



... eine starke Verbindung

YDEEVNEDEKLARATION  
DoP Nr. MKT-232 - dk

1. Varetypens unikke identifikationskode: **MKT Slaganker E / ES**
2. Type-, parti- eller serienummer eller en anden form for angivelse, ved hjælp af hvilken byggevaren kan identificeres som krævet i henhold til artikel 11, stk. 4:

**ETA-02/0020, Annex A3**  
**Batch nummer: se pakningen**

3. Byggevarens tilsigtede anvendelse eller anvendelser i overensstemmelse med den gældende harmoniserede tekniske specifikation som påtænkt af fabrikanten:

|                         |  |
|-------------------------|--|
| <b>Produkttype</b>      | Deformationsstyret slaganker   |
| <b>For anvendelse i</b> | Ikke revnet beton C20/25 - C50/60 (EN 206)   |
| <b>Option</b>           | 7  |
| <b>Belastning</b>       | Statisk, kvasi-statisk   |
| <b>Materiale</b>        | <u>Stål galvaniseret:</u><br>Kun i tørre indeområder<br>Størrelse: E/ES M6x30, E/ES M8x30, E/ES M8x40, ES M10x30,<br>E/ES M10x40, E/ES M12x50, E/ES M12x80,<br>E/ES M16x65, E/ES M16x80, E M20x80<br><u>Rustfri Stål (stemplet A4):</u><br>Til inde- og udeområder uden særlige aggressive påvirkninger<br>Størrelse: E/ES M6x30, E/ES M8x30, E/ES M8x40,<br>E/ES M10x40, E/ES M12x50, E/ES M12x80,<br>E/ES M16x65, E/ES M16x80, E M20x80<br><u>Højkorrosionsbestandig Stål (stemplet HCR):</u><br>inde- og udeområder med særlige aggressive påvirkninger<br>Størrelse: E/ES M6x30, E/ES M8x30, E/ES M8x40,<br>E/ES M10x40, E/ES M12x50, E/ES M12x80,<br>E/ES M16x65, E/ES M16x80, E M20x80 |
| <b>Temperaturområde</b> | --   |

4. Fabrikantens navn, registrerede firmabetegnelse eller registrerede varemærke og kontaktadresse som krævet i henhold til artikel 11, stk. 5:

**MKT Metall-Kunststoff-Technik GmbH & Co. KG**  
**Auf dem Immel 2**  
**D - 67685 Weilerbach**

5. I givet fald navn og kontaktadresse på den bemyndigede repræsentant, hvis mandat omfatter opgaverne i artikel 12, stk. 2: --
6. Systemet eller systemerne til vurdering og kontrol af konstanten af byggevarens ydeevne, jf. bilag V:  
**System 1**
7. Hvis ydeevnedeklarationen vedrører en byggevare, der er omfattet af en harmoniseret standard: --

8. Hvis ydeevnedeklarationen vedrører en byggevare, for hvilken der er udstedt en europæisk teknisk vurdering

**Deutsches Institut für Bautechnik, Berlin**

og udstedte:

**ETA-02/0020**

på grundlag af,

**ETAG 001-4**

Det notificerede produktcertificeringsorgan 1343-CPR udførte kontrollen efter system 1:

- i) bestemmelse af varetypen på grundlag af typeprøvning (herunder stikprøveudtagning), typeberegning, tabelværdier eller deskriptiv dokumentation for byggevaren;
- ii) indledende inspektion af fabriksanlæg og fabrikkens egen produktionskontrol;
- iii) kontinuerlig overvågning, vurdering og evaluering af fabrikkens egen produktionskontrol

og udstedte: Overensstemmelsesattest 1343-CPR-M 550-2

9. Deklareret ydeevne:

| Karakteristiske kendetegn                  | Beregningsmetode  | Ydeevne     | Harmoniserede tekniske specifikationer |
|--|-------------------|-------------|--|
| Karakteristisk modstand ved trækbelastning | ETAG 001, Annex C | Annex C1-C2 | ETAG 001                               |
|  | CEN/TS 1992-4     |             |  |
| Karakteristisk modstand ved tværbelastning | ETAG 001, Annex C | Annex C3-C4 |  |
|  | CEN/TS 1992-4     |             |  |
| Forskydning i anvendelsestilstand          | ETAG 001, Annex C | Annex C5    |  |
|  | CEN/TS 1992-4     |             |  |

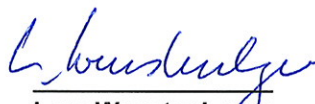
Hvis der er anvendt specifik teknisk dokumentation i medfør af artikel 37 eller 38, de krav varen opfylder:

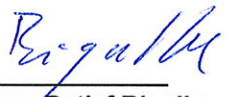
--

10. Ydeevnen for den byggevare, der er anført i punkt 1 og 2, er i overensstemmelse med den deklarerede ydeevne i punkt 9.

