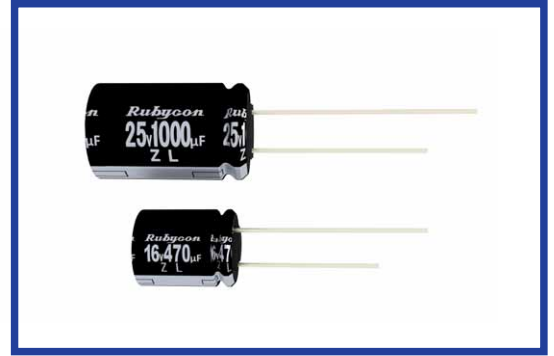


ZL シリーズ
SERIES

105°C 高リップル 低インピーダンス品
105°C High Ripple Current, Low Impedance

・105°C 1000~5000時間品。
Load Life : 105°C 1000~5000 hours.

RoHS
compliance



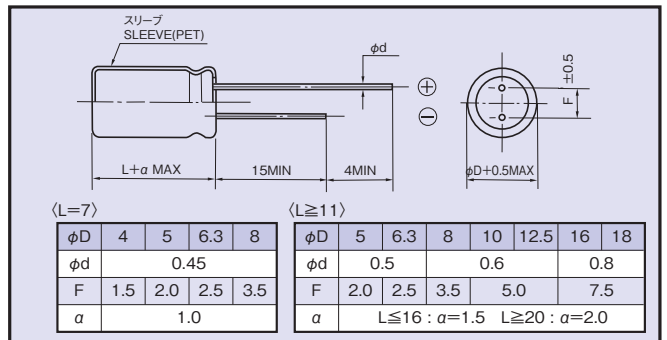
◆規格表 / SPECIFICATIONS

| 項目 Items | 特 性 Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---------------------|--|---|---------------------|----------------------|------------------------------|--|---------------|---------|-------------------------|---|------------------|--|--------|------|-------|------|-------|------|---------|------|------------------|---|---|---|---|---|---|---|---|--|
| カテゴリ温度範囲 Category Temperature Range | -40~+105°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 定格電圧範囲 Rated Voltage Range | 6.3~100Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 静電容量許容差 Capacitance Tolerance | ±20% (20°C, 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 漏れ電流 Leakage Current (MAX) | I=0.01CV又は3µAのいずれか大なる値以下 (定格電圧印加2分後) I=0.01CV or 3µA whichever is greater. (After 2 minutes) I=漏れ電流(µA) C=静電容量(µF) V=定格電圧(Vdc) Leakage Current Capacitance Rated Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 損失角の正接 (tanδ) Dissipation Factor (MAX) | <table border="1"> <tr> <td>定格電圧(Vdc) Rated Voltage</td> <td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td> <td>(20°C, 120Hz)</td> </tr> <tr> <td>tanδ</td> <td>0.22</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.09</td><td>0.08</td> <td></td> </tr> </table> 1000µFを越えるものは1000µF増す毎に上表の値に0.02を加えた値とする。 When capacitance is over 1000µF, tanδ shall be added 0.02 to the listed value with increase of every 1000µF. | | 定格電圧(Vdc) Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (20°C, 120Hz) | tanδ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | | | | | | | | | | | |
| 定格電圧(Vdc) Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (20°C, 120Hz) | | | | | | | | | | | | | | | | | | | | | | | |
| tanδ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | | | | | | | | | | | | | | | | | | | | | | | | |
| 耐 久 性 Endurance | 105°C中で右表の時間定格電圧(リップル重量)印加後、下記項目を満足すること。 After applying rated voltage with rated ripple current for specified time at 105°C, the capacitors shall meet the following requirements. <table border="1"> <tr> <td>静電容量変化率 Capacitance Change</td> <td>初期値の±25%以内 Within ±25% of the initial value.</td> <td>ケースサイズ Case Size</td> <td>時間(hrs) Life Time</td> </tr> <tr> <td>損失角の正接 Dissipation Factor</td> <td>規格値の200%以下 Not more than 200% of the specified value.</td> <td>L=7</td> <td>1000</td> </tr> <tr> <td>漏れ電流 Leakage Current</td> <td>規格値以下 Not more than the specified value.</td> <td>L≥11</td> <td> <table border="1"> <tr> <td>φD≤6.3</td> <td>2000</td> </tr> <tr> <td>φD= 8</td> <td>3000</td> </tr> <tr> <td>φD=10</td> <td>4000</td> </tr> <tr> <td>φD≥12.5</td> <td>5000</td> </tr> </table> </td> </tr> </table> | | 静電容量変化率 Capacitance Change | 初期値の±25%以内 Within ±25% of the initial value. | ケースサイズ Case Size | 時間(hrs) Life Time | 損失角の正接 Dissipation Factor | 規格値の200%以下 Not more than 200% of the specified value. | L=7 | 1000 | 漏れ電流 Leakage Current | 規格値以下 Not more than the specified value. | L≥11 | <table border="1"> <tr> <td>φD≤6.3</td> <td>2000</td> </tr> <tr> <td>φD= 8</td> <td>3000</td> </tr> <tr> <td>φD=10</td> <td>4000</td> </tr> <tr> <td>φD≥12.5</td> <td>5000</td> </tr> </table> | φD≤6.3 | 2000 | φD= 8 | 3000 | φD=10 | 4000 | φD≥12.5 | 5000 | | | | | | | | | | |
| 静電容量変化率 Capacitance Change | 初期値の±25%以内 Within ±25% of the initial value. | ケースサイズ Case Size | 時間(hrs) Life Time | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 損失角の正接 Dissipation Factor | 規格値の200%以下 Not more than 200% of the specified value. | L=7 | 1000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 漏れ電流 Leakage Current | 規格値以下 Not more than the specified value. | L≥11 | <table border="1"> <tr> <td>φD≤6.3</td> <td>2000</td> </tr> <tr> <td>φD= 8</td> <td>3000</td> </tr> <tr> <td>φD=10</td> <td>4000</td> </tr> <tr> <td>φD≥12.5</td> <td>5000</td> </tr> </table> | φD≤6.3 | 2000 | φD= 8 | 3000 | φD=10 | 4000 | φD≥12.5 | 5000 | | | | | | | | | | | | | | | | | | | | | |
| φD≤6.3 | 2000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| φD= 8 | 3000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| φD=10 | 4000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| φD≥12.5 | 5000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 低温特性 Low Temperature Stability (インピーダンス比) Impedance Ratio (MAX) | <table border="1"> <tr> <td>定格電圧(Vdc) Rated Voltage</td> <td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td> <td>(120Hz)</td> </tr> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td> <td></td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td> <td></td> </tr> </table> | | 定格電圧(Vdc) Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (120Hz) | Z(-25°C)/Z(20°C) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | Z(-40°C)/Z(20°C) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| 定格電圧(Vdc) Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (120Hz) | | | | | | | | | | | | | | | | | | | | | | | |
| Z(-25°C)/Z(20°C) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| Z(-40°C)/Z(20°C) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | |

