



**2CP3000 BATTERY
PRODUCT
SPECIFICATION**

Part Number 61363000

TECHNOLOGY

VRLA-AGM Valve Regulated Lead-Acid and Absorbed Glass Mat


ELECTRICAL DATA

| | | | | |
|--|---|-------|--------|----------|
| Type | 2CP3000 | | | |
| Nominal Voltage | 2 volts (1 cell) | | | |
| Rated Capacity | 2800 Ah - C ₁₀ to 1.80 Vpc at 20 °C 2776 Ah - C ₁₀₀ to 1.80 Vpc at 20 °C | | | |
| Current / Power | | | | |
| 0.5 hr back-up time | 1.65 Vpc | 20 °C | 2801 A | 5044.4 W |
| 1.0 hr back-up time | 1.67 Vpc | 20 °C | 1940 A | 3515.3 W |
| 2.0 hr back-up time | 1.80 Vpc | 20 °C | 1043 A | 1908.9 W |
| 4.0 hr back-up time | 1.80 Vpc | 20 °C | 588 A | 1106.6 W |
| 8.0 hr back-up time | 1.80 Vpc | 20 °C | 333 A | 618.6 W |
| 10.0 hr back-up time | 1.80 Vpc | 20 °C | 280 A | 511.1 W |
| 20.0 hr back-up time | 1.80 Vpc | 20 °C | 147 A | 277.9 W |
| Conversion to capacity at 25 °C (77 °F) | 20° C Ah x 1.03 (t > 1 h) | | | |
| Internal resistance (± 10%) to IEC/EN 60896-21 | ≈ 0.08 mΩ | | | |
| Short circuit current (± 10%) to IEC/EN 60896-21 | ≈ 31 kA | | | |
| Self discharge at 20° C IEC/EN 60896-21 | max. 3%/month | | | |
| Heat loss during float service at 20 °C | ≈ 3 W | | | |

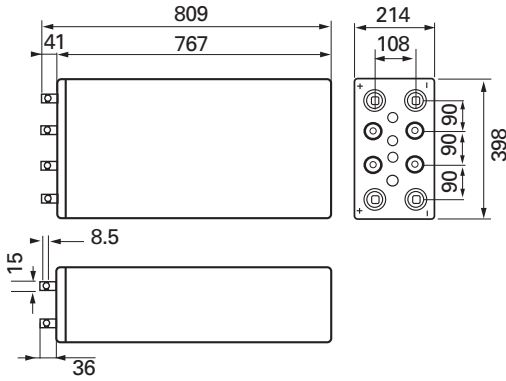
MECHANICAL DATA

| | |
|--|----------------------------|
| Weight ready for use | 180 kg |
| Depth of cell | 767 mm |
| Depth over terminal connector | 809 mm |
| Width | 214 mm |
| Height (operate horizontally only) | 398 mm |
| Number of terminals | 4 positive/4 negative |
| Terminals | ø 8.5 mm (through hole M8) |
| Suggested/maximum cable cross-section | 8-185 mm ² |
| Connection torque | 25 Nm |
| Terminal insulation class according to IEC/EN 60529 | IP20 |
| Diameter of diagnostic hole for voltage probe | 4.0 mm ø |
| Connector (copper, tin-coated) rigid and insulated | 8-180 mm ² |
| Complete connector and terminal connection accessories | available |

