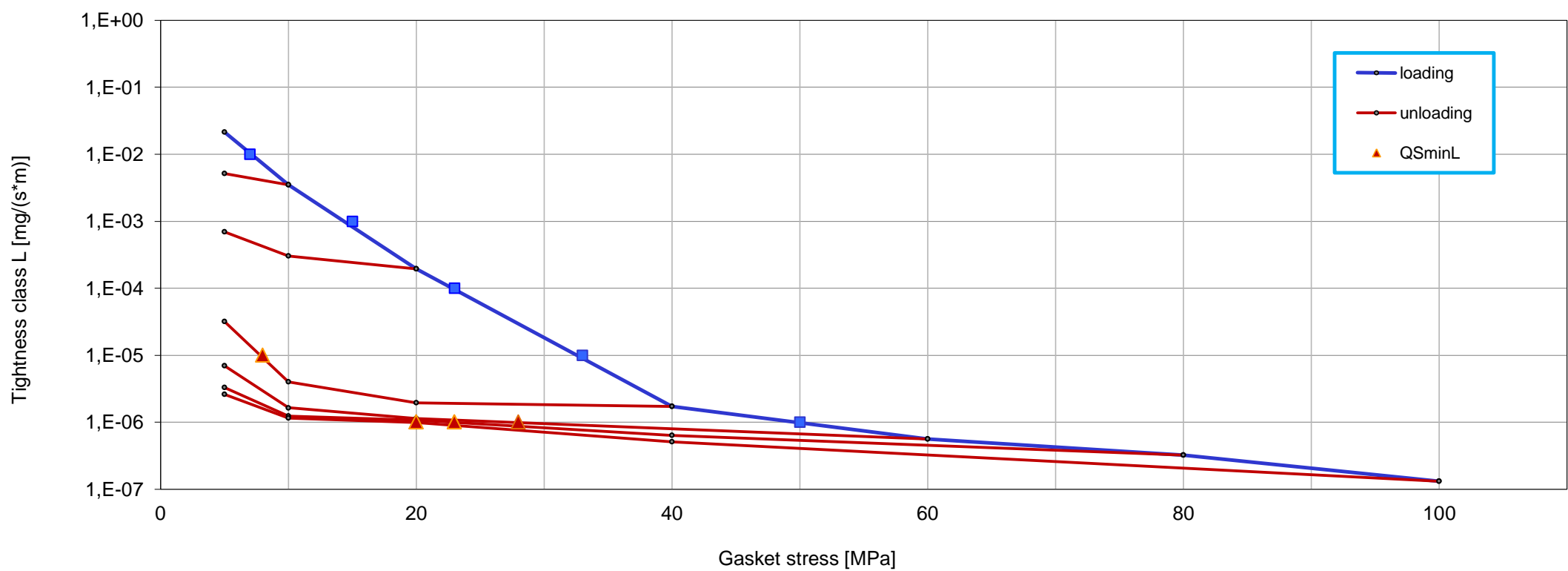
Company	SPETECH sp. z o.o.
Gasket Type	SPETOBAR® BAS 380
Dimensions [mm]	92 x 49 x 2
Calculation type EN 1591-1	a) flat gasket; EN 1514-1

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)