◆リップル電流補正係数 /
MULTIPLIER FOR RIPPLE CURRENT

| 周波数(Hz) Frequency | 120 | 1k | 10k | 100k≤ |
|----------------------|------|------|------|-------|
| 5.6~68µF | 0.40 | 0.70 | 0.90 | 1.00 |
| 82~270µF | 0.50 | 0.73 | 0.92 | 1.00 |
| 330~680µF | 0.55 | 0.77 | 0.94 | 1.00 |
| 820~1800µF | 0.60 | 0.80 | 0.96 | 1.00 |
| 2200~6800µF | 0.70 | 0.85 | 0.98 | 1.00 |

◆寸法図 / DIMENSIONS (mm)



◆呼称方法 / PART NUMBER

| | | | | | | |
|-----------------------|-----------------|---------------------|----------------------------------|---------------|-------------------------|---------------------|
| □□□ | ZL | □□□□□ | M | □□□ | □□ | DXL |
| 定格電圧 Rated Voltage | シリーズ名 Series | 静電容量 Capacitance | 静電容量許容差 Capacitance Tolerance | 副記号 Option | リード加工記号 Lead Forming | ケースサイズ Case Size |

◆副記号 / OPTION

| | |
|--------------------|----------------|
| PETスリーブ PET Sleeve | 記号 Code EFC |
|--------------------|----------------|