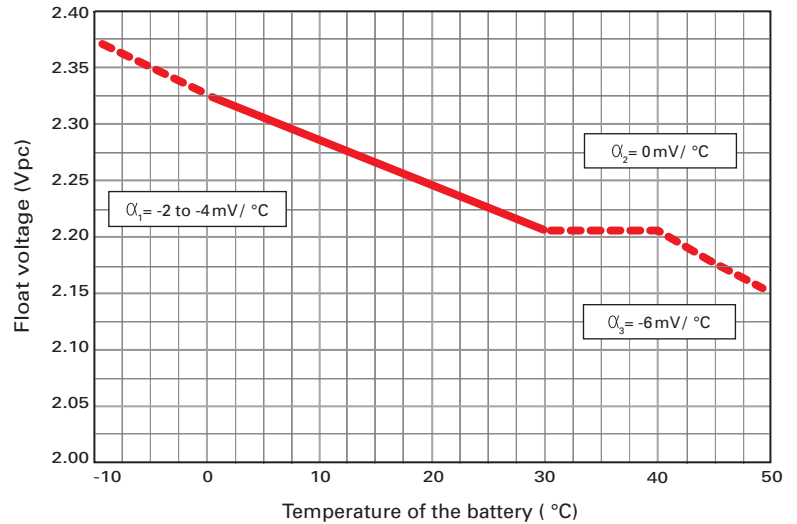
ENVIRONMENTAL DATA

| | |
|--|---|
| Installation | Only horizontally |
| Distance for cooling and ventilation (preset with the rigid connectors) | 10 mm |
| Flame retardancy rating case/cover according to Underwriters Laboratories (UL) USA | ABS - PC – UL 94 V-0 with LOI > 32%, halogen-free |
| Flame barriers at vents | Installed |
| UL file number  | MH 26065 |
| Service life expected at 20 °C | 15 years |
| Eurobat classification | 12+ Long Life |
| Shelves, cabinets and racks | available upon request |

BATTERY DRAWINGS



FLOAT VOLTAGE COMPENSATION AS A FUNCTION OF TEMPERATURE



CAPACITY CORRECTION FACTORS AS A FUNCTION OF TEMPERATURE

| Temperature | % of Rated Capacity |
|-----------------|---------------------|
| 40 °C (104 °F) | 104.8 |
| 35 °C (95 °F) | 104.2 |
| 30 °C (86 °F) | 103.6 |
| 25 °C (77 °F) | 103.0 |
| 20 °C (68 °F) | 100.0 |
| 15 °C (59 °F) | 97.0 |
| 10 °C (50 °F) | 94.0 |
| 5 °C (41 °F) | 90.0 |
| 0 °C (32 °F) | 84.7 |
| -5 °C (23 °F) | 77.7 |
| -10 °C (14 °F) | 69.4 |
| -15 °C (5 °F) | 60.0 |
| -20 °C (-4 °F) | 49.6 |
| -25 °C (-13 °F) | 38.4 |
| -30 °C (-22 °F) | 25.6 |
| -35 °C (-31 °F) | 14.1 |
| -40 °C (-40 °F) | 2.1 |

INSTALLATION & OPERATION CHARACTERISTICS

| | |
|---|--|
| Battery installation and operation | Stand-by mode with constant voltage float operation according to EN 50272-2:2001 |
| Float voltage setting according to DIN 41773 | 2.27 Vpc \pm 1% at 20 °C - 25 °C (68 °F - 77 °F) |
| Float voltage with daily discharge cycles | 2.29 Vpc - 2.30 Vpc (no correction factor needed) |
| CC-CV charge current according to DIN 41773 | unlimited, otherwise $3 \cdot I_{10}$ max. if temp > 25 °C |
| Float voltage compensation in function of temperature | -2 to -4 mV / °C or with profile as displayed in graph above |
| Boost charge | Not needed, if desirable then 2.35 Vpc and I_{10} max. for 24 hr max. at temp < 30 °C |
| Air exchange | As a VRLA battery according to EN 50272-2:2001 $Q = 0.05 \cdot N_{\text{cells}} \cdot I_{\text{gas}} \cdot C_{\text{Ah C10}} \cdot 10^3 \text{ [m}^3\text{/h]}$ $I_{\text{gas}} = 1$ (at 2.25 Vpc) $I_{\text{gas}} = 8$ (at 2.40 Vpc) e.g. 48 V : 3.36 m ³ /hr = 118.66 cu.ft/hr (at 2.25 Vpc) |
| Preferred operating temperature range | Between 15 °C - 25 °C (59 °F - 77 °F) |
| Maximum long term operating temperature | +40 °C (104 °F) with ventilation assured (reduced service life) |
| Maximum short term operating temperature (for hours) | +50 °C (122 °F) with ventilation assured (reduced service life) |
| Minimum fully charged operating temperature | -40 °C (-40 °F) |

