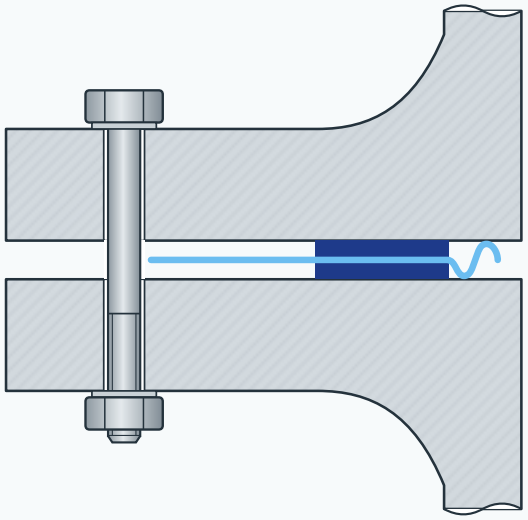
Revoseal Eco+ Data Sheet

Metallic flat-profile gasket with resilient sealing tooth – only 1.6 mm thick.



PRODUCT DESCRIPTION

The revoseal Eco+ consists of a solid metal carrier faced on both sides with a narrow graphite or PTFE layer. A resilient tooth embossed on the media side creates a metal-to-metal seal against both flange faces. This resilient tooth absorbs alternating loads caused by pressure and temperature fluctuations without plastic deformation. Unlike kammprofile gaskets, for example, the bolts do not need to be retightened when the plant is started up.

KEY BENEFITS

- **Virtually zero emissions thanks to metal-to-metal contact**
- **No bolt retightening required**
- **Resilient under cyclic pressure and temperature loads**

TECHNICAL DATA

Design	Metallic flat-profile gasket with resilient tooth
Operating temperature	−270 °C to +500 °C max. +260 °C with PTFE facing
Operating pressure	Vacuum to 160 bar (ASME Class 900)
Total thickness	1.6 mm (± 0.1 mm)
Carrier material	1.4571 as standard, other materials on request
Facing	Graphite or PTFE, both sides
Tightness	Exceeds TA Luft requirements
Gasket characteristics	Tested to EN 13555 – see pages 2 to 6
Versions	revoseal Visio: additional resilient tooth on the atmosphere side Visio also available with pass-partition bars for apparatus
Applications	Steam and condensate, e.g. in steam reformers · volatile gases, e.g. hydrogen · plants with pressure and temperature cycling

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Gasket characteristics to EN 13555

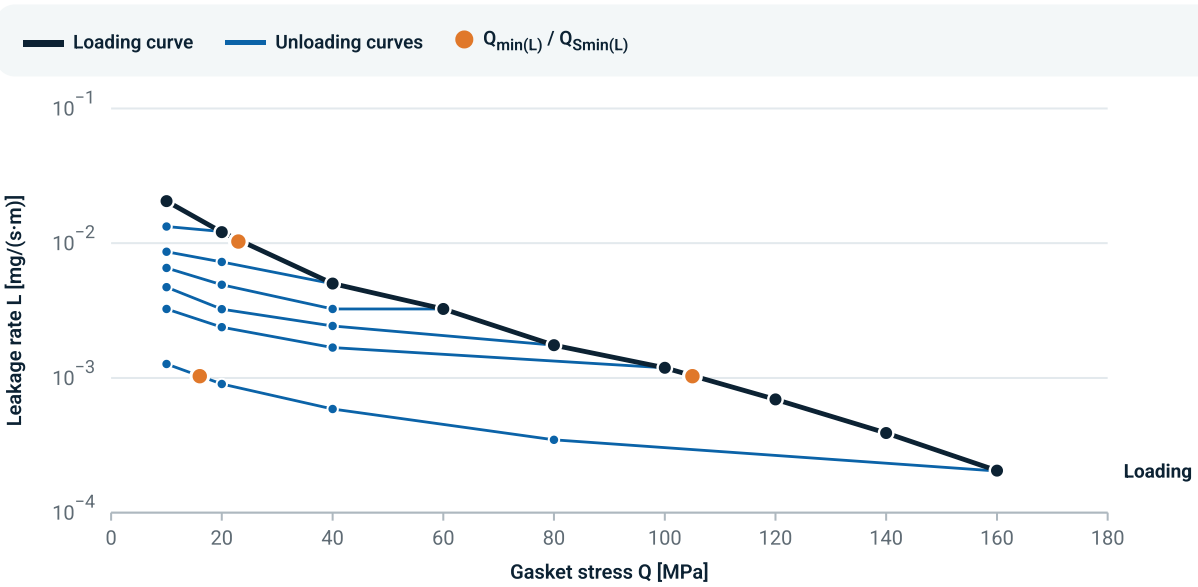
Eco+ with graphite, 1.6 mm

MANUFACTURER	PRODUCT NAME	PRODUCT DIMENSIONS
revoseal Europe GmbH	Eco+ with graphite	77 × 65 × 1.6 mm (DIN EN 1514-4:1997-08)
TESTED TO	**REV. NO.**	**DATE OF ISSUE**
EN 13555:2014-07	1	2017-09-06

