



# POLYFIXER EASF

## Features and Benefits

Version: 25/09/2017

- High bond strength with High load resistance
- Used with all grades of threaded rod and rebar
- Used in concrete and masonry
- Fast gelling and curing
- Used in dry and wet concrete
- Resistance to chemicals and damp conditions
- Close edge distance and small spacing
- European approval for use in masonry with nylon sleeves
- Economical fixing resin
- Extremely versatile
- Styrene free with low odour
- Close edge distance and small spacing
- Manual cleaning up to 20mm diameter and embedment depths of 240mm
- Independently tested and approved

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## Shelf Life and Storage

This product should be stored between +5°C & +25°C.

The Shelf life of the product is 18 months from the manufacture date.

**IMPORTANT** The information and data given is based on our own experience, research and testing and is believed to be reliable and accurate.

However, as we 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.

# POLYFIXER EASF

## Product Description

POLYFIXER EASF is a 2 component high strength 10:1 ratio chemical anchoring resin system. It is designed as a fast curing high strength resin fixing anchor for high loads and medium loads and is particularly advantageous for fixings in damp environments or with chemical exposure.

## Specific Benefits

- European Approved
- Styrene Free Low odour
- High loads possible
- Economical fixing resin
- Chemical resistance
- Studs and rebar
- Approved for Masonry

## Approvals

- ETA ETAG 029 for Masonry Size M10
- ITB approved AT-15-6835:2011 - ITB-974/W
- Tested by Imperial College London
- Tested according to LEED 2009 EQ c4.1, SCAQMD rule 1168 (2005).
- WRAS Approved for use with Potable drinking water no. 1605529.
- A+ Rating VOC content

## Loads, Edge and Spacings based on Characteristic bond strengths - Showing steel failure

| Size (mm) | Characteristic Resistance (kN) |                 | Design Resistance (kN) |                 | Recommended Load (kN) |                  | Characteristic distances (mm) |                   |                   | Min Edge and Spacing (mm)           |
|-----------|--------------------------------|-----------------|------------------------|-----------------|-----------------------|------------------|-------------------------------|-------------------|-------------------|-------------------------------------|
|           | Tension                        | Shear           | Tension                | Shear           | Tension               | Shear            | Edge                          | Spacing           | Edge              |                                     |
|           | N <sub>rk</sub>                | V <sub>rk</sub> | N <sub>rd</sub>        | V <sub>rd</sub> | N <sub>rec</sub>      | V <sub>rec</sub> | C <sub>cr,N</sub>             | S <sub>cr,N</sub> | C <sub>cr,V</sub> | C <sub>min</sub> , S <sub>min</sub> |
| 8         | 17.79                          |                 | 9.88                   |                 | 7.06                  |                  |                               |                   |                   |                                     |
|           | 19.00                          | 9.00            | 12.70                  | 7.20            | 9.07                  | 5.14             | 80                            | 160               | 80                | 40                                  |
|           | 19.00                          |                 | 12.70                  |                 | 9.07                  |                  |                               |                   |                   |                                     |
| 10        | 20.81                          |                 | 11.56                  |                 | 8.26                  |                  |                               |                   |                   |                                     |
|           | 30.20                          | 15.00           | 20.10                  | 12.00           | 14.36                 | 8.57             | 100                           | 200               | 90                | 50                                  |
|           | 30.20                          |                 | 20.10                  |                 | 14.36                 |                  |                               |                   |                   |                                     |
| 12        | 27.45                          |                 | 15.25                  |                 | 10.89                 |                  |                               |                   |                   |                                     |
|           | 43.13                          | 21.00           | 23.96                  | 16.80           | 17.11                 | 12.00            | 120                           | 240               | 110               | 60                                  |
|           | 43.80                          |                 | 29.20                  |                 | 20.86                 |                  |                               |                   |                   |                                     |
| 16        | 39.97                          |                 | 22.21                  |                 | 15.86                 |                  |                               |                   |                   |                                     |
|           | 62.46                          | 39.00           | 34.70                  | 31.20           | 24.78                 | 22.29            | 160                           | 320               | 125               | 80                                  |
|           | 81.60                          |                 | 54.40                  |                 | 38.86                 |                  |                               |                   |                   |                                     |
| 20        | 50.89                          |                 | 28.27                  |                 | 20.20                 |                  |                               |                   |                   |                                     |
|           | 96.13                          | 61.00           | 53.41                  | 48.80           | 38.15                 | 34.86            | 200                           | 400               | 180               | 100                                 |
|           | 127.40                         |                 | 84.90                  |                 | 60.64                 |                  |                               |                   |                   |                                     |
| 24        | 58.28                          |                 | 32.38                  |                 | 23.13                 |                  |                               |                   |                   |                                     |
|           | 122.39                         | 88.00           | 68.00                  | 70.40           | 48.57                 | 50.29            | 240                           | 480               | 220               | 120                                 |
|           | 183.60                         |                 | 122.40                 |                 | 87.43                 |                  |                               |                   |                   |                                     |
| 30        | 71.82                          |                 | 39.90                  |                 | 28.50                 |                  |                               |                   |                   |                                     |
|           | 167.57                         | 142.50          | 93.10                  | 114.00          | 66.50                 | 81.43            | 280                           | 560               | 280               | 150                                 |
|           | 292.00                         |                 | 194.50                 |                 | 138.93                |                  |                               |                   |                   |                                     |

| Nominal Embedment (mm) | Hole Diameter concrete (mm) | Hole Diameter fixture (mm) | Max Torque (Nm) |
|------------------------|-----------------------------|----------------------------|-----------------|
| 60                     |                             |                            |                 |
| 80                     | 10                          | 9                          | 10              |
| 160                    |                             |                            |                 |
| 60                     |                             |                            |                 |
| 90                     | 12                          | 12                         | 20              |
| 200                    |                             |                            |                 |
| 70                     |                             |                            |                 |
| 110                    | 14                          | 14                         | 40              |
| 240                    |                             |                            |                 |
| 80                     |                             |                            |                 |
| 125                    | 18                          | 18                         | 80              |
| 320                    |                             |                            |                 |
| 90                     |                             |                            |                 |
| 170                    | 24                          | 22                         | 120             |
| 400                    |                             |                            |                 |
| 100                    |                             |                            |                 |
| 210                    | 28                          | 26                         | 160             |
| 480                    |                             |                            |                 |
| 120                    |                             |                            |                 |
| 280                    | 35                          | 32                         | 200             |
| 600                    |                             |                            |                 |