2CP3000 BATTERY PRODUCT SPECIFICATION

DISCHARGE DATA

Constant current performance (in Amps) to the defined end-of-discharge voltages

| Voltage (Vpc) | Temp. | Discharge time [min] | | | | | | | | | | | | | | | | | | | | |
|---------------|-------|----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 5 | 7 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 90 | 120 | 180 | 240 | 300 | 360 | 480 | 600 | 720 | 1200 | 1440 |
| 1.90 | 20 °C | 2966 | 2746 | 2543 | 2355 | 2180 | 2000 | 1728 | 1584 | 1475 | 1385 | 1095 | 907 | 661 | 534 | 455 | 403 | 317 | 271 | 226 | 144 | 122 |
| | 25 °C | 3055.1 | 2828.8 | 2619.3 | 2425.2 | 2245.6 | 2060.2 | 1779.8 | 1631.5 | 1519.3 | 1426.6 | 1127.9 | 934.2 | 680.8 | 550.0 | 468.7 | 415.1 | 326.5 | 279.1 | 232.8 | 148.3 | 125.7 |
| 1.87 | 20 °C | 3302.2 | 3057.6 | 2831.1 | 2621.4 | 2427.2 | 2226.8 | 1940.0 | 1757.0 | 1615.0 | 1504.0 | 1168.0 | 959.0 | 690.0 | 555.0 | 469.0 | 411.0 | 323.0 | 275.0 | 228.0 | 145.0 | 123.0 |
| | 25 °C | 3401.2 | 3149.3 | 2916.0 | 2700.0 | 2500.0 | 2293.6 | 1998.2 | 1809.7 | 1663.5 | 1549.1 | 1203.0 | 987.8 | 710.7 | 571.7 | 483.1 | 423.3 | 332.7 | 283.3 | 234.8 | 149.4 | 126.7 |
| 1.85 | 20 °C | 3400.8 | 3295.5 | 3189.4 | 2950.4 | 2729.8 | 2492.7 | 2078.0 | 1862.0 | 1702.0 | 1579.0 | 1209.0 | 986.0 | 706.0 | 566.0 | 475.0 | 416.0 | 326.0 | 277.0 | 229.0 | 146.0 | 123.0 |
| | 25 °C | 3502.8 | 3394.4 | 3285.0 | 3038.9 | 2811.7 | 2567.4 | 2140.3 | 1917.9 | 1753.1 | 1626.4 | 1245.3 | 1015.6 | 727.2 | 583.0 | 489.3 | 428.5 | 335.8 | 285.3 | 235.9 | 150.4 | 126.7 |
| 1.84 | 20 °C | 3448.4 | 3314.0 | 3236.0 | 3021.9 | 2809.5 | 2579.0 | 2142.0 | 1910.0 | 1741.0 | 1611.0 | 1231.0 | 1000.0 | 715.0 | 570.0 | 480.0 | 418.0 | 330.0 | 278.0 | 231.0 | 146.0 | 124.0 |
| | 25 °C | 3551.8 | 3413.3 | 3333.1 | 3112.5 | 2893.8 | 2656.4 | 2206.3 | 1967.3 | 1793.2 | 1659.3 | 1267.9 | 1030.0 | 736.5 | 587.1 | 494.4 | 430.5 | 339.9 | 286.3 | 237.9 | 150.4 | 127.7 |
| 1.83 | 20 °C | 3498.8 | 3402.9 | 3300.4 | 3103.8 | 2885.6 | 2676.4 | 2205.0 | 1959.0 | 1781.0 | 1643.0 | 1246.0 | 1010.0 | 722.0 | 575.0 | 482.0 | 421.0 | 330.0 | 279.0 | 231.0 | 146.0 | 124.0 |
