

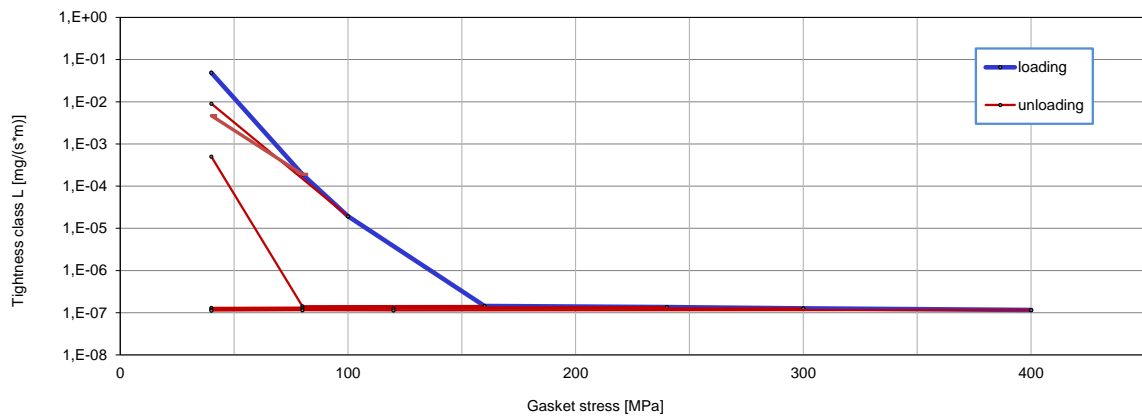
	<b>LABORATORY OF SEALING MATERIALS</b> 43-382 Bielsko-Biala, ul. Szyprów 17 tel. +48 33 8184133 e-mail: lbmu@spetech.com.pl www.laboratory.spetech.eu		 
	Company	SPETECH sp. z o.o.	
Gasket Type	SPETORING® RTJ-R ASTM SA-182 F5		
Dimensions [mm]	R20		
Stiffness (kN/mm)	1500		
Calculation type EN 1591-1	d) RTJ octagonal;	EN 12560-5	

**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<sub>min/L</sub> and after off-loading Q<sub>Smin/L</sub> at room temperature (RT)

Internal pressure [bar]	<b>40</b>										
L [mg/(s·m)]	Q <sub>min/L</sub> [MPa]	Q <sub>Smin/L</sub> [MPa] for effective gasket stress									
		Q <sub>A</sub> = 80 [MPa]	Q <sub>A</sub> = 100 [MPa]	Q <sub>A</sub> = 160 [MPa]	Q <sub>A</sub> = 240 [MPa]	Q <sub>A</sub> = 300 [MPa]	Q <sub>A</sub> = 400 [MPa]				
10 <sup>-0</sup>	40	40	40	40	40	40	40				
10 <sup>-1</sup>	40	40	40	40	40	40	40				
10 <sup>-2</sup>	52	40	40	40	40	40	40				
10 <sup>-3</sup>	67	59	62	40	40	40	40				
10 <sup>-4</sup>	86		84	47	40	40	40				
10 <sup>-5</sup>	107			59	40	40	40				
10 <sup>-6</sup>	136			70	40	40	40				
10 <sup>-7</sup>											
10 <sup>-8</sup>											

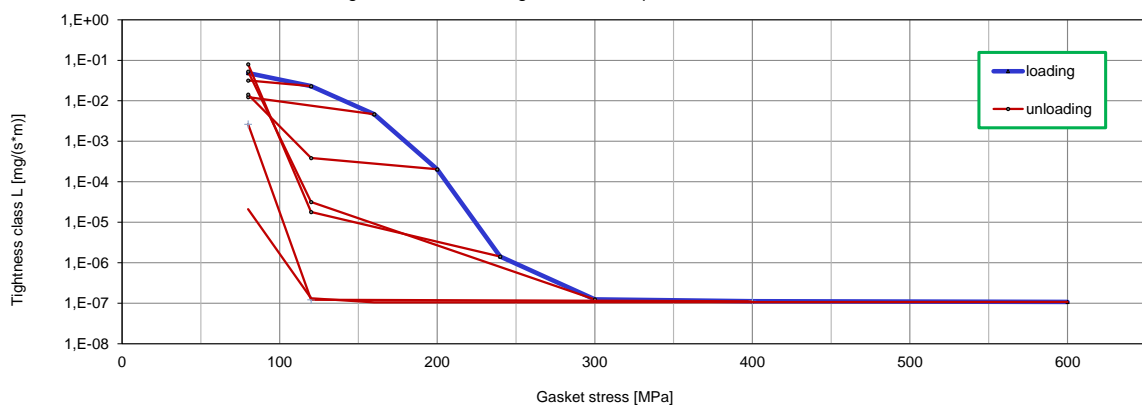
Leakage rate in function of gasket stress - pressure 40 bar / RT



