



Product Description

Chemfix CH+ Low Odour Resin is a high performance, rapid curing two part chemical anchoring system based on a high reactivity Vinylester. Applied in one single action this resin will produce a strong, chemical resistant fixing.

Key Features

- European Technical Approval (Option 7).
- High Load & Critical Loads (overhead applications).
- Guaranteed 50 years working life of anchor.
- Suitable for Underwater Applications
- High Chemical Resistance

Approvals



Tested by:



Available Sizes

380ml / 400ml / 410ml 10:1 Co-axial Cartridge
 825ml 10:1 Side by Side Cartridge
 330ml / 345ml / 350ml 10:1 Side by Side Cartridge
 280ml / 300ml / 410ml 10:1 Foil Bag
 150ml / 165ml / 170ml 10:1 Foil Bag

IMPORTANT NOTE: Performance based on clean holes; HAMMER DRILLED - blown and then brushed with a stiff metal brush & blown again.

| |
|---|
| CE 0679 |
| Chemfix Products Ltd |
| 12 |
|   |
| 0679-CPD-0746 |
| Chemfix Products Ltd |
| ETA-12/0024 |
| ETAG 01-05 Option 7 |
| M8 - M24 / rebar Ø 8 to 25mm |
| European Technical Approval - Option 7 for non-cracked concrete |

Typical Gel and Curing Time*

*Figures are based on M12 fixings. Full cure is achieved after 24 hours. All specifications are based on use of a Chemfix T-Flow™ Mixer.

| BASE MATERIAL TEMPERATURE (°C) | 35 | 25 | 15 | 5 | -5** | -10** |
|--------------------------------|----|----|----|----|------|-------|
| TYPICAL GEL TIME (mins) | 3 | 6 | 7 | 20 | 50 | 60 |
| MIN. LOAD TIME (mins) | 20 | 20 | 20 | 30 | 90 | 180 |

**Resin temperature must be at least 20°C

Typical Tensile (kN) Performance Data at Standard Embedment Depth

| Size | 5.8 Grade Steel Studding | | | A4-70 Grade Steel Studding | | | High Bond Reinforcing bars fyk=500N/mm ² | | | | |
|------|--|--------------------------------------|--------------------------------------|--|--------------------------------------|--------------------------------------|---|-----------------------|------------------|------------------|------------------|
| | Characteristic Resistance (N _{rk}) | Design Resistance (N _{rd}) | Recommended Load (N _{rec}) | Characteristic Resistance (N _{rk}) | Design Resistance (N _{rd}) | Recommended Load (N _{rec}) | Rebar Size (mm) | h _{nom} (mm) | Steel Yield Load | Design Bond Load | Recommended Load |
| M8 | 19.0 | 12.6 | 9.0 | 25.6 | 13.7 | 9.8 | 8 | 80 | 21.9 | 11.7 | 8.3 |
| M10 | 30.2 | 20.1 | 14.3 | 33.8 | 21.7 | 15.5 | 10 | 90 | 34.1 | 15.6 | 11.1 |
| M12 | 43.8 | 29.2 | 20.8 | 46.8 | 31.2 | 22.3 | 12 | 110 | 49.2 | 21.6 | 15.4 |
| M16 | 67.8 | 45.2 | 32.3 | 67.8 | 45.2 | 32.3 | 14 | 125 | 66.9 | 26.4 | 18.9 |
| M20 | 104.1 | 69.4 | 49.5 | 104.1 | 69.4 | 49.5 | 16 | 125 | 87.4 | 27.6 | 19.7 |
| M24 | 133.5 | 88.6 | 63.3 | 133.5 | 88.6 | 63.3 | 20 | 170 | 136.6 | 38.5 | 27.5 |
| M30 | 182.0 | 121.3 | 86.7 | 182.0 | 121.3 | 86.7 | 25 | 210 | 213.4 | 59.4 | 42.4 |
| | | | | | | | 32 | 300 | 349.7 | 99.5 | 71.1 |
| | | | | | | | 40 | 360 | 546.3 | 149.3 | 106.6 |

