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## ROSTOV-NA-DONU, Russian Federation

WMO#: **347310**

Lat: **47.25N** Long: **39.82E** Elev: **77** StdP: **100.4** Time Zone: **4.00 (RUS)** Period: **86-10** WBAN: **99999**

### Annual Heating and Humidification Design Conditions

| | Coldest Month | Heating DB | | Humidification DP/MCDB and HR | | | | | | Coldest month WS/MCDB | | | | MCWS/PCWD to 99.6% DB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 99.6% | | | 99% | | | 0.4% | | 1% | | | | |
| | | 99.6% | 99% | DP | HR | MCDB | DP | HR | MCDB | WS | MCDB | WS | MCDB | MCWS | PCWD | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) | (m) | (n) | (o) | |
| (1) | 1 | -17.1 | -14.5 | -20.8 | 0.6 | -16.2 | -18.1 | 0.8 | -14.0 | 14.7 | -1.4 | 13.4 | -4.3 | 4.1 | 70 | (1) |

### Annual Cooling, Dehumidification, and Enthalpy Design Conditions

| | Hottest Month | Hottest Month DB Range | Cooling DB/MCWB | | | | | | Evaporation WB/MCDB | | | | | | MCWS/PCWD to 0.4% DB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.4% | | 1% | | 2% | | 0.4% | | 1% | | 2% | | | | |
| | | | DB | MCWB | DB | MCWB | DB | MCWB | WB | MCDB | WB | MCDB | WB | MCDB | MCWS | PCWD | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) | (m) | (n) | (o) | (p) | |
| (2) | 7 | 10.3 | 34.6 | 21.8 | 32.2 | 21.3 | 30.3 | 20.5 | 23.3 | 31.0 | 22.4 | 29.5 | 21.4 | 28.1 | 4.9 | 100 | (2) |

| | Dehumidification DP/MCDB and HR | | | | | | | | | Enthalpy/MCDB | | | | | | Hours 8 to 4 & 12.8/20.6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.4% | | | 1% | | | 2% | | | 0.4% | | 1% | | 2% | | | |
| | DP | HR | MCDB | DP | HR | MCDB | DP | HR | MCDB | Enth | MCDB | Enth | MCDB | Enth | MCDB | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) | (m) | (n) | (o) | (p) | |
| (3) | 21.0 | 15.8 | 26.7 | 20.0 | 14.8 | 25.6 | 19.1 | 14.0 | 25.0 | 69.5 | 31.2 | 66.0 | 29.6 | 62.9 | 28.2 | 688 | (3) |

### Extreme Annual Design Conditions

| | Extreme Annual WS | | | Extreme Max WB | Extreme Annual DB | | | | n-Year Return Period Values of Extreme DB | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Mean | | Standard deviation | | n=5 years | | n=10 years | | n=20 years | | n=50 years | | |
| | 1% | 2.5% | 5% | | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) | (m) | (n) | (o) | (p) | |
| (4) | 12.5 | 10.9 | 9.5 | 27.2 | -19.5 | 36.1 | 3.5 | 2.5 | -22.1 | 37.9 | -24.1 | 39.3 | -26.1 | 40.7 | -28.7 | 42.6 | (4) |

