



Table I
Fire Resistance Period: 30 Minutes

Thickness (mm) Required for a Design Temperature of

| Wall Thickness (mm) | 350°C | 400°C | 450°C | 500°C | 512°C | 520°C | 521°C | 547°C | 550°C | 600°C | 620°C | 650°C | 700°C | 750°C |
|---------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) |
| 3.2 | 1.038 | 0.754 | 0.481 | 0.216 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 3.5 | 1.013 | 0.714 | 0.452 | 0.213 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 4.0 | 0.971 | 0.647 | 0.404 | 0.208 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 4.5 | 0.930 | 0.580 | 0.357 | 0.203 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 5.0 | 0.888 | 0.513 | 0.309 | 0.198 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 5.5 | 0.847 | 0.445 | 0.261 | 0.193 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 6.0 | 0.805 | 0.378 | 0.214 | 0.188 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 6.3 | 0.780 | 0.338 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 6.5 | 0.775 | 0.336 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 7.0 | 0.762 | 0.333 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 7.5 | 0.749 | 0.329 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 8.0 | 0.736 | 0.326 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 8.5 | 0.723 | 0.322 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 9.0 | 0.710 | 0.319 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 9.5 | 0.697 | 0.315 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 10.0 | 0.685 | 0.312 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 10.5 | 0.672 | 0.308 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 11.0 | 0.659 | 0.305 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 11.5 | 0.646 | 0.301 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 12.0 | 0.633 | 0.298 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 12.5 | 0.620 | 0.294 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 13.0 | 0.607 | 0.291 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 13.5 | 0.594 | 0.287 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 14.0 | 0.581 | 0.283 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 14.5 | 0.568 | 0.280 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 15.0 | 0.555 | 0.276 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 15.5 | 0.542 | 0.273 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 16.0 | 0.529 | 0.269 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 16.5 | 0.516 | 0.266 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 17.0 | 0.504 | 0.262 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 17.5 | 0.491 | 0.259 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 18.0 | 0.478 | 0.255 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 18.5 | 0.465 | 0.252 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 19.0 | 0.452 | 0.248 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 19.5 | 0.439 | 0.245 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 20.0 | 0.426 | 0.241 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |

- Tables are applicable equally to circular and square concrete filled hollow columns
- Tables are applicable to columns of 88.9 mm diameter/width and higher.
- DFT for 20 mm wall thickness columns can be applied to thicker columns, with no maximum limit.

PLEASE NOTE: The critical temperatures in this loading table are as defined for offices in accordance with BS5950-8:2003 as per Table 18 of the ASFP 5th Edition Yellow Book. The Yellow book also gives new critical temperatures to comply with several different building uses either to the Eurocodes for steel design or BS5950-8:2003. Alternative loadings tables to other critical temperatures are available from the Nullifire Technical Desk on request.



