

## MOPURE



## CERTIFICATES



## BASE MATERIAL



## CHARACTERISTICS

- Assessed for structural applications in cracked and non-cracked concrete, M10 to M30. Rebar used as stud from Ø10 to Ø32.
- Assessed for post-installed rebar connections Ø8 to Ø32.
- Evaluation Report ESR-3807 according to IBC and IRC (USA)
- Pure Epoxy 1:1, cartridges of 300 + 300 ml.
- LEED and A+ certificates.
- Use for high loads, static or quasi-static. Seismic loads C1.
- Working life of 50 and/or 100 years.
- Valid for dry and wet holes.
- Valid for zinc plated steel, hot-dip galvanized, stainless steel A2, A4 and HCR.
- Service temperature range: from -40°C to +80°C (long term maximum temperature +50°C).

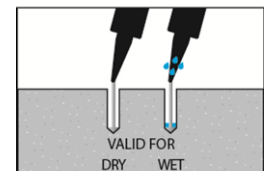
## VALID FOR



## APPLICATIONS

- Use in indoor and outdoor environments.
- Structural applications.
- Fixing of building substructures.
- Rebar and start rebar.
- Safety barriers, billboards, heavy engine, etc.
- Large metric sizes, retaining walls.

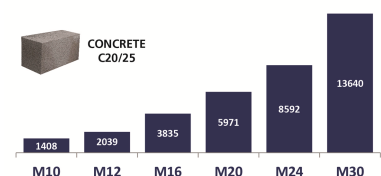
## DRILL HOLE CONDITION



## APPLICATION EXAMPLES



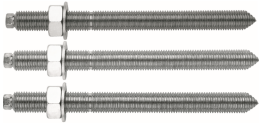
## MAXIMUM RECOMMENDED LOADS [kg]



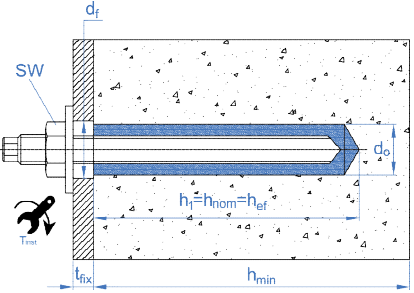
## 1. RANGE

| ITEM | CODE      | SIZE    | PHOTO                                                                             | COMPONENT         | MATERIAL                                                        |    |
|------|-----------|---------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------|----|
| 1    | MOPURE600 | 600 ml. |  | PURE EPOXY MORTAR | Pure Epoxy mortar.<br>Format: side by side cartridges of 600 ml | 12 |

## 2. ACCESORIES

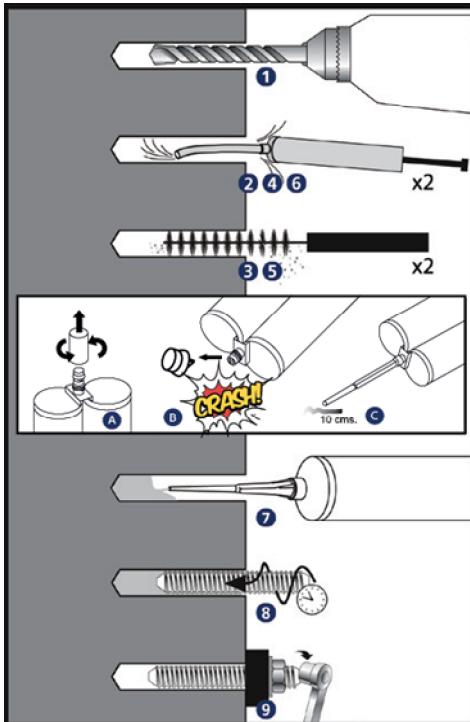
| ITEM | CODE                              | PHOTO                                                                               | COMPONENT        | MATERIAL                                                                                                                                                           |
|------|-----------------------------------|-------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | MOISPUR6                          |    | APPLICATION GUN  | Gun for 600 ml cartridges                                                                                                                                          |
| 2    | EQ-AC<br>EQ-8.8<br>EQ-A2<br>EQ-A4 |    | STUD BOLTS       | Threaded steel stud, class 5.8 ISO 898-1<br>Threaded steel stud, class 8.8 ISO 898-1<br>Threaded stainless steel stud A2-70<br>Threaded stainless steel stud A4-70 |
| 3    | MORCEPKIT                         |    | CLEANING BRUSHES | 3 Cleaning brushes kit of ø14, ø20 and ø29 mm.                                                                                                                     |
| 4    | MOBOMBA                           |   | CLEANING PUMP    | Pump for cleaning dust and drill hole fragments                                                                                                                    |
| 5    | MORCAPU                           |  | MIXING NOZZLE    | Plastic. Helix static mixer.                                                                                                                                       |