Denne ydeevnedeklaration udstedes på eneansvar af den fabrikant, der er anført i punkt 4.

Underskrevet for fabrikanten og på dennes vegne af:

  
**Lore Weustenhagen**  
(CEO)  
**Weilerbach, 22.09.2015**

i.V.   
**Dipl.-Ing. Detlef Bigalke**  
(Chef for Produktudvikling)



**Table C1: Characteristic values for tension loads, zinc plated steel**

| Anchor size                                  |                                 |      | M6x30 <sup>1)</sup>                         | M8x30 <sup>1)</sup> | M8x40 | M10x30 <sup>1)</sup> | M10x40 | M12x50 | M12x80 | M16x65<br>M16x80 | M20x80 |
|--|---------------------------------|------|---|---------------------|-------|----------------------|--------|--------|--------|------------------|--------|
| Installation safety factor                   | $\gamma_2$                      | [-]  | 1,2   |                     |       |                      |        |        |        |                  |        |
| <b>Steel failure</b>                         |                                 |      |   |                     |       |                      |        |        |        |                  |        |
| Characteristic resistance Steel 4.6          | $N_{Rk,s}$                      | [kN] | 8,0   | 14,6                | 23,2  |                      | 33,7   |        | 62,8   | 98,0             |        |
| Partial safety factor                        | $\gamma_{Ms}$                   | [-]  | 2,0   |                     |       |                      |        |        |        |                  |        |
| Characteristic resistance Steel 5.6          | $N_{Rk,s}$                      | [kN] | 10,0  | 18,3                | 18,0  | 20,2                 | 42,1   |        | 78,3   | 122,4            |        |
| Partial safety factor                        | $\gamma_{Ms}$                   | [-]  | 2,0   |                     | 1,5   |                      | 2,0    |        |        |                  |        |
| Characteristic resistance Steel 5.8          | $N_{Rk,s}$                      | [kN] | 10,0  | 17,6                | 18,3  | 18,0                 | 20,2   | 40,2   | 42,1   | 67,1             | 106,4  |
| Partial safety factor                        | $\gamma_{Ms}$                   | [-]  | 1,5   |                     |       |                      |        |        | 1,6    |                  |        |
| Characteristic resistance Steel 8.8          | $N_{Rk,s}$                      | [kN] | 15,0  | 17,6                | 19,9  | 18,0                 | 20,2   | 40,2   | 43,0   | 67,1             | 106,4  |
| Partial safety factor                        | $\gamma_{Ms}$                   | [-]  | 1,5   |                     |       |                      |        |        | 1,6    |                  |        |
| <b>Pull-out failure</b>                      |                                 |      |   |                     |       |                      |        |        |        |                  |        |
| Characteristic resistance in concrete C20/25 | $N_{Rk,p}$                      | [kN] | 2)  | 2)                  | 9     | 2)                   | 2)     | 2)     | 2)     | 2)               |        |
| Increasing factor for $N_{Rk,p}$             | $\psi_C$                        | [-]  | $\left(\frac{f_{ck,cube}}{25}\right)^{0,3}$ |                     |       |                      |        |        |        |                  |        |
| <b>Concrete cone failure and splitting</b>   |                                 |      |   |                     |       |                      |        |        |        |                  |        |
| Effective anchorage depth                    | $h_{ef}$                        | [mm] | 30  | 30                  | 40    | 30                   | 40     | 50     | 65     | 80               |        |
| Spacing (edge distance)                      | $\frac{s_{cr,N}}{2 C_{cr,N}}$   | [mm] | 3 $h_{ef}$                                  |                     |       |                      |        |        |        |                  |        |
|  | $\frac{s_{cr,sp}}{2 C_{cr,sp}}$ | [mm] | 190   | 190                 | 190   | 230                  | 270    | 330    | 400    | 520              |        |
| Factor acc. to CEN/TS 1992-4                 | $k_{ucr}$                       | [-]  | 10,1  |                     |       |                      |        |        |        |                  |        |

