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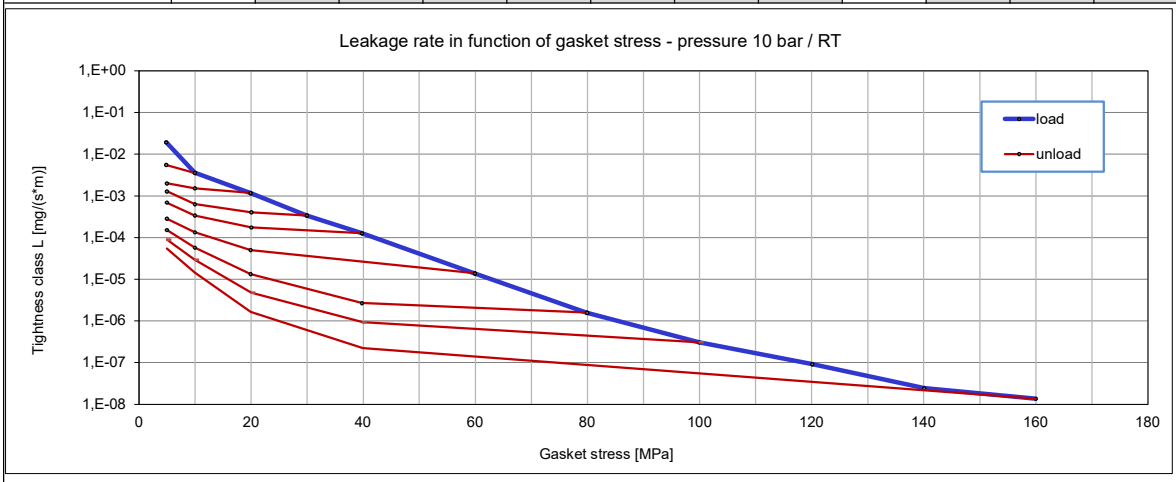
Company	**SPETECH sp. z o.o.**		
Gasket Type	**SPETOGRAF® GUS® 30 PRO**		
Dimensions [mm]	**92 x 49 x 3 (DN40 PN40)**		
Calculation type EN 1591-1	**a) flat gasket;**	**EN 1514-1**	**IBC**
Notes:	Rev.0 (04-03-2021)		

Factors acc. to EN 13555 to use in calculation standard EN 1591-1:2009/ :2013

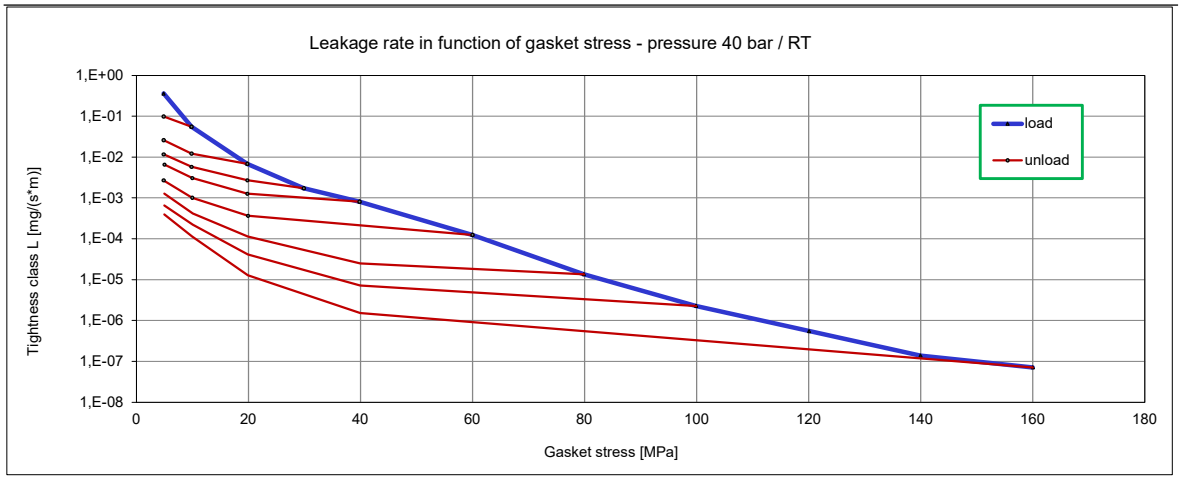
Minimum level of surface pressure required for leakage rate class L on assembly Qmin/L and after off-loading QSmin/L at room temperature (RT)

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 = 160 [MPa]			
10^{-0}	5	5	5	5	5	5	5	5	5			
10^{-1}	5	5	5	5	5	5	5	5	5			
10^{-2}	7	5	5	5	5	5	5	5	5			
10^{-3}	21			7	5	5	5	5	5			
10^{-4}	42					13	7	5	5			
10^{-5}	63						23	16	12			
10^{-6}	86							39	25			
10^{-7}	118								74			



Minimum level of surface pressure required for leakage rate class L on assembly Qmin/L and after off-loading QSmin/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 = 30 [MPa]	Q_A = 40 [MPa]	Q_A = 60 [MPa]	Q_A = 80 [MPa]	Q_A = 100 [MPa]	Q_A = 160 [MPa]			
10^{-0}	5	5	5	5	5	5	5	5	5			
10^{-1}	5	5	5	5	5	5	5	5	5			
10^{-2}	18		13	6	5	5	5	5	5			
10^{-3}	37				29	10	6	5	5			
10^{-4}	62						21	15	10			
10^{-5}	83							36	22			
10^{-6}	112								57			
10^{-7}	150								147			
10^{-8}												