= steel failure

Partial safety factor = 1.5



# POLYFIXER EASF

*Design Resistance used with various stud strengths, material and rebar.*

## 5.8 Grade Steel Studding

| Stud Diameter | Hole Diameter | Embedment Depth h <sub>ef</sub> |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |     |     | h <sub>ef</sub> failure | F <sub>d,s</sub> design load |
|---------------|---------------|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-----|-----|-------------------------|------------------------------|
|               |               | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 480   | 540   | 600   | 660 | 720 |                         |                              |
| (mm)          | (mm)          | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 480   | 540   | 600   | 660 | 720 | (mm)                    | (kN)                         |
| 8             | 10            | 9.9                             | 11.5 | 12.7 |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |     |     | 77                      | 12.7                         |
| 10            | 12            | 11.6                            | 13.5 | 15.4 | 17.3 | 19.3 | 20.1 |      |      |      |      |      |      |      |       |       |       |       |       |     |     | 104                     | 20.1                         |
| 12            | 14            |                                 | 15.3 | 17.4 | 19.6 | 21.8 | 24.0 | 26.2 | 28.3 | 29.2 |      |      |      |      |       |       |       |       |       |     |     | 134                     | 29.2                         |
| 16            | 18            |                                 |      | 22.2 | 25.0 | 27.8 | 30.5 | 33.3 | 36.1 | 38.9 | 44.4 | 54.4 |      |      |       |       |       |       |       |     |     | 196                     | 54.4                         |
| 20            | 24            |                                 |      | 25.1 | 28.3 | 31.4 | 34.6 | 37.7 | 40.8 | 44.0 | 50.3 | 62.8 | 75.4 | 84.9 |       |       |       |       |       |     |     | 270                     | 84.9                         |
| 24            | 28            |                                 |      |      |      | 32.4 | 35.6 | 38.8 | 42.1 | 45.3 | 51.8 | 64.7 | 77.6 | 90.6 | 103.5 | 122.4 |       |       |       |     |     | 378                     | 122.4                        |
| 27            | 32            |                                 |      |      |      |      | 36.4 | 39.7 | 43.0 | 46.3 | 52.9 | 66.2 | 79.4 | 92.6 | 105.9 | 132.3 | 158.8 | 159.1 |       |     |     | 481                     | 159.1                        |
| 30            | 35            |                                 |      |      |      |      |      | 39.9 | 43.3 | 46.6 | 53.2 | 66.5 | 79.9 | 93.2 | 106.5 | 133.1 | 159.7 | 179.7 | 194.5 |     |     | 584                     | 194.5                        |
| Depth (mm)    |               | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 480   | 540   | 600   | 660 | 720 |                         |                              |

## 8.8 Grade Steel Studding

| Stud Diameter | Hole Diameter | Embedment Depth h <sub>ef</sub> |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |     |     | h <sub>ef</sub> | F <sub>d,s</sub> |
|---------------|---------------|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-----|-----|-----------------|------------------|
|               |               | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 480   | 540   | 600   | 660 | 720 | failure         | design load      |
| (mm)          | (mm)          | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 480   | 540   | 600   | 660 | 720 | (mm)            | (kN)             |
| 8             | 10            | 9.9                             | 11.5 | 13.2 | 14.8 | 16.5 | 18.1 | 19.5 |      |      |      |      |      |      |       |       |       |       |       |     |     | 118             | 19.5             |
| 10            | 12            | 11.6                            | 13.5 | 15.4 | 17.3 | 19.3 | 21.2 | 23.1 | 25.0 | 27.0 | 30.9 |      |      |      |       |       |       |       |       |     |     | 161             | 30.9             |
| 12            | 14            |                                 | 15.3 | 17.4 | 19.6 | 21.8 | 24.0 | 26.2 | 28.3 | 30.5 | 34.9 | 43.6 | 45.0 |      |       |       |       |       |       |     |     | 206             | 45.0             |
| 16            | 18            |                                 |      | 22.2 | 25.0 | 27.8 | 30.5 | 33.3 | 36.1 | 38.9 | 44.4 | 55.5 | 66.6 | 77.7 | 83.7  |       |       |       |       |     |     | 302             | 83.7             |
| 20            | 24            |                                 |      | 25.1 | 28.3 | 31.4 | 34.6 | 37.7 | 40.8 | 44.0 | 50.3 | 62.8 | 75.4 | 88.0 | 100.5 | 125.7 |       |       |       |     | 416 | 130.7           |                  |
| 24            | 28            |                                 |      |      |      | 32.4 | 35.6 | 38.8 | 42.1 | 45.3 | 51.8 | 64.7 | 77.6 | 90.6 | 103.5 | 129.4 | 155.3 |       |       |     | 582 | 188.3           |                  |
| 27            | 32            |                                 |      |      |      |      | 36.4 | 39.7 | 43.0 | 46.3 | 52.9 | 66.2 | 79.4 | 92.6 | 105.9 | 132.3 | 158.8 | 178.7 |       |     | 740 | 244.8           |                  |
| 30            | 35            |                                 |      |      |      |      |      | 39.9 | 43.3 | 46.6 | 53.2 | 66.5 | 79.9 | 93.2 | 106.5 | 133.1 | 159.7 | 179.7 | 199.6 |     |     | 899             | 299.2            |
| Depth (mm)    |               | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 480   | 540   | 600   | 660 | 720 |                 |                  |

= steel failure

cont.



*Design Resistance used with various stud strengths, material and rebar.*

### 10.9 Grade Steel Studding

| Stud Diameter | Hole Diameter | Embedment Depth $h_{ef}$ |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |     |     |     | $h_{ef}$ failure | $F_{d,s}$ design load |
|---------------|---------------|--------------------------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-----|-----|-----|------------------|-----------------------|
| (mm)          | (mm)          | 60                       | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280   | 320   | 400   | 480   | 540   | 600 | 660 | 720 | (mm)             | (kN)                  |
| 8             | 10            | 9.9                      | 11.5 | 13.2 | 14.8 | 16.5 | 18.1 | 19.8 | 21.4 | 23.1 | 26.4 |      |      |       |       |       |       |       |     |     |     | 165              | 27.2                  |
| 10            | 12            | 11.6                     | 13.5 | 15.4 | 17.3 | 19.3 | 21.2 | 23.1 | 25.0 | 27.0 | 30.8 | 38.5 |      |       |       |       |       |       |     |     |     | 224              | 43.1                  |
| 12            | 14            |                          | 15.3 | 17.4 | 19.6 | 21.8 | 24.0 | 26.2 | 28.3 | 30.5 | 34.9 | 43.6 | 52.3 |       |       |       |       |       |     |     |     | 287              | 62.6                  |
| 16            | 18            |                          |      | 22.2 | 25.0 | 27.8 | 30.5 | 33.3 | 36.1 | 38.9 | 44.4 | 55.5 | 66.6 | 77.7  | 88.8  |       |       |       |     |     |     | 420              | 116.6                 |
| 20            | 24            |                          |      | 25.1 | 28.3 | 31.4 | 34.6 | 37.7 | 40.8 | 44.0 | 50.3 | 62.8 | 75.4 | 88.0  | 100.5 | 125.7 |       |       |     |     |     | 579              | 182.0                 |
| 24            | 28            |                          |      |      | 32.4 | 35.6 | 38.8 | 42.1 | 45.3 | 51.8 | 64.7 | 77.6 | 90.6 | 103.5 | 129.4 | 155.3 |       |       |     |     |     | 811              | 262.2                 |
| 27            | 32            |                          |      |      |      | 36.4 | 39.7 | 43.0 | 46.3 | 52.9 | 66.2 | 79.4 | 92.6 | 105.9 | 132.3 | 158.8 | 178.7 |       |     |     |     | 1031             | 341.0                 |
| 30            | 35            |                          |      |      |      |      | 39.9 | 43.3 | 46.6 | 53.2 | 66.5 | 79.9 | 93.2 | 106.5 | 133.1 | 159.7 | 179.7 | 199.6 |     |     |     | 1252             | 416.7                 |
| Depth (mm)    |               | 60                       | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280   | 320   | 400   | 480   | 540   | 600 | 660 | 720 |                  |                       |

