LABORATORY OF SEALING MATERIALS
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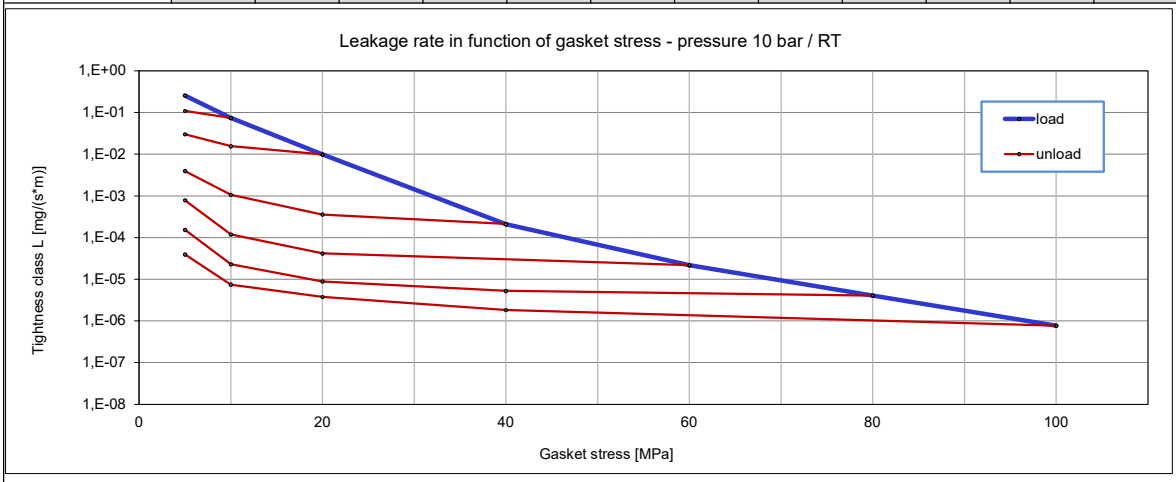
Company	**SPETECH sp. z o.o.**		
Gasket Type	**SPETOBAR® BAS® 300**		
Dimensions [mm]	**92 x 49 x 2 (DN40 PN40)**		
Calculation type EN 1591-1	**a) flat gasket;**	**EN 1514-1**	**IBC**
Notes:	Rev.1 (11-02-2021)		

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

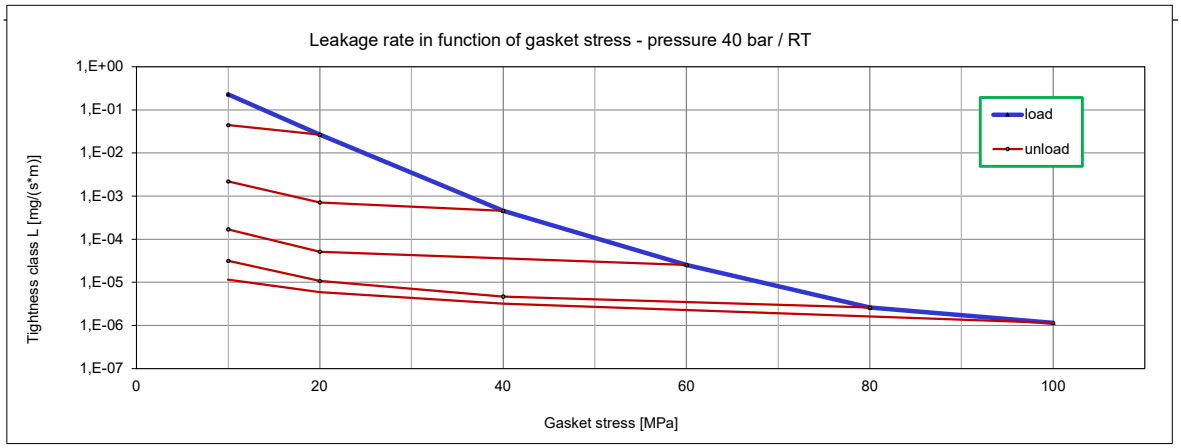
Minimum level of surface pressure required for leakage rate class L on assembly Qmin/L and after off-loading QSmin/L at room temperature (RT)

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]					
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					
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 = 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}	50				15	10	10					
10^{-5}	68					22	12					
10^{-6}												
10^{-7}												