## 3. INSTALLATION DATA - CONCRETE FIXING (SET UP PARAMETERS)

| SIZE                                                                                                                     |      | M10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | M12                    | M16                    | M20                    | M24                    | M30                    |
|--------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| d <sub>0</sub> : nominal diameter                                                                                        | [mm] | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 14                     | 18                     | 22                     | 26                     | 35                     |
| d <sub>f</sub> : fixture hole diameter ≤                                                                                 | [mm] | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 14                     | 18                     | 22                     | 26                     | 33                     |
| T <sub>ins</sub> : torque ≤                                                                                              | [Nm] | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 40                     | 80                     | 135                    | 200                    | 270                    |
| Circular cleaning brush diameter                                                                                         |      | Ø14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Ø20                    |                        | Ø29                    | Ø40                    |                        |
| Assessment of seismic loads C1                                                                                           | [mm] | ✓                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ✓                      | ✓                      | ✓                      | ✓                      | ✓                      |
| Assessment of seismic loads C2                                                                                           | [mm] | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | --                     | --                     | --                     | --                     | --                     |
| <b>h<sub>ef,min</sub> = 8d</b>                                                                                           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                        |                        |                        |                        |                        |
| h <sub>1</sub> : drill hole depth                                                                                        | [mm] | 60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 70                     | 80                     | 90                     | 96                     | 120                    |
| s <sub>cr,N</sub> : critical spacing                                                                                     | [mm] | 180                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 210                    | 240                    | 270                    | 288                    | 360                    |
| c <sub>cr,N</sub> : critical edge distance                                                                               | [mm] | 90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 105                    | 120                    | 135                    | 144                    | 180                    |
| c <sub>min</sub> : minimum distance to edge                                                                              | [mm] | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 40                     | 45                     | 50                     | 55                     | 65                     |
| s <sub>min</sub> : minimum spacing                                                                                       | [mm] | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 40                     | 45                     | 50                     | 55                     | 65                     |
| h <sub>min</sub> : minimum concrete thickness                                                                            | [mm] | 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 100                    | 115                    | 130                    | 160                    | 200                    |
| <b>Standard stud</b>                                                                                                     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                        |                        |                        |                        |                        |
| h <sub>1</sub> : drill hole depth                                                                                        | [mm] | 90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 110                    | 128                    | 170                    | 210                    | 280                    |
| s <sub>cr,N</sub> : critical spacing                                                                                     | [mm] | 270                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 330                    | 384                    | 510                    | 630                    | 840                    |
| c <sub>cr,N</sub> : critical edge distance                                                                               | [mm] | 135                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 165                    | 192                    | 255                    | 315                    | 420                    |
| c <sub>min</sub> : minimum distance to edge                                                                              | [mm] | 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 56                     | 65                     | 85                     | 105                    | 140                    |
| s <sub>min</sub> : minimum spacing                                                                                       | [mm] | 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 56                     | 65                     | 85                     | 105                    | 140                    |
| h <sub>min</sub> : minimum concrete thickness                                                                            | [mm] | 115                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 140                    | 165                    | 220                    | 270                    | 350                    |
| <b>h<sub>ef,max</sub> = 20d</b>                                                                                          |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                        |                        |                        |                        |                        |
| h <sub>1</sub> : drill hole depth                                                                                        | [mm] | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 240                    | 320                    | 400                    | 480                    | 600                    |
| s <sub>cr,N</sub> : critical spacing                                                                                     | [mm] | 600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 720                    | 940                    | 1200                   | 1440                   | 1800                   |
| c <sub>cr,N</sub> : critical edge distance                                                                               | [mm] | 300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 360                    | 470                    | 600                    | 720                    | 900                    |
| c <sub>min</sub> : minimum distance to edge                                                                              | [mm] | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 40                     | 45                     | 50                     | 55                     | 65                     |
| s <sub>min</sub> : minimum spacing                                                                                       | [mm] | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 40                     | 45                     | 50                     | 55                     | 65                     |
| h <sub>min</sub> : minimum concrete thickness                                                                            | [mm] | 224                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 268                    | 336                    | 444                    | 532                    | 670                    |
| 5.8 / 8.8 Zinc plated stud code<br>   |      | EQAC10130<br>EQ8810130                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EQAC12160<br>EQ8812160 | EQAC16190<br>EQ8816190 | EQAC20260<br>EQ8820260 | EQAC24300<br>EQ8824300 | EQAC30330<br>EQ8830330 |
| A2 / A4 Stainless steel stud code<br> |      | EQA210130<br>EQA410130                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EQA212160<br>EQA412160 | EQA216190<br>EQA416190 | EQA220260<br>EQA420260 | EQA224300<br>EQA424300 | EQA230330<br>EQA430330 |
|                                       |      | <ul style="list-style-type: none"> <li>The h<sub>ef</sub> depth value may be selected by the user ranging between h<sub>ef,min</sub> = 8d and h<sub>ef,max</sub> = 20d. Any intermediate values may be interpolated.</li> <li>Critical distances are those where anchors in a group of anchors are not influenced by one another with regard to tension load effects. For smaller distances, down to minimum distances, corresponding reduction coefficients must be applied.</li> <li>Standard studs are available for each measurement, as shown in the table.</li> </ul> |                        |                        |                        |                        |                        |