### A4-70 Stainless Steel Studding

| Stud Diameter | Hole Diameter | Embedment Depth $h_{ef}$ |      |      |      |      |      |      |      |      |      |      |      |       |       |       |     |     |     |     |     | $h_{ef}$ failure | $F_{d,s}$ design load |
|---------------|---------------|--------------------------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-----|-----|-----|-----|-----|------------------|-----------------------|
| (mm)          | (mm)          | 60                       | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280   | 320   | 400   | 480 | 540 | 600 | 660 | 720 | (mm)             | (kN)                  |
| 8             | 10            | 9.9                      | 11.5 | 13.2 | 13.7 |      |      |      |      |      |      |      |      |       |       |       |     |     |     |     |     | 83               | 13.7                  |
| 10            | 12            | 11.6                     | 13.5 | 15.4 | 17.3 | 19.3 | 21.2 | 21.7 |      |      |      |      |      |       |       |       |     |     |     |     |     | 113              | 21.7                  |
| 12            | 14            |                          | 15.3 | 17.4 | 19.6 | 21.8 | 24.0 | 26.2 | 28.3 | 30.5 | 31.6 |      |      |       |       |       |     |     |     |     |     | 145              | 31.6                  |
| 16            | 18            |                          |      | 22.2 | 25.0 | 27.8 | 30.5 | 33.3 | 36.1 | 38.9 | 44.4 | 55.5 | 58.8 |       |       |       |     |     |     |     |     | 212              | 58.8                  |
| 20            | 24            |                          |      | 25.1 | 28.3 | 31.4 | 34.6 | 37.7 | 40.8 | 44.0 | 50.3 | 62.8 | 75.4 | 88.0  | 91.7  |       |     |     |     |     |     | 292              | 91.7                  |
| 24            | 28            |                          |      |      | 32.4 | 35.6 | 38.8 | 42.1 | 45.3 | 51.8 | 64.7 | 77.6 | 90.6 | 103.5 | 129.4 | 132.1 |     |     |     |     |     | 408              | 132.1                 |
| 27            | 32            |                          |      |      |      | 36.4 | 39.7 | 43.0 | 46.3 | 52.9 | 66.2 | 79.4 | 80.2 |       |       |       |     |     |     |     | 1   | 243              | 80.2                  |
| 30            | 35            |                          |      |      |      |      | 39.9 | 43.3 | 46.6 | 53.2 | 66.5 | 79.9 | 93.2 | 98.1  |       |       |     |     |     |     | 1   | 295              | 98.1                  |
| Depth (mm)    |               | 60                       | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280   | 320   | 400   | 480 | 540 | 600 | 660 | 720 |                  |                       |

cont.

*Design Resistance used with various stud strengths, material and rebar.*

#### A4-80 Stainless Steel Studding

| Stud Diameter | Hole Diameter | Embedment Depth h <sub>ef</sub> |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |     |     |     |     | h <sub>ef</sub> failure | F <sub>d,s</sub> design load |      |
|---------------|---------------|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-----|-----|-----|-----|-------------------------|------------------------------|------|
| (mm)          | (mm)          | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 480   | 540 | 600 | 660 | 720 | (mm)                    | (kN)                         |      |
| 8             | 10            | 9.9                             | 11.5 | 13.2 | 14.8 | 15.7 |      |      |      |      |      |      |      |      |       |       |       |     |     |     |     | 95                      | 15.7                         |      |
| 10            | 12            |                                 | 13.5 | 15.4 | 17.3 | 19.3 | 21.2 | 23.1 | 24.8 |      |      |      |      |      |       |       |       |     |     |     |     | 129                     | 24.8                         |      |
| 12            | 14            |                                 | 15.3 | 17.4 | 19.6 | 21.8 | 24.0 | 26.2 | 28.3 | 30.5 | 34.9 | 36.1 |      |      |       |       |       |     |     |     | 165 | 36.1                    |                              |      |
| 16            | 18            |                                 |      | 22.2 | 25.0 | 27.8 | 30.5 | 33.3 | 36.1 | 38.9 | 44.4 | 55.5 | 66.6 | 67.2 |       |       |       |     |     |     | 242 | 67.2                    |                              |      |
| 20            | 24            |                                 |      | 25.1 | 28.3 | 31.4 | 34.6 | 37.7 | 40.8 | 44.0 | 50.3 | 62.8 | 75.4 | 88.0 | 100.5 | 104.8 |       |     |     |     | 334 | 104.8                   |                              |      |
| 24            | 28            |                                 |      |      |      | 32.4 | 35.6 | 38.8 | 42.1 | 45.3 | 51.8 | 64.7 | 77.6 | 90.6 | 103.5 | 129.4 | 132.1 |     |     |     |     | 408                     | 132.1                        |      |
| 27            | 32            |                                 |      |      |      |      | 36.4 | 39.7 | 43.0 | 46.3 | 52.9 | 66.2 | 79.4 | 80.2 |       |       |       |     |     |     | 2   | 243                     | 80.2                         |      |
| 30            | 35            |                                 |      |      |      |      |      | 39.9 | 43.3 | 46.6 | 53.2 | 66.5 | 79.9 | 93.2 | 98.1  |       |       |     |     |     |     | 2                       | 295                          | 98.1 |
| Depth (mm)    |               | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 480   | 540 | 600 | 660 | 720 |                         |                              |      |

