

**Table 5.16(m)** Solar cooling loads for fast-response building with single clear glazing: Southampton (50.8°N); unshaded type 1 glazing

| Date     | Orientation | Solar cooling load at stated sun time / W·m <sup>-2</sup> |       |       |       |       |       |       |       |       |       | Orientation |       |
|----------|-------------|-----------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|-------|
|          |             | 07:30                                                     | 08:30 | 09:30 | 10:30 | 11:30 | 12:30 | 13:30 | 14:30 | 15:30 | 16:30 |             | 17:30 |
| January  | N           | 7                                                         | 7     | 19    | 29    | 37    | 43    | 44    | 41    | 33    | 23    | 15          | N     |
|          | NE          | 7                                                         | 7     | 18    | 29    | 37    | 43    | 44    | 41    | 33    | 23    | 17          | NE    |
|          | E           | 18                                                        | 19    | 48    | 243   | 198   | 96    | 56    | 53    | 45    | 35    | 28          | E     |
|          | SE          | 54                                                        | 55    | 91    | 418   | 478   | 450   | 373   | 263   | 138   | 71    | 62          | SE    |
|          | S           | 87                                                        | 88    | 119   | 376   | 497   | 559   | 580   | 566   | 523   | 438   | 95          | S     |
|          | SW          | 68                                                        | 69    | 82    | 114   | 217   | 340   | 446   | 526   | 579   | 579   | 79          | SW    |
|          | W           | 28                                                        | 29    | 40    | 50    | 59    | 66    | 80    | 184   | 307   | 386   | 38          | W     |
|          | NW          | 7                                                         | 8     | 20    | 29    | 37    | 43    | 44    | 41    | 33    | 21    | 15          | NW    |
| Horiz.   | 23          | 25                                                        | 45    | 90    | 140   | 173   | 180   | 162   | 118   | 66    | 34    | Horiz.      |       |
| February | N           | 12                                                        | 19    | 37    | 49    | 62    | 75    | 79    | 76    | 63    | 44    | 27          | N     |
|          | NE          | 13                                                        | 22    | 55    | 50    | 63    | 76    | 80    | 77    | 64    | 44    | 27          | NE    |
|          | E           | 31                                                        | 48    | 209   | 319   | 262   | 142   | 98    | 95    | 82    | 62    | 45          | E     |
|          | SE          | 67                                                        | 86    | 277   | 493   | 554   | 511   | 415   | 290   | 158   | 99    | 81          | SE    |
|          | S           | 99                                                        | 113   | 229   | 417   | 550   | 612   | 622   | 597   | 537   | 432   | 274         | S     |
|          | SW          | 83                                                        | 89    | 108   | 130   | 236   | 376   | 489   | 570   | 614   | 599   | 457         | SW    |
|          | W           | 44                                                        | 51    | 69    | 81    | 94    | 108   | 122   | 236   | 361   | 439   | 388         | W     |
|          | NW          | 14                                                        | 21    | 39    | 51    | 64    | 78    | 82    | 78    | 66    | 57    | 97          | NW    |
| Horiz.   | 42          | 54                                                        | 101   | 160   | 236   | 290   | 301   | 278   | 216   | 125   | 63    | Horiz.      |       |
| March    | N           | 21                                                        | 41    | 64    | 74    | 83    | 91    | 96    | 105   | 96    | 63    | 48          | N     |
|          | NE          | 24                                                        | 61    | 95    | 72    | 85    | 93    | 98    | 106   | 97    | 65    | 50          | NE    |
|          | E           | 46                                                        | 105   | 308   | 380   | 298   | 156   | 119   | 128   | 119   | 86    | 71          | E     |
|          | SE          | 79                                                        | 137   | 367   | 540   | 585   | 535   | 429   | 292   | 150   | 120   | 105         | SE    |
|          | S           | 109                                                       | 147   | 274   | 436   | 565   | 639   | 666   | 663   | 582   | 376   | 258         | S     |
|          | SW          | 95                                                        | 115   | 138   | 156   | 244   | 400   | 546   | 675   | 726   | 568   | 487         | SW    |
|          | W           | 58                                                        | 78    | 101   | 111   | 120   | 130   | 148   | 315   | 479   | 465   | 461         | W     |
|          | NW          | 24                                                        | 44    | 67    | 77    | 87    | 95    | 100   | 109   | 102   | 90    | 157         | NW    |