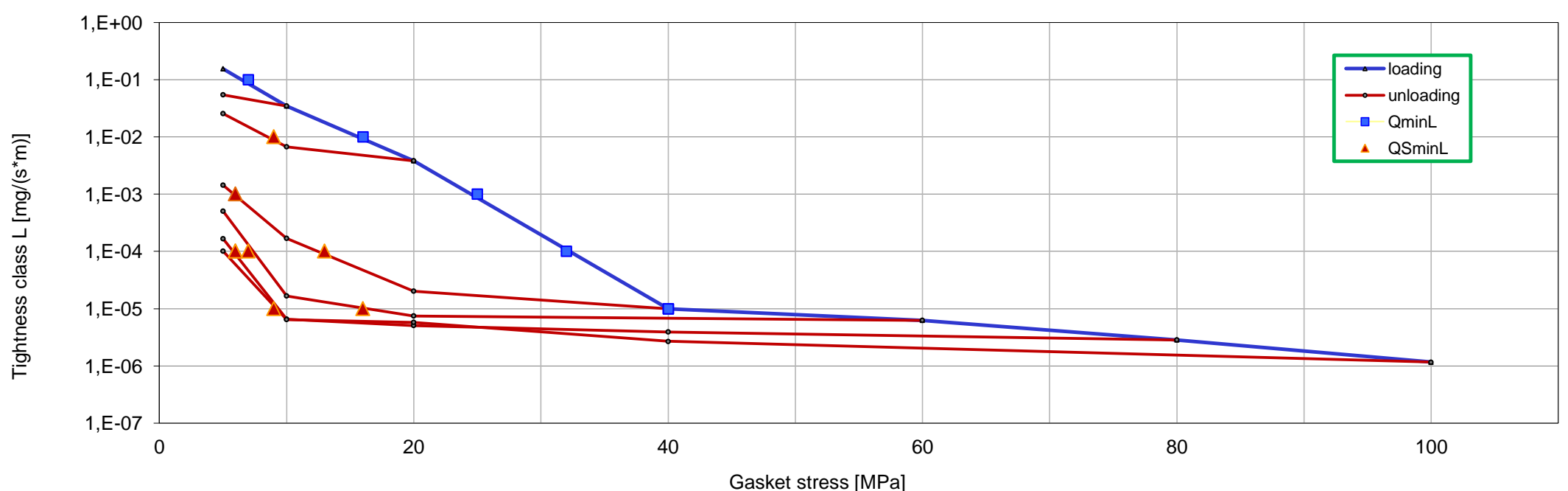
Internal pressure [bar]		10											
L [mg/(s*m)]	$Q_{min/L}$ [MPa]	$Q_{Smin/L}$ [MPa] for effective gasket stress											
		$Q_A = 10$ [MPa]	$Q_A = 20$ [MPa]	$Q_A = 40$ [MPa]	$Q_A = 60$ [MPa]	$Q_A = 80$ [MPa]	$Q_A = 100$ [MPa]	$Q_A = 120$ [MPa]	$Q_A = 140$ [MPa]	$Q_A = 160$ [MPa]			
10^{-0}	5	5	5	5	5	5	5						
10^{-1}	5	5	5	5	5	5	5						
10^{-2}	7	5	5	5	5	5	5						
10^{-3}	15		5	5	5	5	5						
10^{-4}	23			5	5	5	5						
10^{-5}	33			8	5	5	5						
10^{-6}	50				28	23	20						
10^{-7}													

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}	5	5	5	5	5	5	5						
10^{-1}	7	5	5	5	5	5	5						
10^{-2}	16		9	5	5	5	5						
10^{-3}	25			6	5	5	5						
10^{-4}	32			13	7	6	5						
10^{-5}	40				16	9	9						
10^{-6}													

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



Parameters at RT						
Gasket stress [MPa]	Unloading modulus of elasticity E_G	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		1,977			200	0,25
1		1,943				
10	406	1,812				
20	1028	1,769	0,93	0,011		
30	1793	1,741				
40	2380	1,716	0,96	0,015		
50	2788	1,693				
60	3065	1,672	0,96	0,022		
80	3533	1,637				
100	3942	1,605	0,96	0,172		
120	4283	1,577				
140	4754	1,550				
160	5159	1,525				
180	5640	1,501				
200	6065	1,479	0,97	0,051		

Parameters at 100°C						
Gasket stress [MPa]	Unloading modulus of elasticity E_G	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		1,978			100	0,25
1		1,942				
10	798	1,794				
20	1443	1,736	0,76	0,040		
30	1765	1,674				
40	2024	1,604	0,70	0,101		
50	2310	1,526				
60	2669	1,448	0,65	0,175		
80	3279	1,299				
100	3888	1,124	0,61	0,320		

Parameters at 150°C						
Gasket stress [MPa]	Unloading modulus of elasticity E_G	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		1,973			60	0,25
1		1,931				
10	1122	1,762				
20	1405	1,710	0,66	0,057		
30	1612	1,644				
40	1831	1,558	0,60	0,131		
50	2147	1,457				
60	2398	1,346	0,55	0,223		

Parameters at 175°C						
Gasket stress [MPa]	Unloading modulus of elasticity E_G	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		1,984			50	0,25
1		1,941				
10	1027	1,769				
20	1309	1,701	0,62	0,064		
30	1534	1,601				
40	1734	1,475	0,53	0,156		
50	2053	1,334	0,52	0,201		

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	2900	20

[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]
15,0*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]				
		20oC	100oC	200oC	-	-
20,4	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 [%]
19	71

Factors acc. to:

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

Temperature [°C]	Creep Relaxation [%]
20	12
100	78
200	98

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]	6,68E+09
Volume resistance R _v at U=100V	[Ω]	4,88E+09
Surface resistivity ρ _s at U=100V	[Ω]	6,77E+10
Volume resistivity ρ _v at U=U=100V	[Ωm]	3,63E+09