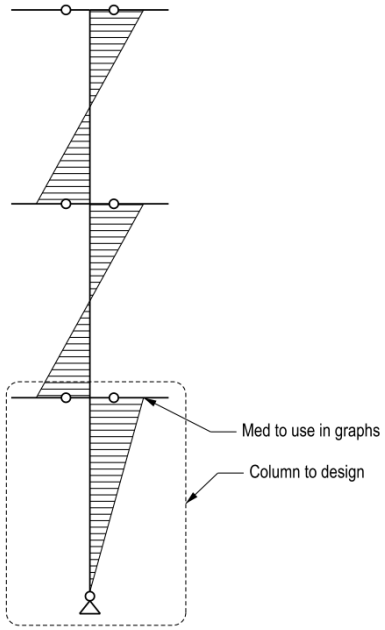
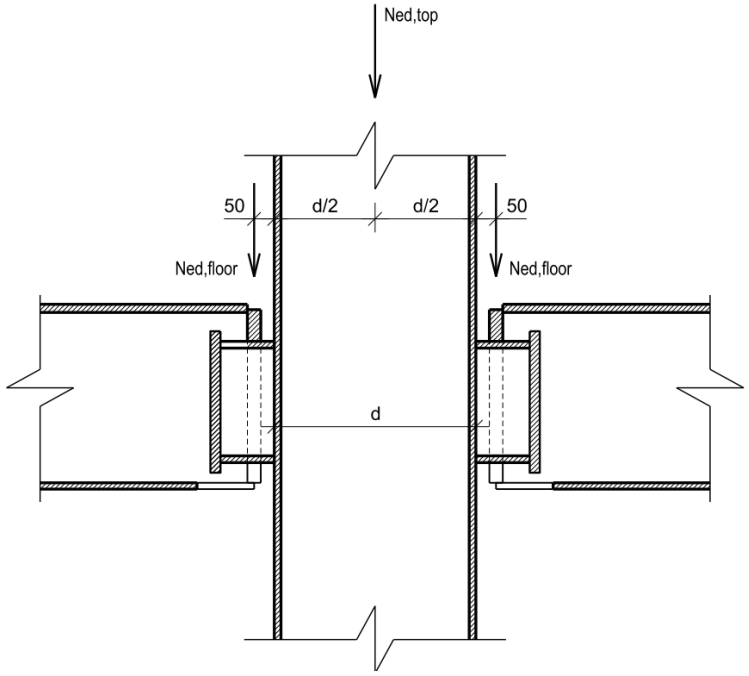
peikko®

# COMPOSITE COLUMNS - CAPACITY CURVES

## DESIGN ASSUMPTIONS for capacity curves:

- Graphs are valid only for Peikko Composite Columns
- Graphs can be used only for Columns in *braced frames.*
- Aplied partial safety factors for ULS are: $\gamma_{M,a} = 1.1; \gamma_{M,s} = 1{,}2; \gamma_{M,c} = 1{,}45.$
- Aplied partial safety factors for FIRE situation are: $\gamma_{M,fi,a} = 1; \gamma_{M,fi,s} = 1; \gamma_{M,fi,c} = 1.$
- First order bending moment on top of column should be used for cross-section check. See picture.
- Eccentricity for floor reaction can be assumed as d/2+50mm for continous columns single span beams and as d/2 for single storey columns continous beams application. See picture.
- ULS capacity check is performefed according to DS EN 1994-1-1 6.7.3 Simplified method of design.
- Influence of member second order effects and member imperfections, are taken into account by capacity curves according to DS EN 1994-1-1 clause 6.7.3.4 assuming $\beta = 1$.
- FIRE design is performed according to DS EN 1994-1-2 using simple calculation model described in 4.3.5.1 section.
- For FIRE capacity check, buckling length in fire situation should be used. Recomended values are given in DS EN1994-1-2 clause 4.3.5.1 (10).



# RECTANGULAR COLUMNS C40/50

| Rectangular columns |
| --- |
| S355-B500B-C40/50 |
| R60 - SHS 150 |
| R60 - SHS 160 |
| R60 - SHS 180 |
| R60 - SHS 200 |
| R60 - SHS 220 |
| R60 - SHS 250 |
| R60 - SHS 300 |
| R60 - SHS 350 |
| R60 - SHS 400 |
| R60 - SHS 500 |
| R120 - SHS 200 |
| R120 - SHS 220 |
| R120 - SHS 250 |
| R120 - SHS 300 |
| R120 - SHS 350 |
| R120 - SHS 400 |
| R120 - SHS 500 |

| ULS | SHS 150x150 |
|---|---|

**Material properties:**

Reinforcement: B500B

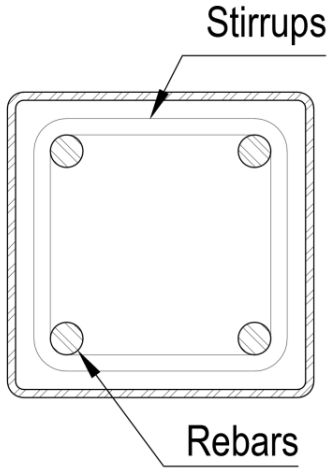
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



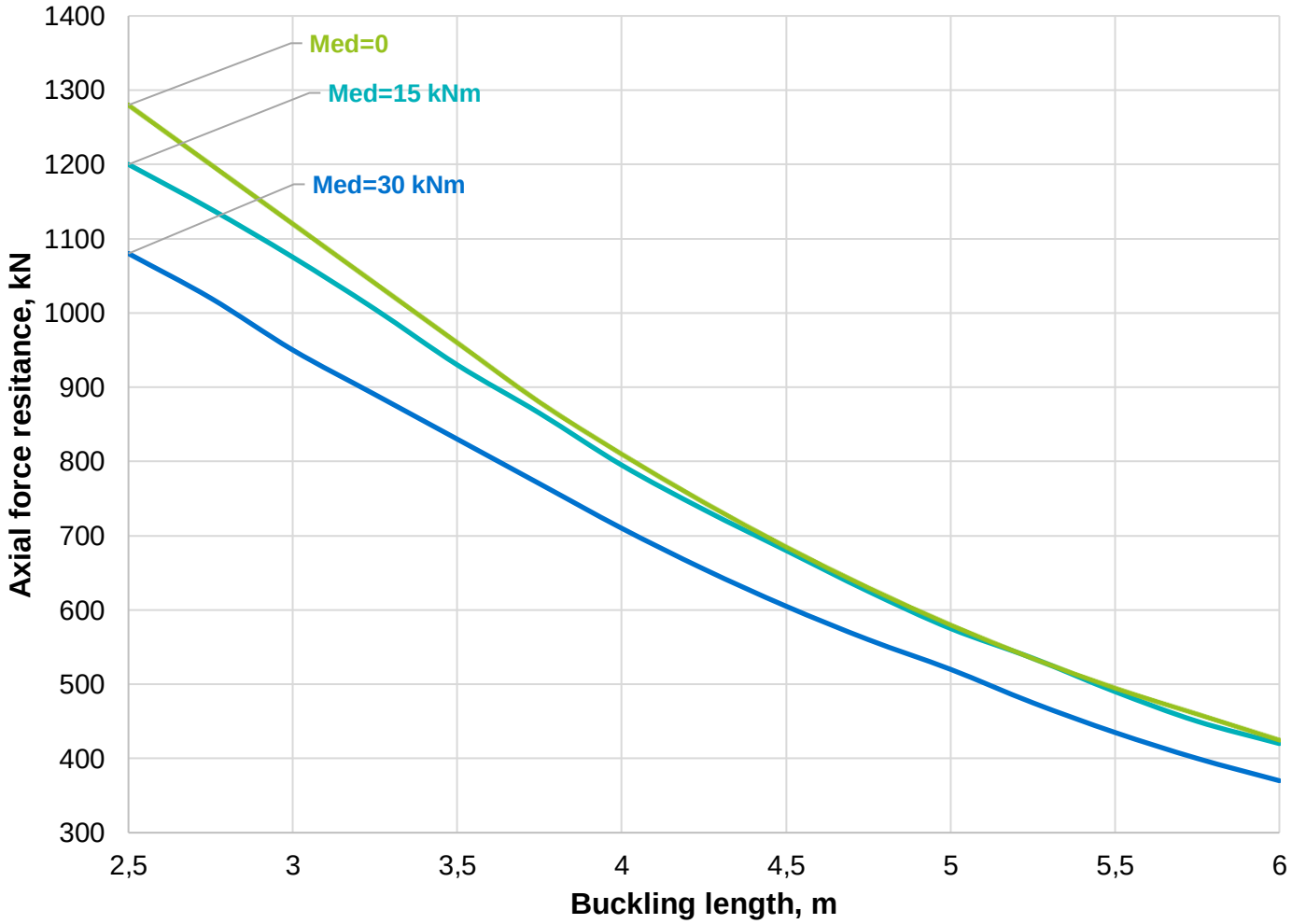




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 150x150 |
|---|---|

**Material properties:**

Reinforcement: B500B

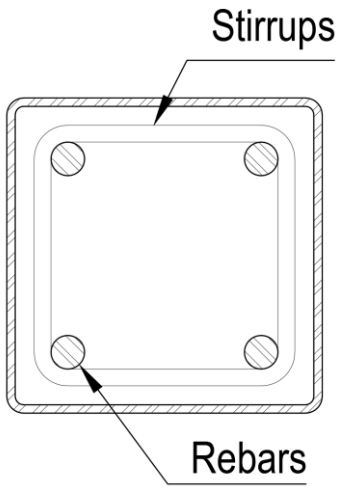
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



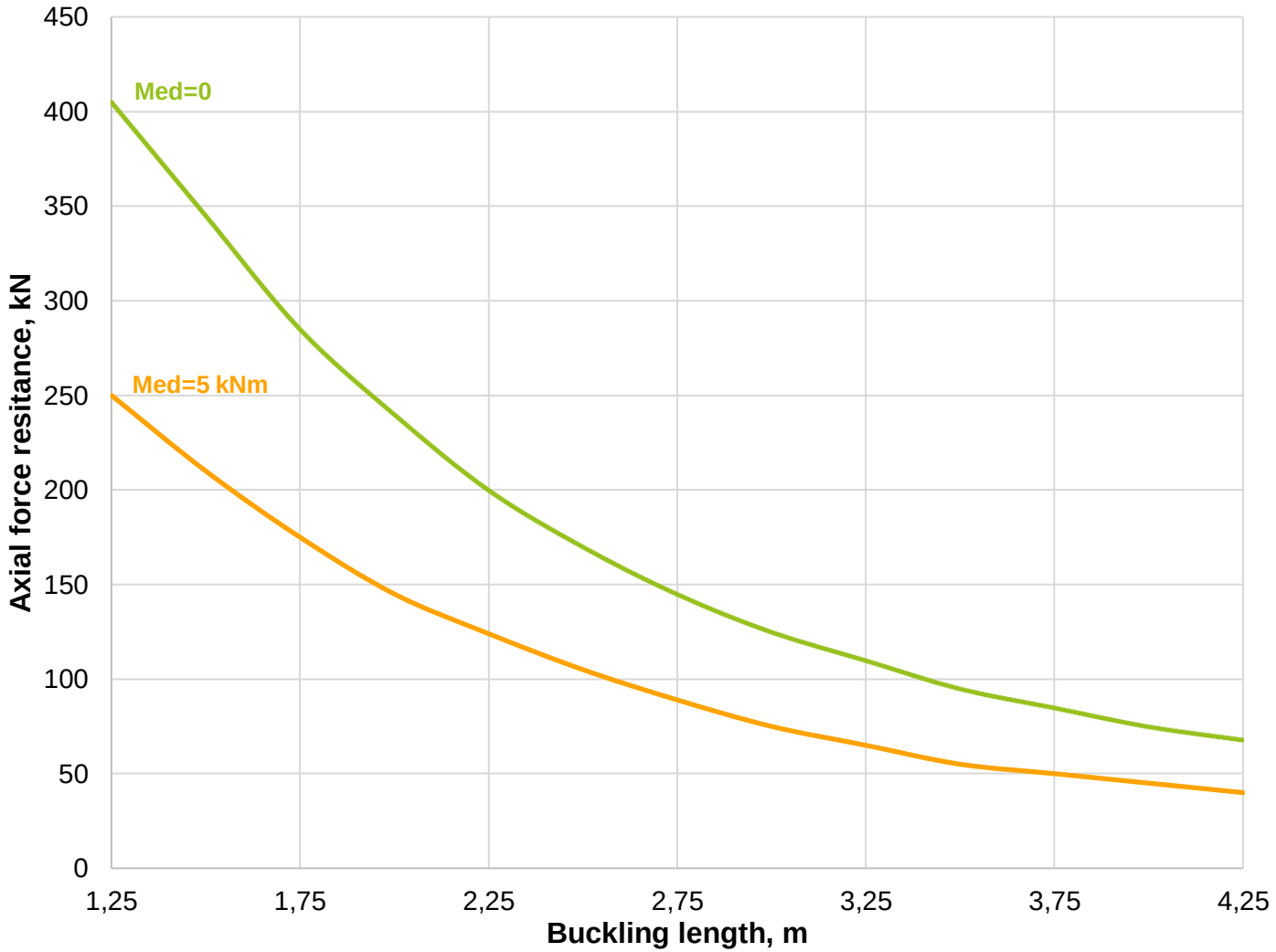




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | SHS 160x160 |
|---|---|

**Material properties:**

Reinforcement: B500B

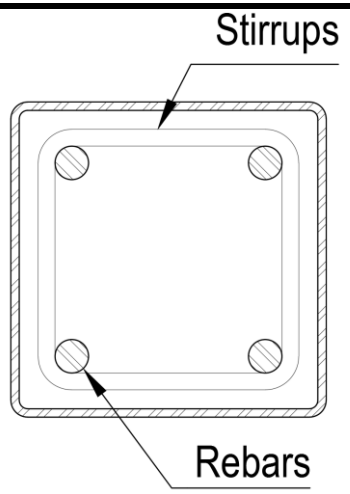
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



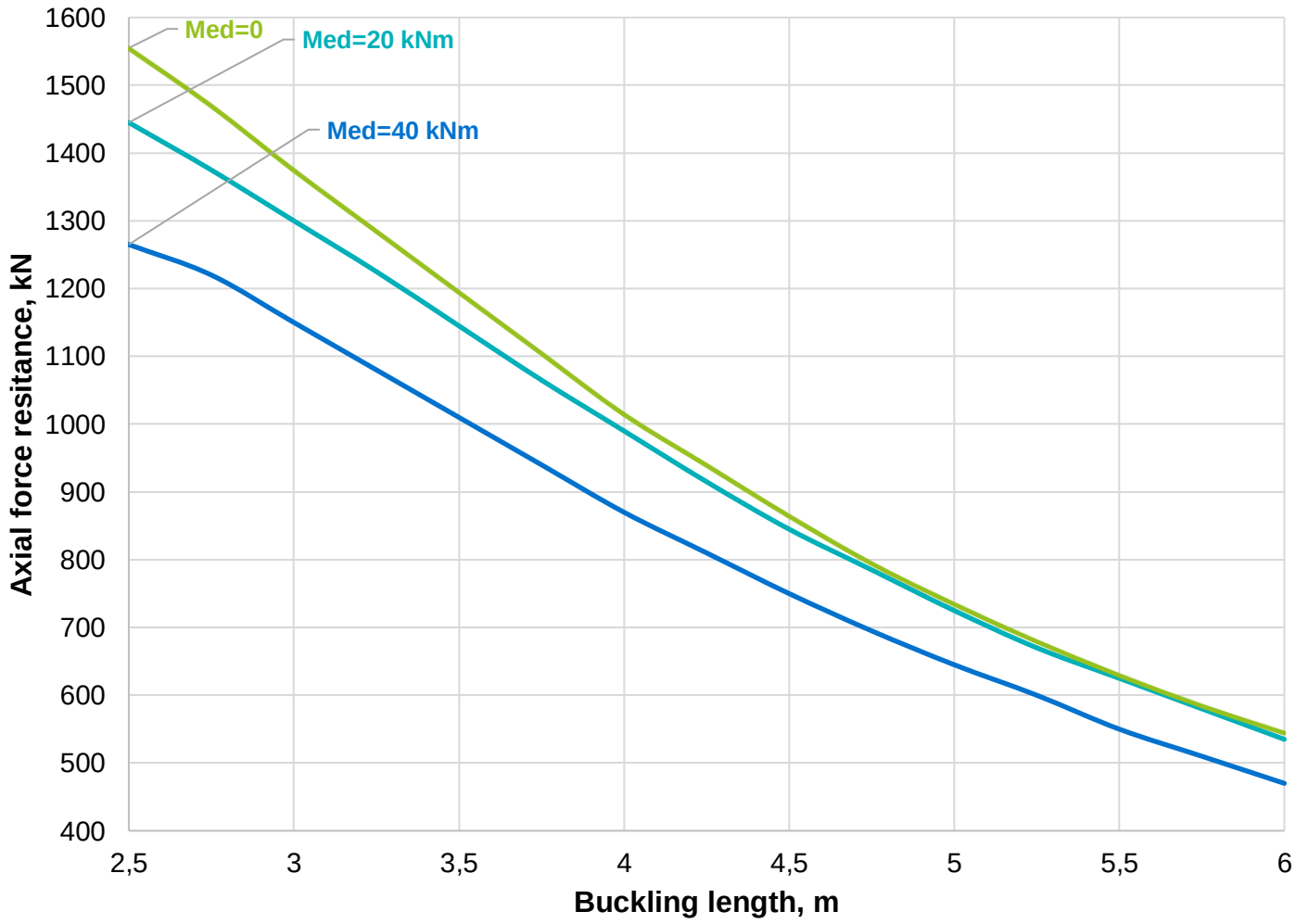




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 160x160 |
|---|---|

**Material properties:**

Reinforcement: B500B

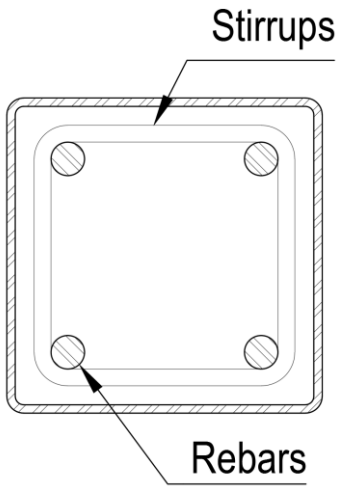
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



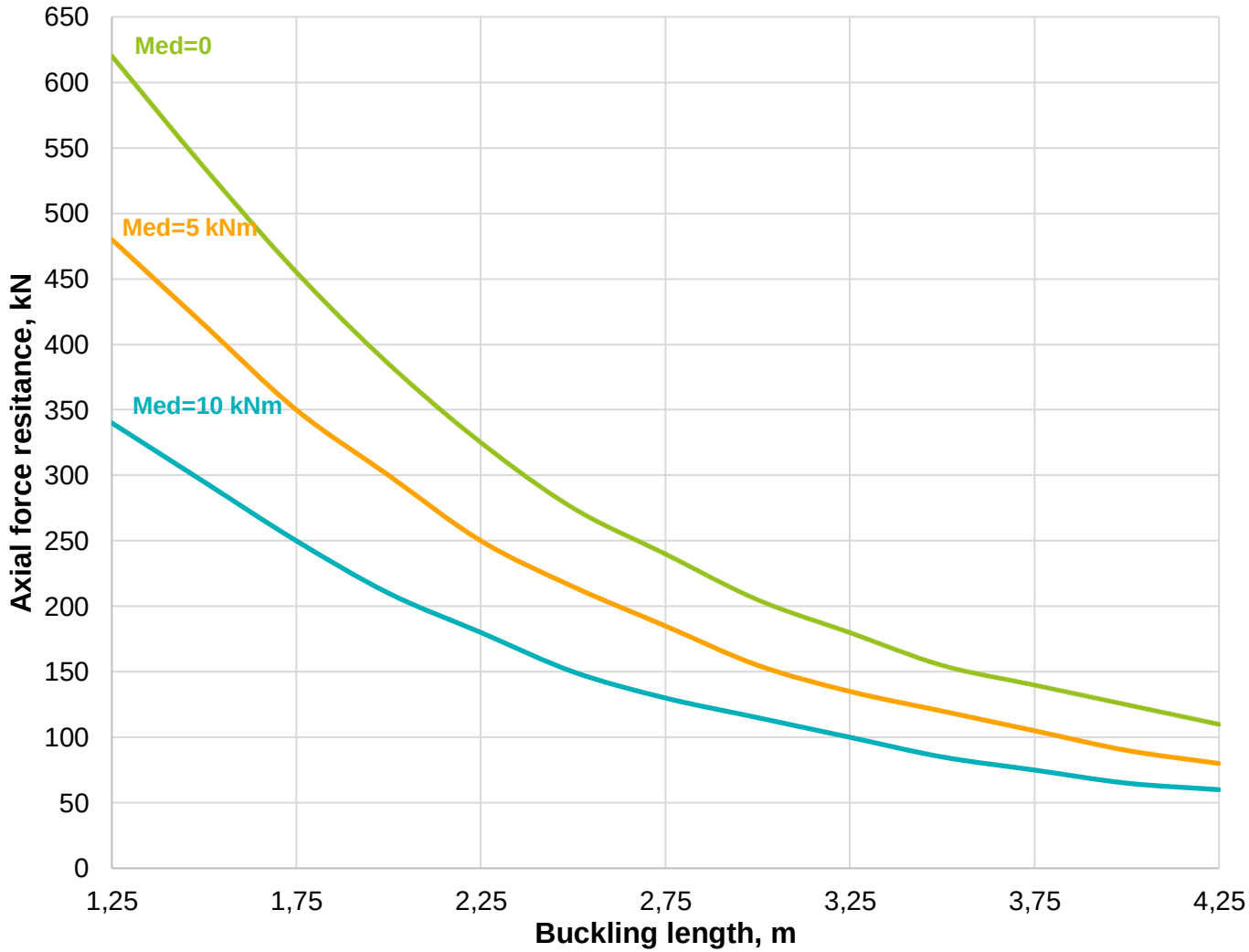




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | SHS 180x180 |
|---|---|

**Material properties:**

Reinforcement: B500B

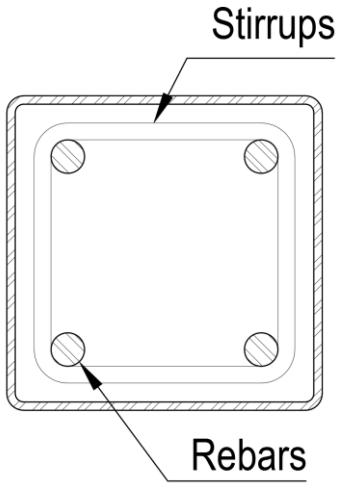
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



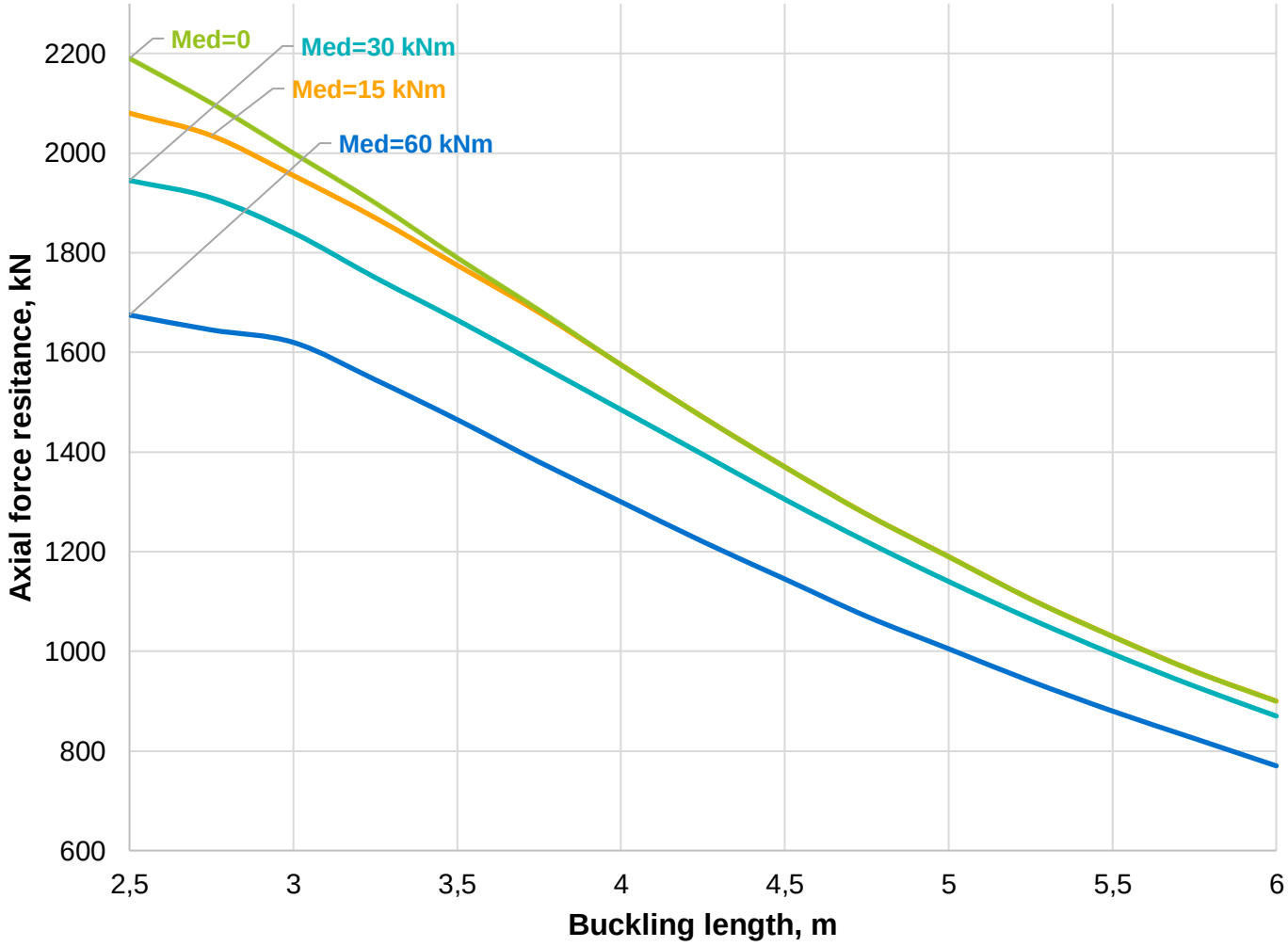




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 180x180 |
|---|---|

**Material properties:**

Reinforcement: B500B

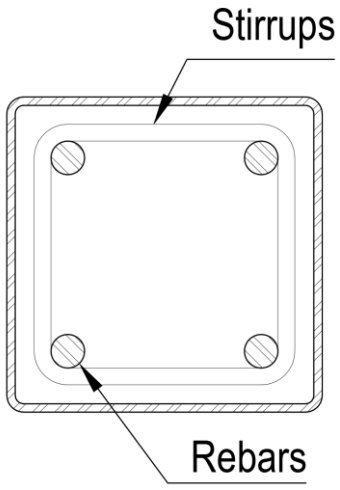
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



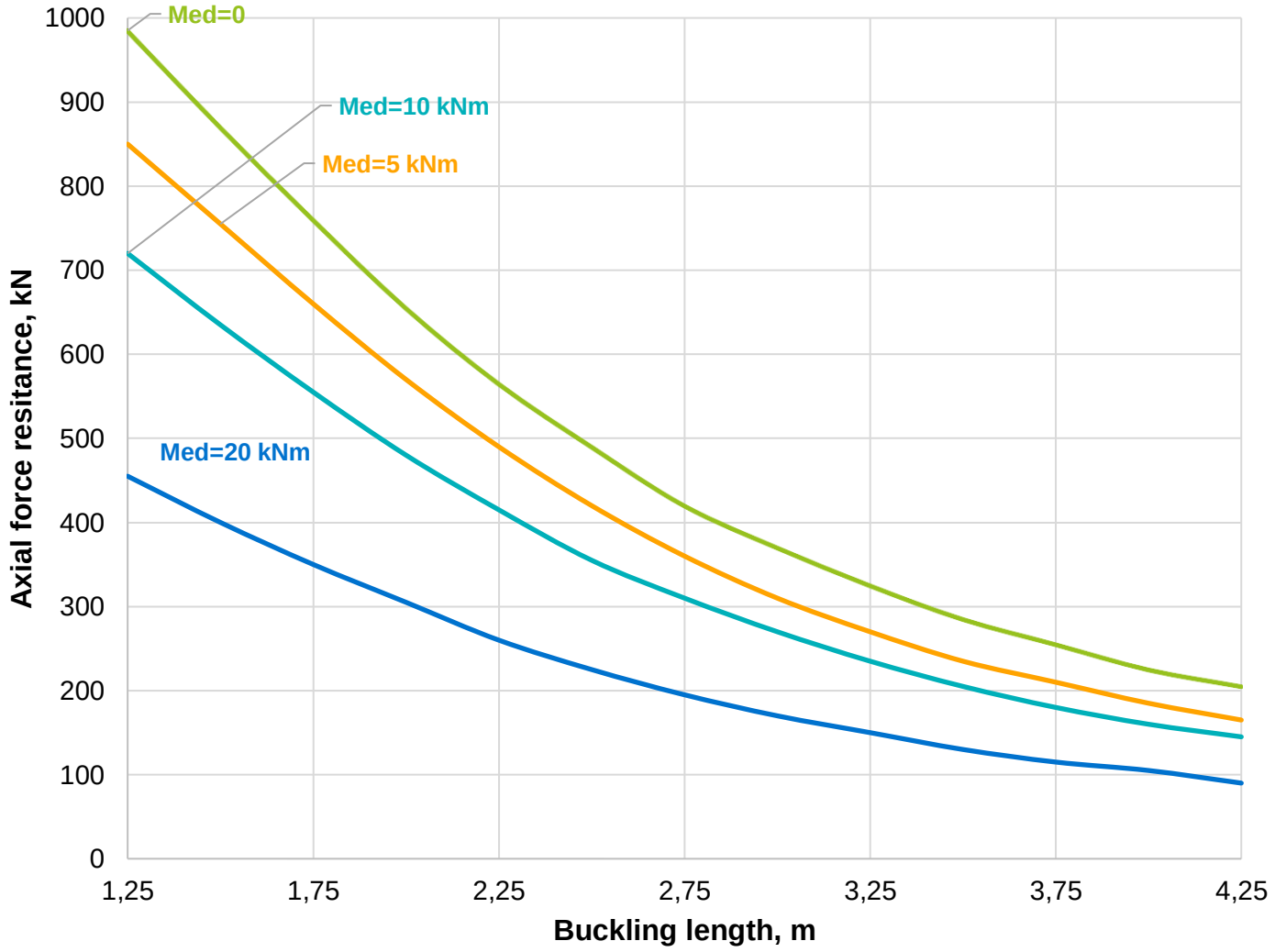




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | SHS 200x200 |
|---|---|

**Material properties:**

Reinforcement: B500B

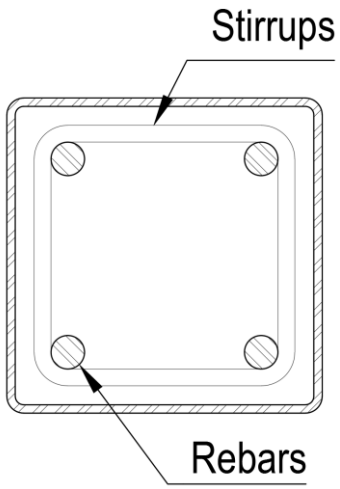
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



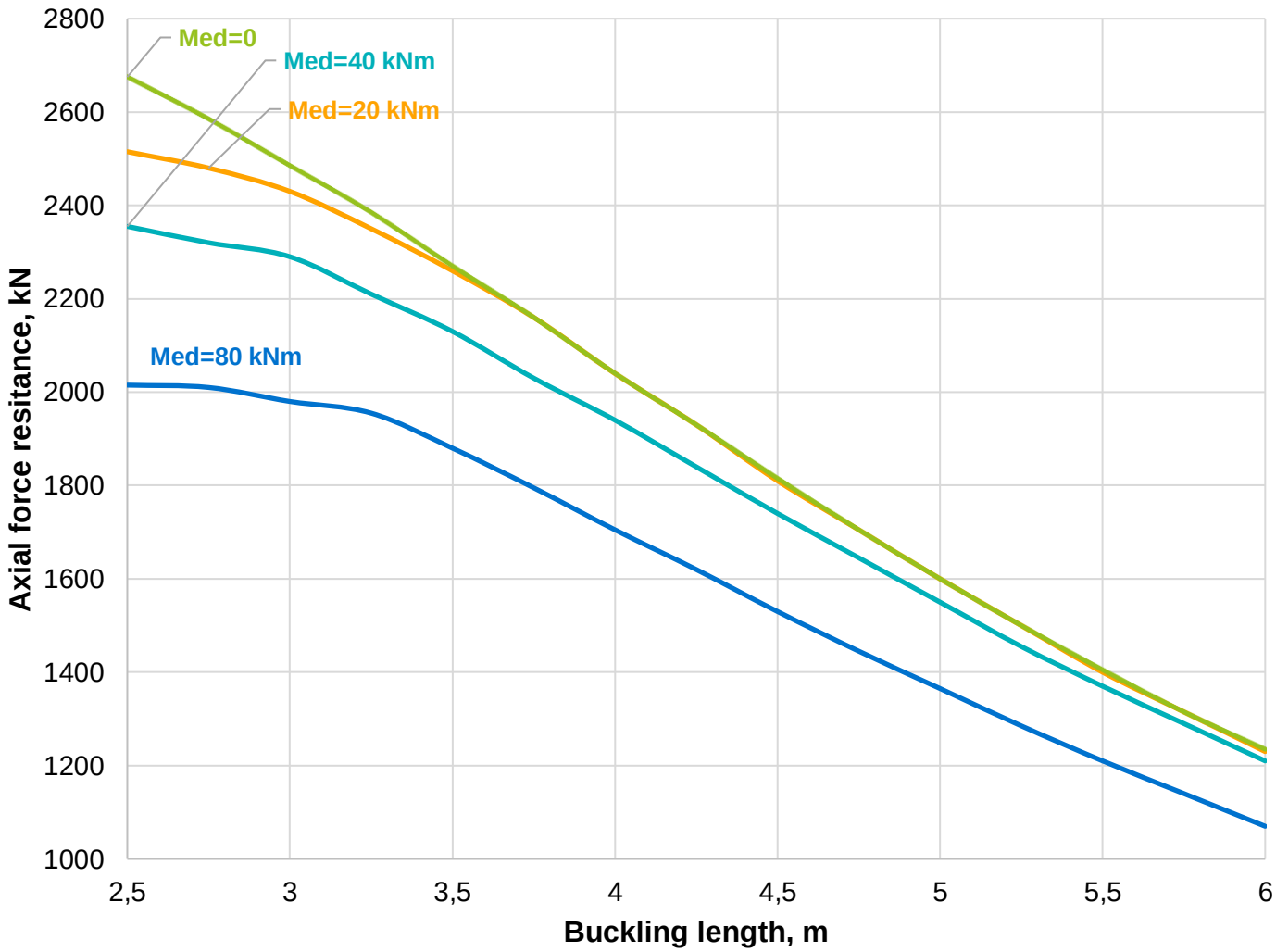




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 200x200 |
|---|---|

**Material properties:**

Reinforcement: B500B

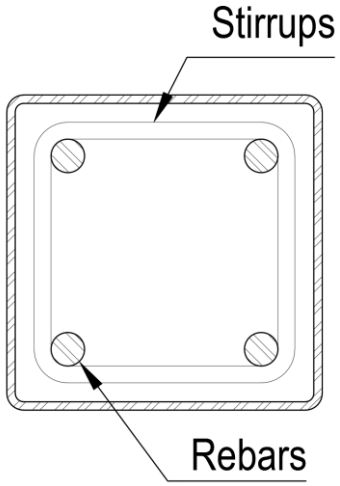
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



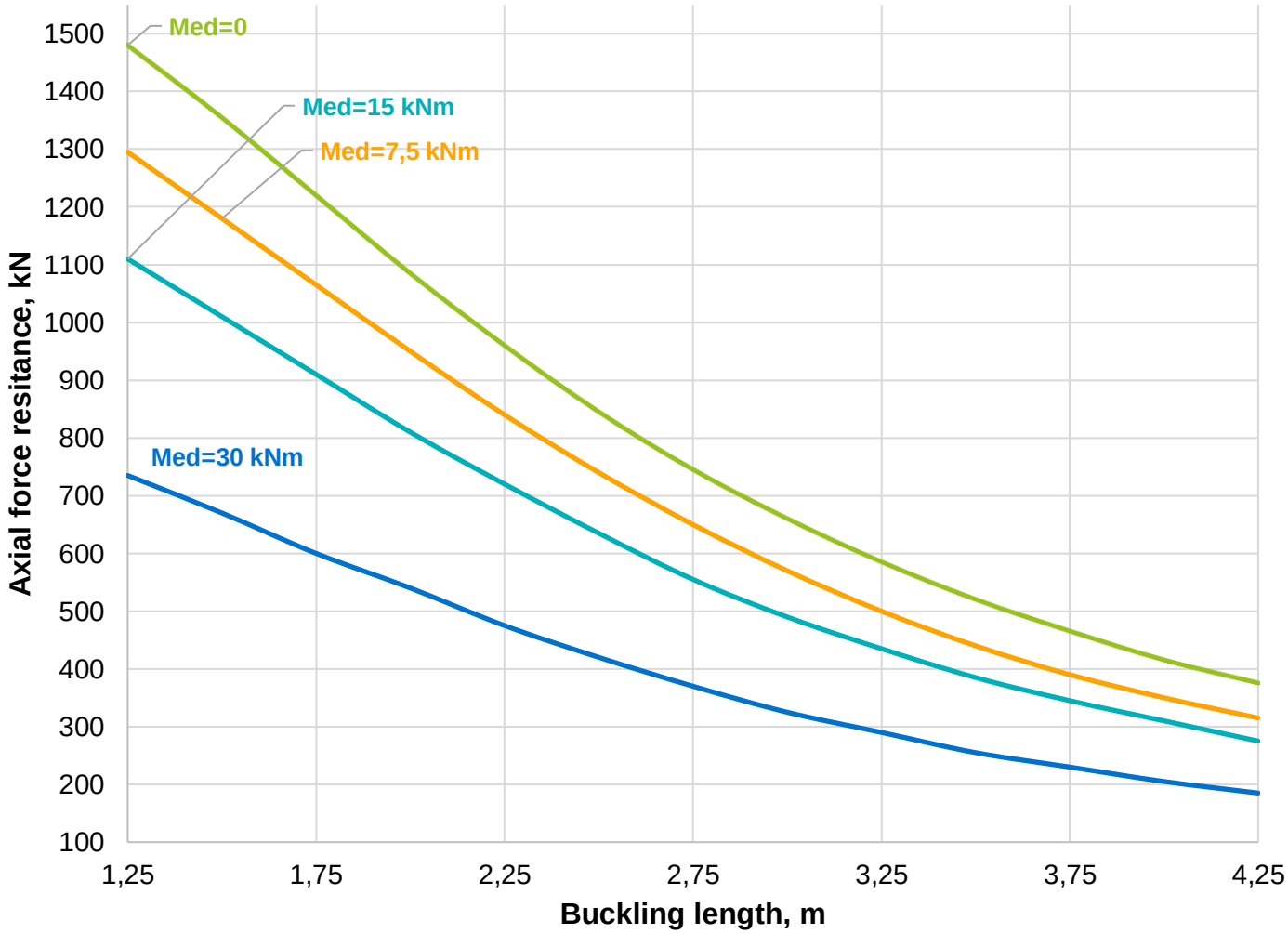




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 200x200 |
|---|---|

**Material properties:**

Reinforcement: B500B

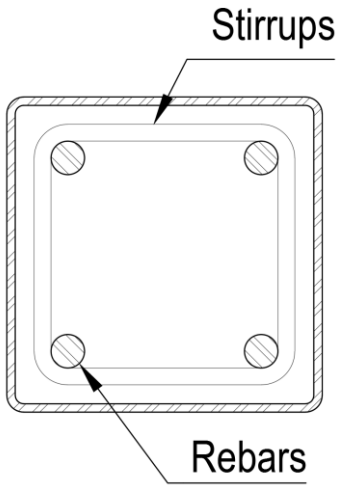
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



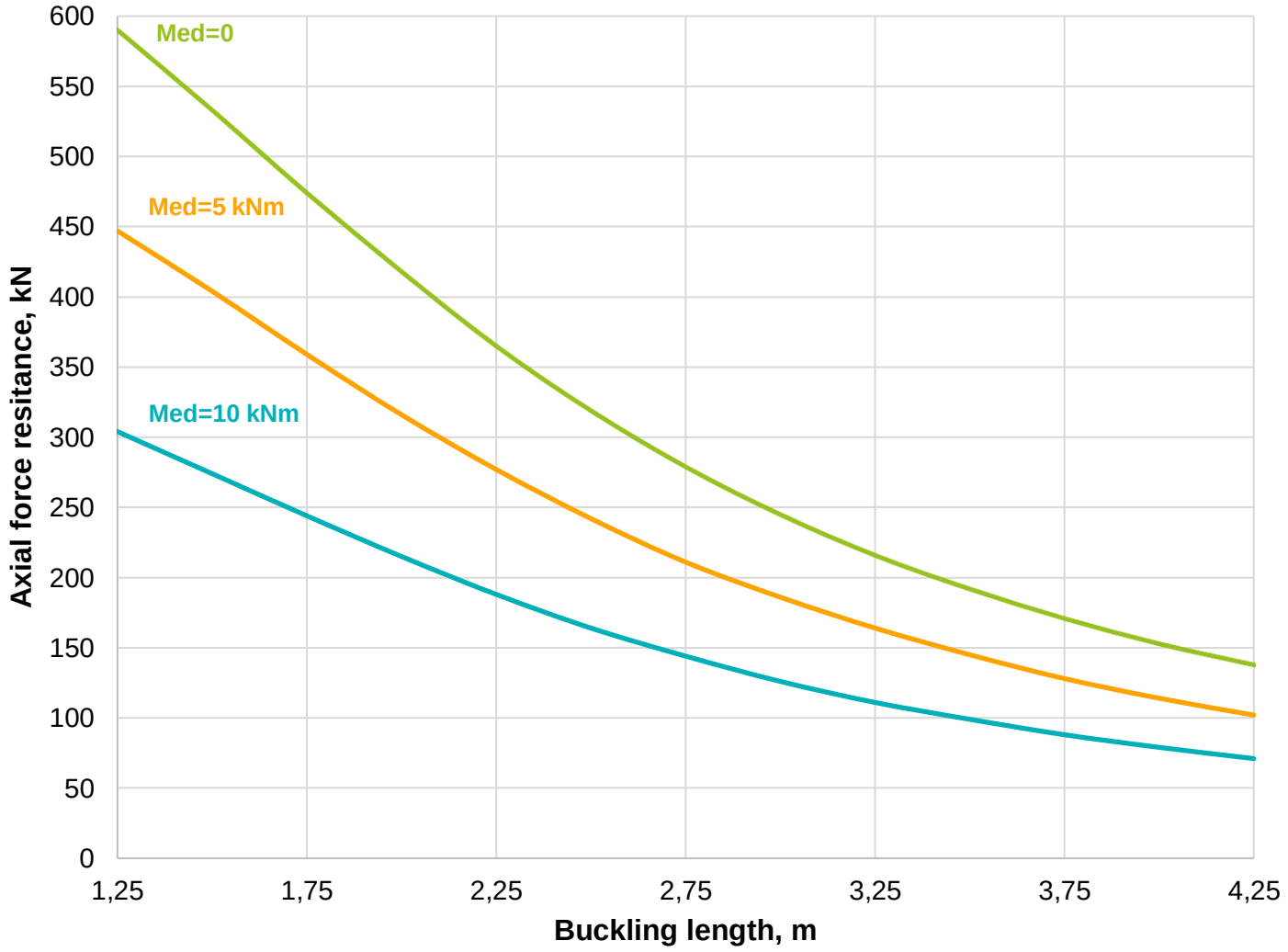




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 220x220 |
|---|---|

**Material properties:**

Reinforcement: B500B

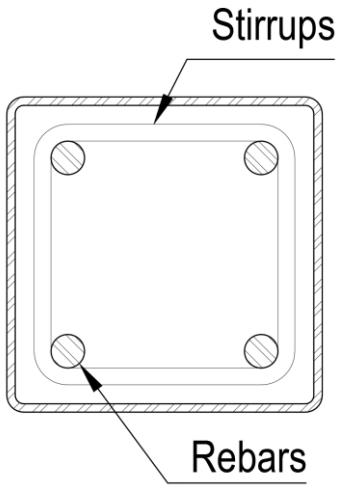
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



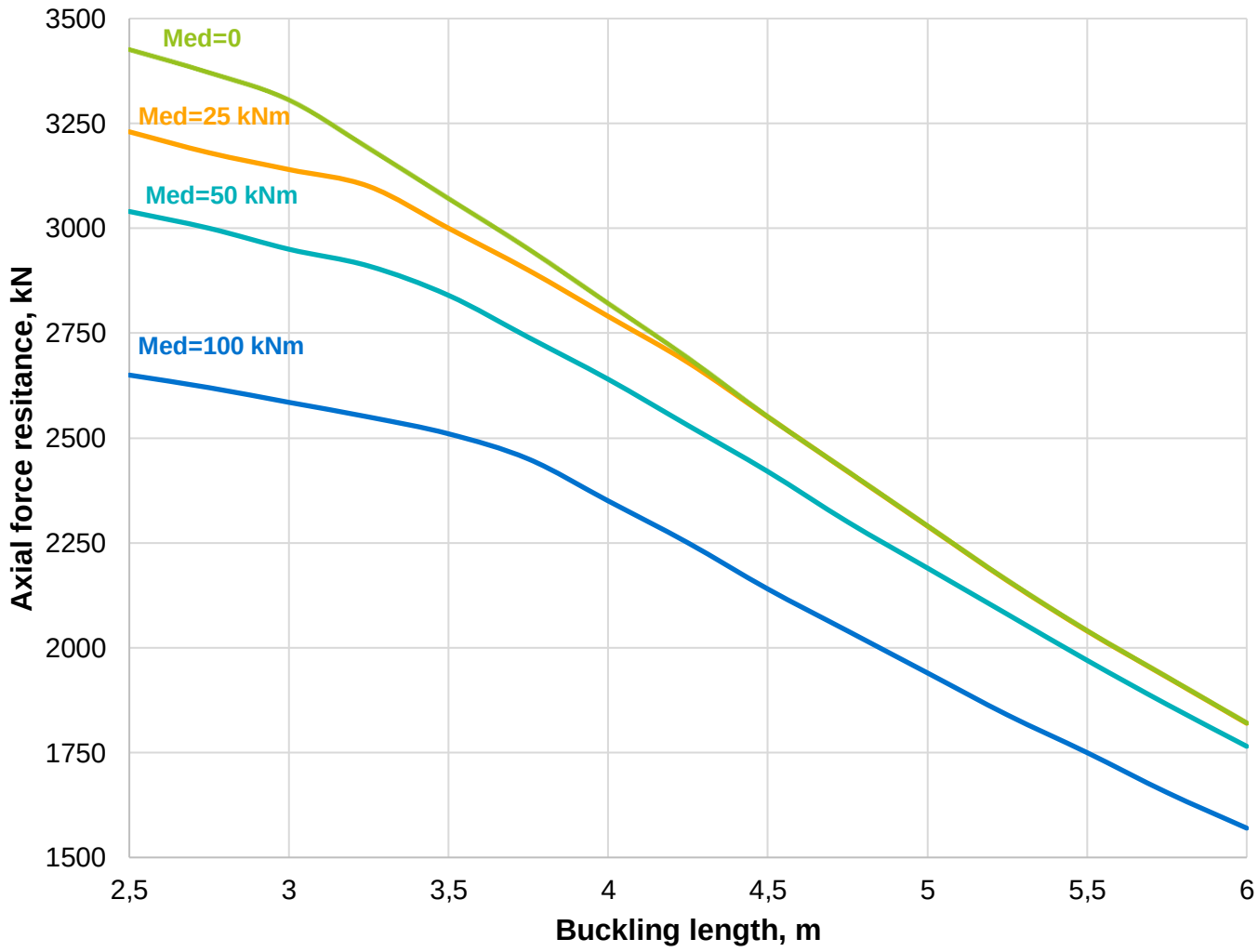




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 220x220 |
|---|---|

**Material properties:**

Reinforcement: B500B

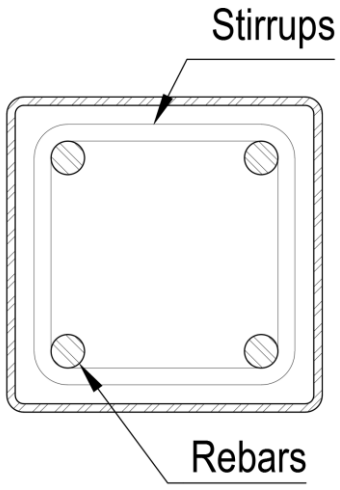
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



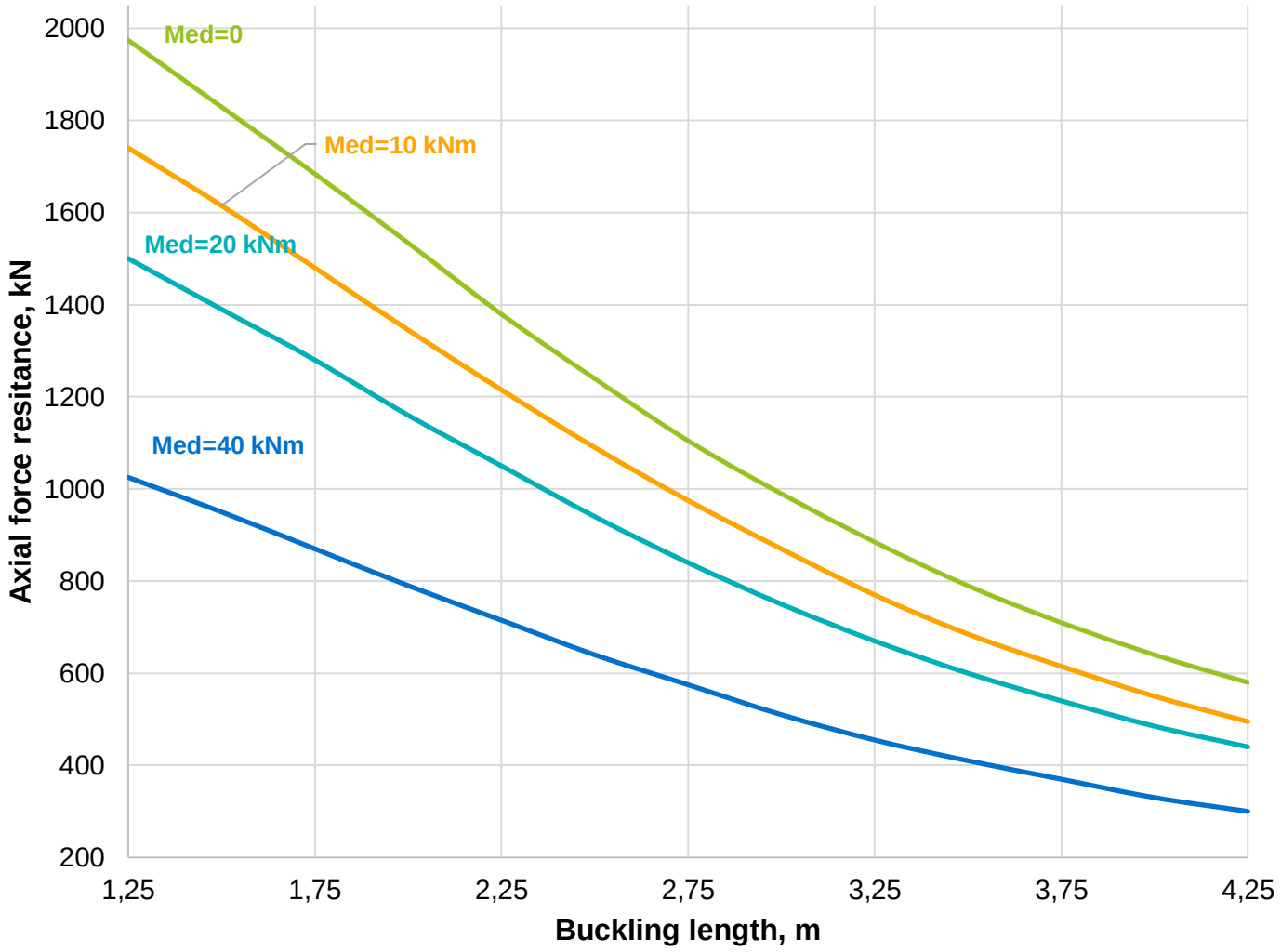




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 220x220 |
|---|---|

**Material properties:**

Reinforcement: B500B

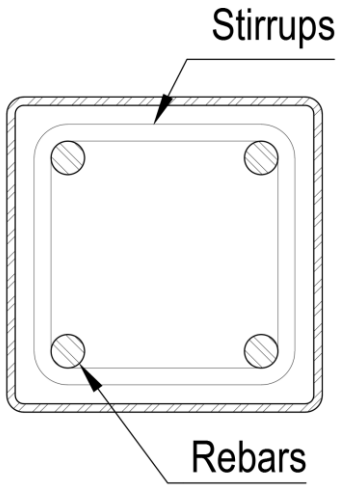
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



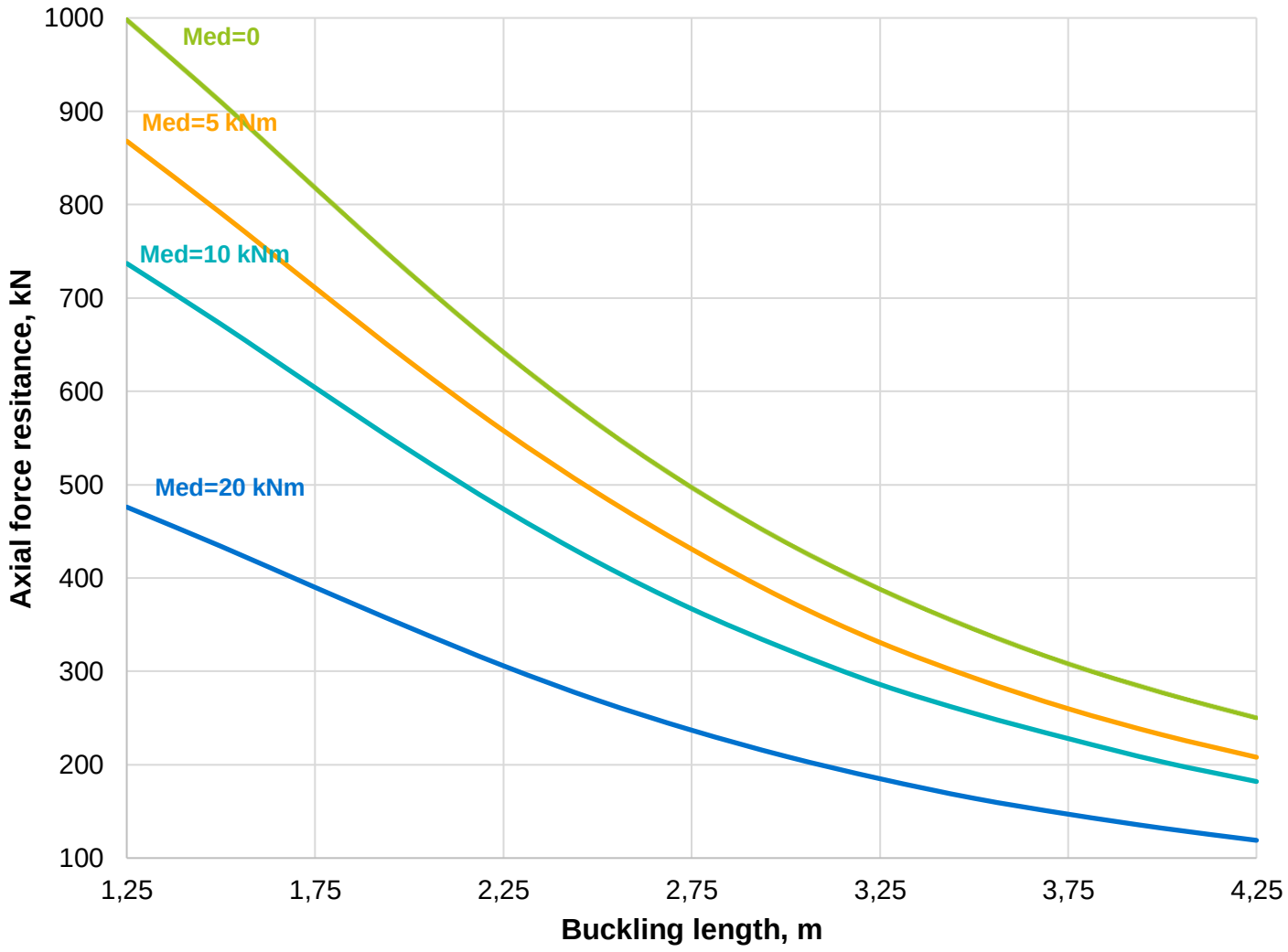




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 250x250 |
|---|---|

**Material properties:**

Reinforcement: B500B

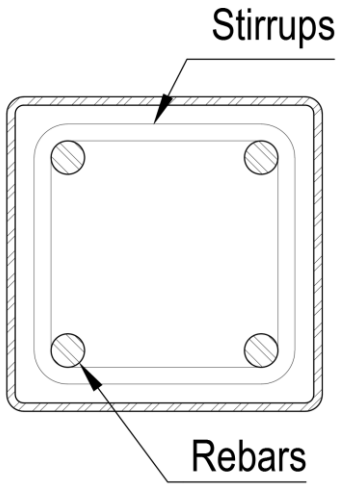
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



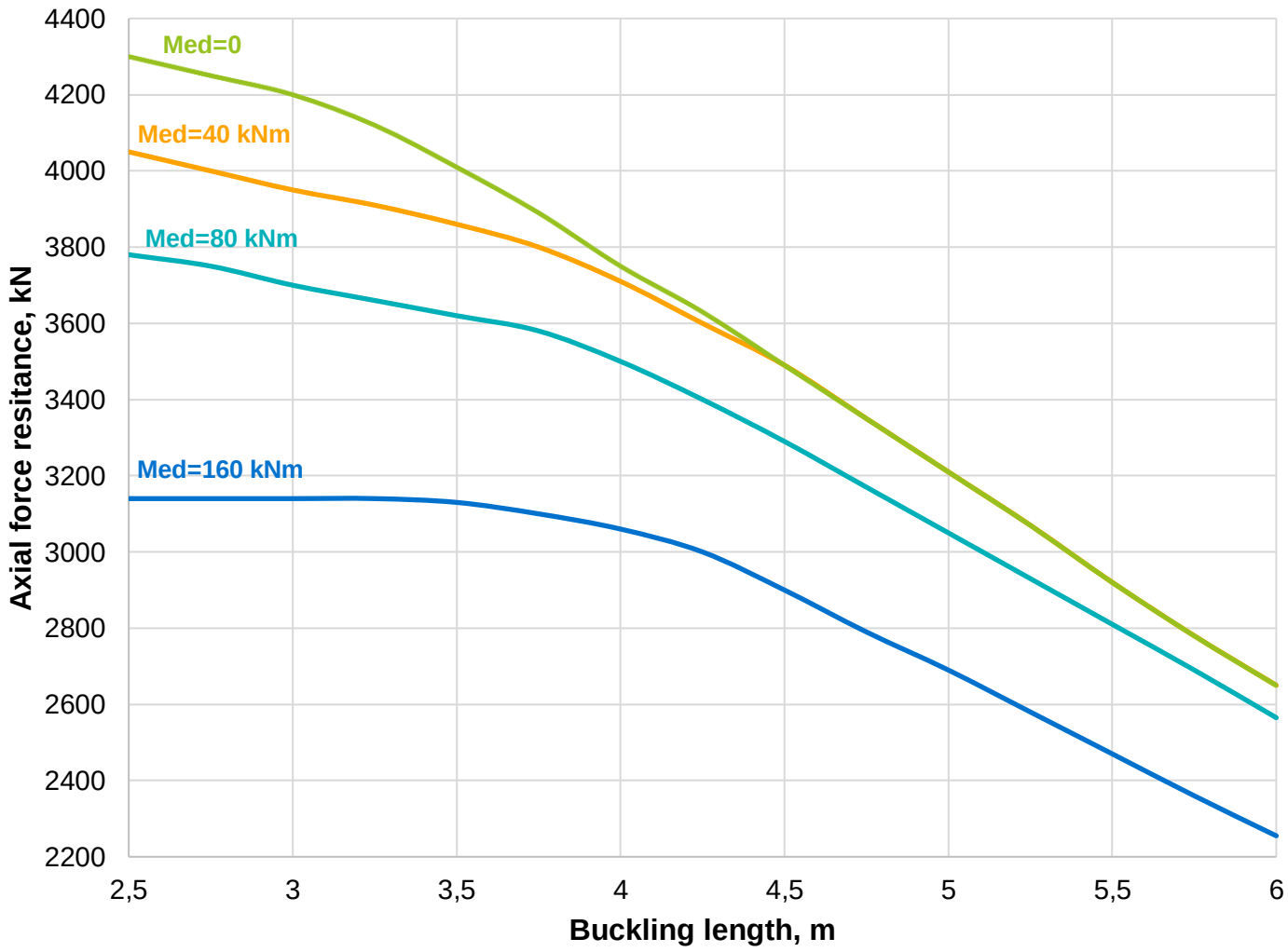




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 250x250 |
|---|---|

**Material properties:**

Reinforcement: B500B

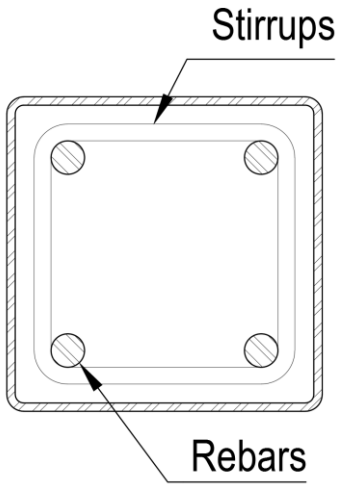
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



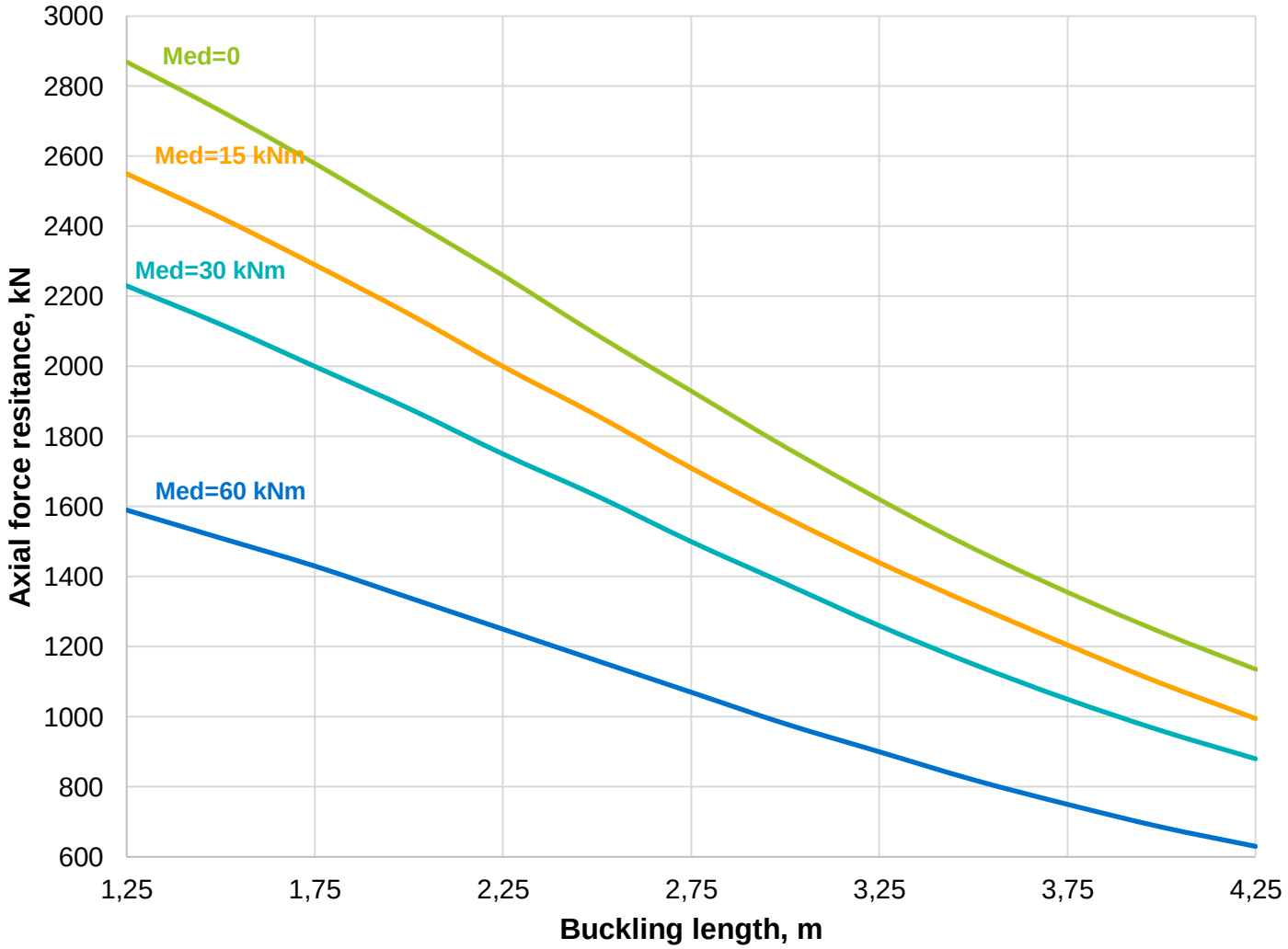




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 250x250 |
|---|---|

**Material properties:**

Reinforcement: B500B

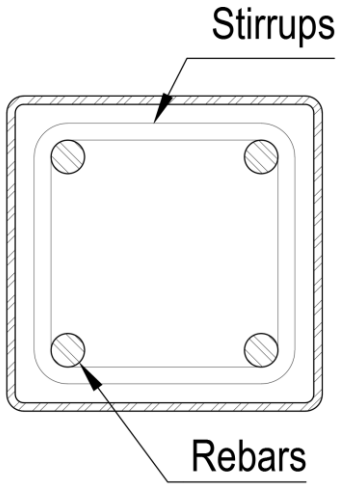
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