#### High bond reinforcing bars F<sub>yk</sub>=500N/mm<sup>2</sup>

| Rebar Diameter | Hole Diameter | Embedment Depth h <sub>ef</sub> |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |     |       | h <sub>ef</sub> failure | F <sub>d,s</sub> yield load |      |
|----------------|---------------|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-----|-------|-------------------------|-----------------------------|------|
| (mm)           | (mm)          | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 500   | 560   | 640   | 720 | 800   | (mm)                    | (kN)                        |      |
| 8              | 12            | 8.6                             | 10.0 | 11.5 | 12.9 | 14.3 | 15.8 | 17.2 | 18.6 | 20.1 | 21.9 |      |      |      |       |       |       |       |       |     |       | 153                     | 21.9                        |      |
| 10             | 14            | 10.4                            | 12.1 | 13.8 | 15.6 | 17.3 | 19.0 | 20.7 | 22.5 | 24.2 | 27.6 | 34.1 |      |      |       |       |       |       |       |     |       |                         | 198                         | 34.1 |
| 12             | 16            |                                 | 12.9 | 14.8 | 16.6 | 18.5 | 20.3 | 22.2 | 24.0 | 25.9 | 29.6 | 36.9 | 44.3 |      |       |       |       |       |       |     | 266   | 49.2                    |                             |      |
| 16             | 20            |                                 |      | 18.0 | 20.3 | 22.5 | 24.8 | 27.0 | 29.3 | 31.5 | 36.0 | 45.0 | 54.1 | 63.1 | 72.1  |       |       |       |       |     | 388   | 87.4                    |                             |      |
| 20             | 25            |                                 |      | 19.1 | 21.5 | 23.9 | 26.3 | 28.7 | 31.0 | 33.4 | 38.2 | 47.8 | 57.3 | 66.9 | 76.4  | 95.5  |       |       |       |     | 572   | 136.6                   |                             |      |
| 25             | 30            |                                 |      |      | 25.0 | 27.5 | 30.0 | 32.5 | 35.0 | 40.0 | 50.0 | 60.0 | 70.1 | 80.1 | 100.1 | 125.1 |       |       |       | 786 | 196.5 |                         |                             |      |
| 28             | 35            |                                 |      |      |      | 29.0 | 31.7 | 34.3 | 36.9 | 42.2 | 52.8 | 63.3 | 73.9 | 84.5 | 105.6 | 132.0 | 147.8 |       |       |     | 1015  | 267.8                   |                             |      |
| 32             | 40            |                                 |      |      |      |      |      |      | 35.3 | 38.0 | 43.4 | 54.3 | 65.2 | 76.0 | 86.9  | 108.6 | 135.7 | 152.0 | 173.7 |     |       | 1288                    | 349.7                       |      |
| Depth (mm)     |               | 60                              | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 160  | 200  | 240  | 280  | 320   | 400   | 500   | 560   | 640   | 720 | 800   |                         |                             |      |

\*1 = Tensile strength 500N/mm<sup>2</sup>

\*2 = Tensile strength 700N/mm<sup>2</sup>



# POLYFIXER EASF

*Characteristic and Design Load resistances based on characteristic bond strengths for hef 4d (minimum embedment) to 20d*

| Size<br>(mm) | Non Cracked Concrete           |                 |                        |                 |                       |                  | Cracked Concrete               |                 |                        |                 |                       |                  | Nominal Embed-<br>ment<br>(mm) |
|--------------|--------------------------------|-----------------|------------------------|-----------------|-----------------------|------------------|--------------------------------|-----------------|------------------------|-----------------|-----------------------|------------------|--------------------------------|
|              | Characteristic Resistance (kN) |                 | Design Resistance (kN) |                 | Recommended Load (kN) |                  | Characteristic Resistance (kN) |                 | Design Resistance (kN) |                 | Recommended Load (kN) |                  |                                |
|              | Tension                        | Shear           | Tension                | Shear           | Tension               | Shear            | Tension                        | Shear           | Tension                | Shear           | Tension               | Shear            |                                |
|              | N <sub>rk</sub>                | V <sub>rk</sub> | N <sub>rd</sub>        | V <sub>rd</sub> | N <sub>rec</sub>      | V <sub>rec</sub> | N <sub>rk</sub>                | V <sub>rk</sub> | N <sub>rd</sub>        | V <sub>rd</sub> | N <sub>rec</sub>      | V <sub>rec</sub> |                                |
| 8            | 17.79                          | 9.00            | 9.89                   | 7.20            | 7.06                  | 5.14             | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 60                             |
|              | 23.73                          |                 | 13.18                  |                 | 9.41                  |                  |                                |                 |                        |                 |                       |                  | 80                             |
|              | 47.45                          |                 | 26.36                  |                 | 18.83                 |                  |                                |                 |                        |                 |                       |                  | 160                            |
| 10           | 20.81                          | 15.00           | 11.56                  | 12.00           | 8.26                  | 8.57             | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 60                             |
|              | 31.21                          |                 | 17.34                  |                 | 12.39                 |                  |                                |                 |                        |                 |                       |                  | 90                             |
|              | 69.37                          |                 | 38.54                  |                 | 27.53                 |                  |                                |                 |                        |                 |                       |                  | 200                            |
| 12           | 27.45                          | 21.00           | 15.25                  | 16.80           | 10.89                 | 12.00            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 70                             |
|              | 43.13                          |                 | 23.96                  |                 | 17.11                 |                  |                                |                 |                        |                 |                       |                  | 110                            |
|              | 94.10                          |                 | 52.28                  |                 | 37.34                 |                  |                                |                 |                        |                 |                       |                  | 240                            |
| 16           | 39.97                          | 39.00           | 22.21                  | 31.20           | 15.86                 | 22.29            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 80                             |
|              | 62.46                          |                 | 34.70                  |                 | 24.78                 |                  |                                |                 |                        |                 |                       |                  | 125                            |
|              | 159.88                         |                 | 88.82                  |                 | 63.45                 |                  |                                |                 |                        |                 |                       |                  | 320                            |
| 20           | 50.89                          | 61.00           | 28.27                  | 48.80           | 20.20                 | 34.86            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 90                             |
|              | 96.13                          |                 | 53.41                  |                 | 38.15                 |                  |                                |                 |                        |                 |                       |                  | 170                            |
|              | 226.20                         |                 | 125.66                 |                 | 89.76                 |                  |                                |                 |                        |                 |                       |                  | 400                            |
| 24           | 58.28                          | 88.00           | 32.38                  | 70.40           | 23.13                 | 50.29            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 100                            |
|              | 122.39                         |                 | 68.00                  |                 | 48.57                 |                  |                                |                 |                        |                 |                       |                  | 210                            |
|              | 279.76                         |                 | 155.42                 |                 | 111.02                |                  |                                |                 |                        |                 |                       |                  | 480                            |
| 30           | 71.82                          | 207.00          | 39.90                  | 165.60          | 28.50                 | 118.29           | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 120                            |
|              | 167.57                         |                 | 93.10                  |                 | 66.50                 |                  |                                |                 |                        |                 |                       |                  | 280                            |
|              | 359.08                         |                 | 199.49                 |                 | 142.49                |                  |                                |                 |                        |                 |                       |                  | 600                            |

# POLYFIXER EASF

## Bond Strength Factors

### Influence of concrete strength on combined pull out and concrete cone resistance

| Concrete Strength<br>N/mm <sup>2</sup> | C15/20 | C20/25 | C25/30 | C30/37 | C35/45 | C40/50 | C45/55 | C50/60 |
|----------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Non-Cracked $f_c$ =                    | 0.98   | 1.00   | 1.03   | 1.06   | 1.09   | 1.13   | 1.16   | 1.20   |