◆標準品一覧表 / STANDARD SIZE

| 定格電圧 Rated Voltage (Vdc) | 静電容量 Capacitance (μ F) | 外形寸法 Size ϕ D \times L(mm) | 定格リプル電流 Rated ripple current (mA r.m.s./105°C, 100kHz) | インピーダンス(Ω MAX) Impedance | |
|--------------------------------|-----------------------------------|---|--|-------------------------------------|---------------|
| | | | | 20°C, 100kHz | -10°C, 100kHz |
| 6.3 | 39 | 4 \times 7 | 130 | 0.85 | 2.6 |
| | 68 | 5 \times 7 | 210 | 0.43 | 1.3 |
| | 150 | 6.3 \times 7 | 300 | 0.23 | 0.69 |
| | 150 | 5 \times 11 | 250 | 0.30 | 1.0 |
| | 220 | 8 \times 7 | 380 | 0.15 | 0.45 |
| | 330 | 6.3 \times 11 | 405 | 0.13 | 0.41 |
| | 560 | 8 \times 11.5 | 760 | 0.072 | 0.22 |
| | 820 | 8 \times 16 | 995 | 0.056 | 0.17 |
| | 1000 | 10 \times 12.5 | 1030 | 0.053 | 0.16 |
| | 1200 | 8 \times 20 | 1250 | 0.041 | 0.13 |
| | 1200 | 10 \times 16 | 1430 | 0.038 | 0.12 |
| | 1500 | 10 \times 20 | 1820 | 0.023 | 0.069 |
| | 2200 | 10 \times 23 | 2150 | 0.022 | 0.066 |
| | 3300 | 12.5 \times 20 | 2360 | 0.021 | 0.053 |
| | 3900 | 12.5 \times 25 | 2770 | 0.018 | 0.045 |
| | 4700 | 12.5 \times 30 | 3290 | 0.016 | 0.041 |
| 5600 | 12.5 \times 35 | 3400 | 0.015 | 0.039 | |
| 5600 | 16 \times 20 | 3140 | 0.018 | 0.045 | |
| 6800 | 16 \times 25 | 3460 | 0.016 | 0.043 | |
| 10 | 27 | 4 \times 7 | 130 | 0.89 | 2.7 |
| | 56 | 5 \times 7 | 210 | 0.44 | 1.4 |
| | 100 | 5 \times 11 | 250 | 0.30 | 1.0 |
| | 120 | 6.3 \times 7 | 300 | 0.23 | 0.69 |
| | 180 | 8 \times 7 | 380 | 0.15 | 0.45 |
| | 220 | 6.3 \times 11 | 405 | 0.13 | 0.41 |
| | 470 | 8 \times 11.5 | 760 | 0.072 | 0.22 |
| | 680 | 8 \times 16 | 995 | 0.056 | 0.17 |
| | 680 | 10 \times 12.5 | 1030 | 0.053 | 0.16 |
| | 1000 | 8 \times 20 | 1250 | 0.041 | 0.13 |
| | 1000 | 10 \times 16 | 1430 | 0.038 | 0.12 |
| | 1200 | 10 \times 20 | 1820 | 0.023 | 0.069 |
| | 1500 | 10 \times 23 | 2150 | 0.022 | 0.066 |
| | 2200 | 12.5 \times 20 | 2360 | 0.021 | 0.053 |
| | 3300 | 12.5 \times 25 | 2770 | 0.018 | 0.045 |
| | 3900 | 12.5 \times 30 | 3290 | 0.016 | 0.041 |
| 3900 | 16 \times 20 | 3140 | 0.018 | 0.045 | |
| 4700 | 12.5 \times 35 | 3400 | 0.015 | 0.039 | |
| 5600 | 16 \times 25 | 3460 | 0.016 | 0.043 | |
| 16 | 18 | 4 \times 7 | 130 | 0.92 | 2.8 |
| | 33 | 5 \times 7 | 210 | 0.45 | 1.4 |
| | 56 | 5 \times 11 | 250 | 0.30 | 1.0 |
| | 68 | 6.3 \times 7 | 300 | 0.24 | 0.72 |
| | 120 | 8 \times 7 | 380 | 0.15 | 0.45 |
| | 120 | 6.3 \times 11 | 405 | 0.13 | 0.41 |
| | 330 | 8 \times 11.5 | 760 | 0.072 | 0.22 |
| | 470 | 8 \times 16 | 995 | 0.056 | 0.17 |
| | 470 | 10 \times 12.5 | 1030 | 0.053 | 0.16 |
| | 680 | 8 \times 20 | 1250 | 0.041 | 0.13 |
| | 680 | 10 \times 16 | 1430 | 0.038 | 0.12 |
| | 1000 | 10 \times 20 | 1820 | 0.023 | 0.069 |
| | 1200 | 10 \times 23 | 2150 | 0.022 | 0.066 |
| | 1500 | 12.5 \times 20 | 2360 | 0.021 | 0.053 |
| | 2200 | 12.5 \times 25 | 2770 | 0.018 | 0.045 |
| | 2700 | 12.5 \times 30 | 3290 | 0.016 | 0.041 |
| 2700 | 16 \times 20 | 3140 | 0.018 | 0.045 | |
| 3300 | 12.5 \times 35 | 3400 | 0.015 | 0.039 | |
| 3900 | 16 \times 25 | 3460 | 0.016 | 0.043 | |
| 25 | 15 | 4 \times 7 | 130 | 0.94 | 2.9 |
| | 27 | 5 \times 7 | 210 | 0.46 | 1.4 |
| | 47 | 5 \times 11 | 250 | 0.30 | 1.0 |
| | 56 | 6.3 \times 7 | 300 | 0.24 | 0.72 |
| | 100 | 8 \times 7 | 380 | 0.15 | 0.45 |
| | 100 | 6.3 \times 11 | 405 | 0.13 | 0.41 |
| | 220 | 8 \times 11.5 | 760 | 0.072 | 0.22 |
| | 330 | 8 \times 16 | 995 | 0.056 | 0.17 |
| | 330 | 10 \times 12.5 | 1030 | 0.053 | 0.16 |
| | 470 | 8 \times 20 | 1250 | 0.041 | 0.13 |
| | 470 | 10 \times 16 | 1430 | 0.038 | 0.12 |
| | 680 | 10 \times 20 | 1820 | 0.023 | 0.069 |
| | 820 | 10 \times 23 | 2150 | 0.022 | 0.066 |
| | 1000 | 12.5 \times 20 | 2360 | 0.021 | 0.053 |
| | 1500 | 12.5 \times 25 | 2770 | 0.018 | 0.045 |
| | 1800 | 12.5 \times 30 | 3290 | 0.016 | 0.041 |
| 1800 | 16 \times 20 | 3140 | 0.018 | 0.045 | |
| 2200 | 12.5 \times 35 | 3400 | 0.015 | 0.039 | |
| 2700 | 16 \times 25 | 3460 | 0.016 | 0.043 | |