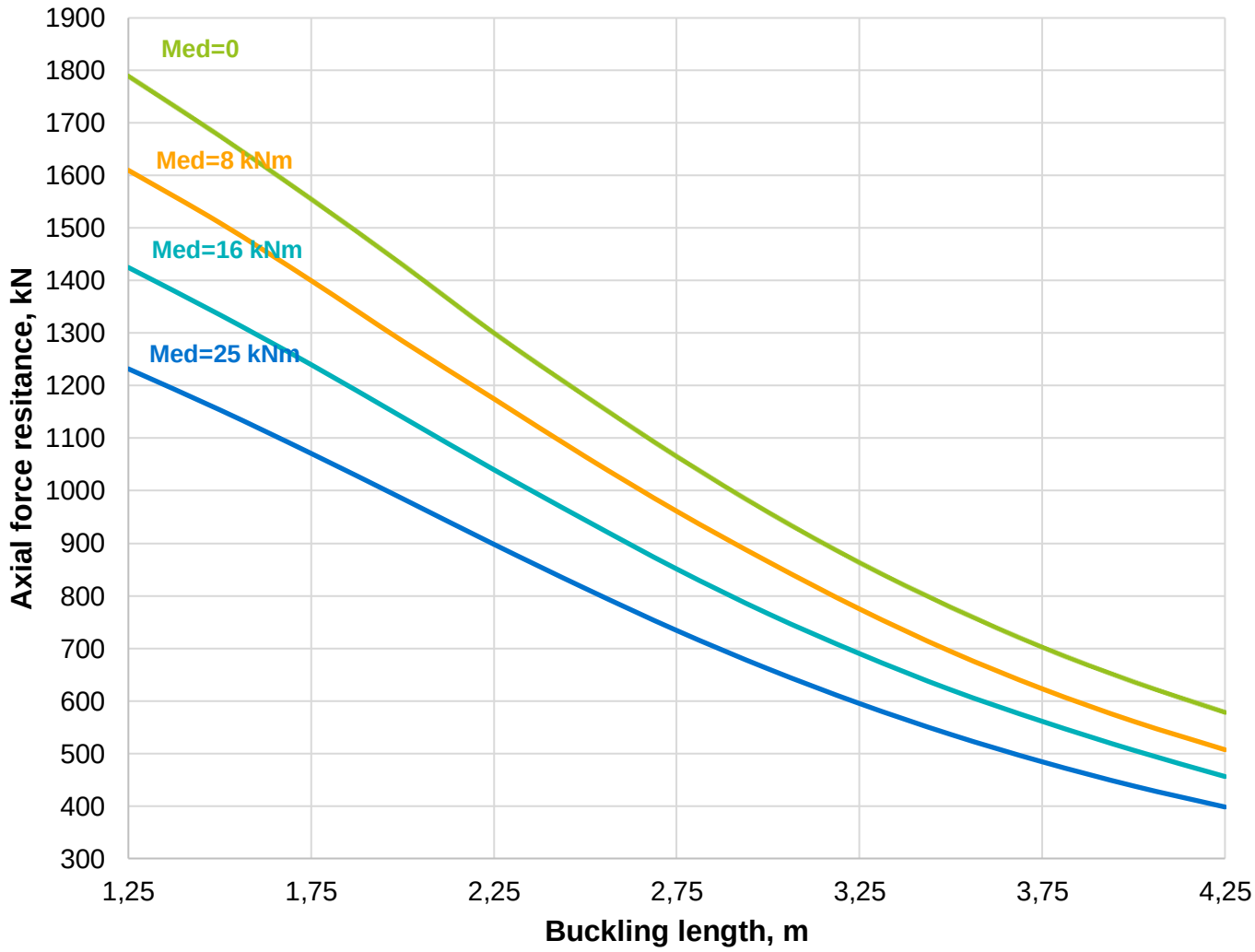




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 300x300 |
|---|---|

**Material properties:**

Reinforcement: B500B

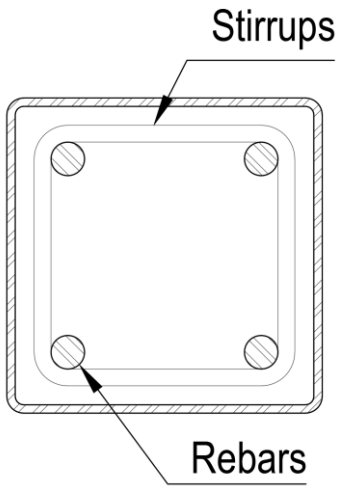
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



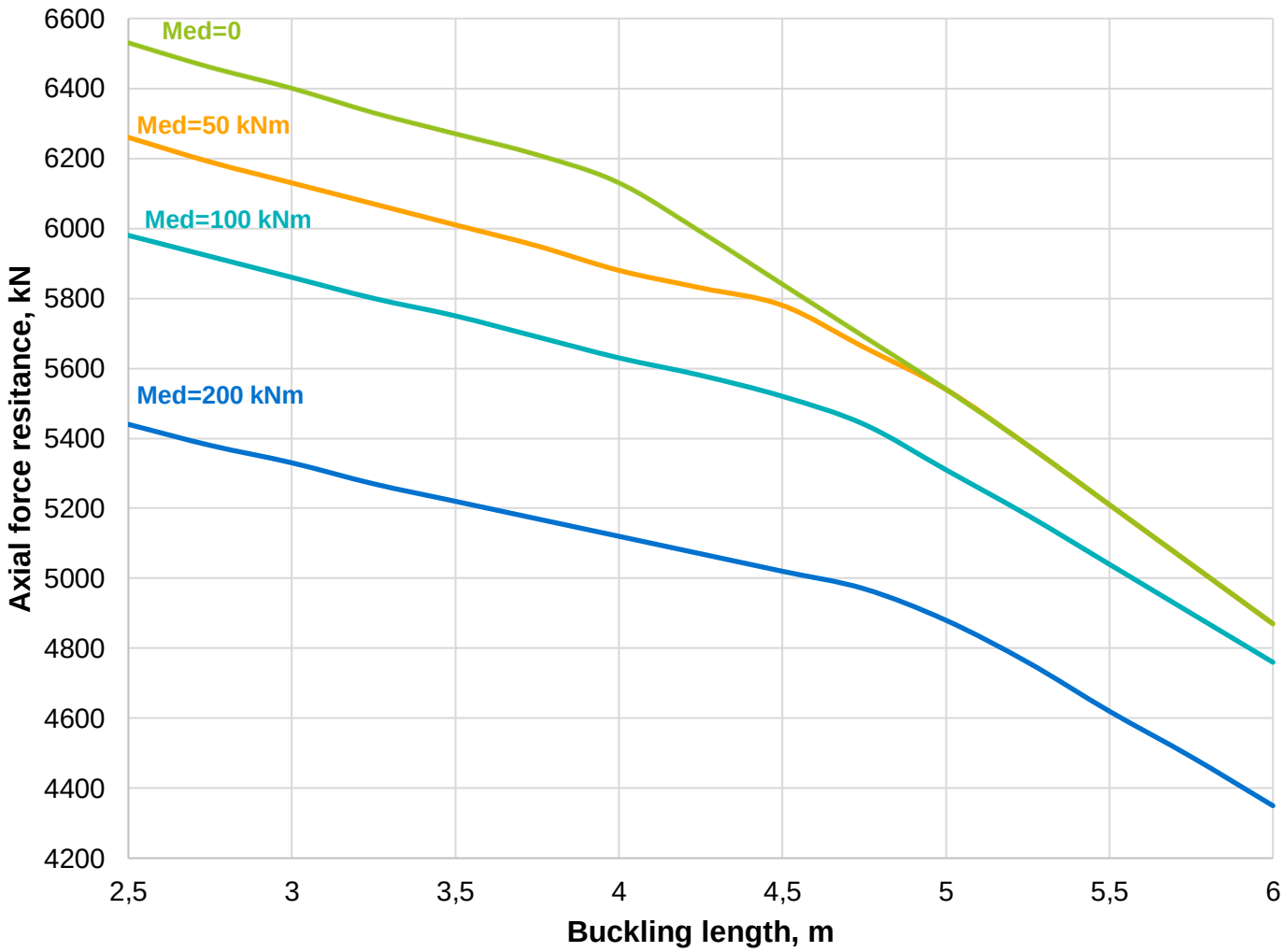




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 300x300 |
|---|---|

**Material properties:**

Reinforcement: B500B

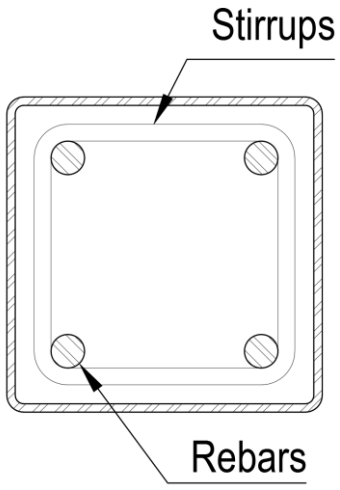
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



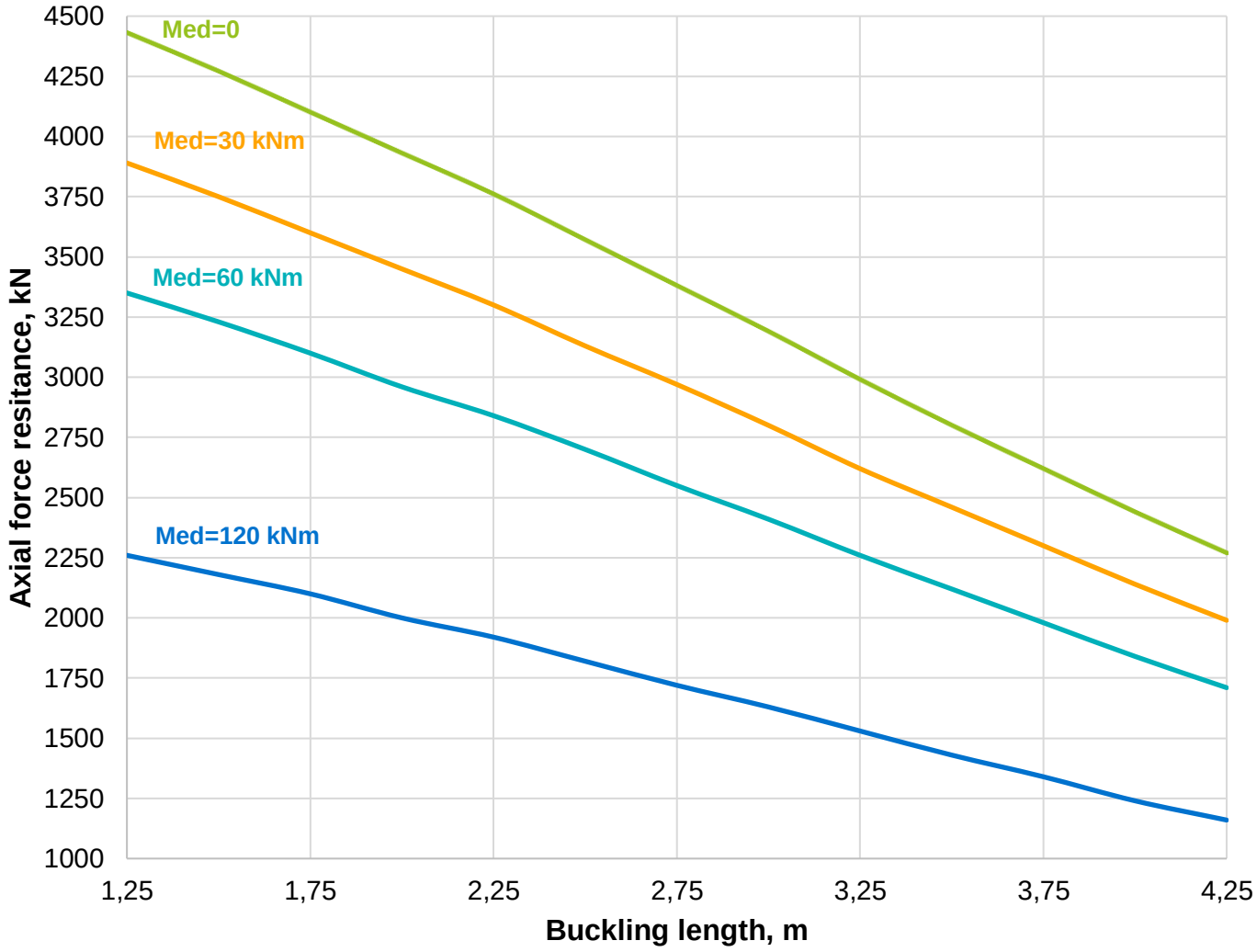




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 300x300 |
|---|---|

**Material properties:**

Reinforcement: B500B

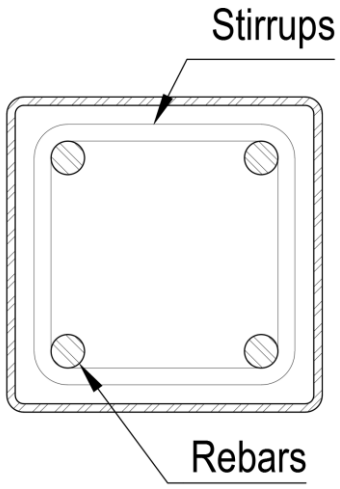
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



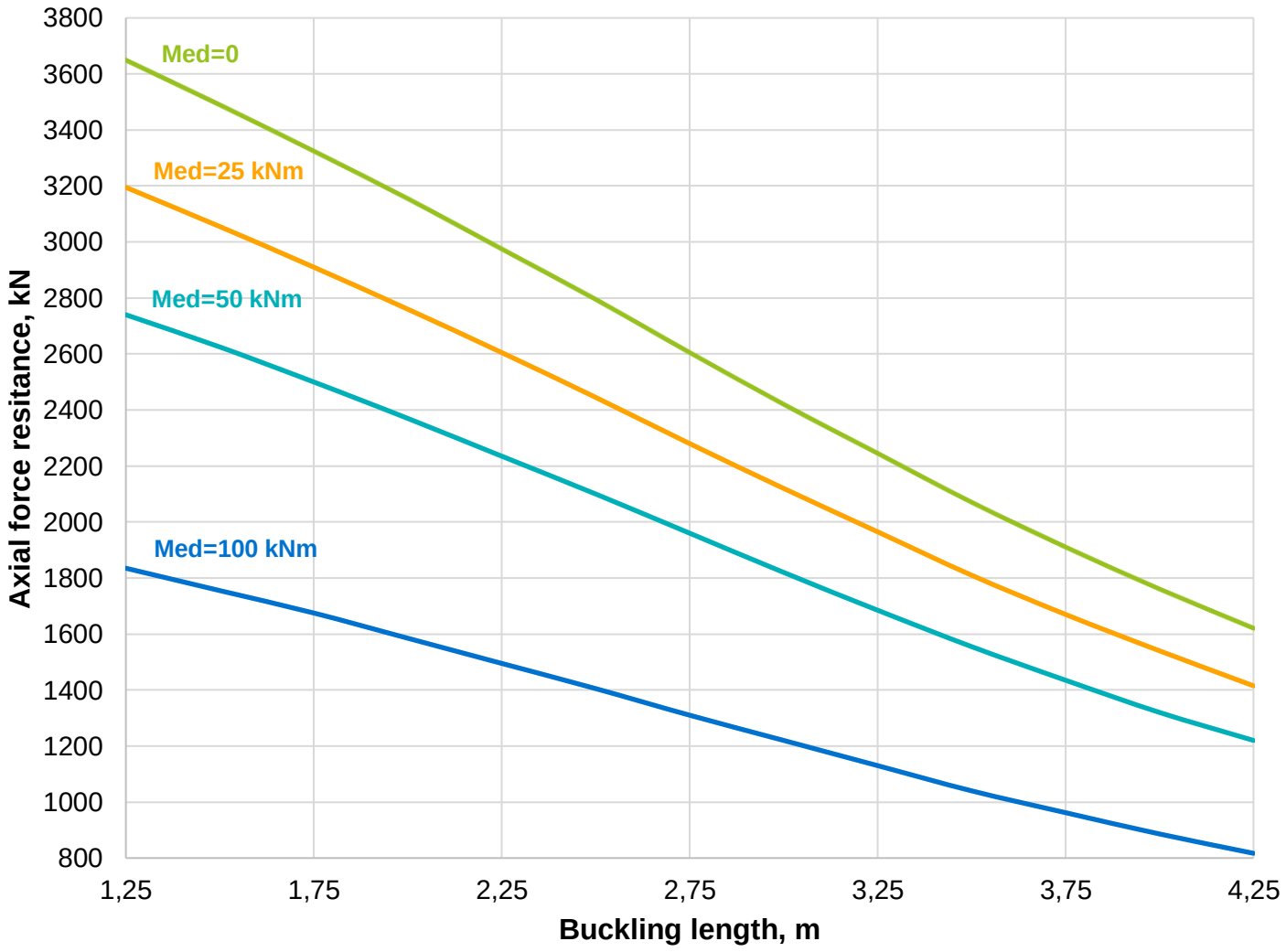




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 350x350 |
|---|---|

**Material properties:**

Reinforcement: B500B

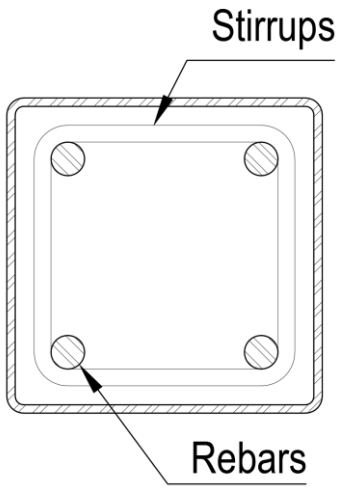
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



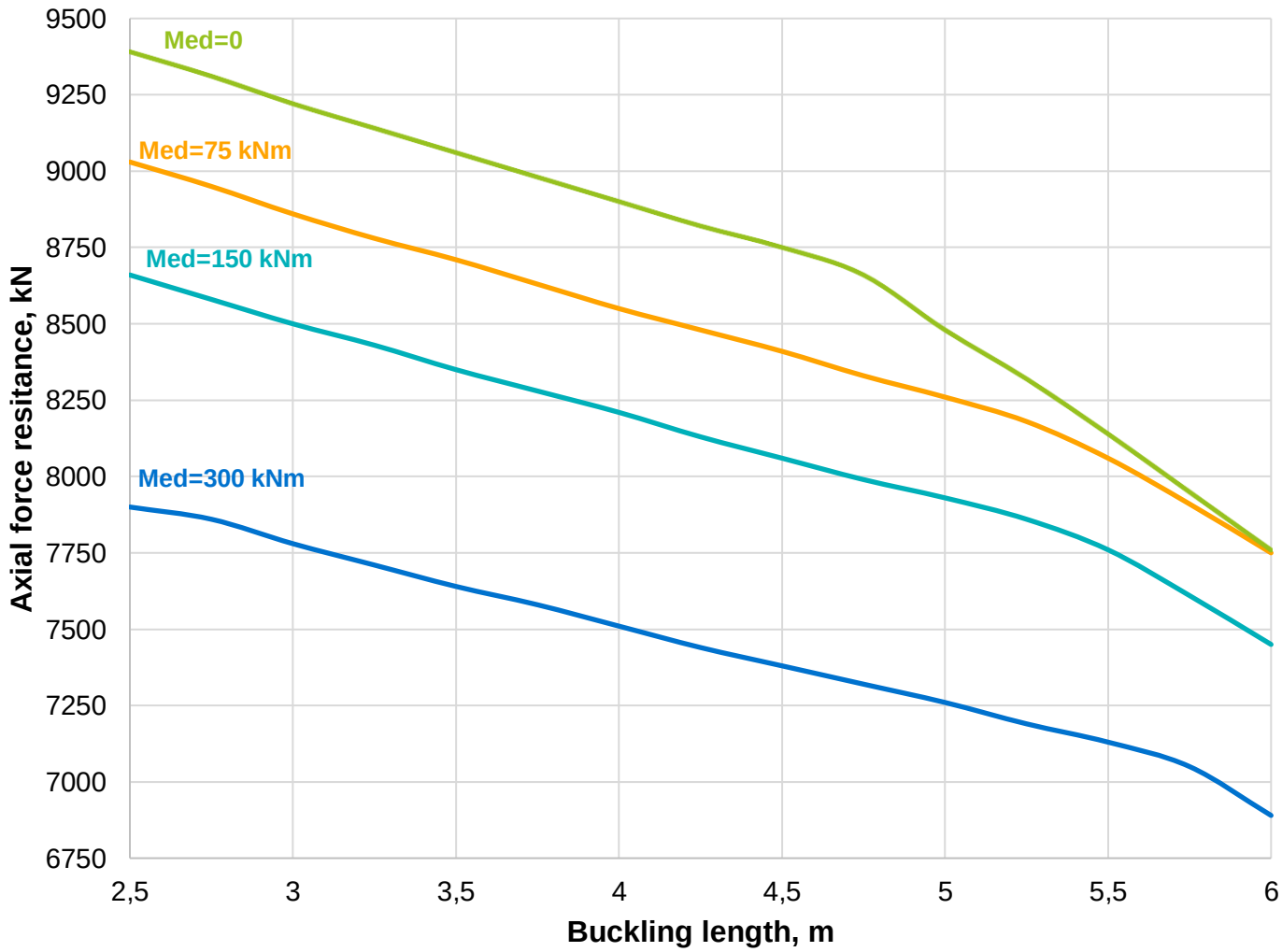




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 350x350 |
|---|---|

**Material properties:**

Reinforcement: B500B

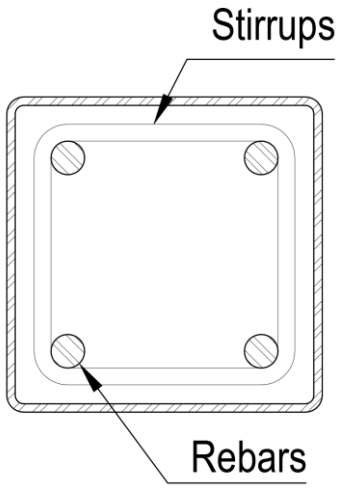
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



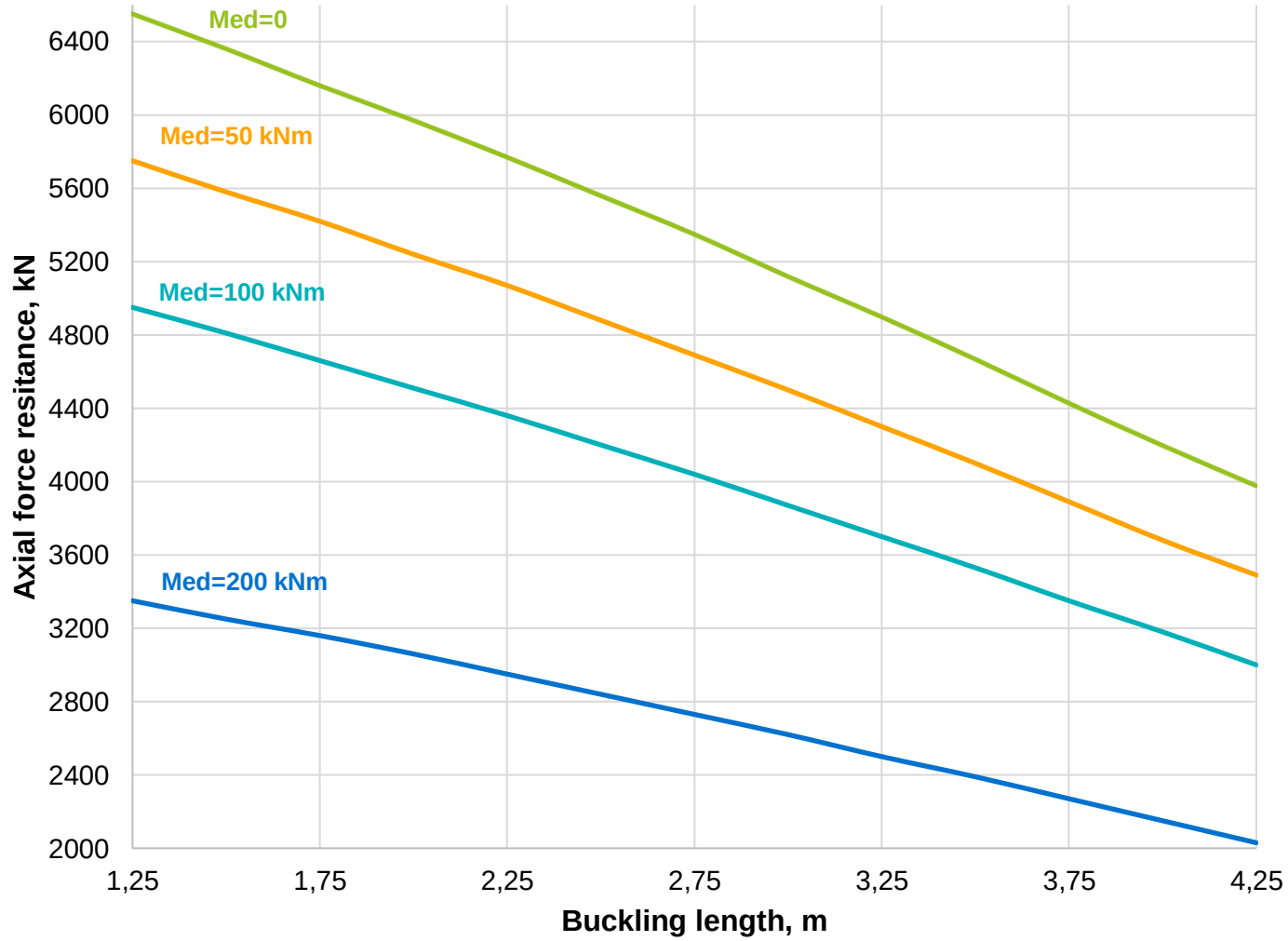




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 350x350 |
|---|---|

**Material properties:**

Reinforcement: B500B

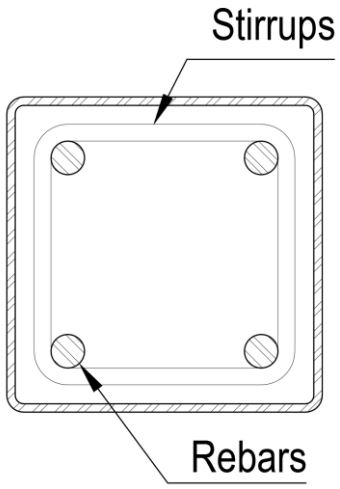
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



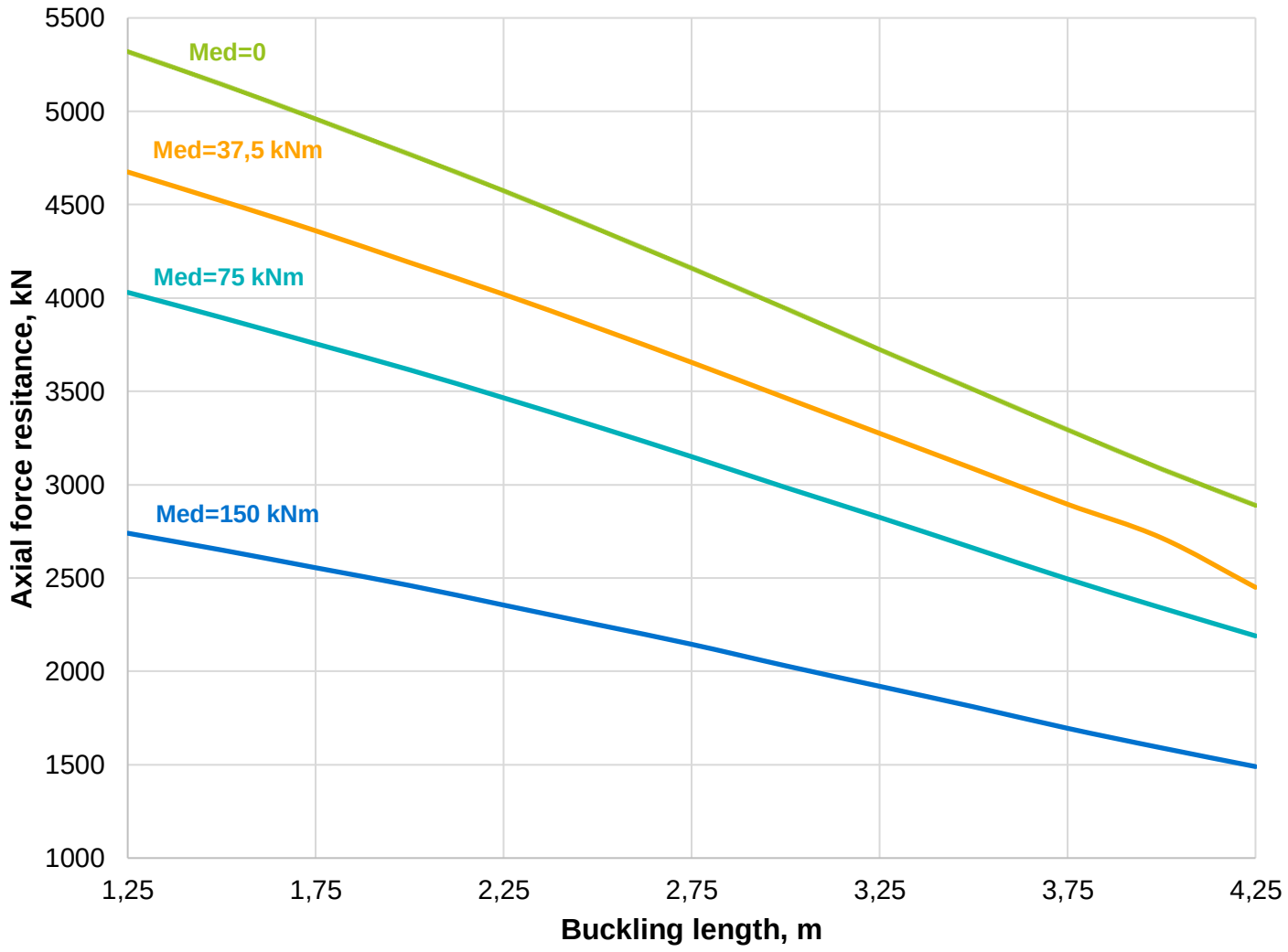




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 400x400 |
|---|---|

**Material properties:**

Reinforcement: B500B

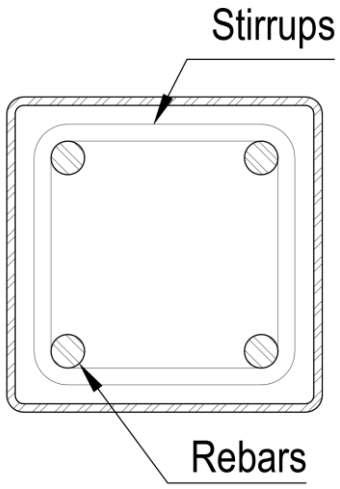
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



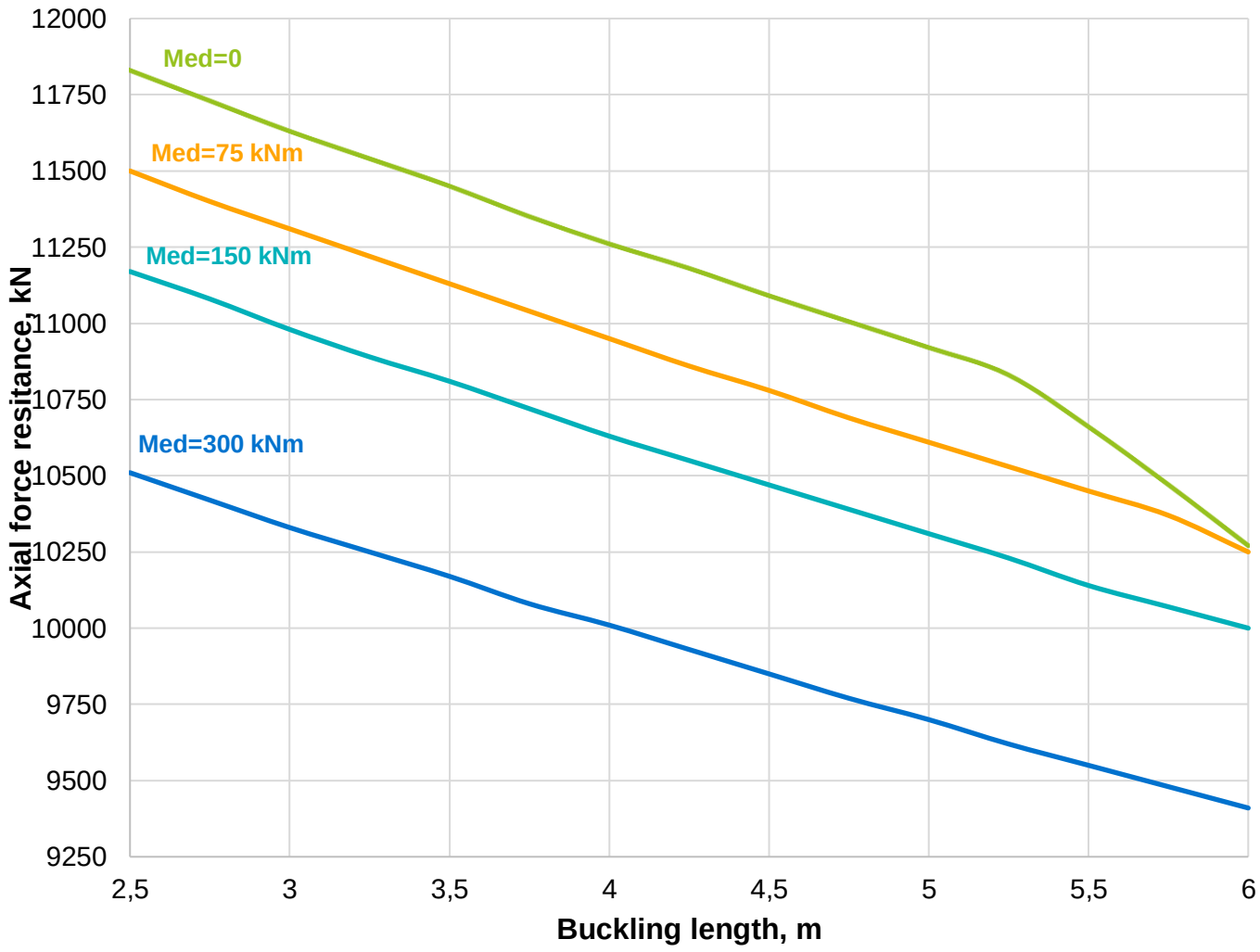




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 400x400 |
|---|---|

**Material properties:**

Reinforcement: B500B

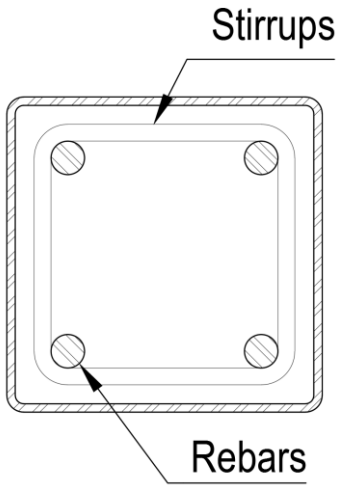
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



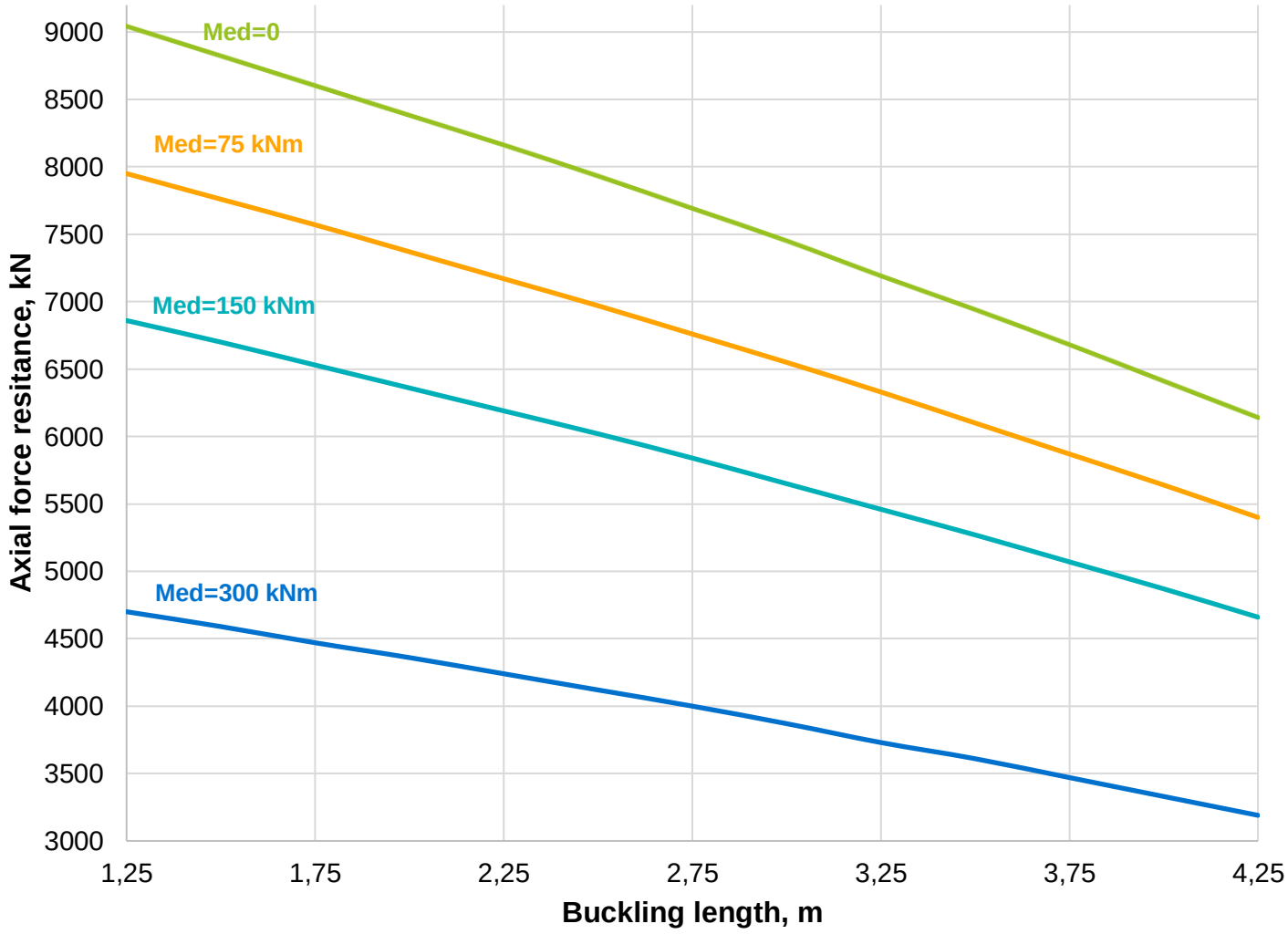




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 400x400 |
|---|---|

**Material properties:**

Reinforcement: B500B

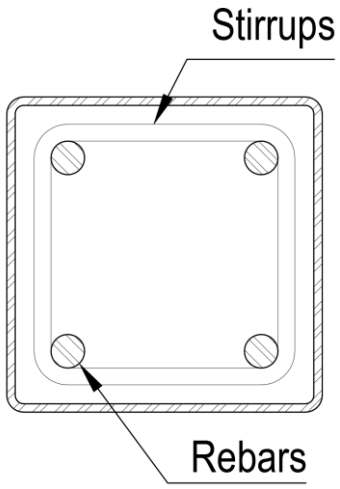
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



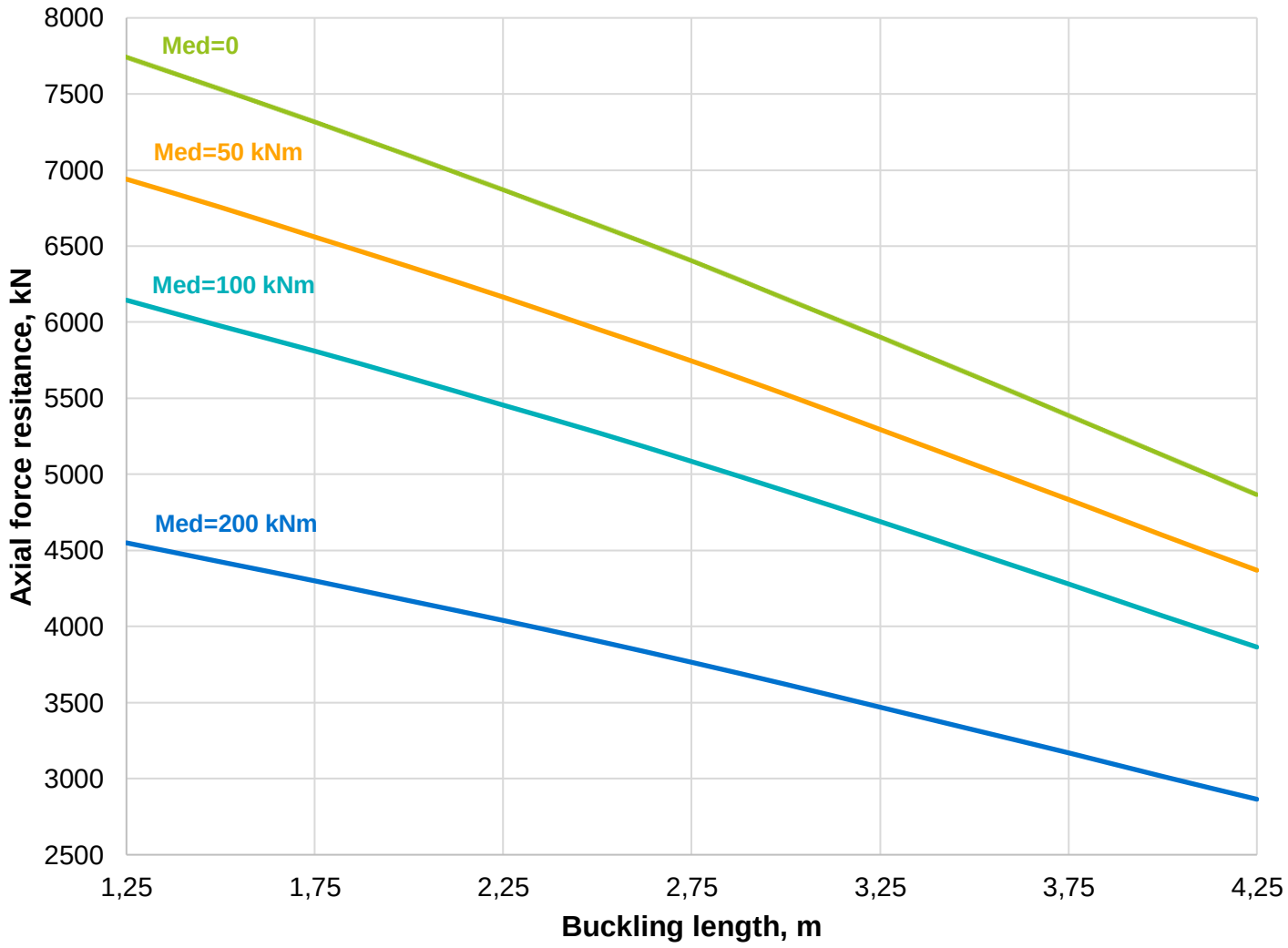




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 500x500 |
|---|---|

**Material properties:**

Reinforcement: B500B

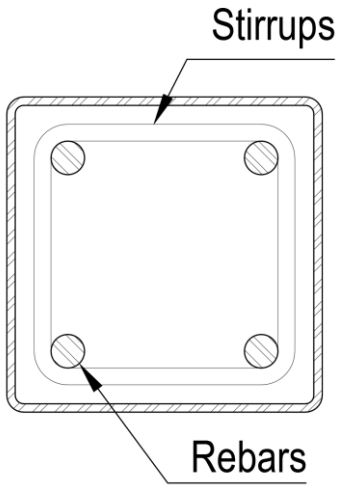
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



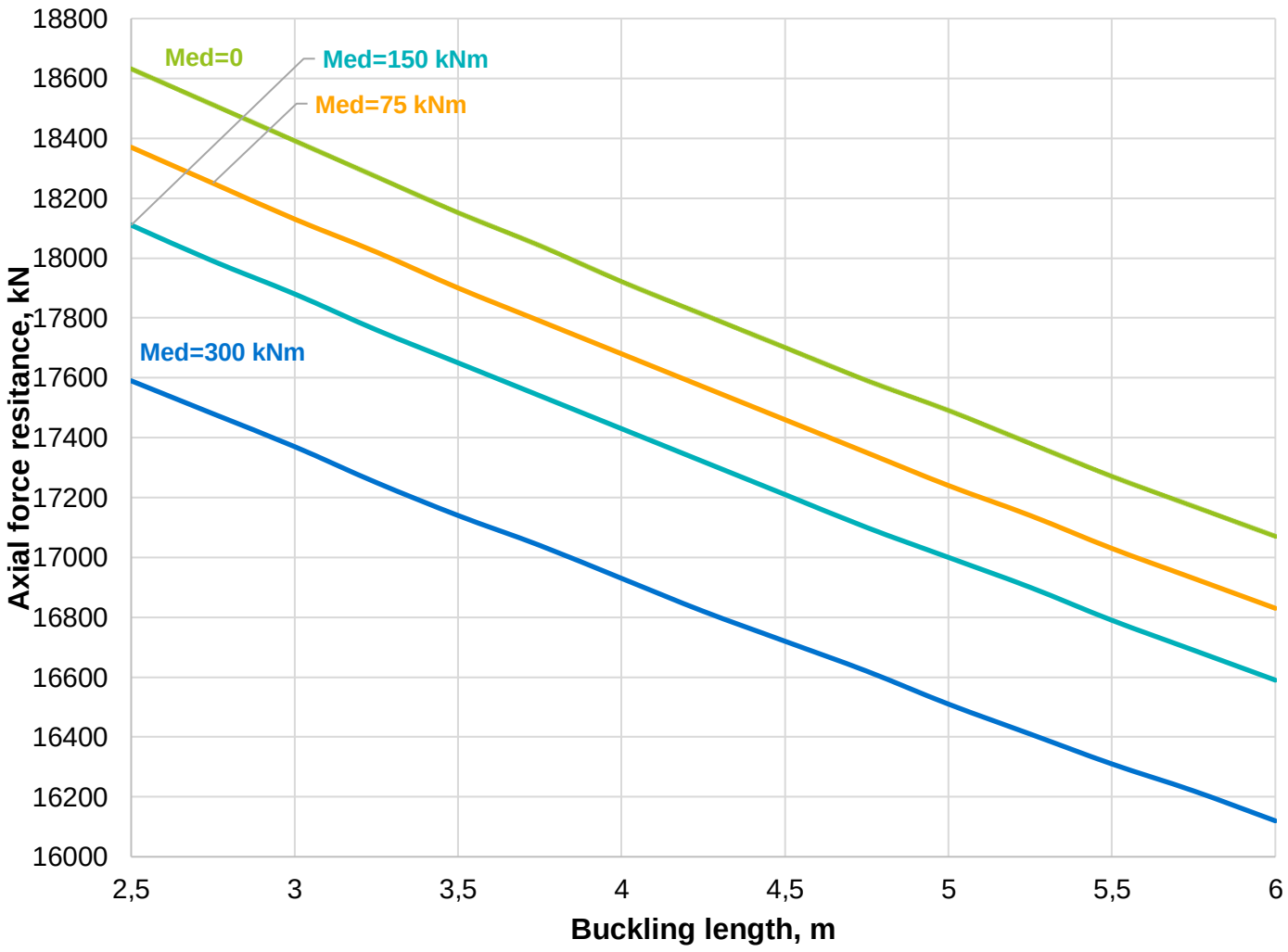




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 500x500 |
|---|---|

**Material properties:**

Reinforcement: B500B

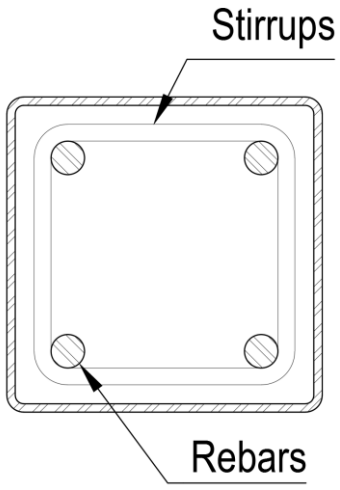
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



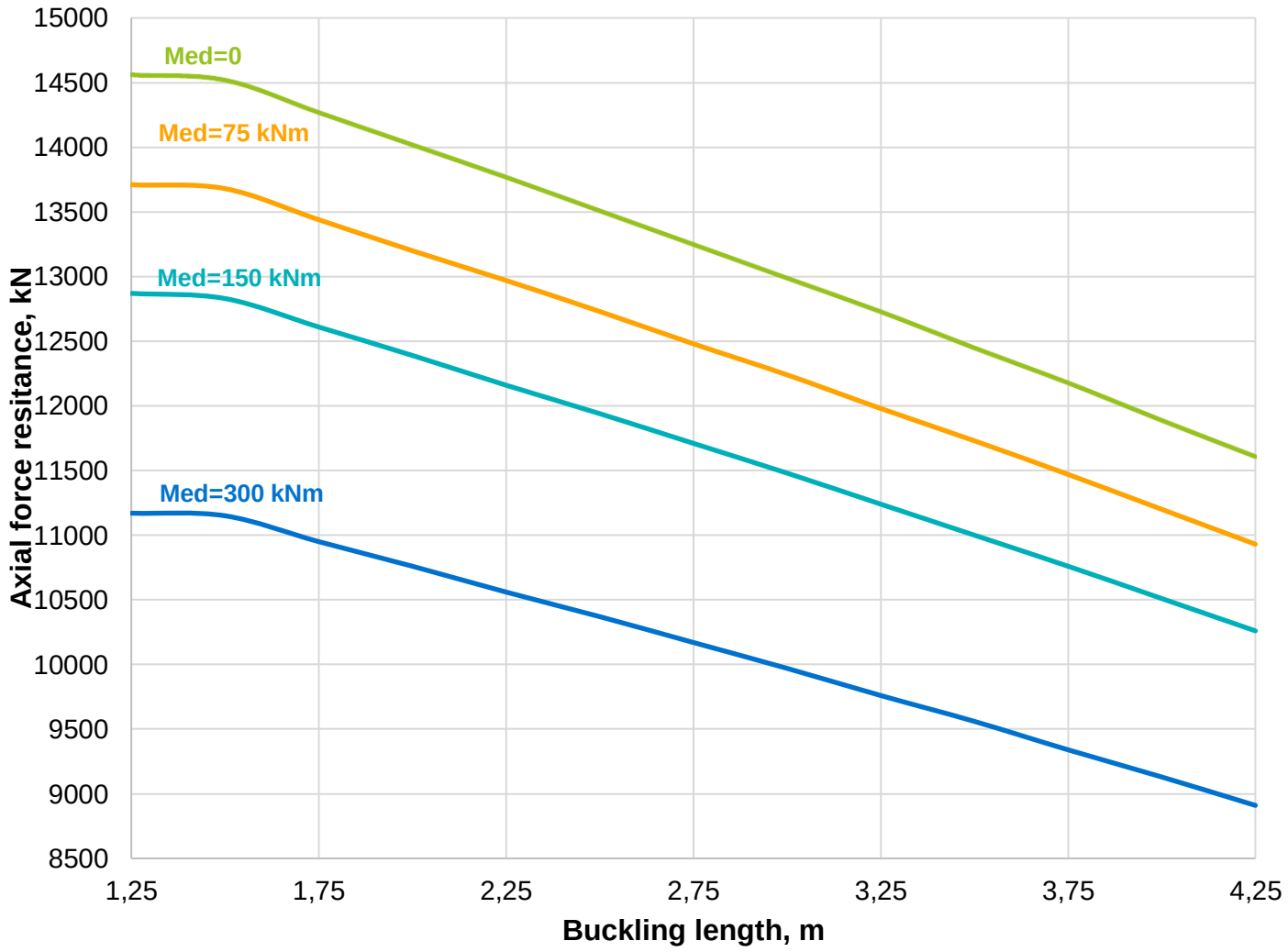




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 500x500 |
|---|---|

**Material properties:**

Reinforcement: B500B

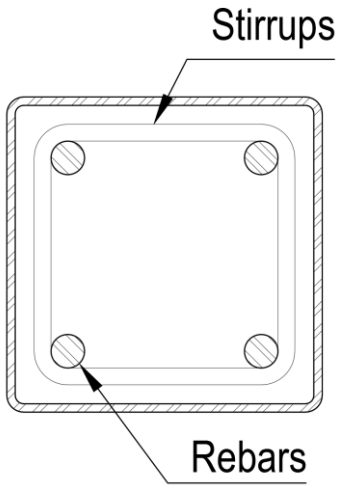
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



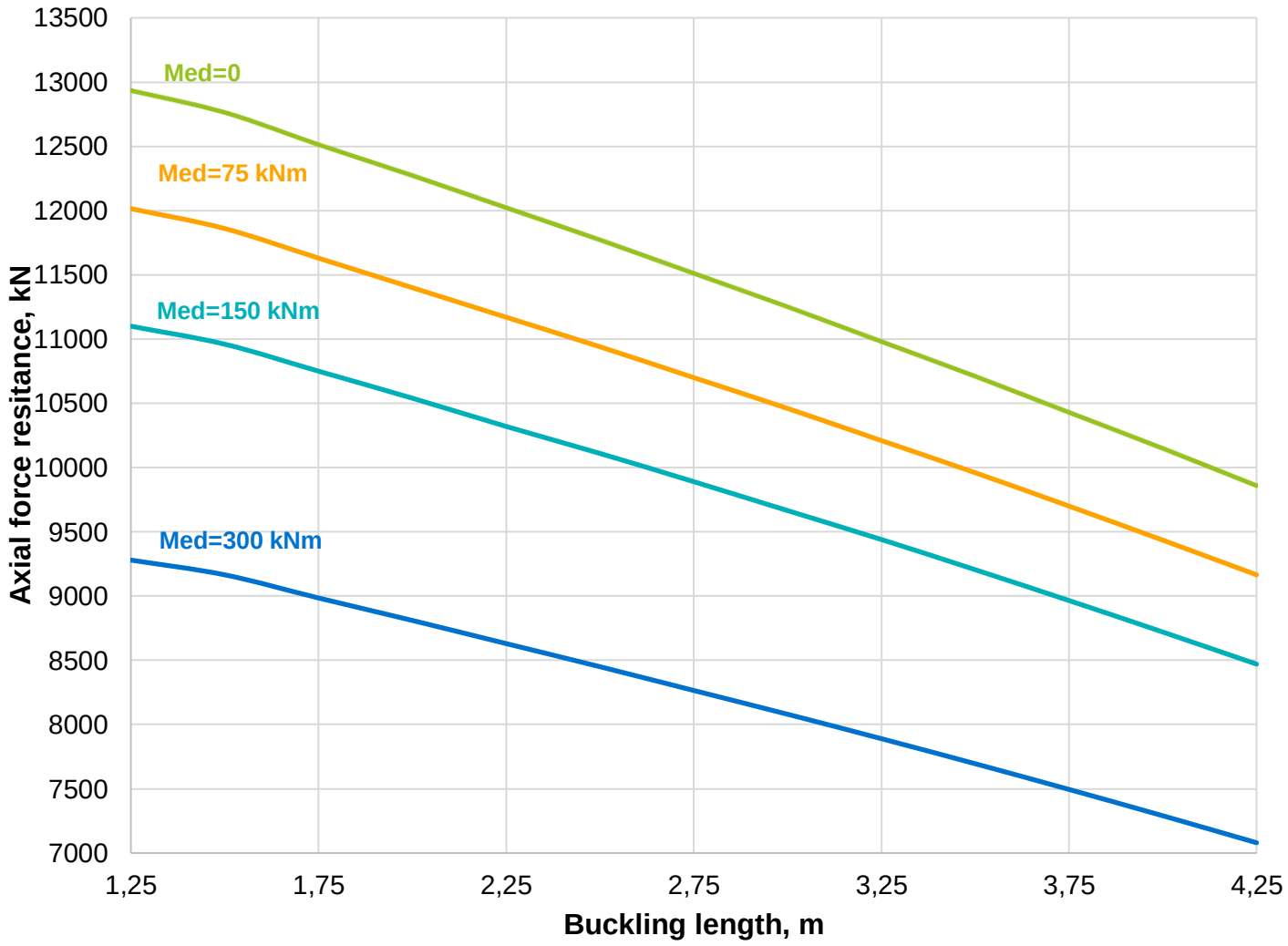




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

# RECTANGULAR COLUMNS C30/37

| Rectangular columns |
| --- |
| S355-B500B-C30/37 |
| R60 - SHS 150 |
| R60 - SHS 160 |
| R60 - SHS 180 |
| R60 - SHS 200 |
| R60 - SHS 220 |
| R60 - SHS 250 |
| R60 - SHS 300 |
| R60 - SHS 350 |
| R60 - SHS 400 |
| R60 - SHS 500 |
| R120 - SHS 200 |
| R120 - SHS 220 |
| R120 - SHS 250 |
| R120 - SHS 300 |
| R120 - SHS 350 |
| R120 - SHS 400 |
| R120 - SHS 500 |

| ULS | SHS 150x150 |
|---|---|

**Material properties:**

Reinforcement: B500B

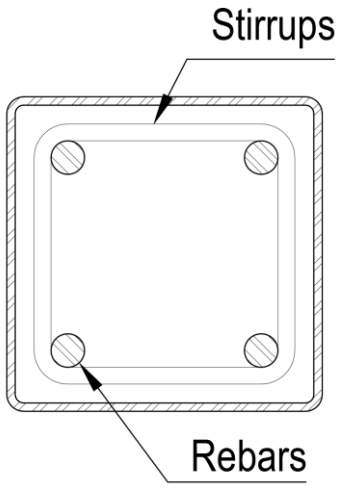
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



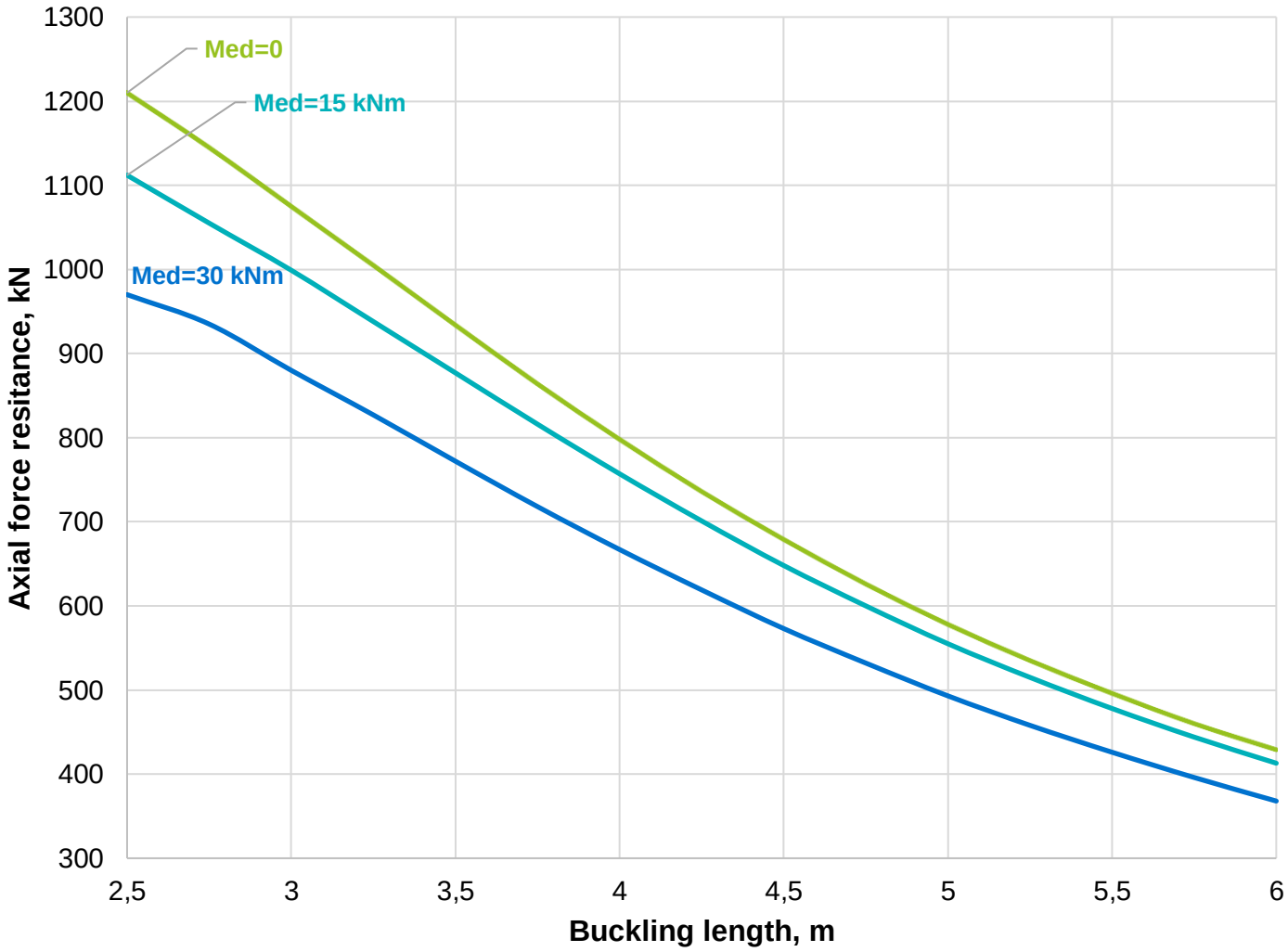




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 150x150 |
|---|---|

**Material properties:**

Reinforcement: B500B

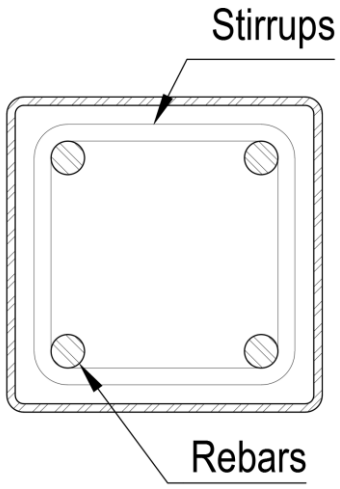
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



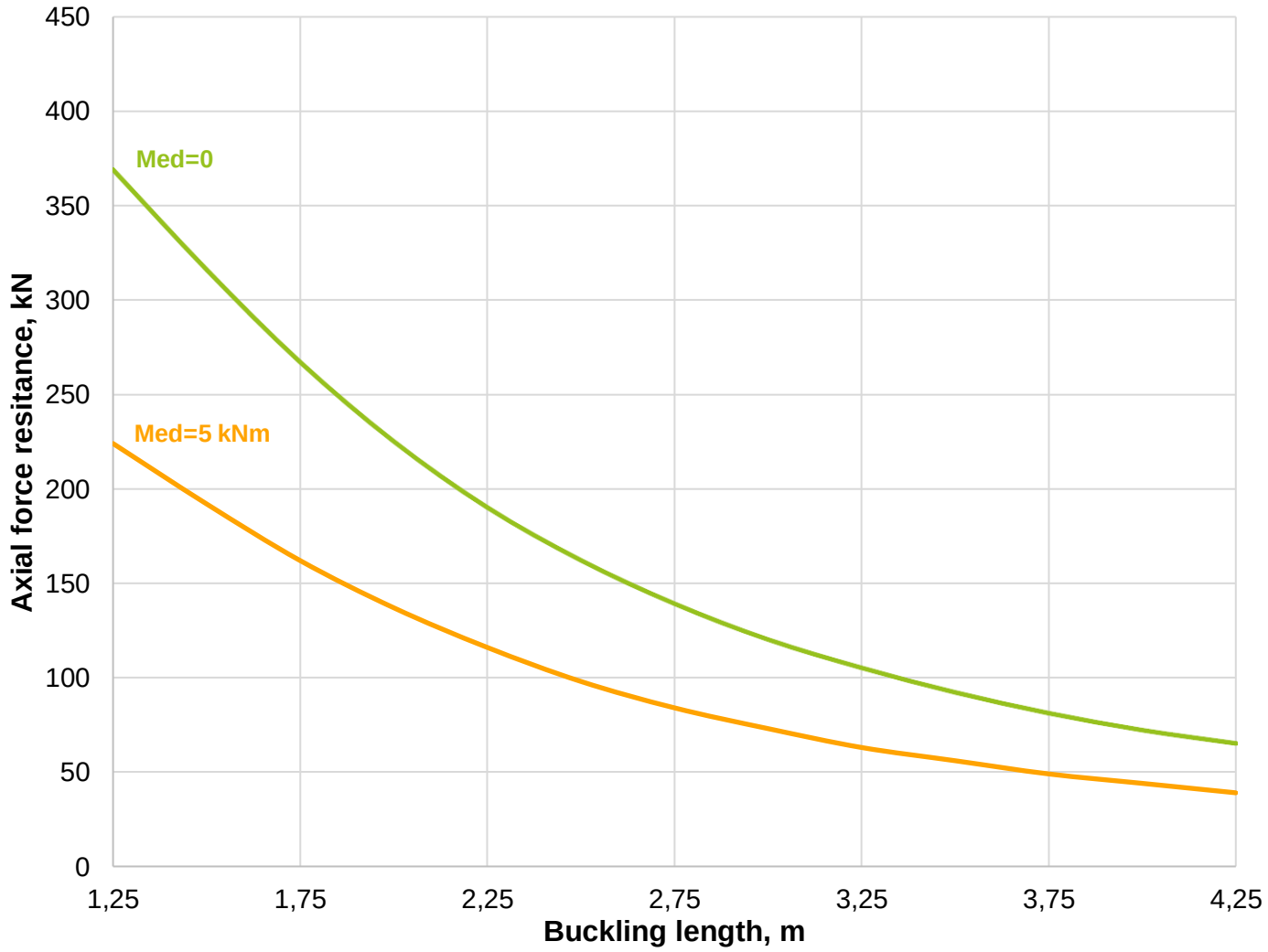




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | SHS 160x160 |
|---|---|

**Material properties:**

Reinforcement: B500B

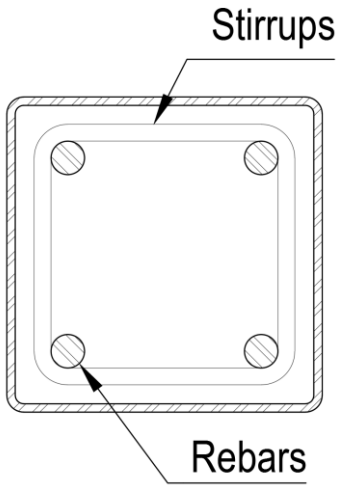
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