Typical Ultimate Physical Properties

| | N/mm ² | TEST METHOD | STORAGE / SHELF LIFE | IMPORTANT |
|----------------------|-------------------|---------------------------|---|--|
| COMPRESSIVE STRENGTH | 86.30 | (EN ISO 604) / (ASTM 695) | This product should be stored between +5°C & +25°C. Avoid Direct Sunlight The Shelf life of the product is 12 months from the manufacture date. | The information and data given is based on our own experience, research and testing and is believed to be reliable and accurate. However, as Chemfix Products cannot know the varied uses to which its products may be applied, or the methods of application used, no warranty as to the fitness or suitability of its products is given or implied. It is the users responsibility to determine suitability of use. For further information please contact our Technical Department. |
| FLEXURAL STRENGTH | 29.47 | (EN ISO 178) / (ASTM 795) | | |
| FLEXURAL MODULUS | 3852 | " | | |
| TENSILE STRENGTH | 13.84 | (EN ISO 527) / (ASTM 638) | | |
| E MODULUS | 10560 | " | | |



Performance Data for Various Stud Strengths, and Rebar

Concrete Strength Class: C20/25 (25N/mm² Cylinder; 30N/mm² 150mm cube).

IMPORTANT NOTE:

Performance based on clean holes;

HAMMER DRILLED - Blown and then brushed with a stiff metal brush & blown again.

5.8 Grade Studding

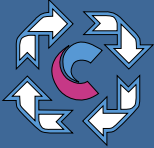
| Stud Diameter | Hole Diameter (mm) | Design Resistance (N _{rd}) | | | | | | | | | | | | | | | | | | Fd,s | | | | |
|---------------|--------------------|--------------------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|------------------|------------------|------|------|-------|
| | | (kN) | | | | | | | | | | | | | | | | | | hef failure (mm) | design load (kN) | | | |
| M8 | 10 | 12.7 | | | | | | | | | | | | | | | | | | 60 | 12.7 | | | |
| M10 | 12 | | 20.1 | | | | | | | | | | | | | | | | | = Steel Failure | 80 | 20.1 | | |
| M12 | 14 | | | 29.2 | | | | | | | | | | | | | | | | | 103 | 29.2 | | |
| M16 | 18 | | | | 43.3 | 46.9 | 50.5 | 54.1 | 54.4 | | | | | | | | | | | | 151 | 54.4 | | |
| Depth (mm) | | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | | | | |
| M20 | 24 | 69.4 | 73.5 | 77.6 | 81.7 | 84.9 | | | | | | | | | | | | | | | | 208 | 84.9 | |
| M24 | 28 | | | | 84.5 | 92.9 | 101.3 | 109.8 | 118.2 | 122.4 | | | | | | | | | | | | | 290 | 122.4 |
| M30 | 40 | | | | | | | | 121.4 | 130.1 | 151.8 | 173.4 | 195.1 | 216.8 | 238.5 | 260.2 | 278.9 | | | | | | 643 | 278.9 |
| Depth (mm) | | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 800 | 900 | 1000 | | | | |