Table 2
Fire Resistance Period: 45 Minutes

Thickness (mm) Required for a Design Temperature of

| Wall Thickness (mm) | 350°C | 400°C | 450°C | 500°C | 512°C | 520°C | 521°C | 547°C | 550°C | 600°C | 620°C | 650°C | 700°C | 750°C |
|---------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) |
| 3.2 | 2.214 | 1.913 | 1.620 | 1.330 | 1.261 | 1.215 | 1.209 | 1.057 | 1.039 | 0.727 | 0.589 | 0.379 | 0.185 | 0.185 |
| 3.5 | 2.182 | 1.867 | 1.565 | 1.261 | 1.187 | 1.138 | 1.132 | 0.976 | 0.958 | 0.675 | 0.550 | 0.360 | 0.185 | 0.185 |
| 4.0 | 2.129 | 1.790 | 1.473 | 1.145 | 1.065 | 1.011 | 1.005 | 0.841 | 0.822 | 0.587 | 0.485 | 0.329 | 0.185 | 0.185 |
| 4.5 | 2.076 | 1.713 | 1.381 | 1.030 | 0.943 | 0.884 | 0.877 | 0.706 | 0.687 | 0.500 | 0.419 | 0.298 | 0.185 | 0.185 |
| 5.0 | 2.023 | 1.636 | 1.290 | 0.914 | 0.820 | 0.757 | 0.750 | 0.571 | 0.552 | 0.412 | 0.354 | 0.266 | 0.185 | 0.185 |
| 5.5 | 1.970 | 1.559 | 1.198 | 0.799 | 0.698 | 0.630 | 0.622 | 0.436 | 0.417 | 0.325 | 0.289 | 0.235 | 0.185 | 0.185 |
| 6.0 | 1.917 | 1.482 | 1.106 | 0.683 | 0.575 | 0.503 | 0.494 | 0.300 | 0.281 | 0.237 | 0.224 | 0.204 | 0.185 | 0.185 |
| 6.3 | 1.885 | 1.436 | 1.051 | 0.614 | 0.502 | 0.427 | 0.418 | 0.219 | 0.200 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 6.5 | 1.871 | 1.424 | 1.043 | 0.610 | 0.499 | 0.425 | 0.415 | 0.219 | 0.200 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 7.0 | 1.834 | 1.396 | 1.022 | 0.599 | 0.491 | 0.418 | 0.409 | 0.218 | 0.200 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 7.5 | 1.797 | 1.367 | 1.001 | 0.588 | 0.483 | 0.412 | 0.404 | 0.216 | 0.199 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 8.0 | 1.760 | 1.338 | 0.980 | 0.577 | 0.474 | 0.406 | 0.398 | 0.215 | 0.198 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 8.5 | 1.723 | 1.309 | 0.959 | 0.567 | 0.466 | 0.400 | 0.392 | 0.214 | 0.198 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 9.0 | 1.686 | 1.280 | 0.938 | 0.556 | 0.458 | 0.394 | 0.386 | 0.213 | 0.197 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 9.5 | 1.649 | 1.251 | 0.918 | 0.545 | 0.450 | 0.388 | 0.380 | 0.211 | 0.197 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 10.0 | 1.612 | 1.222 | 0.897 | 0.534 | 0.442 | 0.381 | 0.374 | 0.210 | 0.196 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 10.5 | 1.575 | 1.193 | 0.876 | 0.524 | 0.434 | 0.375 | 0.368 | 0.209 | 0.196 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 11.0 | 1.538 | 1.165 | 0.855 | 0.513 | 0.426 | 0.369 | 0.362 | 0.208 | 0.195 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 11.5 | 1.501 | 1.136 | 0.834 | 0.502 | 0.418 | 0.363 | 0.356 | 0.206 | 0.194 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 12.0 | 1.464 | 1.107 | 0.813 | 0.491 | 0.410 | 0.357 | 0.350 | 0.205 | 0.194 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 12.5 | 1.427 | 1.078 | 0.792 | 0.480 | 0.402 | 0.351 | 0.344 | 0.204 | 0.193 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 13.0 | 1.390 | 1.049 | 0.771 | 0.470 | 0.394 | 0.344 | 0.338 | 0.203 | 0.193 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 13.5 | 1.353 | 1.020 | 0.750 | 0.459 | 0.386 | 0.338 | 0.332 | 0.201 | 0.192 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 14.0 | 1.317 | 0.991 | 0.729 | 0.448 | 0.378 | 0.332 | 0.326 | 0.200 | 0.192 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 14.5 | 1.280 | 0.962 | 0.709 | 0.437 | 0.370 | 0.326 | 0.320 | 0.199 | 0.191 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 15.0 | 1.243 | 0.934 | 0.688 | 0.427 | 0.362 | 0.320 | 0.315 | 0.198 | 0.191 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 15.5 | 1.206 | 0.905 | 0.667 | 0.416 | 0.354 | 0.314 | 0.309 | 0.196 | 0.190 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 16.0 | 1.169 | 0.876 | 0.646 | 0.405 | 0.346 | 0.307 | 0.303 | 0.195 | 0.189 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 16.5 | 1.132 | 0.847 | 0.625 | 0.394 | 0.338 | 0.301 | 0.297 | 0.194 | 0.189 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 17.0 | 1.095 | 0.818 | 0.604 | 0.383 | 0.330 | 0.295 | 0.291 | 0.193 | 0.188 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 17.5 | 1.058 | 0.789 | 0.583 | 0.373 | 0.322 | 0.289 | 0.285 | 0.191 | 0.188 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 18.0 | 1.021 | 0.760 | 0.562 | 0.362 | 0.314 | 0.283 | 0.279 | 0.190 | 0.187 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 18.5 | 0.984 | 0.731 | 0.541 | 0.351 | 0.306 | 0.277 | 0.273 | 0.189 | 0.187 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 19.0 | 0.947 | 0.703 | 0.520 | 0.340 | 0.298 | 0.270 | 0.267 | 0.188 | 0.186 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 19.5 | 0.910 | 0.674 | 0.499 | 0.329 | 0.290 | 0.264 | 0.261 | 0.186 | 0.186 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 20.0 | 0.873 | 0.645 | 0.479 | 0.319 | 0.282 | 0.258 | 0.255 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |

- Tables are applicable equally to circular and square concrete filled hollow columns
- Tables are applicable to columns of 88.9 mm diameter/width and higher.
- DFT for 20 mm wall thickness columns can be applied to thicker columns, with no maximum limit.