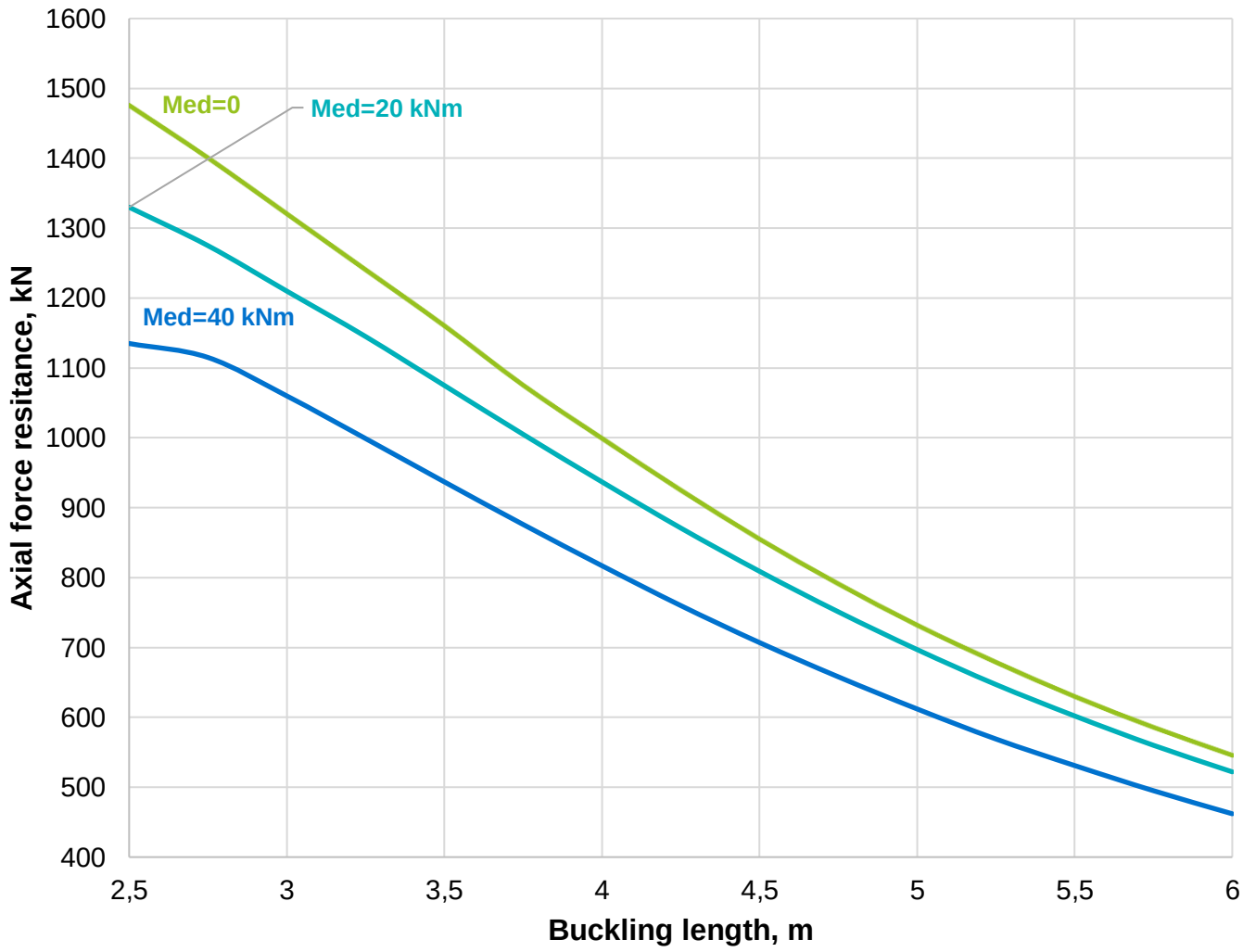




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 160x160 |
|---|---|

**Material properties:**

Reinforcement: B500B

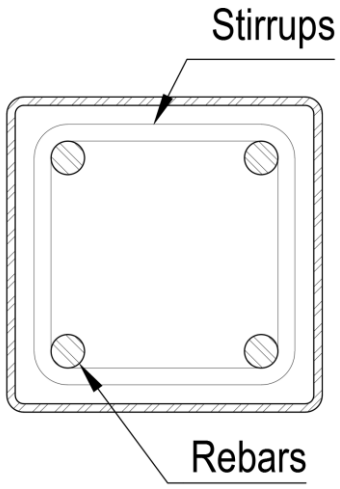
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



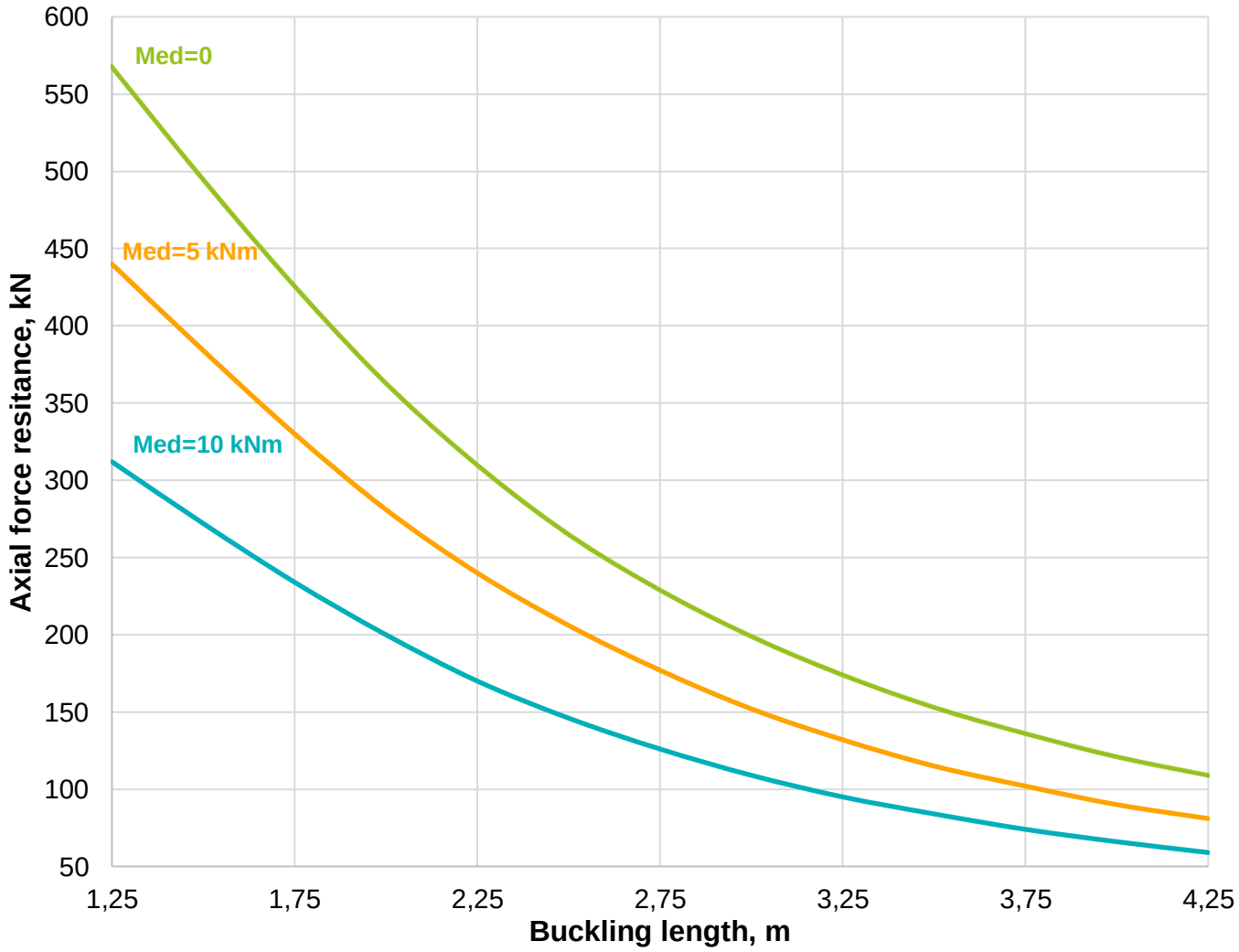




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | SHS 180x180 |
|---|---|

**Material properties:**

Reinforcement: B500B

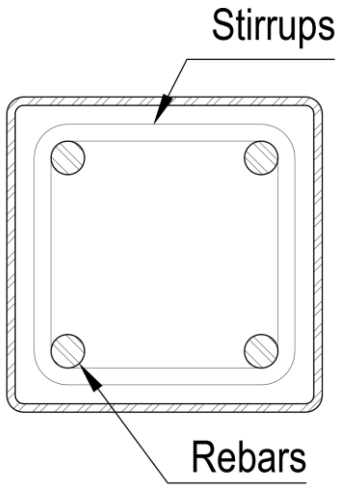
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



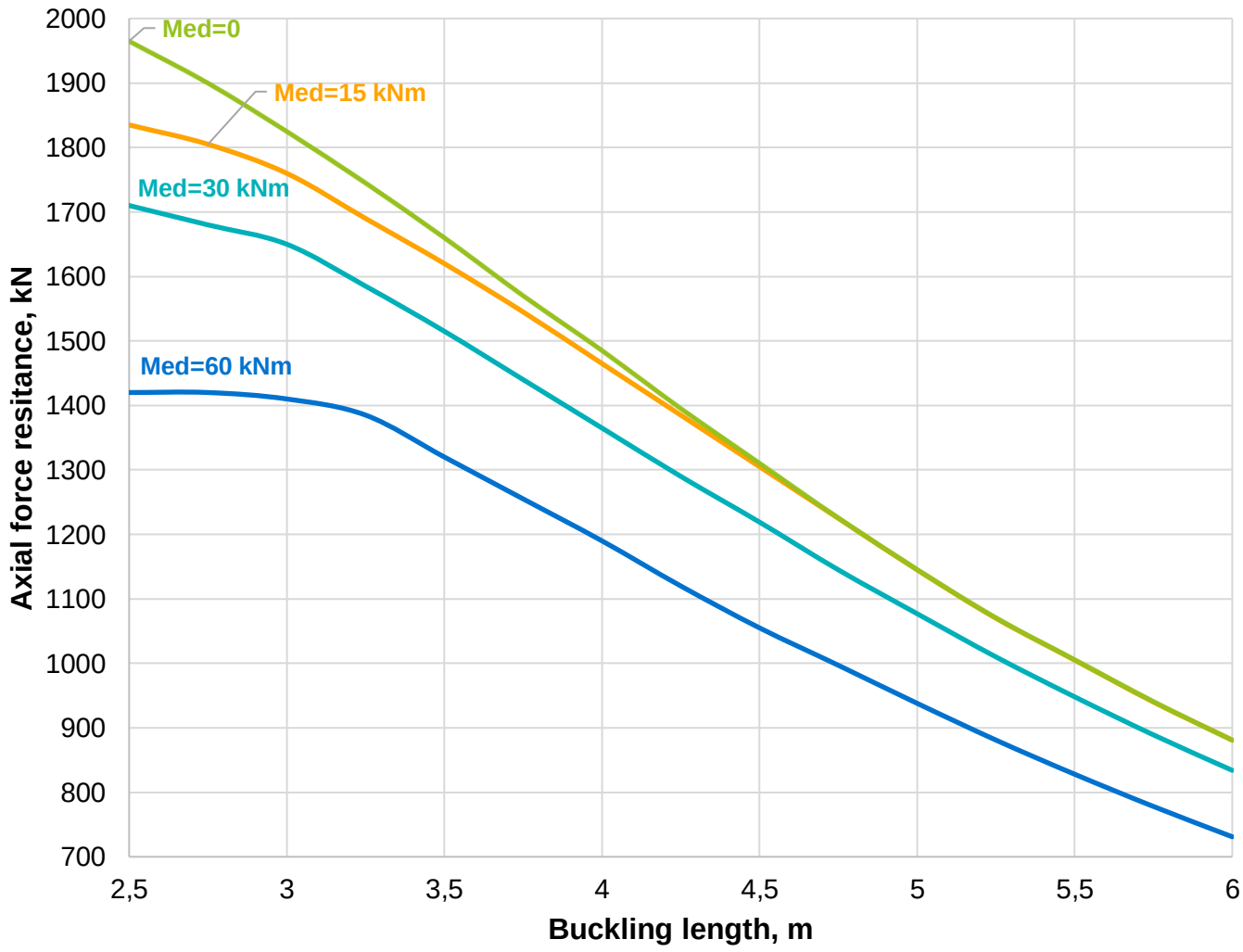




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 180x180 |
|---|---|

**Material properties:**

Reinforcement: B500B

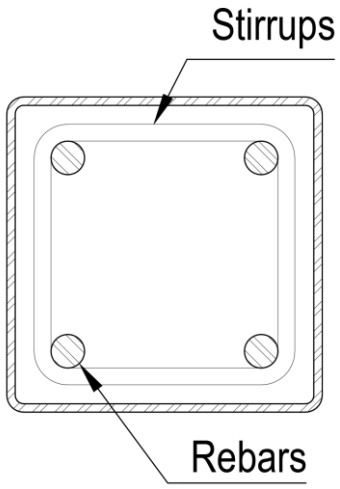
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



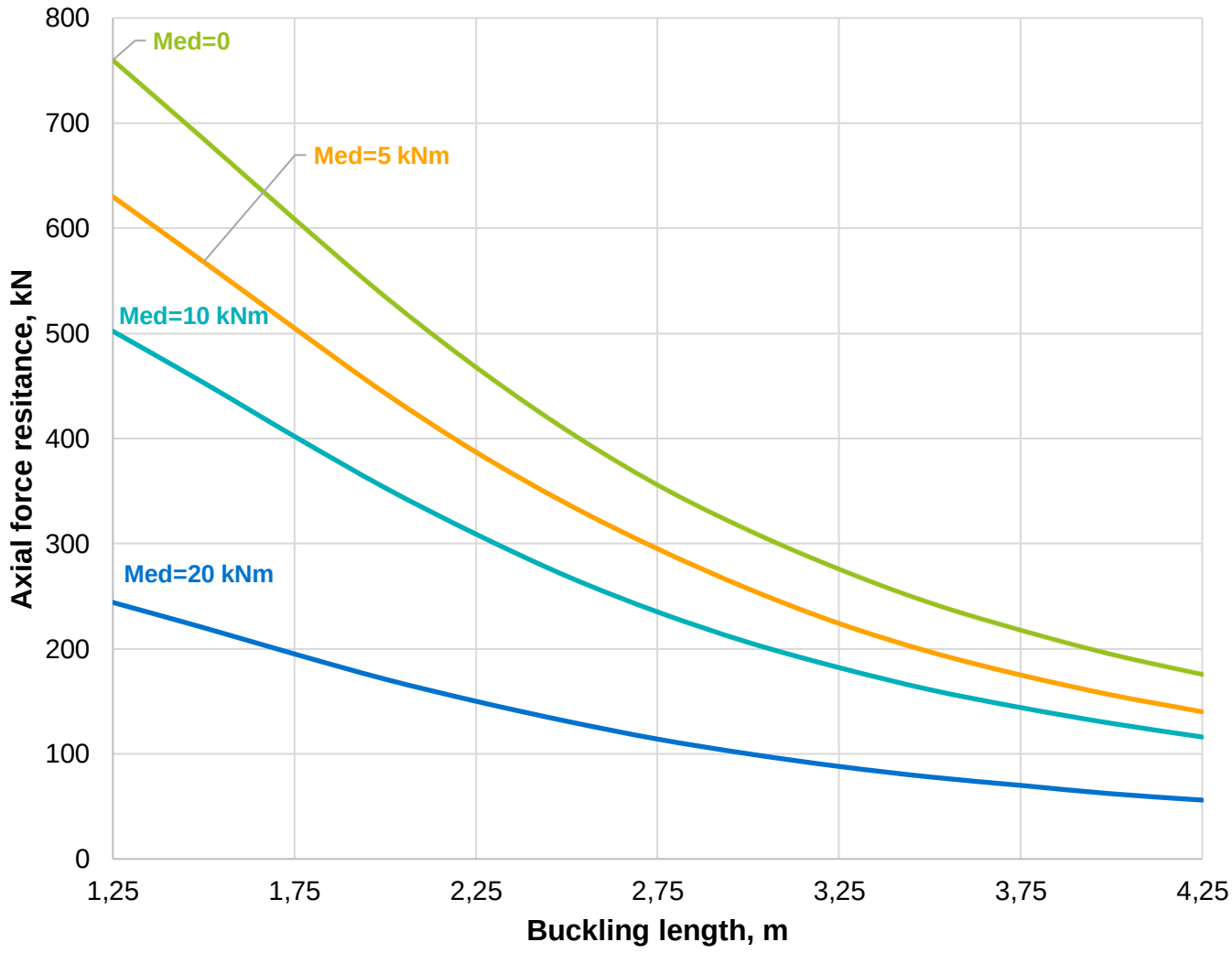




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | SHS 200x200 |
|---|---|

**Material properties:**

Reinforcement: B500B

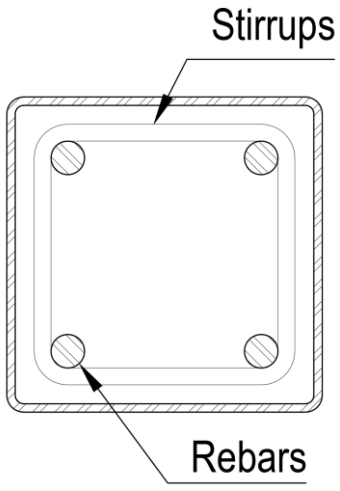
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



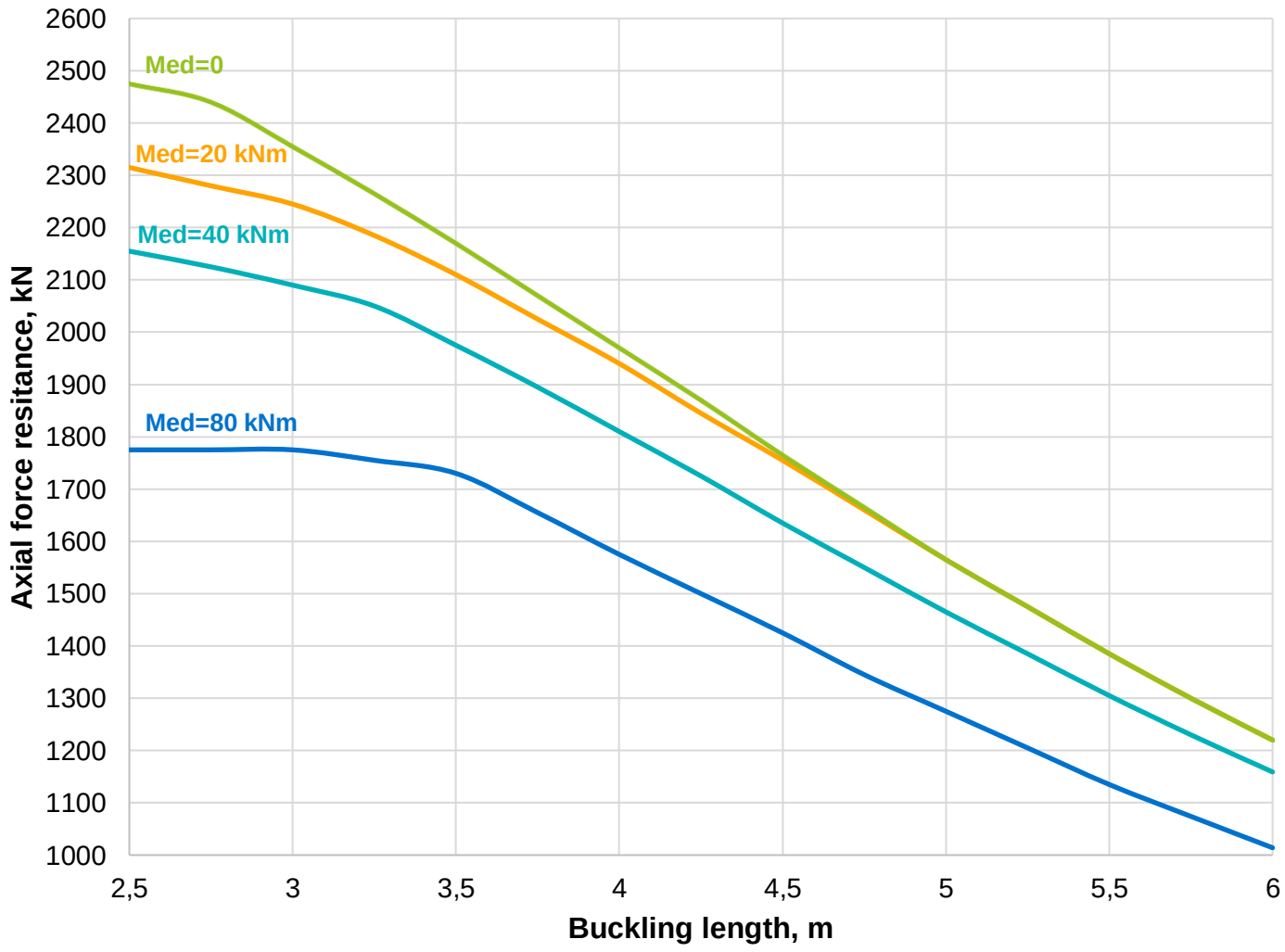
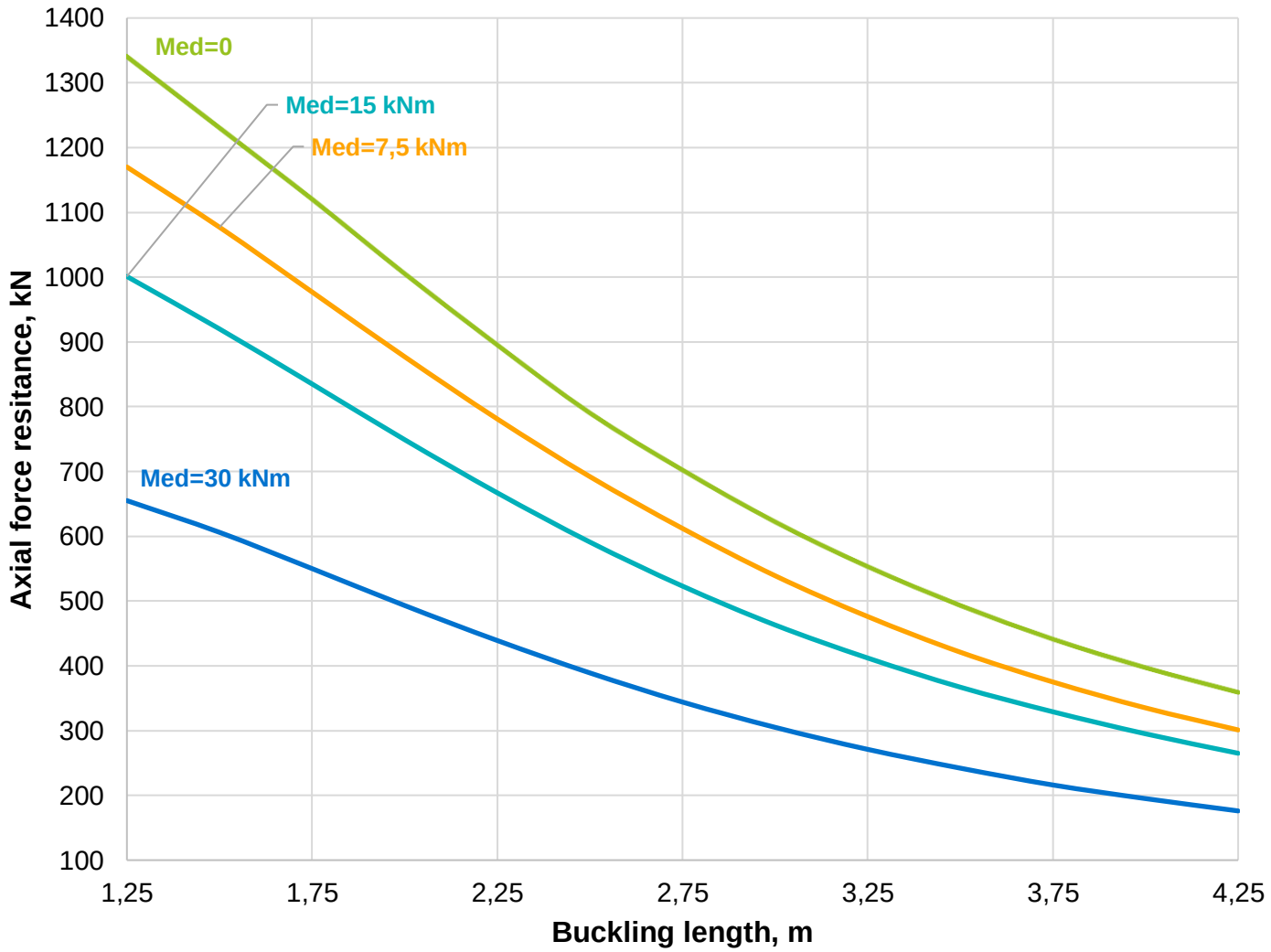




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 200x200 |
|---|---|




**Material properties:**

Reinforcement: B500B

Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.

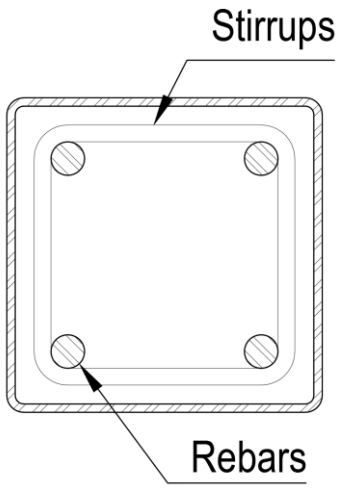



**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 200x200 |
|---|---|

**Material properties:**

Reinforcement: B500B

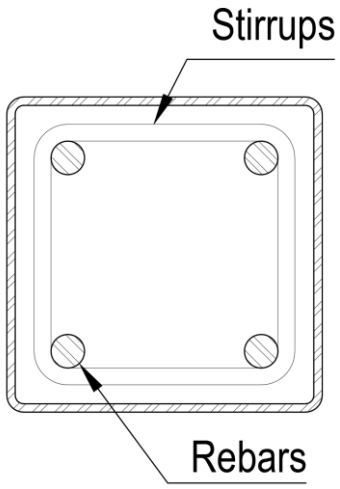
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



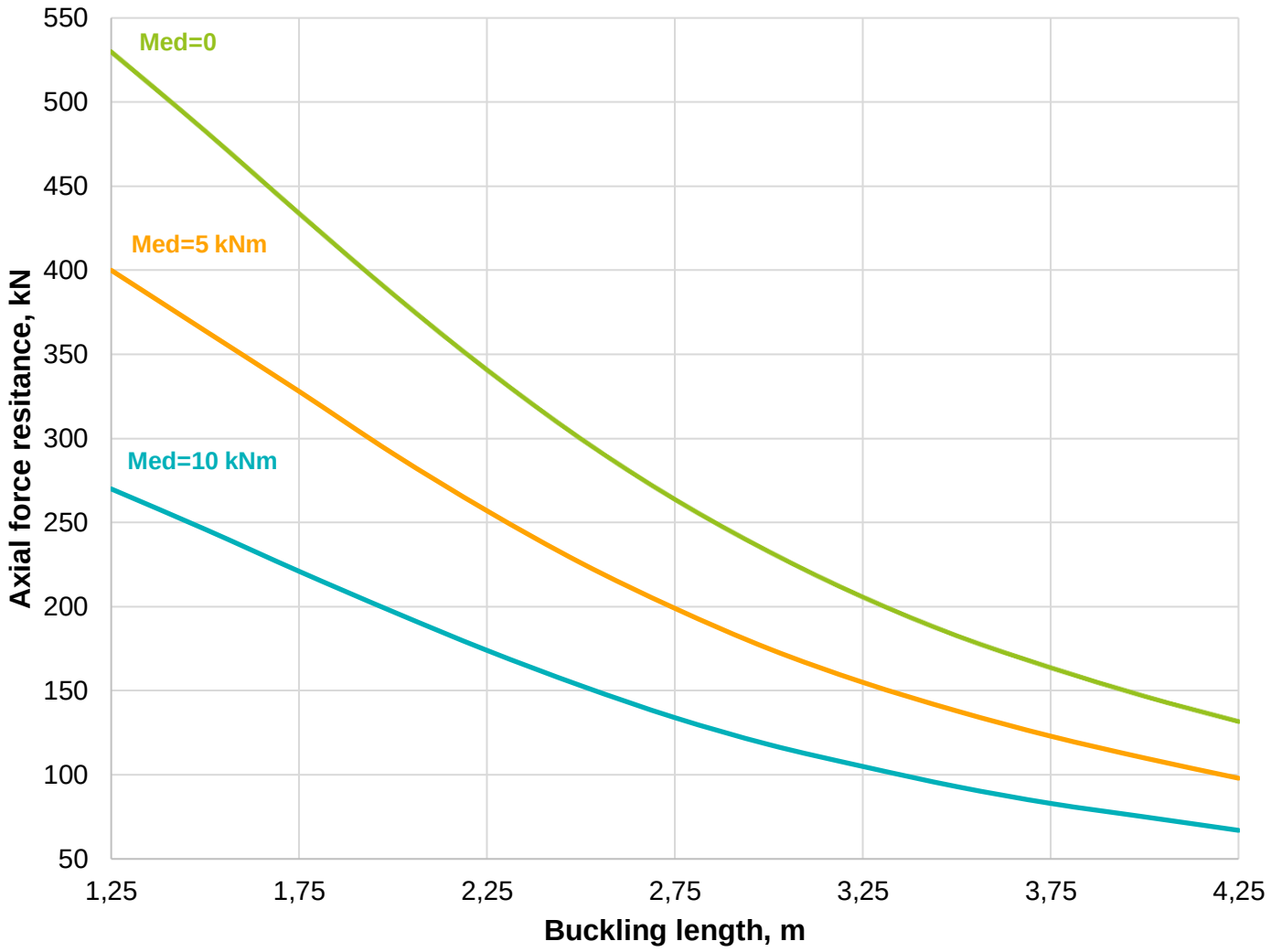




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 220x220 |
|---|---|

**Material properties:**

Reinforcement: B500B

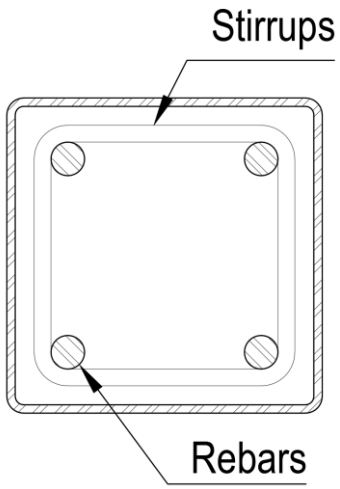
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



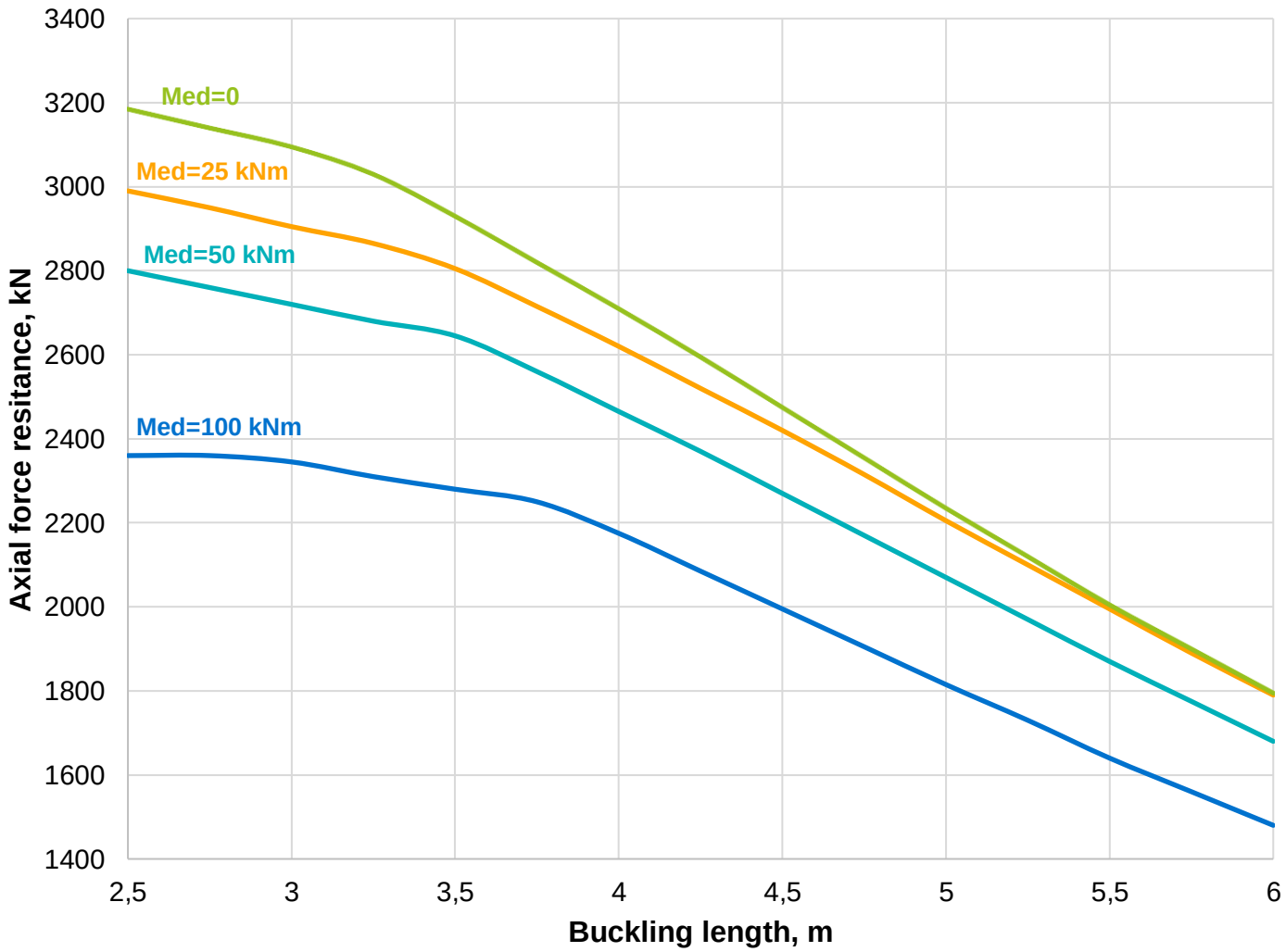




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 220x220 |
|---|---|

**Material properties:**

Reinforcement: B500B

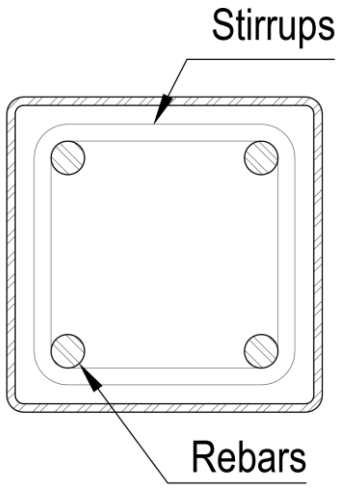
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



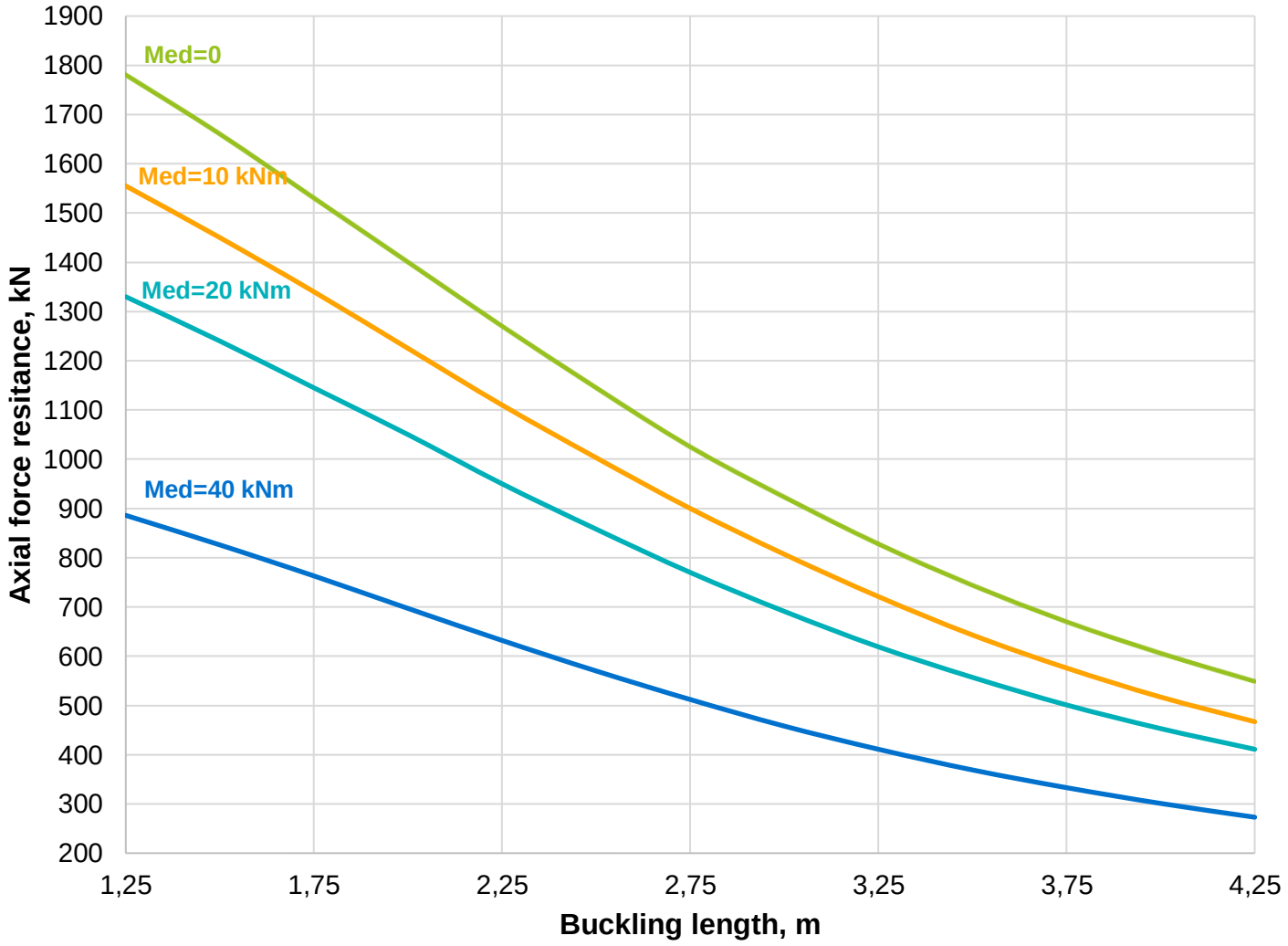




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 220x220 |
|---|---|

**Material properties:**

Reinforcement: B500B

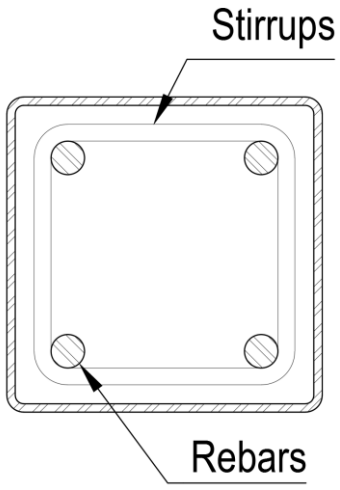
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



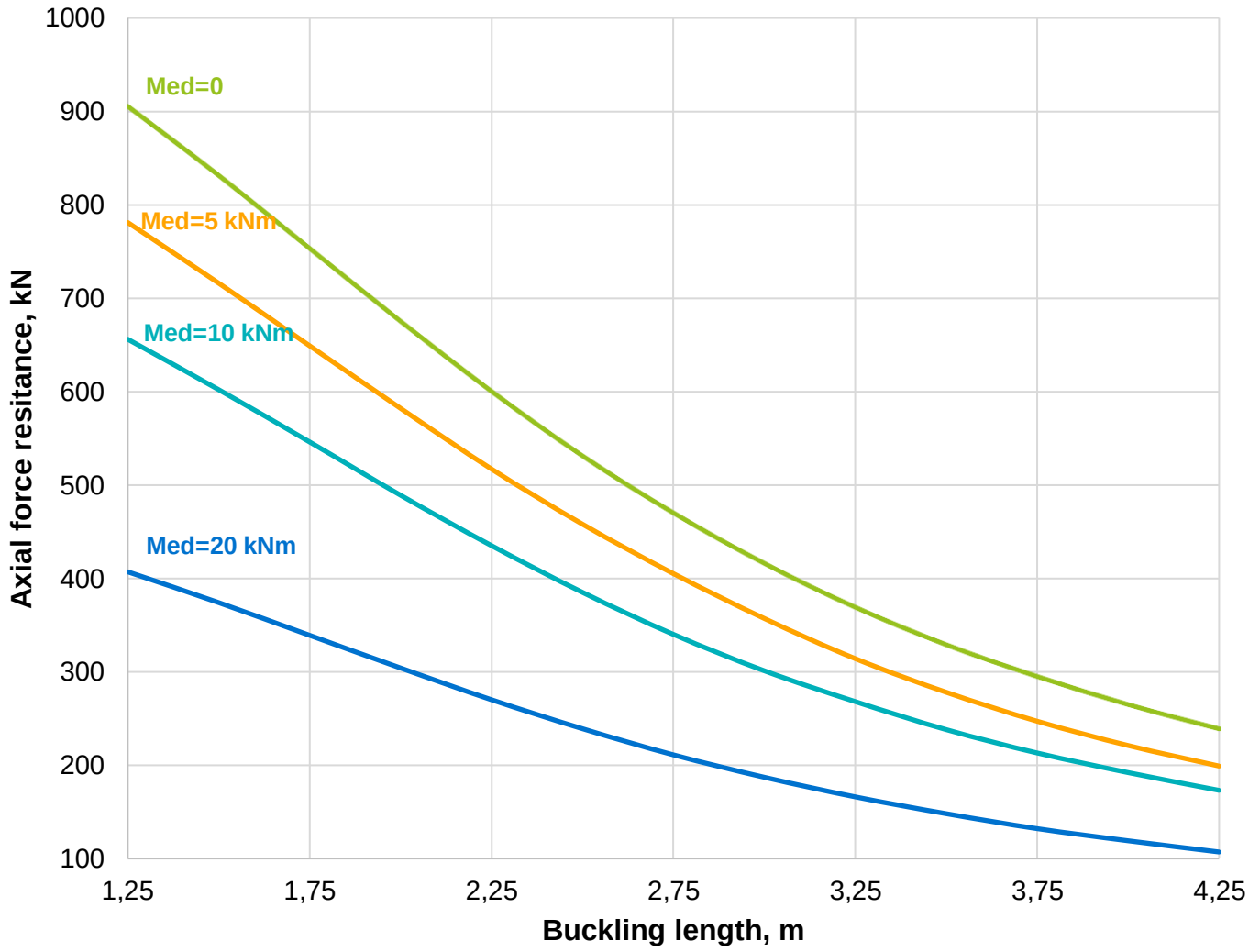




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 250x250 |
|---|---|

**Material properties:**

Reinforcement: B500B

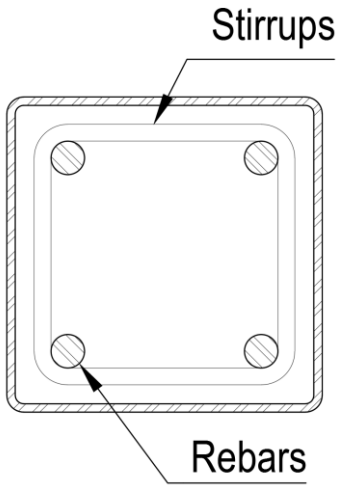
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



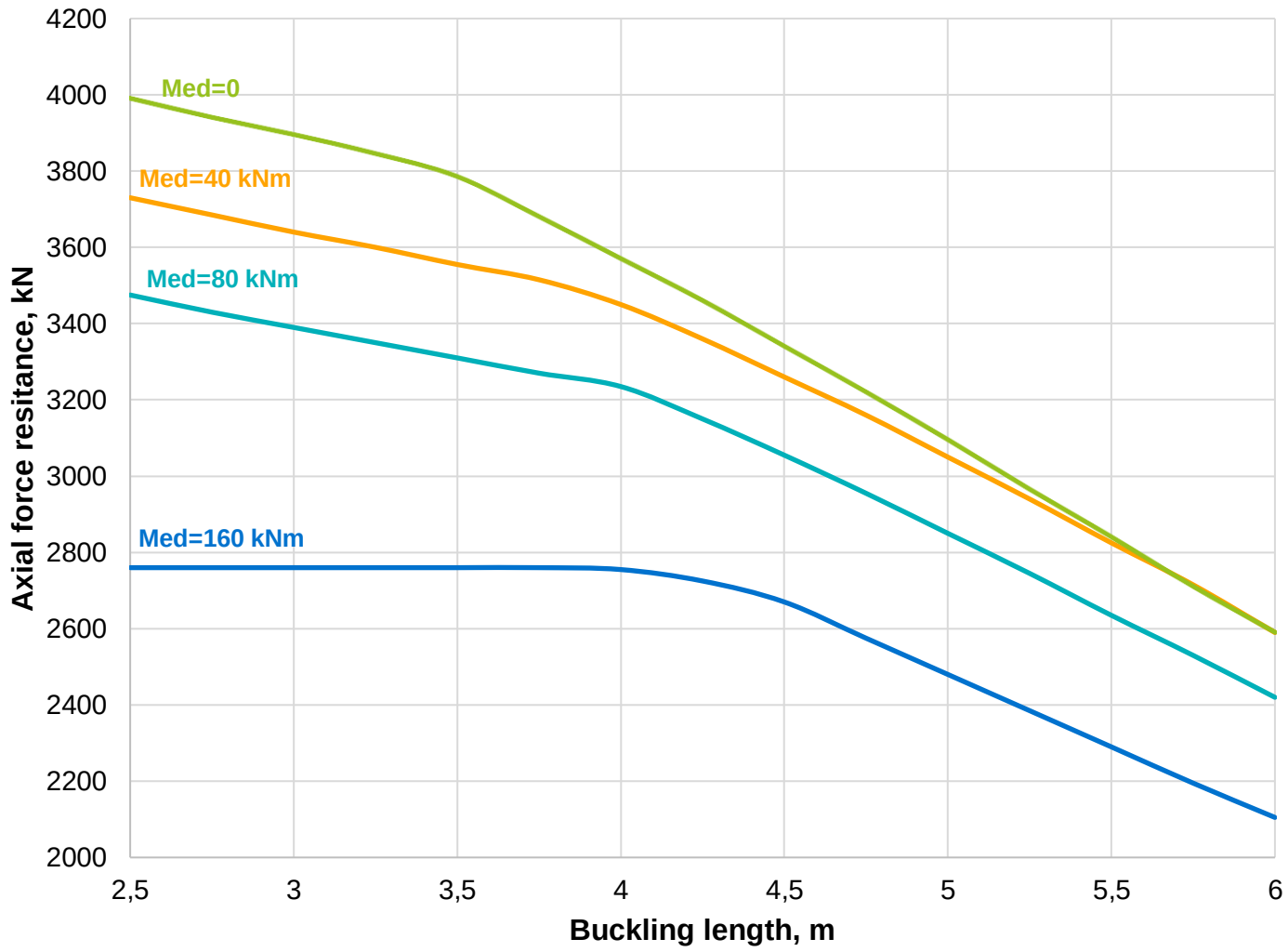




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 250x250 |
|---|---|

**Material properties:**

Reinforcement: B500B

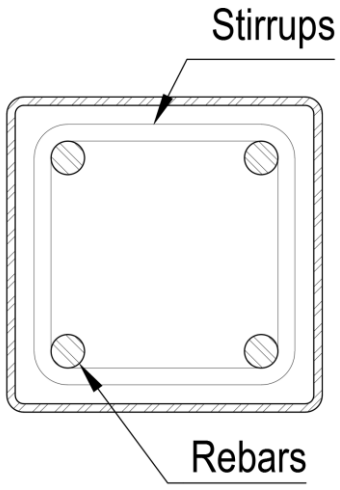
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



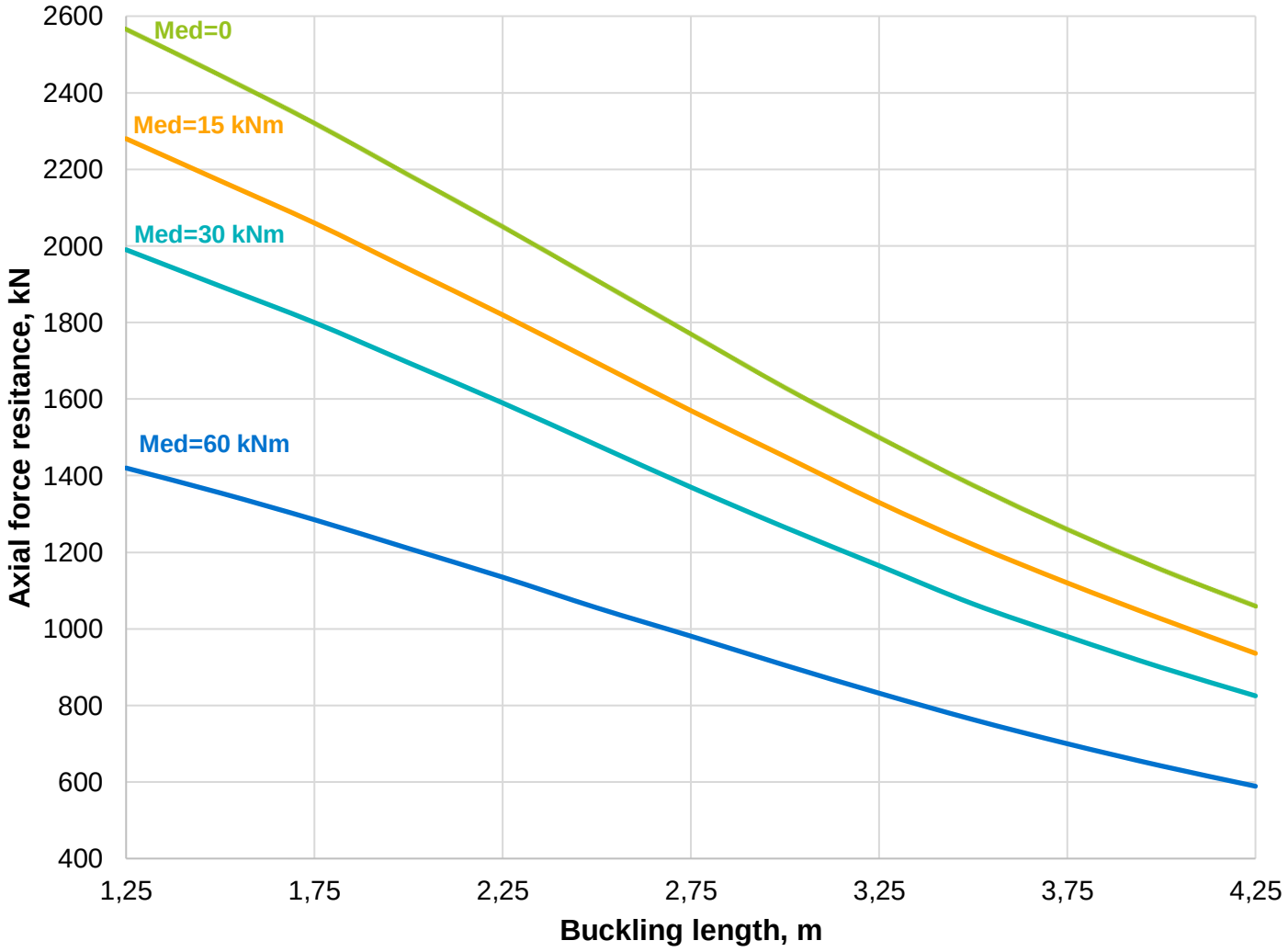




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 250x250 |
|---|---|

**Material properties:**

Reinforcement: B500B

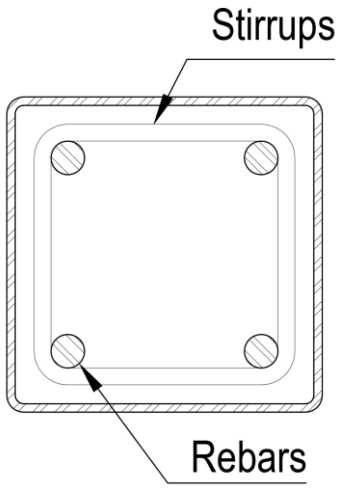
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



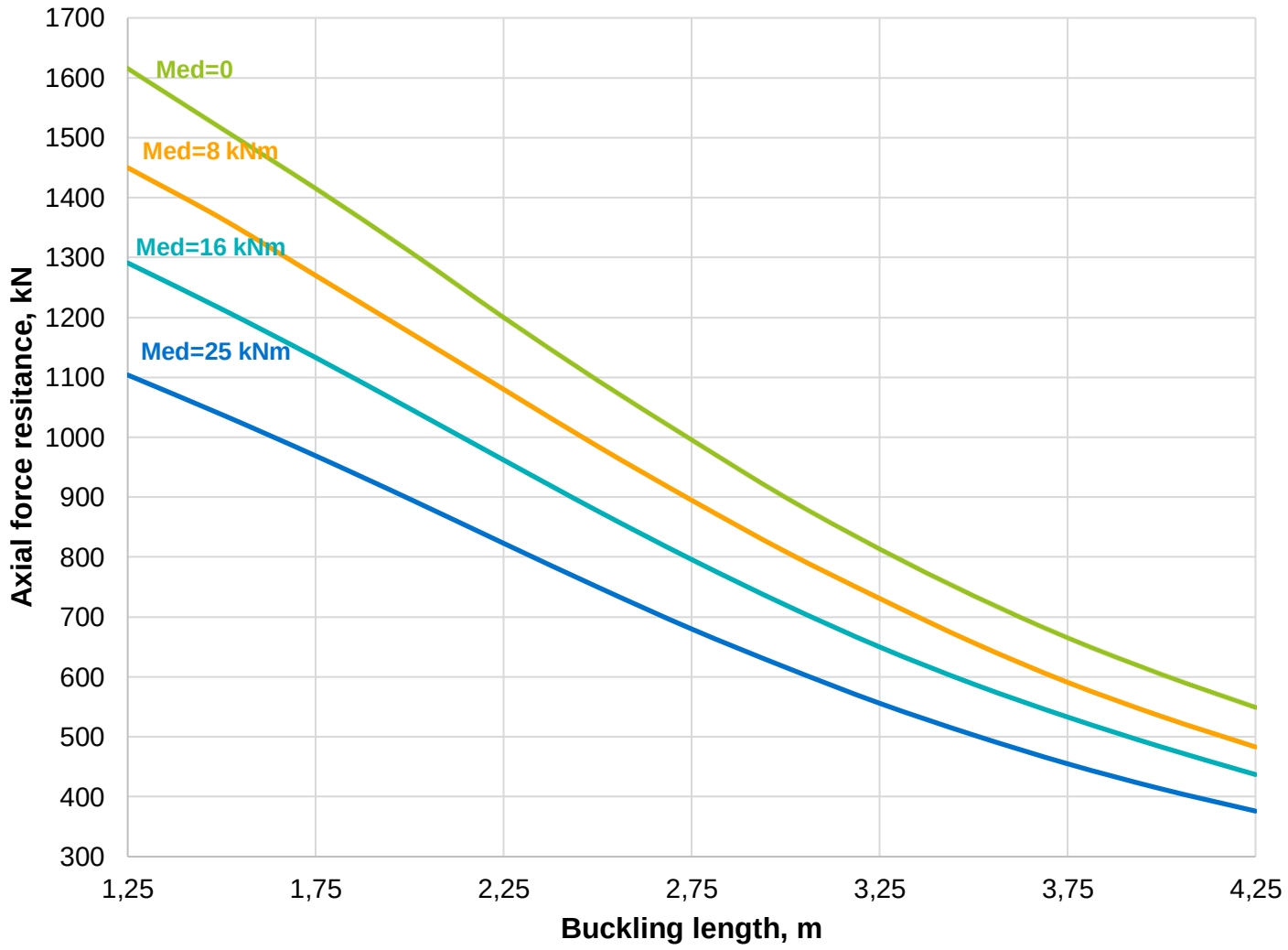




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 300x300 |
|---|---|

**Material properties:**

Reinforcement: B500B

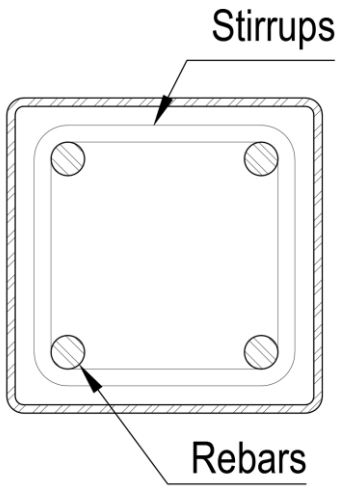
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



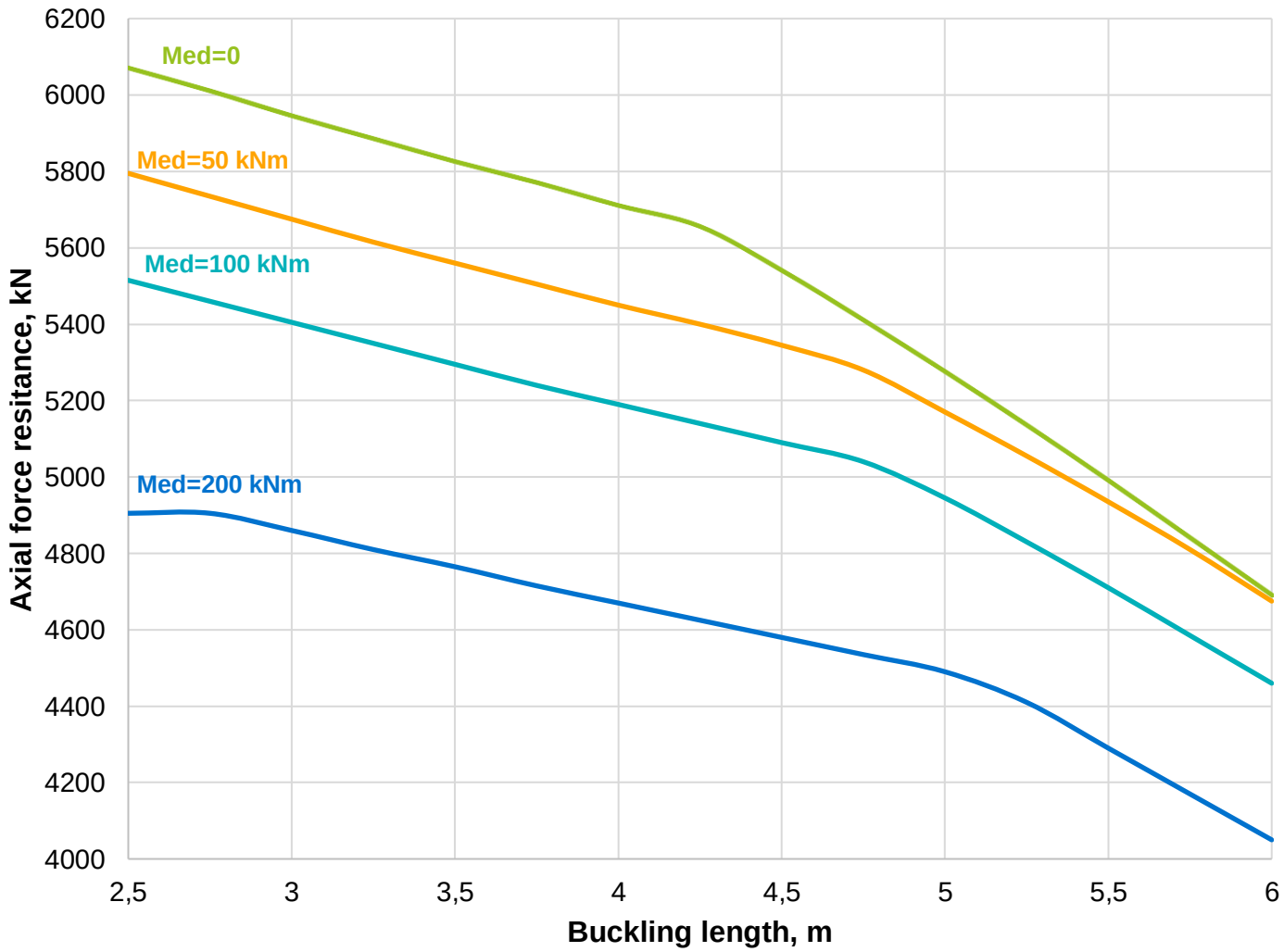




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 300x300 |
|---|---|

**Material properties:**

Reinforcement: B500B

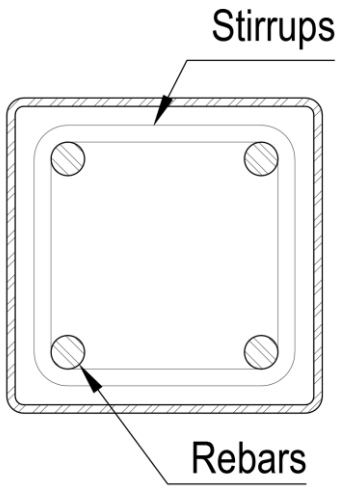
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



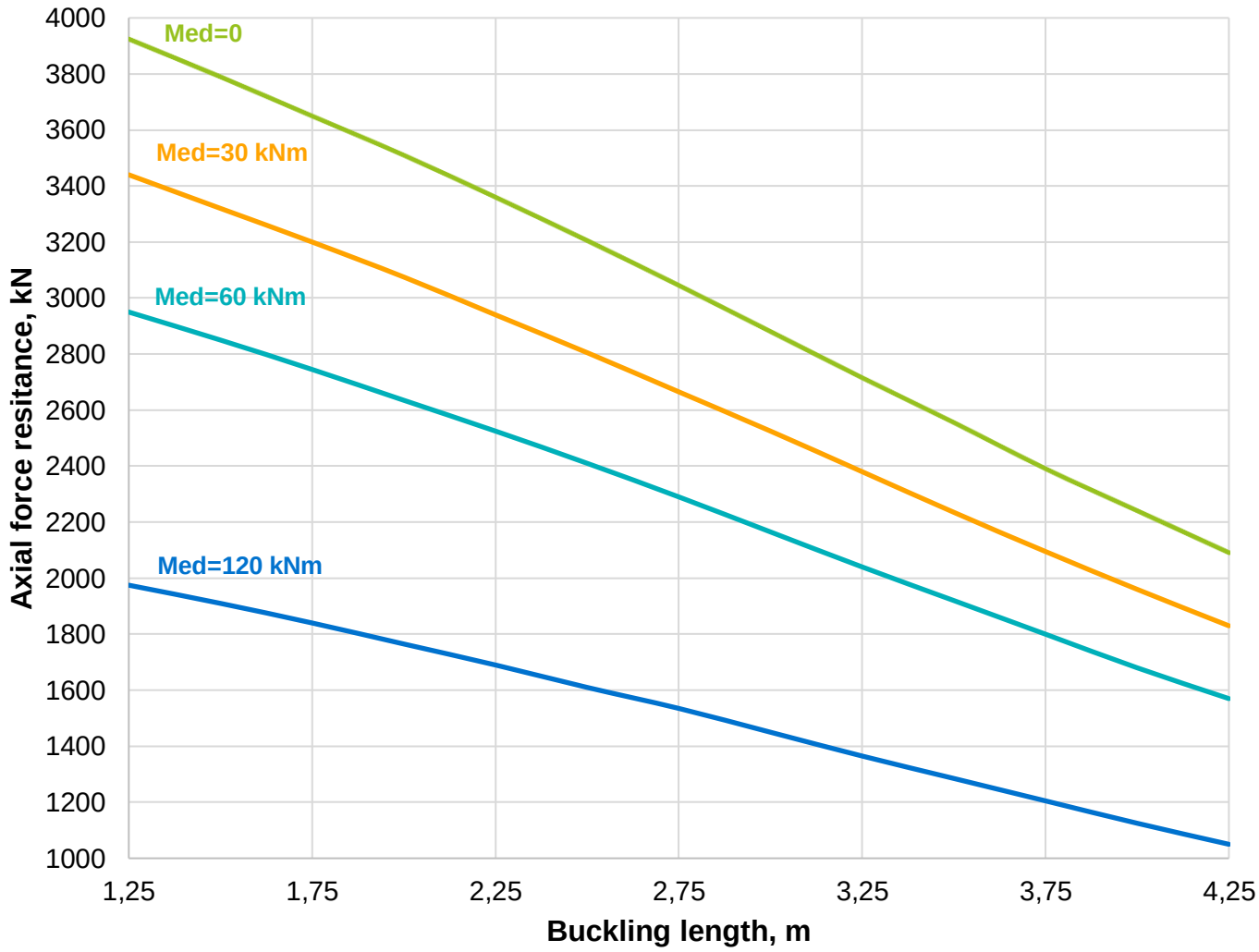




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 300x300 |
|---|---|

**Material properties:**

Reinforcement: B500B

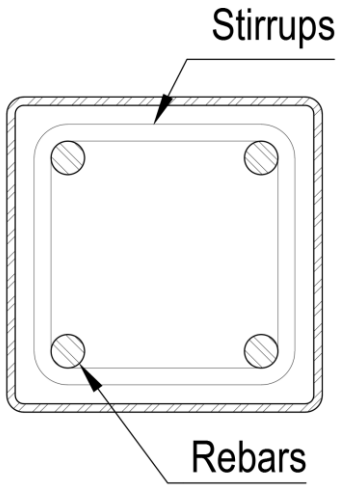
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