1 Minimum gasket stress $Q_{min(L)}$ (at assembly) and $Q_{Smin(L)}$ (after unloading) for p = 10 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 = 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}	**24**			10	10	10	10			10
10^{-3}	**106**									16
10^{-4}										
10^{-5}										
10^{-6}										
10^{-7}										
10^{-8}										

Leakage – 23 ± 2 °C / 10 bar



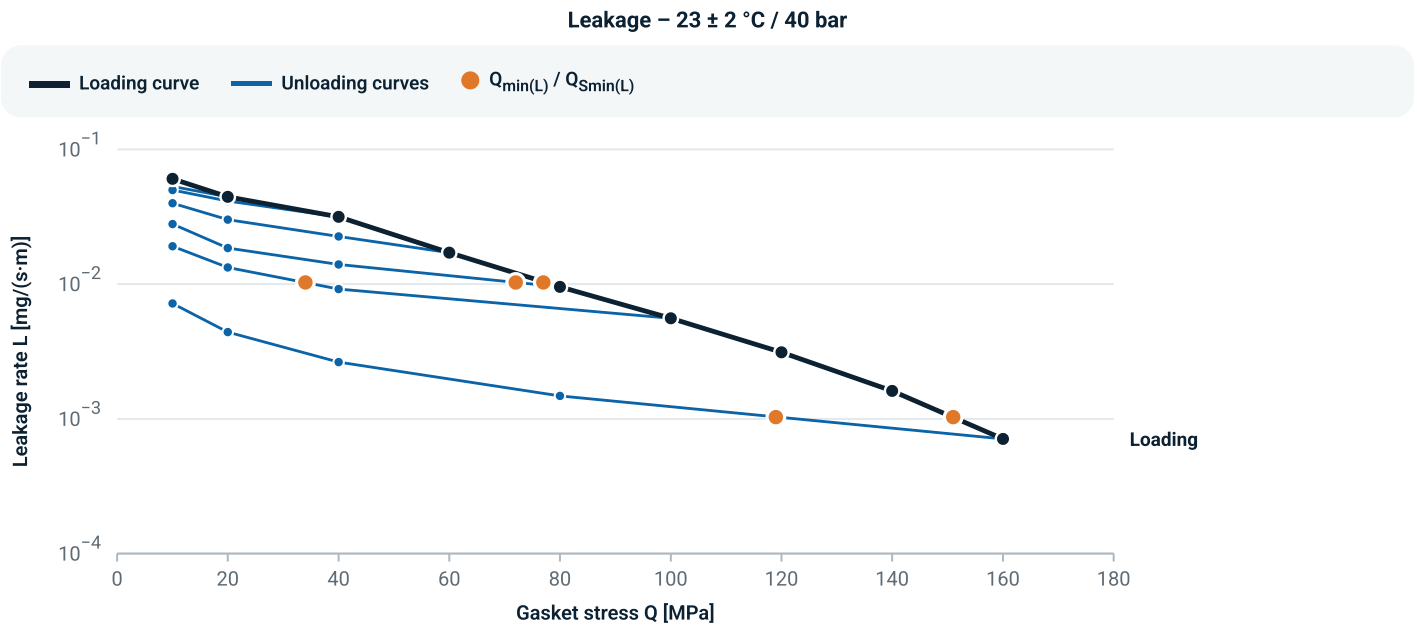
Shaded cells: not determined or not required. Rev. no.: 1 · Test report issued: 2017-09-06 · Center of Sealing Technologies, Bürgerkamp 3, 48565 Steinfurt, Germany

Gasket characteristics to EN 13555

Leakage at 40 bar internal pressure

2 Minimum gasket stress $Q_{min(L)}$ (at assembly) and $Q_{Smin(L)}$ (after unloading) 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 = 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}	**78**					72	34			10
10^{-3}	**151**									120
10^{-4}										
10^{-5}										
10^{-6}										
10^{-7}										
10^{-8}										