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Table 3
Fire Resistance Period: 60 Minutes

Thickness (mm) Required for a Design Temperature of

| Wall Thickness (mm) | 350°C | 400°C | 450°C | 500°C | 512°C | 520°C | 521°C | 547°C | 550°C | 600°C | 620°C | 650°C | 700°C | 750°C |
|---------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) |
| 3.2 | 3.390 | 3.072 | 2.759 | 2.445 | 2.368 | 2.317 | 2.311 | 2.143 | 2.122 | 1.769 | 1.613 | 1.375 | 0.955 | 0.514 |
| 3.5 | 3.351 | 3.020 | 2.698 | 2.370 | 2.290 | 2.236 | 2.230 | 2.057 | 2.036 | 1.682 | 1.527 | 1.290 | 0.881 | 0.483 |
| 4.0 | 3.287 | 2.933 | 2.595 | 2.246 | 2.160 | 2.102 | 2.095 | 1.914 | 1.892 | 1.536 | 1.384 | 1.149 | 0.756 | 0.429 |
| 4.5 | 3.222 | 2.846 | 2.492 | 2.123 | 2.030 | 1.968 | 1.960 | 1.770 | 1.749 | 1.391 | 1.240 | 1.008 | 0.632 | 0.376 |
| 5.0 | 3.158 | 2.760 | 2.390 | 1.999 | 1.900 | 1.834 | 1.826 | 1.627 | 1.605 | 1.246 | 1.097 | 0.867 | 0.508 | 0.323 |
| 5.5 | 3.094 | 2.673 | 2.287 | 1.875 | 1.770 | 1.700 | 1.691 | 1.484 | 1.461 | 1.100 | 0.954 | 0.726 | 0.384 | 0.270 |
| 6.0 | 3.029 | 2.586 | 2.185 | 1.751 | 1.640 | 1.566 | 1.556 | 1.340 | 1.317 | 0.955 | 0.810 | 0.585 | 0.260 | 0.217 |
| 6.3 | 2.990 | 2.534 | 2.123 | 1.677 | 1.562 | 1.485 | 1.476 | 1.254 | 1.231 | 0.868 | 0.724 | 0.501 | 0.185 | 0.185 |
| 6.5 | 2.966 | 2.513 | 2.105 | 1.662 | 1.548 | 1.472 | 1.462 | 1.243 | 1.220 | 0.859 | 0.717 | 0.496 | 0.185 | 0.185 |
| 7.0 | 2.905 | 2.458 | 2.058 | 1.624 | 1.513 | 1.439 | 1.429 | 1.215 | 1.192 | 0.838 | 0.699 | 0.484 | 0.185 | 0.185 |
| 7.5 | 2.844 | 2.404 | 2.011 | 1.587 | 1.478 | 1.406 | 1.397 | 1.186 | 1.164 | 0.817 | 0.680 | 0.473 | 0.185 | 0.185 |
| 8.0 | 2.783 | 2.350 | 1.964 | 1.549 | 1.443 | 1.373 | 1.364 | 1.158 | 1.136 | 0.796 | 0.662 | 0.461 | 0.185 | 0.185 |
| 8.5 | 2.722 | 2.296 | 1.918 | 1.512 | 1.408 | 1.339 | 1.331 | 1.129 | 1.108 | 0.775 | 0.644 | 0.450 | 0.185 | 0.185 |
| 9.0 | 2.661 | 2.241 | 1.871 | 1.474 | 1.373 | 1.306 | 1.298 | 1.101 | 1.080 | 0.754 | 0.626 | 0.438 | 0.185 | 0.185 |
| 9.5 | 2.600 | 2.187 | 1.824 | 1.437 | 1.339 | 1.273 | 1.265 | 1.072 | 1.052 | 0.733 | 0.608 | 0.427 | 0.185 | 0.185 |
| 10.0 | 2.539 | 2.133 | 1.777 | 1.399 | 1.304 | 1.240 | 1.232 | 1.044 | 1.024 | 0.711 | 0.589 | 0.415 | 0.185 | 0.185 |
| 10.5 | 2.479 | 2.079 | 1.731 | 1.362 | 1.269 | 1.207 | 1.199 | 1.015 | 0.996 | 0.690 | 0.571 | 0.404 | 0.185 | 0.185 |