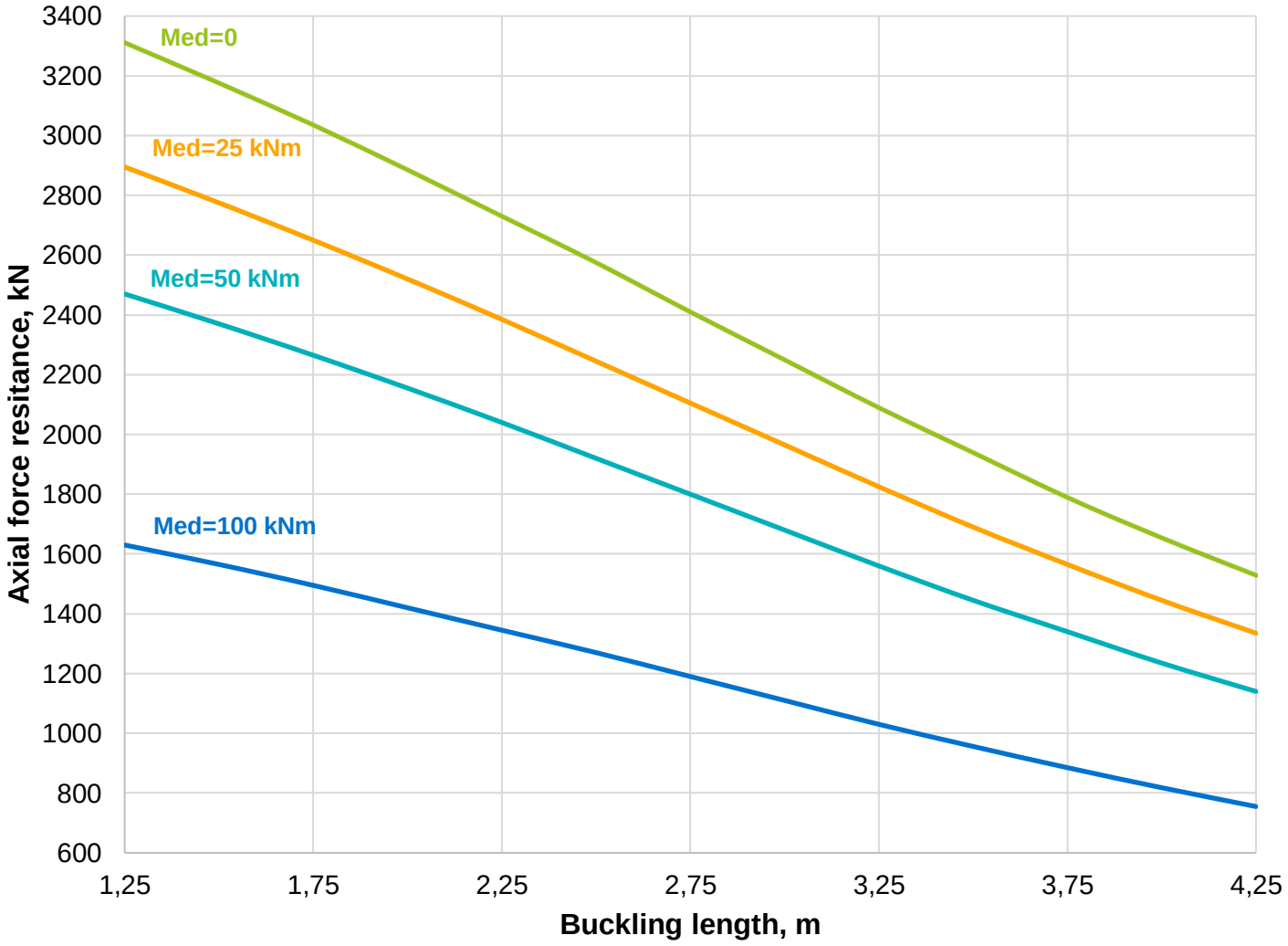




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 350x350 |
|---|---|

**Material properties:**

Reinforcement: B500B

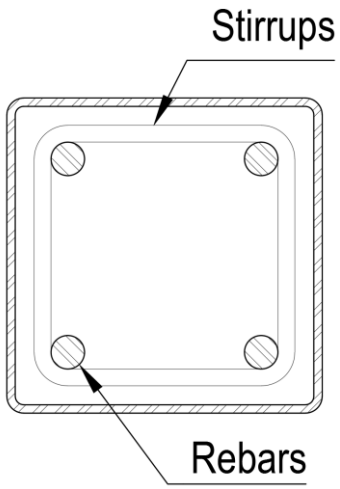
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



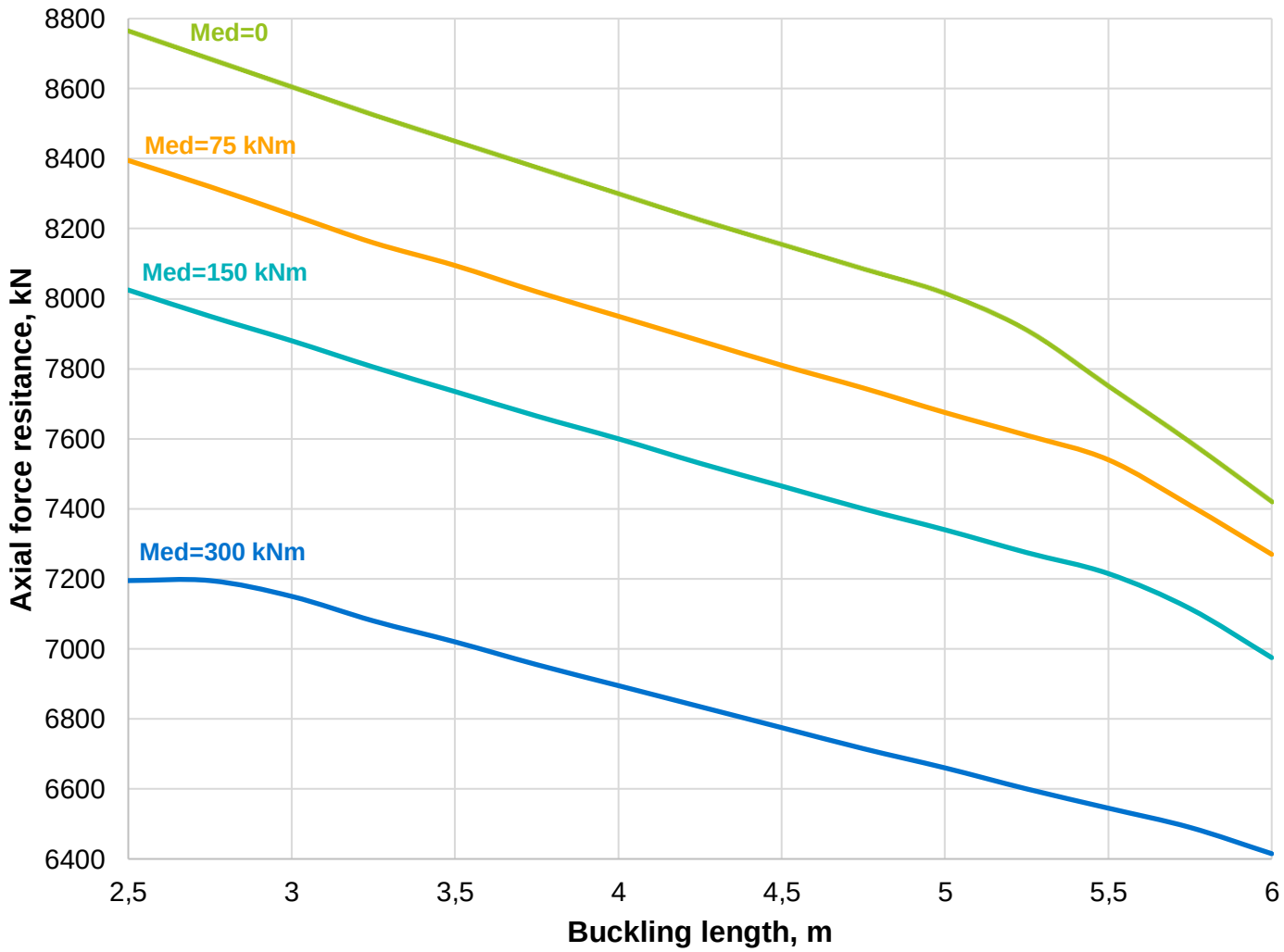




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 350x350 |
|---|---|

**Material properties:**

Reinforcement: B500B

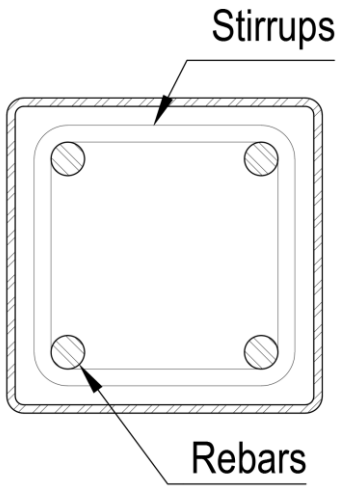
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



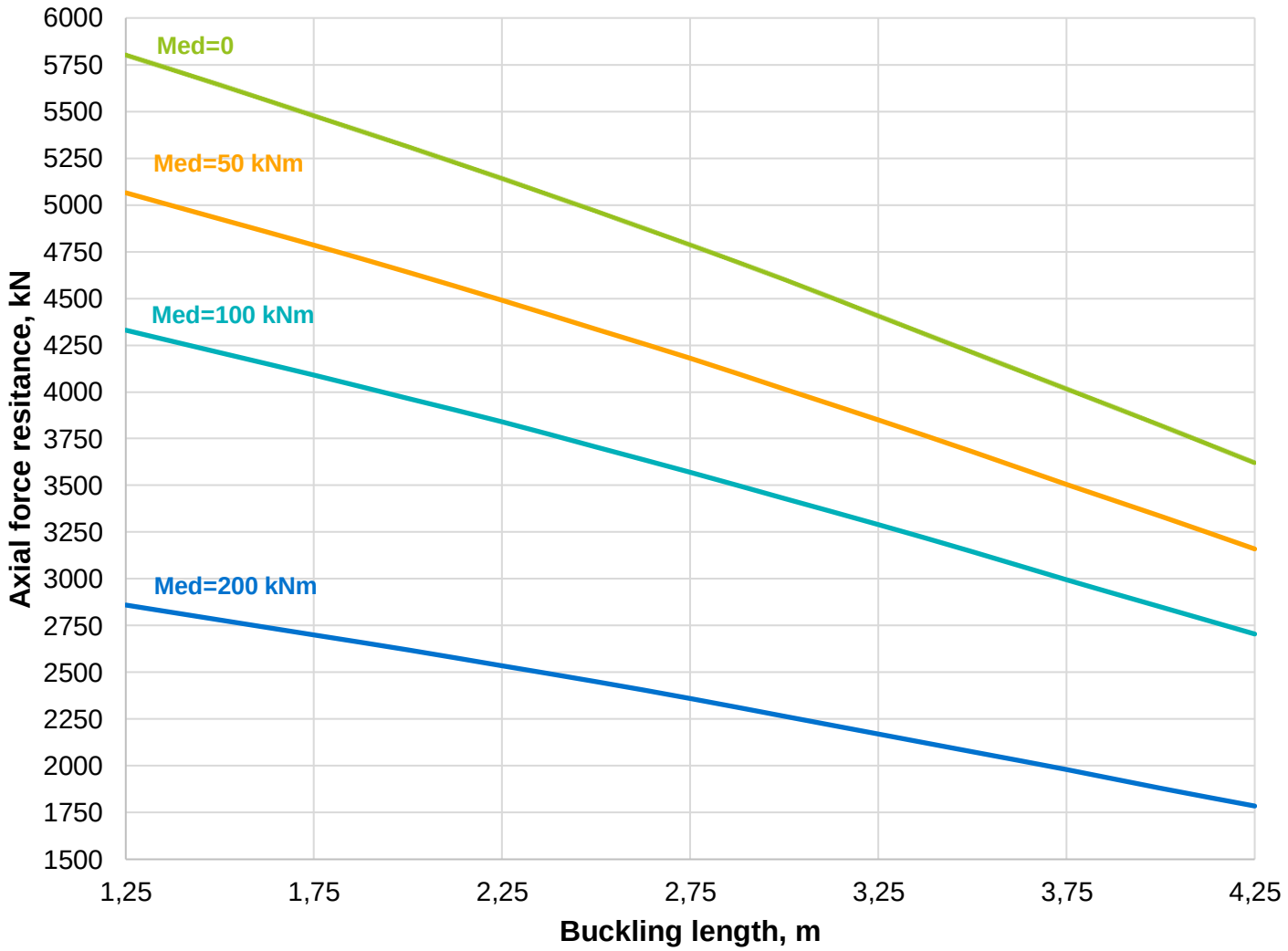




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 350x350 |
|---|---|

**Material properties:**

Reinforcement: B500B

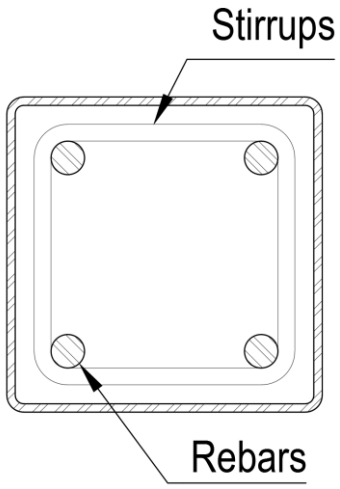
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



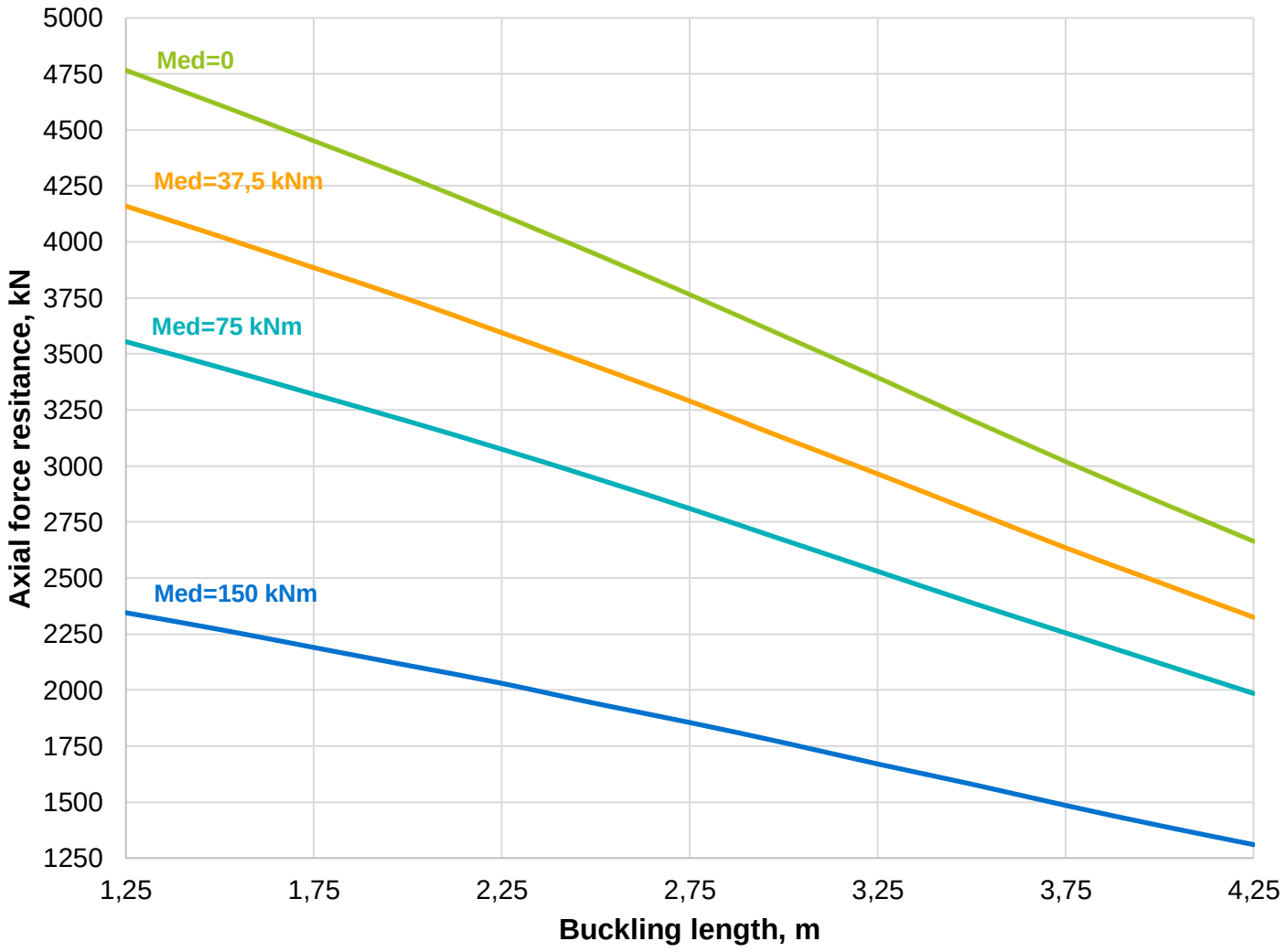




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 400x400 |
|---|---|

**Material properties:**

Reinforcement: B500B

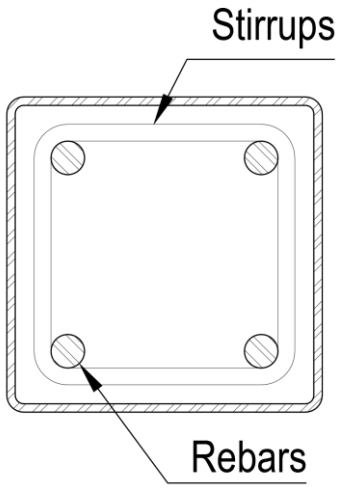
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



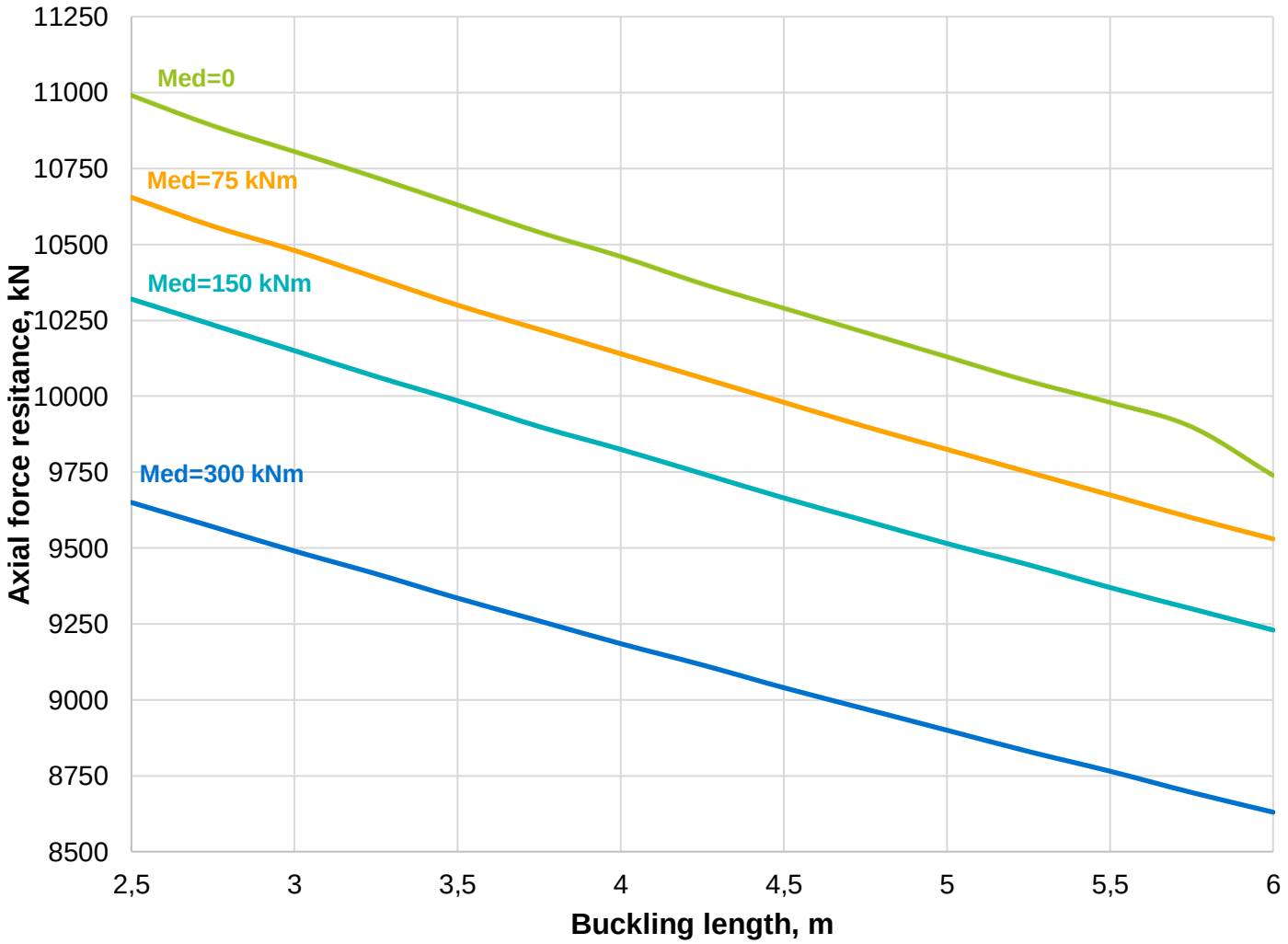




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 400x400 |
|---|---|

**Material properties:**

Reinforcement: B500B

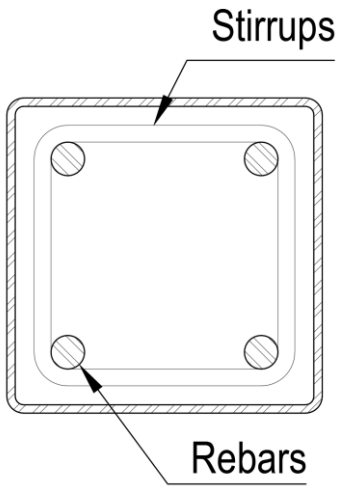
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



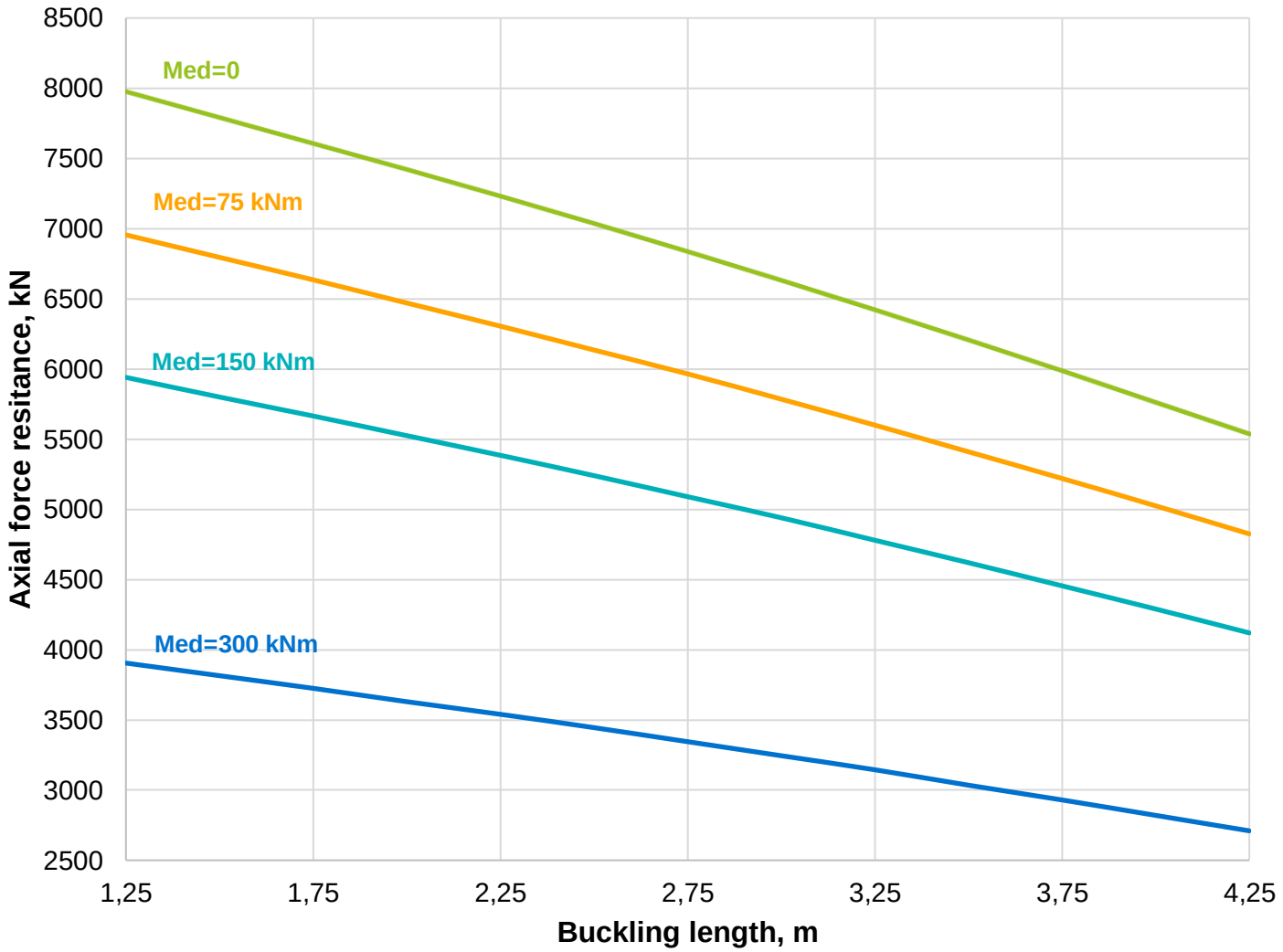




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 400x400 |
|---|---|

**Material properties:**

Reinforcement: B500B

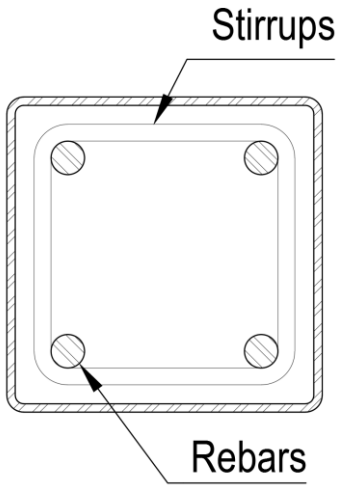
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



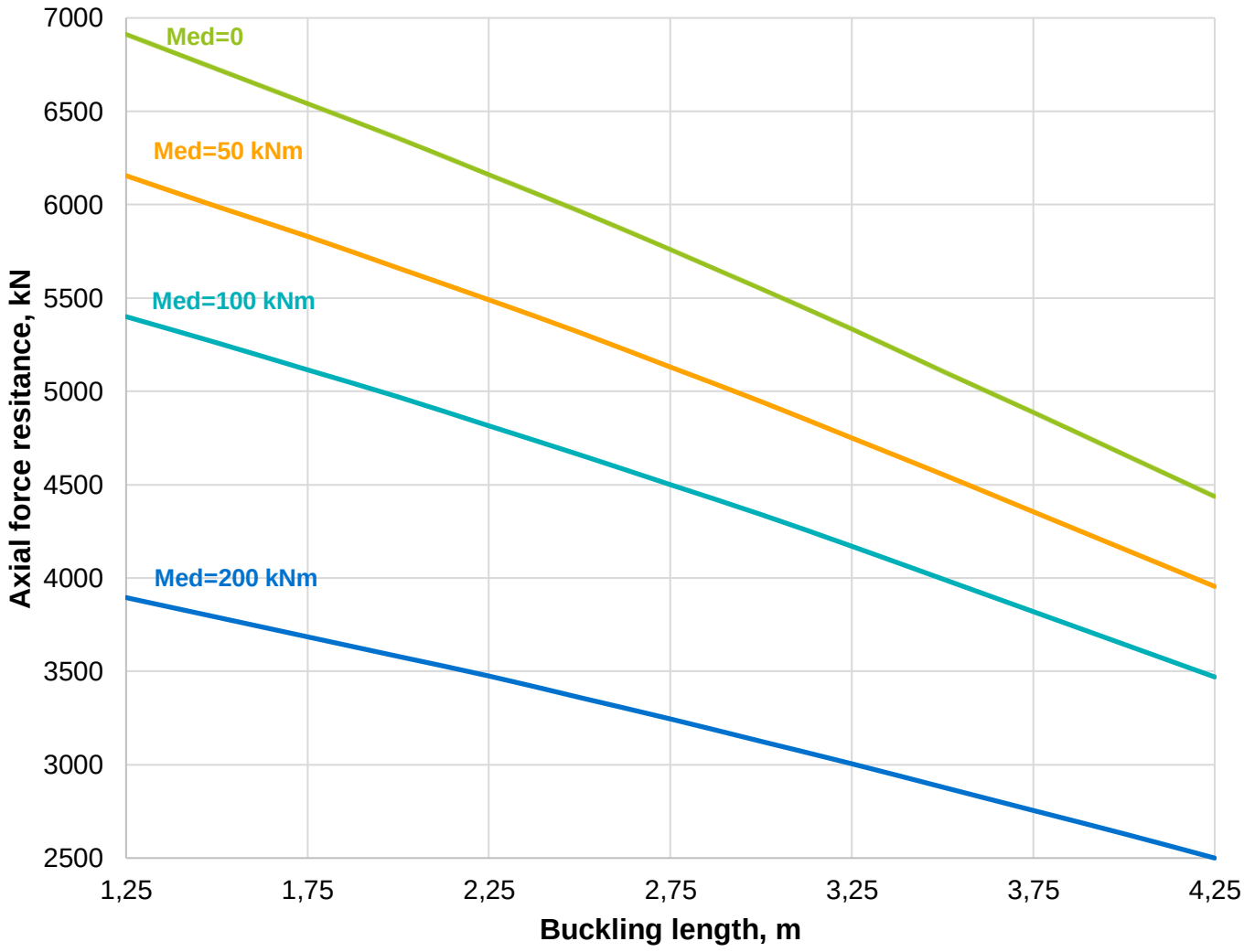




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | SHS 500x500 |
|---|---|

**Material properties:**

Reinforcement: B500B

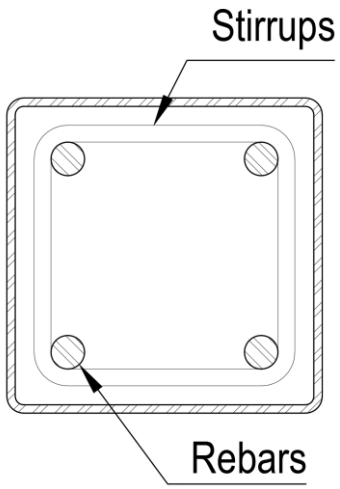
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



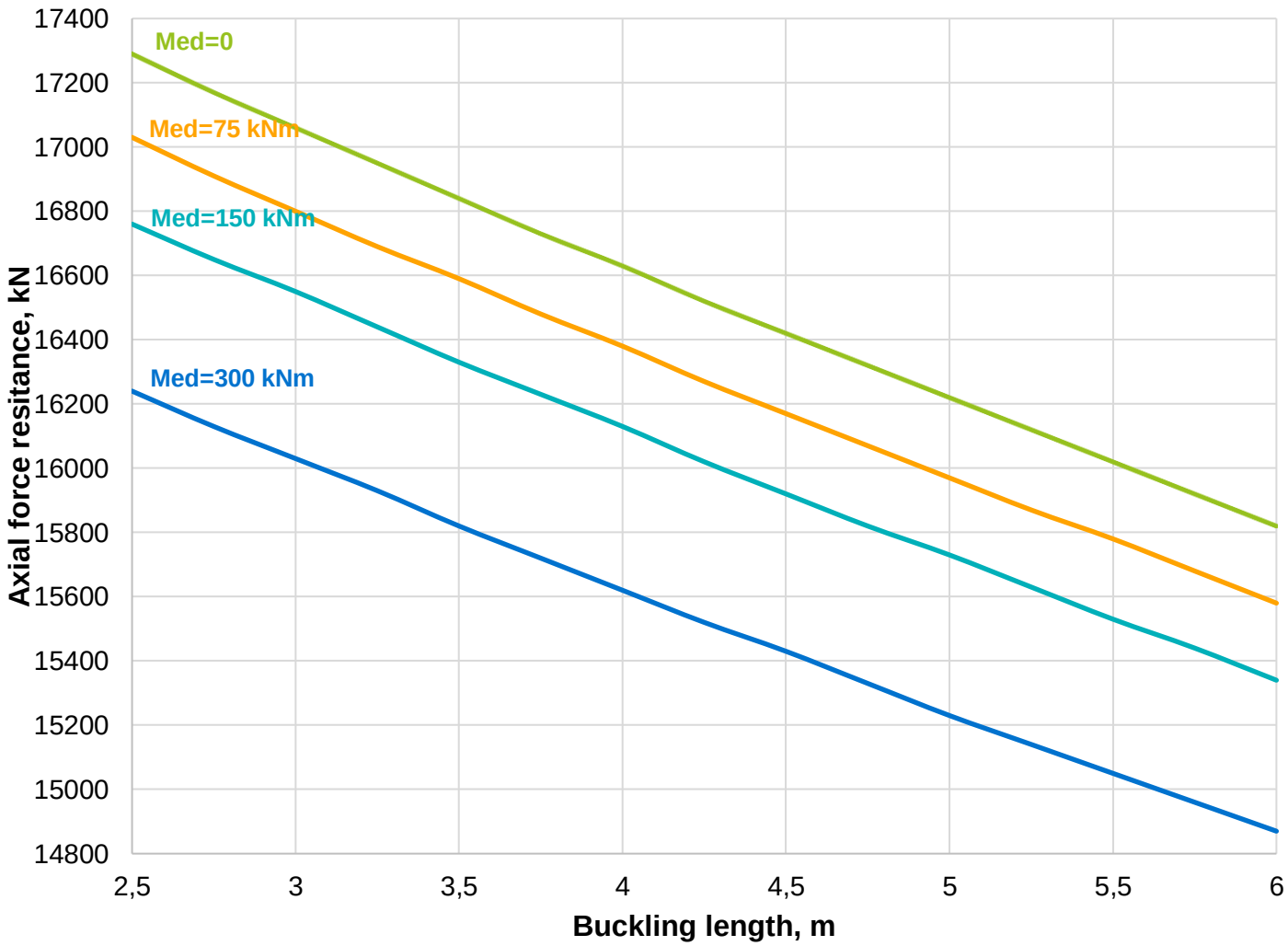




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | SHS 500x500 |
|---|---|

**Material properties:**

Reinforcement: B500B

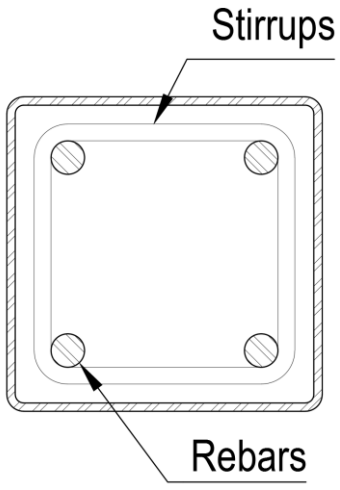
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



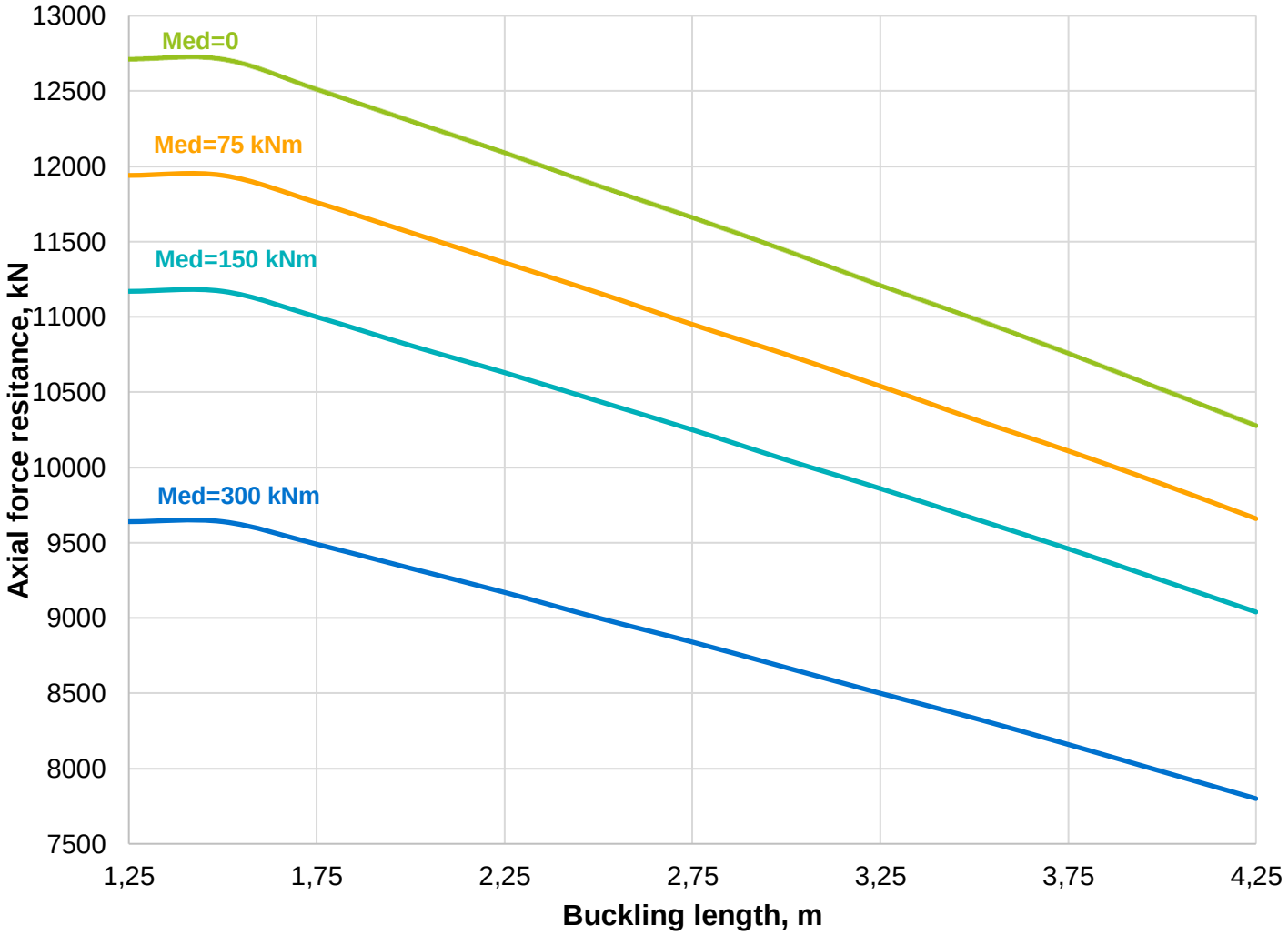




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | SHS 500x500 |
|---|---|

**Material properties:**

Reinforcement: B500B

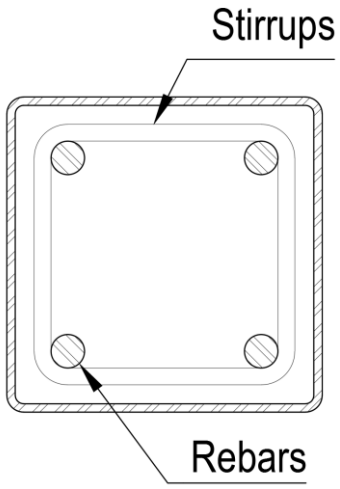
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



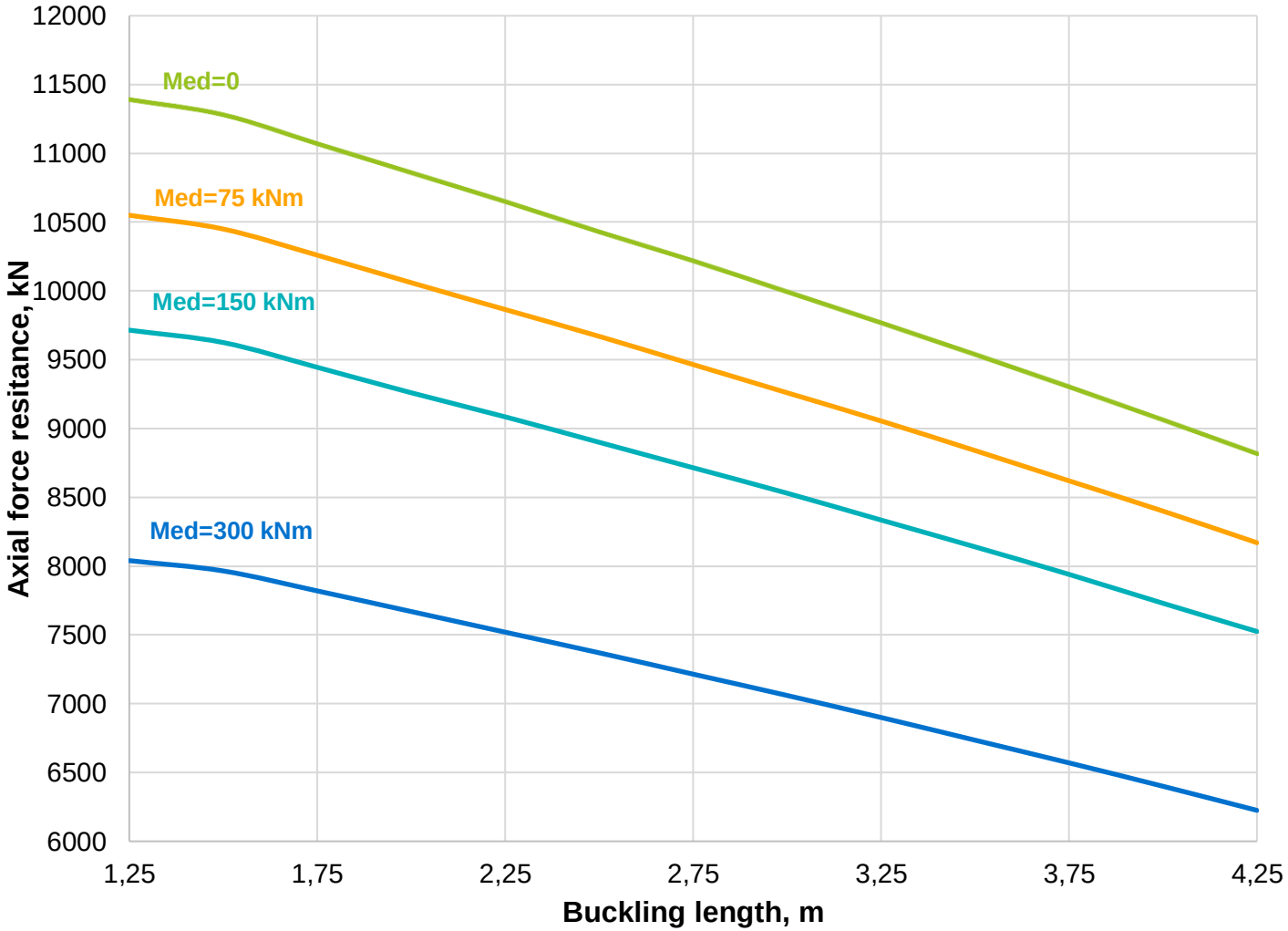




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

# CIRCULAR COLUMNS C40/50

| Circular columns |
| --- |
| S355-B500B-C40/50 |
| R60 - CHS 168.3 |
| R60 - CHS 177.8 |
| R60 - CHS 193.7 |
| R60 - CHS 219.1 |
| R60 - CHS 244.5 |
| R60 - CHS 273 |
| R60 - CHS 323.9 |
| R60 - CHS 355.6 |
| R60 - CHS 406.4 |
| R60 - CHS 457 |
| R60 - CHS 508 |
| R60 - CHS 610 |
| R120 - CHS 219.1 |
| R120 - CHS 244.5 |
| R120 - CHS 273 |
| R120 - CHS 323.9 |
| R120 - CHS 355.6 |
| R120 - CHS 406.4 |
| R120 - CHS 457 |
| R120 - CHS 508 |
| R120 - CHS 610 |

| ULS | CHS 168,3 |
|---|---|

**Material properties:**

Reinforcement: B500B

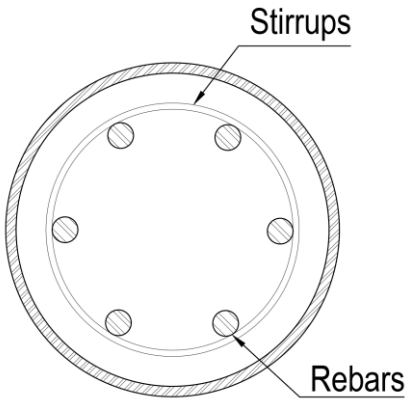
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



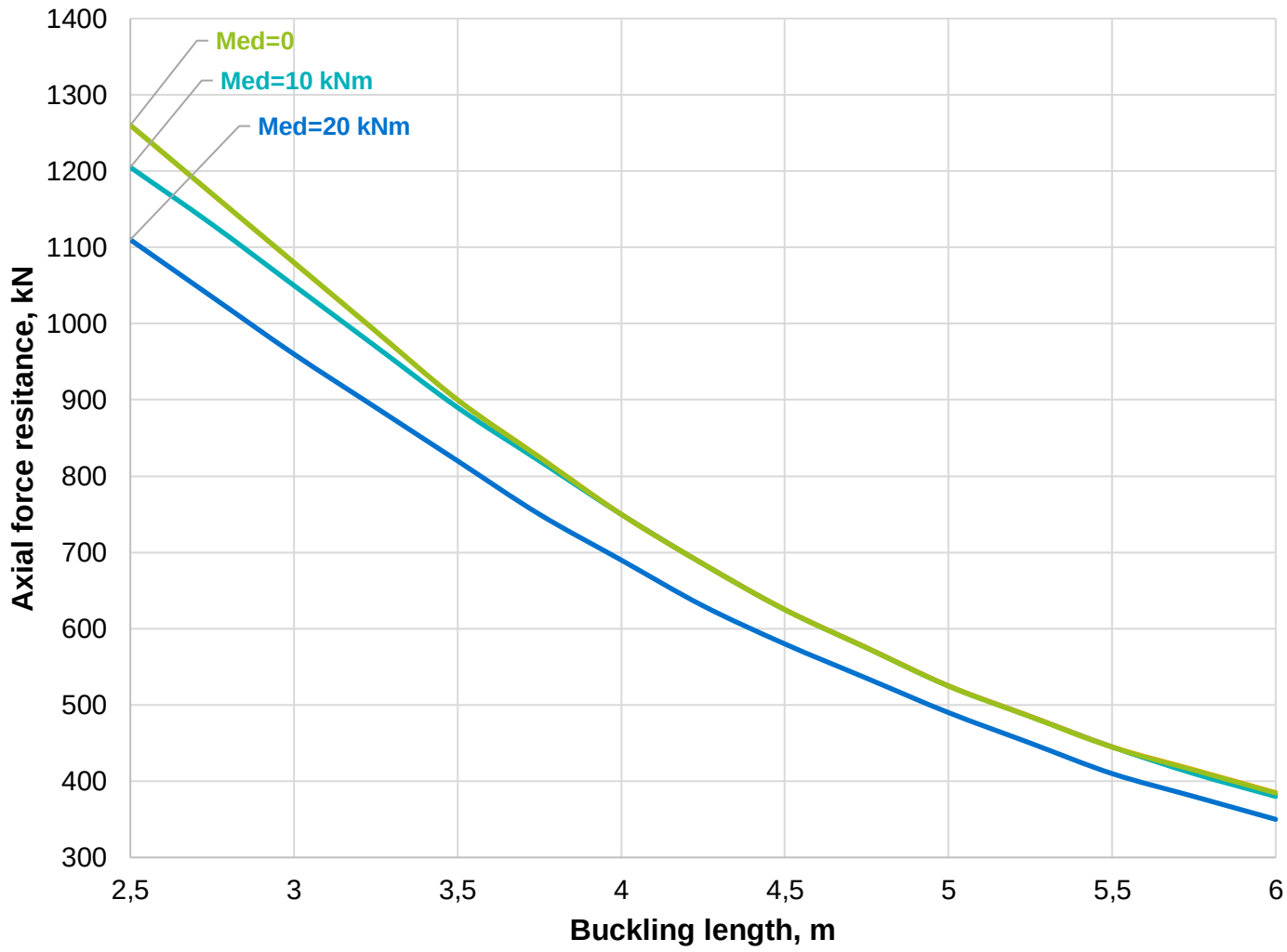




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 168,3 |
|---|---|

**Material properties:**

Reinforcement: B500B

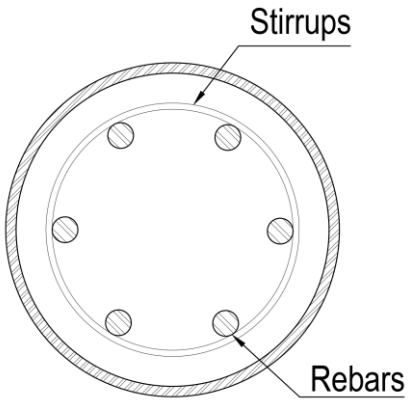
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



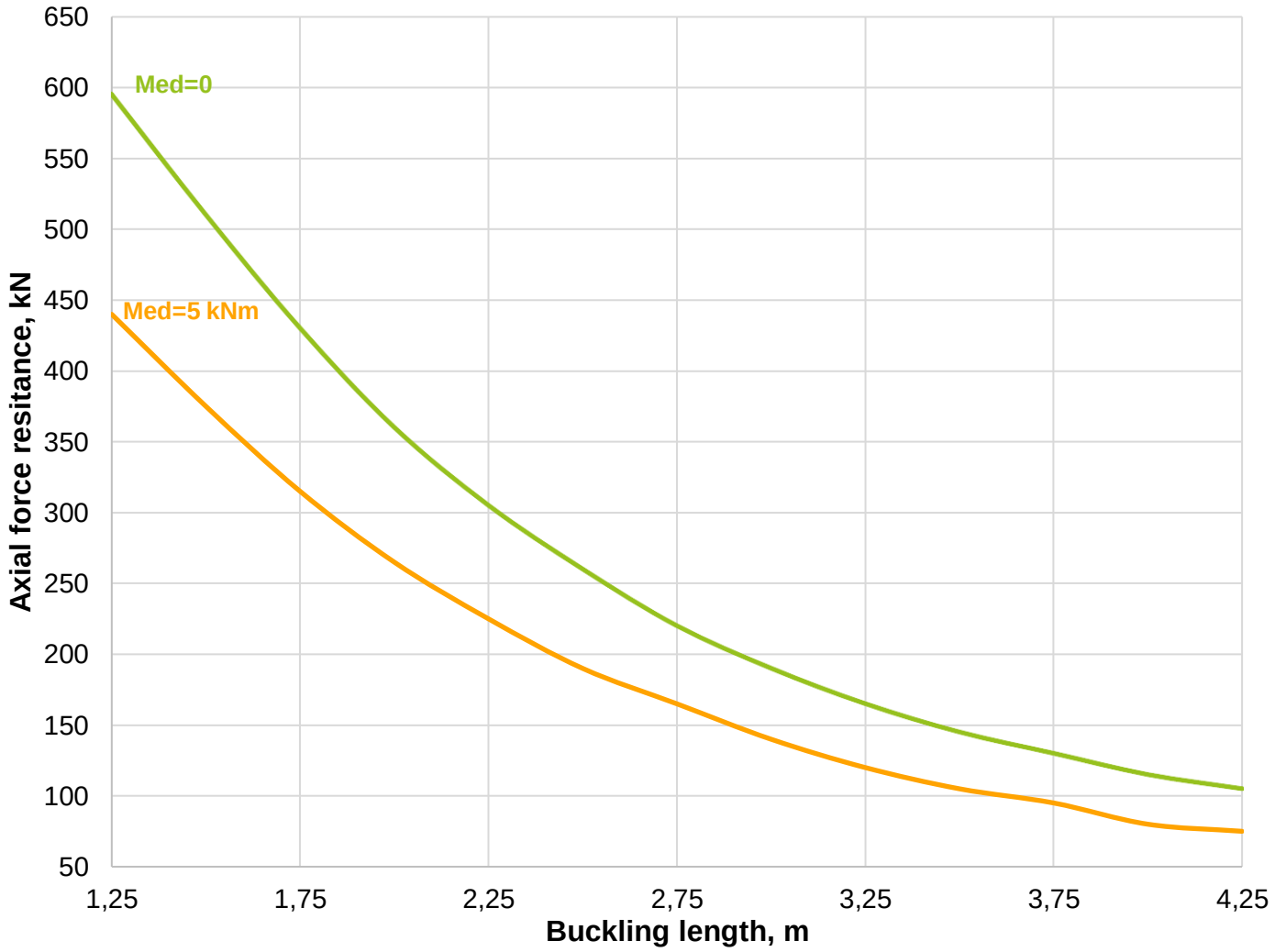




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | CHS 177,8 |
|---|---|

**Material properties:**

Reinforcement: B500B

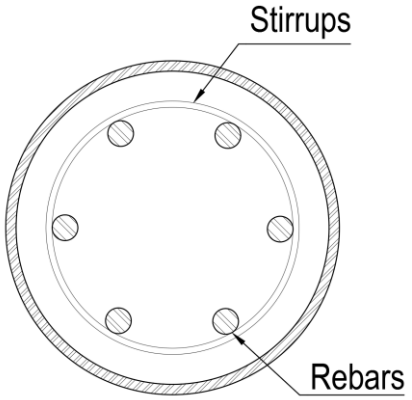
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



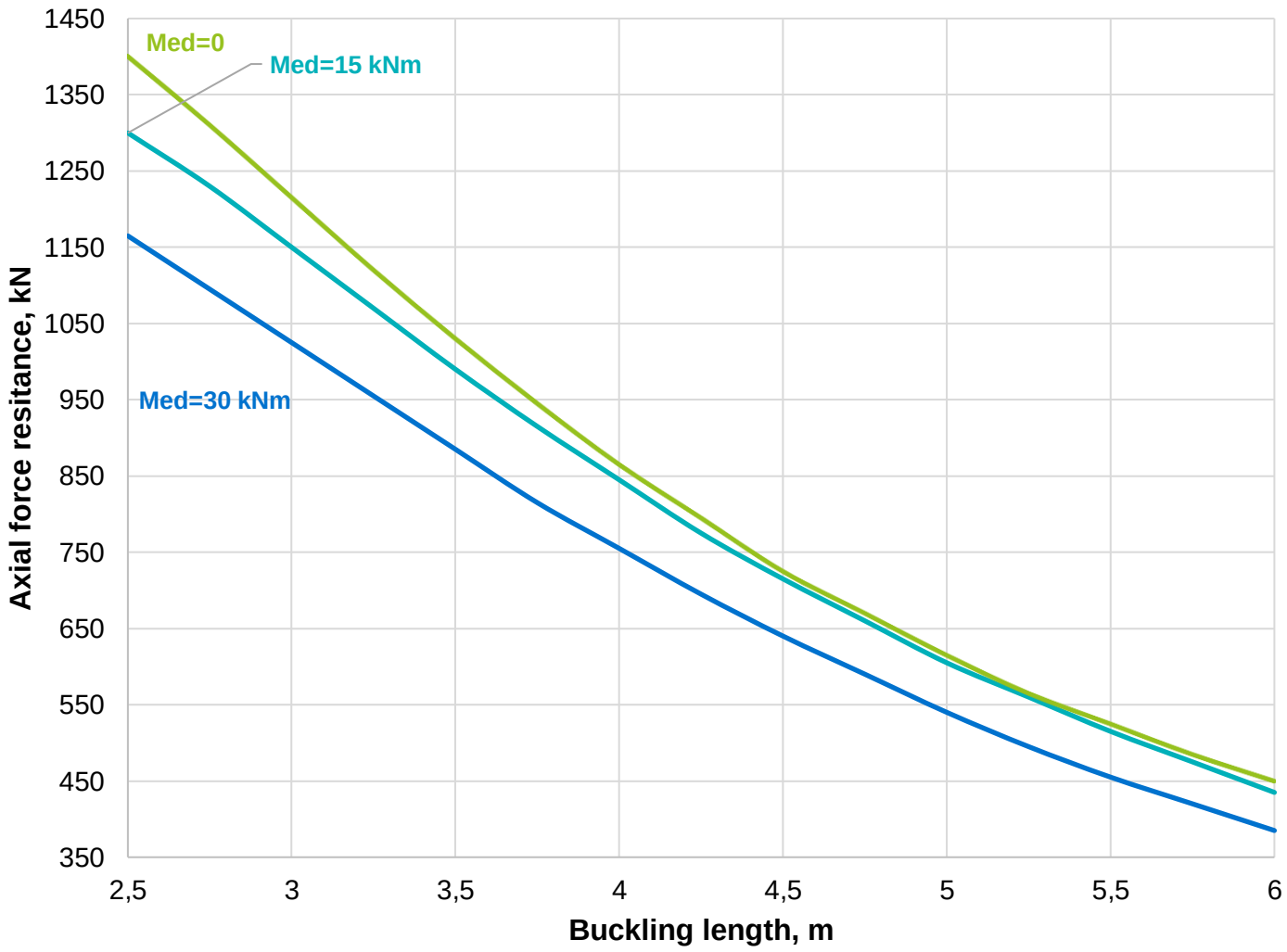




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 177,8 |
|---|---|

**Material properties:**

Reinforcement: B500B

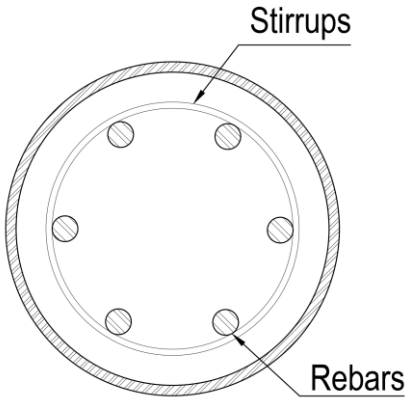
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



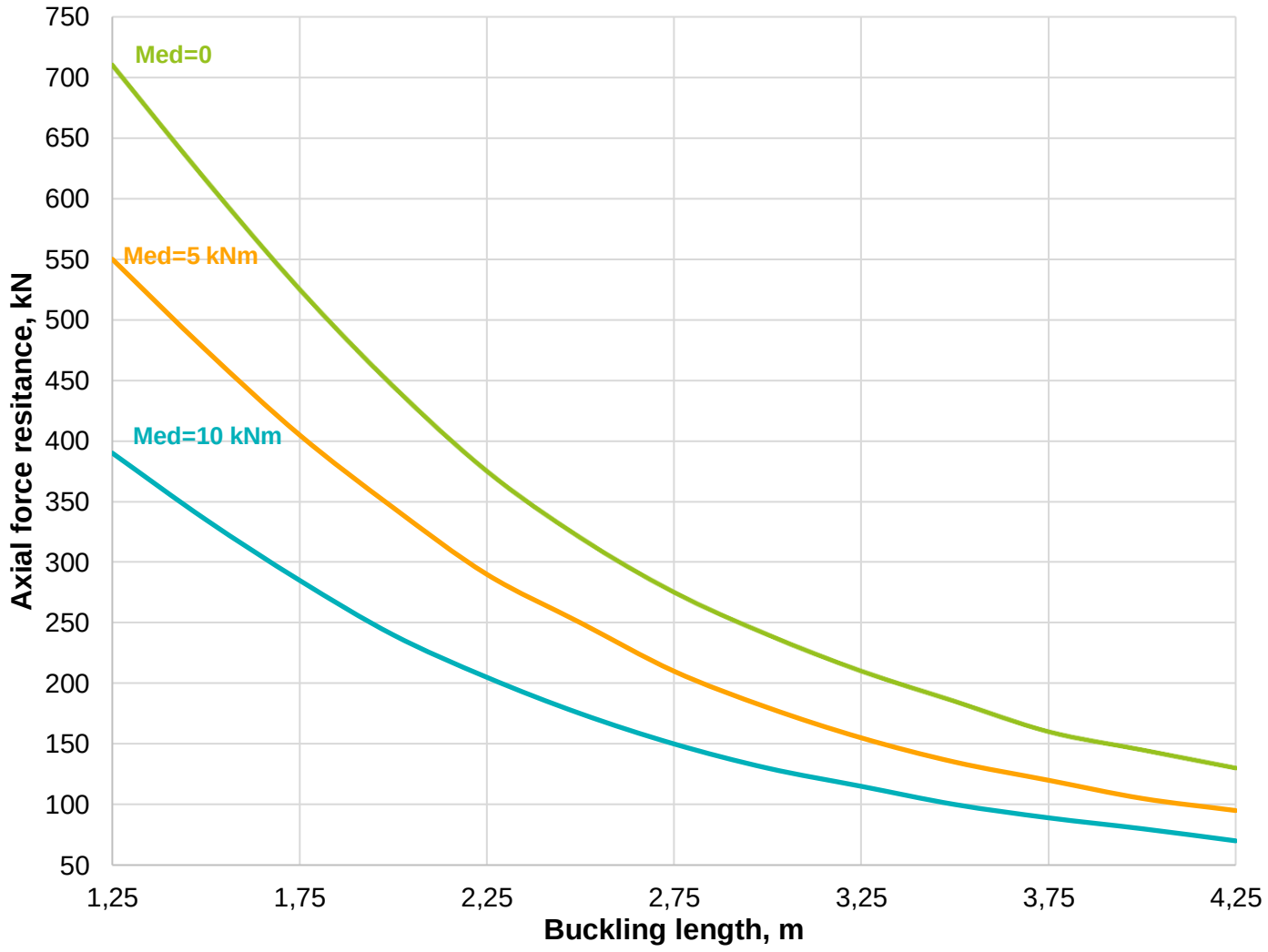




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | CHS 193,7 |
|---|---|

**Material properties:**

Reinforcement: B500B

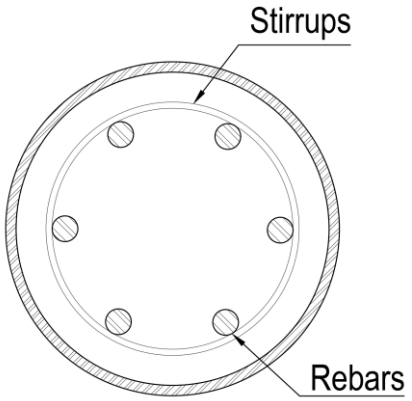
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



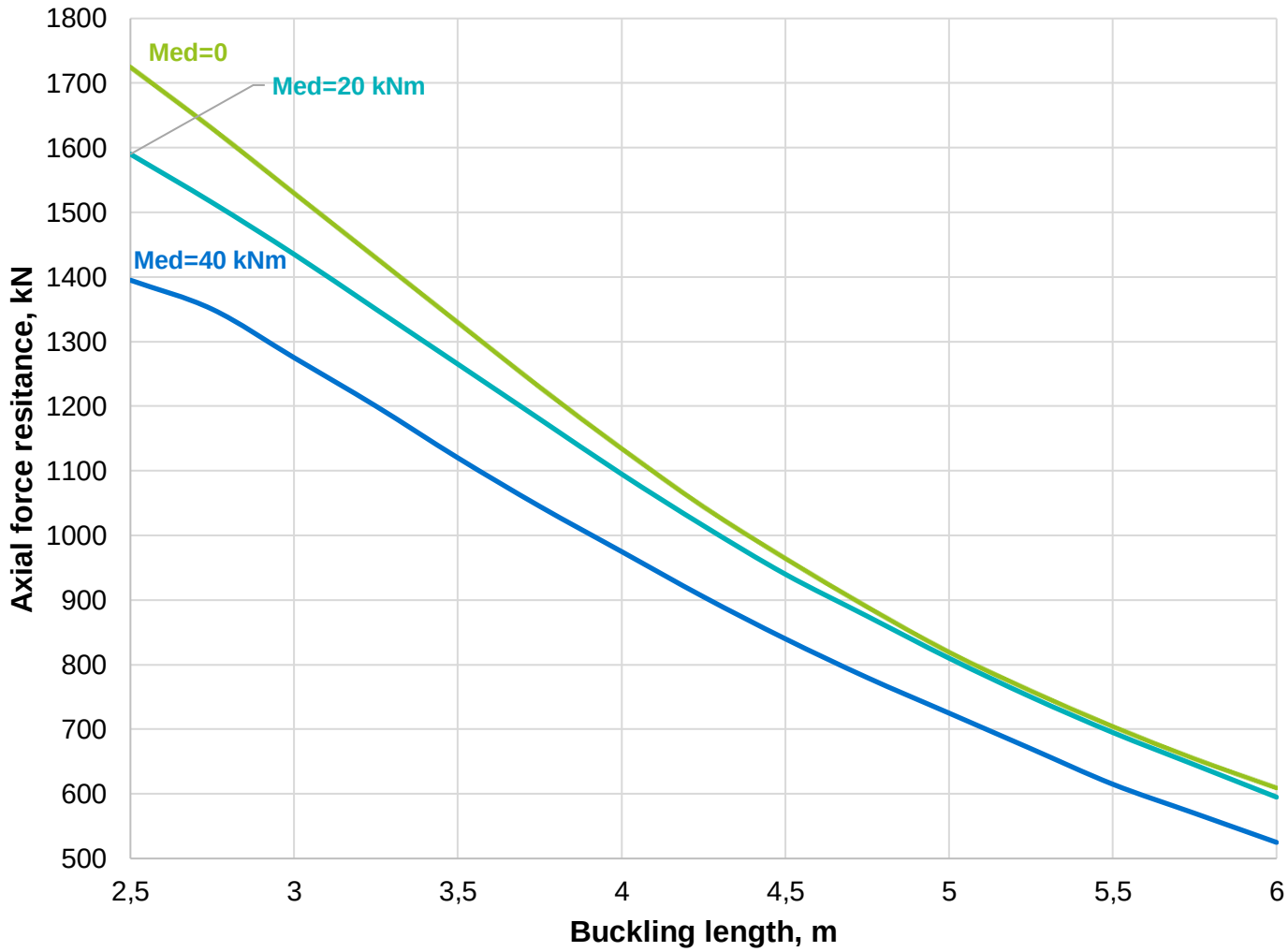




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 193,7 |
|---|---|

**Material properties:**

Reinforcement: B500B

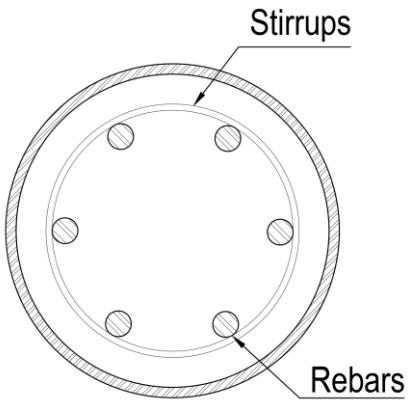
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