## 4. PRODUCT SET UP

### 4.1. CONCRETE SET UP



#### 1. DRILL

Check the concrete base is compact and porosity is insignificant.

Suitable for wet, dry or flooded drill holes.

Cartridge installation temperature:  $\geq 5^{\circ}\text{C}$ .

Base material installation temperature: MOPURE  $\geq +5^{\circ}\text{C}$

Use drill in hammer mode.

Drill to the specified diameter and depth values

#### 2 - 6. BLOW AND CLEAN

Clear the drill holes completely of dust and fragments by following the procedure shown in the picture. If the drill hole is flooded, the water must be removed before mortar is injected.

#### A - B - C. OPEN CARTRIDGE

Remove the plug from the cartridge and hit the cartridge against a rigid surface. The mouth must be hit above the thread otherwise, threading won't be possible. Once the mouth has been opened, insert the mixing nozzle in the gun. Pull the trigger repeatedly until the mortar comes out of the nozzle in a uniform grey color. Any iridescence indicates improper mixing. Always discard the first two doses of each cartridge: these should never be used for fixing.

#### 7. INJECT MORTAR

Insert the nozzle to the bottom of the drill hole and apply mortar: gradually remove the nozzle, ensuring there are no air bubbles. Fill the hole to  $\frac{1}{2}$  and  $\frac{3}{4}$  of its depth.

In the event of not fully using the cartridge, leave nozzle attached. Only change if using again and handling time has expired, remembering to discard the first two doses of mortar

#### 8. INSTALLATION

Introduce the stud to be installed by screwing it lightly down to the installation depth value manually; ensuring the mortar covers the stud thread. The introduction of the anchor must take place within the handling time. The mortar must seep from the top of the drill hole to ensure it is completely full and there are no gaps between the stud and the drill hole.

### TEMPERATURE AND CURING TIME

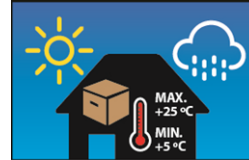
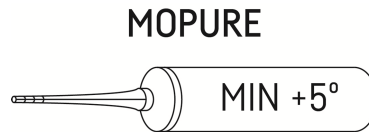
| TYPE   | Base material temperature [ $^{\circ}\text{C}$ ] | Handling time [min] | Curing time [hrs] |
|--------|--------------------------------------------------|---------------------|-------------------|
| MOPURE | +5 to +10                                        | 20                  | 24                |
|        | +10 to +15                                       | 20                  | 12                |
|        | +15 to +20                                       | 15                  | 8                 |
|        | +20 to +25                                       | 11                  | 7                 |
|        | +25 to +30                                       | 8                   | 6                 |
|        | +30 to +35                                       | 6                   | 5                 |
|        | +35 to +40                                       | 4                   | 4                 |
|        | +40                                              | 3                   | 3                 |

#### 9. APPLY TORQUE

Once the curing time has elapsed, apply torque, never exceeding the values indicated in the table.

## 5. STORAGE CONDITIONS

Keep the product stored in a cool, dry place, away from direct sunlight and heat sources, at an average temperature between +5 °C and +25 °C.



Shelf life of unopened cartridge: 24 months from the date of manufacture. The expiration date is indicated on the cartridge.