| 11.0 | 2.418 | 2.025 | 1.684 | 1.324 | 1.234 | 1.174 | 1.166 | 0.987 | 0.968 | 0.669 | 0.553 | 0.392 | 0.185 | 0.185 |
| 11.5 | 2.357 | 1.970 | 1.637 | 1.287 | 1.199 | 1.141 | 1.133 | 0.959 | 0.939 | 0.648 | 0.535 | 0.381 | 0.185 | 0.185 |
| 12.0 | 2.296 | 1.916 | 1.590 | 1.250 | 1.164 | 1.108 | 1.101 | 0.930 | 0.911 | 0.627 | 0.517 | 0.369 | 0.185 | 0.185 |
| 12.5 | 2.235 | 1.862 | 1.543 | 1.212 | 1.129 | 1.074 | 1.068 | 0.902 | 0.883 | 0.606 | 0.499 | 0.358 | 0.185 | 0.185 |
| 13.0 | 2.174 | 1.808 | 1.497 | 1.175 | 1.094 | 1.041 | 1.035 | 0.873 | 0.855 | 0.585 | 0.480 | 0.346 | 0.185 | 0.185 |
| 13.5 | 2.113 | 1.753 | 1.450 | 1.137 | 1.059 | 1.008 | 1.002 | 0.845 | 0.827 | 0.564 | 0.462 | 0.335 | 0.185 | 0.185 |
| 14.0 | 2.052 | 1.699 | 1.403 | 1.100 | 1.024 | 0.975 | 0.969 | 0.816 | 0.799 | 0.542 | 0.444 | 0.323 | 0.185 | 0.185 |
| 14.5 | 1.991 | 1.645 | 1.356 | 1.062 | 0.990 | 0.942 | 0.936 | 0.788 | 0.771 | 0.521 | 0.426 | 0.312 | 0.185 | 0.185 |
| 15.0 | 1.930 | 1.591 | 1.310 | 1.025 | 0.955 | 0.909 | 0.903 | 0.759 | 0.743 | 0.500 | 0.408 | 0.300 | 0.185 | 0.185 |
| 15.5 | 1.869 | 1.536 | 1.263 | 0.987 | 0.920 | 0.876 | 0.870 | 0.731 | 0.715 | 0.479 | 0.389 | 0.289 | 0.185 | 0.185 |
| 16.0 | 1.808 | 1.482 | 1.216 | 0.950 | 0.885 | 0.843 | 0.837 | 0.702 | 0.687 | 0.458 | 0.371 | 0.277 | 0.185 | 0.185 |
| 16.5 | 1.747 | 1.428 | 1.169 | 0.912 | 0.850 | 0.810 | 0.804 | 0.674 | 0.659 | 0.437 | 0.353 | 0.266 | 0.185 | 0.185 |
| 17.0 | 1.686 | 1.374 | 1.122 | 0.875 | 0.815 | 0.776 | 0.772 | 0.645 | 0.631 | 0.416 | 0.335 | 0.254 | 0.185 | 0.185 |
| 17.5 | 1.625 | 1.320 | 1.076 | 0.837 | 0.780 | 0.743 | 0.739 | 0.617 | 0.603 | 0.395 | 0.317 | 0.243 | 0.185 | 0.185 |
| 18.0 | 1.564 | 1.265 | 1.029 | 0.800 | 0.745 | 0.710 | 0.706 | 0.589 | 0.575 | 0.373 | 0.299 | 0.231 | 0.185 | 0.185 |
| 18.5 | 1.503 | 1.211 | 0.982 | 0.762 | 0.710 | 0.677 | 0.673 | 0.560 | 0.547 | 0.352 | 0.280 | 0.220 | 0.185 | 0.185 |
| 19.0 | 1.443 | 1.157 | 0.935 | 0.725 | 0.676 | 0.644 | 0.640 | 0.532 | 0.519 | 0.331 | 0.262 | 0.208 | 0.185 | 0.185 |
| 19.5 | 1.382 | 1.103 | 0.889 | 0.687 | 0.641 | 0.611 | 0.607 | 0.503 | 0.491 | 0.310 | 0.244 | 0.197 | 0.185 | 0.185 |
| 20.0 | 1.321 | 1.048 | 0.842 | 0.650 | 0.606 | 0.578 | 0.574 | 0.475 | 0.463 | 0.289 | 0.226 | 0.185 | 0.185 | 0.185 |

