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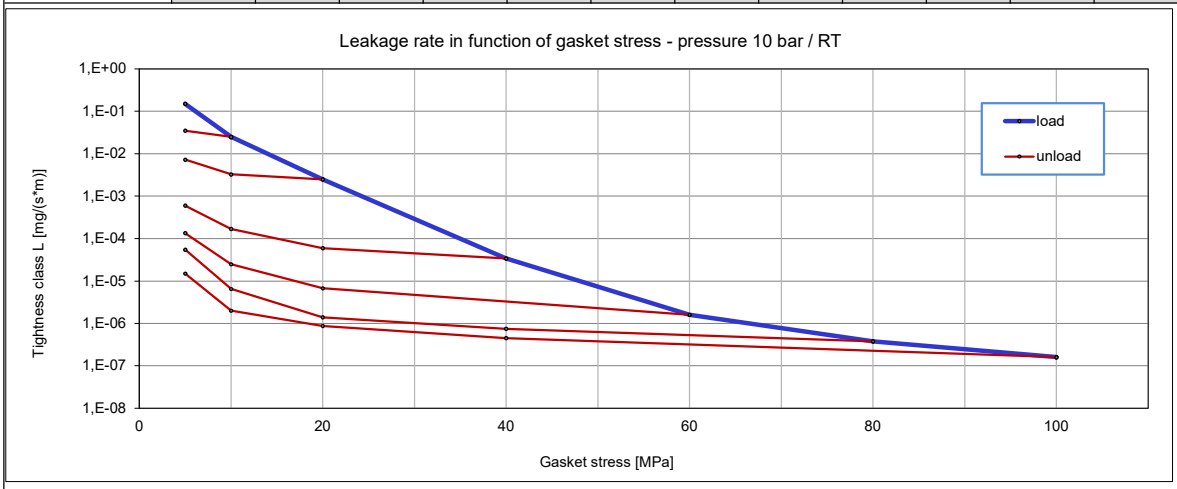
Company	**SPETECH sp. z o.o.**		
Gasket Type	**SPETOBAR® BAS® 340**		
Dimensions [mm]	**92 x 49 x 2 (DN40 PN40)**		
Calculation type EN 1591-1	**a) flat gasket;**	**EN 1514-1**	**IBC**
Notes:	Rev.1 (11-02-2021)		

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

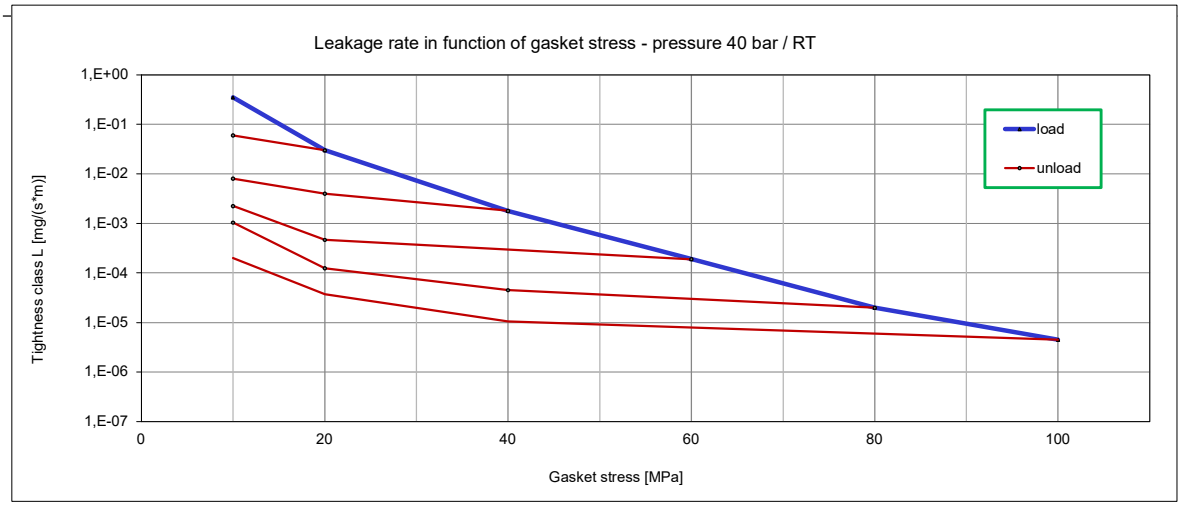
Minimum level of surface pressure required for leakage rate class L on assembly Qmin/L and after off-loading QSmin/L at room temperature (RT)