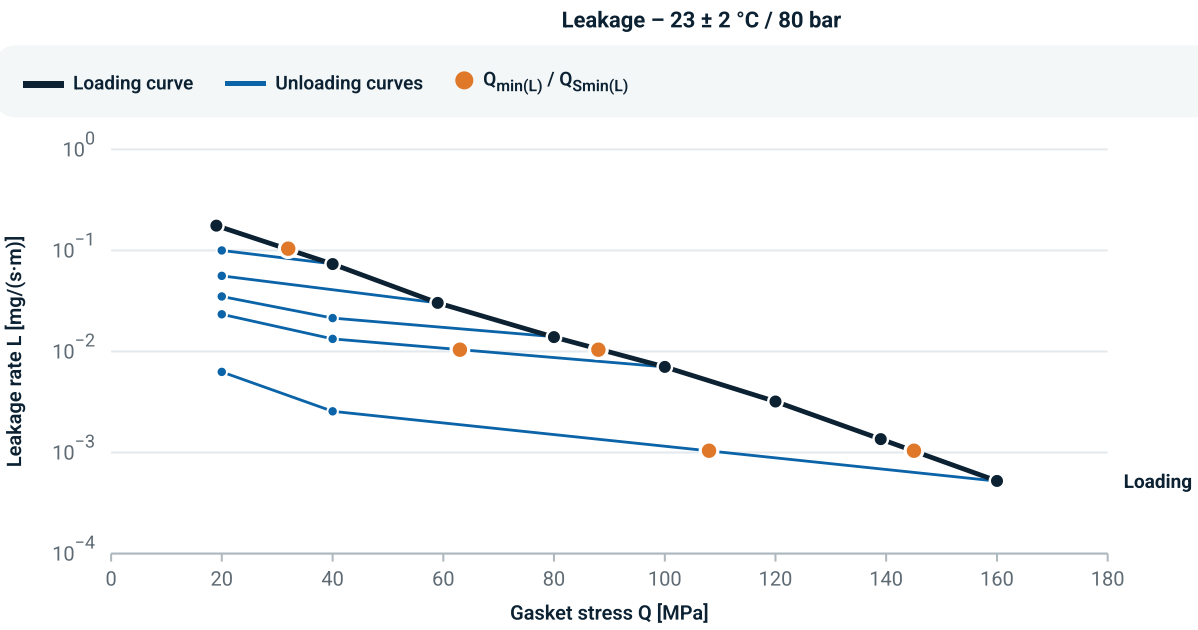
Shaded cells: not determined or not required. Rev. no.: 1 · Test report issued: 2017-09-06 · Center of Sealing Technologies, Bürgerkamp 3, 48565 Steinfurt, Germany

Gasket characteristics to EN 13555

Leakage at 80 bar internal pressure

3 Minimum gasket stress $Q_{min(L)}$ (at assembly) and $Q_{Smin(L)}$ (after unloading) for p = 80 bar (T = 23 ± 2 °C)

L [mg/(s·m)]	$Q_{min(L)}$ [MPa]	$Q_{Smin(L)}$ [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	**20**		20	20	20	20			20
10^{-1}	**32**		20	20	20	20			20
10^{-2}	**89**					63			20
10^{-3}	**146**								108
10^{-4}									
10^{-5}									
10^{-6}									
10^{-7}									
10^{-8}									



4 Creep relaxation factor P_{QR} at stiffness C = 500 kN/mm

Gasket stress	23 ± 2 °C		200 °C		400 °C	
	P_{QR}	Δe_{Gc} [µm]	P_{QR}	Δe_{Gc} [µm]	P_{QR}	Δe_{Gc} [µm]
Stress level 1 [90 MPa]	1.00	0	0.94	16	0.91	22
Stress level 2 [150 MPa]	1.00	0	0.95	20	0.94	24
P_{QR} and Δe_{Gc} at maximum permissible gasket stress Q_{Smax}						
P_{QR} at Q_{Smax}	1.00	0	0.98	27	0.98	20
Q_{Smax}	**500 MPa**		**500 MPa**		**380 MPa**	

Shaded cells: not determined or not required. Rev. no.: 1 · Test report issued: 2017-09-06 · Center of Sealing Technologies, Bürgerkamp 3, 48565 Steinfurt, Germany

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Gasket characteristics to EN 13555