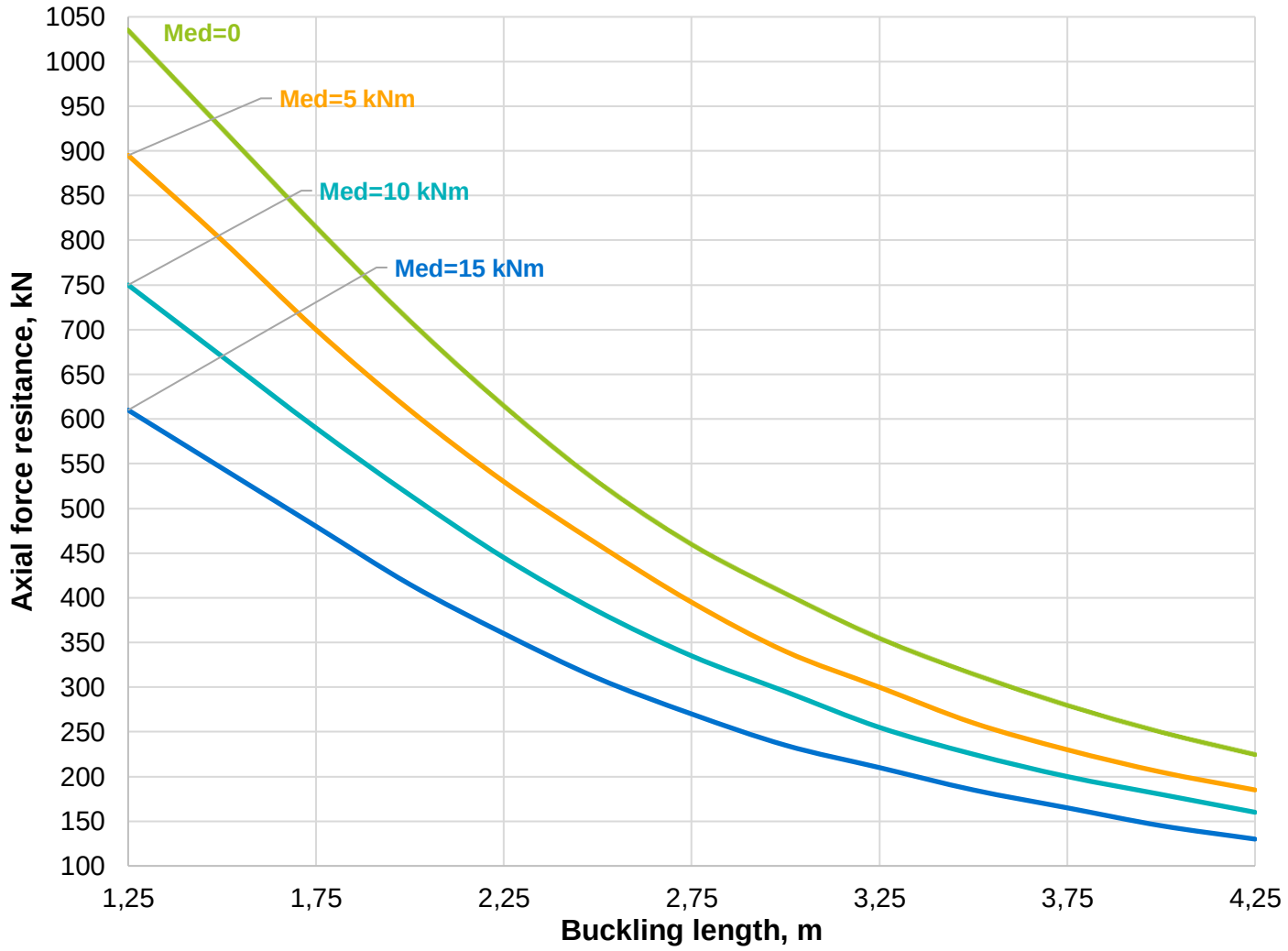




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | CHS 219,1 |
|---|---|

**Material properties:**

Reinforcement: B500B

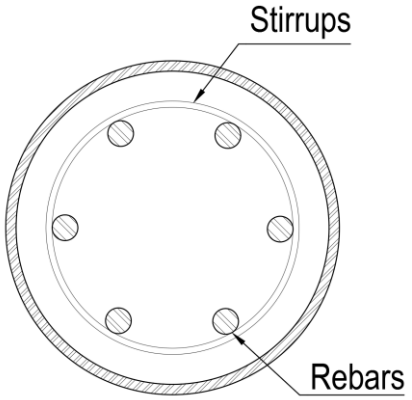
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



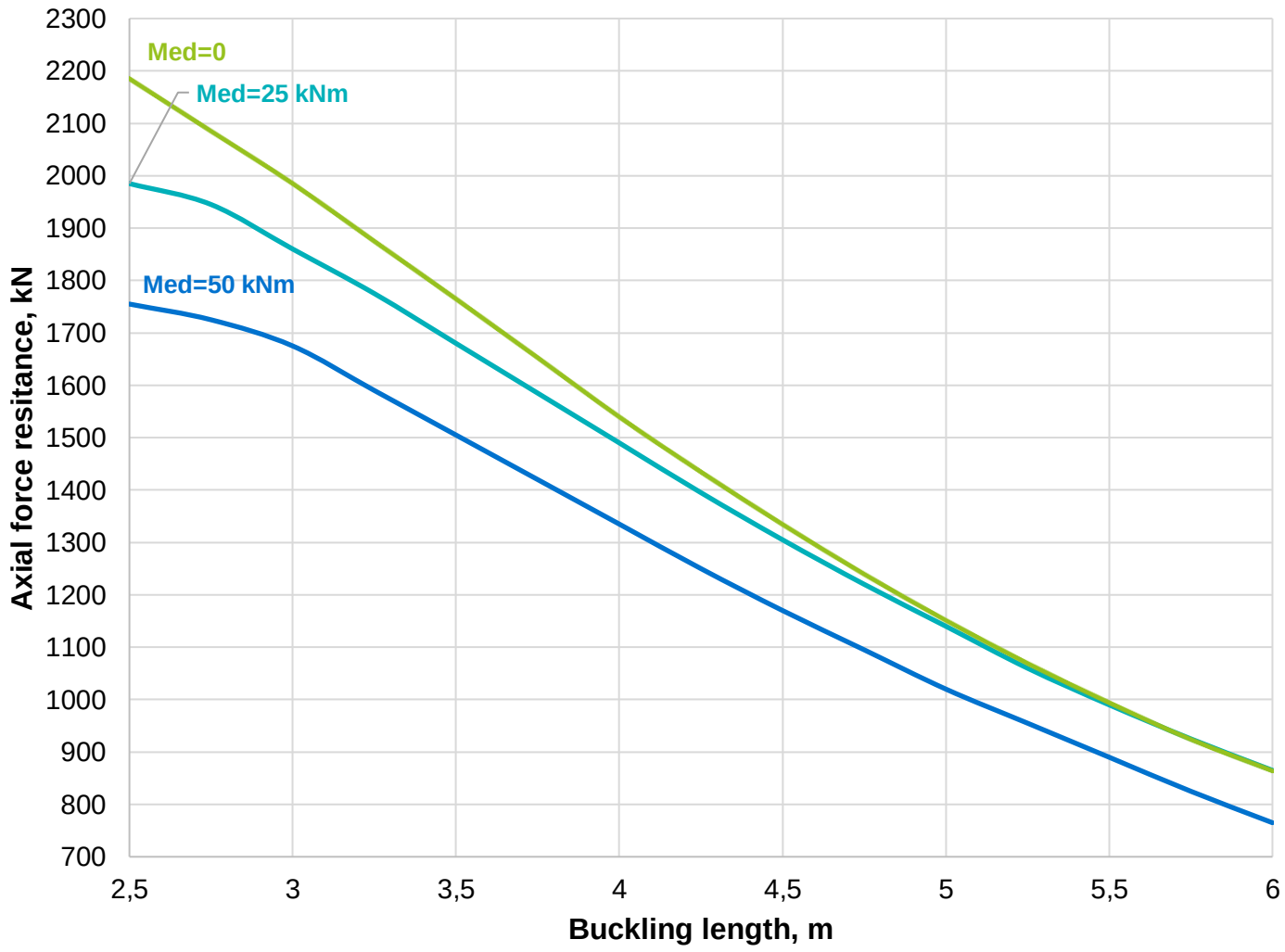




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 219,1 |
|---|---|

**Material properties:**

Reinforcement: B500B

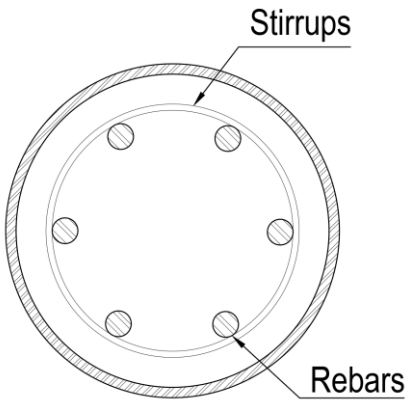
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



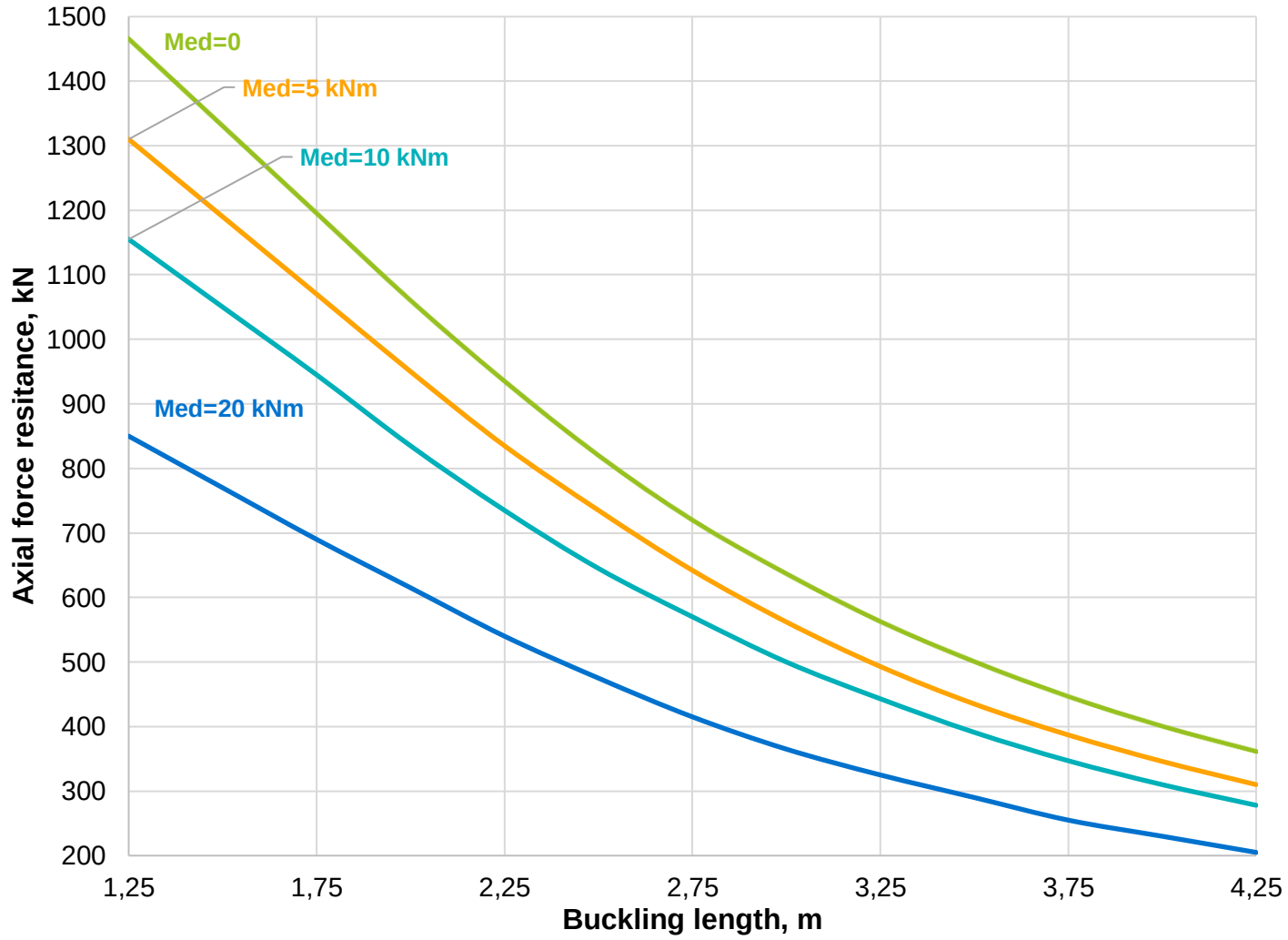




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 219,1 |
|---|---|

**Material properties:**

Reinforcement: B500B

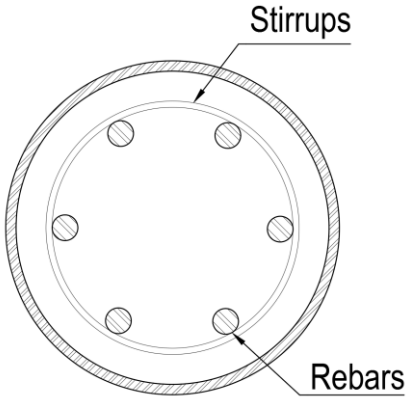
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



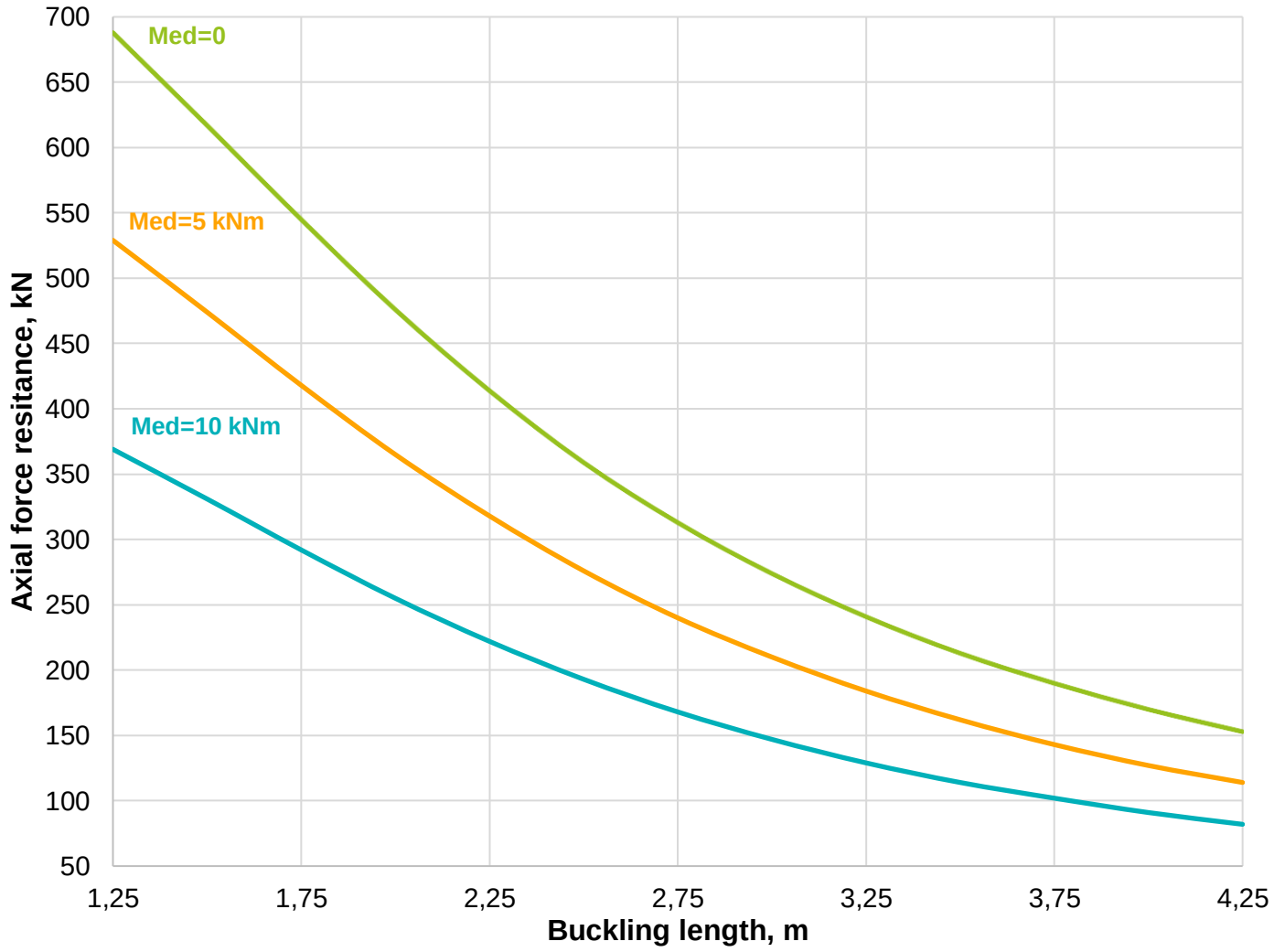




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 244,5 |
|---|---|

**Material properties:**

Reinforcement: B500B

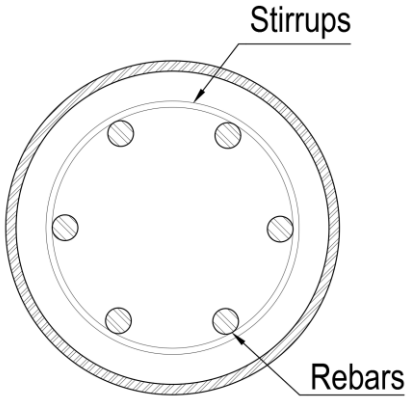
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



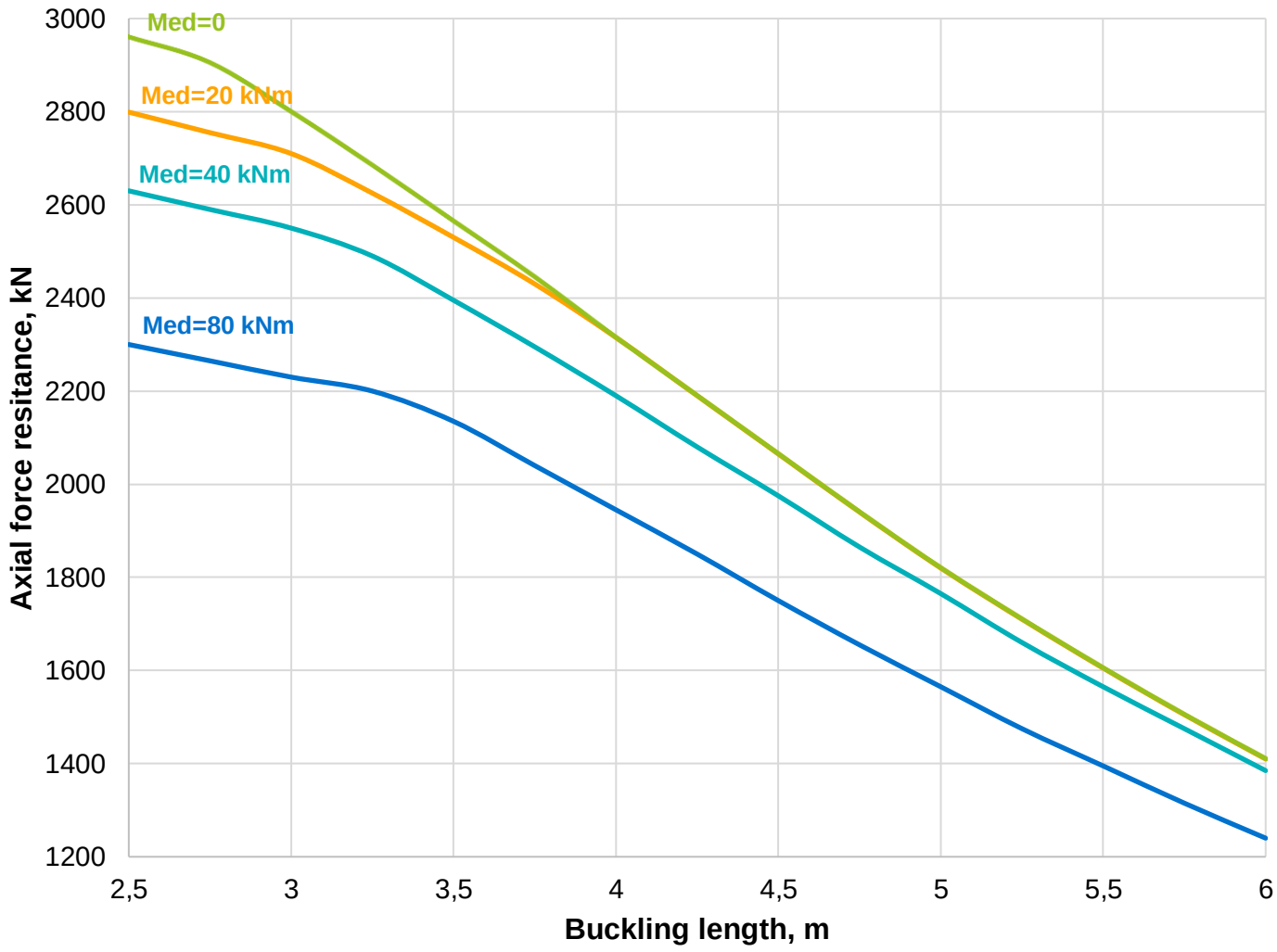




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 244,5 |
|---|---|

**Material properties:**

Reinforcement: B500B

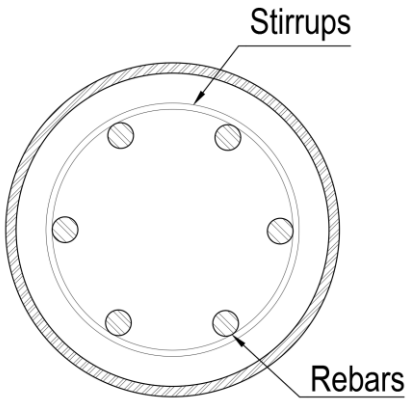
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



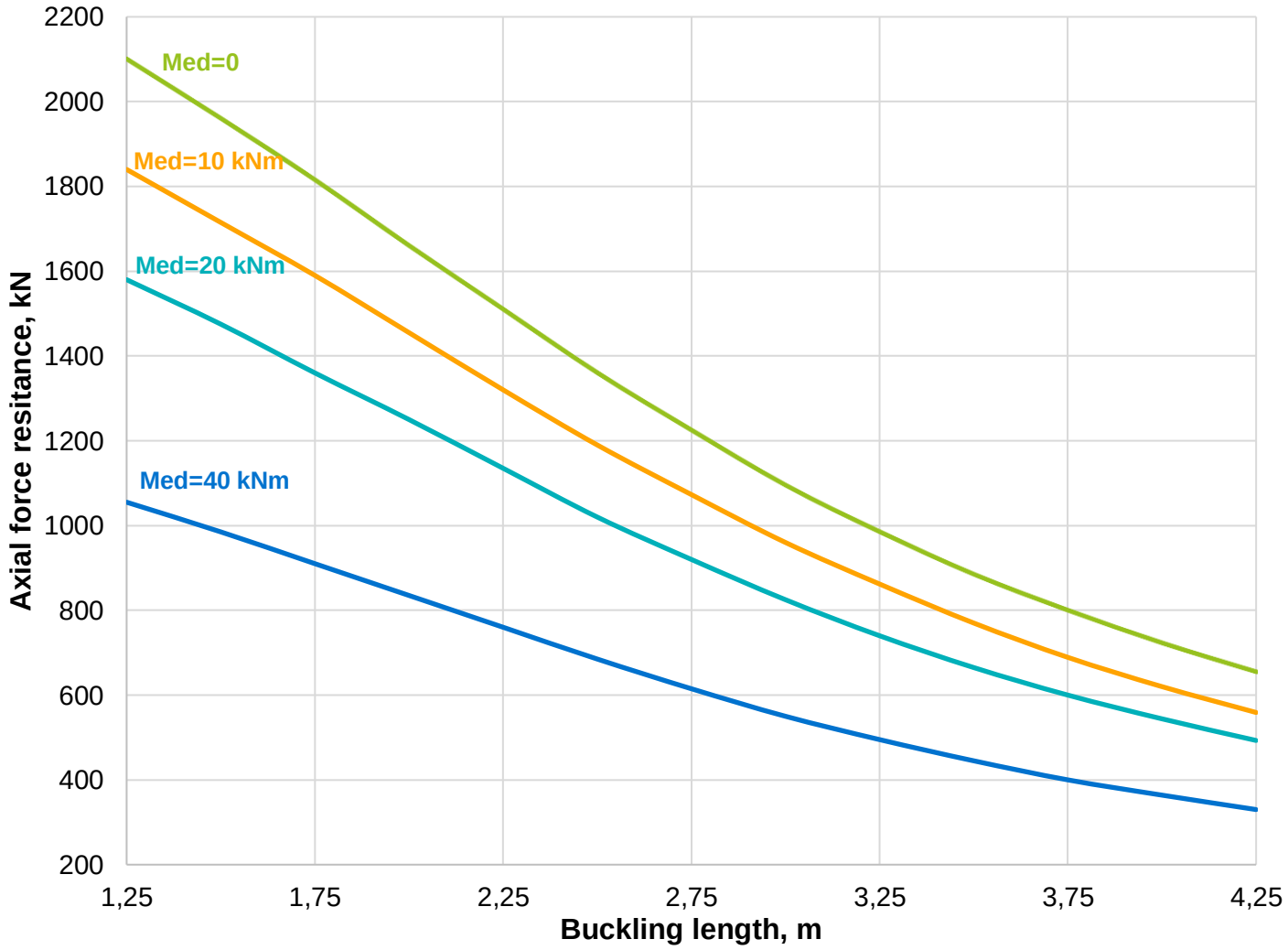




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 244,5 |
|---|---|

**Material properties:**

Reinforcement: B500B

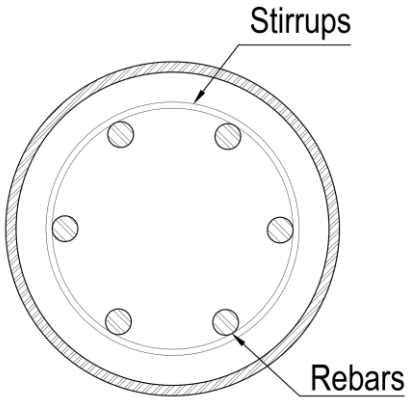
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



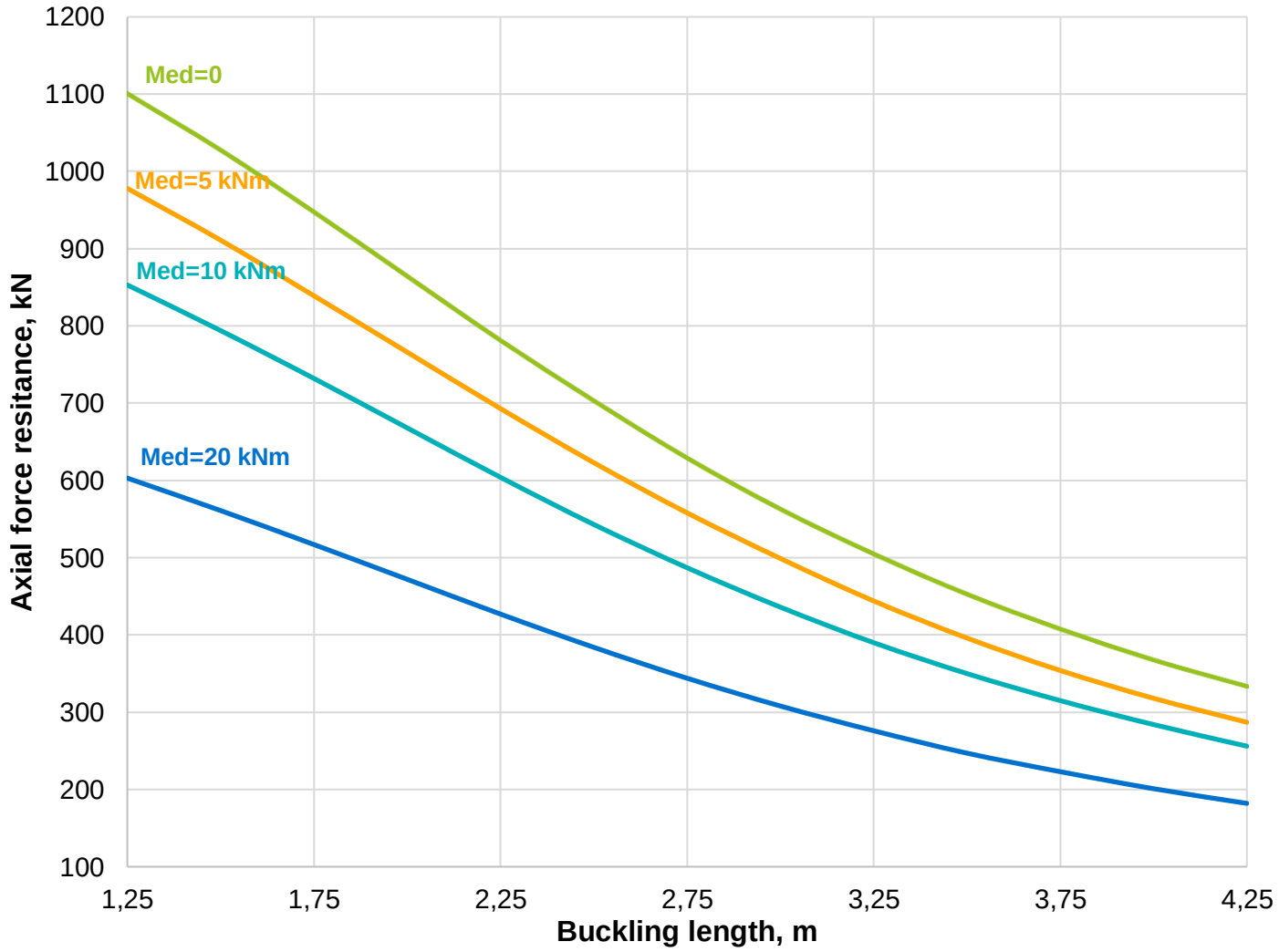




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 273 |
|---|---|

**Material properties:**

Reinforcement: B500B

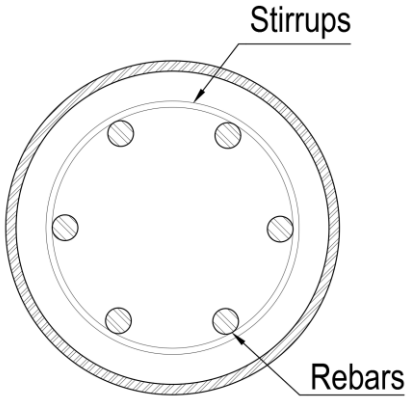
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



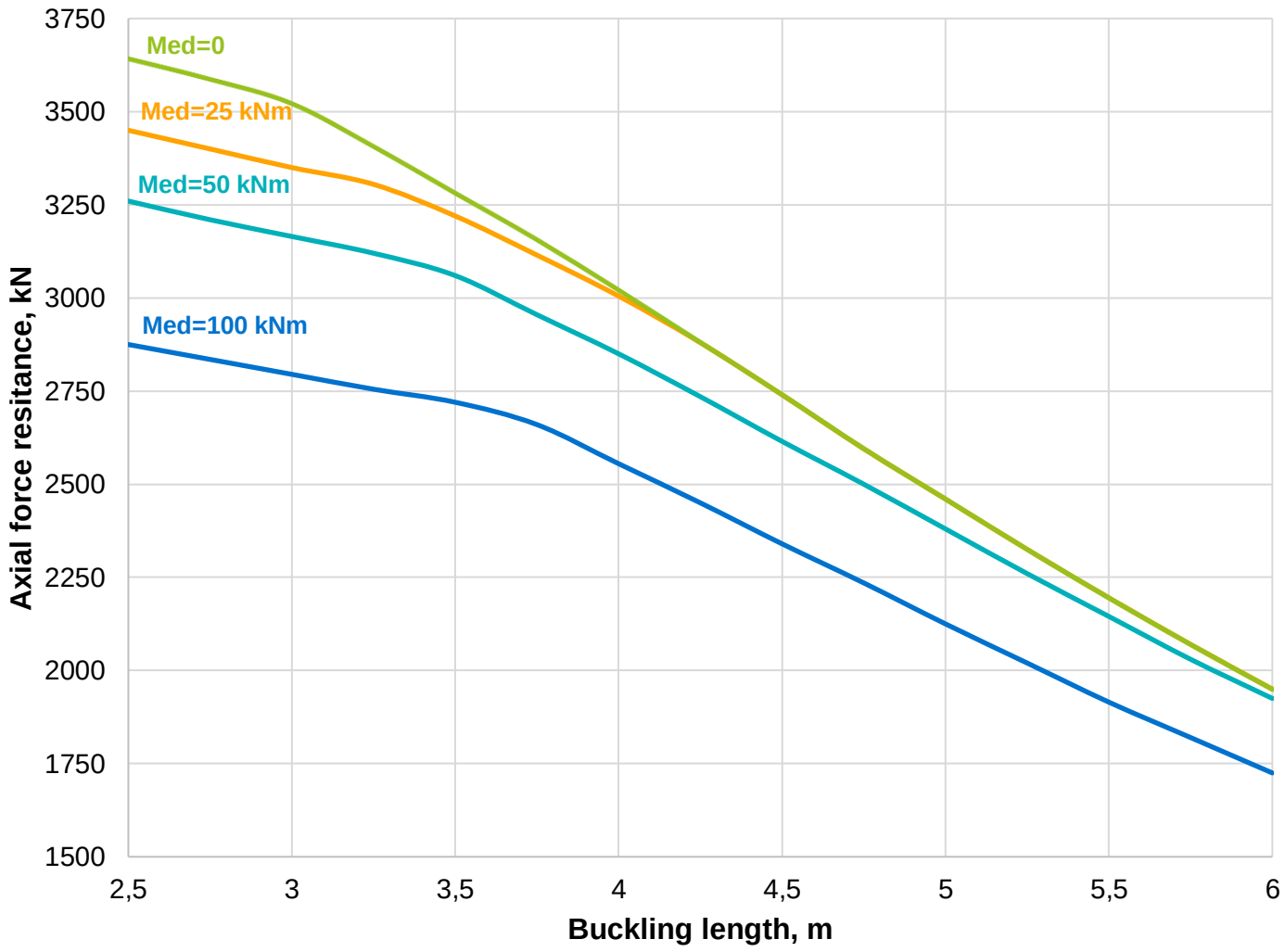




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 273 |
|---|---|

**Material properties:**

Reinforcement: B500B

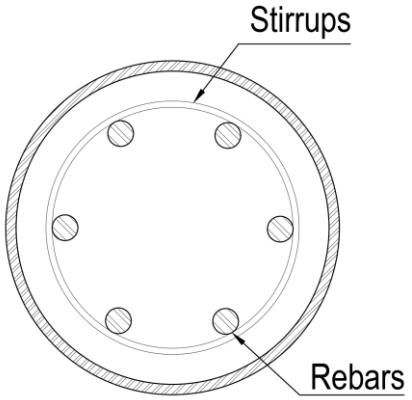
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



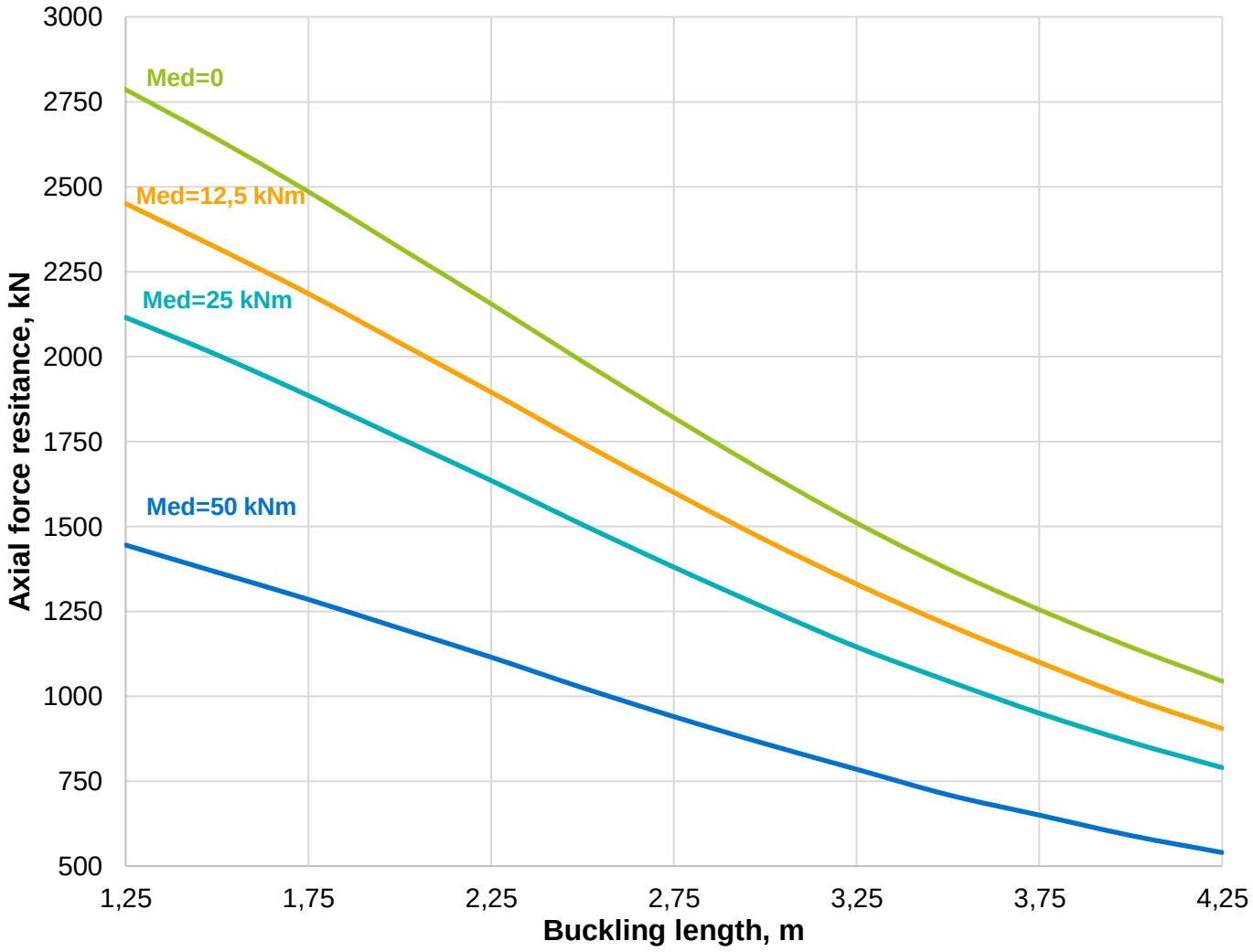




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 273 |
|---|---|

**Material properties:**

Reinforcement: B500B

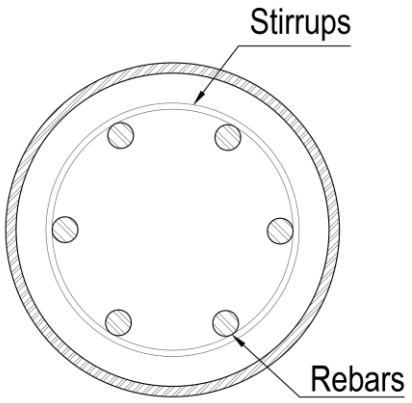
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



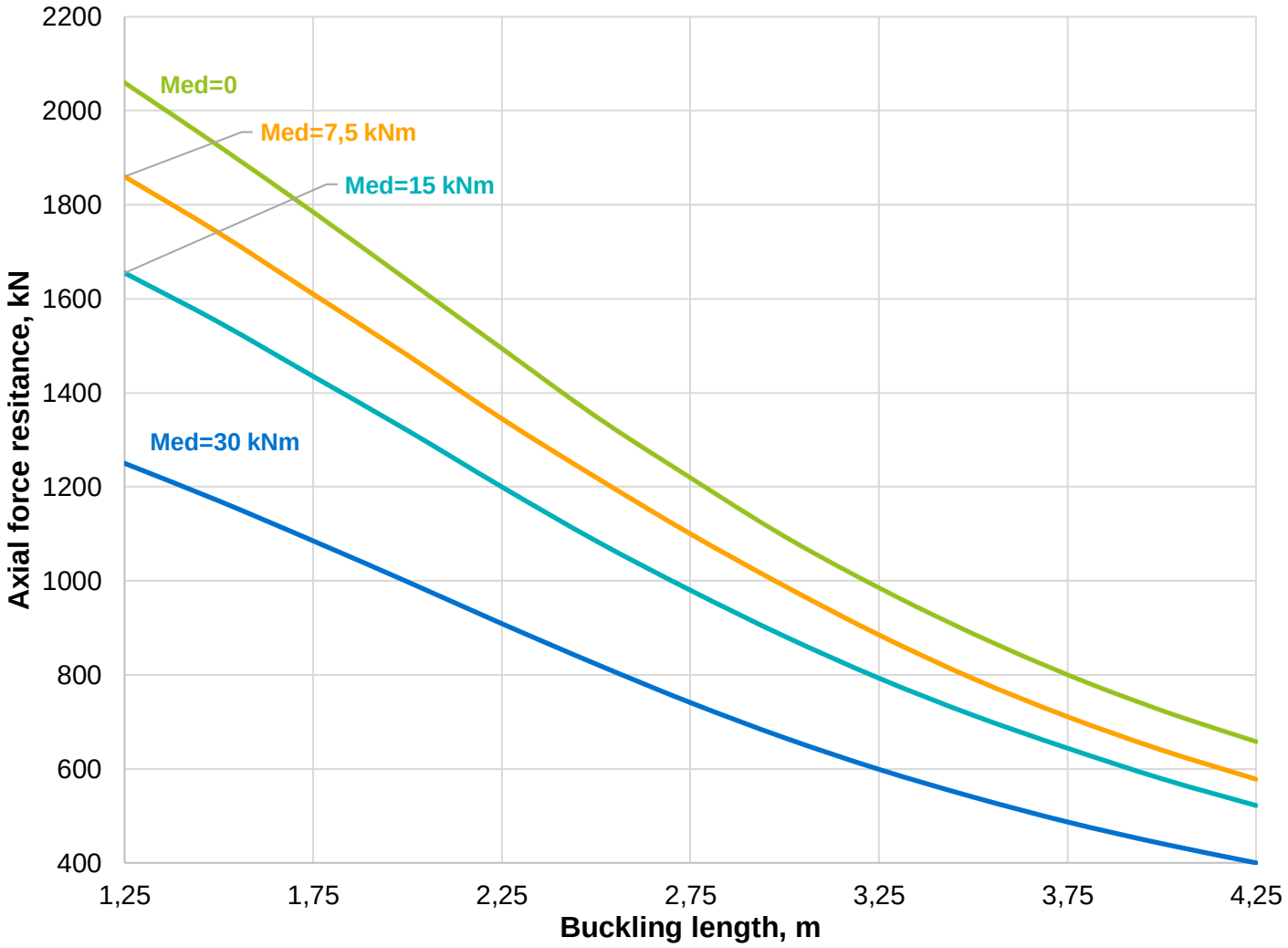




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 323,9 |
|---|---|

**Material properties:**

Reinforcement: B500B

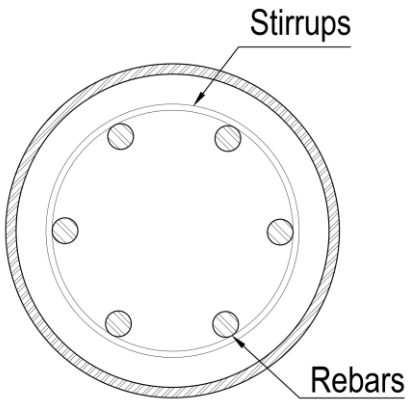
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



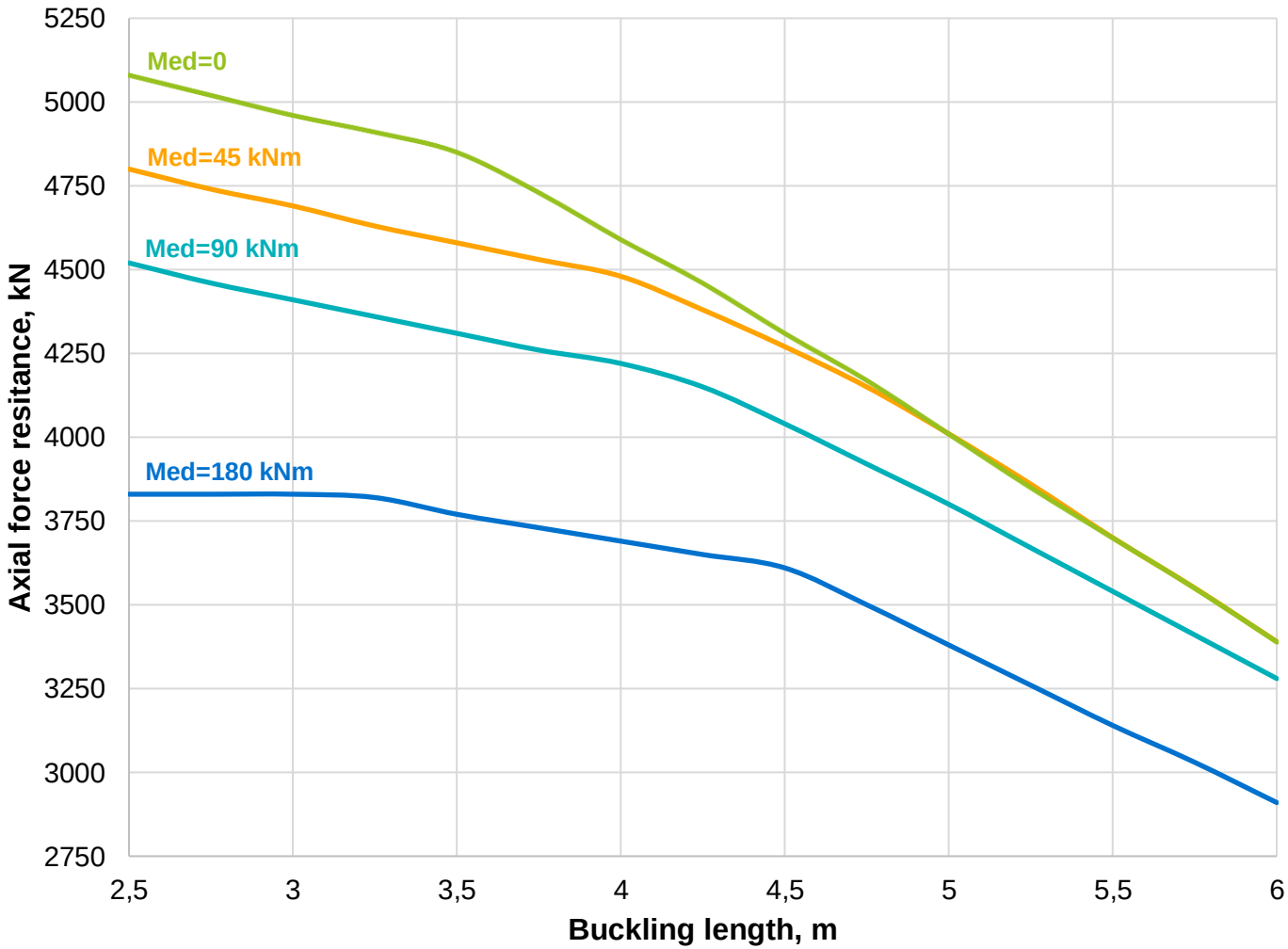




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 323,9 |
|---|---|

**Material properties:**

Reinforcement: B500B

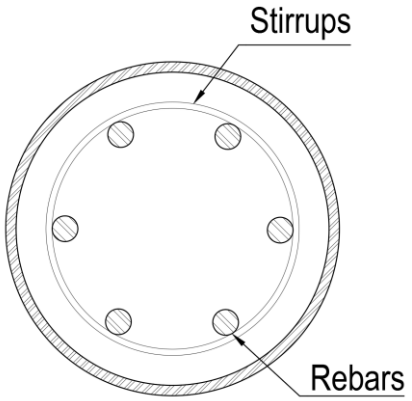
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



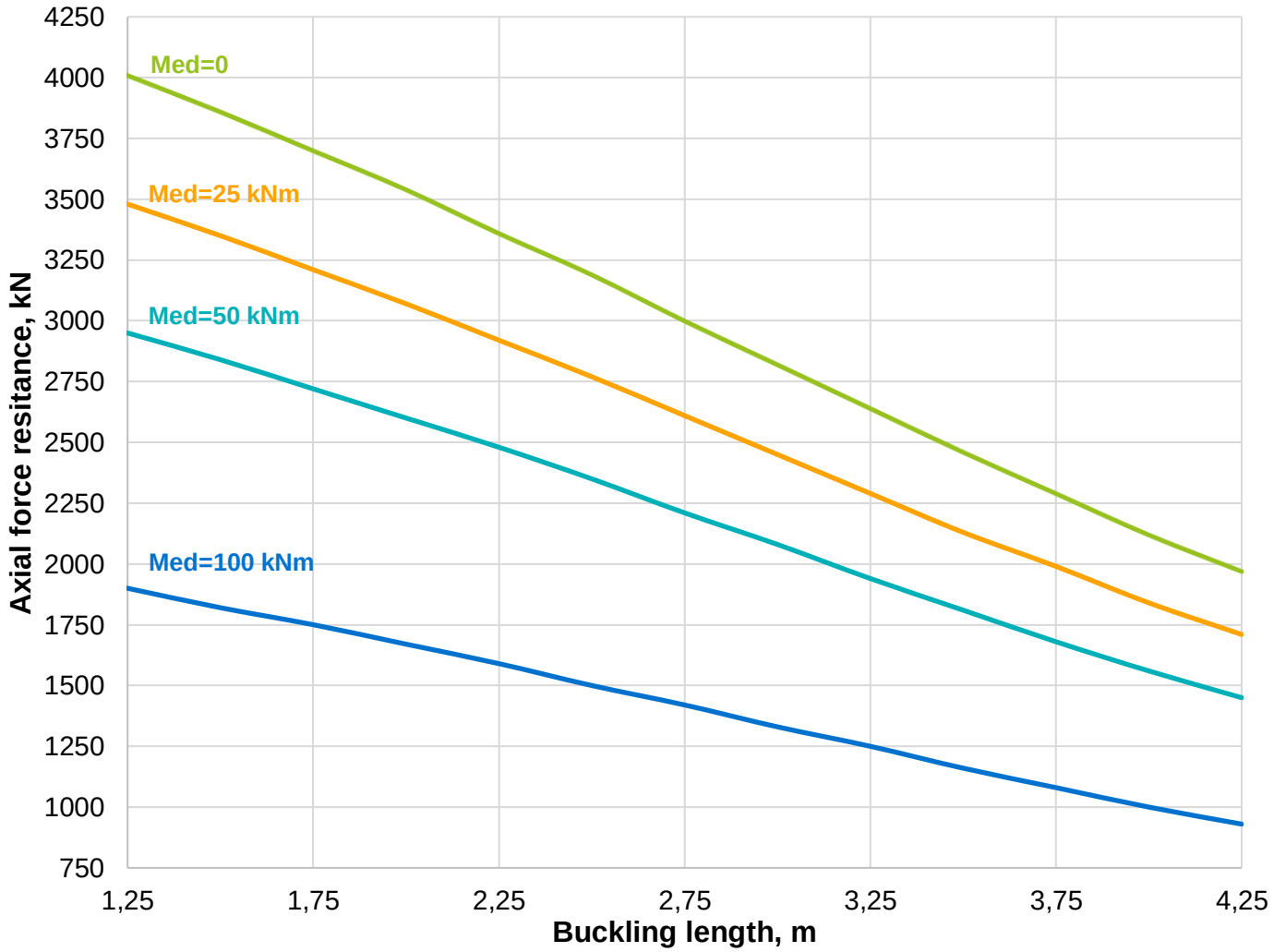




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 323,9 |
|---|---|

**Material properties:**

Reinforcement: B500B

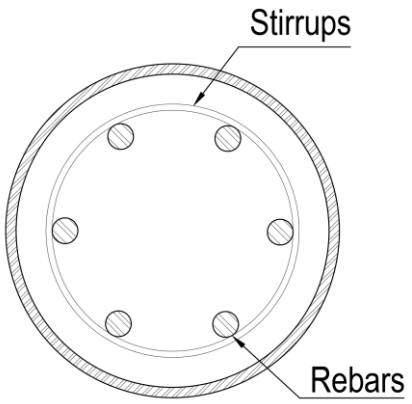
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



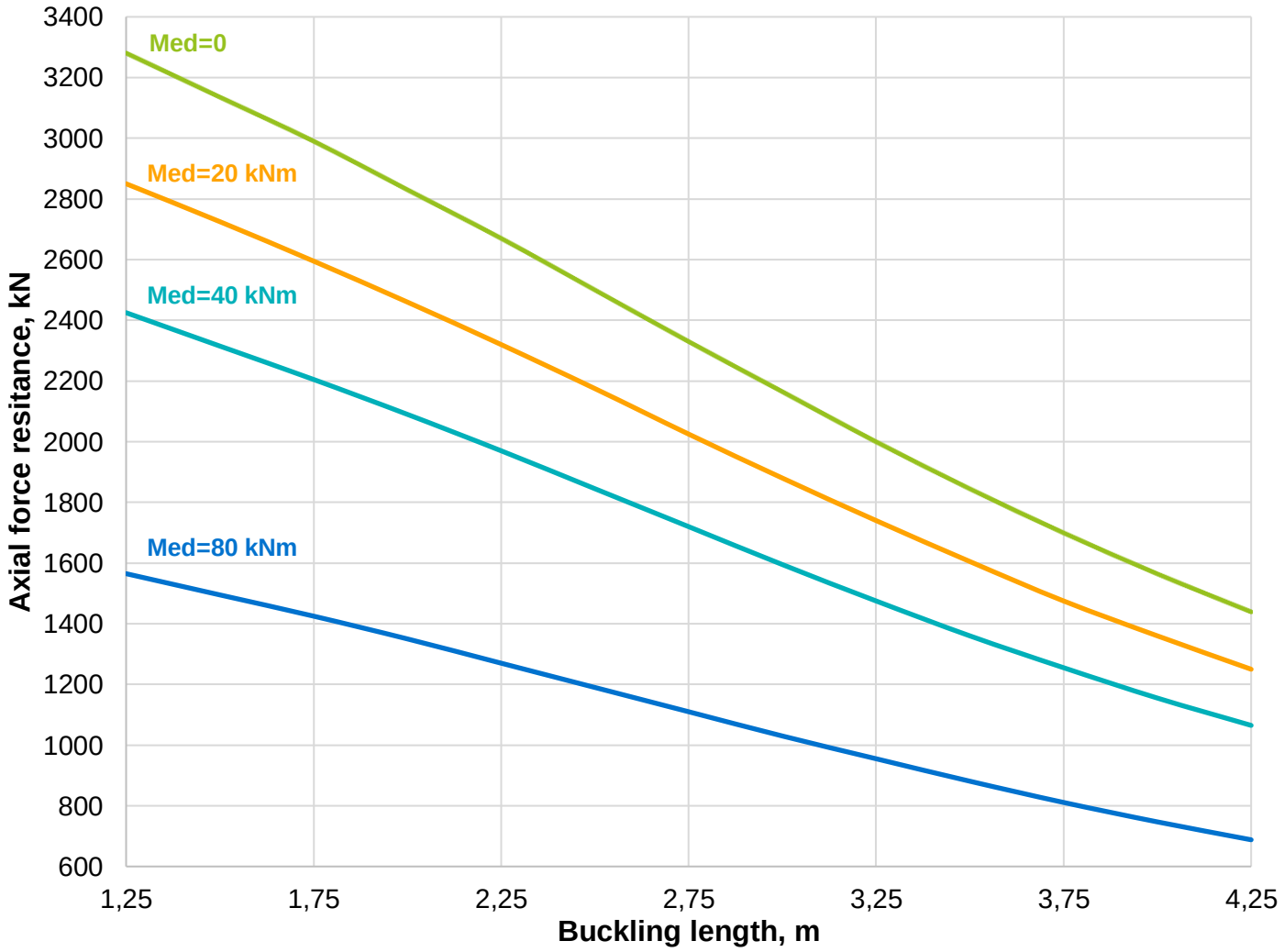




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 355,6 |
|---|---|

**Material properties:**

Reinforcement: B500B

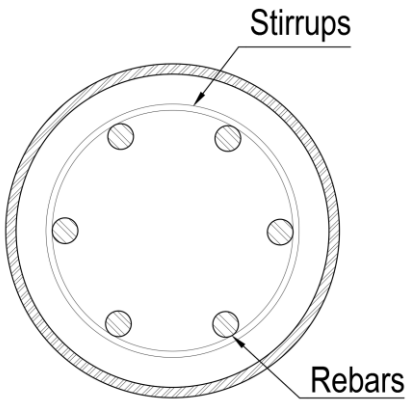
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



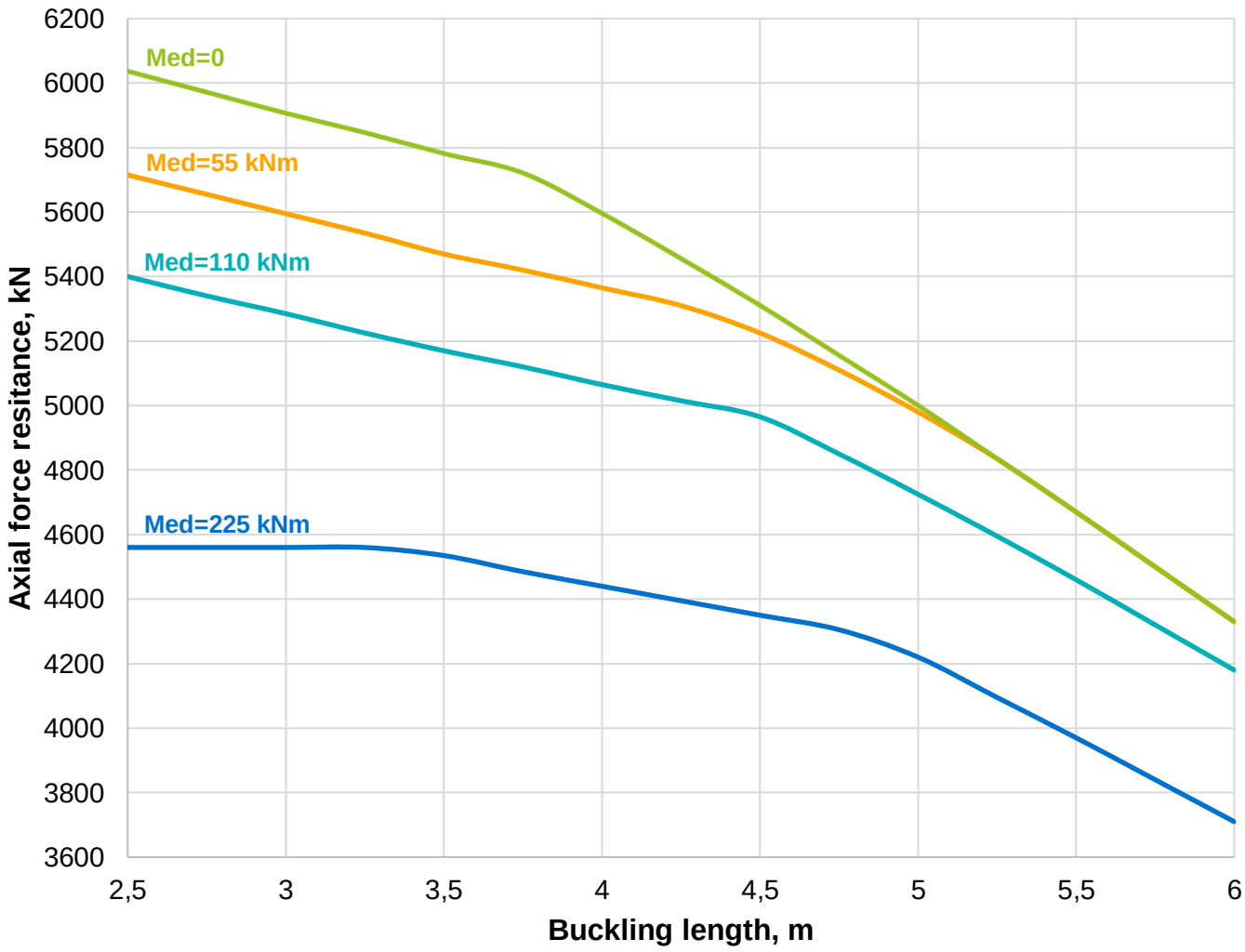




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 355,6 |
|---|---|

**Material properties:**

Reinforcement: B500B

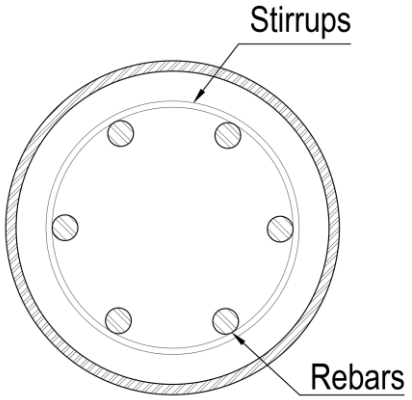
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



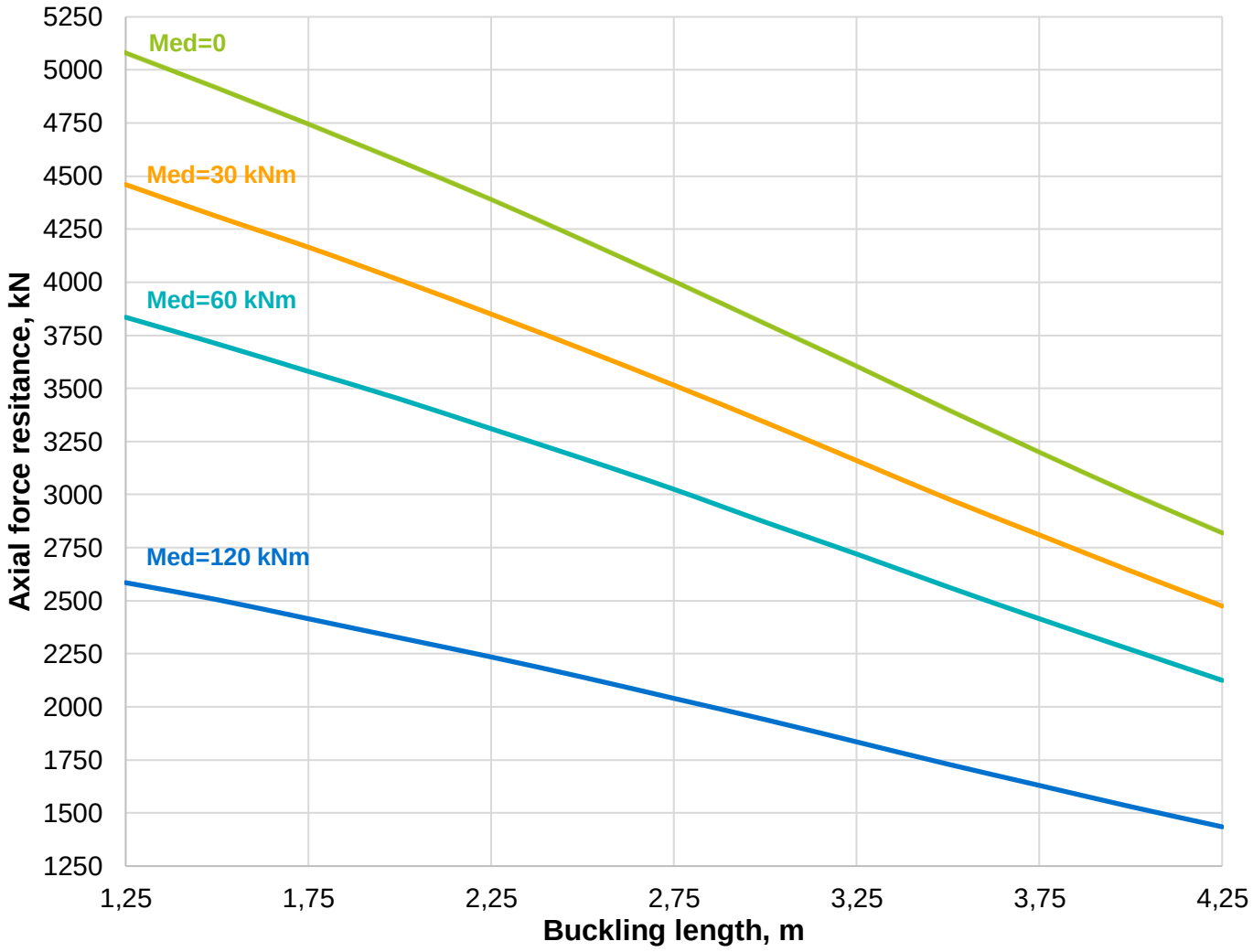




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 355,6 |
|---|---|

**Material properties:**

Reinforcement: B500B

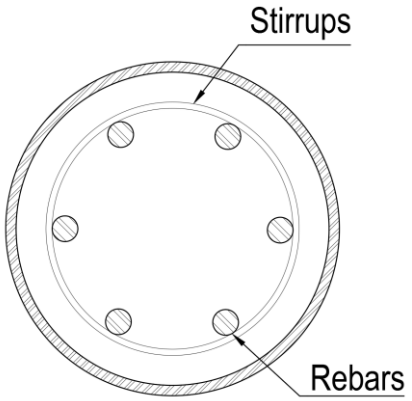
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



