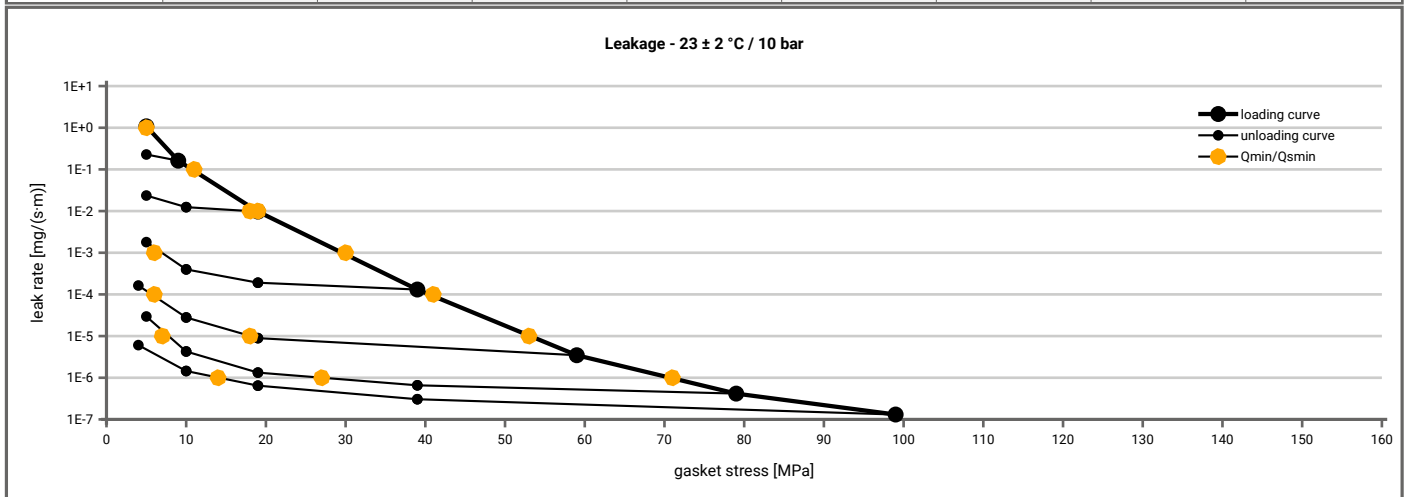
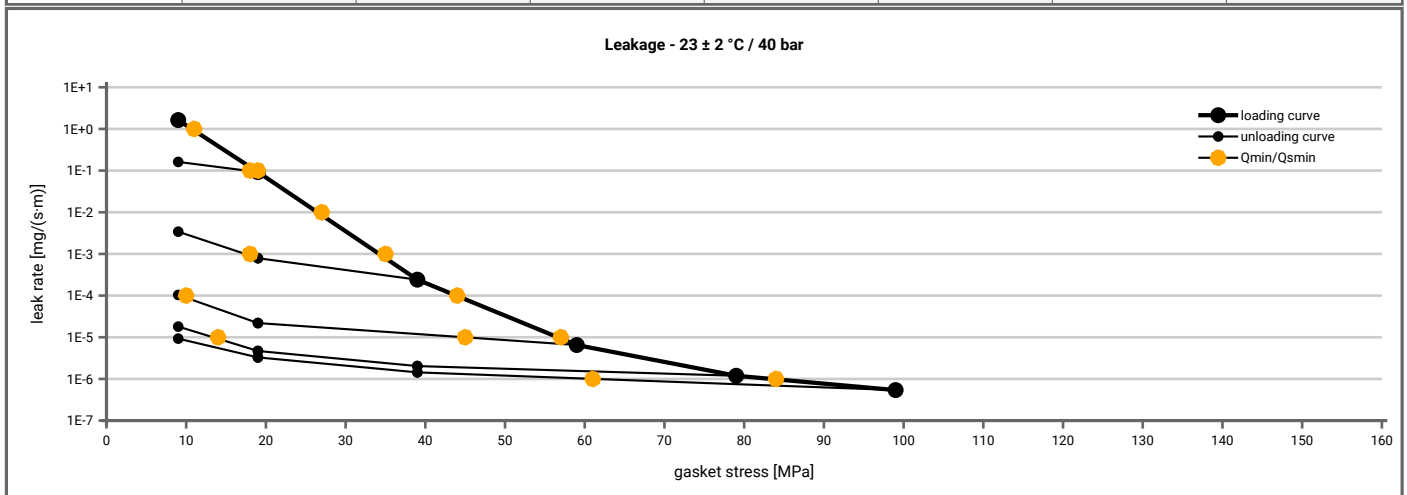


<b>Manufacturer address</b>	KLINGER GmbH, Richard Klinger Str. 37, 65510 Idstein, DE	According to <b>DIN EN 13555</b> <b>2005-2</b>
<b>Product name</b>	KLINGER® top-sil-ML1	
<b>Product dimensions</b>	92 x 49 x 2 mm (DIN EN 1514-1 1997-8)	

Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{smin(L)}$ (after off-loading) for $p = 10$ bar ( $T = 23 \pm 2$ °C)								
L [mg/(s·m)]	$Q_{min(L)}$ [MPa]	$Q_{smin(L)}$ [MPa]						
		$Q_A = 5$ [MPa]	$Q_A = 10$ [MPa]	$Q_A = 20$ [MPa]	$Q_A = 40$ [MPa]	$Q_A = 60$ [MPa]	$Q_A = 80$ [MPa]	$Q_A = 100$ [MPa]
1E+1	5		5	5	5	5	5	5
1E-0	5		5	5	5	5	5	5
1E-1	12			5	5	5	5	5
1E-2	20			19	5	5	5	5
1E-3	30				7	5	5	5
1E-4	41					6	5	5
1E-5	54					19	8	5
1E-6	71						28	15
1E-7								
1E-8								



Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{smin(L)}$ (after off-loading) for $p = 40$ bar ( $T = 23 \pm 2$ °C)								
L [mg/(s·m)]	$Q_{min(L)}$ [MPa]	$Q_{smin(L)}$ [MPa]						
		$Q_A = 10$ [MPa]	$Q_A = 20$ [MPa]	$Q_A = 40$ [MPa]	$Q_A = 60$ [MPa]	$Q_A = 80$ [MPa]	$Q_A = 100$ [MPa]	
1E+1	10		10	10	10	10	10	10
1E-0	12		10	10	10	10	10	10
1E-1	20		18	10	10	10	10	10
1E-2	27			10	10	10	10	10
1E-3	35			18	10	10	10	10
1E-4	45				10	10	10	10
1E-5	57				46	14	10	10
1E-6	84							62
1E-7								
1E-8								



Note: the content of darkened cells was not determined respectively is unnecessary Rev.-No.: 1 Creation date of this sheet: 2012-07-05

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<b>Product name</b>	KLINGER® top-sil-ML1	
<b>Product dimensions</b>	92 x 49 x 2 mm (DIN EN 1514-1 1997-8)	

Relaxation ratio $P_{QR}$ for stiffness $C = 500$ [kN/mm]												
Gasket stress	23 ± 2 °C		Temperature 1 [100 °C]		Temperature 2 [175 °C]		Temperature 3 [200 °C]		Temperature 4 [250 °C]		Temperature 5 [300 °C]	
	$P_{QR}$	$\Delta e_{Gc}$ [µm]	$P_{QR}$	$\Delta e_{Gc}$ [µm]	$P_{QR}$	$\Delta e_{Gc}$ [µm]	$P_{QR}$	$\Delta e_{Gc}$ [µm]	$P_{QR}$	$\Delta e_{Gc}$ [µm]	$P_{QR}$	$\Delta e_{Gc}$ [µm]
Stress level 1 [30 MPa]	0.95	13	0.85	39	0.80	52	0.80	50	0.76	60	0.73	69
Stress level 2 [50 MPa]	0.96	19	0.91	40	0.87	57	0.85	63	0.82	78	0.78	92
$P_{QR}$ and $\Delta e_{Gc}$ at maximum gasket stress to be applied $Q_{smax}$												
$P_{QR}$ at $Q_{smax}$	0.99	13	0.92	107	0.81	229	0.80	241	0.75	294	0.80	134
$Q_{smax}$	160 MPa		160 MPa		140 MPa		140 MPa		140 MPa		80 MPa	

Sekant unloading modulus of the gasket $E_G$ [MPa] and gasket thickness $e_g$ [mm]												
Gasket stress [MPa]	23 ± 2 °C		Temperature 1 [100 °C]		Temperature 2 [175 °C]		Temperature 3 [200 °C]		Temperature 4 [250 °C]		Temperature 5 [300 °C]	
	$E_G$ [MPa]	$e_g$ [mm]	$E_G$ [MPa]	$e_g$ [mm]	$E_G$ [MPa]	$e_g$ [mm]	$E_G$ [MPa]	$e_g$ [mm]	$E_G$ [MPa]	$e_g$ [mm]	$E_G$ [MPa]	$e_g$ [mm]
0	0	1.952	0	1.952	0	2.029	0	1.954	0	1.939	0	1.977
1	0	1.952	0	1.952	0	2.029	0	1.954	0	1.939	0	1.977
20	1281	1.831	1650	1.797	2509	1.847	2524	1.755	3452	1.740	4046	1.791
30	1684	1.800	2221	1.777	3079	1.832	3148	1.738	5911	1.730	3429	1.779
40	2578	1.779	3080	1.758	3374	1.815	5289	1.724	5010	1.714	3728	1.767
50	4311	1.764	3247	1.740	5206	1.801	9248	1.711	6376	1.703	4674	1.757
60	5287	1.751	3970	1.725	4678	1.785	8515	1.697	9827	1.693	5562	1.747
80	5574	1.727	5758	1.700	5602	1.757	12360	1.673	10462	1.672	5149	1.727
100	7877	1.706	9189	1.677	5403	1.724	16416	1.650	18057	1.652		
120	10775	1.691	6364	1.651	6314	1.681	11991	1.622	11184	1.621		
140	11562	1.678	6960	1.623	5610	1.598	14369	1.597	10472	1.536		
160	10313	1.667	8322	1.596								

