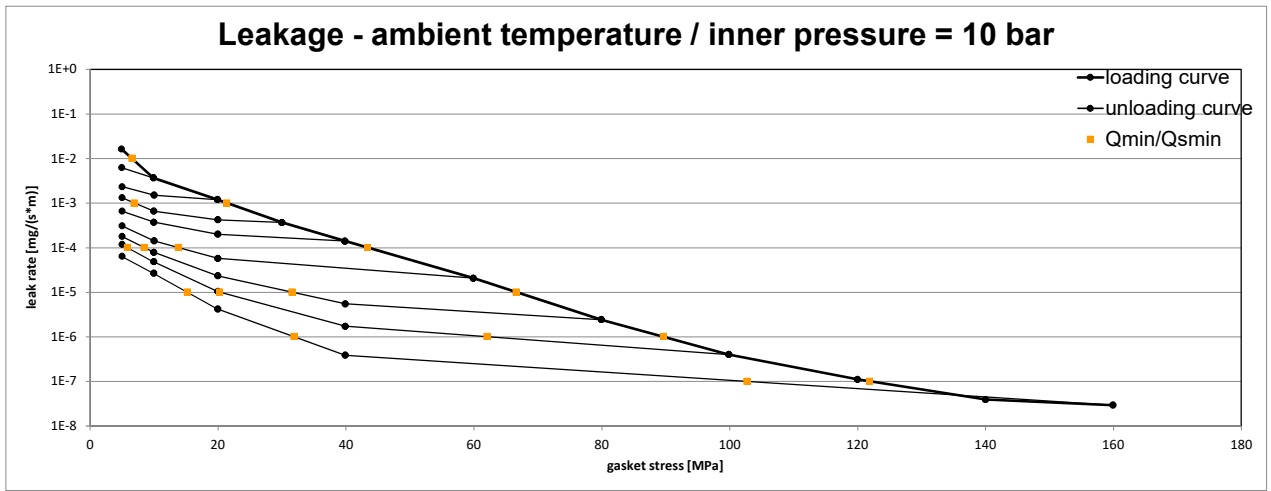
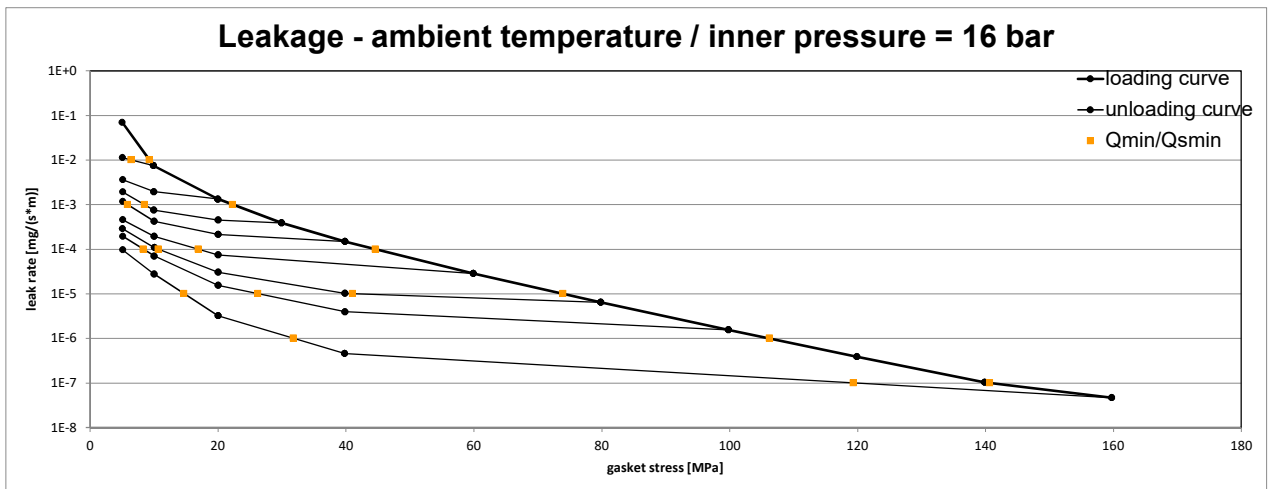