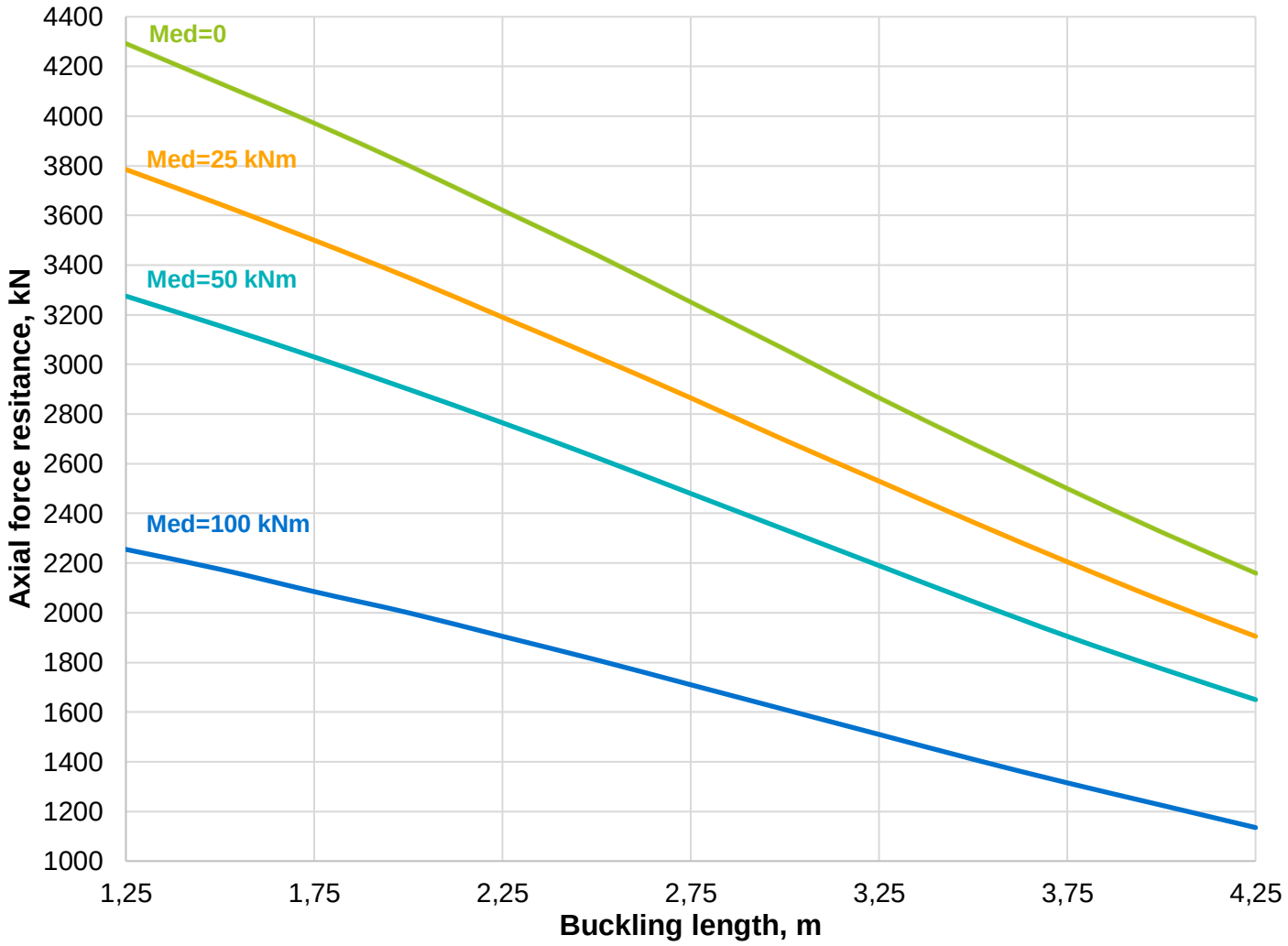




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 406,4 |
|---|---|

**Material properties:**

Reinforcement: B500B

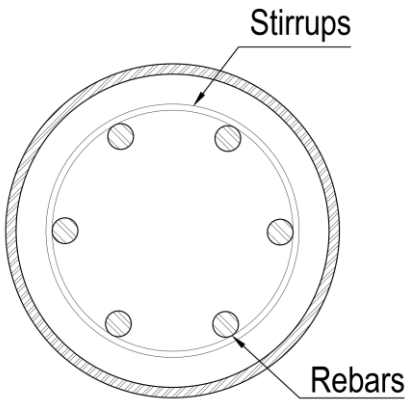
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



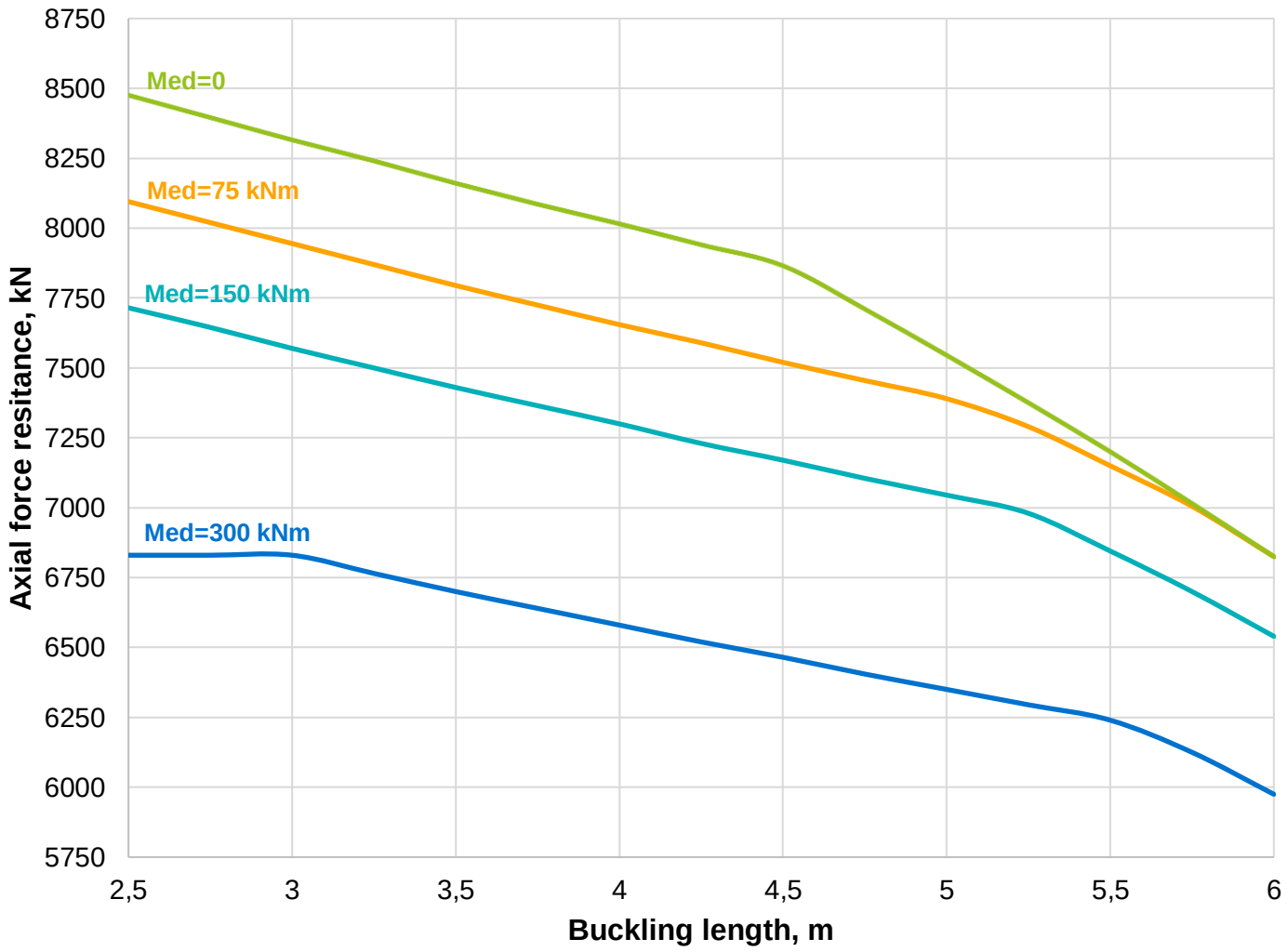




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 406,4 |
|---|---|

**Material properties:**

Reinforcement: B500B

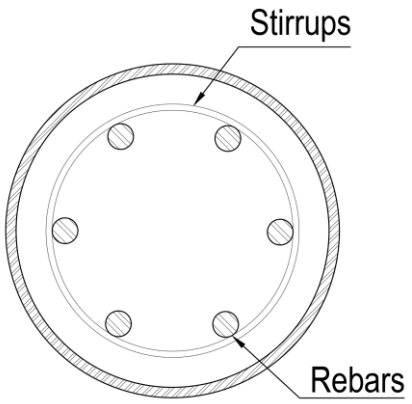
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



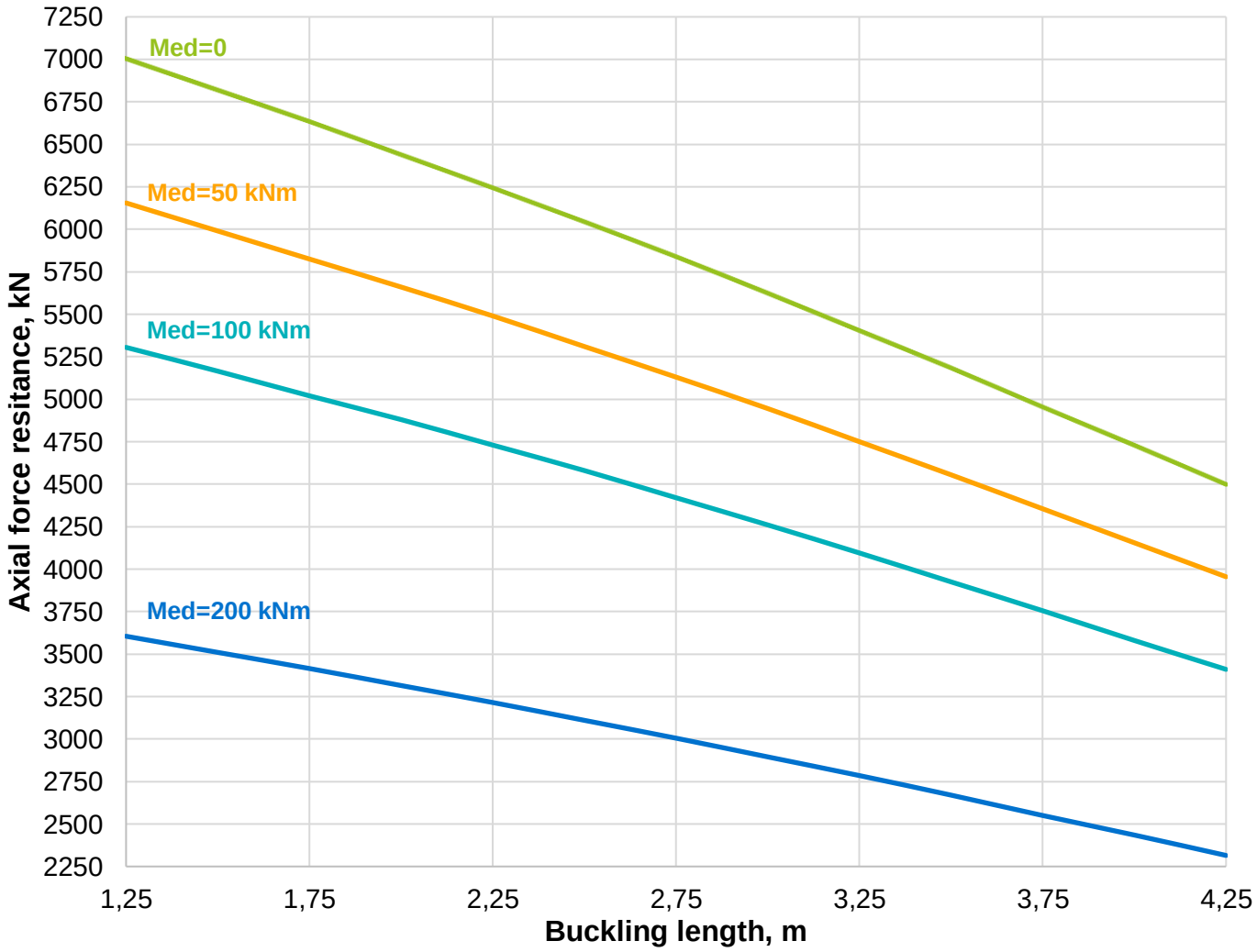




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 406,4 |
|---|---|

**Material properties:**

Reinforcement: B500B

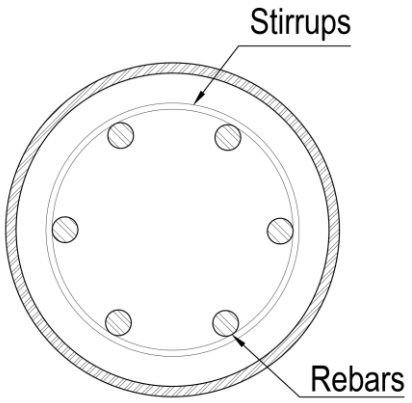
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



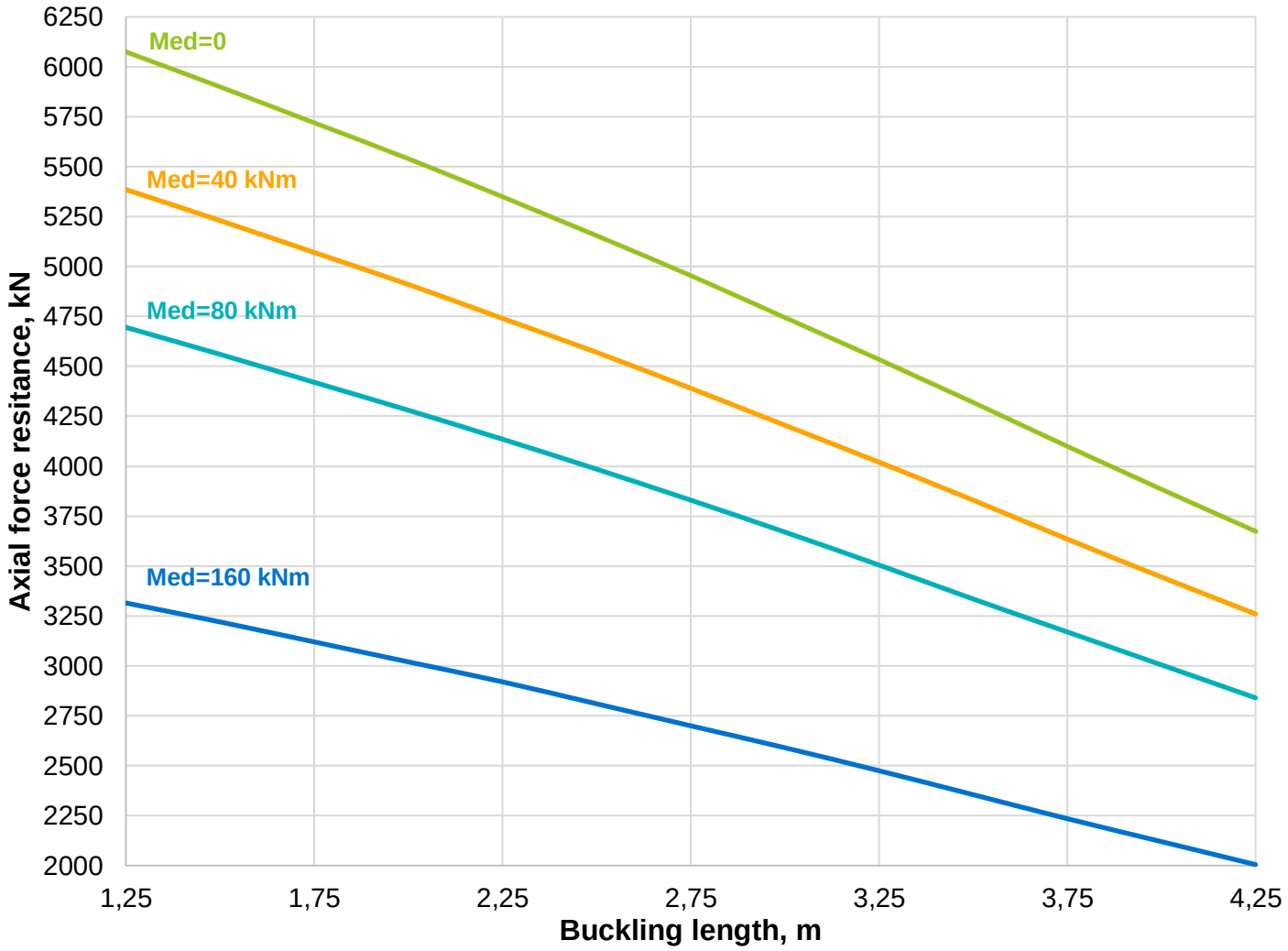




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 457 |
|---|---|

**Material properties:**

Reinforcement: B500B

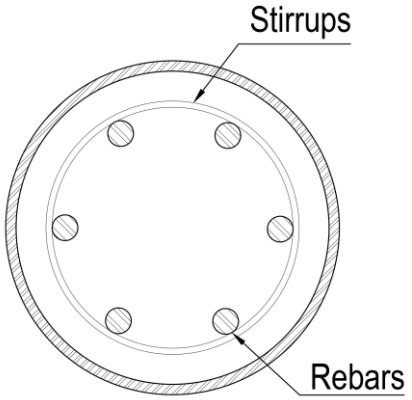
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



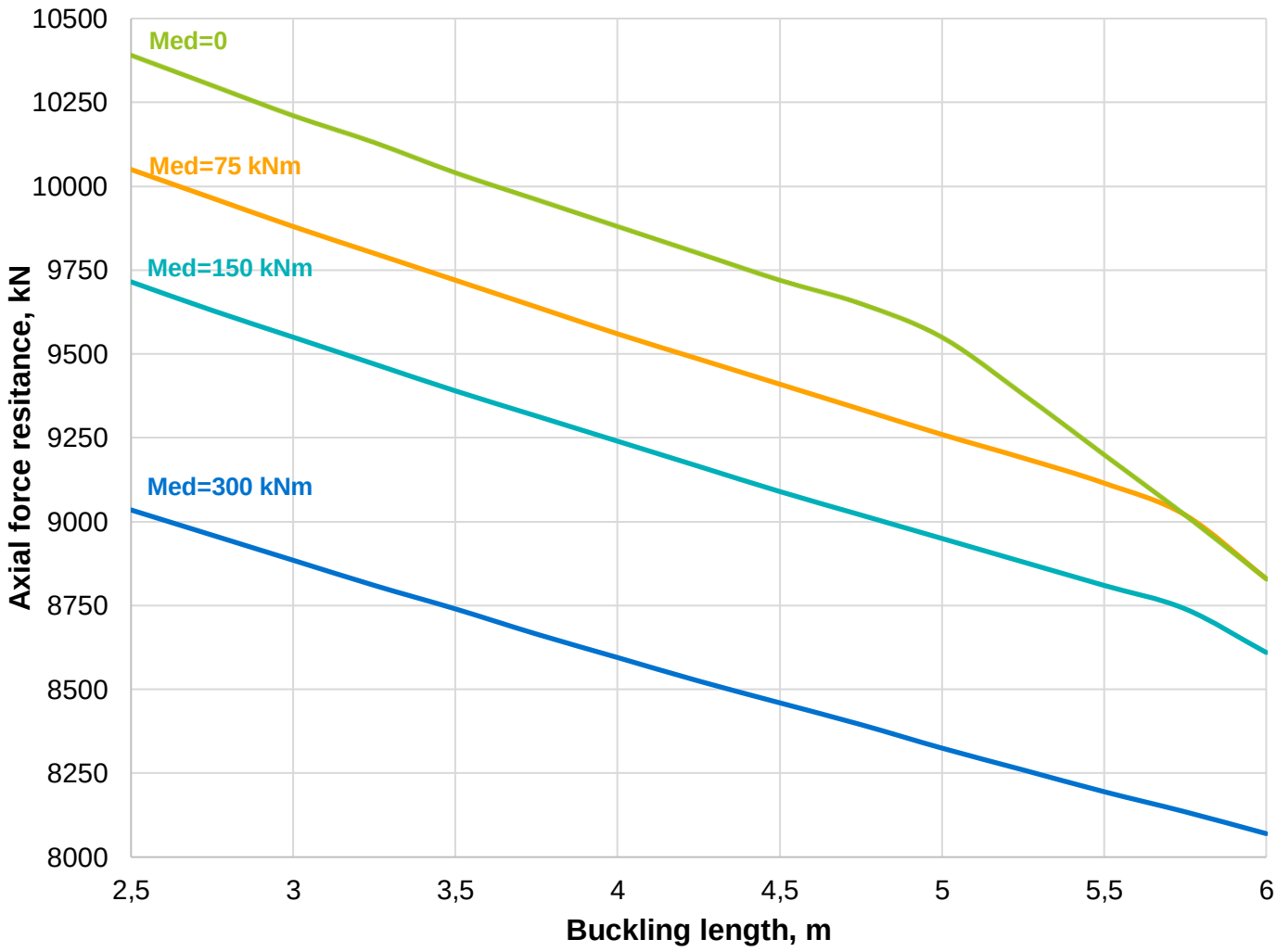




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 457 |
|---|---|

**Material properties:**

Reinforcement: B500B

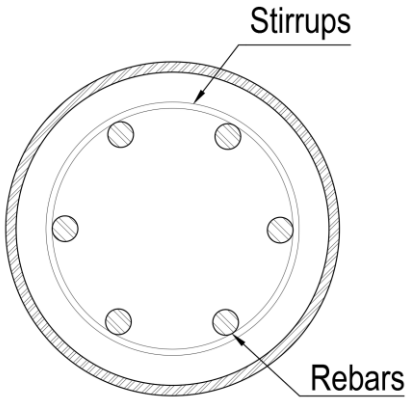
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



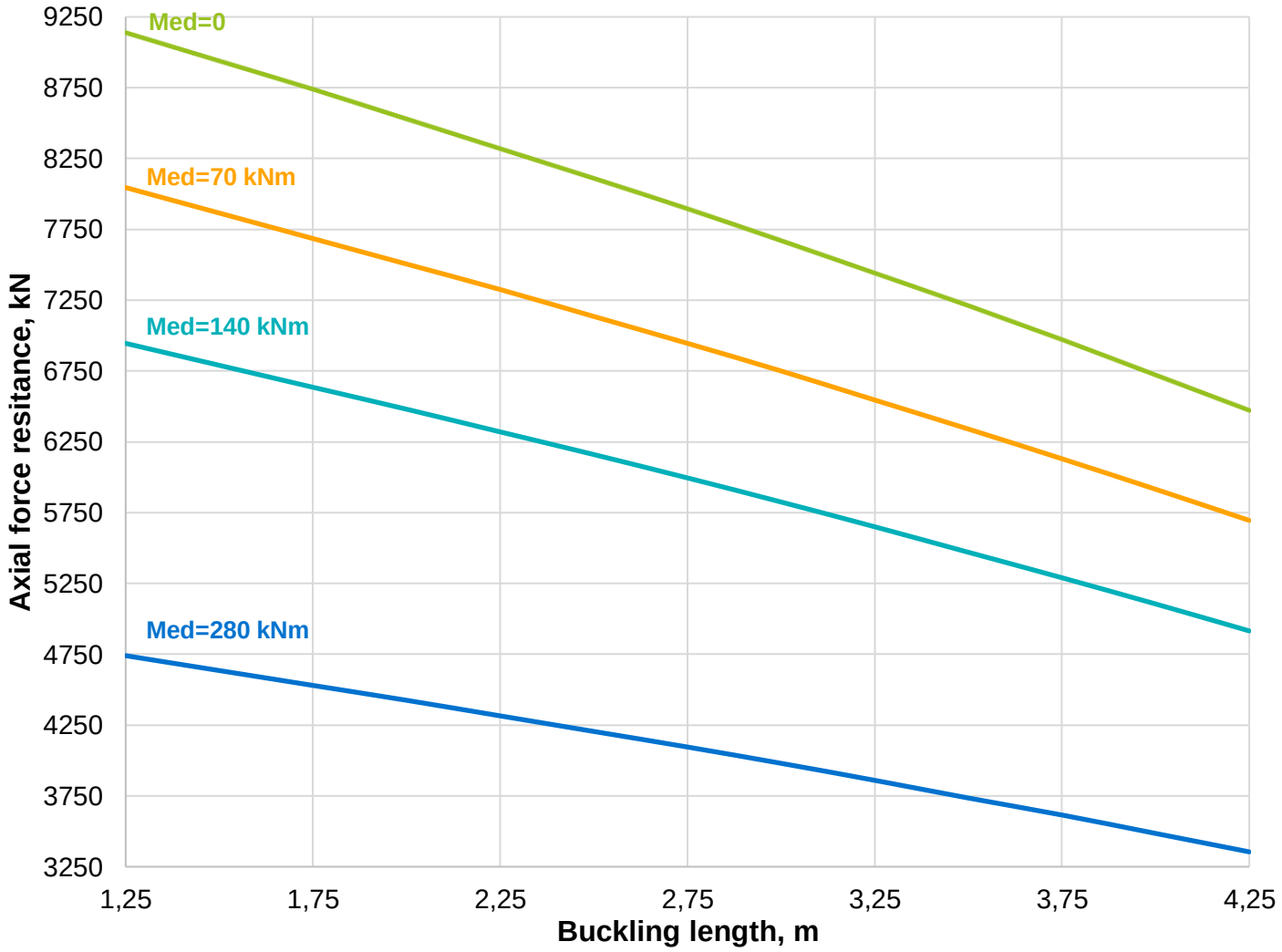




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 457 |
|---|---|

**Material properties:**

Reinforcement: B500B

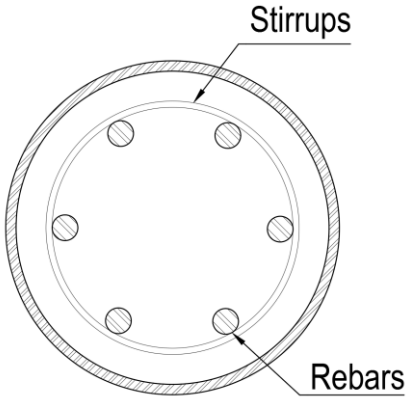
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



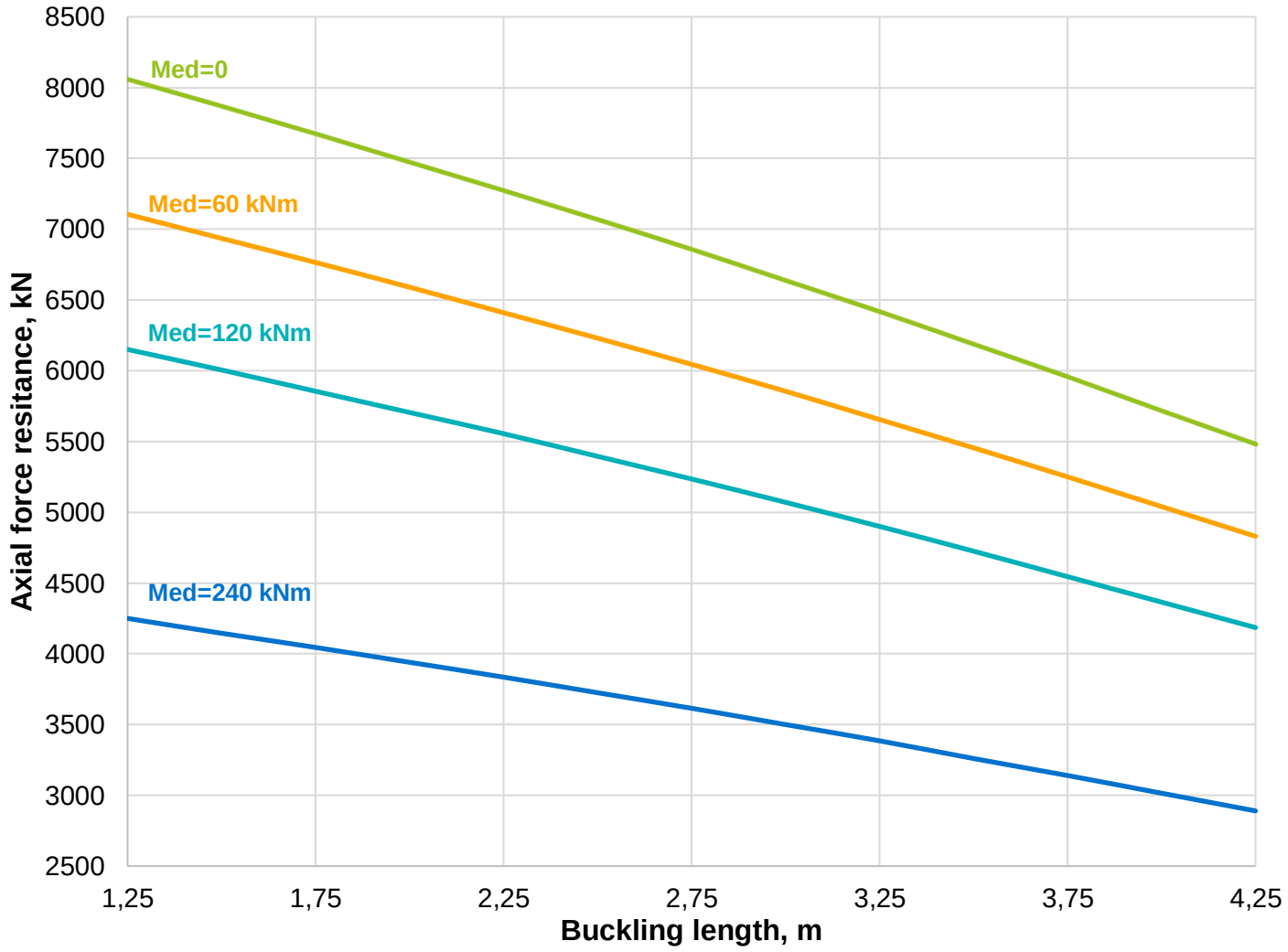




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 508 |
|---|---|

**Material properties:**

Reinforcement: B500B

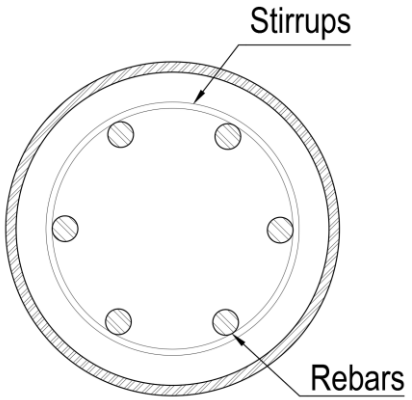
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



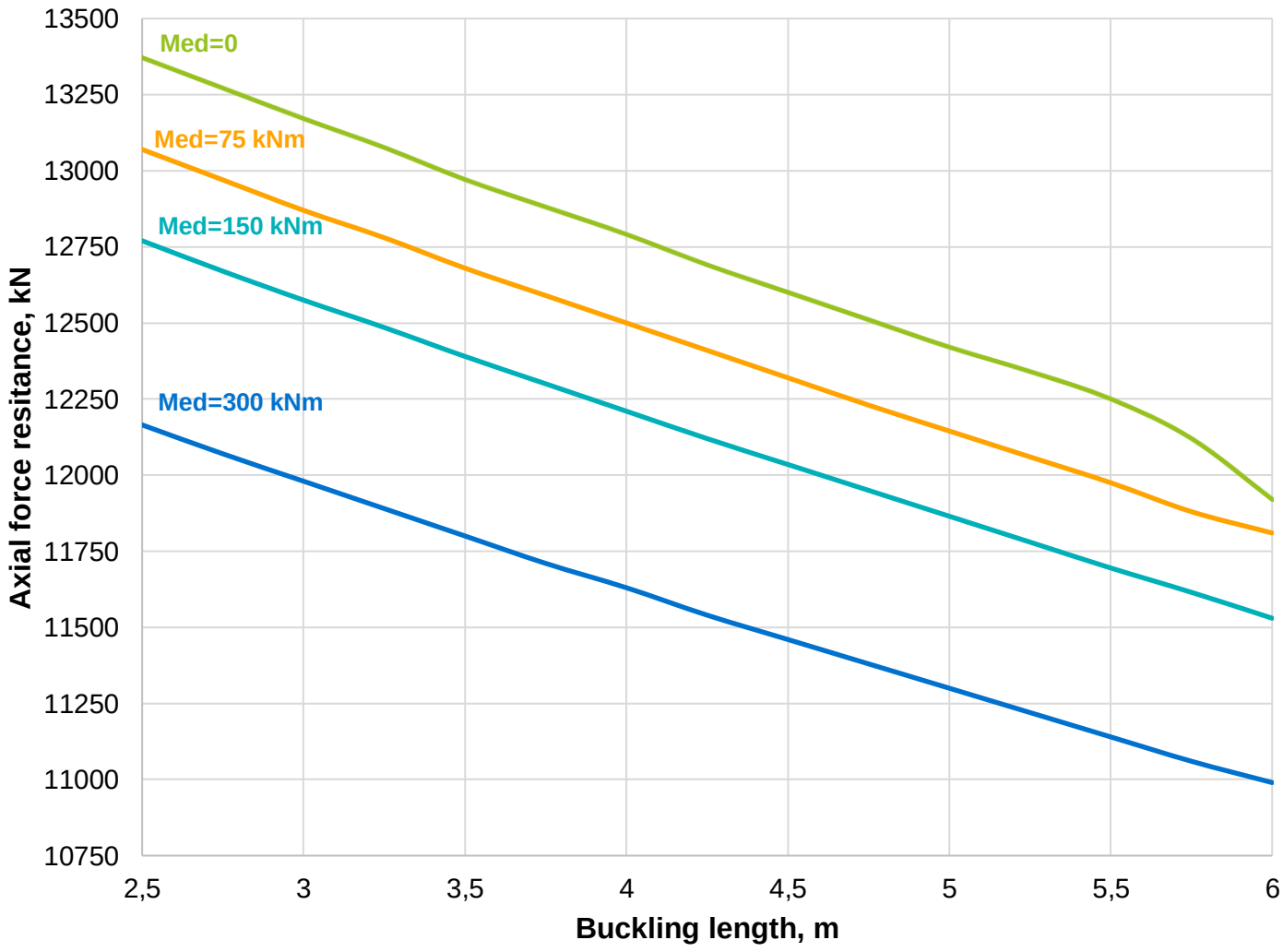




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 508 |
|---|---|

**Material properties:**

Reinforcement: B500B

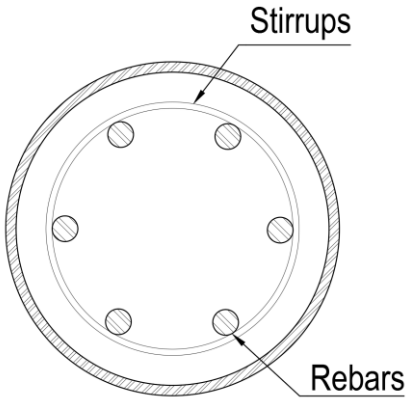
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



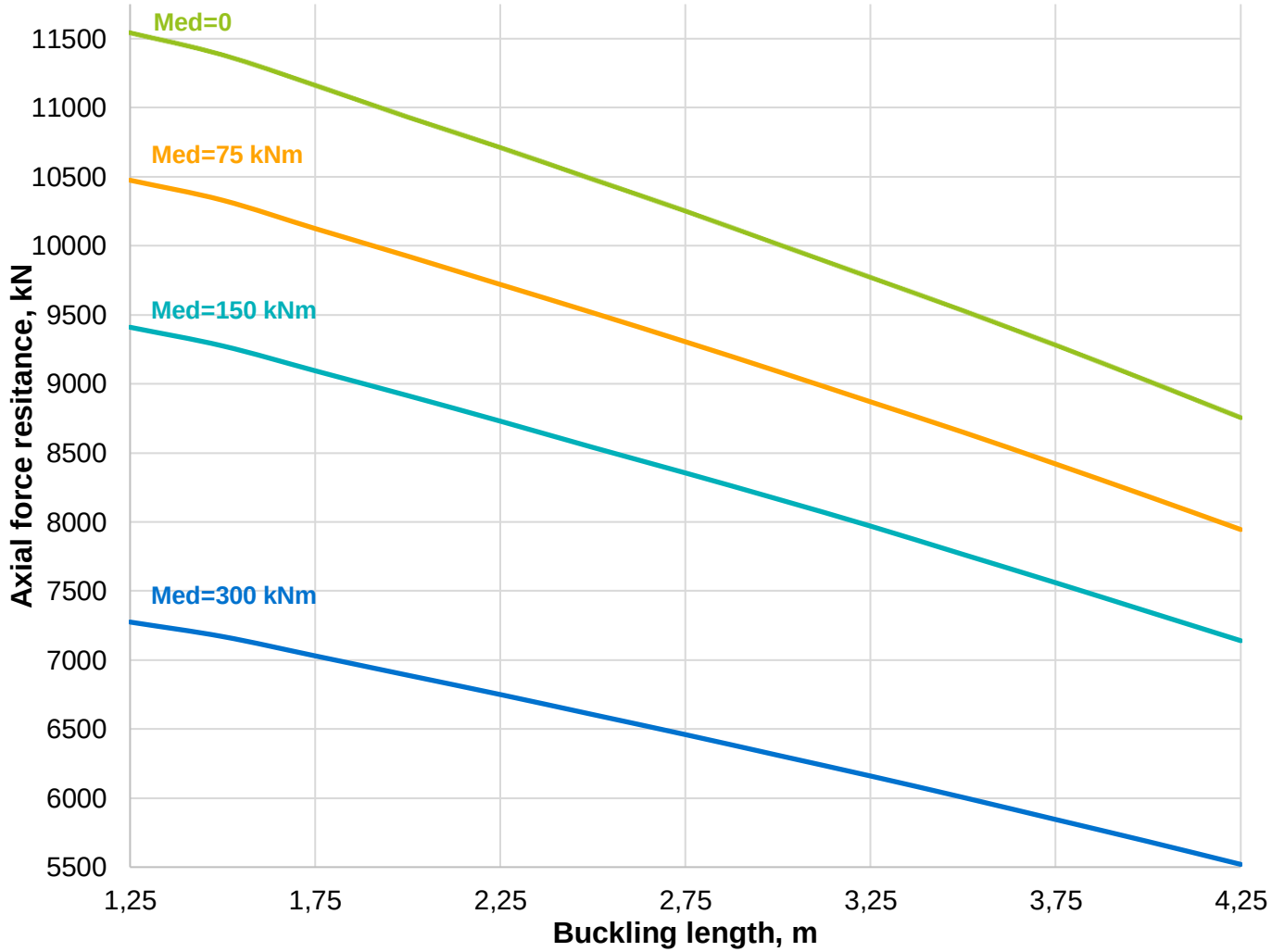




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 508 |
|---|---|

**Material properties:**

Reinforcement: B500B

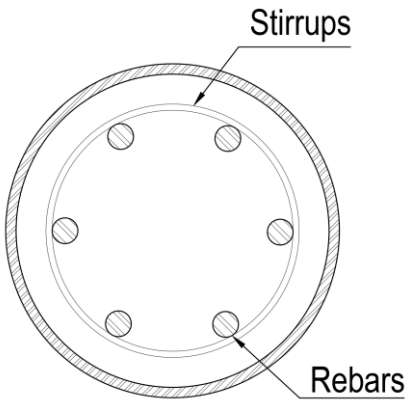
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



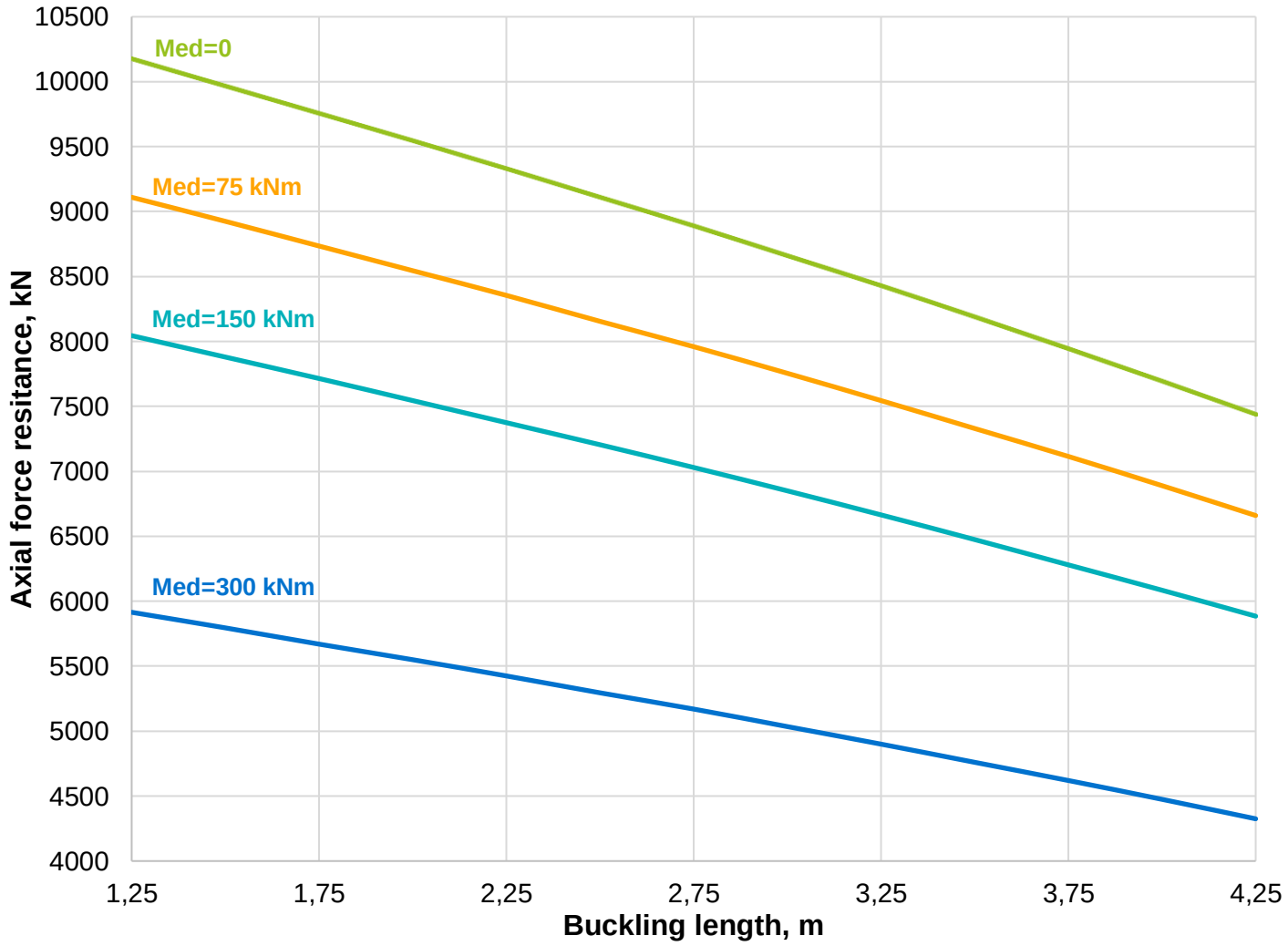




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 610 |
|---|---|

**Material properties:**

Reinforcement: B500B

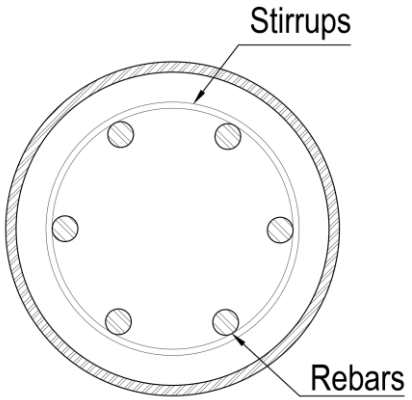
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



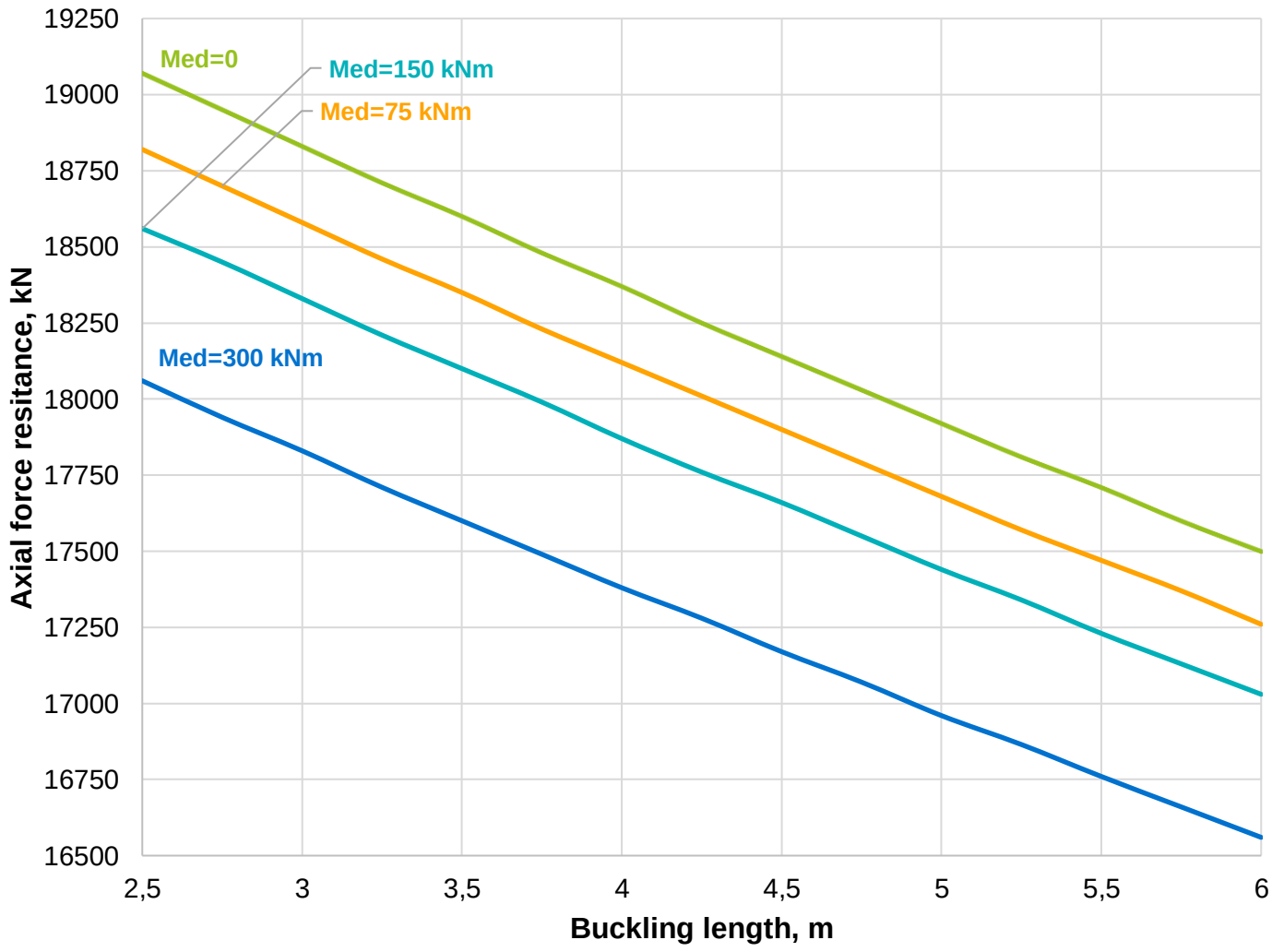




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 610 |
|---|---|

**Material properties:**

Reinforcement: B500B

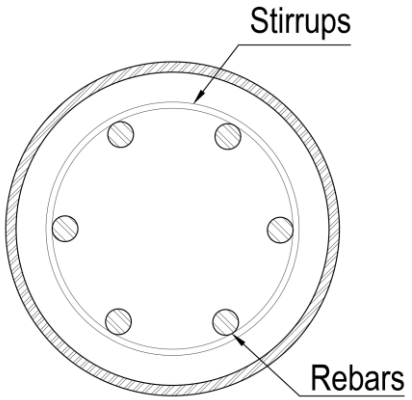
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



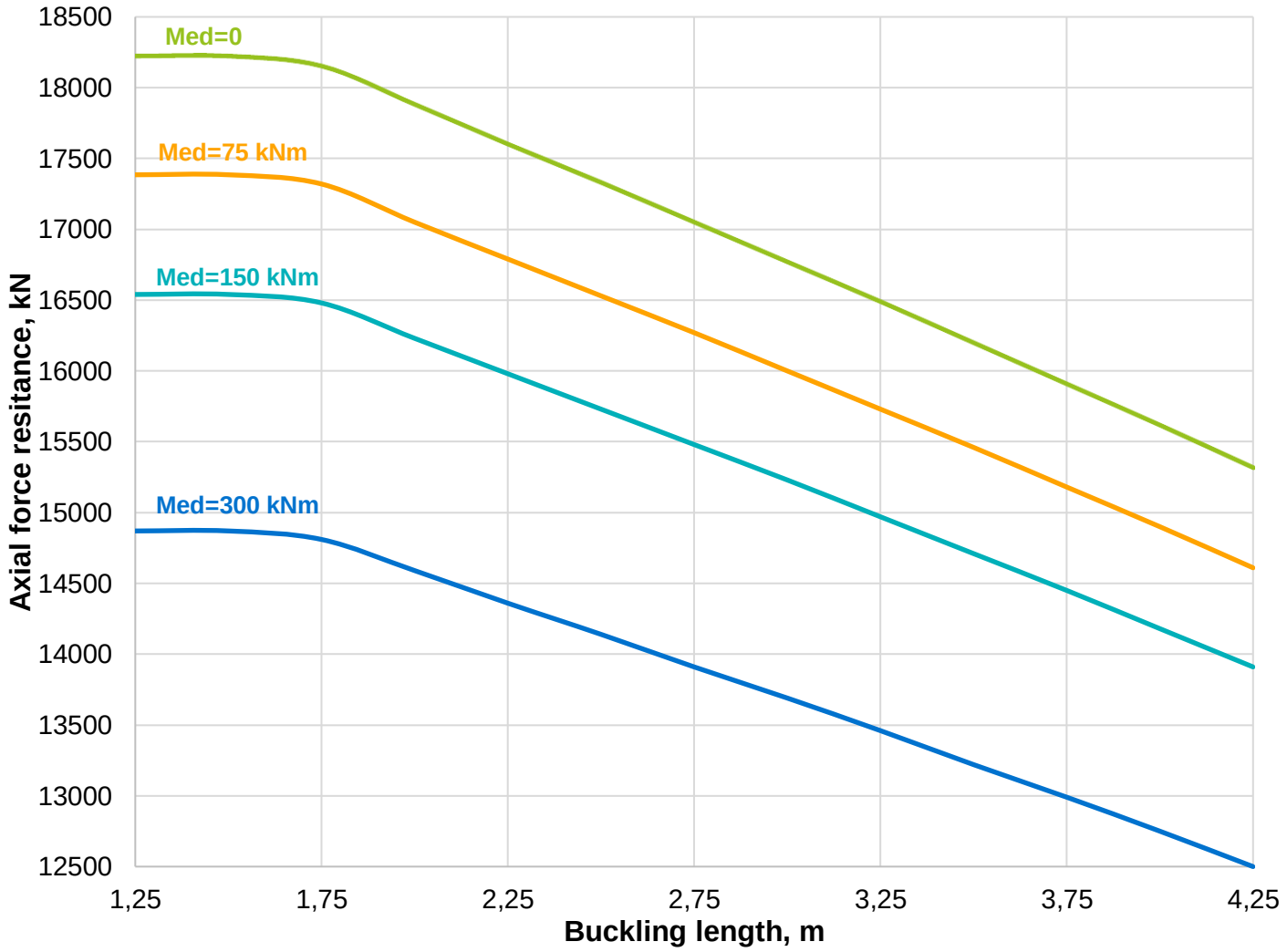




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 610 |
|---|---|

**Material properties:**

Reinforcement: B500B

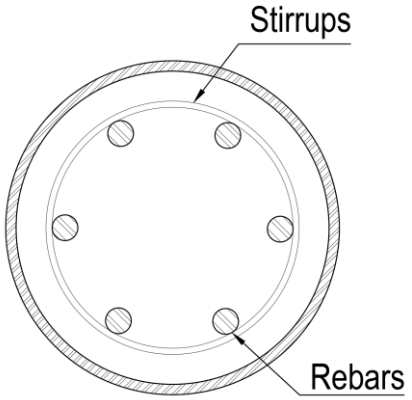
Concrete: C40/50

Tube profile: S355

**Notes:**

1.

2.



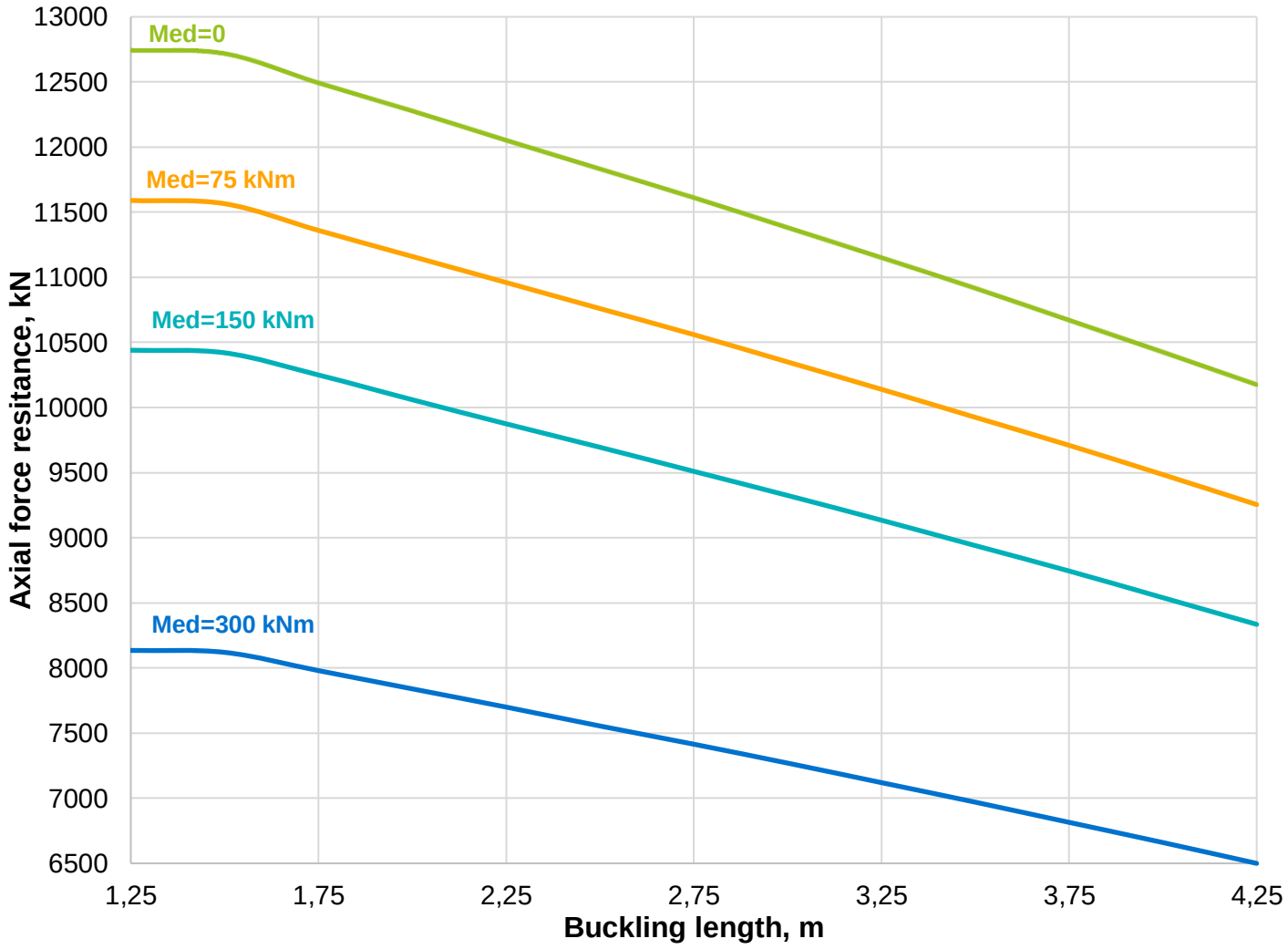




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

# CIRCULAR COLUMNS C30/37

| Circular columns |
| --- |
| S355-B500B-C30/37 |
| R60 - CHS 168.3 |
| R60 - CHS 177.8 |
| R60 - CHS 193.7 |
| R60 - CHS 219.1 |
| R60 - CHS 244.5 |
| R60 - CHS 273 |
| R60 - CHS 323.9 |
| R60 - CHS 355.6 |
| R60 - CHS 406.4 |
| R60 - CHS 457 |
| R60 - CHS 508 |
| R60 - CHS 610 |
| R120 - CHS 219.1 |
| R120 - CHS 244.5 |
| R120 - CHS 273x5 |
| R120 - CHS 323.9 |
| R120 - CHS 355.6 |
| R120 - CHS 406.4 |
| R120 - CHS 457 |
| R120 - CHS 508 |
| R120 - CHS 610 |

| ULS | CHS 168,3 |
|---|---|

**Material properties:**

Reinforcement: B500B

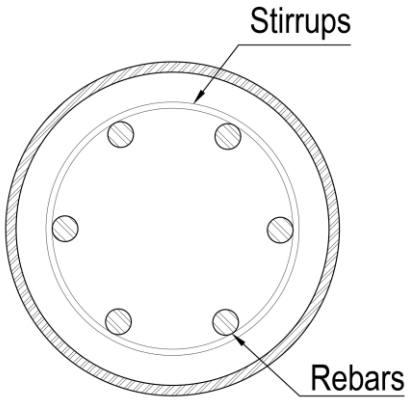
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



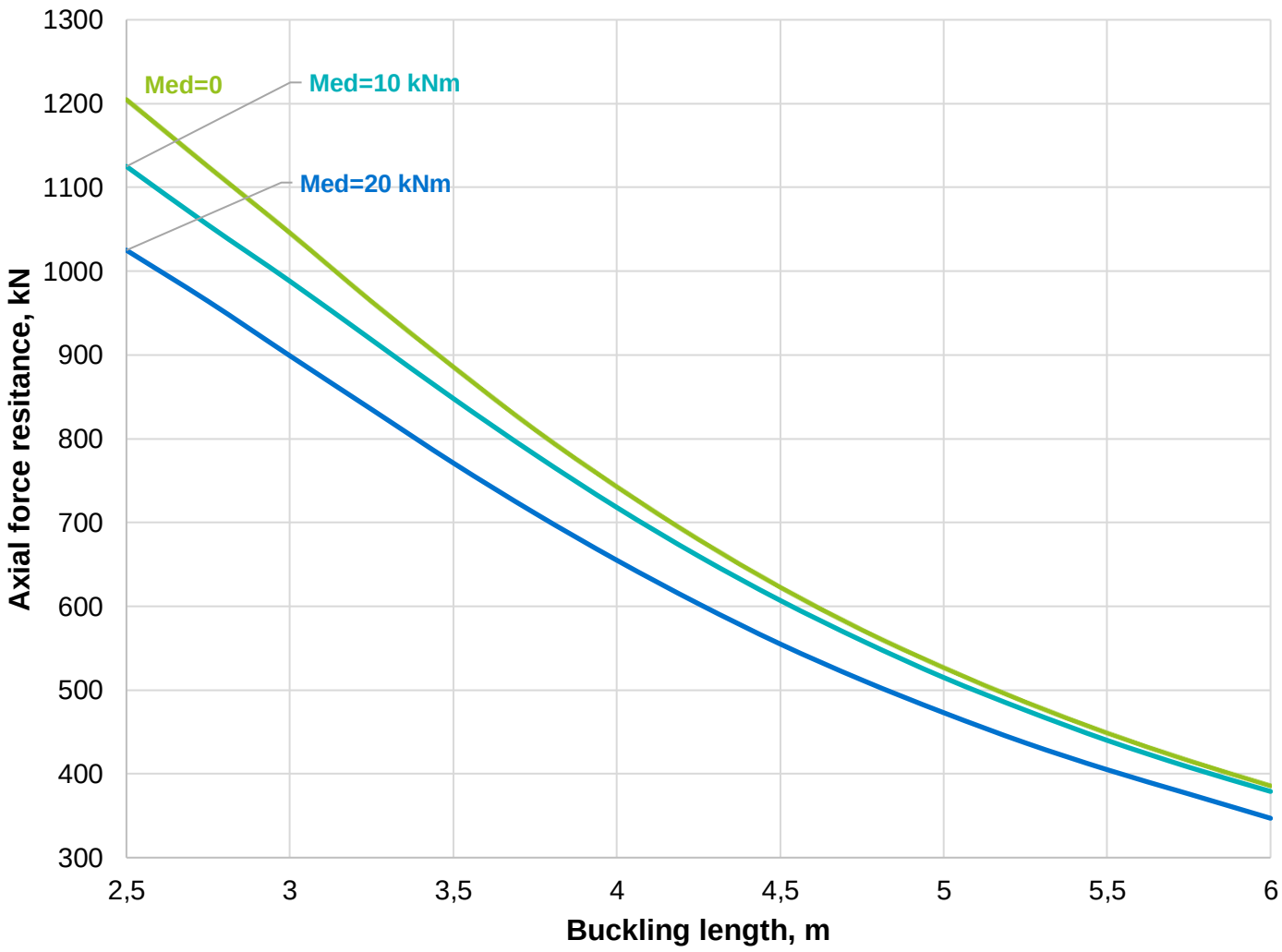




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 168,3 |
|---|---|

**Material properties:**

Reinforcement: B500B

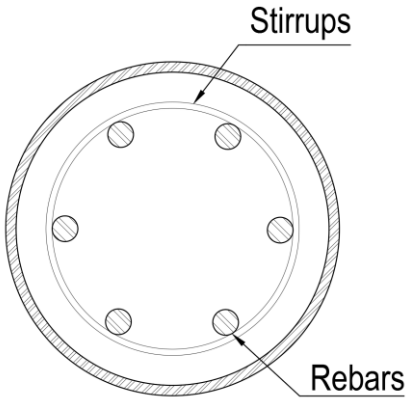
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



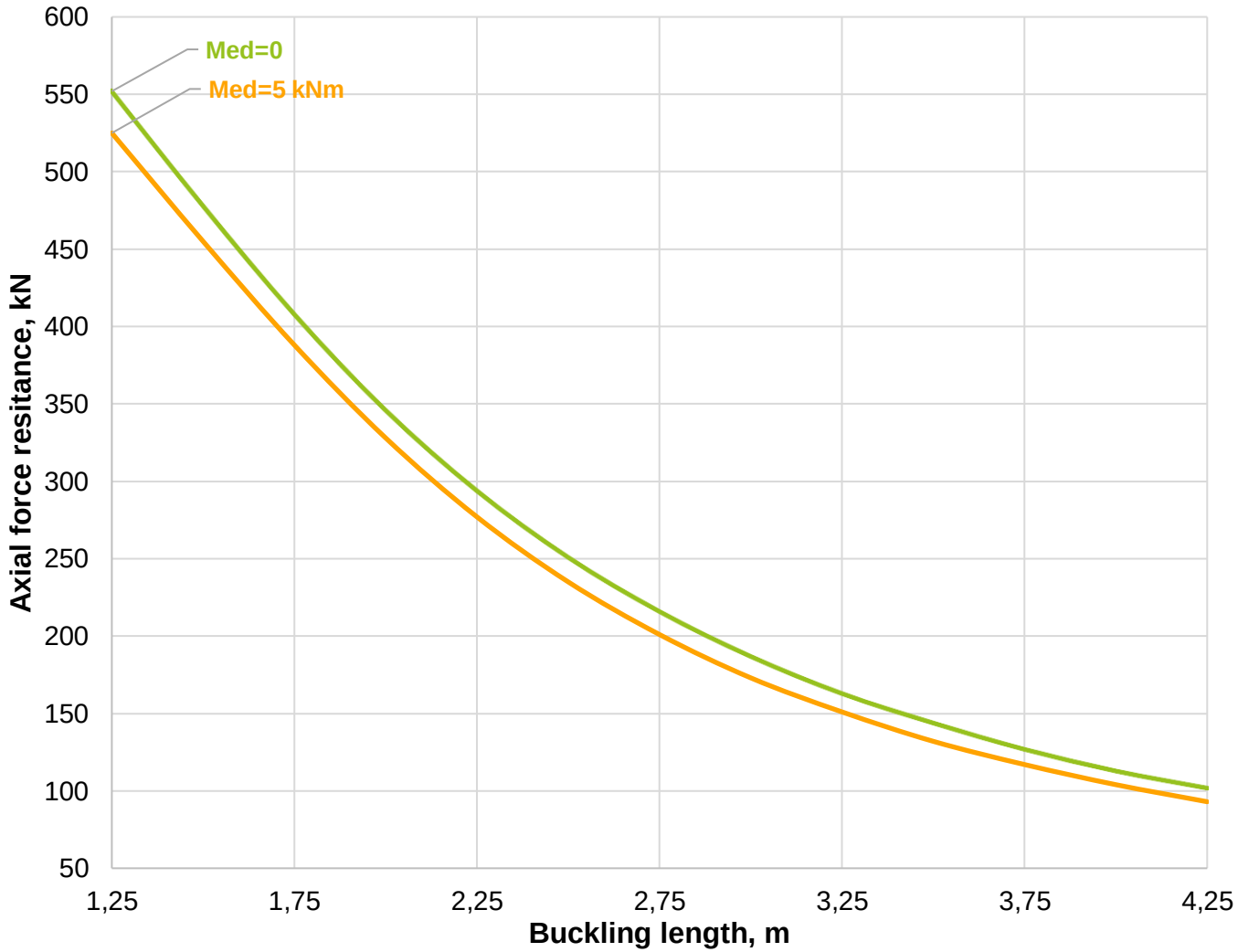




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | CHS 177,8 |
|---|---|

**Material properties:**

Reinforcement: B500B

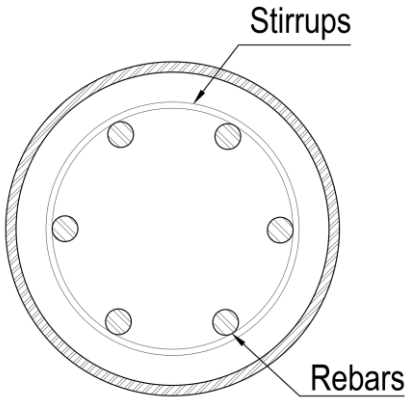
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