## 6. RESISTANCES

### 6.1 CONCRETE FIXATION

Characteristic resistances for C20/25 concrete for an isolated anchor (without considering anchor-to-anchor or anchor-to-edge distance effects), for static or quasi-static loads and class 5.8,8.8 studs or A2-70 and A4-70 stainless steel are shown in tables below.

#### CHARACTERISTIC RESISTANCES

| CONCRETE CLASS       | SIZE            |         |                          |          |      | M10         | M12         | M16          | M20          | M24          | M30          |
|----------------------|-----------------|---------|--------------------------|----------|------|-------------|-------------|--------------|--------------|--------------|--------------|
| NON-CRACKED CONCRETE | ZINC PLATED     | Tension | $h_{ef,min} = 8d$        | $N_{Rk}$ | [kN] | 27,6        | 39,8        | 70,7         | 99,5         | 130,8        | 182,9        |
|                      |                 |         | Standard stud            | $N_{Rk}$ | [kN] | 31,1        | 45,6        | 69,1         | 109,0        | 149,7        | 230,4        |
|                      |                 |         | $h_{ef,max} = 20d - 5.8$ | $N_{Rk}$ | [kN] | <u>29,0</u> | <u>42,0</u> | <u>79,0</u>  | <u>123,0</u> | <u>177,0</u> | <u>281,0</u> |
|                      |                 |         | $h_{ef,max} = 20d - 8.8$ | $N_{Rk}$ | [kN] | <u>46,0</u> | <u>67,0</u> | <u>126,0</u> | <u>196,0</u> | <u>282,0</u> | 565,4        |
|                      |                 | Shear   | All depths 5.8           | $V_{Rk}$ | [kN] | <u>15,0</u> | <u>21,0</u> | <u>39,0</u>  | <u>61,0</u>  | <u>88,0</u>  | <u>140,0</u> |
|                      |                 |         | All depths 8.8           | $V_{Rk}$ | [kN] | <u>23,0</u> | <u>34,0</u> | <u>63,0</u>  | <u>98,0</u>  | <u>141,0</u> | <u>224,0</u> |
|                      | STAINLESS STEEL | Tension | $h_{ef,min} = 8d$        | $N_{Rk}$ | [kN] | 27,6        | 39,8        | 70,7         | 99,5         | 130,8        | 182,9        |
|                      |                 |         | Standard stud            | $N_{Rk}$ | [kN] | 31,1        | 45,6        | 69,1         | 109,0        | 149,7        | 230,4        |
|                      |                 |         | $h_{ef,max} = 20d$       | $N_{Rk}$ | [kN] | <u>41,0</u> | <u>59,0</u> | <u>110,0</u> | <u>172,0</u> | <u>247,0</u> | <u>393,0</u> |
|                      |                 | Shear   | All depths               | $V_{Rk}$ | [kN] | <u>20,0</u> | <u>30,0</u> | <u>55,0</u>  | <u>86,0</u>  | <u>124,0</u> | <u>196,0</u> |
| CRACKED CONCRETE     | ZINC PLATED     | Tension | $h_{ef,min} = 8d$        | $N_{Rk}$ | [kN] | 21,3        | 30,7        | 49,8         | 55,2         | 79,6         | 124,4        |