- Tables are applicable equally to circular and square concrete filled hollow columns
- Tables are applicable to columns of 88.9 mm diameter/width and higher.
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Table 4
Fire Resistance Period: 75 Minutes

Thickness (mm) Required for a Design Temperature of

| Wall Thickness (mm) | 350°C | 400°C | 450°C | 500°C | 512°C | 520°C | 521°C | 547°C | 550°C | 600°C | 620°C | 650°C | 700°C | 750°C |
|---------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) |
| 3.2 | - | - | 3.898 | 3.559 | 3.474 | 3.418 | 3.412 | 3.229 | 3.206 | 2.811 | 2.638 | 2.370 | 1.907 | 1.438 |
| 3.5 | - | - | 3.830 | 3.479 | 3.392 | 3.334 | 3.327 | 3.138 | 3.115 | 2.716 | 2.544 | 2.277 | 1.818 | 1.346 |
| 4.0 | - | - | 3.717 | 3.347 | 3.254 | 3.193 | 3.185 | 2.986 | 2.962 | 2.557 | 2.386 | 2.122 | 1.668 | 1.193 |
| 4.5 | - | - | 3.604 | 3.215 | 3.117 | 3.051 | 3.044 | 2.835 | 2.810 | 2.399 | 2.229 | 1.967 | 1.518 | 1.041 |
| 5.0 | - | - | 3.490 | 3.083 | 2.979 | 2.910 | 2.902 | 2.683 | 2.658 | 2.241 | 2.072 | 1.811 | 1.369 | 0.888 |
| 5.5 | - | - | 3.377 | 2.951 | 2.842 | 2.769 | 2.760 | 2.532 | 2.506 | 2.083 | 1.915 | 1.656 | 1.219 | 0.736 |
| 6.0 | - | - | 3.263 | 2.819 | 2.704 | 2.628 | 2.618 | 2.380 | 2.354 | 1.924 | 1.757 | 1.501 | 1.070 | 0.583 |
| 6.3 | - | 3.632 | 3.195 | 2.740 | 2.622 | 2.543 | 2.533 | 2.290 | 2.262 | 1.829 | 1.663 | 1.408 | 0.980 | 0.491 |
| 6.5 | - | 3.601 | 3.166 | 2.714 | 2.597 | 2.519 | 2.509 | 2.268 | 2.240 | 1.811 | 1.646 | 1.393 | 0.969 | 0.487 |
| 7.0 | - | 3.521 | 3.094 | 2.650 | 2.535 | 2.459 | 2.450 | 2.212 | 2.186 | 1.765 | 1.604 | 1.357 | 0.939 | 0.476 |
| 7.5 | - | 3.441 | 3.021 | 2.586 | 2.474 | 2.399 | 2.390 | 2.157 | 2.131 | 1.719 | 1.562 | 1.320 | 0.910 | 0.465 |
| 8.0 | - | 3.362 | 2.948 | 2.521 | 2.412 | 2.339 | 2.330 | 2.102 | 2.077 | 1.673 | 1.520 | 1.284 | 0.881 | 0.453 |
| 8.5 | - | 3.282 | 2.876 | 2.457 | 2.350 | 2.279 | 2.270 | 2.047 | 2.022 | 1.628 | 1.479 | 1.248 | 0.852 | 0.442 |
| 9.0 | - | 3.203 | 2.803 | 2.393 | 2.288 | 2.219 | 2.210 | 1.992 | 1.968 | 1.582 | 1.437 | 1.211 | 0.823 | 0.431 |
| 9.5 | - | 3.123 | 2.731 | 2.329 | 2.227 | 2.159 | 2.150 | 1.937 | 1.913 | 1.536 | 1.395 | 1.175 | 0.794 | 0.420 |
| 10.0 | - | 3.044 | 2.658 | 2.265 | 2.165 | 2.099 | 2.090 | 1.882 | 1.859 | 1.490 | 1.353 | 1.139 | 0.765 | 0.409 |
| 10.5 | - | 2.964 | 2.585 | 2.200 | 2.103 | 2.039 | 2.031 | 1.827 | 1.804 | 1.444 | 1.311 | 1.102 | 0.736 | 0.397 |