### Influence of environmental conditions in non cracked concrete

|                        |             | M8   | M10  | M12  | M16  | M20  | M24  | M30  |
|------------------------|-------------|------|------|------|------|------|------|------|
| Temp I<br>40°C / 24°C  | Dry and Wet | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Temp II<br>80°C / 50°C | Dry and Wet | 0.90 | 0.88 | 0.87 | 0.86 | 0.85 | 0.84 | 0.82 |

Select concrete strength and environmental condition and apply to bond strength table on page 4

# POLYFIXER EASF



Characteristic and Design Load resistances for REBAR based on characteristic bond strengths for hef 4d (min embedment) to 20d

| Rebar<br>Ø | Non Cracked Concrete           |                 |                        |                 |                       |                  | Cracked Concrete               |                 |                        |                 |                       |                  | Nominal Embed-<br>ment<br>(mm) |
|------------|--------------------------------|-----------------|------------------------|-----------------|-----------------------|------------------|--------------------------------|-----------------|------------------------|-----------------|-----------------------|------------------|--------------------------------|
|            | Characteristic Resistance (kN) |                 | Design Resistance (kN) |                 | Recommended Load (kN) |                  | Characteristic Resistance (kN) |                 | Design Resistance (kN) |                 | Recommended Load (kN) |                  |                                |
|            | Tension                        | Shear           | Tension                | Shear           | Tension               | Shear            | Tension                        | Shear           | Tension                | Shear           | Tension               | Shear            |                                |
|            | N <sub>rk</sub>                | V <sub>rk</sub> | N <sub>rd</sub>        | V <sub>rd</sub> | N <sub>rec</sub>      | V <sub>rec</sub> | N <sub>rk</sub>                | V <sub>rk</sub> | N <sub>rd</sub>        | V <sub>rd</sub> | N <sub>rec</sub>      | V <sub>rec</sub> |                                |
| 8          | 15.47                          | 13.95           | 8.60                   | 9.30            | 6.14                  | 6.64             | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 60                             |
|            | 20.63                          |                 | 11.46                  |                 | 8.19                  |                  |                                |                 |                        |                 |                       |                  | 80                             |
|            | 41.26                          |                 | 22.92                  |                 | 16.37                 |                  |                                |                 |                        |                 |                       |                  | 160                            |
| 10         | 18.66                          | 21.45           | 10.37                  | 14.30           | 7.41                  | 10.21            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 60                             |
|            | 27.99                          |                 | 15.55                  |                 | 11.11                 |                  |                                |                 |                        |                 |                       |                  | 90                             |
|            | 62.20                          |                 | 34.56                  |                 | 24.68                 |                  |                                |                 |                        |                 |                       |                  | 200                            |
| 12         | 23.28                          | 31.05           | 12.93                  | 20.70           | 9.24                  | 14.79            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 70                             |
|            | 36.58                          |                 | 20.32                  |                 | 14.51                 |                  |                                |                 |                        |                 |                       |                  | 110                            |
|            | 79.80                          |                 | 44.33                  |                 | 31.67                 |                  |                                |                 |                        |                 |                       |                  | 240                            |
| 14         | 29.45                          | 42.45           | 16.36                  | 28.30           | 11.69                 | 20.21            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 80                             |
|            | 42.34                          |                 | 23.52                  |                 | 16.80                 |                  |                                |                 |                        |                 |                       |                  | 115                            |
|            | 103.08                         |                 | 57.27                  |                 | 40.90                 |                  |                                |                 |                        |                 |                       |                  | 280                            |
| 16         | 32.41                          | 55.50           | 18.01                  | 37.00           | 12.86                 | 26.43            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 80                             |
|            | 50.64                          |                 | 28.13                  |                 | 20.10                 |                  |                                |                 |                        |                 |                       |                  | 125                            |
|            | 129.65                         |                 | 72.03                  |                 | 51.45                 |                  |                                |                 |                        |                 |                       |                  | 320                            |
| 18         | 33.93                          | 69.66           | 18.85                  | 46.44           | 13.46                 | 33.17            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 80                             |
|            | 63.62                          |                 | 35.34                  |                 | 25.25                 |                  |                                |                 |                        |                 |                       |                  | 150                            |
|            | 152.68                         |                 | 84.82                  |                 | 60.59                 |                  |                                |                 |                        |                 |                       |                  | 360                            |
| 20         | 36.64                          | 86.55           | 20.36                  | 57.70           | 14.54                 | 41.21            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 90                             |
|            | 69.22                          |                 | 38.45                  |                 | 27.47                 |                  |                                |                 |                        |                 |                       |                  | 170                            |
|            | 162.86                         |                 | 90.48                  |                 | 64.63                 |                  |                                |                 |                        |                 |                       |                  | 400                            |
| 22         | 42.16                          | 104.01          | 23.42                  | 69.34           | 16.73                 | 49.53            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 100                            |
|            | 80.10                          |                 | 44.50                  |                 | 31.79                 |                  |                                |                 |                        |                 |                       |                  | 190                            |
|            | 185.51                         |                 | 103.06                 |                 | 73.61                 |                  |                                |                 |                        |                 |                       |                  | 440                            |
| 25         | 45.03                          | 135.00          | 25.01                  | 90.00           | 17.87                 | 64.29            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 100                            |
|            | 94.56                          |                 | 52.53                  |                 | 37.52                 |                  |                                |                 |                        |                 |                       |                  | 210                            |
|            | 225.13                         |                 | 125.07                 |                 | 89.34                 |                  |                                |                 |                        |                 |                       |                  | 500                            |
| 28         | 62.07                          | 168.75          | 29.56                  | 112.50          | 21.11                 | 80.36            | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 112                            |
|            | 155.17                         |                 | 73.89                  |                 | 52.78                 |                  |                                |                 |                        |                 |                       |                  | 280                            |
|            | 310.34                         |                 | 147.78                 |                 | 105.56                |                  |                                |                 |                        |                 |                       |                  | 560                            |
| 32         | 72.96                          | 220.95          | 34.74                  | 147.30          | 24.82                 | 105.21           | Not Applicable                 |                 | Not Applicable         |                 | Not Applicable        |                  | 128                            |
|            | 182.40                         |                 | 86.86                  |                 | 62.04                 |                  |                                |                 |                        |                 |                       |                  | 320                            |
|            | 364.81                         |                 | 173.72                 |                 | 124.08                |                  |                                |                 |                        |                 |                       |                  | 640                            |