Unloading modulus and gasket thickness

5 Secant unloading modulus of the gasket E_G [MPa] and gasket thickness e_G [mm]

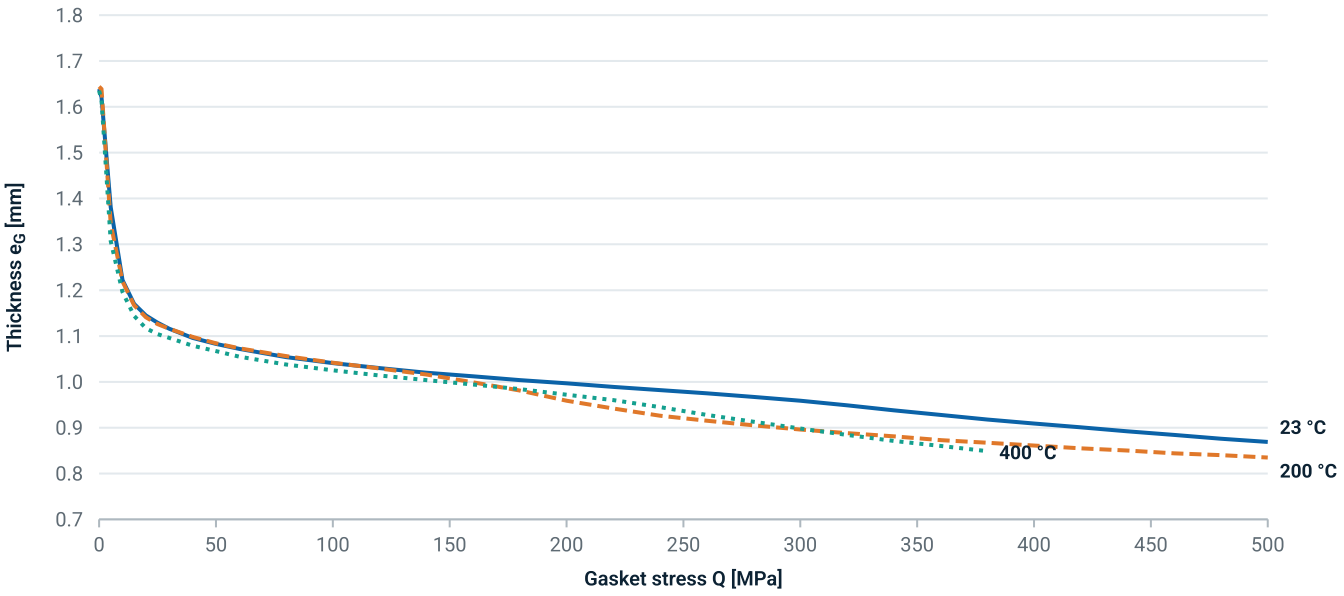
Gasket stress [MPa]	23 ± 2 °C		200 °C		400 °C	
	E_G [MPa]	e_G [mm]	E_G [MPa]	e_G [mm]	E_G [MPa]	e_G [mm]
0	0	1.639	0	1.644	0	1.635
1	0	1.621	0	1.639	0	1.615
5	133	1.381	151	1.345	144	1.307
10	351	1.222	384	1.219	272	1.196
15	630	1.170	706	1.167	548	1.144
20	981	1.145	1,268	1.141	1,058	1.117
25	1,314	1.129	2,079	1.126	2,096	1.104
30	1,657	1.116	3,223	1.116	5,203	1.096
40	2,464	1.096	6,945	1.098	16,065	1.079
50	3,161	1.083	8,701	1.084	22,407	1.067
60	3,852	1.072	8,564	1.073	23,201	1.055
80	5,228	1.054	10,118	1.056	25,122	1.038
100	6,827	1.041	10,368	1.042	27,852	1.025
120	7,786	1.030	10,962	1.029	31,915	1.014
140	8,210	1.020	10,819	1.016	21,609	1.004
160	8,913	1.012	10,392	0.999	21,156	0.994
180	9,672	1.004	11,425	0.981	18,564	0.984
200	10,073	0.997	11,159	0.959	17,067	0.972
220	10,259	0.989	11,150	0.942	15,335	0.960
240	10,625	0.982	11,707	0.926	14,948	0.945
260	10,790	0.975	12,686	0.915	13,692	0.928
280	11,111	0.967	12,461	0.905	15,558	0.913
300	11,652	0.959	13,715	0.896	14,249	0.898
320	12,113	0.949	14,040	0.888	14,706	0.884
340	12,434	0.938	15,171	0.881	16,248	0.871
360	12,942	0.928	14,489	0.873	16,494	0.860
380	13,557	0.918	15,463	0.867	17,793	0.849
400	14,476	0.909	16,445	0.861		
420	15,330	0.901	16,582	0.855		
440	15,757	0.892	17,606	0.850		
460	16,129	0.884	18,032	0.844		
480	17,035	0.876	18,983	0.840		
500	17,601	0.869	19,247	0.835		

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Gasket characteristics to EN 13555

Gasket thickness e_G

6 Gasket thickness e_G vs. gasket stress at 23, 200 and 400 °C



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BOLTED FLANGE JOINT CALCULATION

Based on these characteristics, we calculate your bolted flange joint to EN 1591-1 – free of charge.

All data are typical values and do not replace a case-specific design. Subject to technical change.