8.8 Grade Studding

| Stud Diameter | Hole Diameter (mm) | Design Resistance (N _{rd}) | | | | | | | | | | | | | | | | | | Fd,s | | | | |
|---------------|--------------------|--------------------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|------------------|------------------|------|-------|-------|
| | | (kN) | | | | | | | | | | | | | | | | | | hef failure (mm) | design load (kN) | | | |
| M8 | 10 | 16.9 | 19.0 | 19.5 | | | | | | | | | | | | | | | | 93 | 19.5 | | | |
| M10 | 12 | | 22.5 | 25.0 | 27.5 | 30.1 | 30.9 | | | | | | | | | | | | | = Steel Failure | 124 | 30.9 | | |
| M12 | 14 | | | | 31.4 | 34.2 | 37.1 | 39.9 | 42.8 | 45.0 | | | | | | | | | | | 158 | 45.0 | | |
| M16 | 18 | | | | 43.3 | 46.9 | 50.5 | 54.1 | 57.7 | 61.3 | 64.9 | 68.5 | 72.1 | 79.3 | 83.7 | | | | | | | 232 | 83.7 | |
| Depth (mm) | | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | | | | |
| M20 | 24 | 69.4 | 73.5 | 77.6 | 81.7 | 89.9 | 98.0 | 106.2 | 114.4 | 122.5 | 130.7 | | | | | | | | | | | 320 | 130.7 | |
| M24 | 28 | | | | 84.5 | 92.9 | 101.3 | 109.8 | 118.2 | 126.7 | 147.8 | 168.9 | 188.3 | | | | | | | | | | 446 | 188.3 |
| M30 | 40 | | | | | | | | 121.4 | 130.1 | 151.8 | 173.4 | 195.1 | 216.8 | 238.5 | 260.2 | 278.9 | | | | | | 643 | 278.9 |
| Depth (mm) | | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 800 | 900 | 1000 | | | | |

10.9 Grade Studding

| Stud Diameter | Hole Diameter (mm) | Design Resistance (N _{rd}) | | | | | | | | | | | | | | | | | | Fd,s | | | | | |
|---------------|--------------------|--------------------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|------------------|------------------|------|-------|-------|-------|
| | | (kN) | | | | | | | | | | | | | | | | | | hef failure (mm) | design load (kN) | | | | |
| M8 | 10 | 16.9 | 19.0 | 21.1 | 23.2 | 25.3 | 27.2 | | | | | | | | | | | | | 129 | 27.2 | | | | |
| M10 | 12 | | 22.5 | 25.0 | 27.5 | 30.1 | 32.6 | 35.1 | 37.6 | 40.1 | 42.6 | 43.1 | | | | | | | | = Steel Failure | 172 | 43.1 | | | |
| M12 | 14 | | | | 31.4 | 34.2 | 37.1 | 39.9 | 42.8 | 45.6 | 48.5 | 51.3 | 54.2 | 57.0 | 62.6 | | | | | | | 220 | 62.6 | | |
| M16 | 18 | | | | 43.3 | 46.9 | 50.5 | 54.1 | 57.7 | 61.3 | 64.9 | 68.5 | 72.1 | 79.3 | 86.5 | 93.7 | 116.6 | | | | | | 324 | 116.6 | |
| Depth (mm) | | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 350 | | | | | | | |
| M20 | 24 | 69.4 | 73.5 | 77.6 | 81.7 | 89.9 | 98.0 | 106.2 | 114.4 | 122.5 | 143.0 | 163.4 | 182.0 | | | | | | | | | 446 | 182.0 | | |
| M24 | 28 | | | | 84.5 | 92.9 | 101.3 | 109.8 | 118.2 | 126.7 | 147.8 | 168.9 | 190.0 | 211.1 | 232.3 | 253.4 | 262.2 | | | | | | 621 | 262.2 | |
| M30 | 40 | | | | | | | | 121.4 | 130.1 | 151.8 | 173.4 | 195.1 | 216.8 | 238.5 | 260.2 | 303.5 | 388.5 | | | | | | 896 | 388.5 |
| Depth (mm) | | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 1000 | | | | | | | |