# POLYFIXER EASF

## Material Properties for grades of threaded rod and rebar

|                       | Stud Grade 8.8             |                            | Stud Grade 10.9            |                            | Stud Grade A4-70           |                            | Stud Grade A4-80           |                            |
|-----------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Stud Diameter<br>(mm) | N <sub>rk, s</sub><br>(kN) | N <sub>rd, s</sub><br>(kN) | N <sub>rk, s</sub><br>(kN) | N <sub>rd, s</sub><br>(kN) | N <sub>rk, s</sub><br>(kN) | N <sub>rd, s</sub><br>(kN) | N <sub>rk, s</sub><br>(kN) | N <sub>rd, s</sub><br>(kN) |
| <b>M8</b>             | 29.2                       | 19.5                       | 38.1                       | 27.2                       | 25.6                       | 13.7                       | 29.2                       | 15.6                       |
| <b>M10</b>            | 46.4                       | 30.9                       | 60.3                       | 43.1                       | 40.6                       | 21.7                       | 46.4                       | 24.8                       |
| <b>M12</b>            | 67.4                       | 44.9                       | 87.7                       | 62.6                       | 59.0                       | 31.6                       | 67.4                       | 36.0                       |
| <b>M16</b>            | 125.6                      | 83.7                       | 163.0                      | 116.4                      | 109.9                      | 58.8                       | 125.7                      | 67.2                       |
| <b>M20</b>            | 196.1                      | 130.7                      | 255.0                      | 182.1                      | 171.5                      | 91.7                       | 196.0                      | 104.8                      |
| <b>M24</b>            | 282.5                      | 188.3                      | 367.0                      | 262.1                      | 247.1                      | 132.1                      | 293.0                      | 132.1                      |
| <b>M30</b>            | 448.8                      | 299.2                      | 583.0                      | 416.4                      | 280.5                      | 150.0                      | 392.7                      | 210.0                      |

|                       | Stud Grade 8.8             |                            | Stud Grade 10.9            |                            | Stud Grade A4-70           |                            | Stud Grade A4-80           |                            |
|-----------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Stud Diameter<br>(mm) | V <sub>rk, s</sub><br>(kN) | V <sub>rd, s</sub><br>(kN) | V <sub>rk, s</sub><br>(kN) | V <sub>rd, s</sub><br>(kN) | V <sub>rk, s</sub><br>(kN) | V <sub>rd, s</sub><br>(kN) | V <sub>rk, s</sub><br>(kN) | V <sub>rd, s</sub><br>(kN) |
| <b>M8</b>             | 14.6                       | 11.7                       | 19.0                       | 15.2                       | 12.8                       | 8.2                        | 14.6                       | 9.4                        |
| <b>M10</b>            | 23.2                       | 18.6                       | 30.2                       | 24.1                       | 20.3                       | 13.0                       | 23.2                       | 14.9                       |
| <b>M12</b>            | 33.7                       | 27.0                       | 43.8                       | 35.1                       | 29.5                       | 18.9                       | 33.7                       | 21.6                       |
| <b>M16</b>            | 62.8                       | 50.2                       | 81.6                       | 65.3                       | 55.0                       | 35.2                       | 62.8                       | 40.3                       |
| <b>M20</b>            | 98.0                       | 78.4                       | 127.4                      | 101.9                      | 85.8                       | 55.0                       | 98.0                       | 62.8                       |
| <b>M24</b>            | 141.2                      | 113.0                      | 183.6                      | 146.8                      | 123.6                      | 79.2                       | 141.2                      | 90.5                       |
| <b>M30</b>            | 224.4                      | 179.5                      | 291.5                      | 215.9                      | 140.3                      | 89.9                       | 196.4                      | 125.9                      |

|                        | Rebar BSt 500 to DIN 488   |                            | Rebar BSt 500 to DIN 488   |                            |
|------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Rebar Diameter<br>(mm) | N <sub>rk, s</sub><br>(kN) | N <sub>rd, s</sub><br>(kN) | V <sub>rk, s</sub><br>(kN) | V <sub>rd, s</sub><br>(kN) |
| <b>8</b>               | 28.0                       | 20.0                       | 14.0                       | 9.3                        |
| <b>10</b>              | 43.0                       | 30.7                       | 21.5                       | 14.3                       |
| <b>12</b>              | 62.0                       | 44.3                       | 31.0                       | 20.7                       |
| <b>14</b>              | 85.0                       | 60.7                       | 42.5                       | 28.3                       |
| <b>16</b>              | 111.0                      | 79.3                       | 55.5                       | 37.0                       |
| <b>18</b>              | 140.0                      | 100.0                      | 70.0                       | 46.7                       |
| <b>20</b>              | 173.0                      | 123.6                      | 86.5                       | 57.7                       |
| <b>22</b>              | 209.0                      | 149.3                      | 104.5                      | 69.7                       |
| <b>25</b>              | 270.0                      | 192.9                      | 135.0                      | 90.0                       |
| <b>28</b>              | 339.0                      | 242.1                      | 169.0                      | 112.7                      |
| <b>32</b>              | 442                        | 315.7                      | 221                        | 147.3                      |



# POLYFIXER EASF

## Bond Strength Factors - REBAR

### Influence of concrete strength on combined pull out and concrete cone resistance

| Concrete Strength<br>N/mm <sup>2</sup> | C15/20 | C20/25 | C25/30 | C30/37 | C35/45 | C40/50 | C45/55 | C50/60 |
|----------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| non-cracked $f_c =$                    | 0.97   | 1.00   | 1.03   | 1.06   | 1.09   | 1.12   | 1.16   | 1.20   |

### Influence of environmental conditions in non cracked concrete

|                        |                | Ø 8  | Ø 10 | Ø 12 | Ø 14 | Ø 16 | Ø 18 | Ø 20 | Ø 22 | Ø 25 | Ø 28 | Ø 32 |
|------------------------|----------------|------|------|------|------|------|------|------|------|------|------|------|
| Temp I<br>40°C / 24°C  | Dry and<br>Wet | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Temp II<br>80°C / 50°C | Dry and<br>Wet | 0.90 | 0.90 | 0.88 | 0.88 | 0.88 | 0.86 | 0.86 | 0.84 | 0.84 | 0.84 | 0.84 |



