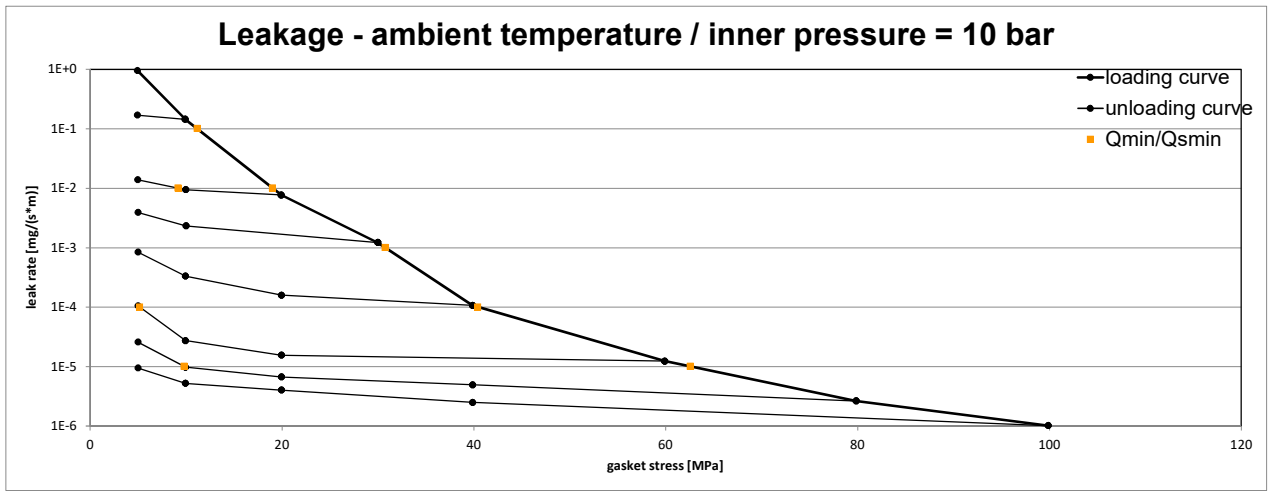
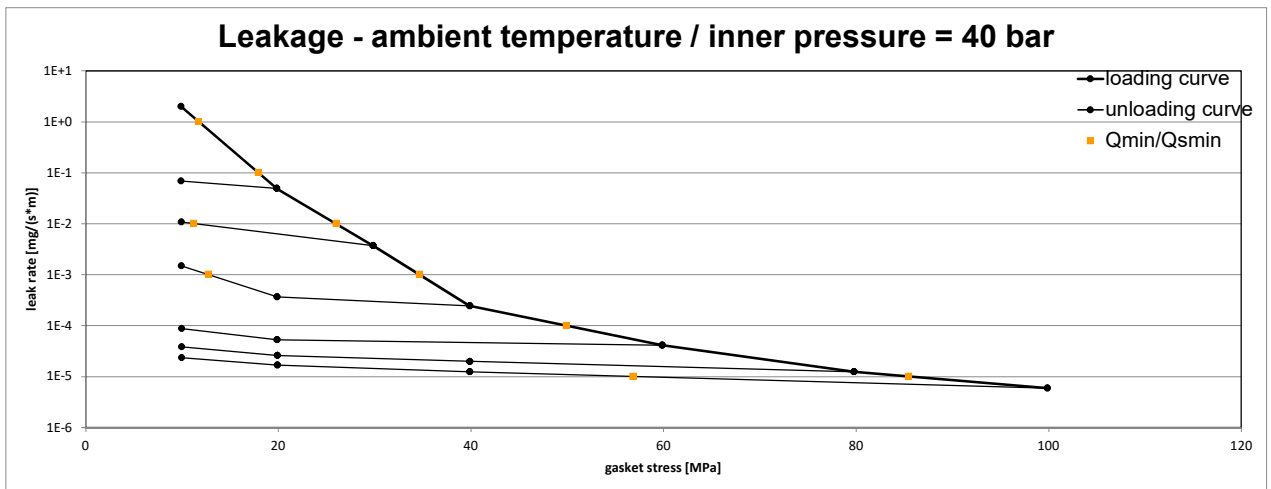


|                                 |   |  |
|---------------------------------|---|--|
| Company Address                 | KLINGER GmbH, Richard-Klinger-Straße 37, 65510 Idstein, Germany | According to<br><b>DIN EN 13555</b><br>2014-07 |
| Gasket Type                     | KLINGER® top-chem2000soft                                       |  |
| Sealing element dimensions [mm] | 92 x 49 x 2   |  |