A4-70 Stainless Steel Studding

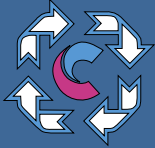
| Stud Diameter | Hole Diameter (mm) | Design Resistance (N _{rd}) | | | | | | | | | | | | | | | | | | Fd,s | | |
|---------------|--------------------|--------------------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|-----|-----|-----|------------------|------------------|-------|
| | | (kN) | | | | | | | | | | | | | | | | | | hef failure (mm) | design load (kN) | |
| M8 | 10 | 13.7 | | | | | | | | | | | | | | | | | | 65 | 13.7 | |
| M10 | 12 | | 21.7 | | | | | | | | | | | | | | | | | = Steel Failure | 87 | 21.7 |
| M12 | 14 | | | 31.4 | 31.6 | | | | | | | | | | | | | | | | 111 | 31.6 |
| M16 | 18 | | | | 43.3 | 46.9 | 50.5 | 54.1 | 57.7 | 58.8 | | | | | | | | | | | 163 | 58.8 |
| Depth (mm) | | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | | |
| M20 | 24 | 69.4 | 73.5 | 77.6 | 81.7 | 89.9 | 91.7 | | | | | | | | | | | | | | 225 | 91.7 |
| M24 | 28 | | | | 84.5 | 92.9 | 101.3 | 109.8 | 118.2 | 126.7 | 132.1 | | | | | | | | | | 313 | 132.1 |
| M30 | 40 | | | | | | | | 121.4 | 130.1 | 151.8 | 173.4 | 195.1 | 195.8 | | | | | | | 452 | 195.8 |
| Depth (mm) | | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 800 | 900 | 1000 | | |

A4-80 Stainless Steel Studding

| Stud Diameter | Hole Diameter (mm) | Design Resistance (N _{rd}) | | | | | | | | | | | | | | | | | | Fd,s | | |
|---------------|--------------------|--------------------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|-----|-----|------------------|------------------|-------|
| | | (kN) | | | | | | | | | | | | | | | | | | hef failure (mm) | design load (kN) | |
| M8 | 10 | 15.7 | | | | | | | | | | | | | | | | | | 74 | 15.7 | |
| M10 | 12 | | 22.5 | 24.8 | | | | | | | | | | | | | | | | = Steel Failure | 99 | 24.8 |
| M12 | 14 | | | | 31.4 | 34.2 | 36.1 | | | | | | | | | | | | | | 127 | 36.1 |
| M16 | 18 | | | | 43.3 | 46.9 | 50.5 | 54.1 | 57.7 | 61.3 | 64.9 | 67.2 | | | | | | | | | 186 | 67.2 |
| Depth (mm) | | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | | |
| M20 | 24 | 69.4 | 73.5 | 77.6 | 81.7 | 89.9 | 98.0 | 104.8 | | | | | | | | | | | | | 257 | 104.8 |
| M24 | 28 | | | | 84.5 | 92.9 | 101.3 | 109.8 | 118.2 | 126.7 | 147.8 | 151.0 | | | | | | | | | 358 | 151.0 |
| M30 | 40 | | | | | | | | 121.4 | 130.1 | 151.8 | 173.4 | 195.1 | 216.8 | 223.7 | | | | | | 516 | 223.7 |
| Depth (mm) | | 170 | 180 | 190 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 800 | 900 | 1000 | | |

High Bond Reinforcing Bars fyk=500N/mm²

| Rebar Diameter (mm) | Hole Diameter (mm) | Design Resistance (N _{rd}) | | | | | | | | | | | | | | | | | | Fd,s | | | |
|---------------------|--------------------|--------------------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|------------------|------------------|-------|-------|
| | | (kN) | | | | | | | | | | | | | | | | | | hef failure (mm) | design load (kN) | | |
| 8 | 10-12 | 11.7 | 14.6 | 17.5 | 20.4 | 21.9 | | | | | | | | | | | | | | 150 | 21.9 | | |
| 10 | 12-14 | | 17.3 | 20.7 | 24.2 | 27.6 | 31.1 | 34.1 | | | | | | | | | | | | = Steel Failure | 198 | 34.1 | |
| 12 | 16-18 | | | 23.5 | 27.4 | 31.4 | 35.3 | 39.2 | 43.1 | 47.1 | 49.2 | | | | | | | | | | 251 | 49.2 | |
| 14 | 18-20 | | | | 29.6 | 33.8 | 38.0 | 42.2 | 46.5 | 50.7 | 54.9 | 59.1 | 63.3 | 66.9 | | | | | | | 317 | 66.9 | |
| 16 | 20-22 | | | | | 35.4 | 39.8 | 44.2 | 48.7 | 53.1 | 57.5 | 61.9 | 66.4 | 70.8 | 75.2 | 79.6 | 84.1 | 87.4 | | | | 395 | 87.4 |
| Depth (mm) | | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 380 | 500 | | | | | |
| 20 | 25-28 | 45.2 | 50.9 | 56.6 | 62.2 | 67.9 | 79.2 | 90.5 | 101.8 | 113.1 | 124.4 | 136.6 | | | | | | | | 604 | 136.6 | | |
| 25 | 30-32 | | | 70.7 | 77.8 | 84.8 | 99.0 | 113.1 | 127.3 | 141.4 | 155.5 | 169.7 | 197.9 | 213.4 | | | | | | | 755 | 213.4 | |
| 32 | 39-42 | | | | | 99.5 | 116.1 | 132.7 | 149.3 | 165.9 | 182.5 | 199.1 | 232.3 | 265.4 | 298.6 | 331.8 | 349.7 | | | | 1054 | 349.7 | |
| 40 | 48-52 | | | | | | | 165.9 | 186.6 | 207.4 | 228.1 | 248.8 | 290.3 | 331.8 | 373.3 | 414.7 | 456.2 | 546.3 | | | | 1317 | 546.3 |
| Depth (mm) | | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1400 | | | | | |



