

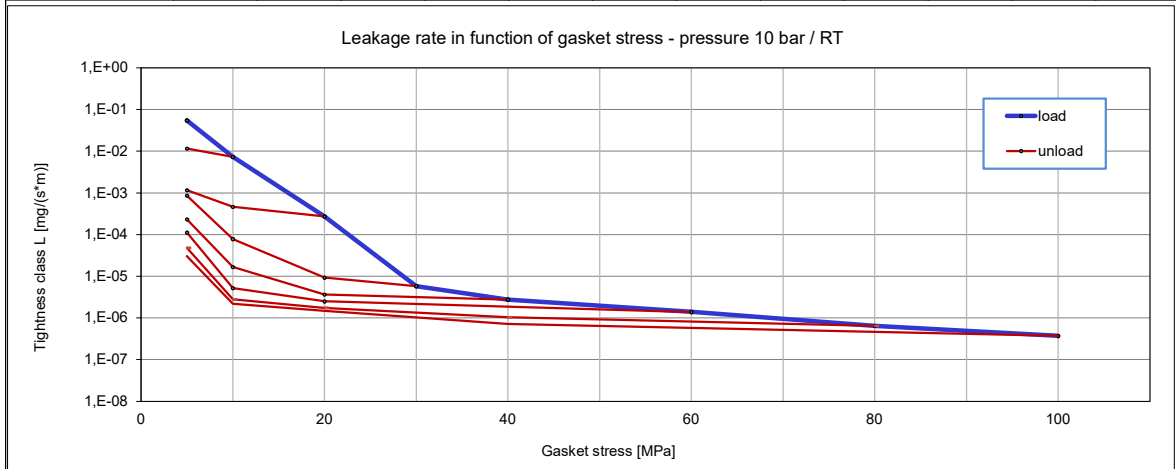
	LABORATORY OF SEALING MATERIALS 43-382 Bielsko-Biala, ul. Szyprów 17 tel. +48 33 8184133 e-mail: lbmu@spetech.com.pl www.laboratory.spetech.eu			  LB - 12402
	Company	SPETECH sp. z o.o.		
Gasket Type	SPETOBAR® BAS® 380			
Dimensions [mm]	92 x 49 x 3 (DN40 PN40)			
Calculation type EN 1591-1	a) flat gasket;		EN 1514-1	IBC
Notes:	Rev.1 (16-02-2021)			

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

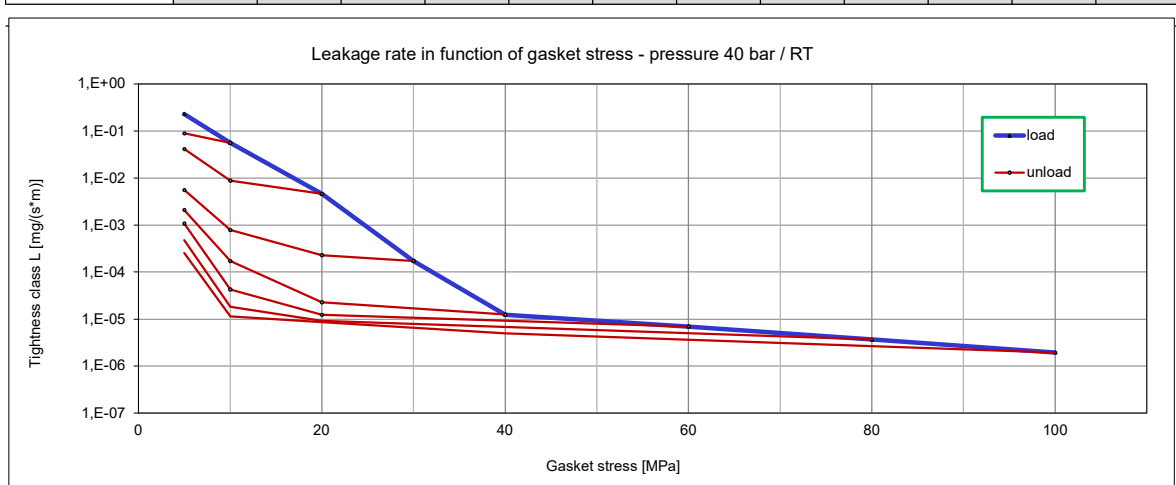
Minimum level of surface pressure required for leakage rate class L on assembly $Q_{min/L}$ and after off-loading $Q_{Smin/L}$ at room temperature (RT)

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]	
10^{-0}	5	5	5	5	5	5	5	5	
10^{-1}	5	5	5	5	5	5	5	5	
10^{-2}	9	7	5	5	5	5	5	5	
10^{-3}	16		6	5	5	5	5	5	
10^{-4}	23			9	7	6	5	5	
10^{-5}	28			19	13	9	8	7	
10^{-6}	68						43	31	
10^{-7}									



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]	$Q_A = 30$ [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	5	
10^{-1}	8	5	5	5	5	5	5	5	
10^{-2}	17		9	5	5	5	5	5	
10^{-3}	24			9	7	6	5	5	
10^{-4}	32				13	8	7	7	
10^{-5}	48					35	19	15	
10^{-6}									
10^{-7}									