◆標準品一覧表 / STANDARD SIZE

| 定格電圧 Rated Voltage (Vdc) | 静電容量 Capacitance (μ F) | 外形寸法 Size ϕ D×L(mm) | 定格リップル電流 Rated ripple current (mA r.m.s./105°C, 100kHz) | インピーダンス(Ω MAX) Impedance | |
|--------------------------------|-----------------------------------|--------------------------------|---|-------------------------------------|---------------|
| | | | | 20°C, 100kHz | -10°C, 100kHz |
| | | | | 35 | 10 |
| 18 | 5×7 | 210 | 0.47 | | 1.5 |
| 33 | 5×11 | 250 | 0.30 | | 1.0 |
| 39 | 6.3×7 | 300 | 0.25 | | 0.75 |
| 56 | 8×7 | 380 | 0.16 | | 0.48 |
| 56 | 6.3×11 | 405 | 0.13 | | 0.41 |
| 150 | 8×11.5 | 760 | 0.072 | | 0.22 |
| 220 | 8×16 | 995 | 0.056 | | 0.17 |
| 220 | 10×12.5 | 1030 | 0.053 | | 0.16 |
| 270 | 8×20 | 1250 | 0.041 | | 0.13 |
| 330 | 10×16 | 1430 | 0.038 | | 0.12 |
| 470 | 10×20 | 1820 | 0.023 | | 0.069 |
| 560 | 10×23 | 2150 | 0.022 | | 0.066 |
| 680 | 12.5×20 | 2360 | 0.021 | | 0.053 |
| 1000 | 12.5×25 | 2770 | 0.018 | | 0.045 |
| 1200 | 12.5×30 | 3290 | 0.016 | | 0.041 |
| 1200 | 16×20 | 3140 | 0.018 | | 0.045 |
| 1500 | 12.5×35 | 3400 | 0.015 | | 0.039 |
| 1800 | 16×25 | 3460 | 0.016 | 0.043 | |
| 50 | 5.6 | 4×7 | 130 | 1.0 | 3.0 |
| | 10 | 5×7 | 210 | 0.50 | 1.5 |
| | 22 | 6.3×7 | 300 | 0.26 | 0.78 |
| | 22 | 5×11 | 238 | 0.34 | 1.18 |
| | 33 | 8×7 | 380 | 0.17 | 0.51 |
| | 56 | 6.3×11 | 385 | 0.14 | 0.50 |
| | 100 | 8×11.5 | 724 | 0.074 | 0.22 |
| | 120 | 8×16 | 950 | 0.061 | 0.18 |
| | 150 | 10×12.5 | 979 | 0.061 | 0.18 |
| | 180 | 8×20 | 1190 | 0.046 | 0.14 |
| | 220 | 10×16 | 1370 | 0.042 | 0.12 |
| | 270 | 10×20 | 1580 | 0.030 | 0.090 |
| | 330 | 10×23 | 1870 | 0.028 | 0.085 |
| | 470 | 12.5×20 | 2050 | 0.027 | 0.068 |
| | 560 | 12.5×25 | 2410 | 0.023 | 0.059 |
| | 680 | 12.5×30 | 2860 | 0.021 | 0.052 |
| | 820 | 12.5×35 | 2960 | 0.019 | 0.051 |
| | 820 | 16×20 | 2730 | 0.023 | 0.059 |
| 1000 | 16×25 | 3010 | 0.021 | 0.056 | |