Minimum level of surface pressure required for leakage rate class L on assembly Q<sub>min/L</sub> and after off-loading Q<sub>Smin/L</sub> at room temperature (RT)

Internal pressure [bar]	<b>160</b>										
L [mg/(s·m)]	Q <sub>min/L</sub> [MPa]	Q <sub>Smin/L</sub> [MPa] for effective gasket stress									
		Q <sub>A</sub> = 120 [MPa]	Q <sub>A</sub> = 160 [MPa]	Q <sub>A</sub> = 200 [MPa]	Q <sub>A</sub> = 240 [MPa]	Q <sub>A</sub> = 300 [MPa]	Q <sub>A</sub> = 400 [MPa]	Q <sub>A</sub> = 600 [MPa]			
10 <sup>-0</sup>	80	80	80	80	80	80	80	80			
10 <sup>-1</sup>	80	80	80	80	80	80	80	80			
10 <sup>-2</sup>	140		100	84	90	88	80	80			
10 <sup>-3</sup>	180			110	101	102	83	80			
10 <sup>-4</sup>	206				112	114	93	80			
10 <sup>-5</sup>	224				147	156	102	86			
10 <sup>-6</sup>	250					232	112	104			
10 <sup>-7</sup>											
10 <sup>-8</sup>											

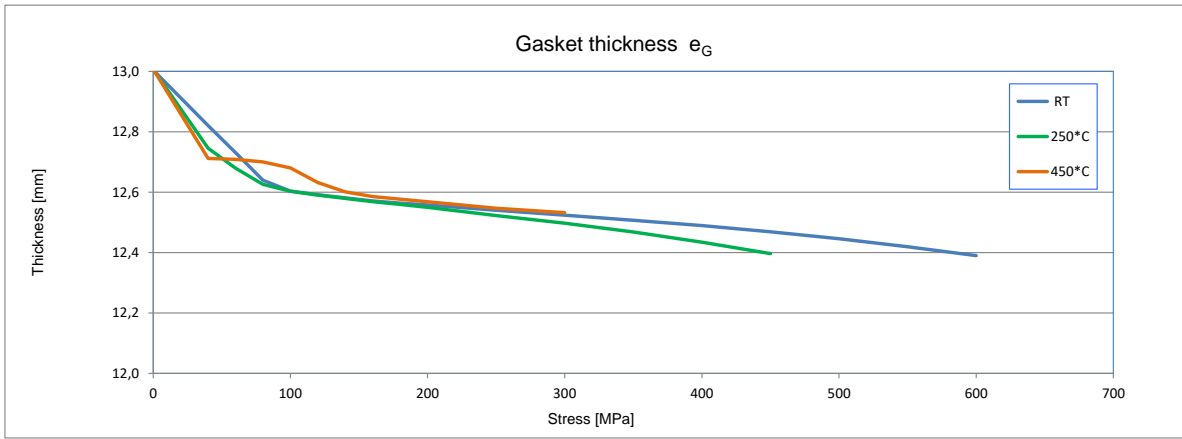
Leakage rate in function of gasket stress - pressure 160 bar / RT



