









## 4.6





Steel temperature  $\theta_a$  (°C) of unprotected IPE and HE sections after 30 minutes exposure to the standard fire curve (based on values from table 4.5 and table 4.4), for both non-galvanized and galvanized steel.





| section | non-galvanized steel  |   | galvanized steel  |   |
|---------|---|---|---|---|
|         |  |  |  |  |
|         | four-sided heating  | three-sided heating   | four-sided heating  | three-sided heating   |
| IPE 80  | 835   | 833   | 835   | 833   |
| IPE 100 | 834   | 831   | 834   | 831   |
| IPE 120 | 833   | 830   | 833   | 829   |
| IPE 140 | 832   | 828   | 832   | 827   |
| IPE 160 | 831   | 825   | 831   | 824   |
| IPE 180 | 829   | 823   | 829   | 821   |
| IPE 200 | 827   | 819   | 827   | 816   |
| IPE 220 | 825   | 814   | 824   | 810   |
| IPE 240 | 822   | 809   | 820   | 802   |
| IPE 270 | 819   | 804   | 817   | 797   |
| IPE 300 | 816   | 798   | 812   | 788   |
| IPE 330 | 811   | 791   | 805   | 779   |
| IPE 360 | 804   | 782   | 795   | 767   |
| IPE 400 | 798   | 774   | 787   | 757   |
| IPE 450 | 790   | 767   | 778   | 750   |
| IPE 500 | 781   | 759   | 765   | 743   |
| IPE 550 | 771   | 751   | 754   | 737   |
| IPE 600 | 761   | 744   | 744   | 734   |

| section  | non-galvanized steel  |   | galvanized steel  |   |
|----------|---|---|---|---|
|          |  |  |  |  |
|          | four-sided heating  | three-sided heating   | four-sided heating  | three-sided heating   |
| HEA 100  | 822   | 798   | 820   | 787   |
| HEA 120  | 822   | 798   | 820   | 787   |
| HEA 140  | 818   | 789   | 815   | 776   |
| HEA 160  | 813   | 779   | 808   | 764   |
| HEA 180  | 810   | 774   | 804   | 757   |
| HEA 200  | 803   | 764   | 794   | 747   |
| HEA 220  | 794   | 753   | 782   | 739   |
| HEA 240  | 782   | 744   | 767   | 734   |
| HEA 260  | 777   | 741   | 760   | 730   |
| HEA 280  | 771   | 738   | 754   | 726   |
| HEA 300  | 760   | 735   | 744   | 712   |
| HEA 320  | 752   | 732   | 738   | 700   |
| HEA 340  | 747   | 730   | 736   | 692   |
| HEA 360  | 744   | 728   | 734   | 684   |
| HEA 400  | 740   | 724   | 729   | 675   |
| HEA 450  | 737   | 722   | 724   | 667   |
| HEA 500  | 736   | 718   | 718   | 659   |
| HEA 550  | 735   | 719   | 716   | 661   |
| HEA 600  | 735   | 720   | 714   | 662   |
| HEA 650  | 735   | 720   | 712   | 662   |
| HEA 700  | 733   | 718   | 707   | 657   |
| HEA 800  | 734   | 721   | 707   | 664   |
| HEA 900  | 732   | 719   | 701   | 659   |
| HEA 1000 | 732   | 721   | 701   | 664   |

## 4.6 (continued)

Steel temperature  $\theta_a$  (°C) of unprotected IPE and HE sections after 30 minutes exposure to the standard fire curve (based on values from table 4.5 and table 4.4), for both non-galvanized and galvanized steel.

| section  | non-galvanized steel  |   | galvanized steel  |   |
|----------|---|---|---|---|
|          |  |  |  |  |
|          | four-sided heating  | three-sided heating   | four-sided heating  | three-sided heating   |
| HEB 160  | 777   | 741   | 760   | 731   |
| HEB 180  | 767   | 737   | 750   | 723   |
| HEB 200  | 757   | 734   | 741   | 709   |
| HEB 220  | 750   | 730   | 737   | 694   |
| HEB 240  | 743   | 724   | 745   | 675   |
| HEB 260  | 741   | 721   | 731   | 665   |
| HEB 280  | 739   | 717   | 727   | 654   |
| HEB 300  | 736   | 707   | 719   | 632   |
| HEB 320  | 734   | 701   | 709   | 618   |
| HEB 340  | 733   | 698   | 703   | 612   |
| HEB 360  | 731   | 695   | 697   | 605   |
| HEB 400  | 729   | 692   | 688   | 599   |
| HEB 450  | 726   | 689   | 679   | 594   |
| HEB 500  | 723   | 687   | 670   | 590   |
| HEB 550  | 723   | 690   | 670   | 595   |
| HEB 600  | 722   | 692   | 669   | 598   |
| HEB 650  | 722   | 693   | 667   | 601   |
| HEB 700  | 720   | 691   | 662   | 598   |
| HEB 800  | 721   | 696   | 665   | 608   |
| HEB 900  | 718   | 695   | 658   | 606   |
| HEB 1000 | 719   | 698   | 660   | 612   |

| section  | non-galvanized steel  |   | galvanized steel  |   |
|----------|---|---|---|---|
|          |  |  |  |  |
|          | four-sided heating  | three-sided heating   | four-sided heating  | three-sided heating   |
| HEM 100  | 739   | 719   | 727   | 660   |
| HEM 120  | 736   | 710   | 718   | 637   |
| HEM 140  | 733   | 700   | 707   | 616   |
| HEM 160  | 729   | 686   | 690   | 588   |
| HEM 180  | 725   | 676   | 676   | 567   |
| HEM 200  | 719   | 664   | 659   | 544   |
| HEM 220  | 713   | 653   | 645   | 523   |
| HEM 240  | 676   | 604   | 568   | 461   |
| HEM 260  | 671   | 598   | 559   | 455   |
| HEM 280  | 667   | 592   | 549   | 449   |
| HEM 300  | 628   | 549   | 486   | 408   |
| HEM 320  | 627   | 551   | 485   | 409   |
| HEM 340  | 631   | 558   | 489   | 416   |
| HEM 360  | 635   | 565   | 494   | 422   |
| HEM 400  | 643   | 578   | 503   | 435   |
| HEM 450  | 651   | 591   | 518   | 448   |
| HEM 500  | 659   | 604   | 533   | 460   |
| HEM 550  | 666   | 615   | 547   | 472   |
| HEM 600  | 672   | 625   | 559   | 483   |
| HEM 650  | 677   | 634   | 570   | 492   |
| HEM 700  | 682   | 643   | 580   | 503   |
| HEM 800  | 690   | 656   | 596   | 529   |
| HEM 900  | 698   | 668   | 611   | 552   |
| HEM 1000 | 703   | 678   | 623   | 571   |