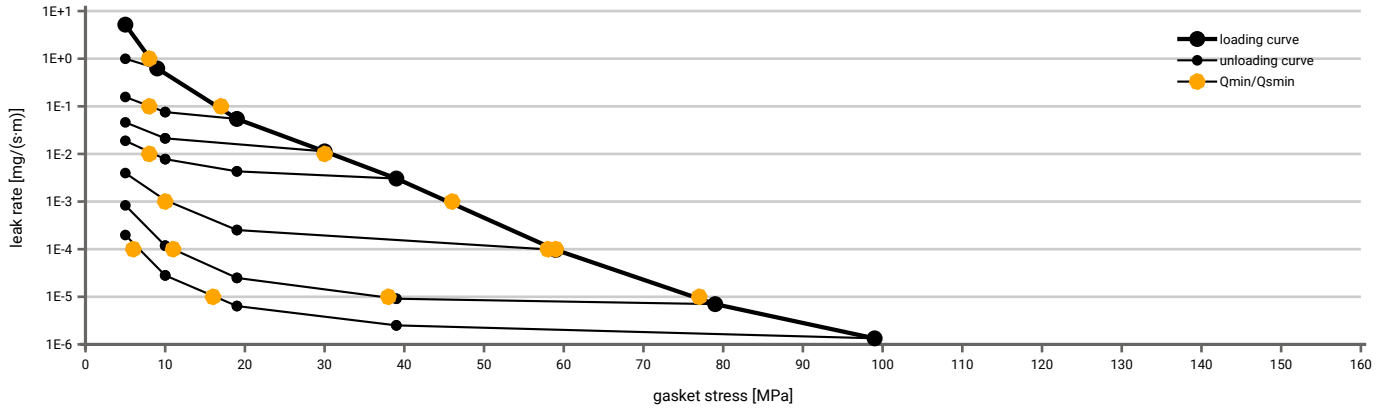
Manufacturer address	KLINGER GmbH, Richard Klinger Str. 37, 65510 Idstein, DE	According to **DIN EN 13555 2005-2**
Product name	KLINGERSIL® C 4509	
Product dimensions	92 x 49 x 2 mm (DIN EN 1514-1 1997-8)	

Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{smin(L)}$ (after off-loading) for p = 16 bar (T = 23 ± 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 = 30 [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	5
1E-0	9		5	5	5	5	5	5	5
1E-1	17			8	5	5	5	5	5
1E-2	31					9	5	5	5
1E-3	46						10	5	5
1E-4	60						58	11	7
1E-5	77							38	17
1E-6									
1E-7									
1E-8									

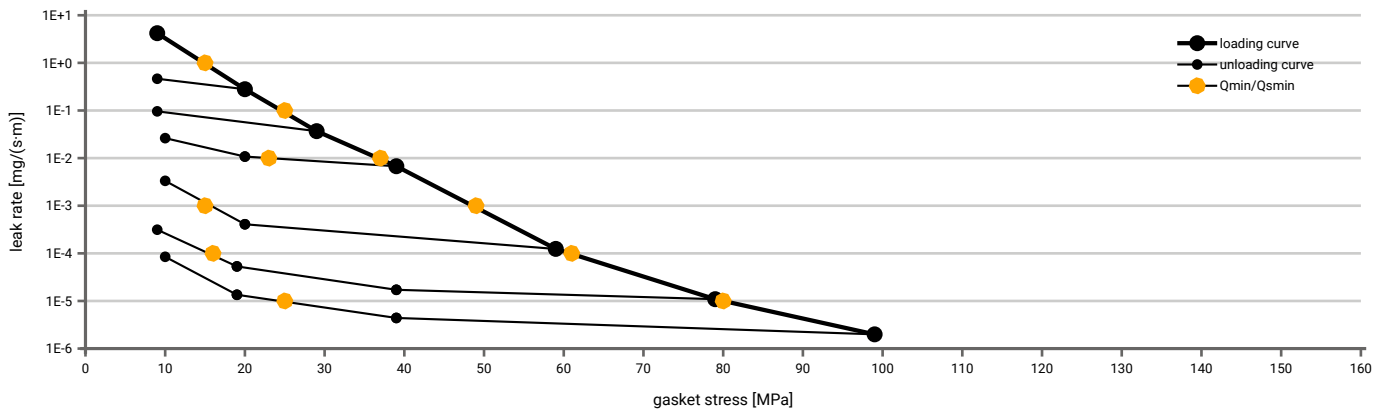
Leakage - 23 ± 2 °C / 16 bar



Minimum stress to seal $Q_{min(L)}$ (at assembly), $Q_{smin(L)}$ (after off-loading) for p = 40 bar (T = 23 ± 2 °C)

L [mg/(s·m)]	$Q_{min(L)}$ [MPa]	$Q_{smin(L)}$ [MPa]						
		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]
1E+1	10		10	10	10	10	10	10
1E-0	15		10	10	10	10	10	10
1E-1	25			10	10	10	10	10
1E-2	38				23	10	10	10
1E-3	49					16	10	10
1E-4	62						16	10
1E-5	81							25
1E-6								
1E-7								
1E-8								