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|---------------------------------|--|--|
| Company Address | SGL Group - The Carbon Company Werner-von-Siemens-Str. 18, 86405 Meitingen, Germany | According to DIN EN 13555 2014-07 |
| Gasket Type | Sigraflex Hochdruck Pro V30011Z3IP | |
| Sealing element dimensions [mm] | 92 x 49 x 3 | |

| L [mg/(s*m)] | Q _{min/L} [MPa] | Minimum stress to seal Q _{min/L} (at assembly), Q _{Smin/L} (after off-loading) for p = 10 bar | | | | | | | | | |
|------------------|--------------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | 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 | Q _A = 120 MPa | Q _A = 140 MPa | Q _A = 160 MPa |
| 10 ⁰ | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻¹ | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻² | 7 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻³ | 21 | | | 7 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻⁴ | 43 | | | | | 14 | 8 | 6 | | | 5 |
| 10 ⁻⁵ | 67 | | | | | | 32 | 20 | | | 15 |
| 10 ⁻⁶ | 90 | | | | | | | 62 | | | 32 |
| 10 ⁻⁷ | 122 | | | | | | | | | | 103 |
| 10 ⁻⁸ | | | | | | | | | | | |



| L [mg/(s*m)] | Q _{min/L} [MPa] | Minimum stress to seal Q _{min/L} (at assembly), Q _{Smin/L} (after off-loading) for p = 16 bar | | | | | | | | | |
|------------------|--------------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | 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 | Q _A = 120 MPa | Q _A = 140 MPa | Q _A = 160 MPa |
| 10 ⁰ | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻¹ | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻² | 9 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻³ | 22 | | | 9 | 6 | 5 | 5 | 5 | | | 5 |
| 10 ⁻⁴ | 45 | | | | | 17 | 11 | 8 | | | 5 |
| 10 ⁻⁵ | 74 | | | | | | 41 | 26 | | | 15 |
| 10 ⁻⁶ | 106 | | | | | | | | | | 32 |
| 10 ⁻⁷ | 141 | | | | | | | | | | 119 |
| 10 ⁻⁸ | | | | | | | | | | | |

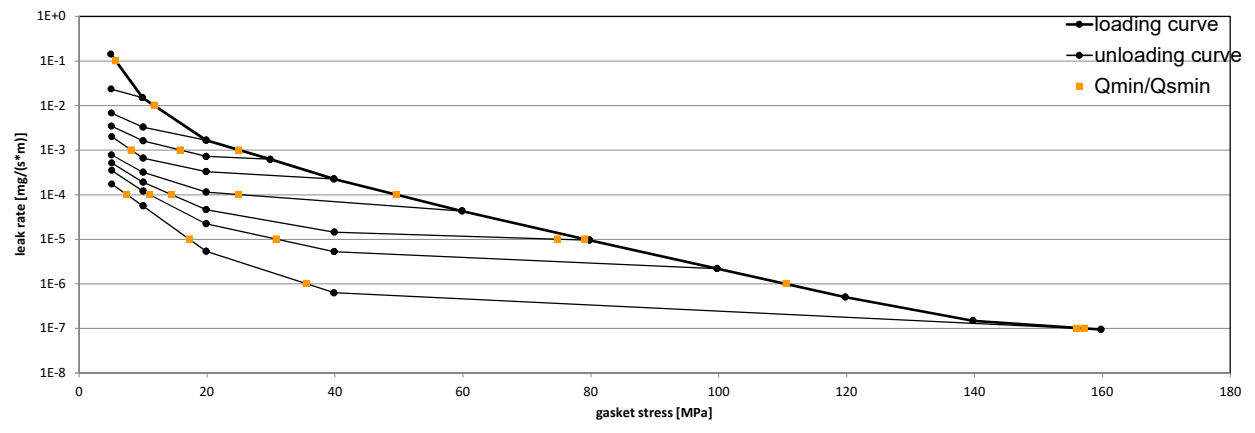


Note: the content of darkened cells was not determined respectively is unnecessary Rev - No: 4 Creation date of this sheet: 2019-03-12

| | | |
|---------------------------------|--|--|
| Company Address | SGL Group - The Carbon Company Werner-von-Siemens-Str. 18, 86405 Meitingen, Germany | According to DIN EN 13555 2014-07 |
| Gasket Type | Sigraflex Hochdruck Pro V30011Z3IP | |
| Sealing element dimensions [mm] | 92 x 49 x 3 | |