| | 25 °C | 3603.7 | 3505.0 | 3399.4 | 3196.9 | 2972.2 | 2756.7 | 2271.2 | 2017.8 | 1834.4 | 1692.3 | 1283.4 | 1040.3 | 743.7 | 592.3 | 496.5 | 433.6 | 339.9 | 287.4 | 237.9 | 150.4 | 127.7 |
| 1.82 | 20 °C | 3488.8 | 3404.0 | 3323.0 | 3157.2 | 2953.9 | 2745.4 | 2266.0 | 2005.0 | 1817.0 | 1672.0 | 1265.0 | 1022.0 | 728.0 | 579.0 | 486.0 | 421.0 | 330.0 | 280.0 | 231.0 | 146.0 | 124.0 |
| | 25 °C | 3593.4 | 3506.1 | 3422.6 | 3251.9 | 3042.6 | 2827.7 | 2334.0 | 2065.2 | 1871.5 | 1722.2 | 1303.0 | 1052.7 | 749.8 | 596.4 | 500.6 | 433.6 | 339.9 | 288.4 | 237.9 | 150.4 | 127.7 |
| 1.80 | 20 °C | 3878.3 | 3676.8 | 3470.0 | 3218.8 | 3009.4 | 2801.8 | 2378.0 | 2090.0 | 1885.0 | 1727.0 | 1295.0 | 1043.0 | 740.0 | 588.0 | 491.0 | 425.0 | 333.0 | 280.0 | 233.0 | 147.0 | 124.0 |
| | 25 °C | 3994.6 | 3787.1 | 3574.1 | 3315.4 | 3099.7 | 2885.9 | 2449.3 | 2152.7 | 1941.6 | 1778.8 | 1333.9 | 1074.3 | 762.2 | 605.6 | 505.7 | 437.8 | 343.0 | 288.4 | 240.0 | 151.4 | 127.7 |
| 1.77 | 20 °C | 4040.3 | 3907.3 | 3722.0 | 3304.5 | 3074.3 | 2877.8 | 2529.0 | 2200.0 | 1970.0 | 1796.0 | 1335.0 | 1068.0 | 771.0 | 606.0 | 502.0 | 430.0 | 335.0 | 284.0 | 235.0 | 147.0 | 125.0 |
| | 25 °C | 4161.5 | 4024.5 | 3730.7 | 3403.6 | 3166.6 | 2964.1 | 2604.9 | 2266.0 | 2029.1 | 1849.9 | 1375.1 | 1100.0 | 794.1 | 624.2 | 517.1 | 442.9 | 345.1 | 292.5 | 242.1 | 151.4 | 128.8 |
| 1.75 | 20 °C | 4122.4 | 4004.6 | 3817.1 | 3408.1 | 3137.1 | 2935.1 | 2600.0 | 2231.0 | 2018.0 | 1835.0 | 1355.0 | 1082.0 | 778.0 | 611.0 | 504.0 | 432.0 | 337.0 | 284.0 | 235.0 | 147.0 | 125.0 |
| | 25 °C | 4246.1 | 4124.7 | 3931.6 | 3510.4 | 3231.2 | 3023.2 | 2678.0 | 2297.9 | 2078.5 | 1890.1 | 1395.7 | 1114.5 | 801.3 | 629.3 | 519.1 | 445.0 | 347.1 | 292.5 | 242.1 | 151.4 | 128.8 |
| 1.72 | 20 °C | 4229.5 | 4052.6 | 3905.8 | 3555.2 | 3205.0 | 2975.7 | 2632.0 | 2290.0 | 2054.0 | 1883.0 | 1382.0 | 1098.0 | 786.0 | 616.0 | 509.0 | 435.0 | 338.0 | 285.0 | 236.0 | 148.0 | 125.0 |