<sup>1)</sup> Use restricted to anchoring of structural components statically indeterminate

<sup>2)</sup> Pull-out is not decisive

**Drop-in Anchor E / ES**

**Performance**  
Characteristic values for tension loads, zinc plated steel

**Annex C1**

**Table C2: Characteristic values for tension loads, stainless steel A4, HCR**

| Anchor size                                   |                             |      | M6x30 <sup>1)</sup>                         | M8x30 <sup>1)</sup> | M8x40 | M10x40 | M12x50<br>M12x80 | M16x65<br>M16x80 | M20x80 |
|---|-----------------------------|------|---|---------------------|-------|--------|------------------|------------------|--------|
| Installation safety factor                    | $\gamma_2$                  | [-]  | 1,0   |                     |       |        |                  |                  |        |
| <b>Steel failure</b>                          |                             |      |   |                     |       |        |                  |                  |        |
| Characteristic resistance (property class 70) | $N_{Rk,s}$                  | [kN] | 14,1  | 23,3                |       | 29,4   | 50,2             | 83,8             | 133,0  |
| Characteristic resistance (property class 80) | $N_{Rk,s}$                  | [kN] | 17,5  | 23,3                |       | 29,4   | 50,2             | 83,8             | 133,0  |
| Partial safety factor                         | $\gamma_{Ms}$               | [-]  | 1,87  |                     |       |        |                  |                  |        |
| <b>Pull-out failure</b>                       |                             |      |   |                     |       |        |                  |                  |        |
| Characteristic resistance in concrete C20/25  | $N_{Rk,p}$                  | [kN] | 2)  | 2)                  | 9     | 2)     | 2)               | 2)               | 2)     |
| Increasing factor for $N_{Rk,p}$              | $\psi_C$                    | [-]  | $\left(\frac{f_{ck,cube}}{25}\right)^{0,5}$ |                     |       |        |                  |                  |        |
| <b>Concrete cone failure and splitting</b>    |                             |      |   |                     |       |        |                  |                  |        |
| Effective anchorage depth                     | $h_{ef}$                    | [mm] | 30 <sup>3)</sup>                            | 30                  | 40    | 40     | 50               | 65               | 80     |
| Spacing (edge distance)                       | $s_{cr,N} (= 2 c_{cr,N})$   | [mm] | 3 $h_{ef}$                                  |                     |       |        |                  |                  |        |
|   | $s_{cr,sp} (= 2 c_{cr,sp})$ | [mm] | 160   | 190                 | 190   | 270    | 330              | 400              | 520    |
| Factor acc. to CEN/TS 1992-4                  | $k_{ucr}$                   | [-]  | 10,1  |                     |       |        |                  |                  |        |

<sup>1)</sup> Use restricted to anchoring of structural components statically indeterminate and subject to dry internal conditions

<sup>2)</sup> Pull-out is not decisive

<sup>3)</sup> For proof against concrete cone failure as per ETAG 001, annex C or CEN/TS 1992-4-4,  $N_{Rk,c}$  must be multiplied by the factor  $(25/f_{ck,cube})^{0,2}$ .