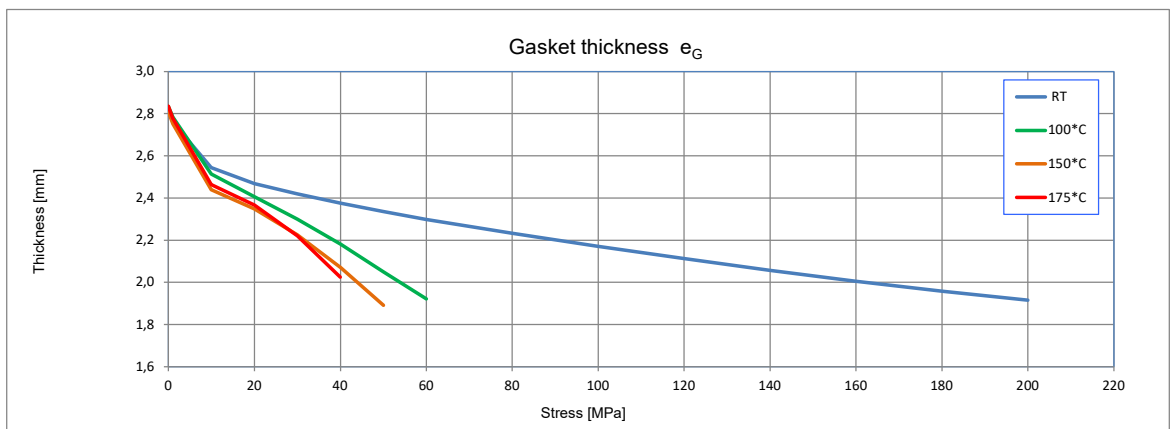


Temperature		RT						Q _{smax}	μ _G
Gasket stress	E _G	e _G	C=500 kN/mm		C=1500 kN/mm				
			P _{QR}	Δe _{Gc}	P _{QR}	Δe _{Gc}			
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]	
0		2,818					200	0,25	
1		2,759							
10	359	2,543							
20	896	2,469	0,91	0,015					
30	1551	2,420							
40	2052	2,376	0,93	0,025					
50	2389	2,336							
60	2683	2,298	0,93	0,035					
80	3206	2,233							
100	3751	2,171	0,93	0,057					
120	4278	2,112							
140	4750	2,057							
160	5205	2,005							
180	5701	1,958							
200	6114	1,915	0,942	0,096					

Temperature		100°C						Q _{smax}	μ _G
Gasket stress	E _G	e _G	C=500 kN/mm		C=1500 kN/mm				
			P _{QR}	Δe _{Gc}	P _{QR}	Δe _{Gc}			
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]	
0		2,835					60	0,25	
1		2,783							
10	607	2,513							
20	1174	2,405	0,62	0,063					
30	1478	2,299							
40	1751	2,180	0,57	0,143					
50	2066	2,050							
60	2417	1,921	0,55	0,225					

Temperature		150°C						Q _{smax}	μ _G
Gasket stress	E _G	e _G	C=500 kN/mm		C=1500 kN/mm				
			P _{QR}	Δe _{Gc}	P _{QR}	Δe _{Gc}			
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]	
0		2,809					50	0,25	
1		2,753							
10	935	2,440							
20	1204	2,348	0,50	0,084					
30	1395	2,225							
40	1629	2,070	0,45	0,182					
50	1913	1,892	0,45	0,229					

Temperature		175°C						Q _{smax}	μ _G
Gasket stress	E _G	e _G	C=500 kN/mm		C=1500 kN/mm				
			P _{QR}	Δe _{Gc}	P _{QR}	Δe _{Gc}			
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]	
0		2,836					40	0,25	
1		2,777							
10	872	2,463							
20	1073	2,365	0,44	0,094					
30	1262	2,221							
40	1515	2,025	0,42	0,194					



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
	Δe _{Gc}	Gasket thickness change due to creep		

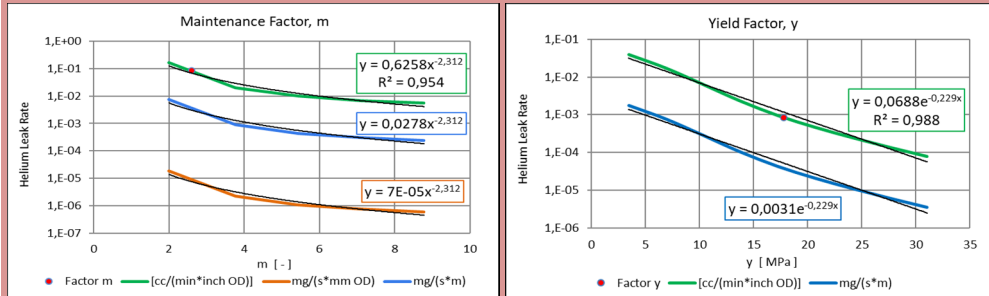
Factors acc. to EN 13555 to use in calculation standard EN 1591-1:2001

T [°C]	Q _{min} [MPa]	Q _{max, ref} [MPa]	E ₀ [MPa]	K ₁	Q _i /P	g _c	c ₁
20	35	80	500	20	1,6	-	0,05
100	-	70	500	20	1,6	-	
bGref [mm]		19,5		eGref [mm]		2,8	

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	-	2,6	< 2,0	< 2,0	3,7
Factor y	[MPa]	17,8		13,9	24,8
	[psi]	2580			



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.

[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]	k1 [mm]	k ₀ k _θ [N/mm]
15,0*bD	1,4*bD	*bD

[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]		
		20°C	100°C	200°C
20,4	4,0*p0	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 [%]
NDA	NDA

Factors acc. to:

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

Temperature [°C]	Creep Relaxation [%]
	NDA
	NDA
	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=100V	[Ω]		NDA
Volume resistance R _v at U=100V	[Ω]		NDA
Surface resistivity ρ _s at U=100V	[Ω]		NDA
Volume resistivity ρ _v at U=100V	[Ωm]		NDA