| | 25 °C | 4356.3 | 4174.2 | 4022.7 | 3661.9 | 3301.1 | 3065.0 | 2711.0 | 2358.7 | 2115.6 | 1939.5 | 1423.5 | 1130.9 | 809.6 | 634.5 | 524.3 | 448.1 | 348.1 | 293.6 | 243.1 | 152.4 | 128.8 |
| 1.70 | 20 °C | 4277.3 | 4152.0 | 3982.3 | 3672.6 | 3326.8 | 3054.2 | 2691.0 | 2334.0 | 2086.0 | 1908.0 | 1396.0 | 1107.0 | 790.0 | 618.0 | 511.0 | 435.0 | 338.0 | 285.0 | 236.0 | 148.0 | 125.0 |
| | 25 °C | 4405.6 | 4276.5 | 4101.8 | 3782.8 | 3426.6 | 3145.8 | 2771.7 | 2404.0 | 2148.6 | 1965.2 | 1437.9 | 1140.2 | 813.7 | 636.5 | 526.3 | 448.1 | 348.1 | 293.6 | 243.1 | 152.4 | 128.8 |
| 1.67 | 20 °C | 4407.1 | 4289.1 | 4053.3 | 3771.3 | 3416.0 | 3089.7 | 2764.0 | 2385.0 | 2125.0 | 1940.0 | 1412.0 | 1117.0 | 794.0 | 622.0 | 513.0 | 437.0 | 340.0 | 287.0 | 236.0 | 148.0 | 125.0 |
| | 25 °C | 4539.2 | 4417.8 | 4174.9 | 3884.4 | 3518.5 | 3182.4 | 2846.9 | 2456.6 | 2188.8 | 1998.2 | 1454.4 | 1150.5 | 817.8 | 640.7 | 528.4 | 450.1 | 350.2 | 295.6 | 243.1 | 152.4 | 128.8 |
| 1.65 | 20 °C | 4492.1 | 4315.3 | 4138.6 | 3829.3 | 3471.8 | 3118.3 | 2801.0 | 2411.0 | 2147.0 | 1956.0 | 1421.0 | 1122.0 | 798.0 | 623.0 | 514.0 | 438.0 | 340.0 | 287.0 | 236.0 | 148.0 | 126.0 |
| | 25 °C | 4626.8 | 4444.8 | 4262.8 | 3944.2 | 3576.0 | 3211.8 | 2885.0 | 2483.3 | 2211.4 | 2014.7 | 1463.6 | 1155.7 | 821.9 | 641.7 | 529.4 | 451.1 | 350.2 | 295.6 | 243.1 | 152.4 | 129.8 |
| 1.63 | 20 °C | 4613.8 | 4495.9 | 4274.8 | 4009.4 | 3561.3 | 3191.5 | 2834.0 | 2443.0 | 2163.0 | 1969.0 | 1428.0 | 1127.0 | 799.0 | 625.0 | 514.0 | 438.0 | 340.0 | 287.0 | 236.0 | 148.0 | 126.0 |
| | 25 °C | 4752.2 | 4630.7 | 4403.0 | 4129.7 | 3668.1 | 3287.2 | 2919.0 | 2516.3 | 2227.9 | 2028.1 | 1470.8 | 1160.8 | 823.0 | 643.8 | 529.4 | 451.1 | 350.2 | 295.6 | 243.1 | 152.4 | 129.8 |
| 1.60 | 20 °C | 4780.0 | 4617.7 | 4352.1 | 4027.6 | 3619.0 | 3265.0 | 2875.0 | 2464.0 | 2186.0 | 1987.0 | 1437.0 | 1132.0 | 803.0 | 627.0 | 516.0 | 439.0 | 341.0 | 287.0 | 236.0 | 148.0 | 126.0 |
| | 25 °C | 4923.3 | 4756.2 | 4482.7 | 4148.4 | 3727.6 | 3363.0 | 2961.3 | 2537.9 | 2251.6 | 2046.6 | 1480.1 | 1166.0 | 827.1 | 645.8 | 531.5 | 452.2 | 351.2 | 295.6 | 243.1 | 152.4 | 129.8 |