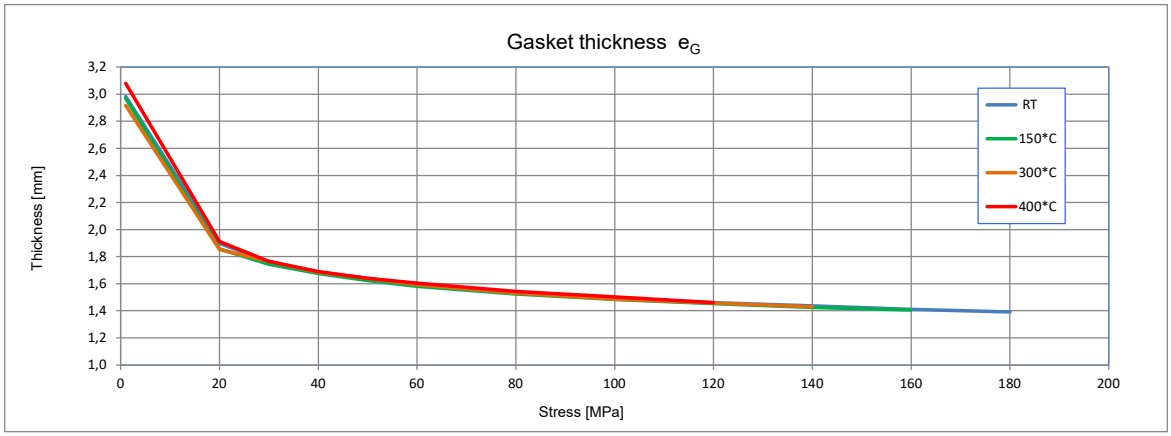


Temperature	RT							
Gasket stress	E_G	eG	C=500 kN/mm		C=1500 kN/mm		Q_{smax}	μ_G
			P_{QR}	Δ_{eGc}	P_{QR}	Δ_{eGc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
1		2,984						
20	358	1,897						
30	629	1,764	0,97	0,008				
40	789	1,684						
50	1265	1,638	0,98	0,008				
60	1326	1,596						
80	1786	1,535					**180**	0,10
100	2328	1,495						
120	2679	1,462						
140	3182	1,437						
160	3293	1,410						
180	4090	1,392	1,00	0,000				

Temperature	150*C							
Gasket stress	E_G	eG	C=500 kN/mm		C=1500 kN/mm		Q_{smax}	μ_G
			P_{QR}	Δe_{Gc}	P_{QR}	Δe_{Gc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
1		2,968						
20	447	1,859						
30	649	1,743	0,92	0,020				
40	941	1,676						
50	1135	1,624	0,96	0,017				
60	1314	1,581					**160**	0,10
80	1835	1,524						
100	2254	1,484						
120	2674	1,454						
140	3149	1,426						
160	3675	1,406	0,99	0,013				

Temperature	300*C							
Gasket stress	E_G	e_G	C=500 kN/mm		C=1500 kN/mm		Q_{smax}	μ_G
			P_{QR}	Δe_{Gc}	P_{QR}	Δe_{Gc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
1		2,918						
20	414	1,854						
30	586	1,766	0,90	0,025				
40	811	1,685						
50	1300	1,640	0,95	0,023				
60	1191	1,593					**140**	0,10
80	1747	1,530						
100	1949	1,486						
120	2892	1,459						
140	2981	1,429	0,99	0,018				

Temperature	400*C							
Gasket stress	E_G	e_G	C=500 kN/mm		C=1500 kN/mm		Q_{smax}	μ_G
			P_{QR}	Δe_{Gc}	P_{QR}	Δe_{Gc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
1		3,080						
20	471	1,911						
30	673	1,766	0,08	0,063				
40	967	1,691						
50	1187	1,640	0,08	0,067				
60	1431	1,604					**120**	0,10
80	1954	1,543						
100	2647	1,503						
120	2296	1,461	0,92	0,081				



Description:					
	E_G	Modulus of elasticity	Q_{smax}	Maximum surface pressure	
	e_G	Gasket or sealing element thickness	μ_G	Static friction factor	(based on EN1591-1:2014 Annex E)
	P_{QR}	Creep relaxation factor	C	Stiffness	
	Δ_{eGc}	Gasket thickness change due to creep			

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_l/P	g_c	c_1
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]	3,0

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

NOTE: Maintenance values [m] less than 2.0 are typically not used in ASME designs except for elastomeric gaskets (Classification D2000).

σmax - see maximal applicable gasket stress Qsmax acc. EN 1591-1:2009/:2013

Factors acc. to:

AD 2000-Merkblatt B7 August 2007

k_0k_D [N/mm]	k1 [mm]	$k_0k\vartheta$ [N/mm]
$16,0*b_D$	$2,2*b_D$	$*b_D$

σmax - see maximal applicable gasket stress Qsmax 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	300°C	400°C
18,3	$5,1*p_0$	1,0	1,1	1,1	1,1	1,2

σmax - see maximal applicable gasket stress Qsmax 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 [%]
NDA	NDA

Factors acc. to:

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

Temperature [°C]	Creep Relaxation [%]
20	NDA
100	NDA
200	NDA

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]		NDA
Volume resistance R_v at U=10V	[Ω]		NDA
Surface resistivity ρ_s at U=10V	[Ω]		NDA
Volume resistivity ρ_v at U=10V	[Ωm]		NDA