# POLYFIXER EASF

## Effect of Anchor Spacing - Tension

| Anchor Spacing | Stud / Rebar Diameter |      |      |      |      |      |      |
|----------------|-----------------------|------|------|------|------|------|------|
| (mm)           | 8                     | 10   | 12   | 16   | 20   | 24   | 30   |
| 40             | 0.64                  |      |      |      |      |      |      |
| 50             | 0.67                  | 0.63 |      |      |      |      |      |
| 60             | 0.70                  | 0.65 | 0.63 |      |      |      |      |
| 70             | 0.73                  | 0.67 | 0.64 |      |      |      |      |
| 80             | 0.76                  | 0.69 | 0.66 | 0.63 |      |      |      |
| 90             | 0.79                  | 0.72 | 0.68 | 0.64 |      |      |      |
| 100            | 0.82                  | 0.74 | 0.70 | 0.65 | 0.63 |      |      |
| 120            | 0.87                  | 0.79 | 0.74 | 0.68 | 0.65 | 0.63 |      |
| 150            | 0.96                  | 0.86 | 0.80 | 0.73 | 0.68 | 0.65 | 0.63 |
| 160            | 1.00                  | 0.88 | 0.82 | 0.74 | 0.70 | 0.66 | 0.63 |
| 175            |                       | 0.92 | 0.85 | 0.76 | 0.71 | 0.67 | 0.64 |
| 200            |                       | 1.00 | 0.90 | 0.80 | 0.74 | 0.69 | 0.66 |
| 225            |                       |      | 0.95 | 0.84 | 0.77 | 0.72 | 0.68 |
| 240            |                       |      | 1.00 | 0.86 | 0.79 | 0.73 | 0.69 |
| 250            |                       |      |      | 0.87 | 0.80 | 0.74 | 0.70 |
| 275            |                       |      |      | 0.91 | 0.83 | 0.76 | 0.72 |
| 280            |                       |      |      | 0.92 | 0.84 | 0.77 | 0.73 |
| 300            |                       |      |      | 0.95 | 0.86 | 0.79 | 0.74 |
| 320            |                       |      |      | 1.00 | 0.88 | 0.81 | 0.76 |
| 350            |                       |      |      |      | 0.92 | 0.83 | 0.78 |
| 400            |                       |      |      |      | 1.00 | 0.88 | 0.82 |
| 440            |                       |      |      |      |      | 0.92 | 0.85 |
| 460            |                       |      |      |      |      | 1.00 | 0.87 |
| 500            |                       |      |      |      |      |      | 0.90 |
| 560            |                       |      |      |      |      |      | 1.00 |

## Effect of Edge Distance - Tension

| Edge Distance | Stud / Rebar Diameter |      |      |      |      |      |      |
|---------------|-----------------------|------|------|------|------|------|------|
| (mm)          | 8                     | 10   | 12   | 16   | 20   | 24   | 30   |
| 40            | 0.64                  |      |      |      |      |      |      |
| 50            | 0.73                  | 0.63 |      |      |      |      |      |
| 60            | 0.82                  | 0.70 | 0.63 |      |      |      |      |
| 70            | 0.90                  | 0.77 | 0.68 |      |      |      |      |
| 80            | 1.00                  | 0.84 | 0.74 | 0.63 |      |      |      |
| 90            |                       | 0.91 | 0.80 | 0.67 |      |      |      |
| 100           |                       | 1.00 | 0.86 | 0.71 | 0.63 |      |      |
| 110           |                       |      | 0.92 | 0.76 | 0.66 |      |      |
| 120           |                       |      | 1.00 | 0.80 | 0.70 | 0.64 |      |
| 140           |                       |      |      | 0.89 | 0.77 | 0.67 | 0.63 |
| 160           |                       |      |      | 1.00 | 0.84 | 0.72 | 0.65 |
| 180           |                       |      |      |      | 0.91 | 0.78 | 0.70 |
| 200           |                       |      |      |      | 1.00 | 0.84 | 0.76 |
| 220           |                       |      |      |      |      | 0.89 | 0.81 |
| 240           |                       |      |      |      |      | 1.00 | 0.86 |
| 280           |                       |      |      |      |      |      | 1.00 |

## Effect of Edge Distance - Shear

| Edge | Stud / Rebar Diameter |      |      |      |      |      |      |
|------|-----------------------|------|------|------|------|------|------|
| (mm) | 8                     | 10   | 12   | 16   | 20   | 24   | 30   |
| 40   | 0.25                  |      |      |      |      |      |      |
| 50   | 0.44                  | 0.30 |      |      |      |      |      |
| 60   | 0.63                  | 0.48 | 0.30 |      |      |      |      |
| 70   | 0.81                  | 0.65 | 0.44 |      |      |      |      |
| 80   | 1.00                  | 0.83 | 0.58 | 0.40 |      |      |      |
| 90   |                       | 1.00 | 0.72 | 0.53 |      |      |      |
| 100  |                       |      | 0.86 | 0.67 | 0.35 |      |      |
| 110  |                       |      | 1.00 | 0.80 | 0.44 |      |      |
| 125  |                       |      |      | 1.00 | 0.58 | 0.35 |      |
| 140  |                       |      |      |      | 0.72 | 0.46 | 0.30 |
| 160  |                       |      |      |      | 0.91 | 0.62 | 0.35 |
| 180  |                       |      |      |      | 1.00 | 0.77 | 0.46 |
| 200  |                       |      |      |      |      | 0.92 | 0.57 |
| 220  |                       |      |      |      |      | 1.00 | 0.68 |
| 240  |                       |      |      |      |      |      | 0.78 |
| 280  |                       |      |      |      |      |      | 1.00 |

# POLYFIXER EASF

## Minimum Curing Time

| Concrete Temperature | Gel - Working Time | Minimum curing time in dry concrete | Minimum curing time in wet concrete |
|----------------------|--------------------|-------------------------------------|-------------------------------------|
| - 10°C *             | 50 min             | 240 min                             | x2                                  |
| -5°C *               | 40 min             | 180 min                             | x2                                  |
| 5°C                  | 20 min             | 90 min                              | x2                                  |
| 15°C                 | 9 min              | 60 min                              | x2                                  |
| 25°C                 | 5 min              | 30 min                              | x2                                  |
| 35°C                 | 3 min              | 20 min                              | x2                                  |

\* Resin temperature must be at least 20°C

- Full cure 24 hours

- All specifications based on supplied mixer

## Temperature Ranges

| Temperature Range | Concrete Service Temperature | Maximum Long Term Concrete Temp | Maximum Short Term Concrete Temp |
|-------------------|------------------------------|---------------------------------|----------------------------------|
| Range I           | -40°C to +40°C               | +24°C                           | +40°C                            |
| Range II          | -40°C to +60°C               | +50°C                           | +80°C                            |

**Service temperature range:** Range of ambient temperatures after installation and during the lifetime of the anchor.

**Short term temperature:** Temperatures within the service temperature range which vary over short intervals, e.g. day/night cycles and freeze/thaw cycles.

**Long term temperature:** Temperature, within the service temperature range, which will be approximately constant over significant periods of time.

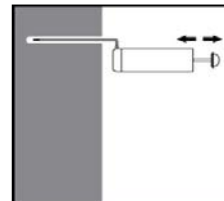
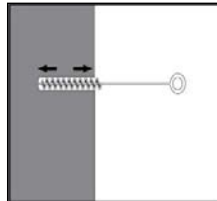
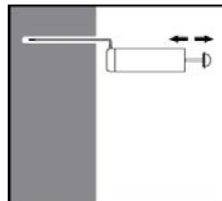
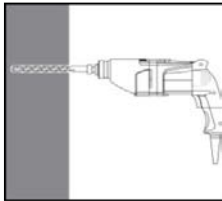
Long term temperatures will include constant or near constant temperatures, such as those experienced in cold stores or next to heating installations.