|                      |                 |         | Standard stud            | $N_{Rk}$ | [kN] | 24,0        | 35,2        | 48,1         | 58,7         | 87,1         | 145,1        |
|                      |                 |         | $h_{ef,max} = 20d - 5.8$ | $N_{Rk}$ | [kN] | <u>29,0</u> | <u>42,0</u> | <u>79,0</u>  | 138,2        | 199,0        | 311,0        |
|                      |                 |         | $h_{ef,max} = 20d - 8.8$ | $N_{Rk}$ | [kN] | 53,4        | 76,9        | 136,7        | 138,2        | 199,0        | 311,0        |
|                      |                 | Shear   | All depths 5.8           | $V_{Rk}$ | [kN] | <u>15,0</u> | <u>21,0</u> | <u>39,0</u>  | <u>61,0</u>  | <u>88,0</u>  | <u>140,0</u> |
|                      |                 |         | $h_{ef,min} = 8d - 8.8$  | $V_{Rk}$ | [kN] | <u>23,0</u> | <u>34,0</u> | <u>63,0</u>  | <u>98,0</u>  | <u>183,2</u> | <b>256,0</b> |
|                      |                 |         | Standard stud 8.8        | $V_{Rk}$ | [kN] | <u>23,0</u> | <u>34,0</u> | <u>63,0</u>  | <u>98,0</u>  | <u>141,0</u> | <u>224,0</u> |
|                      |                 |         | $h_{ef,max} = 20d - 8.8$ | $V_{Rk}$ | [kN] | <u>23,0</u> | <u>34,0</u> | <u>63,0</u>  | <u>98,0</u>  | <u>141,0</u> | <u>224,0</u> |
|                      |                 | Tension | $h_{ef,min} = 8d$        | $N_{Rk}$ | [kN] | 21,3        | 30,7        | 49,8         | 55,2         | 79,6         | 124,4        |
|                      |                 |         | Standard stud            | $N_{Rk}$ | [kN] | 24,0        | 35,2        | 48,1         | 58,7         | 87,1         | 145,1        |
|                      |                 |         | $h_{ef,max} = 20d$       | $N_{Rk}$ | [kN] | <u>41,0</u> | <u>59,0</u> | <u>110,0</u> | 138,2        | 199,1        | 311,0        |
|                      |                 |         | All depths               | $V_{Rk}$ | [kN] | <u>20,0</u> | <u>30,0</u> | <u>55,0</u>  | <u>86,0</u>  | <u>124,0</u> | <u>196,0</u> |
|                      | STAINLESS STEEL | Tension | $h_{ef,min} = 8d$        | $N_{Rk}$ | [kN] | 21,3        | 30,7        | 49,8         | 55,2         | 79,6         | 124,4        |
|                      |                 |         | Standard stud            | $N_{Rk}$ | [kN] | 24,0        | 35,2        | 48,1         | 58,7         | 87,1         | 145,1        |
|                      |                 |         | $h_{ef,max} = 20d$       | $N_{Rk}$ | [kN] | <u>41,0</u> | <u>59,0</u> | <u>110,0</u> | 138,2        | 199,1        | 311,0        |
|                      |                 |         | All depths               | $V_{Rk}$ | [kN] | <u>20,0</u> | <u>30,0</u> | <u>55,0</u>  | <u>86,0</u>  | <u>124,0</u> | <u>196,0</u> |