| Horiz.   | 69          | 116                                                       | 171   | 254   | 347   | 410   | 432   | 425   | 345   | 183   | 110   | Horiz.      |       |
| April    | N           | 60                                                        | 71    | 89    | 105   | 113   | 125   | 134   | 130   | 122   | 99    | 76          | N     |
|          | NE          | 98                                                        | 109   | 117   | 121   | 116   | 128   | 138   | 133   | 126   | 103   | 80          | NE    |
|          | E           | 127                                                       | 151   | 185   | 238   | 307   | 166   | 150   | 146   | 138   | 116   | 92          | E     |
|          | SE          | 133                                                       | 165   | 210   | 299   | 547   | 480   | 366   | 224   | 161   | 138   | 115         | SE    |
|          | S           | 120                                                       | 155   | 196   | 274   | 513   | 572   | 588   | 549   | 475   | 359   | 223         | S     |
|          | SW          | 166                                                       | 183   | 201   | 222   | 281   | 431   | 569   | 663   | 719   | 717   | 665         | SW    |
|          | W           | 159                                                       | 177   | 194   | 211   | 218   | 233   | 254   | 413   | 582   | 696   | 754         | W     |
|          | NW          | 97                                                        | 114   | 131   | 148   | 155   | 167   | 177   | 171   | 156   | 187   | 338         | NW    |
| Horiz.   | 141         | 179                                                       | 223   | 302   | 461   | 533   | 557   | 517   | 434   | 279   | 149   | Horiz.      |       |
| May      | N           | 89                                                        | 96    | 109   | 118   | 123   | 126   | 124   | 119   | 111   | 101   | 89          | N     |
|          | NE          | 285                                                       | 285   | 186   | 135   | 142   | 144   | 143   | 138   | 130   | 120   | 107         | NE    |
|          | E           | 383                                                       | 486   | 492   | 433   | 320   | 193   | 172   | 167   | 159   | 149   | 136         | E     |
|          | SE          | 292                                                       | 410   | 477   | 500   | 479   | 409   | 305   | 189   | 164   | 154   | 141         | SE    |
|          | S           | 127                                                       | 163   | 250   | 337   | 407   | 445   | 450   | 417   | 349   | 254   | 152         | S     |
|          | SW          | 174                                                       | 189   | 202   | 212   | 238   | 354   | 462   | 543   | 585   | 582   | 528         | SW    |
|          | W           | 196                                                       | 211   | 224   | 233   | 238   | 244   | 256   | 393   | 537   | 634   | 667         | W     |
|          | NW          | 145                                                       | 161   | 173   | 182   | 187   | 190   | 188   | 183   | 176   | 205   | 353         | NW    |
| Horiz.   | 179         | 211                                                       | 267   | 386   | 482   | 534   | 543   | 505   | 419   | 278   | 166   | Horiz.      |       |
| June     | N           | 98                                                        | 104   | 116   | 124   | 130   | 130   | 131   | 126   | 121   | 110   | 96          | N     |
|          | NE          | 314                                                       | 292   | 200   | 147   | 153   | 153   | 153   | 148   | 143   | 132   | 118         | NE    |
|          | E           | 403                                                       | 463   | 481   | 442   | 328   | 206   | 181   | 175   | 171   | 159   | 146         | E     |
|          | SE          | 291                                                       | 375   | 444   | 483   | 452   | 401   | 296   | 186   | 170   | 159   | 145         | SE    |
|          | S           | 124                                                       | 143   | 220   | 306   | 367   | 417   | 416   | 393   | 319   | 234   | 140         | S     |
|          | SW          | 178                                                       | 194   | 206   | 213   | 222   | 331   | 435   | 520   | 543   | 551   | 525         | SW    |
|          | W           | 211                                                       | 227   | 239   | 247   | 254   | 256   | 266   | 395   | 521   | 621   | 684         | W     |
|          | NW          | 163                                                       | 179   | 191   | 198   | 205   | 205   | 206   | 200   | 196   | 225   | 375         | NW    |
| Horiz.   | 189         | 224                                                       | 280   | 396   | 490   | 554   | 558   | 526   | 432   | 294   | 172   | Horiz.      |       |
