

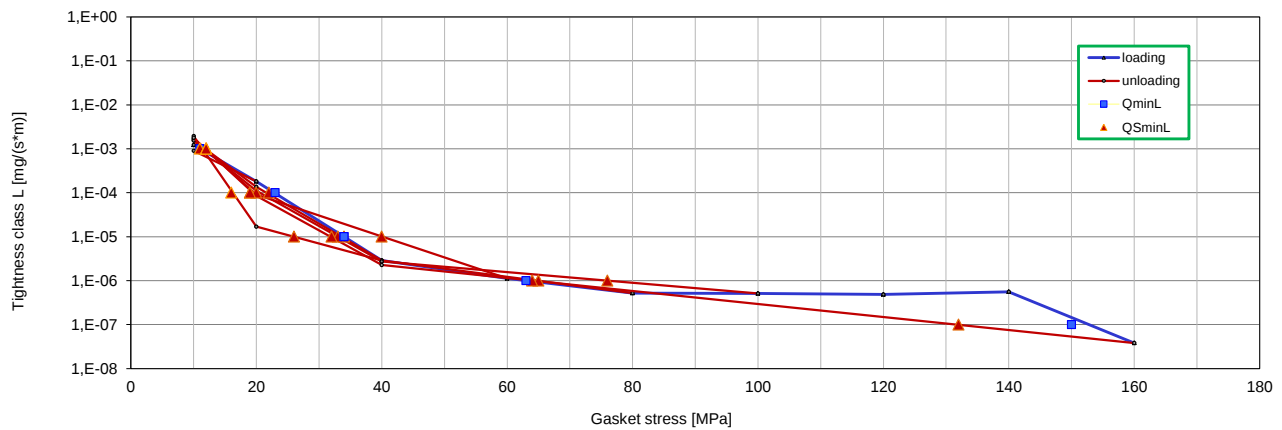
	LABORATORY OF SEALING MATERIALS		
	43-382 Bielsko-Biała, ul. Szyprów 17		
	tel. +48 33 8184133	e-mail: lbmu@spetech.com.pl	http://www.laboratory.spetech.eu
	Company		
	SPETECH sp. z o.o.		
Gasket Type			
SPETOMET® MWK®50 FGC			
Dimensions [mm]			
69 x 53 x 4			
Calculation type EN 1591-1			
a) flat gasket; EN 1514-6			

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]		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		
10^{-1}	10		10	10	10	10	10			10		
10^{-2}	10		10	10	10	10	10			10		
10^{-3}	11		10	11	12	12	12			12		
10^{-4}	23			16	19	22	20			19		
10^{-5}	34			26	40	34	33			32		
10^{-6}	63					65	76			64		
10^{-7}	150									132		

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



Parameters at RT						
Gasket stress [MPa]	Unloading modulus of elasticity EG	Gasket or sealing element thickness e_G	Creep relaxation factor P_{QR}	Gasket thickness change due to creep Δe_{Gc}	Maximum surface pressure Q_{smax}	Static friction factor μ_G
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
1		3,835			500	0,10
20	3986	2,997				
30	7601	2,965				
40	10891	2,949				
50	13974	2,938	0,98	0,003		
60	15774	2,930				
80	19350	2,917				
100	21635	2,906				
120	24160	2,896				
140	24830	2,884				
150			0,99	0,006		
160	26084	2,870				
180	26565	2,855				
200	27106	2,838	0,99	0,005		
300	26675	2,738				
400	27887	2,646				
500	28216	2,565				

Parameters at 200°C						
Gasket stress [MPa]	Unloading modulus of elasticity EG	Gasket or sealing element thickness e _G	Creep relaxation factor P _{QR}	Gasket thickness change due to creep Δe _{Gc}	Maximum surface pressure Q _{smax}	Static friction factor μ _G
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
1		3,844			400	0,10
20	4576	2,967				
30	9878	2,957				
40	14601	2,947				
50	17877	2,940	0,86	0,021		
60	19126	2,934				
80	21702	2,922				
100	24645	2,908				
120	25921	2,891				
140	26480	2,869				
150			0,93	0,033		
160	27489	2,844				
180	26550	2,816				
200	27398	2,789	0,93	0,041		
300	27837	2,671				
400	28342	2,552				

Parameters at 400°C						
Gasket stress [MPa]	Unloading modulus of elasticity EG	Gasket or sealing element thickness e _G	Creep relaxation factor P _{QR}	Gasket thickness change due to creep Δe _{Gc}	Maximum surface pressure Q _{smax}	Static friction factor μ _G
	[MPa]	[mm]	[-]	[mm]	[MPa]	[-]
1		3,849			300	0,10
20	3734	2,979				
30	9186	2,971				
40	12322	2,961				
50	15654	2,953	0,84	0,024		
60	18237	2,945				
80	23224	2,931				
100	24506	2,914				
120	26086	2,893				
140	26983	2,866				
150			0,89	0,050		
160	27237	2,836				
180	27372	2,805				
200	27451	2,775	0,90	0,059		
300	28532	2,654				

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/P	g _c	c ₁
0...20	15	500	16000	-	1,3	1,0	0,00
100		480	16000	-	1,3	1,0	
200		450	16000	-	1,3	1,0	
200		420	16000	-	1,3	1,0	
b _{Gref} [mm]		8,0		e _{Gref} [mm]		4,0	

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]
2,8	2400	16,5

g_{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 ₀ [N/mm]	k ₁ [mm]	k ₀ k ₀ [N/mm]
15,0*b ₀	1,1*b ₀	*b ₀

g_{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]			
		20oC	100oC	200oC	300oC
16,5	5,5*p ₀	1,0	1,1	1,1	1,1

g_{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 [%]
-	-

Factors acc. to:

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

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

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]	> 1,00E+03
Volume resistance R_v at U=10V	[Ω]	> 1,00E+03
Surface resistivity ρ_s at U=10V	[Ω]	> 1,01E+04
Volume resistivity ρ_v at U=10V	[Ωm]	> 3,72E+02