| 11.0 | - | 2.884 | 2.513 | 2.136 | 2.041 | 1.978 | 1.971 | 1.772 | 1.750 | 1.398 | 1.269 | 1.066 | 0.707 | 0.386 |
| 11.5 | - | 2.805 | 2.440 | 2.072 | 1.980 | 1.918 | 1.911 | 1.717 | 1.695 | 1.352 | 1.227 | 1.030 | 0.678 | 0.375 |
| 12.0 | - | 2.725 | 2.367 | 2.008 | 1.918 | 1.858 | 1.851 | 1.662 | 1.641 | 1.307 | 1.185 | 0.993 | 0.649 | 0.364 |
| 12.5 | - | 2.646 | 2.295 | 1.944 | 1.856 | 1.798 | 1.791 | 1.607 | 1.586 | 1.261 | 1.143 | 0.957 | 0.620 | 0.353 |
| 13.0 | - | 2.566 | 2.222 | 1.879 | 1.794 | 1.738 | 1.731 | 1.552 | 1.532 | 1.215 | 1.101 | 0.920 | 0.591 | 0.342 |
| 13.5 | - | 2.487 | 2.149 | 1.815 | 1.733 | 1.678 | 1.671 | 1.497 | 1.477 | 1.169 | 1.059 | 0.884 | 0.562 | 0.330 |
| 14.0 | - | 2.407 | 2.077 | 1.751 | 1.671 | 1.618 | 1.612 | 1.442 | 1.422 | 1.123 | 1.018 | 0.848 | 0.533 | 0.319 |
| 14.5 | - | 2.327 | 2.004 | 1.687 | 1.609 | 1.558 | 1.552 | 1.387 | 1.368 | 1.077 | 0.976 | 0.811 | 0.504 | 0.308 |
| 15.0 | - | 2.248 | 1.932 | 1.623 | 1.547 | 1.498 | 1.492 | 1.332 | 1.313 | 1.032 | 0.934 | 0.775 | 0.475 | 0.297 |
| 15.5 | - | 2.168 | 1.859 | 1.558 | 1.486 | 1.438 | 1.432 | 1.277 | 1.259 | 0.986 | 0.892 | 0.739 | 0.446 | 0.286 |
| 16.0 | - | 2.089 | 1.786 | 1.494 | 1.424 | 1.378 | 1.372 | 1.222 | 1.204 | 0.940 | 0.850 | 0.702 | 0.417 | 0.274 |
| 16.5 | - | 2.009 | 1.714 | 1.430 | 1.362 | 1.318 | 1.312 | 1.167 | 1.150 | 0.894 | 0.808 | 0.666 | 0.388 | 0.263 |
| 17.0 | - | 1.930 | 1.641 | 1.366 | 1.300 | 1.258 | 1.252 | 1.112 | 1.095 | 0.848 | 0.766 | 0.630 | 0.359 | 0.252 |
| 17.5 | - | 1.850 | 1.568 | 1.302 | 1.239 | 1.198 | 1.193 | 1.057 | 1.041 | 0.802 | 0.724 | 0.593 | 0.330 | 0.241 |
| 18.0 | - | 1.770 | 1.496 | 1.237 | 1.177 | 1.138 | 1.133 | 1.002 | 0.986 | 0.757 | 0.682 | 0.557 | 0.301 | 0.230 |
| 18.5 | - | 1.691 | 1.423 | 1.173 | 1.115 | 1.078 | 1.073 | 0.947 | 0.932 | 0.711 | 0.640 | 0.521 | 0.272 | 0.219 |
| 19.0 | - | 1.611 | 1.350 | 1.109 | 1.053 | 1.017 | 1.013 | 0.892 | 0.877 | 0.665 | 0.599 | 0.484 | 0.243 | 0.207 |
| 19.5 | - | 1.532 | 1.278 | 1.045 | 0.991 | 0.957 | 0.953 | 0.837 | 0.823 | 0.619 | 0.557 | 0.448 | 0.214 | 0.196 |
| 20.0 | 1.768 | 1.452 | 1.205 | 0.981 | 0.930 | 0.897 | 0.893 | 0.781 | 0.768 | 0.573 | 0.515 | 0.411 | 0.185 | 0.185 |

- Tables are applicable equally to circular and square concrete filled hollow columns
- Tables are applicable to columns of 88.9 mm diameter/width and higher.
- DFT for 20 mm wall thickness columns can be applied to thicker columns, with no maximum limit.