| L [mg/(s*m)]     | Q <sub>minL</sub> [MPa] | Minimum stress to seal Q <sub>minL</sub> (at assembly), Q <sub>SminL</sub> (after off-loading) for p = 10 bar |                         |                         |                         |                         |                         |                          |  |
|------------------|-------------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--|
|                  |                         | Q <sub>SminL</sub> [MPa]  |                         |                         |                         |                         |                         |                          |  |
|                  |                         | Q <sub>A</sub> = 10 MPa   | Q <sub>A</sub> = 20 MPa | Q <sub>A</sub> = 30 MPa | Q <sub>A</sub> = 40 MPa | Q <sub>A</sub> = 60 MPa | Q <sub>A</sub> = 80 MPa | Q <sub>A</sub> = 100 MPa |  |
| 10 <sup>0</sup>  | 5                       | 5   | 5                       | 5                       | 5                       | 5                       | 5                       | 5                        |  |
| 10 <sup>-1</sup> | 11                      |   | 5                       | 5                       | 5                       | 5                       | 5                       | 5                        |  |
| 10 <sup>-2</sup> | 19                      |   | 9                       | 5                       | 5                       | 5                       | 5                       | 5                        |  |
| 10 <sup>-3</sup> | 31                      |   |                         |                         | 5                       | 5                       | 5                       | 5                        |  |
| 10 <sup>-4</sup> | 40                      |   |                         |                         |                         | 5                       | 5                       | 5                        |  |
| 10 <sup>-5</sup> | 63                      |   |                         |                         |                         |                         | 10                      | 5                        |  |
| 10 <sup>-6</sup> |                         |   |                         |                         |                         |                         |                         |                          |  |
| 10 <sup>-7</sup> |                         |   |                         |                         |                         |                         |                         |                          |  |
| 10 <sup>-8</sup> |                         |   |                         |                         |                         |                         |                         |                          |  |



| L [mg/(s*m)]     | Q <sub>minL</sub> [MPa] | Minimum stress to seal Q <sub>minL</sub> (at assembly), Q <sub>SminL</sub> (after off-loading) for p = 40 bar |                         |                         |                         |                         |                          |  |
|------------------|-------------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--|
|                  |                         | Q <sub>SminL</sub> [MPa]  |                         |                         |                         |                         |                          |  |
|                  |                         | Q <sub>A</sub> = 20 MPa   | Q <sub>A</sub> = 30 MPa | Q <sub>A</sub> = 40 MPa | Q <sub>A</sub> = 60 MPa | Q <sub>A</sub> = 80 MPa | Q <sub>A</sub> = 100 MPa |  |
| 10 <sup>0</sup>  | 12                      | 10  | 10                      | 10                      | 10                      | 10                      | 10                       |  |
| 10 <sup>-1</sup> | 18                      | 10  | 10                      | 10                      | 10                      | 10                      | 10                       |  |
| 10 <sup>-2</sup> | 26                      |   | 11                      | 10                      | 10                      | 10                      | 10                       |  |
| 10 <sup>-3</sup> | 35                      |   |                         | 13                      | 10                      | 10                      | 10                       |  |
| 10 <sup>-4</sup> | 50                      |   |                         |                         | 10                      | 10                      | 10                       |  |
| 10 <sup>-5</sup> | 85                      |   |                         |                         |                         |                         | 57                       |  |
| 10 <sup>-6</sup> |                         |   |                         |                         |                         |                         |                          |  |
| 10 <sup>-7</sup> |                         |   |                         |                         |                         |                         |                          |  |
| 10 <sup>-8</sup> |                         |   |                         |                         |                         |                         |                          |  |

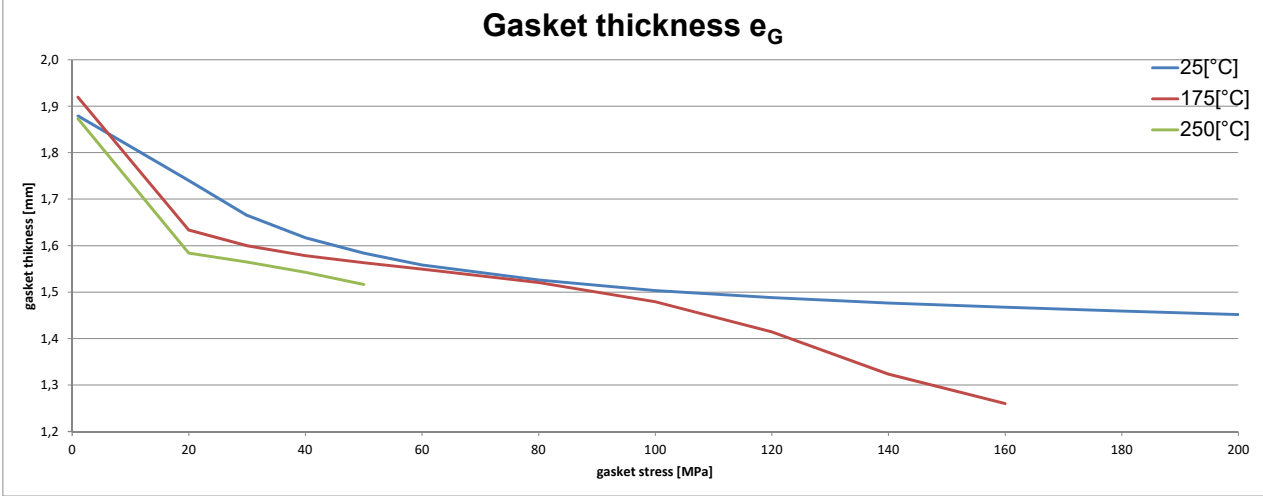


Note: the content of darkened cells was not determined respectively is unnecessary      Rev - No: 2      Creation date of this sheet: 2017-09-27