## DESIGN RESISTANCES

| CONCRETE CLASS       | SIZE            |         |                          |          |      | M10         | M12         | M16         | M20          | M24          | M30          |
|----------------------|-----------------|---------|--------------------------|----------|------|-------------|-------------|-------------|--------------|--------------|--------------|
|                      |                 |         |                          |          |      |             |             |             |              |              |              |
| NON-CRACKED CONCRETE | ZINC PLATED     | Tension | $h_{ef,min} = 8d$        | $N_{Rd}$ | [kN] | 15,3        | 18,9        | 33,7        | <b>47,4</b>  | <b>62,3</b>  | <b>87,1</b>  |
|                      |                 |         | Standard stud            | $N_{Rd}$ | [kN] | 17,2        | 21,7        | 32,9        | <b>51,9</b>  | <b>71,2</b>  | <b>109,7</b> |
|                      |                 |         | $h_{ef,max} = 20d - 5.8$ | $N_{Rd}$ | [kN] | <u>19,3</u> | <u>28,0</u> | <u>52,6</u> | <u>82,0</u>  | <u>118,0</u> | <u>187,3</u> |
|                      |                 |         | $h_{ef,max} = 20d - 8.8$ | $N_{Rd}$ | [kN] | <u>30,6</u> | <u>44,6</u> | <u>84,0</u> | <u>130,6</u> | <u>188,0</u> | 269,2        |
|                      |                 | Shear   | All depths 5.8           | $V_{Rd}$ | [kN] | <u>12,0</u> | <u>16,8</u> | <u>31,2</u> | <u>48,8</u>  | <u>70,4</u>  | <u>112,0</u> |
|                      |                 |         | All depths 8.8           | $V_{Rd}$ | [kN] | <u>18,4</u> | <u>27,2</u> | <u>50,4</u> | <u>78,4</u>  | <u>112,8</u> | <u>179,2</u> |
|                      | STAINLESS STEEL | Tension | $h_{ef,min} = 8d$        | $N_{Rd}$ | [kN] | 15,3        | 18,9        | 33,7        | <b>47,4</b>  | <b>62,3</b>  | <b>87,1</b>  |
|                      |                 |         | Standard stud            | $N_{Rd}$ | [kN] | 17,2        | 21,7        | 32,9        | <b>51,9</b>  | <b>71,2</b>  | <b>109,7</b> |
|                      |                 |         | $h_{ef,max} = 20d$       | $N_{Rd}$ | [kN] | <u>21,5</u> | <u>31,0</u> | <u>57,8</u> | <u>90,5</u>  | <u>130,0</u> | <u>206,4</u> |
|                      |                 | Shear   | All depths               | $V_{Rd}$ | [kN] | <u>12,8</u> | <u>19,2</u> | <u>35,2</u> | <u>55,1</u>  | <u>79,4</u>  | <u>125,4</u> |
| CRACKED CONCRETE     | ZINC PLATED     | Tension | $h_{ef,min} = 8d$        | $N_{Rd}$ | [kN] | 11,8        | 14,6        | <b>23,7</b> | 26,3         | 37,9         | 59,2         |
|                      |                 |         | Standard stud            | $N_{Rd}$ | [kN] | 13,3        | 16,7        | <b>22,9</b> | 27,9         | 41,4         | 69,1         |
|                      |                 |         | $h_{ef,max} = 20d - 5.8$ | $N_{Rd}$ | [kN] | <u>19,3</u> | <u>28,0</u> | <u>52,6</u> | 65,8         | 94,7         | 148,1        |
|                      |                 |         | $h_{ef,max} = 20d - 8.8$ | $N_{Rd}$ | [kN] | 29,6        | 36,6        | 65,1        | 65,8         | 94,7         | 148,1        |
|                      |                 | Shear   | All depths 5.8           | $V_{Rd}$ | [kN] | <u>12,0</u> | <u>16,8</u> | <u>31,2</u> | <u>48,8</u>  | <u>70,4</u>  | <u>112,0</u> |
|                      |                 |         | $h_{ef,min} = 8d - 8.8$  | $V_{Rd}$ | [kN] | <u>18,4</u> | <u>27,2</u> | <u>50,4</u> | <u>78,4</u>  | <u>112,8</u> | <b>170,7</b> |
|                      |                 |         | Standard stud 8.8        | $V_{Rd}$ | [kN] | <u>18,4</u> | <u>27,2</u> | <u>50,4</u> | <u>78,4</u>  | <u>112,8</u> | <u>179,2</u> |
|                      |                 |         | $h_{ef,max} = 20d - 8.8$ | $V_{Rd}$ | [kN] | <u>18,4</u> | <u>27,2</u> | <u>50,4</u> | <u>78,4</u>  | <u>112,8</u> | <u>179,2</u> |
|                      | STAINLESS STEEL | Tension | $h_{ef,min} = 8d$        | $N_{Rd}$ | [kN] | 11,8        | 14,6        | <b>23,7</b> | 26,3         | 37,9         | 59,2         |
|                      |                 |         | Standard stud            | $N_{Rd}$ | [kN] | 13,3        | 16,7        | <b>22,9</b> | 27,9         | 41,4         | 69,1         |
|                      |                 |         | $h_{ef,max} = 20d$       | $N_{Rd}$ | [kN] | <u>21,5</u> | <u>31,0</u> | <u>57,8</u> | 65,8         | 94,7         | 148,1        |
|                      |                 | Shear   | All depths               | $V_{Rk}$ | [kN] | <u>12,8</u> | <u>19,2</u> | <u>35,2</u> | <u>55,1</u>  | <u>79,4</u>  | <u>125,4</u> |