PLEASE NOTE: The critical temperatures in this loading table are as defined for offices in accordance with BS5950-8:2003 as per Table 18 of the ASFP 5th Edition Yellow Book. The Yellow book also gives new critical temperatures to comply with several different building uses either to the Eurocodes for steel design or BS5950-8:2003. Alternative loadings tables to other critical temperatures are available from the Nullifire Technical Desk on request.



SC604/5 Loading Tables

EN13381-6: Concrete Filled Hollow Columns



Table 5
Fire Resistance Period: 90 Minutes

Thickness (mm) Required for a Design Temperature of

| Wall Thickness (mm) | 350°C | 400°C | 450°C | 500°C | 512°C | 520°C | 521°C | 547°C | 550°C | 600°C | 620°C | 650°C | 700°C | 750°C |
|---------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) | DFT (mm) |
| 3.2 | - | - | - | - | - | - | - | - | - | 3.852 | 3.663 | 3.366 | 2.859 | 2.361 |
| 3.5 | - | - | - | - | - | - | - | - | - | 3.750 | 3.560 | 3.264 | 2.762 | 2.262 |
| 4.0 | - | - | - | - | - | - | - | - | - | 3.578 | 3.389 | 3.095 | 2.599 | 2.098 |
| 4.5 | - | - | - | - | - | - | - | - | - | 3.407 | 3.218 | 2.925 | 2.436 | 1.934 |
| 5.0 | - | - | - | - | - | - | - | - | - | 3.236 | 3.047 | 2.756 | 2.273 | 1.770 |
| 5.5 | - | - | - | - | - | - | - | - | - | 3.065 | 2.876 | 2.586 | 2.111 | 1.606 |
| 6.0 | - | - | - | - | - | - | - | - | - | 2.894 | 2.705 | 2.416 | 1.948 | 1.441 |
| 6.3 | - | - | - | 3.802 | 3.682 | 3.601 | 3.591 | 3.325 | 3.293 | 2.791 | 2.602 | 2.315 | 1.850 | 1.343 |
| 6.5 | - | - | - | 3.766 | 3.646 | 3.566 | 3.556 | 3.292 | 3.261 | 2.763 | 2.576 | 2.291 | 1.830 | 1.326 |
| 7.0 | - | - | - | 3.675 | 3.558 | 3.479 | 3.470 | 3.210 | 3.180 | 2.692 | 2.510 | 2.233 | 1.781 | 1.284 |
| 7.5 | - | - | - | 3.584 | 3.469 | 3.392 | 3.383 | 3.129 | 3.099 | 2.621 | 2.444 | 2.174 | 1.731 | 1.242 |
| 8.0 | - | - | - | 3.493 | 3.381 | 3.305 | 3.296 | 3.047 | 3.018 | 2.551 | 2.379 | 2.115 | 1.681 | 1.199 |
| 8.5 | - | - | - | 3.402 | 3.292 | 3.218 | 3.209 | 2.965 | 2.937 | 2.480 | 2.313 | 2.057 | 1.631 | 1.157 |
| 9.0 | - | - | - | 3.311 | 3.203 | 3.131 | 3.122 | 2.884 | 2.856 | 2.410 | 2.247 | 1.998 | 1.581 | 1.115 |
| 9.5 | - | - | - | 3.221 | 3.115 | 3.044 | 3.035 | 2.802 | 2.775 | 2.339 | 2.182 | 1.940 | 1.532 | 1.072 |
| 10.0 | - | - | - | 3.130 | 3.026 | 2.957 | 2.949 | 2.721 | 2.694 | 2.269 | 2.116 | 1.881 | 1.482 | 1.030 |
| 10.5 | - | - | - | 3.039 | 2.938 | 2.870 | 2.862 | 2.639 | 2.613 | 2.198 | 2.051 | 1.822 | 1.432 | 0.988 |
| 11.0 | - | - | - | 2.948 | 2.849 | 2.783 | 2.775 | 2.557 | 2.532 | 2.127 | 1.985 | 1.764 | 1.382 | 0.946 |