**Drop-in Anchor E / ES**

**Performance**  
Characteristic values for tension loads, stainless steel A4, HCR

**Annex C2**

**Table C3: Characteristic values for shear loads, zinc plated steel**

| Anchor size  |               |      | M6x30 | M8x30 | M8x40 | M10x30 | M10x40 | M12x50 | M12x80 | M16x65<br>M16x80 | M20x80 |
|--|---------------|------|-------|-------|-------|--------|--------|--------|--------|------------------|--------|
| <b>Steel failure without lever arm</b>                           |               |      |       |       |       |        |        |        |        |                  |        |
| Characteristic resistance<br>Steel 4.6                           | $V_{Rk,s}$    | [kN] | 4,0   | 7,3   | 11,6  | 9,6    | 16,8   |        | 31,3   | 49,0             |        |
| Partial safety factor  | $\gamma_{Ms}$ | [-]  | 1,67  |       |       |        |        |        |        |                  |        |
| Characteristic resistance<br>Steel 5.6                           | $V_{Rk,s}$    | [kN] | 5,0   | 9,1   | 10,1  | 9,6    | 21,1   |        | 39,2   | 61,2             |        |
| Partial safety factor  | $\gamma_{Ms}$ | [-]  | 1,67  |       | 1,25  | 1,67   |        |        |        |                  |        |
| Characteristic resistance<br>Steel 5.8                           | $V_{Rk,s}$    | [kN] | 5,0   | 6,9   | 10,1  | 7,2    | 19,4   | 21,1   | 33,5   | 53,2             |        |
| Partial safety factor  | $\gamma_{Ms}$ | [-]  | 1,25  |       |       |        |        |        | 1,33   |                  |        |
| Characteristic resistance<br>Steel 8.8                           | $V_{Rk,s}$    | [kN] | 5,0   | 6,9   | 10,1  | 7,2    | 19,4   | 21,5   | 33,5   | 53,2             |        |
| Partial safety factor  | $\gamma_{Ms}$ | [-]  | 1,25  |       |       |        |        |        | 1,33   |                  |        |
| Factor of ductility  | $k_2$         | [-]  | 1,0   |       |       |        |        |        |        |                  |        |
| <b>Steel failure with lever arm</b>                              |               |      |       |       |       |        |        |        |        |                  |        |
| Characteristic resistance<br>Steel 4.6                           | $M^0_{Rk,s}$  | [Nm] | 6,1   | 15    | 30    | 30     | 52     |        | 133    | 259              |        |
| Partial safety factor  | $\gamma_{Ms}$ | [-]  | 1,67  |       |       |        |        |        |        |                  |        |
| Characteristic resistance<br>Steel 5.6                           | $M^0_{Rk,s}$  | [Nm] | 7,6   | 19    | 37    | 37     | 65     |        | 166    | 324              |        |
| Partial safety factor  | $\gamma_{Ms}$ | [-]  | 1,67  |       |       |        |        |        |        |                  |        |
| Characteristic resistance<br>Steel 5.8                           | $M^0_{Rk,s}$  | [Nm] | 7,6   | 19    | 37    | 37     | 65     |        | 166    | 324              |        |
| Partial safety factor  | $\gamma_{Ms}$ | [-]  | 1,25  |       |       |        |        |        |        |                  |        |
| Characteristic resistance<br>Steel 8.8                           | $M^0_{Rk,s}$  | [Nm] | 12    | 30    | 59    | 60     | 105    |        | 266    | 519              |        |
| Partial safety factor  | $\gamma_{Ms}$ | [-]  | 1,25  |       |       |        |        |        |        |                  |        |
| Factor of ductility  | $k_2$         | [-]  | 1,0   |       |       |        |        |        |        |                  |        |
| <b>Concrete pry-out failure</b>                                  |               |      |       |       |       |        |        |        |        |                  |        |
| Factor k acc. to ETAG 001,<br>Annex C or<br>$k_3$ acc. to CEN/TS | $k_{(3)}$     | [-]  | 1,0   |       |       |        | 1,5    |        | 2,0    |                  |        |
| <b>Concrete edge failure</b>                                     |               |      |       |       |       |        |        |        |        |                  |        |
| Effective length of anchor<br>under shear loading                | $l_f$         | [mm] | 30    | 30    | 40    | 30     | 40     | 50     |        | 65               | 80     |
| Outside diameter of<br>anchor                                    | $d_{nom}$     | [mm] | 8     | 10    | 10    | 12     | 12     | 15     |        | 20               | 25     |

