

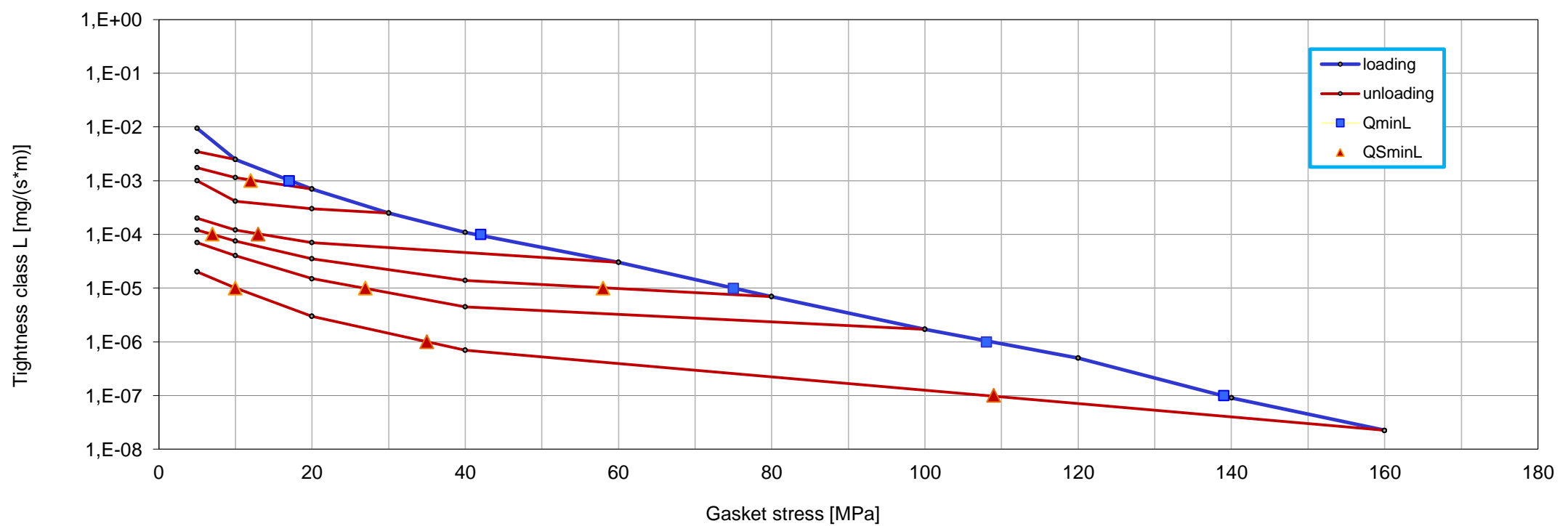
Company	SPETECH sp. z o.o.
Gasket Type	SPETOGRAF® GUS® 30 PRO
Dimensions [mm]	92 x 49 x 2
Calculation type EN 1591-1	a) flat gasket; EN 1514-1

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)