| 定格電圧 Rated Voltage (Vdc) | 静電容量 Capacitance (μ F) | 外形寸法 Size ϕ D×L(mm) | 定格リップル電流 Rated ripple current (mA r.m.s./105°C, 100kHz) | インピーダンス(Ω MAX) Impedance | |
|--------------------------------|-----------------------------------|--------------------------------|---|-------------------------------------|---------------|
| | | | | 20°C, 100kHz | -10°C, 100kHz |
| | | | | 63 | 15 |
| 33 | 6.3×11 | 265 | 0.35 | | 1.4 |
| 56 | 8×11.5 | 500 | 0.22 | | 0.88 |
| 82 | 8×16 | 665 | 0.16 | | 0.64 |
| 82 | 10×12.5 | 685 | 0.15 | | 0.60 |
| 120 | 8×20 | 820 | 0.12 | | 0.48 |
| 120 | 10×16 | 945 | 0.11 | | 0.44 |
| 180 | 10×20 | 1100 | 0.080 | | 0.32 |
| 180 | 12.5×16 | 1135 | 0.082 | | 0.27 |
| 220 | 10×23 | 1300 | 0.073 | | 0.29 |
| 270 | 12.5×20 | 1495 | 0.060 | | 0.20 |
| 330 | 12.5×25 | 1850 | 0.043 | | 0.14 |
| 470 | 12.5×30 | 2250 | 0.039 | | 0.13 |
| 470 | 16×20 | 1990 | 0.045 | | 0.14 |
| 560 | 12.5×35 | 2450 | 0.033 | | 0.11 |
| 560 | 16×25 | 2550 | 0.032 | | 0.096 |
| 680 | 12.5×40 | 2780 | 0.029 | | 0.096 |
| 680 | 18×20 | 2450 | 0.038 | | 0.10 |
| 820 | 16×31.5 | 2810 | 0.026 | 0.078 | |
| 820 | 18×25 | 2780 | 0.031 | 0.084 | |
| 1000 | 16×35.5 | 2835 | 0.021 | 0.063 | |
| 1000 | 18×31.5 | 3270 | 0.025 | 0.068 | |
| 1200 | 16×40 | 3340 | 0.019 | 0.057 | |
| 1200 | 18×35.5 | 3310 | 0.020 | 0.054 | |
| 1500 | 18×40 | 3420 | 0.018 | 0.049 | |
| 100 | 6.8 | 5×11 | 125 | 1.4 | 5.6 |
| | 15 | 6.3×11 | 205 | 0.57 | 2.3 |
| | 27 | 8×11.5 | 355 | 0.36 | 1.4 |
| | 39 | 8×16 | 450 | 0.25 | 1.0 |
| | 47 | 10×12.5 | 450 | 0.24 | 0.96 |
| | 56 | 8×20 | 565 | 0.19 | 0.76 |
| | 68 | 10×16 | 580 | 0.18 | 0.72 |
| | 82 | 10×20 | 750 | 0.13 | 0.52 |
| | 82 | 12.5×16 | 735 | 0.13 | 0.43 |
| | 100 | 10×23 | 880 | 0.12 | 0.48 |
| | 120 | 12.5×20 | 1045 | 0.094 | 0.31 |
| | 180 | 12.5×25 | 1195 | 0.071 | 0.23 |
| | 220 | 12.5×30 | 1410 | 0.063 | 0.21 |
| | 220 | 16×20 | 1295 | 0.071 | 0.21 |
| | 270 | 12.5×35 | 1560 | 0.052 | 0.17 |
| | 270 | 16×25 | 1600 | 0.053 | 0.16 |
| | 270 | 18×20 | 1470 | 0.069 | 0.19 |
| | 330 | 12.5×40 | 1700 | 0.046 | 0.15 |
| | 390 | 16×31.5 | 1750 | 0.041 | 0.12 |
| | 390 | 18×25 | 1620 | 0.049 | 0.13 |
| | 470 | 16×35.5 | 1890 | 0.033 | 0.10 |
| | 470 | 18×31.5 | 1775 | 0.039 | 0.11 |
| | 560 | 16×40 | 2080 | 0.030 | 0.090 |
| | 560 | 18×35.5 | 2060 | 0.031 | 0.084 |
| 680 | 18×40 | 2570 | 0.028 | 0.076 | |