## MAXIMUM LOADS RECOMMENDED (when $\gamma_f = 1.4$ )

| CONCRETE CLASS       | SIZE            |         |                          |           |      | M10         | M12         | M16         | M20         | M24          | M30          |
|----------------------|-----------------|---------|--------------------------|-----------|------|-------------|-------------|-------------|-------------|--------------|--------------|
| NON-CRACKED CONCRETE | ZINC PLATED     | Tension | $h_{ef,min} = 8d$        | $N_{rec}$ | [kN] | 10,9        | 13,5        | 24,0        | <b>33,8</b> | <b>44,5</b>  | <b>62,2</b>  |
|                      |                 |         | Standard stud            | $N_{rec}$ | [kN] | 12,3        | 15,5        | 23,5        | <b>37,1</b> | <b>50,9</b>  | <b>78,4</b>  |
|                      |                 |         | $h_{ef,max} = 20d - 5.8$ | $N_{rec}$ | [kN] | <u>13,8</u> | <u>20,0</u> | <u>37,6</u> | <u>58,5</u> | <u>84,2</u>  | <u>133,8</u> |
|                      |                 |         | $h_{ef,max} = 20d - 8.8$ | $N_{rec}$ | [kN] | <u>21,9</u> | <u>31,9</u> | <u>60,0</u> | <u>93,3</u> | <u>134,2</u> | 192,3        |
|                      |                 | Shear   | All depths 5.8           | $V_{rec}$ | [kN] | <u>8,5</u>  | <u>12,0</u> | <u>22,2</u> | <u>34,8</u> | <u>50,2</u>  | <u>80,0</u>  |
|                      |                 |         | All depths 8.8           | $V_{rec}$ | [kN] | <u>13,1</u> | <u>19,4</u> | <u>36,0</u> | <u>56,0</u> | <u>80,5</u>  | <u>128,0</u> |
|                      | STAINLESS STEEL | Tension | $h_{ef,min} = 8d$        | $N_{rec}$ | [kN] | 10,9        | 13,5        | 24,0        | <b>33,8</b> | <b>44,5</b>  | <b>62,2</b>  |
|                      |                 |         | Standard stud            | $N_{rec}$ | [kN] | 12,3        | 15,5        | 23,5        | <b>37,1</b> | <b>50,9</b>  | <b>78,4</b>  |
|                      |                 |         | $h_{ef,max} = 20d$       | $N_{rec}$ | [kN] | <u>15,4</u> | <u>22,1</u> | <u>41,3</u> | <u>64,6</u> | <u>92,8</u>  | <u>147,7</u> |
|                      |                 | Shear   | All depths               | $V_{rec}$ | [kN] | <u>9,1</u>  | <u>13,7</u> | <u>25,1</u> | <u>39,3</u> | <u>56,7</u>  | <u>89,7</u>  |
| CRACKED CONCRETE     | ZINC PLATED     | Tension | $h_{ef,min} = 8d$        | $N_{rec}$ | [kN] | 8,4         | 10,4        | <b>16,9</b> | 18,8        | 27,0         | 42,3         |
|                      |                 |         | Standard stud            | $N_{rec}$ | [kN] | 9,5         | 11,9        | <b>16,3</b> | 19,9        | 29,6         | 49,3         |
|                      |                 |         | $h_{ef,max} = 20d - 5.8$ | $N_{rec}$ | [kN] | <u>13,8</u> | <u>20,0</u> | <u>37,6</u> | 47,0        | 67,7         | 105,7        |
|                      |                 |         | $h_{ef,max} = 20d - 8.8$ | $N_{rec}$ | [kN] | 21,1        | 26,1        | 46,5        | 47,0        | 67,7         | 105,7        |
|                      |                 | Shear   | All depths 5.8           | $V_{rec}$ | [kN] | <u>8,5</u>  | <u>12,0</u> | <u>22,2</u> | <u>34,8</u> | <u>50,2</u>  | <u>80,0</u>  |
|                      |                 |         | $h_{ef,min} = 8d - 8.8$  | $V_{rec}$ | [kN] | <u>13,1</u> | <u>19,4</u> | <u>36,0</u> | <u>56,0</u> | <u>80,5</u>  | <b>121,9</b> |
|                      |                 |         | Standard stud 8.8        | $V_{rec}$ | [kN] | <u>13,1</u> | <u>19,4</u> | <u>36,0</u> | <u>56,0</u> | <u>80,5</u>  | <u>128,0</u> |
|                      |                 |         | $h_{ef,max} = 20d - 8.8$ | $V_{rec}$ | [kN] | <u>13,1</u> | <u>19,4</u> | <u>36,0</u> | <u>56,0</u> | <u>80,5</u>  | <u>128,0</u> |
|                      | STAINLESS STEEL | Tension | $h_{ef,min} = 8d$        | $N_{rec}$ | [kN] | 8,4         | 10,4        | <b>16,9</b> | 18,8        | 27,0         | 42,3         |
|                      |                 |         | Standard stud            | $N_{rec}$ | [kN] | 9,5         | 11,9        | <b>16,3</b> | 19,9        | 29,6         | 49,3         |
|                      |                 |         | $h_{ef,max} = 20d$       | $N_{rec}$ | [kN] | <u>15,4</u> | <u>22,1</u> | <u>41,3</u> | 47,0        | 67,7         | 105,7        |
|                      |                 | Shear   | All depths               | $V_{rec}$ | [kN] | <u>9,1</u>  | <u>13,7</u> | <u>25,1</u> | <u>39,3</u> | <u>56,7</u>  | <u>89,7</u>  |

1 kN  $\approx$  100 kg

The italic font underlined values indicate steel failure; bold values indicate concrete failure, rest indicates pull-out failure.