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 = 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					
10^{-7}												



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 = 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}												
10^{-7}												



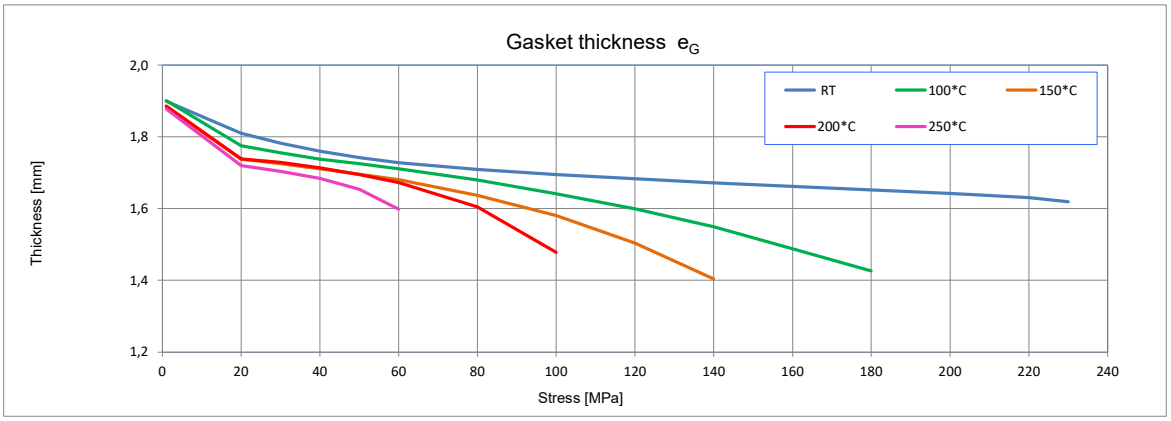
Temperature	RT							
Gasket stress	E_G	eG	C=500 kN/mm		C=1500 kN/mm		Q_{smax}	μ_G
			P_{QR}	Δ_{eGc}	P_{QR}	Δ_{eGc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
1		1,900						
20	1528	1,810						
30	1839	1,782	0,96	0,011				
40	2309	1,760						
50	2851	1,742	0,97	0,015				
60	3501	1,728						
80	4836	1,709						
100	5988	1,695	0,98	0,017			230	0,31
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				

Temperature	100*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		1,901						
20	1803	1,775						
30	2296	1,756	0,85	0,039				
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			180	0,21
120	5577	1,599						
140	6394	1,549						
160	6464	1,488						
180	7149	1,426	0,79	0,317				

Temperature	150*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		1,885						
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					140	0,20
80	4681	1,637						
100	4976	1,581	0,77	0,197				
120	5429	1,504						
140	5732	1,404	0,74	0,305				

Temperature	200*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		1,886						
20	2183	1,739						
30	2920	1,729	0,81	0,049				
40	3390	1,714						
50	3537	1,695	0,77	0,097				
60	3943	1,673					100	0,19
80	4248	1,605						
100	4672	1,478	0,74	0,218				

Temperature	250*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		1,878						
20	2713	1,720						
30	3204	1,704	0,69	0,079				
40	3132	1,684						
50	3785	1,654	0,70	0,128				
60	3661	1,599	0,69	0,159			60	0,18