| July     | N           | 87                                                        | 94    | 108   | 118   | 125   | 128   | 127   | 122   | 114   | 104   | 90          | N     |
|          | NE          | 293                                                       | 282   | 191   | 144   | 147   | 150   | 149   | 144   | 136   | 126   | 112         | NE    |
|          | E           | 385                                                       | 459   | 469   | 424   | 327   | 207   | 176   | 172   | 164   | 153   | 139         | E     |
|          | SE          | 282                                                       | 379   | 443   | 470   | 459   | 403   | 312   | 204   | 166   | 155   | 141         | SE    |
|          | S           | 120                                                       | 146   | 227   | 309   | 376   | 418   | 429   | 404   | 346   | 259   | 164         | S     |
|          | SW          | 182                                                       | 198   | 212   | 222   | 235   | 340   | 444   | 523   | 569   | 572   | 556         | SW    |
|          | W           | 216                                                       | 232   | 246   | 257   | 263   | 267   | 273   | 392   | 526   | 622   | 696         | W     |
|          | NW          | 161                                                       | 178   | 191   | 202   | 208   | 211   | 210   | 205   | 196   | 224   | 368         | NW    |
| Horiz.   | 169         | 204                                                       | 260   | 368   | 457   | 510   | 522   | 490   | 412   | 277   | 160   | Horiz.      |       |
| August   | N           | 62                                                        | 75    | 88    | 99    | 107   | 112   | 111   | 101   | 97    | 86    | 73          | N     |
|          | NE          | 179                                                       | 231   | 151   | 107   | 117   | 122   | 120   | 110   | 106   | 96    | 83          | NE    |
|          | E           | 260                                                       | 434   | 465   | 418   | 305   | 179   | 149   | 139   | 135   | 125   | 112         | E     |
|          | SE          | 227                                                       | 395   | 486   | 523   | 499   | 426   | 334   | 224   | 153   | 142   | 130         | SE    |
|          | S           | 121                                                       | 183   | 280   | 378   | 447   | 476   | 489   | 505   | 407   | 310   | 199         | S     |
|          | SW          | 136                                                       | 154   | 168   | 182   | 227   | 340   | 450   | 576   | 580   | 567   | 490         | SW    |
|          | W           | 124                                                       | 142   | 156   | 167   | 175   | 182   | 194   | 328   | 454   | 538   | 539         | W     |
|          | NW          | 80                                                        | 99    | 112   | 123   | 131   | 136   | 135   | 124   | 117   | 141   | 246         | NW    |
| Horiz.   | 139         | 175                                                       | 227   | 330   | 414   | 455   | 468   | 456   | 362   | 242   | 153   | Horiz.      |       |

Table continues

**Table 5.16(m)** Solar cooling loads for fast-response building with single clear glazing: Southampton (50.8°N); unshaded type 1 glazing — *continued*

| Date      | Orientation | Solar cooling load at stated sun time / W·m <sup>-2</sup> |       |       |       |       |       |       |       |       |       | Orientation |       |
|-----------|-------------|-----------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|-------|
|           |             | 07:30                                                     | 08:30 | 09:30 | 10:30 | 11:30 | 12:30 | 13:30 | 14:30 | 15:30 | 16:30 |             | 17:30 |
| September | N           | 34                                                        | 48    | 63    | 75    | 83    | 87    | 86    | 81    | 71    | 58    | 42          | N     |
|           | NE          | 54                                                        | 179   | 102   | 80    | 88    | 92    | 91    | 86    | 76    | 63    | 48          | NE    |
|           | E           | 96                                                        | 433   | 440   | 361   | 258   | 141   | 119   | 114   | 104   | 91    | 76          | E     |
|           | SE          | 121                                                       | 444   | 526   | 526   | 514   | 461   | 361   | 229   | 133   | 120   | 105         | SE    |
|           | S           | 125                                                       | 238   | 350   | 433   | 512   | 566   | 578   | 540   | 468   | 365   | 240         | S     |
|           | SW          | 106                                                       | 119   | 134   | 150   | 249   | 381   | 500   | 575   | 612   | 599   | 508         | SW    |
|           | W           | 76                                                        | 88    | 103   | 115   | 123   | 130   | 151   | 289   | 427   | 515   | 507         | W     |
|           | NW          | 40                                                        | 52    | 67    | 79    | 87    | 91    | 90    | 85    | 70    | 93    | 175         | NW    |