Loads, Edge and Spacings based on characteristic bond strengths

| Size | Characteristic Resistance (kN) | | Design Resistance (kN) | | Recommended Load (kN) | | Characteristic Distances (mm) | | | Min Edge and Spacing (mm) | Nominal Embedment and Spacing (mm) | Hole Diameter concrete (mm) | Hole Diameter fixture (mm) | Max Torque (Nm) | | | |
|------|--------------------------------|--------|------------------------|--------|-----------------------|--------|-------------------------------|---------|-------|---------------------------|------------------------------------|-----------------------------|----------------------------|-----------------|-----|-----|-----|
| | Tension | Shear | Tension | Shear | Tension | Shear | Edge | Spacing | Edge | | | | | | | | |
| | Nrk | Vrk | Nrd | Vrd | Nrec | Vrec | Ccr,N | Scr,N | Ccr,V | | | | | | | | |
| M8 | 19.30 | 9.00 | 12.87 | 7.20 | 9.19 | 5.14 | 80 | 160 | 80 | 40 | 60 | 10 | 9 | 10 | | | |
| | 25.74 | | 17.16 | | 12.26 | | | | | | 80 | | | | 160 | 80 | 80 |
| | 51.47 | | 34.31 | | 24.51 | | | | | | 80 | | | | 160 | 80 | 80 |
| M10 | 22.54 | 15.00 | 15.03 | 12.00 | 10.74 | 8.57 | 100 | 200 | 90 | 50 | 60 | 12 | 12 | 20 | | | |
| | 33.82 | | 22.54 | | 16.10 | | | | | | 100 | | | | 200 | 90 | 90 |
| | 75.15 | | 50.10 | | 35.78 | | | | | | 100 | | | | 200 | 90 | 90 |
| M12 | 29.82 | 21.00 | 19.88 | 16.80 | 14.20 | 12.00 | 120 | 240 | 110 | 60 | 70 | 14 | 14 | 30 | | | |
| | 46.86 | | 31.24 | | 22.31 | | | | | | 120 | | | | 240 | 110 | 110 |
| | 102.24 | | 68.16 | | 48.69 | | | | | | 120 | | | | 240 | 110 | 110 |
| M16 | 43.43 | 39.00 | 28.95 | 31.20 | 20.68 | 22.29 | 160 | 320 | 175 | 80 | 80 | 18 | 18 | 60 | | | |
| | 67.86 | | 45.24 | | 32.31 | | | | | | 160 | | | | 320 | 175 | 175 |
| | 173.72 | | 115.81 | | 82.72 | | | | | | 160 | | | | 320 | 175 | 175 |
| M20 | 55.14 | 61.00 | 36.76 | 48.80 | 26.25 | 34.86 | 200 | 400 | 225 | 100 | 90 | 24 | 22 | 90 | | | |
| | 104.14 | | 69.43 | | 49.59 | | | | | | 200 | | | | 400 | 225 | 225 |
| | 245.04 | | 163.36 | | 116.69 | | | | | | 200 | | | | 400 | 225 | 225 |
| M24 | 63.33 | 88.00 | 42.22 | 70.40 | 30.16 | 50.29 | 230 | 460 | 280 | 120 | 100 | 28 | 26 | 140 | | | |
| | 133.00 | | 88.67 | | 63.33 | | | | | | 230 | | | | 460 | 280 | 280 |
| | 304.01 | | 202.67 | | 144.76 | | | | | | 230 | | | | 460 | 280 | 280 |
| M30 | 78.04 | 207.00 | 52.02 | 165.60 | 37.16 | 118.29 | 280 | 560 | 460 | 150 | 120 | 35 | 32 | 260 | | | |
| | 182.09 | | 121.39 | | 86.71 | | | | | | 280 | | | | 560 | 460 | 460 |
| | 390.19 | | 260.12 | | 185.80 | | | | | | 280 | | | | 560 | 460 | 460 |