Description:					
	E_G	Modulus of elasticity	Q_{smax}	Maximum surface pressure
	e_G	Gasket or sealing element thickness	μ_G	Static friction factor
	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

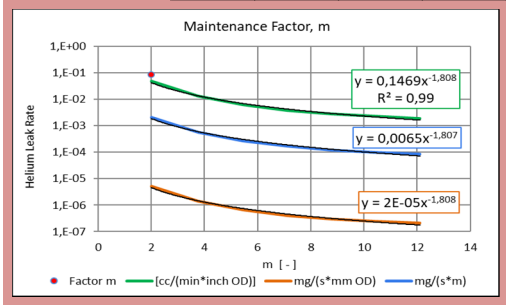
T [°C]	Q_{min} [MPa]	$Q_{max, ref}$ [MPa]	E_0 [MPa]	K_1	Q_f/P	g_c	c_1
0…20	35	80	500	20	1,6	-	0,05
100	-	70	500	20	1,6	-	-
200	-	60	500	20	1,6	-	-

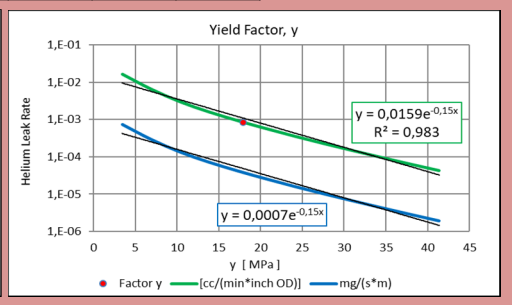
bGref [mm]	19,5	eGref [mm]	1,9

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

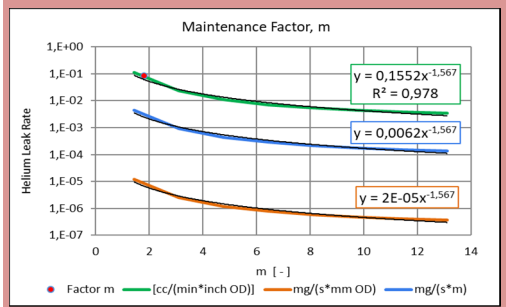
Tightness class		ASTM F3149	PVRC Tightness class		EN 13555	
			T3	T4	L0,01	L0,001
Factor m	[-]	2,0	< 2,0	12,5	< 2,0	3,1
Factor y	[MPa]	17,9			12,0	27,8
	[psi]	2600				

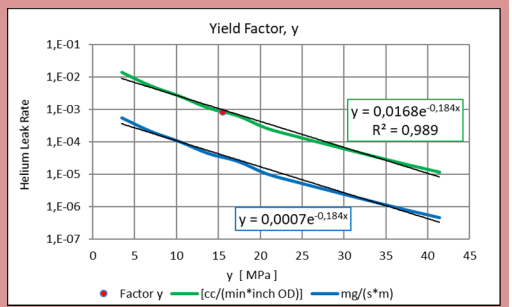




NOTE: Maintenance values [m] less than 2.0 are typically not used in ASME designs except for elastomeric gaskets (Classification D2000).
Gasket dimensions acc. to EN 1514-1 DN40 PN40
The given coefficient values are read from the test curves, not from the trend line.

Tightness class		ASTM F3149	PVRC Tightness class		EN 13555	
			T3	T4	L0,01	L0,001
Factor m	[-]	2,0	< 1,5	21,4	< 1,5	3,1
Factor y	[MPa]	15,5			10,5	21,1
	[psi]	2250				





NOTE: Maintenance values [m] less than 2.0 are typically not used in ASME designs except for elastomeric gaskets (Classification D2000).
Gasket dimensions acc. to EN 12560-1 NPS4 Class 300
The given coefficient values are read from the test curves, not from the trend line.

[qmax - 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]
$20*b_D$	$2,0*b_D$	

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
26,5	$4*p_0$	1,0	1,4	1,8		

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 [%]
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