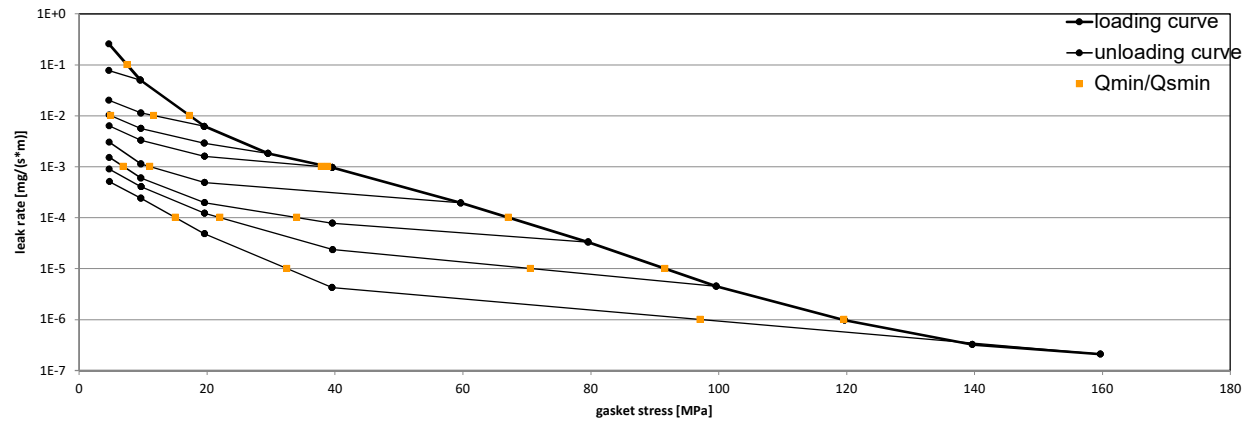
| L [mg/(s*m)] | Q _{min/L} [MPa] | Minimum stress to seal Q _{min/L} (at assembly), Q _{Smin/L} (after off-loading) for p = 25 bar | | | | | | | | | |
|------------------|--------------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | 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 | Q _A = 120 MPa | Q _A = 140 MPa | Q _A = 160 MPa |
| 10 ⁰ | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻¹ | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻² | 12 | | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻³ | 25 | | | 16 | 8 | 5 | 5 | 5 | | | 5 |
| 10 ⁻⁴ | 50 | | | | | 25 | 14 | 11 | | | 7 |
| 10 ⁻⁵ | 79 | | | | | | 75 | 31 | | | 17 |
| 10 ⁻⁶ | 111 | | | | | | | | | | 36 |
| 10 ⁻⁷ | 157 | | | | | | | | | | 156 |
| 10 ⁻⁸ | | | | | | | | | | | |

Leakage - ambient temperature / inner pressure = 25 bar



| L [mg/(s*m)] | Q _{min/L} [MPa] | Minimum stress to seal Q _{min/L} (at assembly), Q _{Smin/L} (after off-loading) for p = 40 bar | | | | | | | | | |
|------------------|--------------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | 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 | Q _A = 120 MPa | Q _A = 140 MPa | Q _A = 160 MPa |
| 10 ⁰ | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻¹ | 8 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻² | 17 | | 12 | 5 | 5 | 5 | 5 | 5 | | | 5 |
| 10 ⁻³ | 39 | | | | 38 | 11 | 7 | 5 | | | 5 |
| 10 ⁻⁴ | 67 | | | | | | 34 | 22 | | | 15 |
| 10 ⁻⁵ | 92 | | | | | | | 71 | | | 33 |
| 10 ⁻⁶ | 120 | | | | | | | | | | 97 |
| 10 ⁻⁷ | | | | | | | | | | | |
| 10 ⁻⁸ | | | | | | | | | | | |