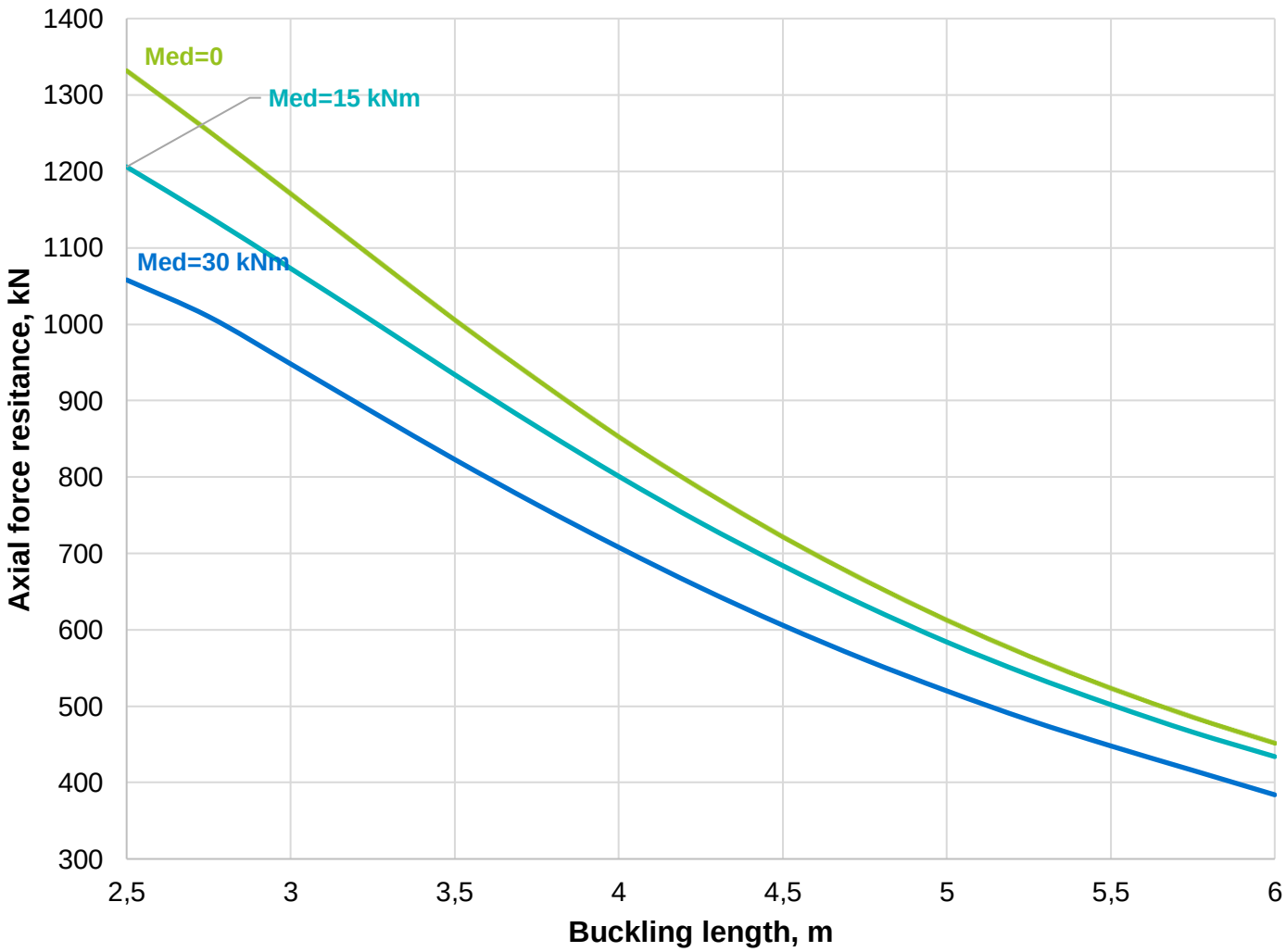




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 177,8 |
|---|---|

**Material properties:**

Reinforcement: B500B

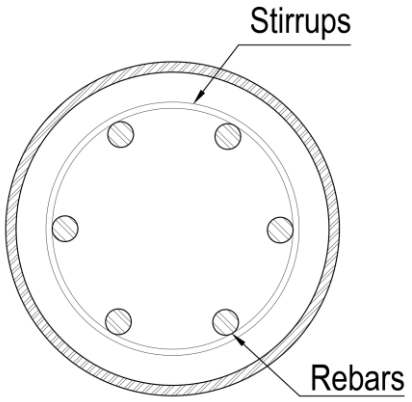
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



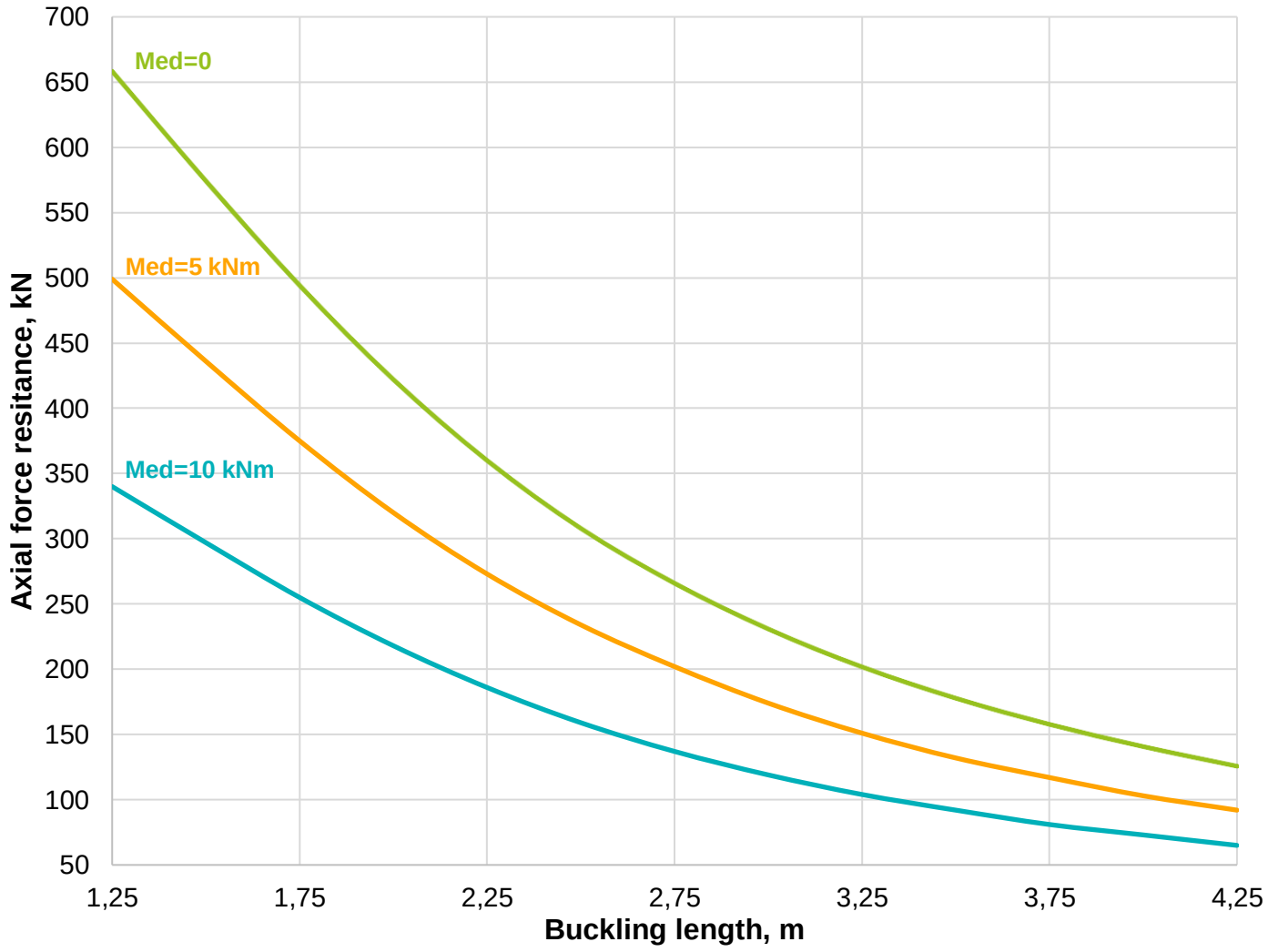




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | CHS 193,7 |
|---|---|

**Material properties:**

Reinforcement: B500B

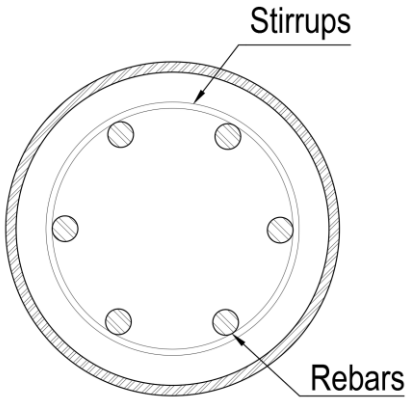
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



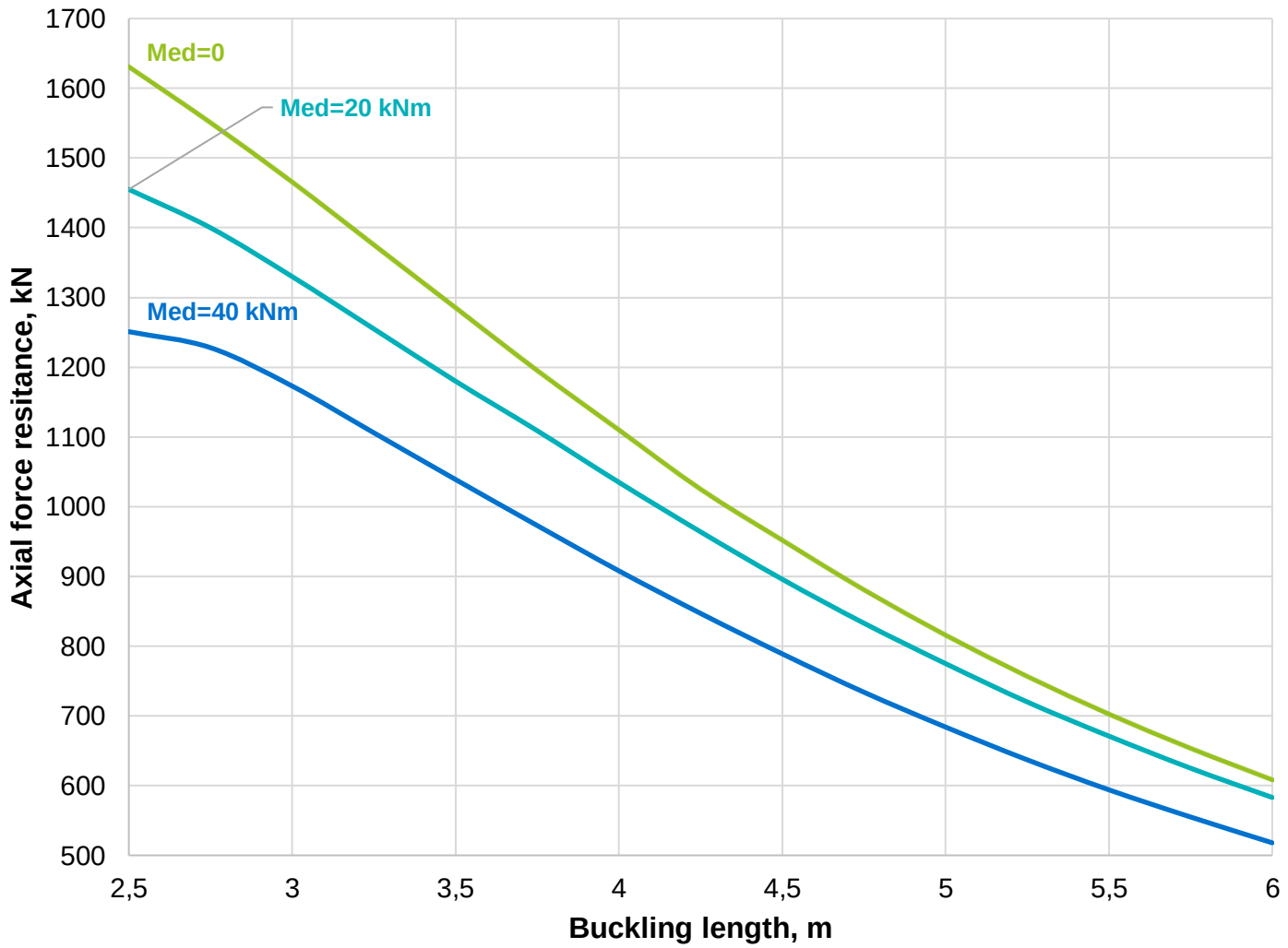




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 193,7 |
|---|---|

**Material properties:**

Reinforcement: B500B

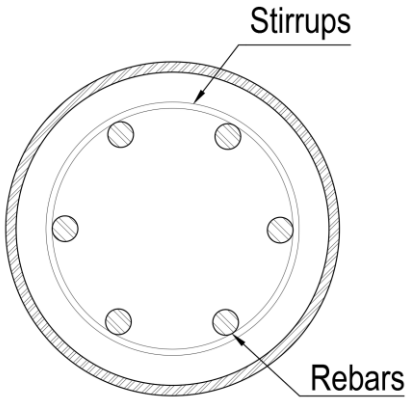
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



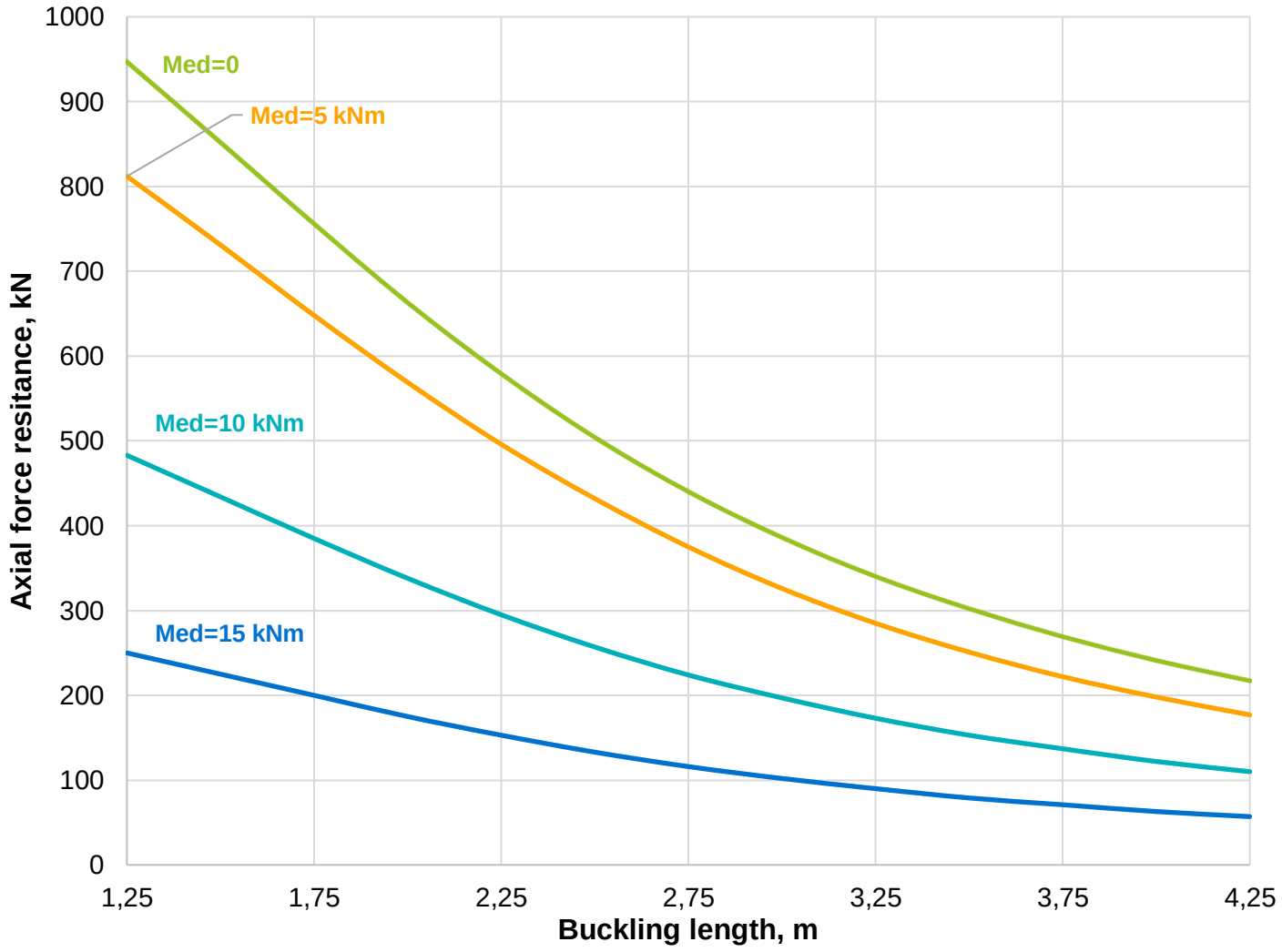




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| ULS | CHS 219,1 |
|---|---|

**Material properties:**

Reinforcement: B500B

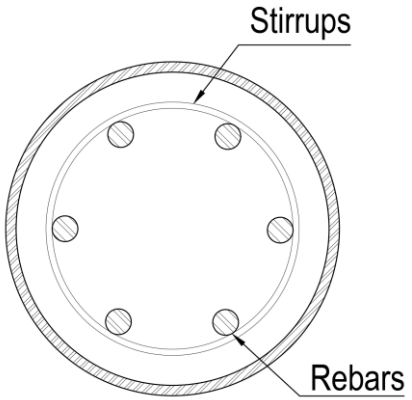
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



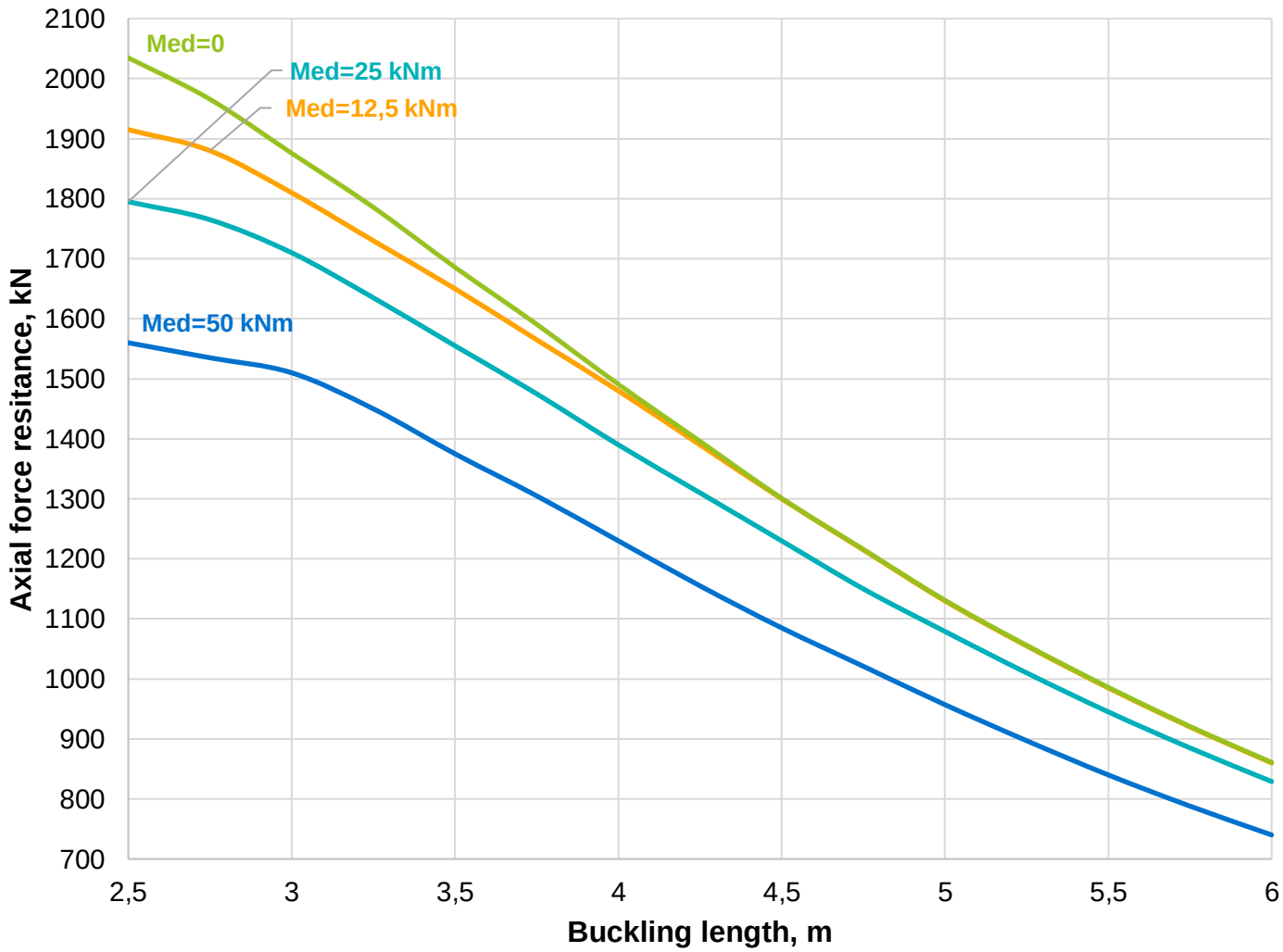




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 219,1 |
|---|---|

**Material properties:**

Reinforcement: B500B

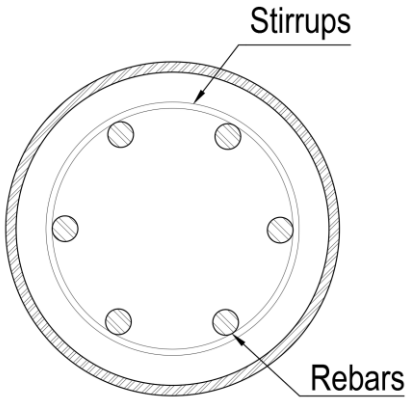
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



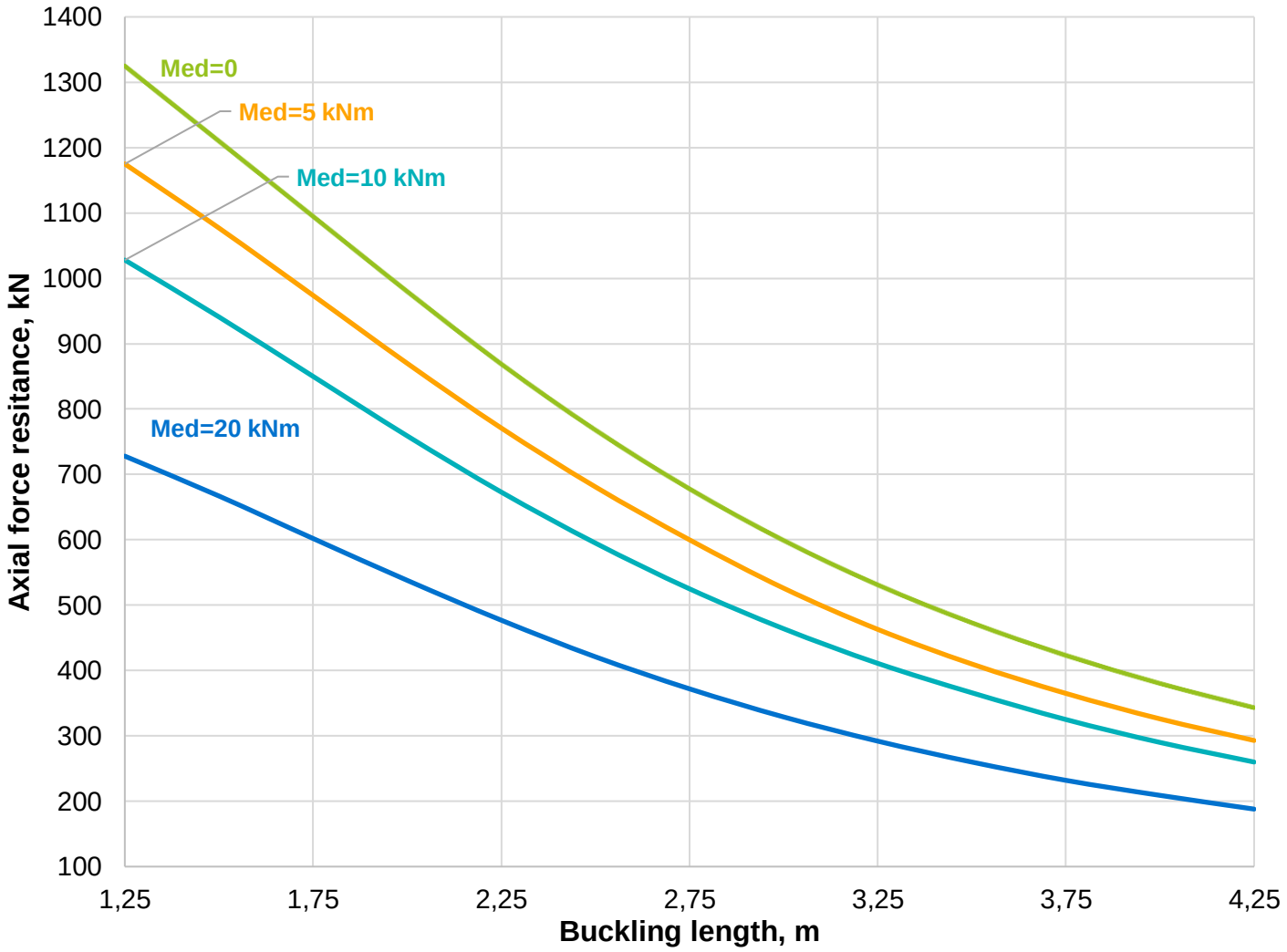




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 219,1 |
|---|---|

**Material properties:**

Reinforcement: B500B

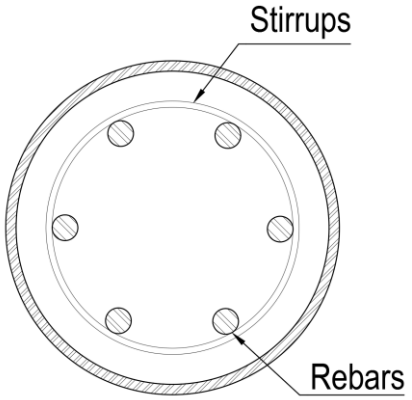
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



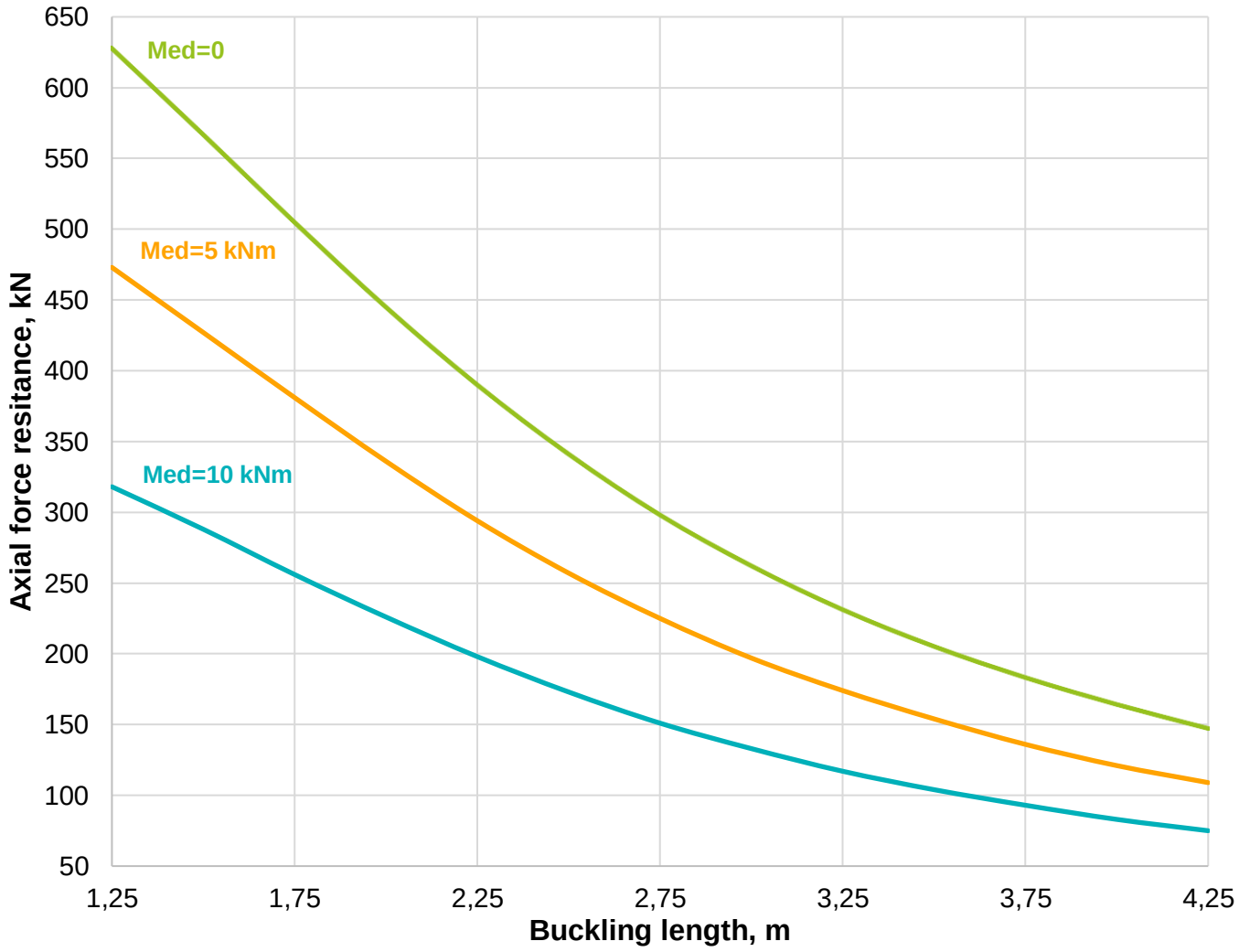




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 244,5 |
|---|---|

**Material properties:**

Reinforcement: B500B

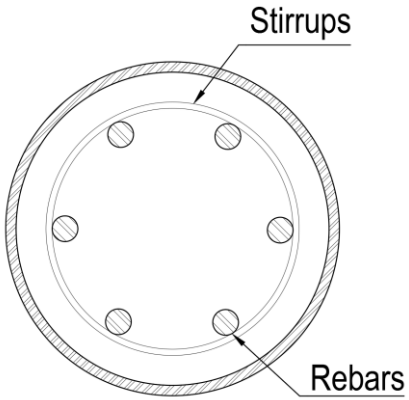
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



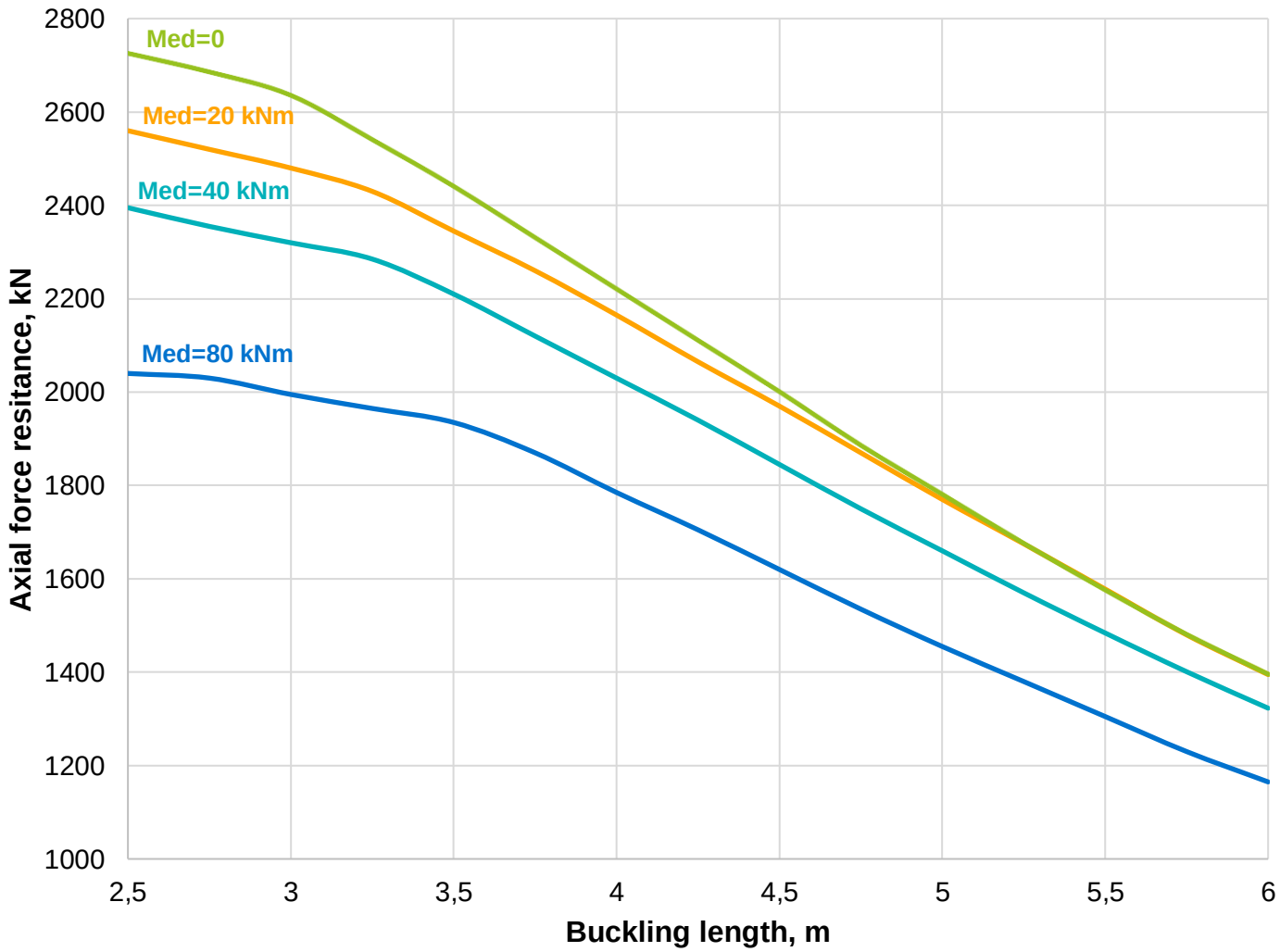




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 244,5 |
|---|---|

**Material properties:**

Reinforcement: B500B

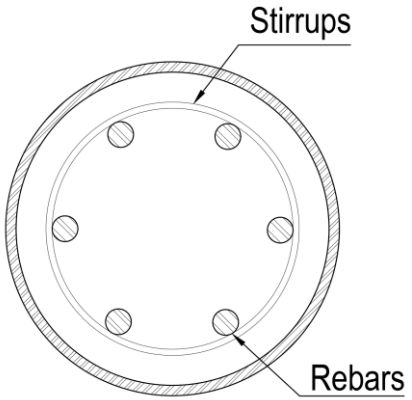
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



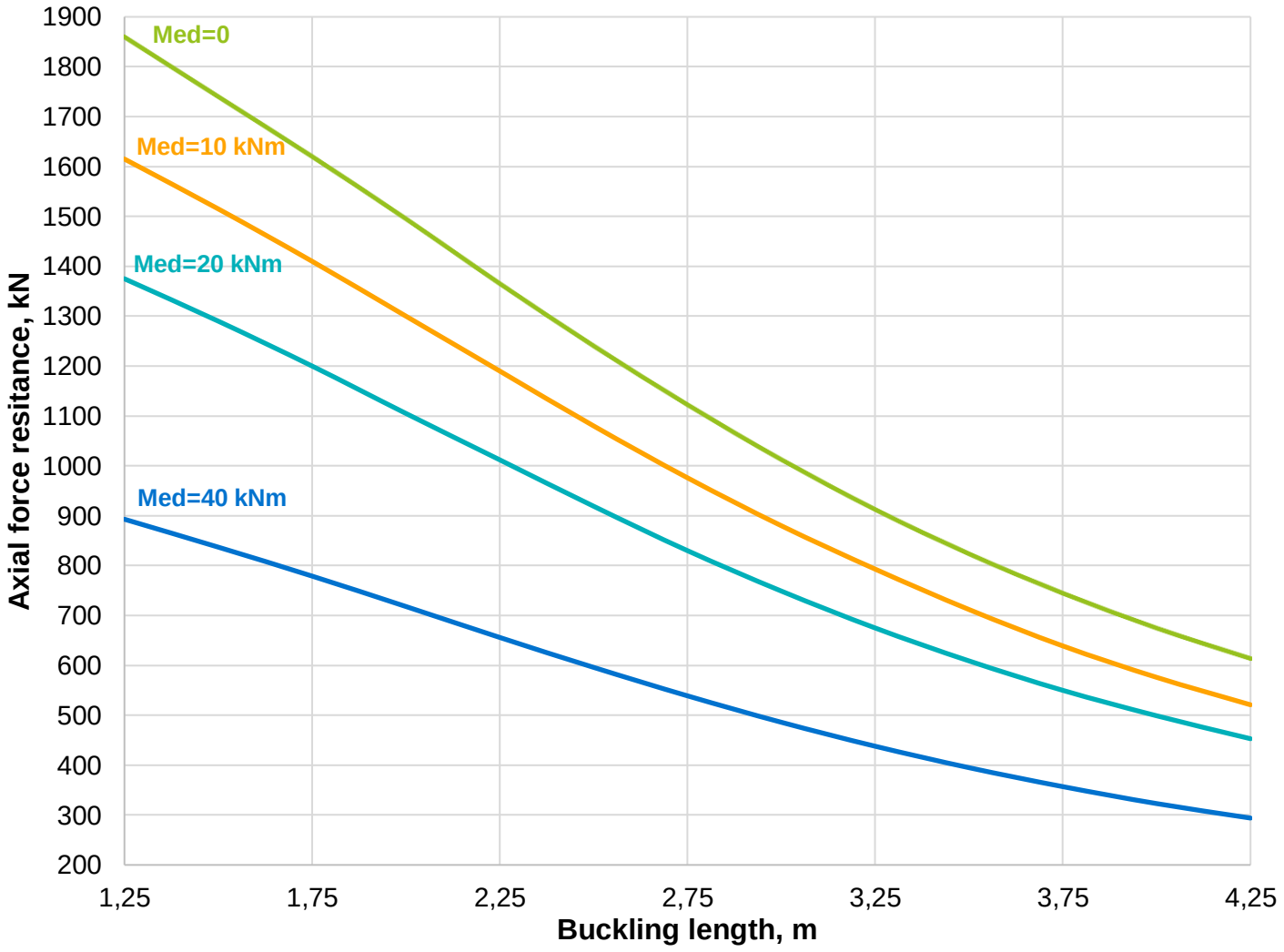




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 244,5 |
|---|---|

**Material properties:**

Reinforcement: B500B

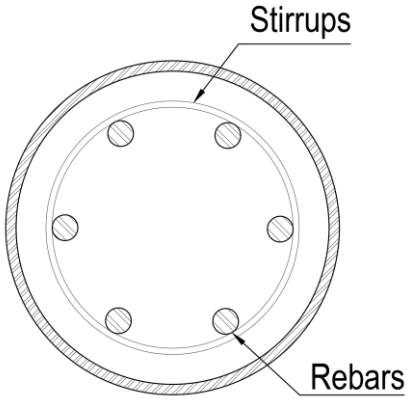
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



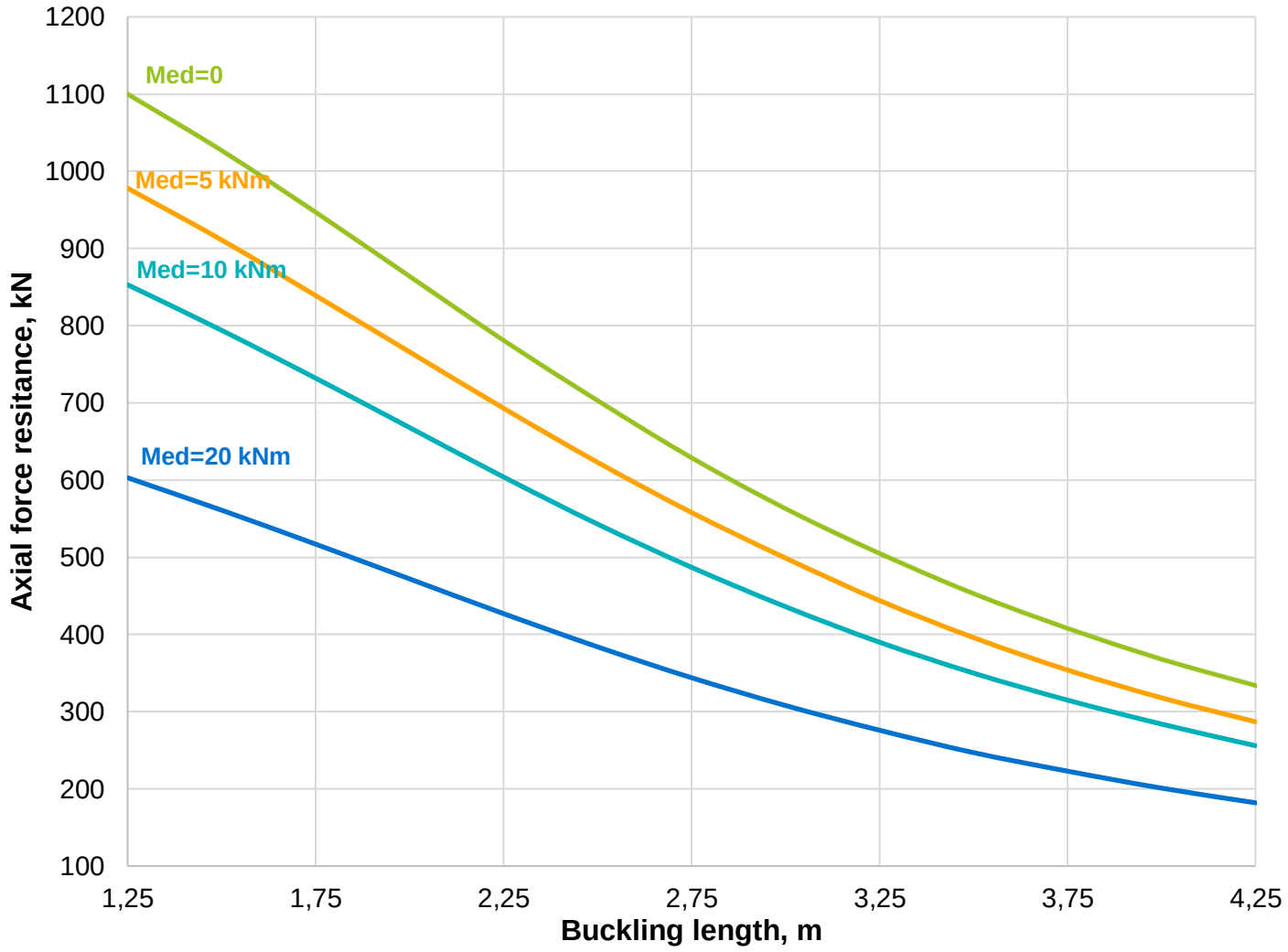




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 273 |
|---|---|

**Material properties:**

Reinforcement: B500B

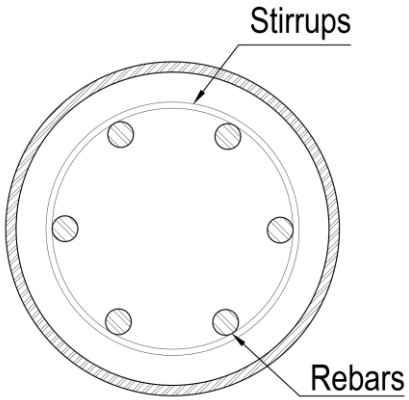
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



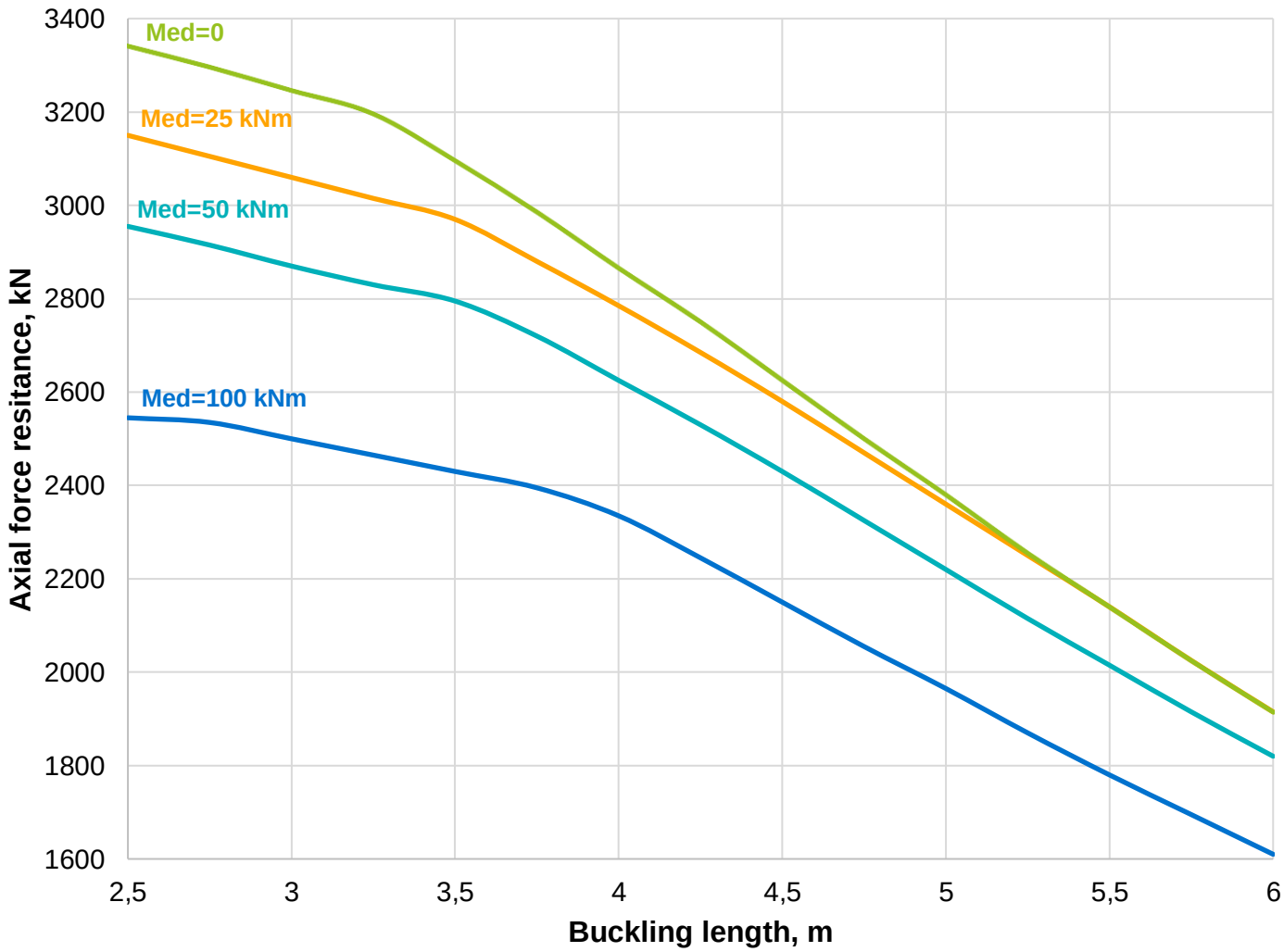




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 273 |
|---|---|

**Material properties:**

Reinforcement: B500B

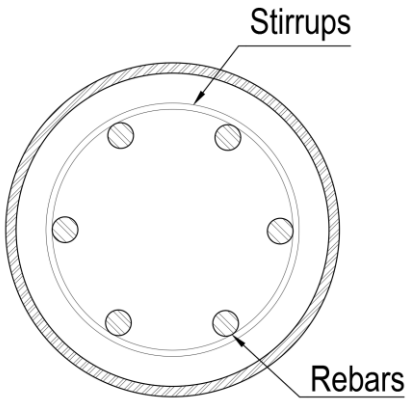
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



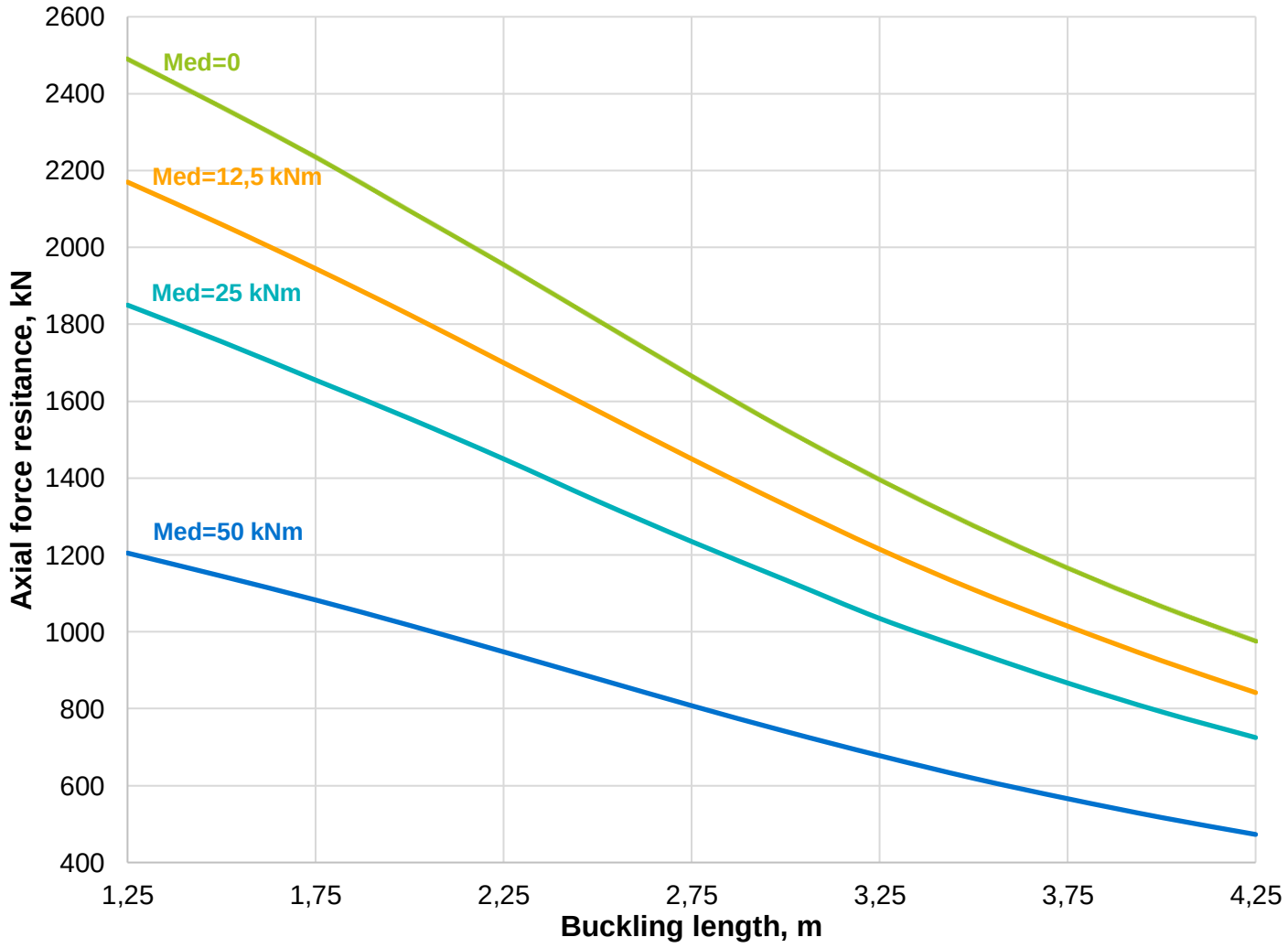




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 273 |
|---|---|

**Material properties:**

Reinforcement: B500B

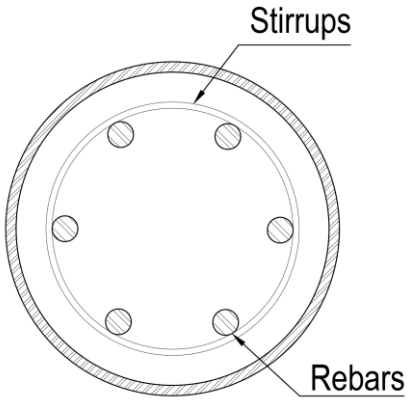
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



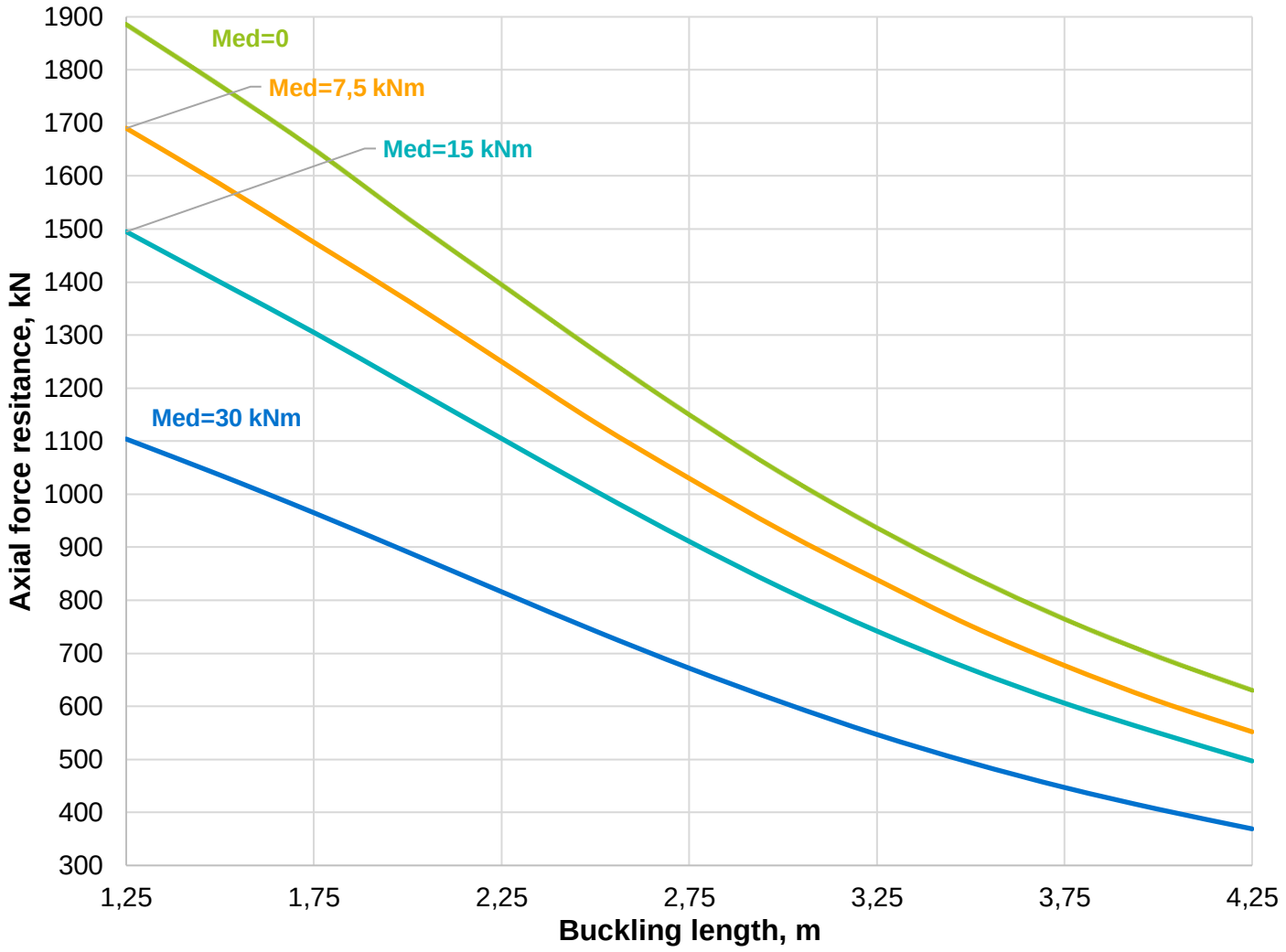




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 323,9 |
|---|---|

**Material properties:**

Reinforcement: B500B

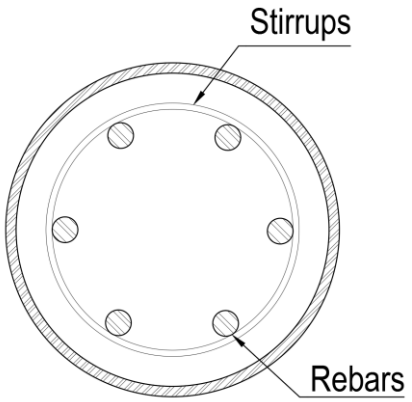
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



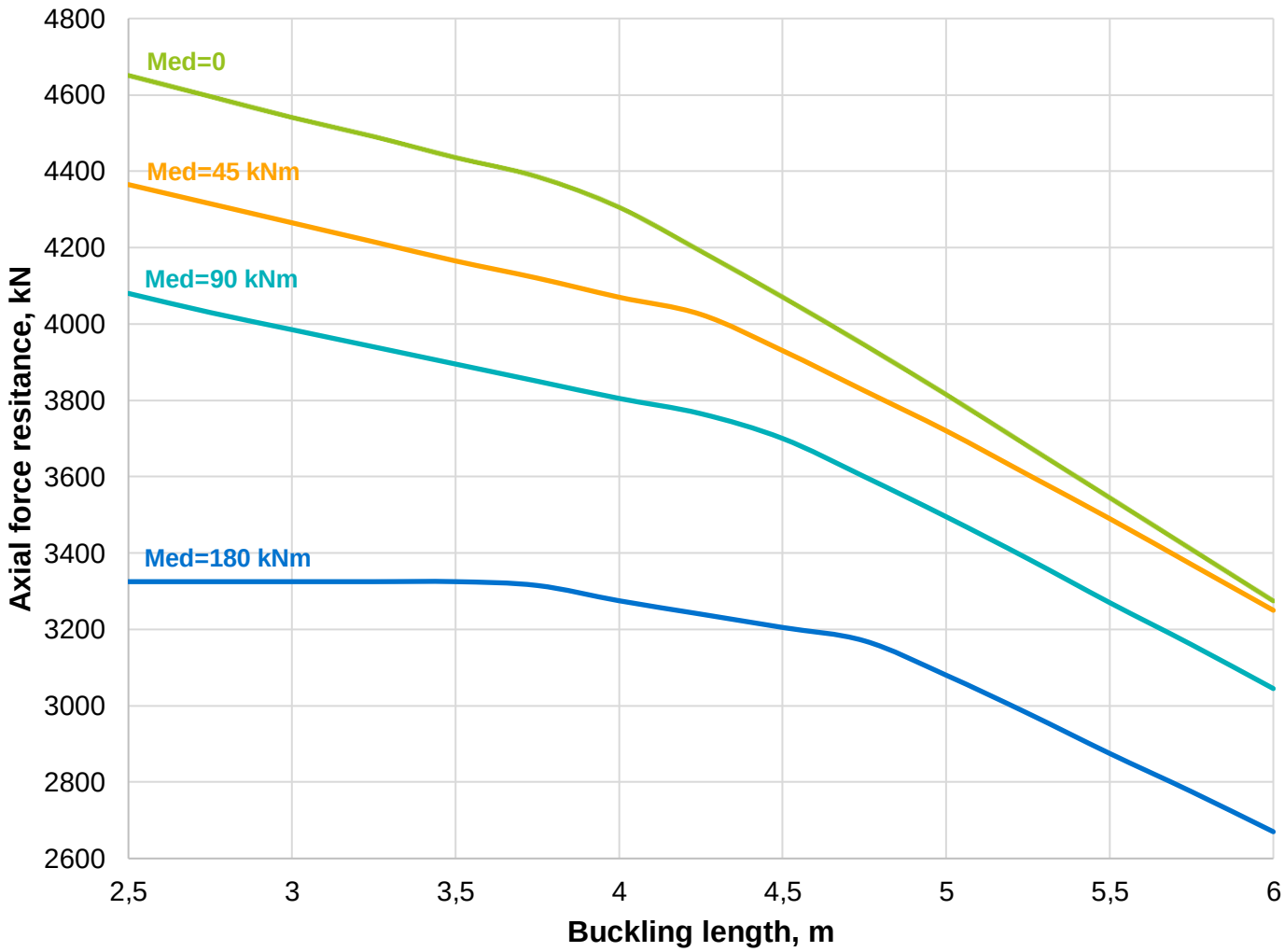




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 323,9 |
|---|---|

**Material properties:**

Reinforcement: B500B

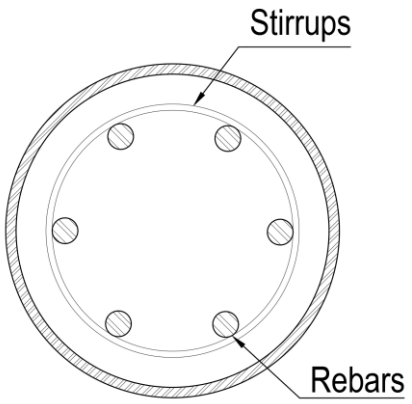
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



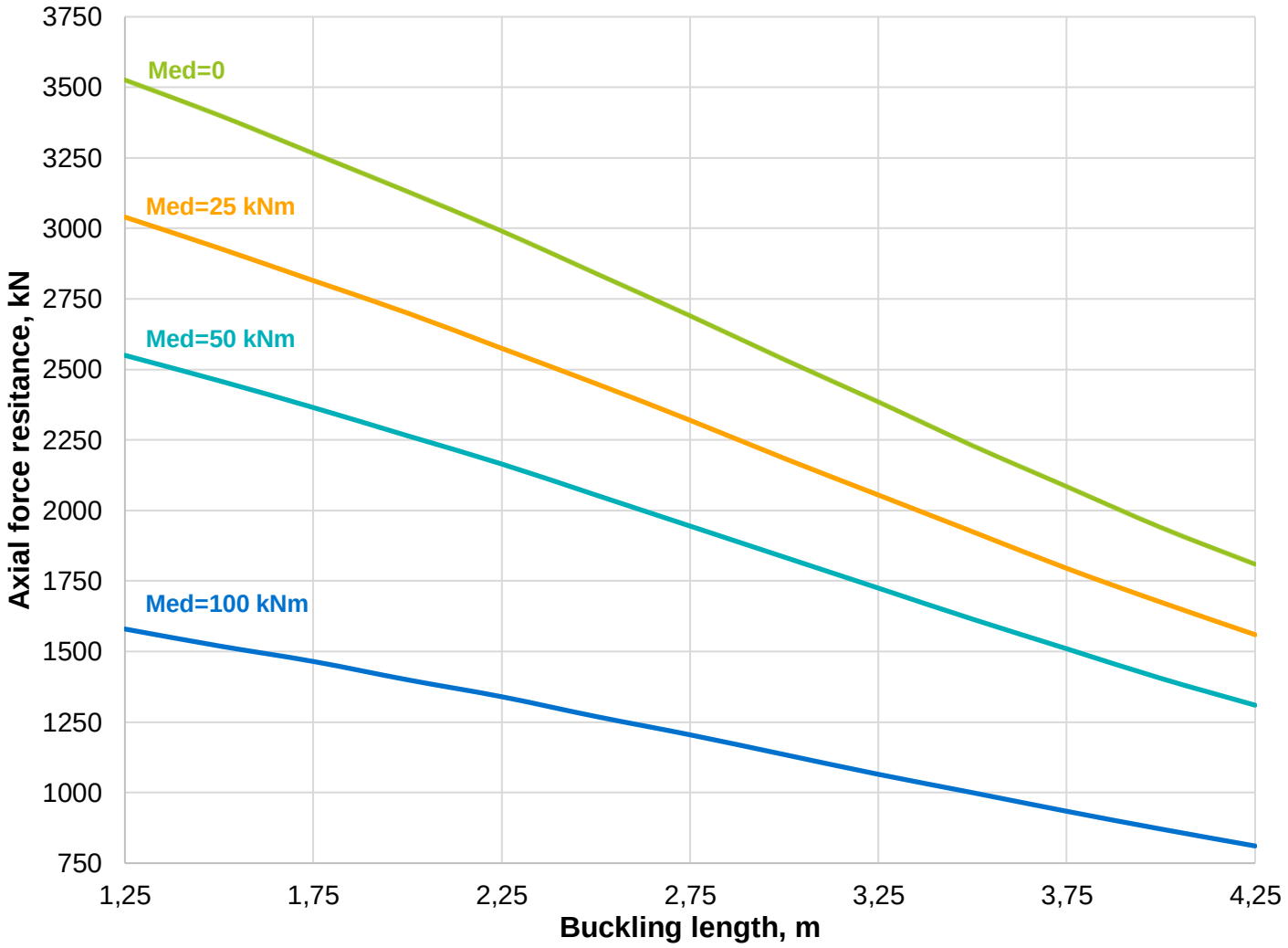




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 323,9 |
|---|---|

**Material properties:**

Reinforcement: B500B

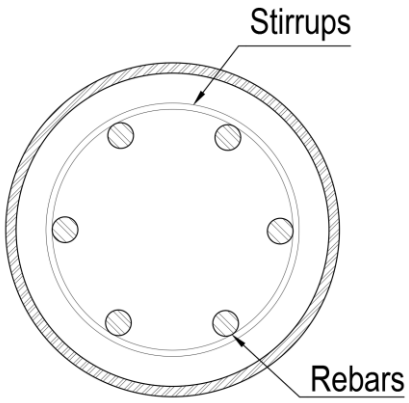
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



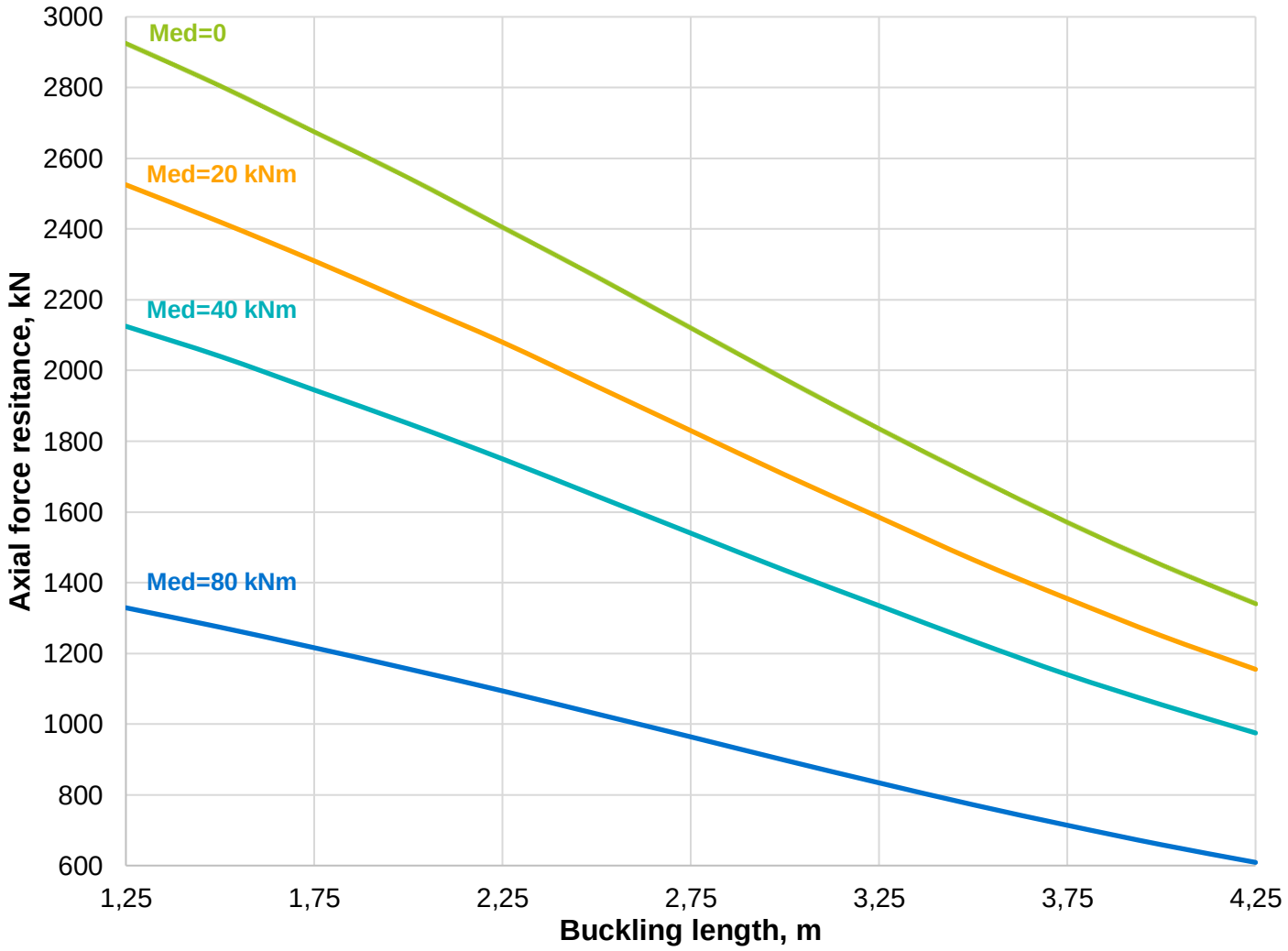




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 355,6 |
|---|---|

**Material properties:**

Reinforcement: B500B

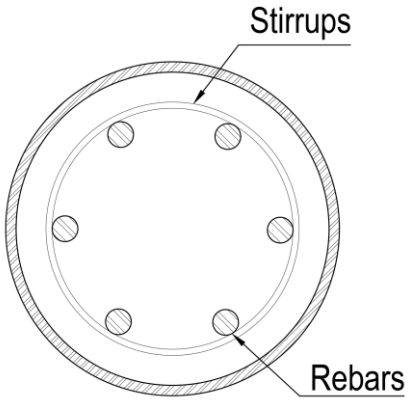
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