## Physical Properties

|                      | N/mm2     | Test Method           |
|----------------------|-----------|-----------------------|
| Compressive Strength | 45        | EN ISO 604 / ASTM 695 |
| Flexural Strength    | 15.4      | EN ISO 178 / ASTM 790 |
| Flexural Modulus     | 3111.7    | EN ISO 178 / ASTM 790 |
| Tensile Strength     | 9.4       | EN ISO 527 / ASTM 638 |
| E Modulus            | 5488.5    | EN ISO 527 / ASTM 638 |
| VOC Content          | A+ Rating | -                     |

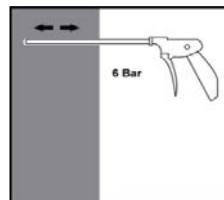
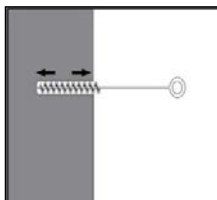
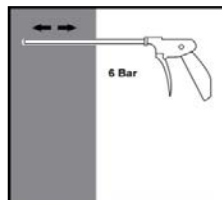
# POLYFIXER EASF

## Installation parameters: drilling hole cleaning and installation

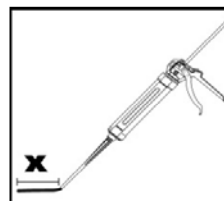
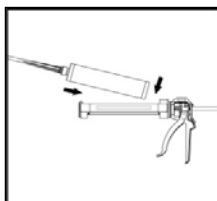
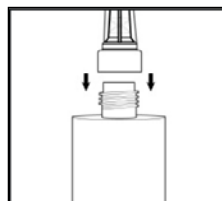
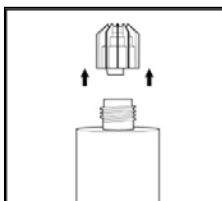


Drill hole in the substrate to the required embedment depth using the appropriately sized carbide drill bit. Bore hole cleaning Just before setting an anchor, the bore hole must be free of dust and debris. The manual pump shall be used for blowing out bore holes up to diameters  $\leq 24\text{mm}$  and embedment depths up to  $\text{hef} \leq 10d$ . Blow out at least 4 times from the back of the bore hole, using an extension if needed. Brush 4 times with the specified brush size (see Table 6) by inserting the steel brush to the back of the hole (if needed with an extension) in a twisting motion and removing it. Blow out again with manual pump at least 4 times.

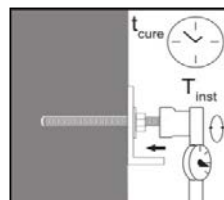
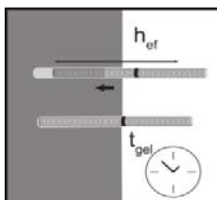
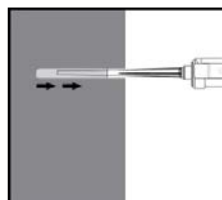
Compressed air cleaning (CAC) for all bore hole diameters do and all bore hole depths



Blow 2 times from the back of the hole (if needed with a nozzle extension) over the whole length with oil-free compressed air (min. 6 bar at  $6 \text{ m}^3/\text{h}$ ). Brush 2 times with the specified brush size (see Table 6) by inserting the steel brush to the back of the hole (if needed with an extension) in a twisting motion and removing it.  
X 2 Blow out again with compressed air at least 2 times.



Remove the threaded cap from the cartridge. Tightly attach the mixing nozzle. Do not modify the mixer in any way. Made sure the mixing element is inside the mixer. Use only the supplied mixer. Insert the cartridge into the dispenser gun. Discard the initial trigger pulls of adhesive. Discard the first 10ml of resin.



Inject the adhesive starting at the back of the hole, slowly withdrawing the mixer with each trigger pull. Fill holes approximately 2/3 full, to ensure that the annular gap between the anchor and the concrete is completely filled with adhesive along the embedment depth. Before use, verify that the threaded rod is dry and free of contaminants. Install the threaded rod to the required embedment depth during the open gel time  $t_{gel}$  has elapsed. The working time  $t_{gel}$  is given in Table 7. The anchor can be loaded after the required curing time  $t_{cure}$  (see Table 7). The applied torque shall not exceed the values  $T_{max}$  given in Table 1.

# POLYFIXER EASF

## Notes

PAGE 2 :

### ***Typical characteristic and design resistance performance with 5.8 grade studding and associated installation data***

All data is based on correct installation - see instructions

No influence of edge and spacing

Minimum base material thickness  $h_{ef} + 30\text{mm} > 100\text{mm}$  for M8 to M12 and for M16 to M30  $h_{ef} + 2d$

$h_{ef}$  range minimum or  $4d$  whichever is greatest to  $20d$

Concrete strength C20/25 -  $f_c$  cube =  $25\text{N/mm}^2$  (25MPa)

5.8 grade stud

Temperature range i maximum long term / short term temperature +24/40°C

PAGE 3 :

### ***Design Resistance with various stud strengths, material and rebar.***

Note 1 for stainless steel tensile strength is  $500\text{N/mm}^2$  (500MPa)

Note 2 for stainless steel tensile strength is  $700\text{N/mm}^2$  (500MPa)

Data shown below the minimum embedment depth is for reference only. Please refer to manufacturer for advice.

PAGE 4 and 6 :

### ***Characteristic and Design Load resistances based on characteristic bond strengths for $h_{ef} 4d$ (minimum embedment) to $20d$***

All data is based on correct installation - see instructions

No influence of edge and spacing

Minimum base material thickness  $h_{ef} + 30\text{mm} > 100\text{mm}$  for M8 to M12 and for M16 to M30  $h_{ef} + 2d$

$h_{ef}$  range minimum or  $4d$  whichever is greatest to  $20d$

Concrete strength C20/25 -  $f_c$  cube =  $25\text{N/mm}^2$  (25MPa)

Temperature range i maximum long term / short term temperature +24/40°C

PAGE 5 & 7 :

### ***Bond Strength Factors***

Select concrete strength and environmental condition and apply to bond strength table on page 4

PAGE 8 :

### ***Material Properties for grades of other threaded rod and rebar***

All grades shown for information

M30 studding is 8.8 grade instead of 5.8 grade

M30 for A4-70 tensile strength of  $500\text{N/mm}^2$  (500MPa), instead of  $700\text{N/mm}^2$  (700MPa)

Safety factor is 1.5 tension and 1.25 shear for all carbon steel

Safety factor is 1.56 for stainless steel, up to M24, M30 and M36 is 2.0

Safety factor is 1.4 tension and 1.5 shear for BSt 500 rebar

### **Partial Safety Factors for pages 2,3,4,5,6,7 :**

1.8 for all sizes studs

1.8 for all sizes rebar