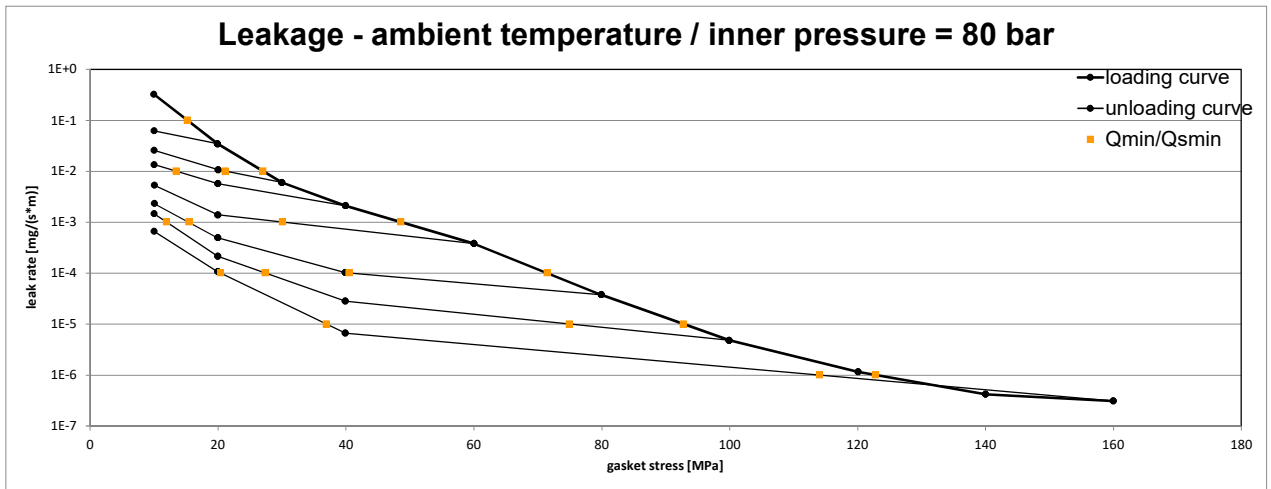
Leakage - ambient temperature / inner pressure = 40 bar



Note: the content of darkened cells was not determined respectively is unnecessary Rev - No: 4 Creation date of this sheet: 2019-03-12

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| Gasket Type | Sigraflex Hochdruck Pro V30011Z3IP | |
| Sealing element dimensions [mm] | 92 x 49 x 3 | |

| | | Minimum stress to seal $Q_{min/L}$ (at assembly), $Q_{Smin/L}$ (after off-loading) for p = 80 bar | | | | | | | | | |
|--------------|-------------------|---|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|-----|
| L [mg/(s*m)] | $Q_{min/L}$ [MPa] | $Q_{Smin/L}$ [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 | $Q_A=120$ MPa | $Q_A=140$ MPa | $Q_A=160$ MPa | |
| 10^{-9} | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | 10 |
| 10^{-1} | 15 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | 10 |
| 10^{-2} | 27 | | 21 | 13 | 10 | 10 | 10 | 10 | | | 10 |
| 10^{-3} | 49 | | | | 30 | 15 | 12 | | | | 10 |
| 10^{-4} | 71 | | | | | 41 | 27 | | | | 20 |
| 10^{-5} | 93 | | | | | | 75 | | | | 37 |
| 10^{-6} | 123 | | | | | | | | | | 114 |
| 10^{-7} | | | | | | | | | | | |
| 10^{-8} | | | | | | | | | | | |



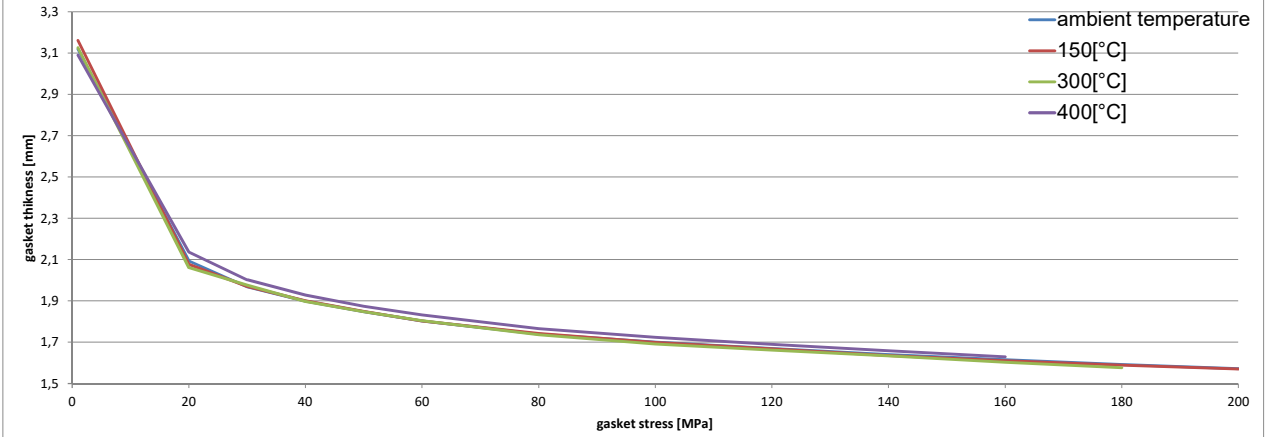
Note: the content of darkened cells was not determined respectively is unnecessary Rev - No: 4 Creation date of this sheet: 2019-03-12