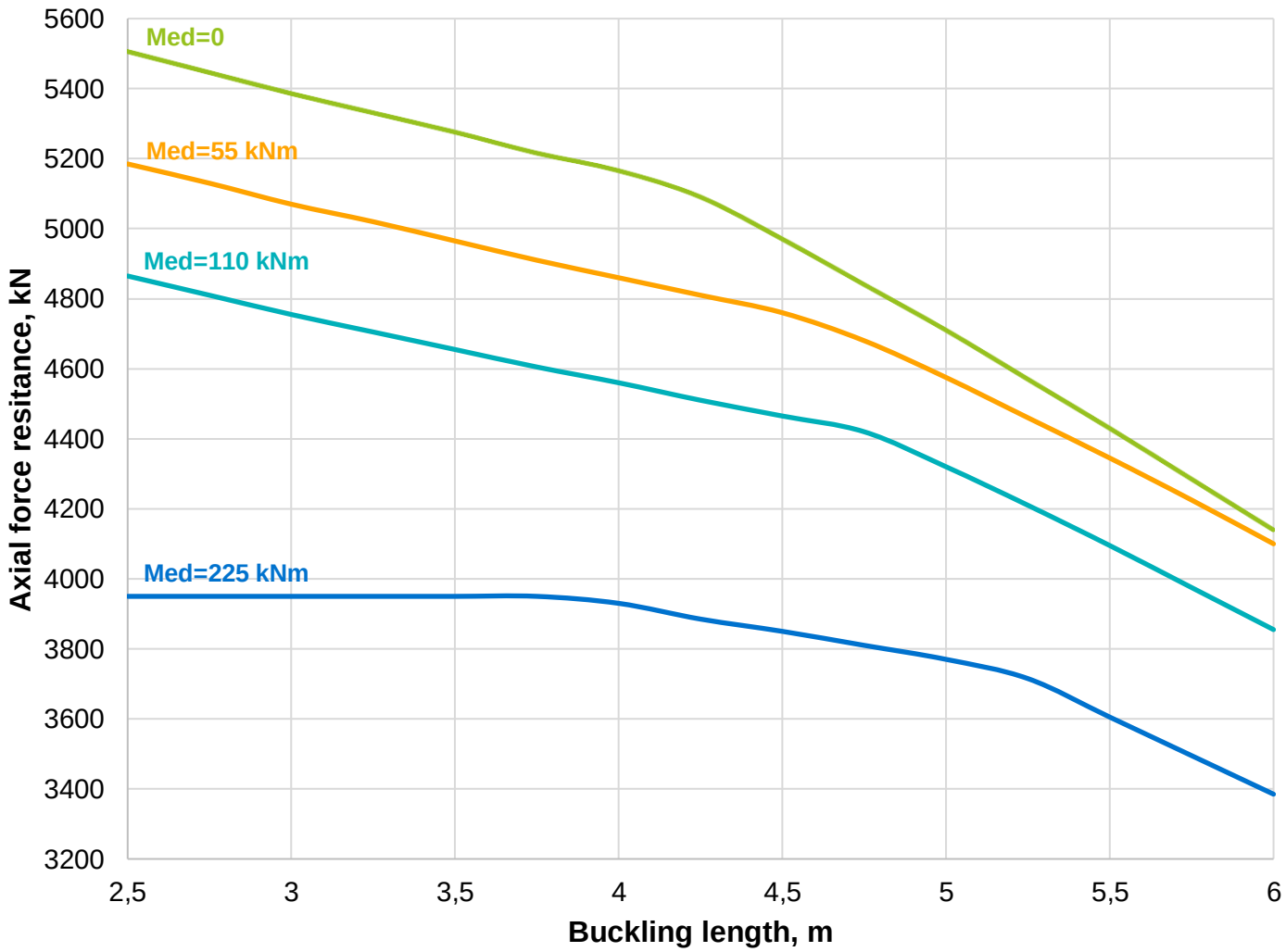




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 355,6 |
|---|---|

**Material properties:**

Reinforcement: B500B

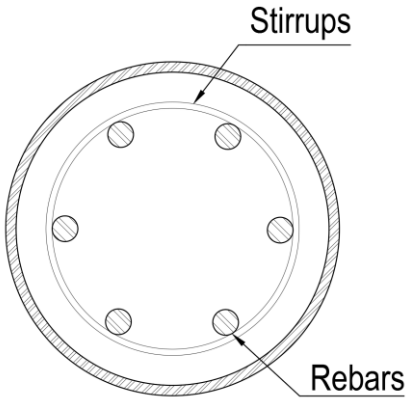
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



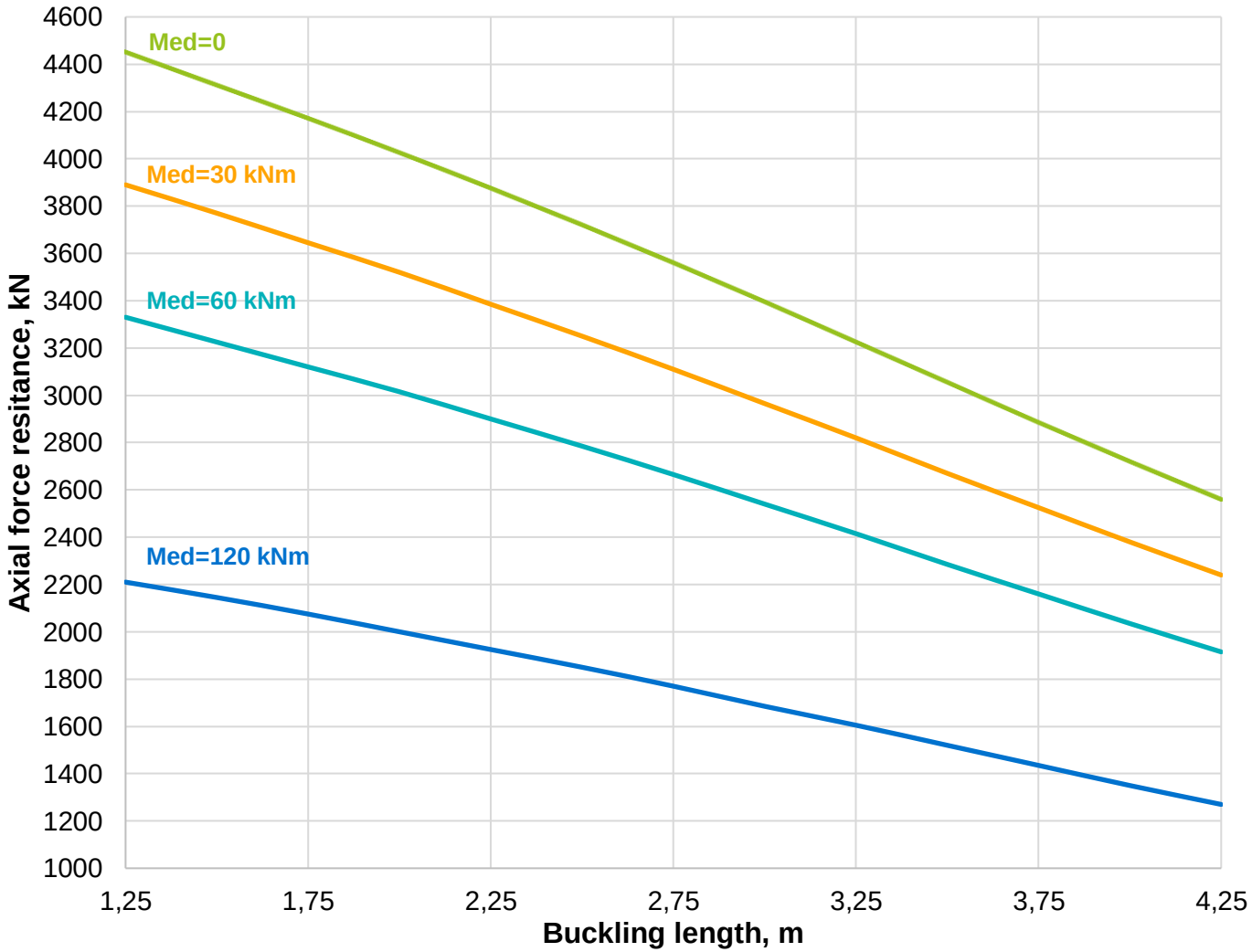




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 355,6 |
|---|---|

**Material properties:**

Reinforcement: B500B

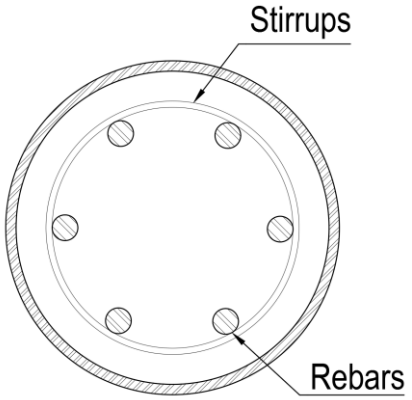
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



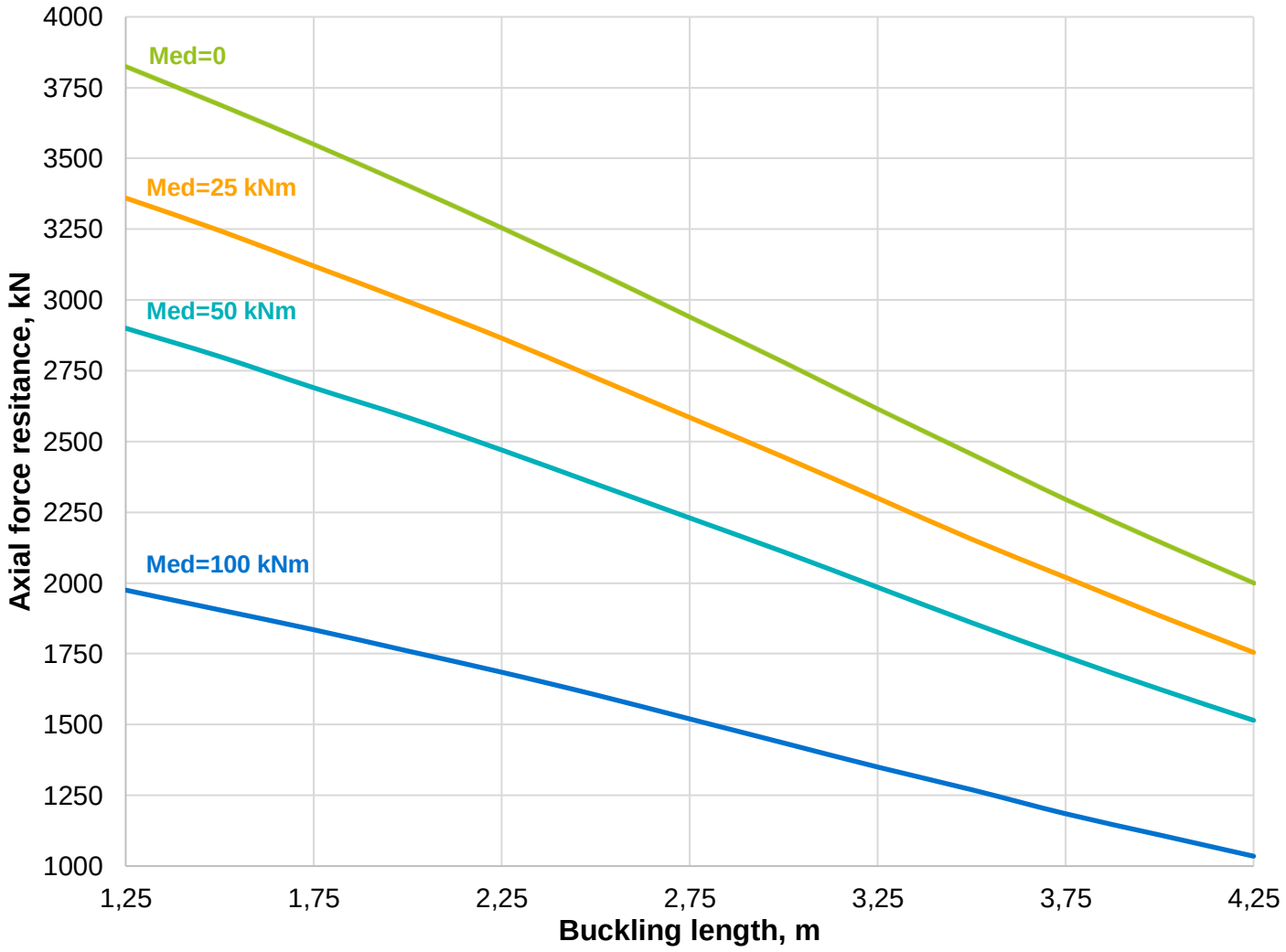




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 406,4 |
|---|---|

**Material properties:**

Reinforcement: B500B

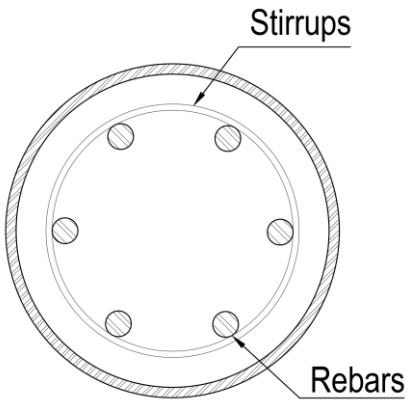
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



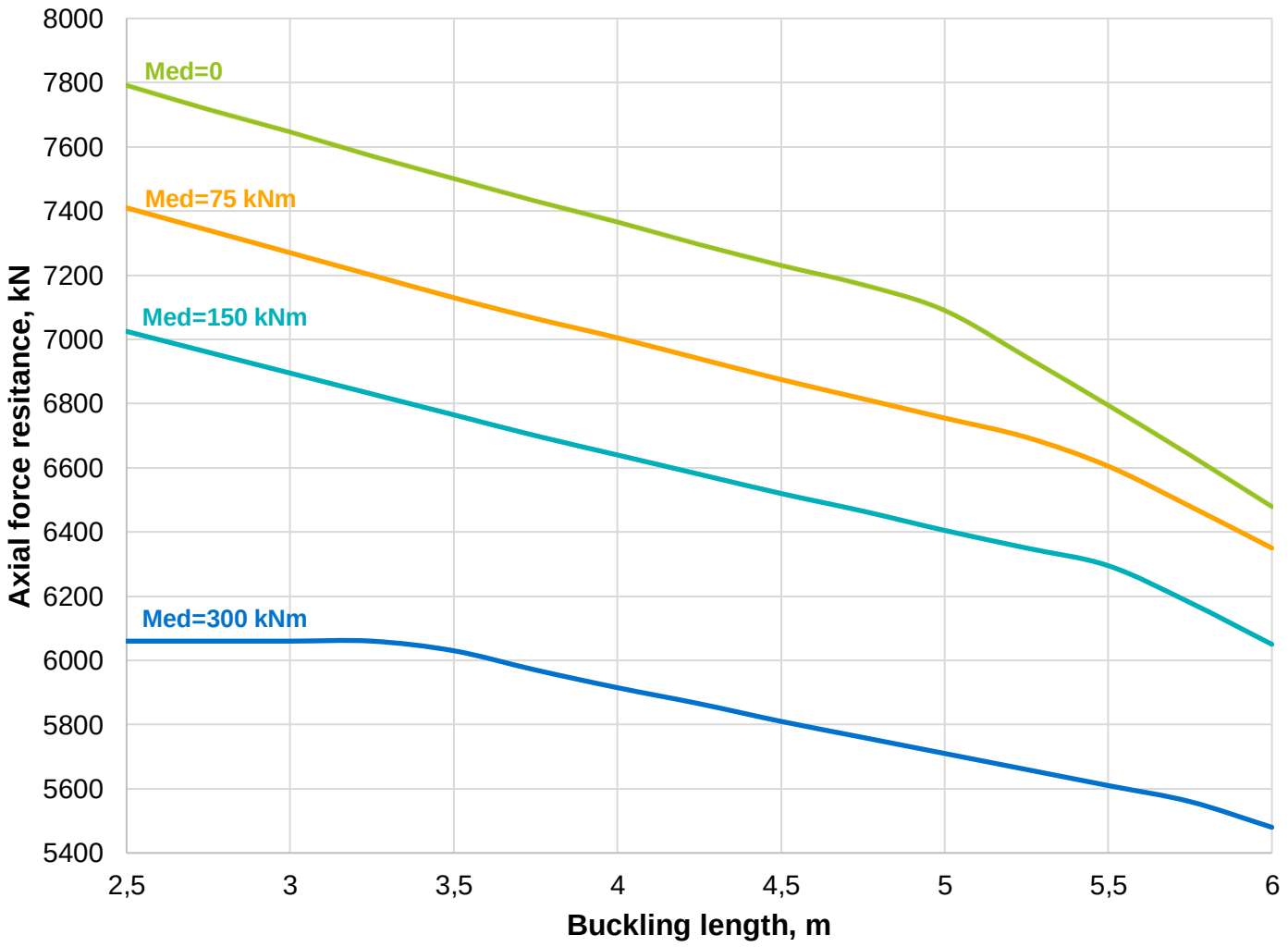




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 406,4 |
|---|---|

**Material properties:**

Reinforcement: B500B

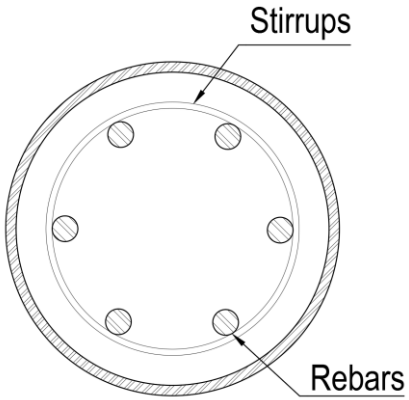
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



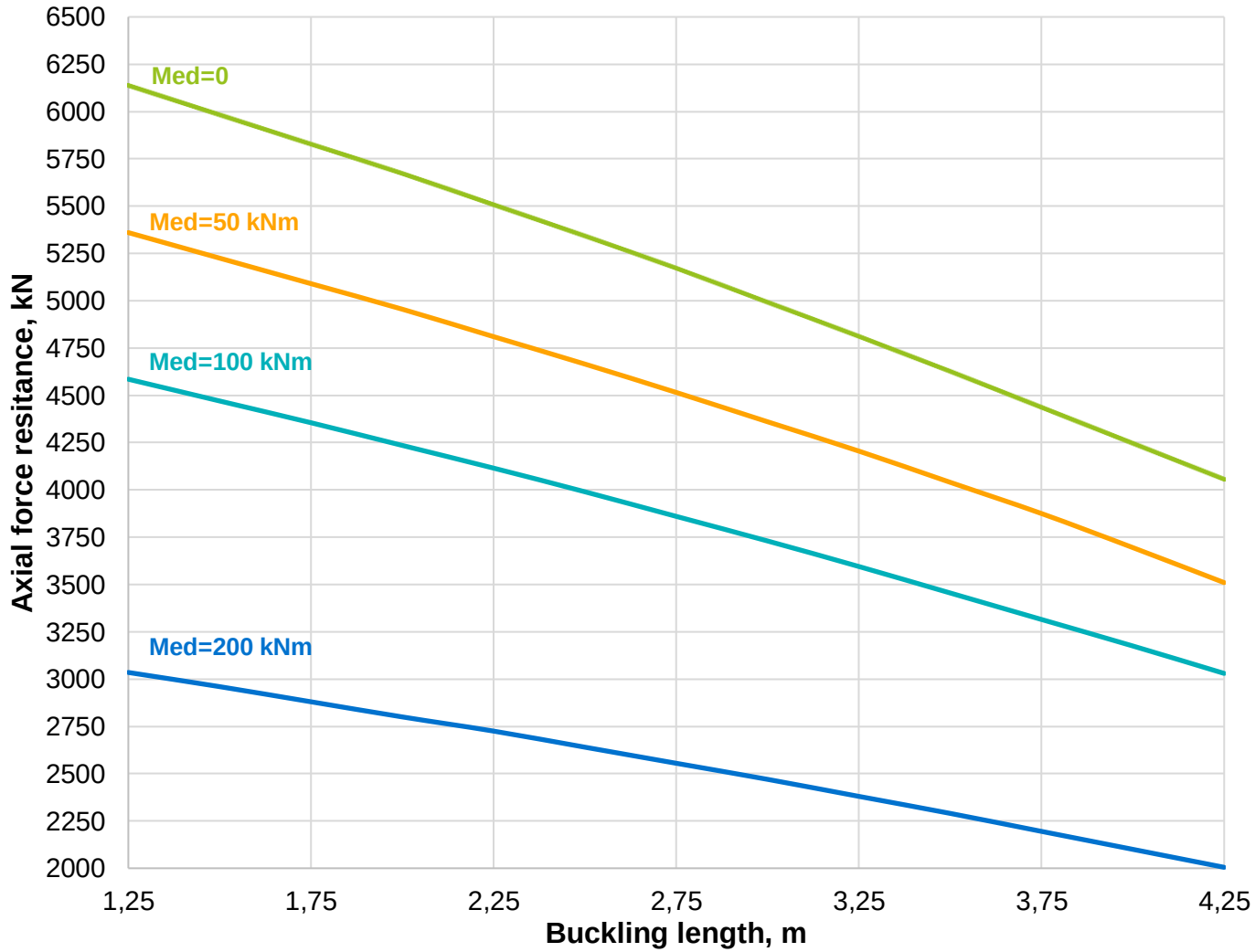




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 406,4 |
|---|---|

**Material properties:**

Reinforcement: B500B

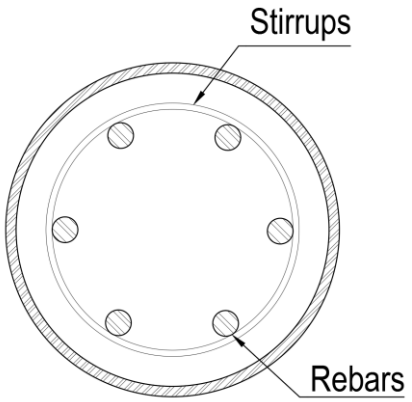
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



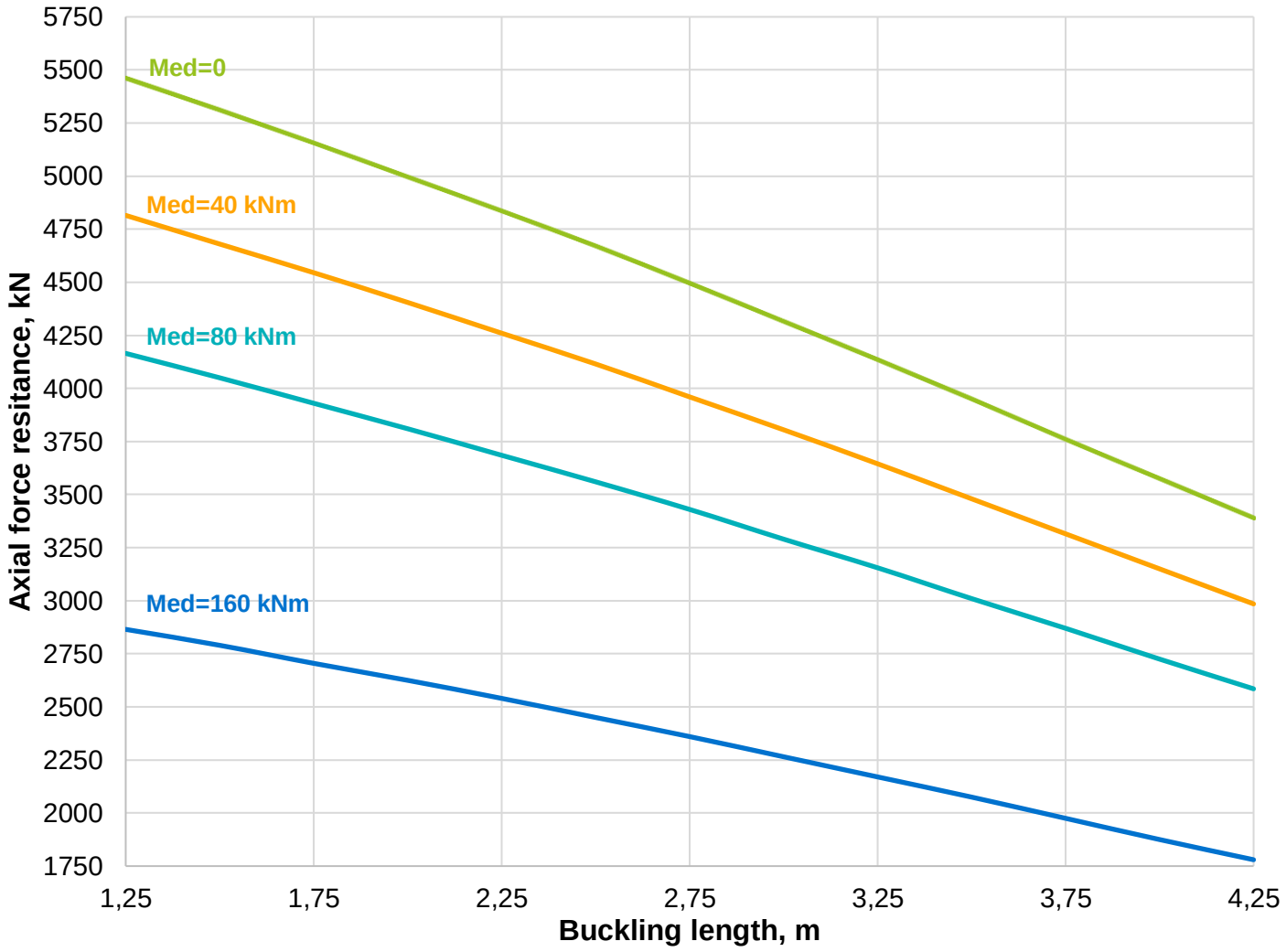




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 457 |
|---|---|

**Material properties:**

Reinforcement: B500B

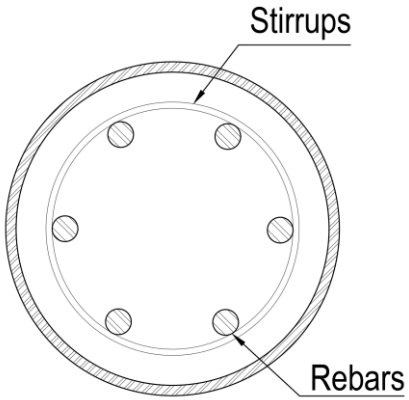
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



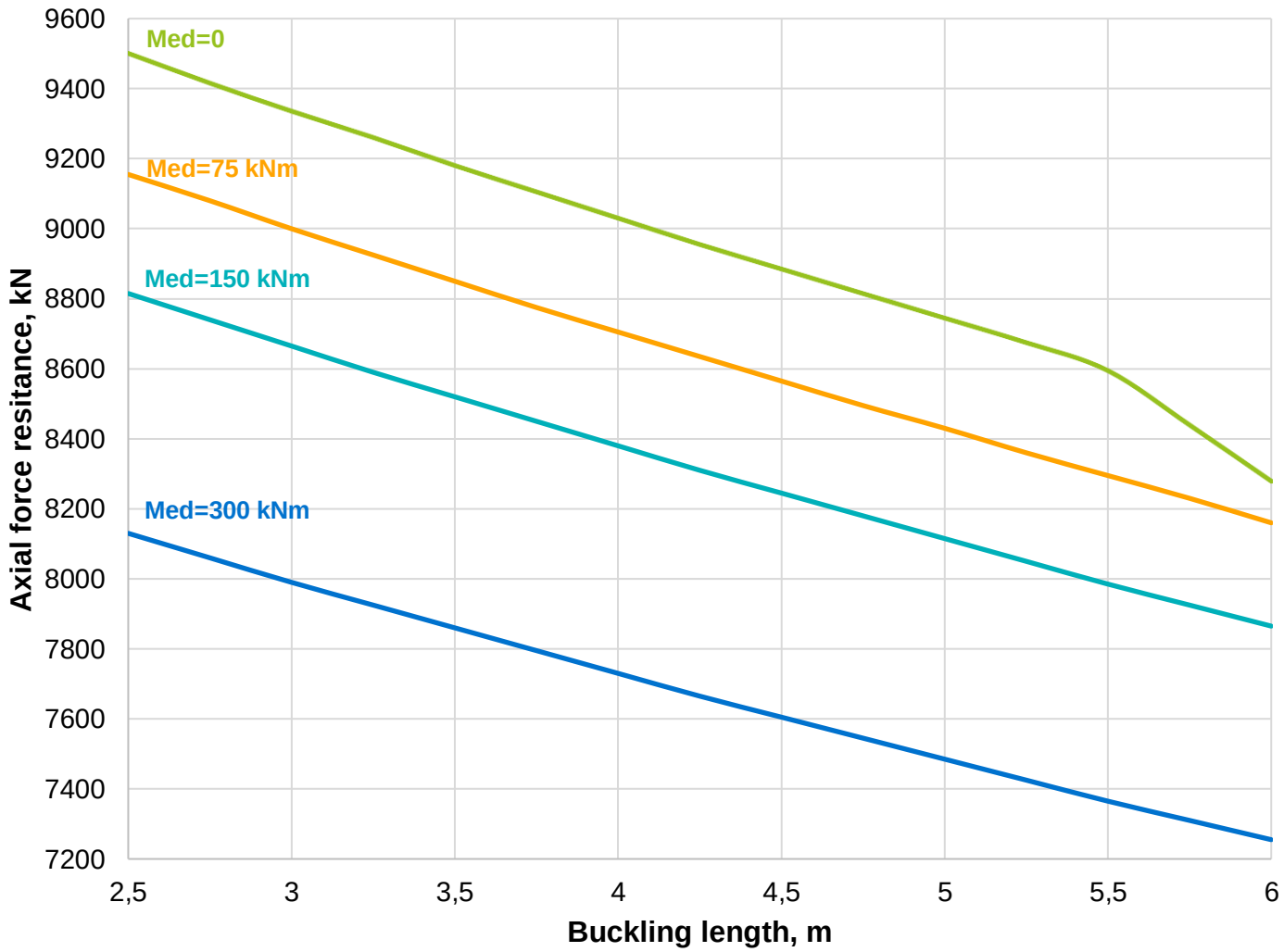




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 457 |
|---|---|

**Material properties:**

Reinforcement: B500B

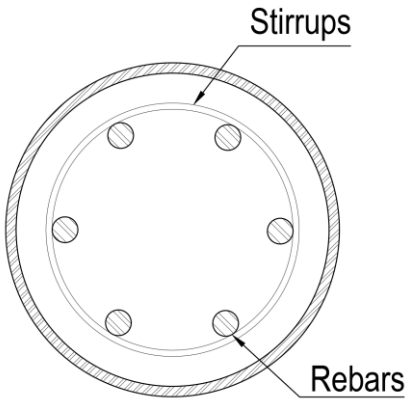
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



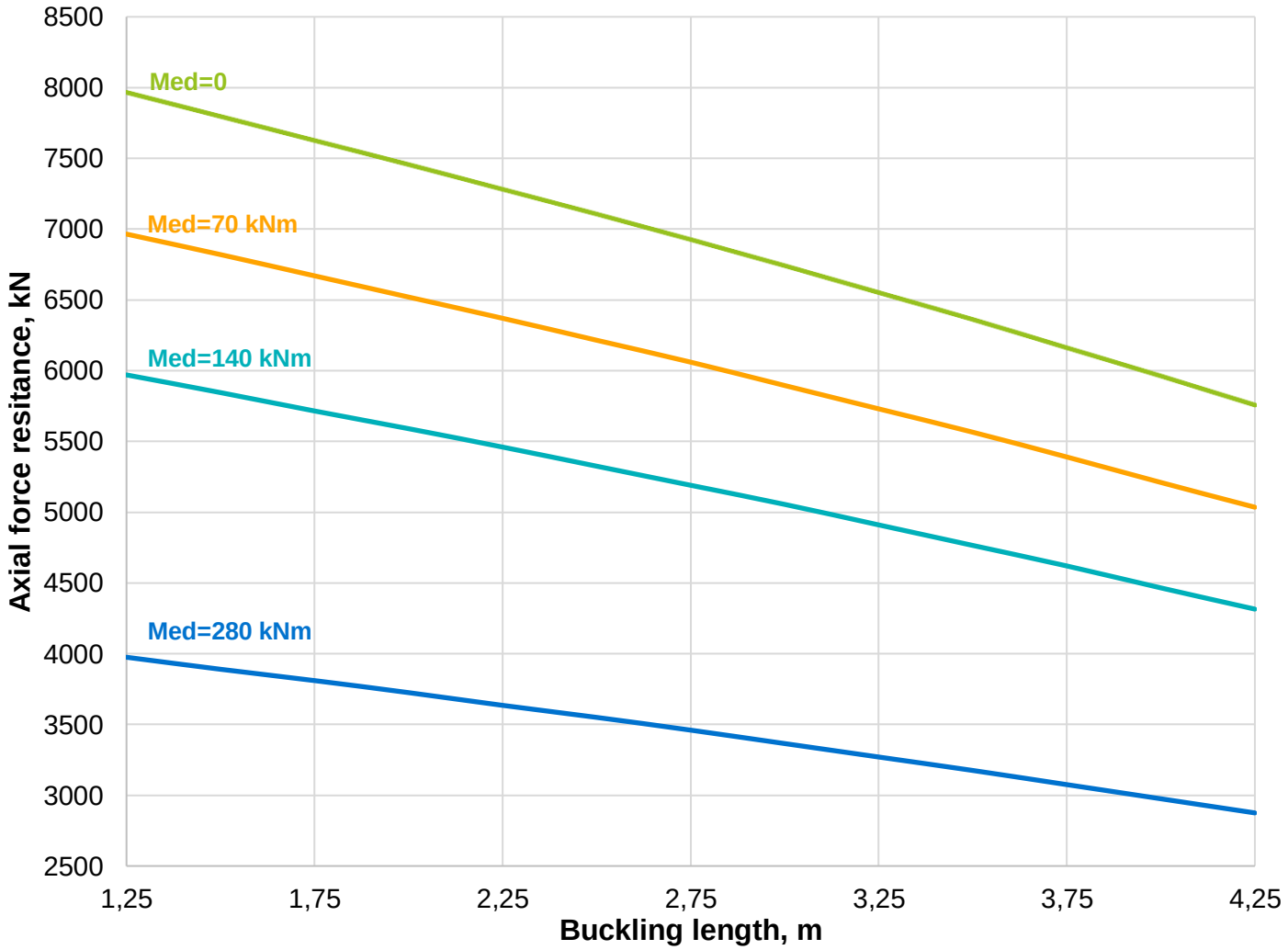




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 457 |
|---|---|

**Material properties:**

Reinforcement: B500B

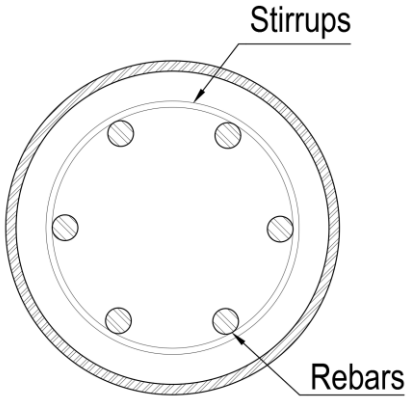
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



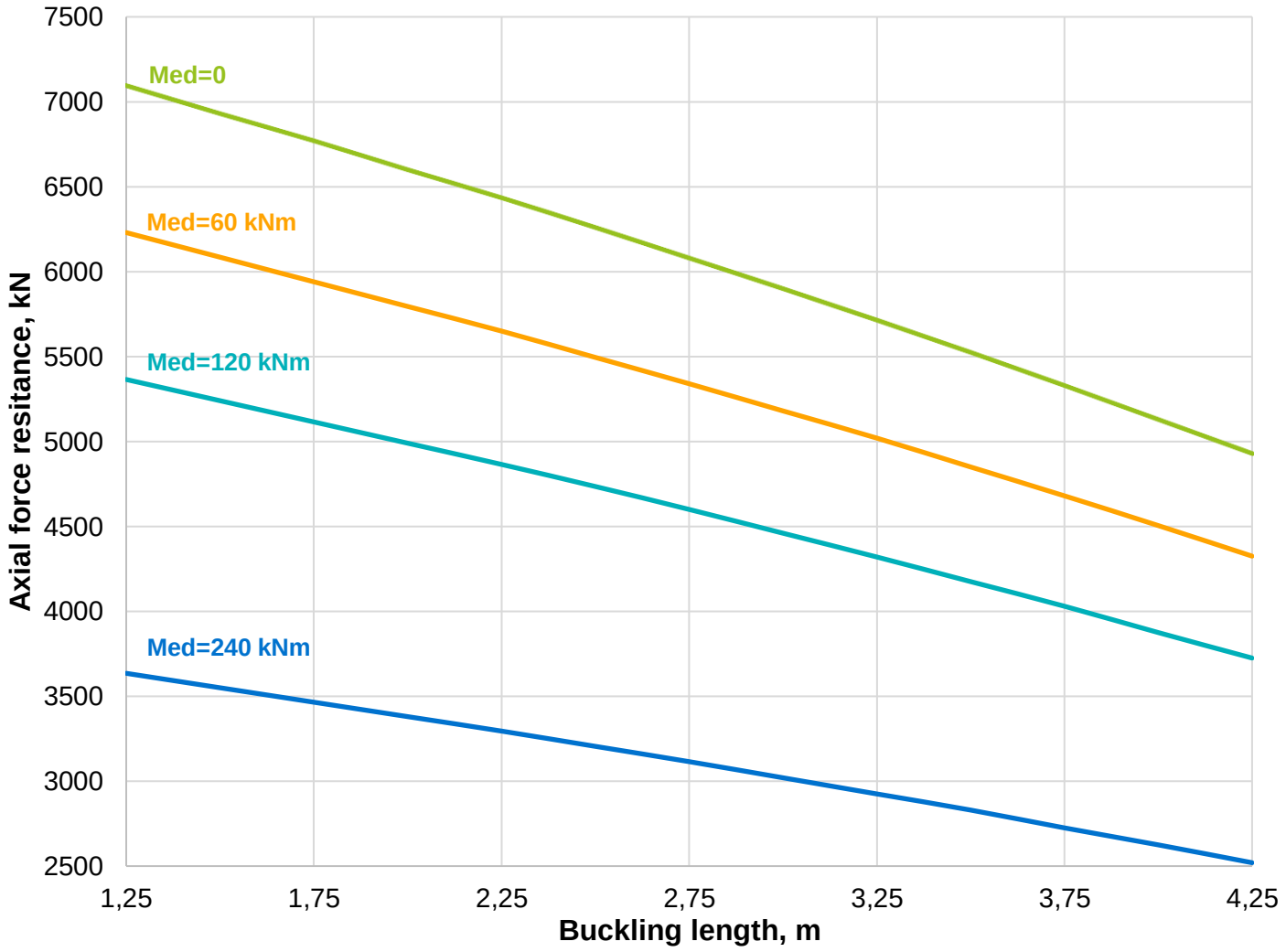




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 508 |
|---|---|

**Material properties:**

Reinforcement: B500B

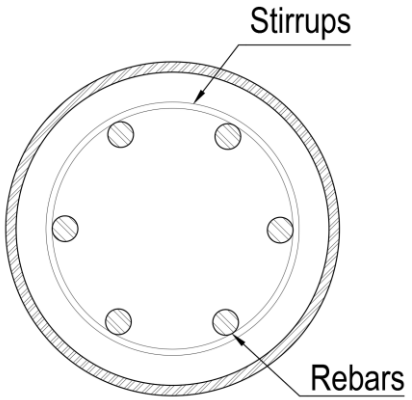
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



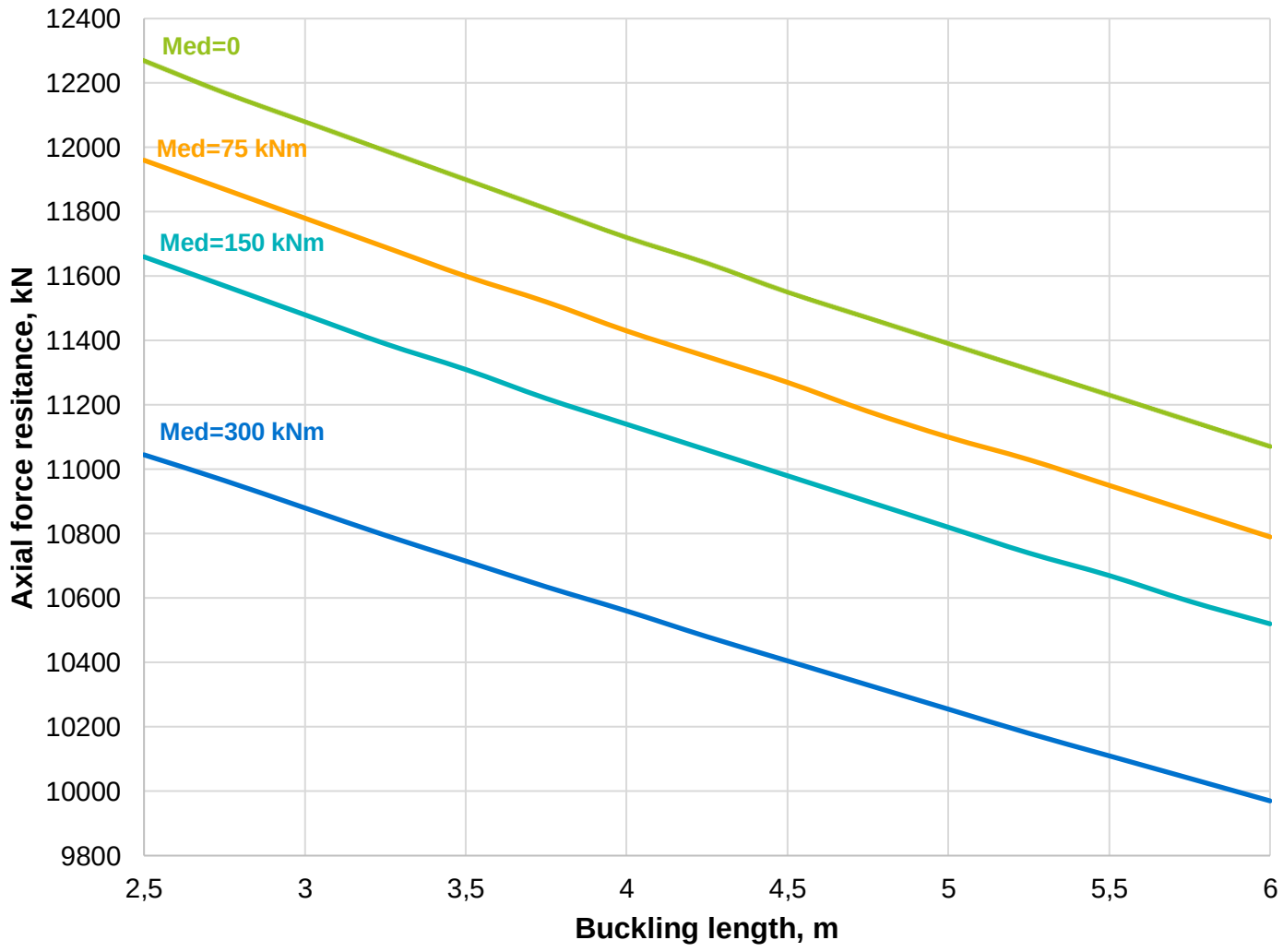




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 508 |
|---|---|

**Material properties:**

Reinforcement: B500B

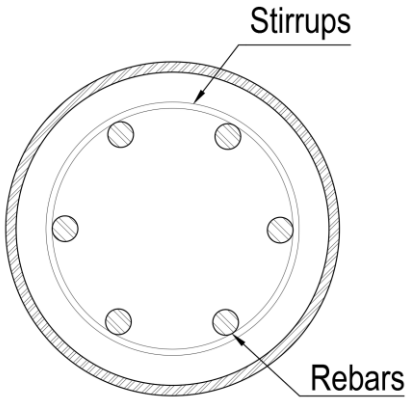
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



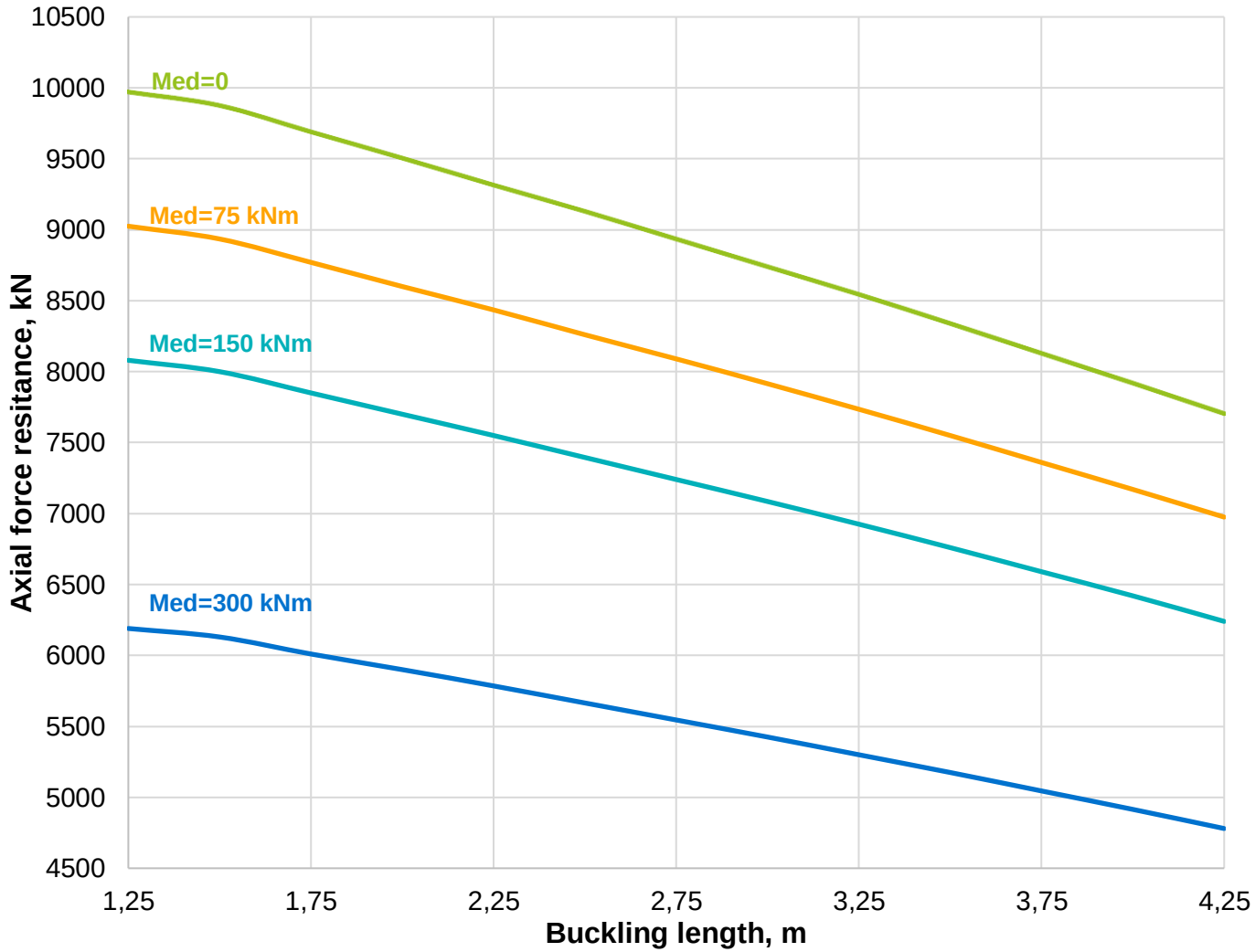




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 508 |
|---|---|

**Material properties:**

Reinforcement: B500B

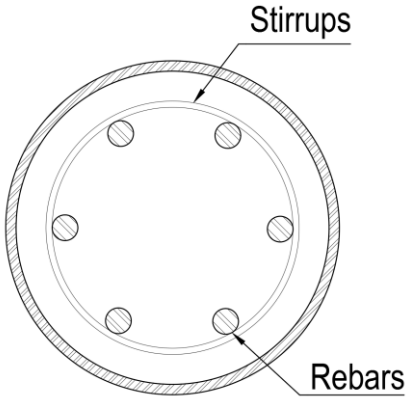
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



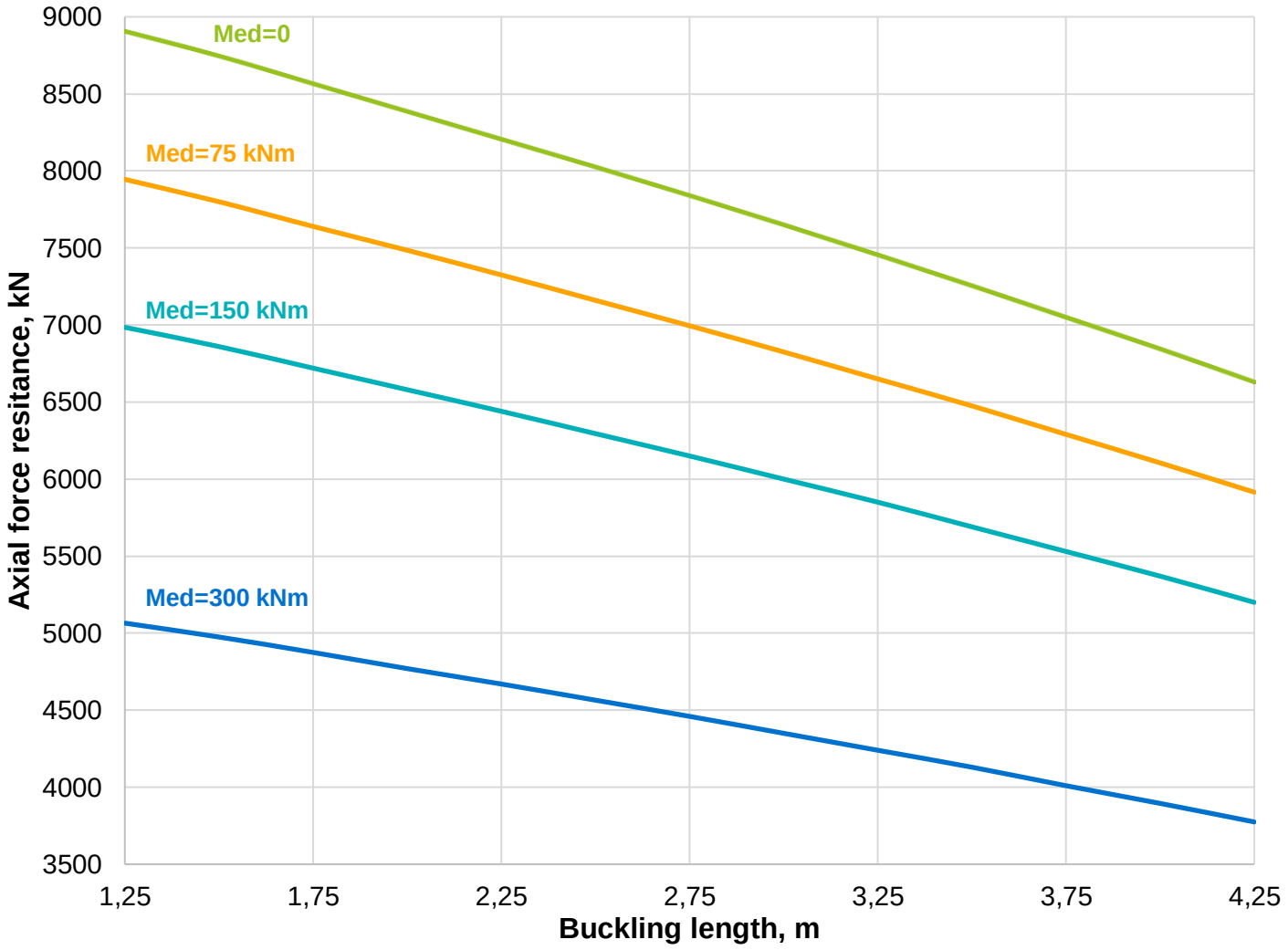




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

| ULS | CHS 610 |
|---|---|

**Material properties:**

Reinforcement: B500B

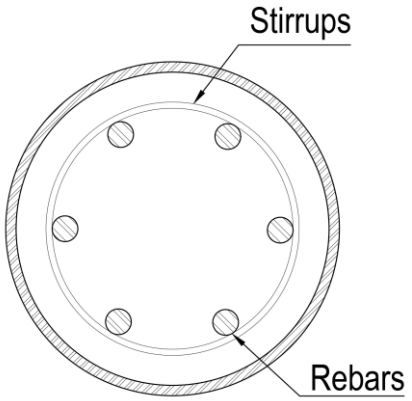
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



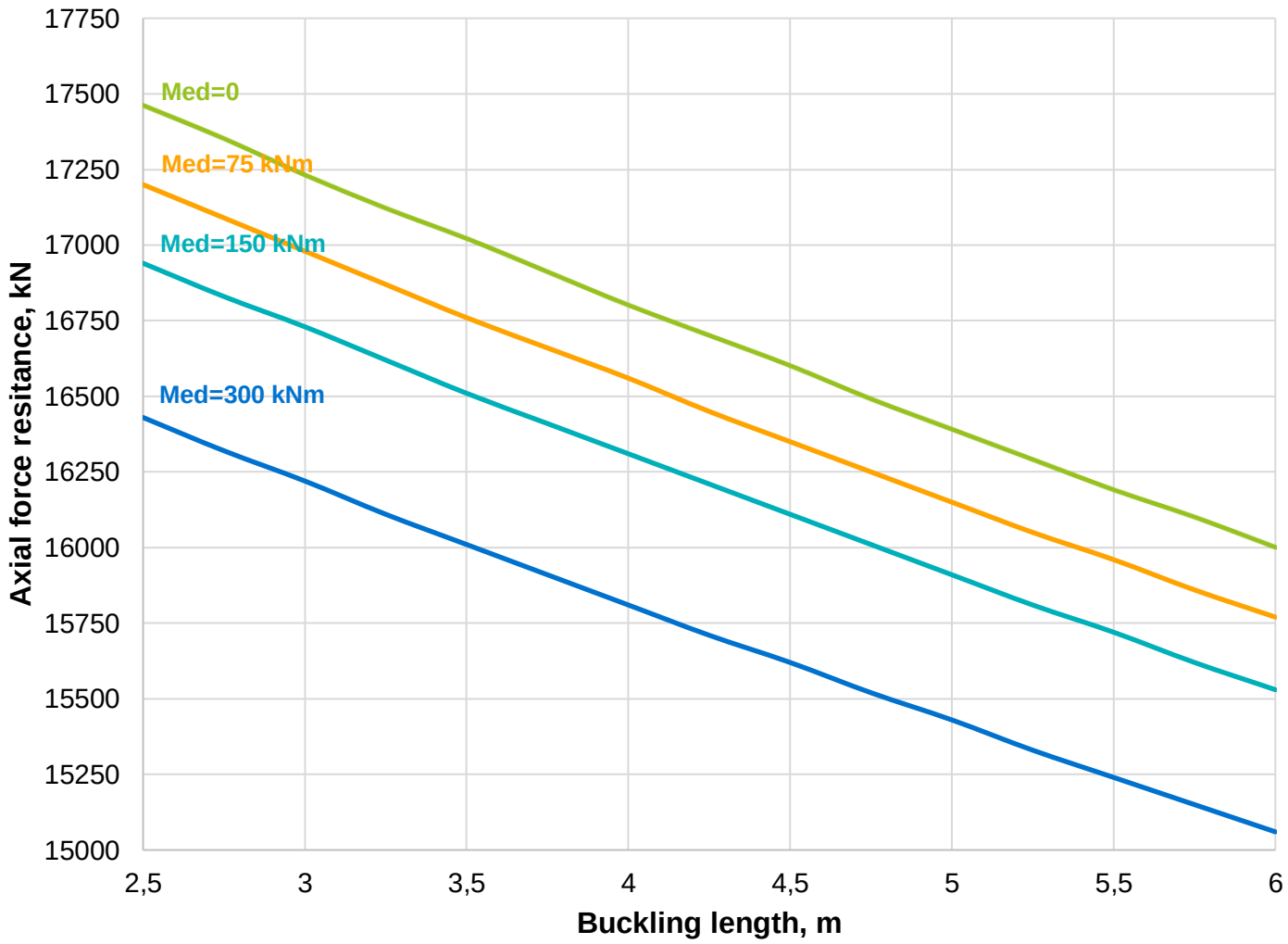




**Fig. X.** Axial force resistance - buckling length relation under ULS

| R60 | CHS 610 |
|---|---|

**Material properties:**

Reinforcement: B500B

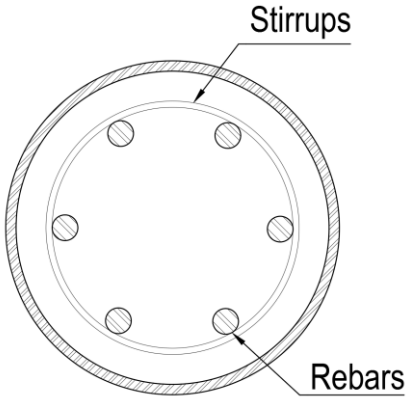
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



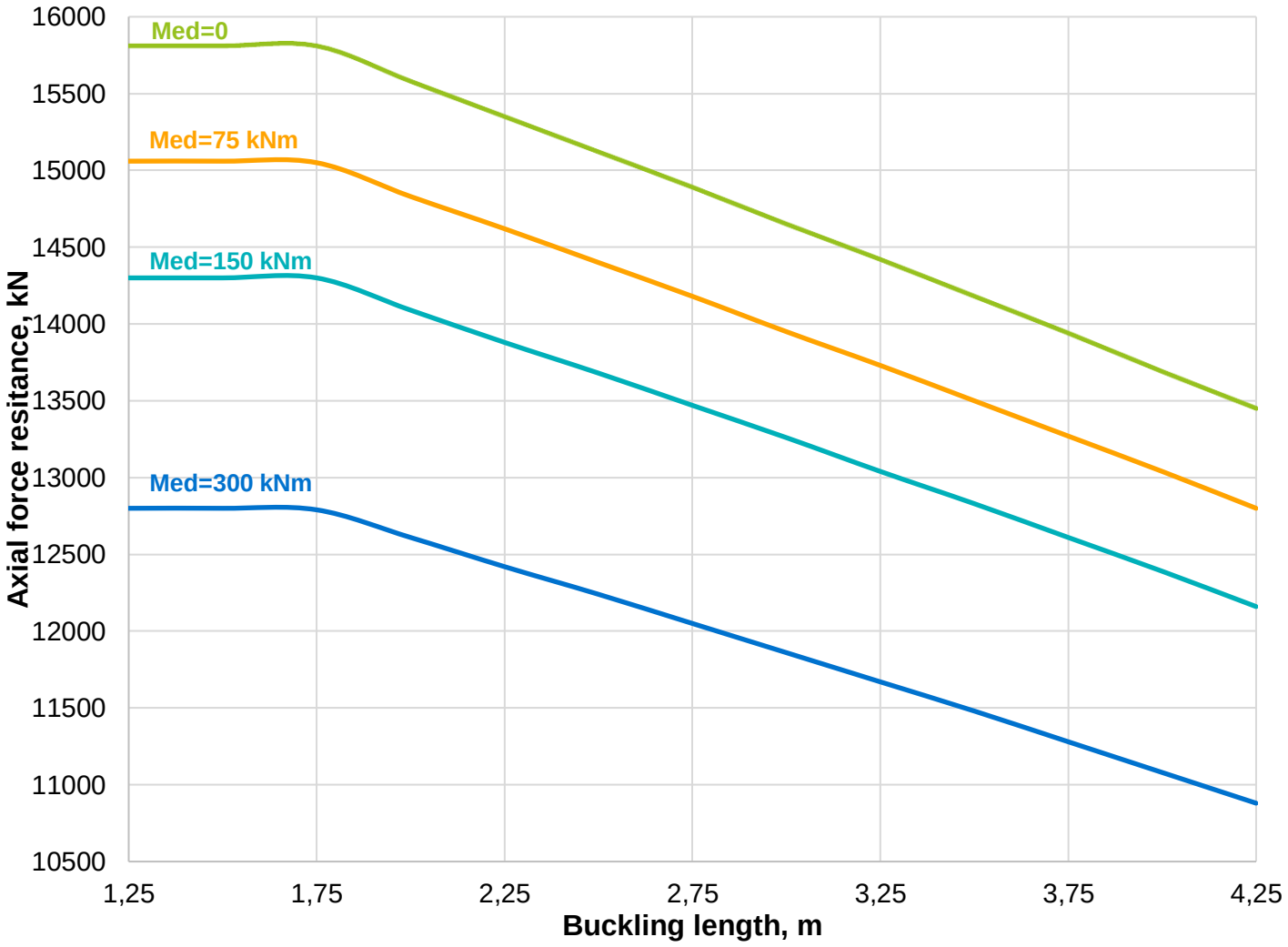




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R60)

| R120 | CHS 610 |
|---|---|

**Material properties:**

Reinforcement: B500B

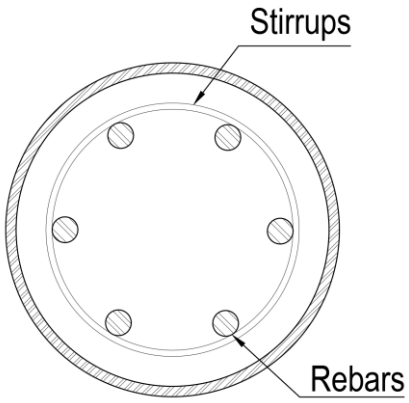
Concrete: C30/37

Tube profile: S355

**Notes:**

1.

2.



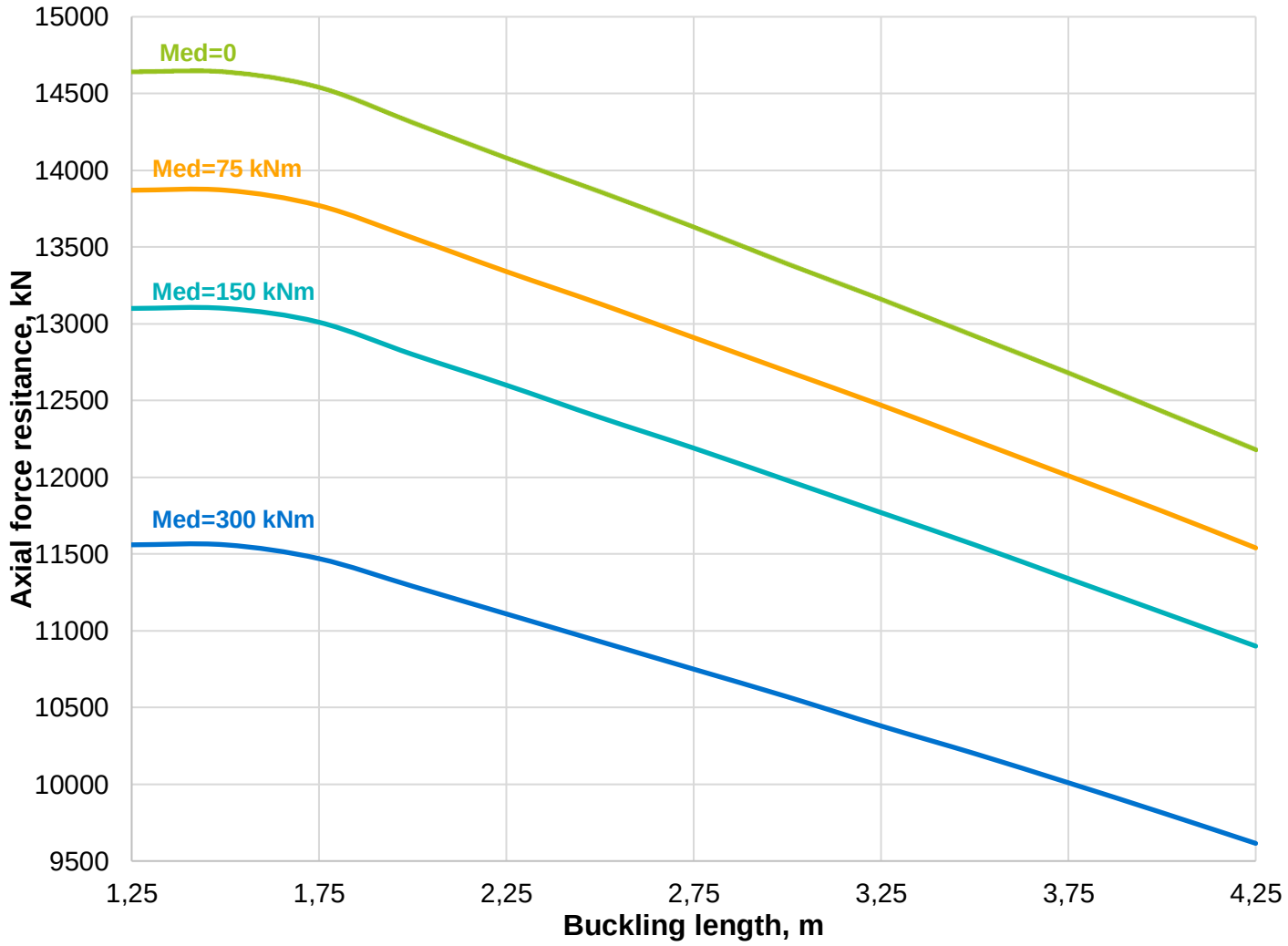




**Fig. X.** Axial force resistance - buckling length relation under fire conditions (R120)

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