## COEFFICIENTS FOR TENSION LOADS IN PULL-OUT FAILURE IN HIGH-RESISTANCE CONCRETE TYPES

| CONCRETE COEFFICIENT   | C30/37 | C40/50 | C50/60 |
|------------------------|--------|--------|--------|
| $\Psi_c$ (Non-cracked) | 1,03   | 1,06   | 1,07   |
| $\Psi_c$ (Cracked)     | 1,12   | 1,23   | 1,30   |

## 6.2 CHEMICAL RESISTANCE

Chemical resistance of the product for different kind of chemical environments and for a specific concentration.

| Chemical Environment                                                 | Concentration | Result | Chemical Environment               | Concentration | Result |
|----------------------------------------------------------------------|---------------|--------|------------------------------------|---------------|--------|
| Aqueous Solution Acetic Acid                                         | 10%           | C      | Hexane                             | 100%          | C      |
| Acetone                                                              | 100%          | X      | Hydrochloric Acid                  | 10%           | ✓      |
| Aqueous Solution Aluminium Chloride                                  | Saturated     | ✓      |                                    | 15%           | ✓      |
| Aqueous Solution Aluminium Nitrate                                   | 10%           | ✓      |                                    | 25%           | C      |
| Ammonia Solution                                                     | 5%            | ✓      | Hydrogen Sulphide Gas              | 100%          | ✓      |
| Jet Fuel                                                             | 100%          | C      | Isopropyl Alcohol                  | 100%          | X      |
| Benzene                                                              | 100%          | C      | Linseed Oil                        | 100%          | ✓      |
| Benzoic Acid                                                         | Saturated     | ✓      | Lubricating Oil                    | 100%          | ✓      |
| Benzyl Alcohol                                                       | 100%          | X      | Mineral Oil                        | 100%          | ✓      |
| Sodium Hypochlorite Solution                                         | 5 - 15%       | ✓      | Paraffin / Kerosene (Domestic)     | 100%          | C      |
| Butyl Alcohol                                                        | 100%          | C      | Phenol Aqueous Solution            | 1%            | C      |
| Calcium Sulphate Aqueous Solution                                    | Saturated     | ✓      | Phosphoric Acid                    | 50%           | ✓      |
| Carbon Monoxide                                                      | Gas           | ✓      | Potassium Hydroxide                | 10% / pH13    | ✓      |
| Carbon Tetrachloride                                                 | 100%          | C      | Sea Water                          | 100%          | C      |
| Chlorine Water                                                       | Saturated     | X      | Styrene                            | 100%          | C      |
| Chloro Benzene                                                       | 100%          | X      | Sulphur Dioxide Solution           | 10%           | ✓      |
| Citric Acid Aqueous Solution                                         | Saturated     | ✓      | Sulphur Dioxide (40°C)             | 5%            | ✓      |
| Cyclohexanol                                                         | 100%          | ✓      | Sulphuric Acid                     | 10%           | ✓      |
| Diesel Fuel                                                          | 100%          | C      |                                    | 50%           | ✓      |
| Diethylene Glycol                                                    | 100%          | ✓      | Turpentine                         | 100%          | C      |
| Ethanol                                                              | 95%           | X      | White Spirit                       | 100%          | ✓      |
| Ethanol Aqueous Solution                                             | 20%           | C      | Xylene                             | 100%          | C      |
| Heptane                                                              | 100%          | C      | Contact only to a maximum of 25°C. |               | C      |
| Resistant to 75°C with at least 80% of physical properties retained. |               | ✓      | Not Resistant                      |               | X      |

## 7. OFFICIAL DOCUMENTATION

The following documents are available through our Sales Department or on our official website: [www.indexfix.com](http://www.indexfix.com):

- MOPURE Safety Data Sheet.
- European Technical Assessment ETA 14/0156 for use on cracked and non-cracked concrete according to EAD 330232-00-0601 Guide, option 1, for M10 to M30. Assessment for seismic loads C1.
- European Technical Approval ETA 14/0325 for the installation of post-installed concrete reinforcements with diameters from 8 to 32 mm according to technical report EAD 330087-01-0601.
- ICC-ES Evaluation Report ESR-3807 according to International Building Code (IBC 2003, 2006, 2009, 2012 and 205) and International Residential Code (IRC 2003, 2006, 2009, 2012 and 205).
- Classified A+ according to French Regulation DEVL11044875A relative to the emission of volatile pollutants for indoor use.
- LEED MOPURE Certification of sustainability.
- Declaration of Performance DoP MOPURE.
- INDEXcal anchor calculation software.
- INDEXmor cartridge calculation needs software.