### Monthly Climatic Design Conditions

| | | | | Annual (d) | Jan (e) | Feb (f) | Mar (g) | Apr (h) | May (i) | Jun (j) | Jul (k) | Aug (l) | Sep (m) | Oct (n) | Nov (o) | Dec (p) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (5) | Temperatures, Degree-Days and Degree-Hours | Tavg | | 10.2 | -3.1 | -2.4 | 3.1 | 10.5 | 16.4 | 21.2 | 23.8 | 23.2 | 17.2 | 10.3 | 3.1 | -1.6 | (5) |
| (6) | | Sd | | | 5.98 | 5.47 | 4.73 | 3.90 | 3.90 | 3.51 | 3.20 | 3.40 | 3.93 | 4.63 | 5.18 | 5.27 | (6) |
| (7) | | HDD10.0 | | 1634 | 405 | 347 | 218 | 39 | 2 | 0 | 0 | 0 | 2 | 52 | 211 | 358 | (7) |
| (8) | | HDD18.3 | | 3442 | 663 | 580 | 473 | 234 | 84 | 12 | 1 | 3 | 67 | 251 | 457 | 617 | (8) |
| (9) | | CDD10.0 | | 1716 | 0 | 0 | 3 | 55 | 202 | 335 | 429 | 409 | 217 | 62 | 4 | 0 | (9) |
| (10) | | CDD18.3 | | 482 | 0 | 0 | 0 | 1 | 25 | 97 | 171 | 154 | 31 | 3 | 0 | 0 | (10) |
| (11) | | CDH23.3 | | 4434 | 0 | 0 | 0 | 5 | 224 | 808 | 1658 | 1502 | 217 | 21 | 0 | 0 | (11) |
| (12) | | CDH26.7 | | 1702 | 0 | 0 | 0 | 1 | 57 | 274 | 689 | 626 | 49 | 4 | 0 | 0 | (12) |
| (13) | Precipitation | PrecAvg | | 593 | 54 | 41 | 38 | 47 | 60 | 60 | 55 | 42 | 42 | 33 | 52 | 72 | (13) |
| (14) | | PrecMax | | 801 | 129 | 92 | 92 | 128 | 150 | 147 | 166 | 116 | 171 | 107 | 129 | 151 | (14) |
| (15) | | PrecMin | | 426 | 6 | 2 | 1 | 5 | 5 | 9 | 2 | 4 | 0 | 2 | 7 | 4 | (15) |
| (16) | | PrecSD | | 92.8 | 32.4 | 21.9 | 20.4 | 25.7 | 33.7 | 32.1 | 39.2 | 30.2 | 33.8 | 22.4 | 33.7 | 34.0 | (16) |
| (17) | Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures | 0.4% | DB | | 9.7 | 12.2 | 17.3 | 23.9 | 31.2 | 34.0 | 37.0 | 38.0 | 30.4 | 26.1 | 16.1 | 10.8 | (17) |
| (18) | | | MCWB | | 7.0 | 7.9 | 10.9 | 14.6 | 21.5 | 21.1 | 22.6 | 21.5 | 19.7 | 17.8 | 12.2 | 8.5 | (18) |
| (19) | | 2% | DB | | 6.9 | 8.0 | 14.2 | 21.1 | 28.0 | 31.8 | 34.9 | 34.9 | 28.1 | 22.0 | 13.4 | 8.4 | (19) |
| (20) | | | MCWB | | 5.8 | 5.9 | 9.0 | 13.4 | 18.5 | 20.9 | 21.8 | 21.6 | 18.6 | 15.5 | 11.2 | 7.4 | (20) |
| (21) | | 5% | DB | | 5.1 | 5.8 | 11.9 | 19.0 | 25.8 | 29.9 | 32.4 | 32.0 | 26.0 | 19.0 | 11.2 | 6.8 | (21) |
| (22) | | | MCWB | | 4.3 | 4.4 | 7.7 | 12.2 | 17.7 | 20.4 | 21.7 | 20.9 | 17.9 | 14.3 | 9.5 | 5.8 | (22) |
| (23) | | 10% | DB | | 3.6 | 3.9 | 9.4 | 17.2 | 23.7 | 27.9 | 30.4 | 30.0 | 23.9 | 16.8 | 9.8 | 5.0 | (23) |
| (24) | | | MCWB | | 2.9 | 2.8 | 6.4 | 11.3 | 16.6 | 19.7 | 20.7 | 20.3 | 17.0 | 13.0 | 8.7 | 4.3 | (24) |
| (25) | Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures | 0.4% | WB | | 7.4 | 8.6 | 11.3 | 15.6 | 22.2 | 23.4 | 25.1 | 25.0 | 21.7 | 18.4 | 13.2 | 9.4 | (25) |
| (26) | | | MCDB | | 8.7 | 11.5 | 16.2 | 21.6 | 29.4 | 30.3 | 33.7 | 32.5 | 27.7 | 24.0 | 14.9 | 9.9 | (26) |
| (27) | | 2% | WB | | 5.6 | 6.1 | 9.6 | 14.1 | 19.7 | 22.1 | 23.4 | 23.1 | 20.0 | 16.2 | 11.4 | 7.4 | (27) |
| (28) | | | MCDB | | 6.5 | 7.6 | 13.5 | 19.2 | 26.2 | 28.4 | 31.4 | 31.0 | 25.4 | 20.6 | 13.2 | 8.3 | (28) |
| (29) | | 5% | WB | | 4.2 | 4.2 | 8.1 | 12.9 | 18.3 | 21.3 | 22.5 | 22.0 | 18.8 | 14.9 | 10.0 | 5.7 | (29) |
| (30) | | | MCDB | | 5.0 | 5.4 | 11.1 | 17.8 | 24.3 | 27.5 | 30.0 | 29.0 | 23.9 | 18.2 | 11.0 | 6.4 | (30) |
| (31) | | 10% | WB | | 2.7 | 2.7 | 6.7 | 11.9 | 17.1 | 20.5 | 21.6 | 21.0 | 17.8 | 13.5 | 8.5 | 4.2 | (31) |
| (32) | | | MCDB | | 3.4 | 3.6 | 9.1 | 16.3 | 22.4 | 26.4 | 28.4 | 27.8 | 22.6 | 16.3 | 9.5 | 4.8 | (32) |
| (33) | Mean Daily Temperature Range | | MDBR | | 5.0 | 5.9 | 7.2 | 9.4 | 9.9 | 9.7 | 10.3 | 11.2 | 10.1 | 8.3 | 5.6 | 5.0 | (33) |
| (34) | | 5% DB | MCDBR | | 5.4 | 7.7 | 11.2 | 12.6 | 12.7 | 12.1 | 12.7 | 13.8 | 12.6 | 11.6 | 8.0 | 6.4 | (34) |
| (35) | | | MCWBR | | 4.7 | 5.9 | 6.9 | 6.8 | 6.5 | 5.5 | 5.5 | 6.1 | 6.2 | 6.8 | 6.1 | 5.7 | (35) |
| (36) | | 5% WB | MCDBR | | 5.2 | 7.2 | 10.1 | 10.9 | 11.6 | 10.6 | 11.2 | 11.8 | 11.2 | 10.7 | 7.5 | 6.0 | (36) |
| (37) | | | MCWBR | | 4.6 | 5.8 | 6.6 | 6.3 | 6.4 | 5.5 | 5.6 | 6.1 | 6.3 | 6.7 | 6.1 | 5.4 | (37) |
| (38) | Clear Sky Solar Irradiance | taub | | | 0.339 | 0.324 | 0.358 | 0.363 | 0.343 | 0.366 | 0.377 | 0.385 | 0.360 | 0.338 | 0.332 | 0.322 | (38) |
| (39) | | taud | | | 2.409 | 2.320 | 2.352 | 2.350 | 2.405 | 2.368 | 2.334 | 2.323 | 2.441 | 2.520 | 2.502 | 2.471 | (39) |
| (40) | | Ebn,noon | | | 732 | 834 | 860 | 890 | 920 | 897 | 880 | 857 | 849 | 818 | 744 | 714 | (40) |
| (41) | | Edh,noon | | | 70 | 92 | 105 | 115 | 113 | 118 | 121 | 117 | 95 | 76 | 64 | 59 | (41) |

Nomenclature: See separate page