Based on 5.8 grade steel

Characteristic (Vrk,s) & Design (Vrd,s) Shear Loads for Various Stud Grades + Rebar

| Stud Diameter | Stud Grade 5.8 | | Stud Grade 8.8 | | Stud Grade 10.9 | | Stud Grade A4-70 | | Stud Grade A4-80 | | Rebar Diameter (mm) | BSt 500 Rebar | |
|---------------|----------------|------------|----------------|------------|-----------------|------------|------------------|------------|------------------|------------|---------------------|---------------|------------|
| | Vrk,s (kN) | Vrd,s (kN) | Vrk,s (kN) | Vrd,s (kN) | Vrk,s (kN) | Vrd,s (kN) | Vrk,s (kN) | Vrd,s (kN) | Vrk,s (kN) | Vrd,s (kN) | | Vrk,s (kN) | Vrd,s (kN) |
| M8 | 9.0 | 7.2 | 14.6 | 11.7 | 19.0 | 15.2 | 12.8 | 8.2 | 14.6 | 9.4 | 8 | 16.6 | 11.1 |
| M10 | 15.0 | 12.0 | 23.2 | 18.6 | 30.2 | 24.1 | 20.3 | 13.0 | 23.2 | 14.9 | 10 | 25.9 | 17.3 |
| M12 | 21.0 | 16.8 | 33.7 | 27.0 | 43.8 | 35.1 | 29.5 | 18.9 | 33.7 | 21.6 | 12 | 37.3 | 24.9 |
| M16 | 39.0 | 31.2 | 62.8 | 50.2 | 81.6 | 65.3 | 55.0 | 32.5 | 62.8 | 40.3 | 14 | 50.8 | 33.9 |
| M20 | 61.0 | 48.8 | 98.0 | 78.4 | 127.4 | 101.9 | 85.8 | 55.0 | 98.0 | 62.8 | 16 | 66.4 | 44.3 |
| M24 | 88.0 | 70.4 | 141.2 | 113.0 | 183.6 | 146.8 | 123.6 | 79.2 | 141.2 | 90.5 | 20 | 103.9 | 69.3 |
| M30 | 207.0 | 165.6 | 207.6 | 166.1 | 269.9 | 215.9 | 129.8 | 64.9 | 207.6 | 103.8 | 25 | 162.0 | 108.0 |
| | | | | | | | | | | | 32 | 265.1 | 176.7 |
| | | | | | | | | | | | 40 | 414.6 | 276.4 |

Notes:

All grades shown for information. M30 studding is 8.8 grade instead of 5.8 grade. M30 for A4-70 tensile strength of 500N/mm², instead of 700N/mm². Safety Factor is 1.25 for all carbon steel. Safety Factor is 1.56 for stainless steel, up to M24, M30 is 2.0. Safety Factor is 1.5 for BSt 500 rebar.