Leakage - 23 ± 2 °C / 40 bar

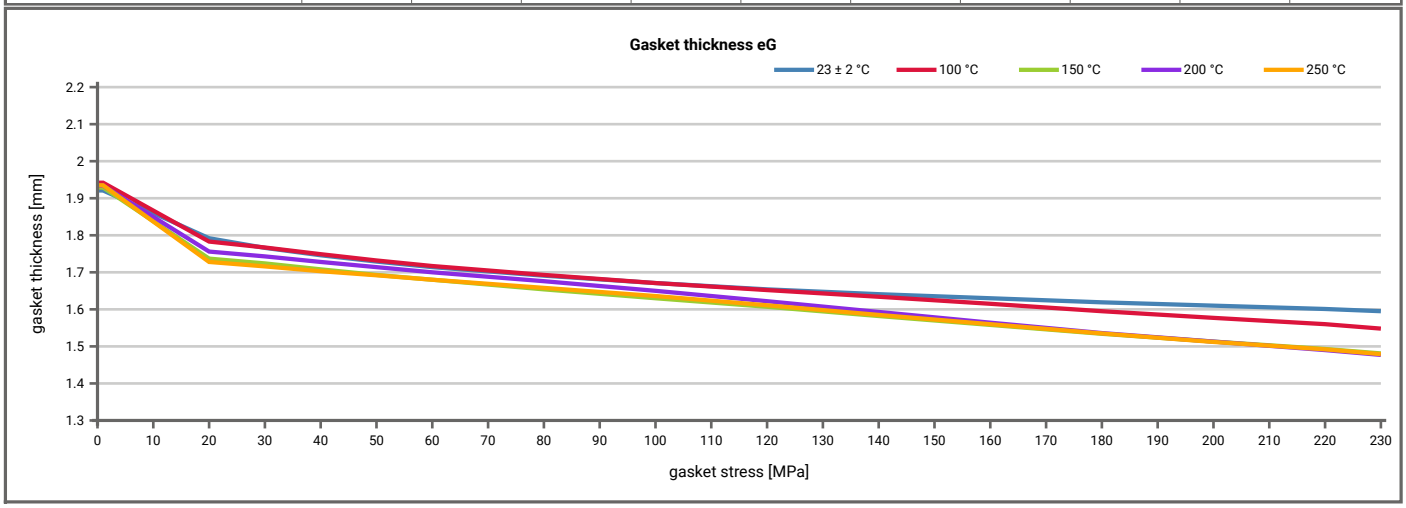


Note: the content of darkened cells was not determined respectively is unnecessary	Rev.-No.: **1**	Creation date of this sheet: **2014-05-16**

Manufacturer address	KLINGER GmbH, Richard Klinger Str. 37, 65510 Idstein, DE	According to **DIN EN 13555 2005-2**
Product name	KLINGERSIL® C 4509	
Product dimensions	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 [150 °C]**		**Temperature 3 [200 °C]**		**Temperature 4 [250 °C]**	
	P_{QR}	**Δe_{Gc} [µm]**	**P_{QR}**	**Δe_{Gc} [µm]**	**P_{QR}**	**Δe_{Gc} [µm]**	**P_{QR}**	**Δe_{Gc} [µm]**	**P_{QR}**	**Δe_{Gc} [µm]**
Stress level 1 [30 MPa]	0.96	10	0.87	33	0.86	37	0.84	42	0.81	49
Stress level 2 [50 MPa]	0.97	13	0.92	36	0.91	38	0.91	40	0.86	59
P_{QR} and Δe_{Gc} at maximum gasket stress to be applied Q_{smax}										
P_{QR} at Q_{smax}	0.99	19	0.94	116	0.90	193	0.88	232	0.85	299
Q_{smax}	230 MPa		230 MPa		230 MPa		230 MPa		230 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 [150 °C]**		**Temperature 3 [200 °C]**		**Temperature 4 [250 °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]**
0	0	1.921	0	1.942	0	1.929	0	1.934	0	1.935
1	0	1.921	0	1.942	0	1.929	0	1.934	0	1.935
20	1210	1.792	1292	1.783	1484	1.737	1573	1.756	2032	1.728
30	1825	1.766	1919	1.767	2035	1.724	2101	1.743	2726	1.716
40	2440	1.746	2430	1.749	2346	1.708	2494	1.728	3127	1.703
50	3070	1.729	2861	1.732	2747	1.693	2854	1.714	3494	1.692
60	3638	1.714	3392	1.717	3244	1.680	3295	1.700	3787	1.680
80	4795	1.691	4287	1.693	4064	1.654	3937	1.676	4149	1.658
100	5747	1.671	5068	1.671	4619	1.630	4368	1.650	4642	1.636
120	6570	1.654	5602	1.652	5032	1.607	4696	1.622	4729	1.611
140	7383	1.641	6050	1.634	5368	1.582	4922	1.593	5093	1.585
160	7840	1.630	6494	1.615	5684	1.558	5089	1.564	5380	1.560
180	8223	1.619	6569	1.595	5728	1.534	5222	1.536	5552	1.535
200	8643	1.610	6828	1.577	6066	1.513	5529	1.513	5727	1.512
220	8984	1.601	7173	1.560	6149	1.493	5620	1.490	6092	1.492
230	8882	1.595	7138	1.548	6320	1.481	5669	1.477	6056	1.479



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