| | | |
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| Gasket Type | Sigraflex Hochdruck Pro V30011Z3IP | |
| Sealing element dimensions [mm] | 92 x 49 x 3 | |

| Relaxation ratio P_{QR} for stiffness $C = 500$ kN/mm | | | | | | | | | | |
|--|---------------------|----------------------|------------------------|----------------------|------------------------|----------------------|------------------------|----------------------|----------|----------------------|
| Gasket stress | ambient temperature | | temperature 1 [150 °C] | | temperature 2 [300 °C] | | temperature 3 [400 °C] | | P_{QR} | Δe_{GC} [mm] |
| | P_{QR} | Δe_{GC} [mm] | P_{QR} | Δe_{GC} [mm] | P_{QR} | Δe_{GC} [mm] | P_{QR} | Δe_{GC} [mm] | | |
| Stress level 1 [30 MPa] | 0.98 | 0.006 | 0.93 | 0.018 | 0.91 | 0.023 | 0.88 | 0.030 | | |
| Stress level 2 [50 MPa] | 0.98 | 0.008 | 0.97 | 0.015 | 0.94 | 0.025 | 0.94 | 0.027 | | |
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| | | | | | | | | | | |
| P _{QR} and Δe _{GC} at maximal applicable gasket stress Q _{Smax} | | | | | | | | | | |
| P _{QR} at Q _{Smax} | 1.00 | 0.000 | 0.99 | 0.017 | 0.98 | 0.030 | 0.98 | 0.034 | | |
| Q _{Smax} | 200 MPa | | 200 MPa | | 180 MPa | | 160 MPa | | | |

| Sekant unloading modulus of the gasket E _G [MPa] and gasket thickness e _G [mm] | | | | | | | | | | |
|--|----------------------|---------------------|------------------------|---------------------|------------------------|---------------------|------------------------|---------------------|----------------------|---------------------|
| Gasket stress [MPa] | ambient temperature | | temperature 1 [150 °C] | | temperature 2 [300 °C] | | temperature 3 [400 °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 | | | | | | | | | | |
| 1 | | 3.120 | | 3.161 | | 3.127 | | 3.154 | | |
| 20 | 381 | 2.094 | 398 | 2.077 | 371 | 2.062 | 383 | 2.138 | | |
| 30 | 562 | 1.969 | 606 | 1.970 | 584 | 1.977 | 558 | 2.002 | | |
| 40 | 889 | 1.899 | 868 | 1.901 | 766 | 1.898 | 862 | 1.928 | | |
| 50 | 1147 | 1.848 | 1120 | 1.850 | 1109 | 1.847 | 1080 | 1.874 | | |
| 60 | 1287 | 1.803 | 1246 | 1.803 | 1324 | 1.805 | 1360 | 1.832 | | |
| 80 | 1760 | 1.740 | 1983 | 1.743 | 1620 | 1.737 | 1827 | 1.765 | | |
| 100 | 2649 | 1.701 | 2231 | 1.699 | 1939 | 1.692 | 2676 | 1.723 | | |
| 120 | 3123 | 1.669 | 2827 | 1.668 | 2878 | 1.662 | 3464 | 1.689 | | |
| 140 | 3057 | 1.640 | 2871 | 1.636 | 3354 | 1.634 | 3886 | 1.658 | | |
| 160 | 3463 | 1.615 | 3327 | 1.610 | 3184 | 1.603 | 4201 | 1.629 | | |
| 180 | 3764 | 1.592 | 3958 | 1.590 | 3207 | 1.577 | | | | |
| 200 | 4428 | 1.573 | 4767 | 1.571 | | | | | | |
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Gasket thickness e_G



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| Note: the content of darkened cells was not determined respectively is unnecessary | Rev - No: 4 | Creation date of this sheet: 2019-03-12 |
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