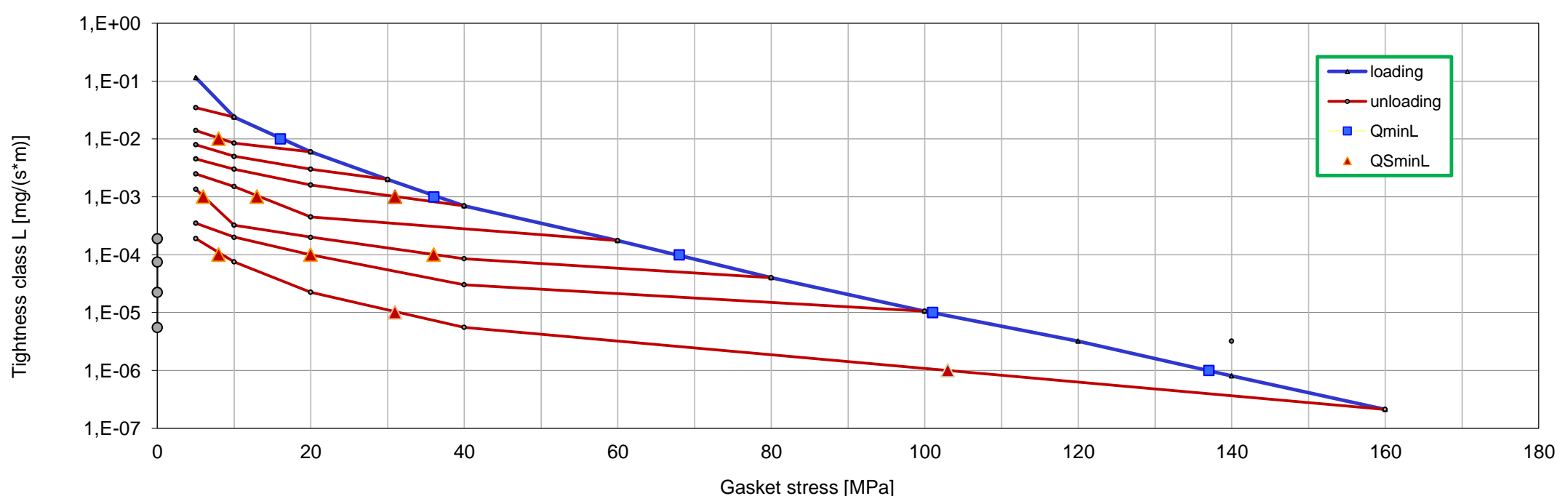
Internal pressure [bar]		10											
L [mg/(s*m)]	$Q_{min/L}$ [MPa]	$Q_{Smin/L}$ [MPa] for effective gasket stress											
		$Q_A = 10$ [MPa]	$Q_A = 20$ [MPa]	$Q_A = 30$ [MPa]	$Q_A = 40$ [MPa]	$Q_A = 60$ [MPa]	$Q_A = 80$ [MPa]	$Q_A = 100$ [MPa]	$Q_A = 120$ [MPa]	$Q_A = 140$ [MPa]	$Q_A = 160$ [MPa]		
10^{-0}	5	5	5	5	5	5	5	5	5			5	
10^{-1}	5	5	5	5	5	5	5	5	5			5	
10^{-2}	5	5	5	5	5	5	5	5	5			5	
10^{-3}	17		12	5	5	5	5	5	5			5	
10^{-4}	42					13	7	5				5	
10^{-5}	75						58	27					10
10^{-6}	108												35
10^{-7}	139												109

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	5	5			5	
10^{-1}	5	5	5	5	5	5	5	5	5			5	
10^{-2}	16		8	5	5	5	5	5	5			5	
10^{-3}	36				31	13	6	5				5	
10^{-4}	68						36	20					8
10^{-5}	101												31
10^{-6}	137												103

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		1,924			200	0,10
20	433	1,300				
30	814	1,200	0,97	0,008		
40	1066	1,149				
50	1077	1,107	0,99	0,004		
60	1645	1,081				
80	2628	1,046				
100	2375	1,013				
120	4666	0,996				
140	4919	0,977				
160	7545	0,969				
180	11339	0,958				
200	9901	0,945	1,00	0,000		

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		1,920			200	0,10
20	569	1,260				
30	1030	1,181	0,94	0,015		
40	1086	1,134				
50	1289	1,099	0,97	0,013		
60	1366	1,070				
80	3210	1,038				
100	2859	1,010				
120	3119	0,988				
140	4768	0,970				
160	6044	0,959				
180	8752	0,947				
200	7804	0,934	0,99	0,017		

Parameters at 300°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		1,933			160	0,10
20	547	1,279				
30	1032	1,220	0,89	0,028		
40	1170	1,172				
50	1339	1,134	0,95	0,021		
60	1550	1,107				
80	3184	1,074				
100	2984	1,046				
120	3266	1,024				
140	4307	1,006				
160	5493	0,990	0,99	0,017		

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/P	g _c	c ₁
0...20	15	150	1	31	1,3	1,0	
100		145	1	31	1,3	1,0	
200		140	1	31	1,3	1,0	
300		130	1	31	1,3	1,0	
bGref [mm]		19,5		eGref [mm]		2,0	

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]
2,54	17,9	2600

[gmax - 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]
16,0*b _D	2,2*b _D	*b _D

[gmax - 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]				
		20oC	100oC	200oC	300oC	400oC
18,3	5,1*p ₀	1,0	1,1	1,1	1,1	1,2

[gmax - 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 [%]
41	17

Factors acc. to:

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

Temperature [°C]	Creep Relaxation [%]
20	6
100	21
200	26

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	[Ω]	< 1,0E+3
Volume resistance R _v at U=10V	[Ω]	< 1,0E+3
Surface resistivity ρ _s at U=10V	[Ω]	< 1,01E+4
Volume resistivity ρ _v at U=10V	[Ωm]	< 7,43E+2