| Horiz.    | 82          | 117                                                       | 164   | 252   | 326   | 372   | 379   | 342   | 270   | 168   | 92    | Horiz.      |       |
| October   | N           | 14                                                        | 32    | 42    | 53    | 60    | 63    | 62    | 56    | 49    | 35    | 19          | N     |
|           | NE          | 15                                                        | 35    | 55    | 54    | 61    | 64    | 62    | 57    | 49    | 35    | 22          | NE    |
|           | E           | 33                                                        | 71    | 313   | 284   | 197   | 94    | 80    | 74    | 67    | 53    | 40          | E     |
|           | SE          | 66                                                        | 109   | 429   | 484   | 485   | 431   | 344   | 217   | 109   | 86    | 71          | SE    |
|           | S           | 101                                                       | 135   | 338   | 446   | 530   | 575   | 594   | 563   | 576   | 446   | 106         | S     |
|           | SW          | 86                                                        | 104   | 117   | 155   | 267   | 394   | 510   | 587   | 733   | 697   | 93          | SW    |
|           | W           | 46                                                        | 65    | 73    | 85    | 92    | 100   | 126   | 267   | 468   | 546   | 53          | W     |
|           | NW          | 15                                                        | 34    | 42    | 54    | 61    | 64    | 62    | 57    | 52    | 48    | 20          | NW    |
| Horiz.    | 44          | 73                                                        | 112   | 175   | 231   | 262   | 265   | 234   | 193   | 105   | 46    | Horiz.      |       |
| November  | N           | 7                                                         | 12    | 28    | 33    | 40    | 44    | 43    | 39    | 29    | 27    | 7           | N     |
|           | NE          | 7                                                         | 11    | 26    | 33    | 40    | 44    | 43    | 39    | 30    | 30    | 7           | NE    |
|           | E           | 17                                                        | 22    | 55    | 246   | 165   | 70    | 54    | 49    | 39    | 38    | 17          | E     |
|           | SE          | 52                                                        | 57    | 103   | 467   | 470   | 427   | 333   | 219   | 105   | 70    | 52          | SE    |
|           | S           | 78                                                        | 83    | 124   | 435   | 518   | 569   | 568   | 542   | 454   | 98    | 79          | S     |
|           | SW          | 58                                                        | 62    | 82    | 125   | 244   | 373   | 468   | 537   | 532   | 81    | 58          | SW    |
|           | W           | 20                                                        | 25    | 41    | 46    | 53    | 62    | 89    | 211   | 298   | 41    | 20          | W     |
|           | NW          | 7                                                         | 12    | 30    | 33    | 40    | 44    | 43    | 39    | 29    | 25    | 7           | NW    |
| Horiz.    | 24          | 30                                                        | 59    | 107   | 152   | 180   | 177   | 150   | 100   | 55    | 29    | Horiz.      |       |
| December  | N           | 5                                                         | 6     | 12    | 24    | 31    | 36    | 35    | 31    | 26    | 27    | 5           | N     |
|           | NE          | 5                                                         | 6     | 12    | 24    | 31    | 36    | 35    | 31    | 26    | 27    | 5           | NE    |
|           | E           | 13                                                        | 14    | 31    | 165   | 157   | 69    | 43    | 39    | 34    | 36    | 13          | E     |
|           | SE          | 46                                                        | 46    | 70    | 308   | 430   | 390   | 327   | 234   | 122   | 68    | 46          | SE    |
|           | S           | 71                                                        | 72    | 93    | 295   | 463   | 503   | 532   | 540   | 491   | 93    | 71          | S     |
|           | SW          | 53                                                        | 54    | 63    | 102   | 209   | 318   | 420   | 514   | 552   | 75    | 53          | SW    |
|           | W           | 17                                                        | 18    | 24    | 36    | 43    | 50    | 71    | 181   | 287   | 39    | 17          | W     |
|           | NW          | 5                                                         | 6     | 12    | 24    | 31    | 36    | 35    | 31    | 26    | 27    | 5           | NW    |
| Horiz.    | 18          | 18                                                        | 31    | 70    | 112   | 136   | 140   | 122   | 85    | 54    | 20    | Horiz.      |       |

Air node correction factor: 0.86 (fast response); 0.82 (slow response)