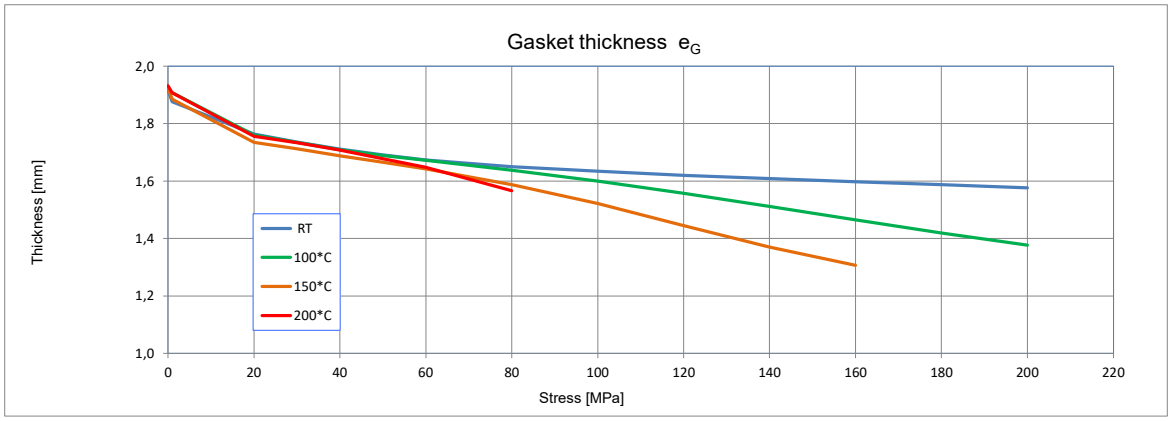


Temperature	RT							
Gasket stress	E_G	eG	C=500 kN/mm		C=1500 kN/mm		Q_{smax}	μ_G
			P_{QR}	Δ_{eGc}	P_{QR}	Δ_{eGc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
0		1,918						
1		1,877						
20	969	1,764						
30	1493	1,736	0,96	0,010				
40	1936	1,711						
50	2500	1,691	0,97	0,012				
60	3021	1,673						
80	4018	1,650						
100	4891	1,634	0,99	0,013			**200**	0,22
120	5561	1,621						
140	6112	1,609						
160	6720	1,598						
180	7186	1,587						
200	7795	1,576	0,99	0,026				

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]	[-]
0		1,928						
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			**200**	0,22
120	5094	1,558						
140	5617	1,512						
160	6137	1,465						
180	6594	1,419						
200	7103	1,376	0,85	0,253				

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]	[-]
0		1,925						
1		1,886						
20	1366	1,734						
30	1797	1,712	0,82	0,042				
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			**160**	0,14
120	4779	1,445						
140	5293	1,371						
160	5833	1,307	0,77	0,310				

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]	[-]
0		1,932						
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			**80**	0,15
60	3033	1,648						
80	3559	1,566	0,74	0,175				



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

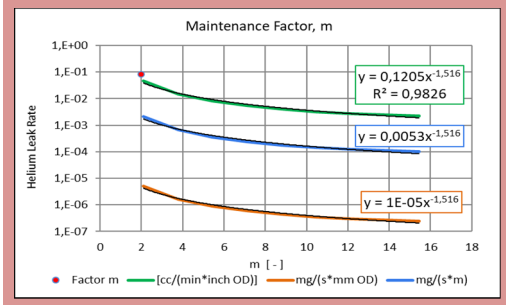
T [oC]	Q_{min} [MPa]	$Q_{max, ref}$ [MPa]	E_0 [MPa]	K_1	Q_l/P	g_c	c_1
20	35	80	500	20	1,6	-	0,05
100	-	70	500	20	1,6	-	-
200	-	60	500	20	1,6	-	-

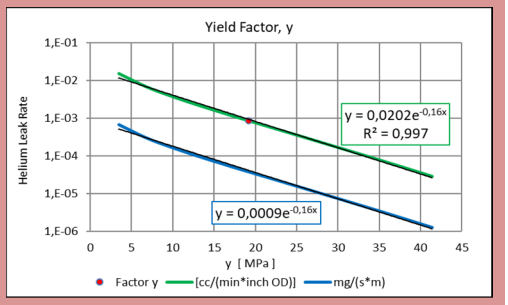
bGref [mm]	19,5	eGref [mm]	2,0

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

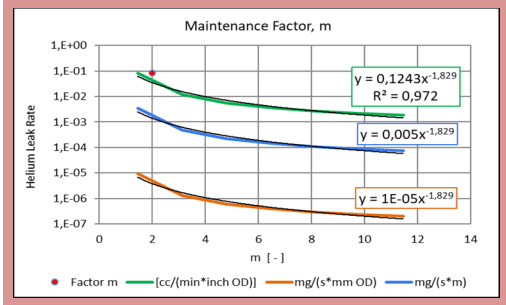
Tightness class		ASTM F3149	PVRC Tightness class		EN 13555	
			T3	T4	L0,01	L0,001
Factor m	[-]	2,0	< 2,0	22,0	< 2,0	3,2
Factor y	[MPa]	19,2			13,0	28,0
	[psi]	2780				

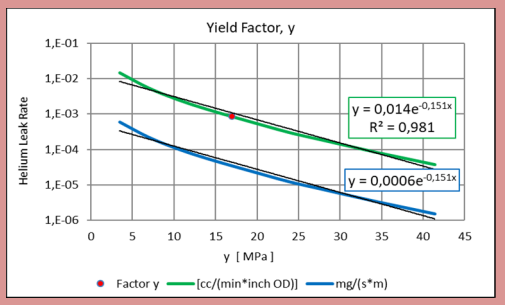




NOTE: Maintenance values [m] less than 2.0 are typically not used in ASME designs except for elastomeric gaskets (Classification D2000).
Gasket dimensions acc. to EN 1514-1 PN40 DN40.
The given coefficient values are read from the test curves, not from the trend line.

Tightness class		ASTM F3149	ASME		EN 13555	
			T3 Class	T4 Class	L0,01	L0,001
Factor m	[-]	2,0	<1,5	14,0	<1,5	2,5
Factor y	[MPa]	17,0			10,5	25,5
	[psi]	2470				





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.

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]
$18*b_D$	$1,4*b_D$	$*b_D$

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]				
		20oC	100oC	200oC		
25,5	$4,0*p_0$	1,0	1,4	1,8	NDA	NDA

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 [%]
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