| 11.5 | - | - | - | 2.857 | 2.760 | 2.696 | 2.688 | 2.476 | 2.451 | 2.057 | 1.919 | 1.705 | 1.332 | 0.903 |
| 12.0 | - | - | - | 2.766 | 2.672 | 2.609 | 2.601 | 2.394 | 2.370 | 1.986 | 1.854 | 1.647 | 1.283 | 0.861 |
| 12.5 | - | - | - | 2.675 | 2.583 | 2.522 | 2.515 | 2.313 | 2.289 | 1.916 | 1.788 | 1.588 | 1.233 | 0.819 |
| 13.0 | - | - | - | 2.584 | 2.494 | 2.435 | 2.428 | 2.231 | 2.208 | 1.845 | 1.722 | 1.529 | 1.183 | 0.777 |
| 13.5 | - | - | - | 2.493 | 2.406 | 2.348 | 2.341 | 2.149 | 2.127 | 1.775 | 1.657 | 1.471 | 1.133 | 0.734 |
| 14.0 | - | - | - | 2.402 | 2.317 | 2.261 | 2.254 | 2.068 | 2.046 | 1.704 | 1.591 | 1.412 | 1.083 | 0.692 |
| 14.5 | - | - | - | 2.312 | 2.229 | 2.174 | 2.167 | 1.986 | 1.965 | 1.634 | 1.526 | 1.354 | 1.034 | 0.650 |
| 15.0 | - | - | - | 2.221 | 2.140 | 2.087 | 2.080 | 1.904 | 1.884 | 1.563 | 1.460 | 1.295 | 0.984 | 0.608 |
| 15.5 | - | - | - | 2.130 | 2.051 | 2.000 | 1.994 | 1.823 | 1.803 | 1.492 | 1.394 | 1.236 | 0.934 | 0.565 |
| 16.0 | - | - | - | 2.039 | 1.963 | 1.913 | 1.907 | 1.741 | 1.722 | 1.422 | 1.329 | 1.178 | 0.884 | 0.523 |
| 16.5 | - | - | - | 1.948 | 1.874 | 1.826 | 1.820 | 1.660 | 1.641 | 1.351 | 1.263 | 1.119 | 0.834 | 0.481 |
| 17.0 | - | - | - | 1.857 | 1.785 | 1.739 | 1.733 | 1.578 | 1.560 | 1.281 | 1.197 | 1.061 | 0.785 | 0.439 |
| 17.5 | - | - | - | 1.766 | 1.697 | 1.652 | 1.646 | 1.496 | 1.479 | 1.210 | 1.132 | 1.002 | 0.735 | 0.396 |
| 18.0 | - | - | - | 1.675 | 1.608 | 1.565 | 1.560 | 1.415 | 1.398 | 1.140 | 1.066 | 0.943 | 0.685 | 0.354 |
| 18.5 | - | - | - | 1.584 | 1.520 | 1.478 | 1.473 | 1.333 | 1.317 | 1.069 | 1.001 | 0.885 | 0.635 | 0.312 |
| 19.0 | - | - | - | 1.493 | 1.431 | 1.391 | 1.386 | 1.251 | 1.236 | 0.998 | 0.935 | 0.826 | 0.585 | 0.270 |
| 19.5 | - | - | - | 1.403 | 1.342 | 1.304 | 1.299 | 1.170 | 1.155 | 0.928 | 0.869 | 0.767 | 0.536 | 0.227 |
| 20.0 | 2.215 | 1.856 | 1.568 | 1.312 | 1.254 | 1.217 | 1.212 | 1.088 | 1.074 | 0.857 | 0.804 | 0.709 | 0.486 | 0.185 |

- Tables are applicable equally to circular and square concrete filled hollow columns
- Tables are applicable to columns of 88.9 mm diameter/width and higher.
- DFT for 20 mm wall thickness columns can be applied to thicker columns, with no maximum limit.

PLEASE NOTE: The critical temperatures in this loading table are as defined for offices in accordance with BS5950-8:2003 as per Table 18 of the ASFP 5th Edition Yellow Book. The Yellow book also gives new critical temperatures to comply with several different building uses either to the Eurocodes for steel design or BS5950-8:2003. Alternative loadings tables to other critical temperatures are available from the Nullifire Technical Desk on request.