|                                 |   |  |
|---------------------------------|---|--|
| Company Address                 | KLINGER GmbH, Richard-Klinger-StraÙe 37, 65510 Idstein, Germany | According to<br><b>DIN EN 13555</b><br>2014-07 |
| Gasket Type                     | KLINGER® top-chem2000soft                                       |  |
| Sealing element dimensions [mm] | 92 x 49 x 2   |  |

| Relaxation ratio $P_{QR}$ for stiffness $C = 500$ kN/mm                                    |                       |                      |                        |                      |                        |                      |          |                      |          |                      |
|--|-----------------------|----------------------|------------------------|----------------------|------------------------|----------------------|----------|----------------------|----------|----------------------|
| Gasket stress  | temperature 1 [25 °C] |                      | temperature 2 [175 °C] |                      | temperature 3 [250 °C] |                      |          |                      |          |                      |
|  | $P_{QR}$              | $\Delta e_{Gc}$ [mm] | $P_{QR}$               | $\Delta e_{Gc}$ [mm] | $P_{QR}$               | $\Delta e_{Gc}$ [mm] | $P_{QR}$ | $\Delta e_{Gc}$ [mm] | $P_{QR}$ | $\Delta e_{Gc}$ [mm] |
| Stress level 1 [30 MPa]  | 0.92                  | 0.021                | 0.70                   | 0.076                | 0.67                   | 0.083                |          |                      |          |                      |
| Stress level 2 [50 MPa]  | 0.95                  | 0.021                | 0.87                   | 0.055                |                        |                      |          |                      |          |                      |
|  |                       |                      |                        |                      |                        |                      |          |                      |          |                      |
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|  |                       |                      |                        |                      |                        |                      |          |                      |          |                      |
| P <sub>QR</sub> and Δe <sub>Gc</sub> at maximal applicable gasket stress Q <sub>Smax</sub> |                       |                      |                        |                      |                        |                      |          |                      |          |                      |
| P <sub>QR</sub> at Q <sub>Smax</sub>   | 0.99                  | 0.017                | 0.83                   | 0.235                | 0.85                   | 0.063                |          |                      |          |                      |
| Q <sub>Smax</sub>  | 200 MPa               |                      | 160 MPa                |                      | 50 MPa                 |                      |          |                      |          |                      |

| Sekant unloading modulus of the gasket E <sub>G</sub> [MPa] and gasket thickness e <sub>G</sub> [mm] |                       |                     |                        |                     |                        |                     |                      |                     |                      |                     |
|--|-----------------------|---------------------|------------------------|---------------------|------------------------|---------------------|----------------------|---------------------|----------------------|---------------------|
| Gasket stress [MPa]  | temperature 1 [25 °C] |                     | temperature 2 [175 °C] |                     | temperature 3 [250 °C] |                     |                      |                     |                      |                     |
|  | E <sub>G</sub> [MPa]  | e <sub>G</sub> [mm] | E <sub>G</sub> [MPa]   | e <sub>G</sub> [mm] | E <sub>G</sub> [MPa]   | e <sub>G</sub> [mm] | E <sub>G</sub> [MPa] | e <sub>G</sub> [mm] | E <sub>G</sub> [MPa] | e <sub>G</sub> [mm] |
| 0  |                       | 2.000               |                        | 2.000               |                        | 2.000               |                      |                     |                      |                     |
| 1  |                       | 1.879               |                        | 1.920               |                        | 1.873               |                      |                     |                      |                     |
| 20   | 2655                  | 1.740               | 1982                   | 1.634               | 1628                   | 1.584               |                      |                     |                      |                     |
| 30   | 3714                  | 1.665               | 3290                   | 1.600               | 2364                   | 1.565               |                      |                     |                      |                     |
| 40   | 4897                  | 1.617               | 3987                   | 1.579               | 2711                   | 1.543               |                      |                     |                      |                     |
| 50   | 6049                  | 1.584               | 4406                   | 1.563               | 2921                   | 1.517               |                      |                     |                      |                     |
| 60   | 6656                  | 1.559               | 4974                   | 1.550               |                        |                     |                      |                     |                      |                     |
| 80   | 8547                  | 1.526               | 4875                   | 1.521               |                        |                     |                      |                     |                      |                     |
| 100  | 9491                  | 1.504               | 5502                   | 1.479               |                        |                     |                      |                     |                      |                     |
| 120  | 10293                 | 1.488               | 5392                   | 1.414               |                        |                     |                      |                     |                      |                     |
| 140  | 10665                 | 1.477               | 5361                   | 1.324               |                        |                     |                      |                     |                      |                     |
| 160  | 11019                 | 1.468               | 5307                   | 1.260               |                        |                     |                      |                     |                      |                     |
| 180  | 10974                 | 1.460               |                        |                     |                        |                     |                      |                     |                      |                     |
| 200  | 10856                 | 1.452               |                        |                     |                        |                     |                      |                     |                      |                     |
|  |                       |                     |                        |                     |                        |                     |                      |                     |                      |                     |
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