RT						
Gasket stress $Q_{Ge}$ [MPa]	Modulus of elasticity <b>EG</b>	Gasket or sealing element thickness <b>e<sub>G</sub></b>	Creep relaxation factor <b>P<sub>QR</sub></b>	Gasket thickness change due to creep <b>Δe<sub>Gc</sub></b>	Maximum surface pressure <b>Q<sub>smax</sub></b>	Static friction factor <b>μ<sub>G</sub></b>
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
			Stiffness 1500 kN/mm			
1	214000	13,000			600	NDA
40		12,820				
60		12,731				
80		12,640				
100		12,603	0,95	0,002		
120		12,591				
140		12,581				
160		12,571				
180		12,563				
200		12,558	0,97	0,003		
250		12,540				
300		12,524	0,98	0,002		
350		12,507				
400		12,489				
450		12,469				
500		12,446				
550		12,420				
600	12,390	0,95	0,011			

250°C						
Gasket stress $Q_{Ge}$ [MPa]	Modulus of elasticity <b>EG</b>	Gasket or sealing element thickness <b>e<sub>G</sub></b>	Creep relaxation factor <b>P<sub>QR</sub></b>	Gasket thickness change due to creep <b>Δe<sub>Gc</sub></b>	Maximum surface pressure <b>Q<sub>smax</sub></b>	Static friction factor <b>μ<sub>G</sub></b>
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
			Stiffness 1500 kN/mm			
1	198500	13,000			450	NDA
40		12,746				
60		12,680				
80		12,626				
100		12,603	0,70	0,012		
120		12,590				
140		12,579				
160		12,569				
180		12,559				
200		12,550	0,74	0,021		
250		12,523				
300		12,497	0,77	0,027		
350		12,468				
400		12,435				
450		12,397	0,75	0,044		

450°C						
Gasket stress $Q_{Ge}$ [MPa]	Modulus of elasticity <b>EG</b>	Gasket or sealing element thickness <b>e<sub>G</sub></b>	Creep relaxation factor <b>P<sub>QR</sub></b>	Gasket thickness change due to creep <b>Δe<sub>Gc</sub></b>	Maximum surface pressure <b>Q<sub>smax</sub></b>	Static friction factor <b>μ<sub>G</sub></b>
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
			Stiffness 1500 kN/mm			
1	174000	13,000			300	NDA
40		12,712				
60		12,709				
80		12,700				
100		12,680	0,45	0,021		
120		12,632				
140		12,601				
160		12,585				
180		12,575				
200		12,566	0,57	0,034		
250		12,547				
300		12,532	0,70	0,035		



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

T [°C]	Q <sub>min</sub> [MPa]	Q <sub>max, ref</sub> [MPa]	E <sub>0</sub> [MPa]	K <sub>1</sub>	Q/P	g <sub>c</sub>	c <sub>1</sub>
NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA
NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA
NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA
NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA
NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA
b <sub>Gref</sub> [mm]		NDA		e <sub>Gref</sub> [mm]		NDA	

**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]
6,5	26000	179

[σ<sub>max</sub> - see maximal applicable gasket stress Q<sub>smax</sub> acc. EN 1591-1:2009/2013](#)

**Factors acc. to:**

AD 2000-Merkblatt B7 August 2007

k <sub>0</sub> [mm]	k <sub>1</sub> [mm]	k <sub>0</sub> k <sub>1</sub> [N/mm]
2,0	6,0	NDA

[σ<sub>max</sub> - see maximal applicable gasket stress Q<sub>smax</sub> acc. EN 1591-1:2009/2013](#)

**Factors acc. to:**

WUDT-UC-WO-O/19

σ <sub>m</sub> [MPa]	σ <sub>r</sub> [MPa]	b [1]				
		20°C	100°C	200°C	NDA	NDA
NDA	NDA	NDA	NDA	NDA	NDA	NDA

[σ<sub>max</sub> - see maximal applicable gasket stress Q<sub>smax</sub> 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 <sub>s</sub> at U=10V	[Ω]		NDA
Volume resistance R <sub>v</sub> at U=10V	[Ω]		NDA
Surface resistivity ρ <sub>s</sub> at U=10V	[Ω]		NDA
Volume resistivity ρ <sub>v</sub> at U=10V	[Ωm]		NDA