Constant current performance (in watt per cell) to the defined end-of-discharge voltages

| Voltage (Vpc) | Temp. | Discharge time [min] | | | | | | | | | | | | | | | | | | | | |
|---------------|-------|----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| | | 5 | 7 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 90 | 120 | 180 | 240 | 300 | 360 | 480 | 600 | 720 | 1200 | 1440 |
| 1.90 | 20 °C | 5050.0 | 4800.0 | 4600.0 | 4200.0 | 3950.0 | 3615.9 | 3408.5 | 3014.2 | 2590.6 | 2165.4 | 1930.8 | 1603.2 | 1209.5 | 978.0 | 823.6 | 713.4 | 563.8 | 470.9 | 403.2 | 259.9 | 222.1 |
| | 25 °C | 5201.5 | 4944.0 | 4738.0 | 4326.0 | 4068.5 | 3724.4 | 3510.7 | 3104.7 | 2668.3 | 2230.4 | 1988.7 | 1651.3 | 1245.8 | 1007.3 | 848.4 | 734.8 | 580.7 | 485.0 | 415.3 | 267.6 | 228.7 |
| 1.87 | 20 °C | 5550.0 | 5300.0 | 5000.0 | 4600.0 | 4300.0 | 4000.0 | 3733.0 | 3355.1 | 2930.0 | 2552.1 | 2141.6 | 1762.4 | 1310.7 | 1051.8 | 883.7 | 761.7 | 601.8 | 497.9 | 427.0 | 273.7 | 234.1 |
| | 25 °C | 5716.5 | 5459.0 | 5150.0 | 4738.0 | 4429.0 | 4120.0 | 3845.0 | 3455.7 | 3017.9 | 2628.7 | 2205.8 | 1815.3 | 1350.0 | 1083.4 | 910.2 | 784.5 | 619.8 | 512.8 | 439.8 | 281.9 | 241.1 |
| 1.85 | 20 °C | 6007.3 | 5701.4 | 5265.4 | 4754.1 | 4399.4 | 4115.7 | 3926.5 | 3514.2 | 3099.0 | 2733.9 | 2235.8 | 1829.3 | 1351.1 | 1079.6 | 903.0 | 778.0 | 613.1 | 509.8 | 434.8 | 276.6 | 236.6 |
| | 25 °C | 6187.5 | 5872.4 | 5423.4 | 4896.7 | 4531.4 | 4239.2 | 4044.3 | 3619.7 | 3191.9 | 2816.0 | 2302.9 | 1884.2 | 1391.7 | 1112.0 | 930.1 | 801.4 | 631.5 | 525.1 | 447.9 | 284.9 | 243.7 |
| 1.84 | 20 °C | 6270.0 | 5940.1 | 5468.8 | 4903.2 | 4526.1 | 4215.3 | 4007.7 | 3583.5 | 3168.1 | 2805.8 | 2269.3 | 1849.4 | 1364.6 | 1088.0 | 909.7 | 783.1 | 616.5 | 509.8 | 436.5 | 278.2 | 236.6 |
| | 25 °C | 6458.1 | 6118.3 | 5632.8 | 5050.3 | 4661.9 | 4341.8 | 4127.9 | 3691.0 | 3263.2 | 2890.0 | 2337.4 | 1904.9 | 1405.5 | 1120.6 | 937.0 | 806.6 | 635.0 | 525.1 | 449.6 | 286.6 | 243.7 |
| 1.83 | 20 °C | 6495.6 | 6166.2 | 5658.8 | 5036.8 | 4636.8 | 4294.1 | 4085.3 | 3652.9 | 3248.5 | 2872.1 | 2365.9 | 1924.7 | 1415.2 | 1127.2 | 940.7 | 809.2 | 636.0 | 526.1 | 449.5 | 288.0 | 244.8 |
| | 25 °C | 6690.5 | 6351.2 | 5828.6 | 5187.9 | 4775.9 | 4422.9 | 4207.9 | 3762.5 | 3346.0 | 2958.2 | 2436.9 | 1982.4 | 1457.7 | 1161.0 | 968.9 | 833.4 | 655.1 | 541.9 | 463.0 | 296.7 | 252.1 |
| 1.82 | 20 °C | 6702.0 | 6351.3 | 5819.5 | 5184.5 | 4744.0 | 4390.4 | 4162.0 | 3706.8 | 3314.9 | 2930.4 | 2378.3 | 1928.8 | 1416.4 | 1125.5 | 940.4 | 806.6 | 634.7 | 522.3 | 446.2 | 285.9 | 243.0 |
| | 25 °C | 6903.0 | 6541.9 | 5994.1 | 5340.0 | 4886.3 | 4522.1 | 4286.9 | 3818.0 | 3414.3 | 3018.3 | 2449.7 | 1986.6 | 1458.9 | 1159.3 | 968.6 | 830.7 | 653.7 | 537.9 | 459.6 | 294.5 | 250.2 |
| 1.80 | 20 °C | 7300.0 | 6745.1 | 6132.0 | 5449.7 | 4953.1 | 4565.5 | 4292.8 | 3821.3 | 3444.0 | 3066.7 | 2360.4 | 1908.9 | 1392.8 | 1106.6 | 921.3 | 790.7 | 618.6 | 511.1 | 436.7 | 277.9 | 234.9 |
| | 25 °C | 7519.0 | 6947.4 | 6316.0 | 5613.2 | 5101.6 | 4702.4 | 4421.6 | 3935.9 | 3547.3 | 3158.7 | 2431.2 | 1966.1 | 1434.6 | 1139.8 | 949.0 | 814.4 | 637.2 | 526.5 | 449.8 | 286.2 | 241.9 |
| 1.77 | 20 °C | 7600.0 | 7200.0 | 6559.8 | 5757.7 | 5238.7 | 4766.9 | 4455.8 | 3964.8 | 3587.3 | 3209.9 | 2389.9 | 1920.4 | 1392.2 | 1103.7 | 916.2 | 785.8 | 616.2 | 505.4 | 433.6 | 277.1 | 234.8 |
| | 25 °C | 7828.0 | 7416.0 | 6756.6 | 5930.5 | 5395.9 | 4909.9 | 4589.5 | 4083.7 | 3695.0 | 3306.2 | 2461.6 | 1978.0 | 1434.0 | 1136.8 | 943.7 | 809.3 | 634.7 | 520.5 | 446.6 | 285.5 | 241.8 |
| 1.75 | 20 °C | 7800.0 | 7400.0 | 6785.8 | 5937.7 | 5372.4 | 4901.3 | 4547.9 | 4053.2 | 3646.9 | 3299.4 | 2405.3 | 1927.5 | 1396.2 | 1101.4 | 915.2 | 785.6 | 612.3 | 505.4 | 430.9 | 275.4 | 233.2 |
| | 25 °C | 8034.0 | 7622.0 | 6989.4 | 6115.9 | 5533.6 | 5048.3 | 4684.3 | | | | | | | | | | | | | | |