**Drop-in Anchor E / ES**

**Performance**  
Characteristic values for shear loads, zinc plated steel

**Annex C3**

**Table C4: Characteristic values for shear loads, stainless steel A4, HCR**

| Anchor size   |               |      | M6x30 | M8x30 | M8x40 | M10x40 | M12x50<br>M12x80 | M16x65<br>M16x80 | M20x80 |
|---|---------------|------|-------|-------|-------|--------|------------------|------------------|--------|
| <b>Steel failure without lever arm</b>                        |               |      |       |       |       |        |                  |                  |        |
| Characteristic resistance<br>(property class 70)              | $V_{Rk,s}$    | [kN] | 7,0   | 10,6  | 13,4  | 25,1   | 41,9             | 66,5             |        |
| Characteristic resistance<br>(property class 80)              | $V_{Rk,s}$    | [kN] | 8,7   | 10,6  | 13,4  | 25,1   | 41,9             | 66,5             |        |
| Partial safety factor   | $\gamma_{Ms}$ | [-]  | 1,56  |       |       |        |                  |                  |        |
| Factor of ductility   | $k_2$         | [-]  | 1,0   |       |       |        |                  |                  |        |
| <b>Steel failure with lever arm</b>                           |               |      |       |       |       |        |                  |                  |        |
| Characteristic resistance<br>(property class 70)              | $M^0_{Rk,s}$  | [Nm] | 11    | 26    | 52    | 92     | 233              | 454              |        |
| Partial safety factor   | $\gamma_{Ms}$ | [-]  | 1,56  |       |       |        |                  |                  |        |
| Characteristic resistance<br>(property class 80)              | $M^0_{Rk,s}$  | [Nm] | 12    | 30    | 60    | 105    | 266              | 519              |        |
| Partial safety factor   | $\gamma_{Ms}$ | [-]  | 1,33  |       |       |        |                  |                  |        |
| Factor of ductility   | $k_2$         | [-]  | 1,0   |       |       |        |                  |                  |        |
| <b>Concrete pry-out failure</b>                               |               |      |       |       |       |        |                  |                  |        |
| Factor k acc. to ETAG 001, Annex C or<br>$k_3$ acc. to CEN/TS | $k_{(3)}$     | [-]  | 1,0   | 1,7   | 1,7   | 2,0    |                  |                  |        |
| <b>Concrete edge failure</b>                                  |               |      |       |       |       |        |                  |                  |        |
| Effective length of anchor under shear<br>loading             | $l_f$         | [mm] | 30    | 30    | 40    | 40     | 50               | 65               | 80     |
| Outside diameter of anchor                                    | $d_{nom}$     | [mm] | 8     | 10    | 10    | 12     | 15               | 20               | 25     |

**Drop-in Anchor E / ES**

**Performance**  
Characteristic values for shear loads, stainless steel A4, HCR

**Annex C4**

**Table C5: Displacements under tension loads**

| Anchor size                          |                    |      | M6x30 | M8x30 | M8x40 | M10x30 | M10x40 | M12x50<br>M12x80 | M16x65<br>M16x80 | M20x80 |
|--------------------------------------|--------------------|------|-------|-------|-------|--------|--------|------------------|------------------|--------|
| <b>Steel zinc plated</b>             |                    |      |       |       |       |        |        |                  |                  |        |
| Tension load in non-cracked concrete | N                  | [kN] | 3     | 3     | 3,6   | 3,3    | 4,8    | 6,4              | 10               | 14,8   |
| Displacement                         | $\delta_{N0}$      | [mm] | 0,24  |       |       |        |        |                  |                  |        |
|                                      | $\delta_{N\infty}$ | [mm] | 0,36  |       |       |        |        |                  |                  |        |
| <b>Stainless steel A4 / HCR</b>      |                    |      |       |       |       |        |        |                  |                  |        |
| Tension load in non-cracked concrete | N                  | [kN] | 4     | 4     | 4,3   | -      | 6,1    | 8,5              | 12,6             | 17,2   |
| Displacement                         | $\delta_{N0}$      | [mm] | 0,12  |       |       |        |        |                  |                  |        |
|                                      | $\delta_{N\infty}$ | [mm] | 0,24  |       |       |        |        |                  |                  |        |

**Table C6: Displacements under shear loads**

| Anchor size                        |                    |      | M6x30 | M8x30 | M8x40 | M10x30 | M10x40 | M12x50<br>M12x80 | M16x65<br>M16x80 | M20x80 |
|------------------------------------|--------------------|------|-------|-------|-------|--------|--------|------------------|------------------|--------|
| <b>Steel zinc plated</b>           |                    |      |       |       |       |        |        |                  |                  |        |
| Shear load in non-cracked concrete | V                  | [kN] | 2     | 4     | 4     | 5,7    | 4,0    | 11,3             | 18,8             | 32,2   |
| Displacement                       | $\delta_{V0}$      | [mm] | 0,9   | 0,9   | 1,0   | 1,5    | 0,6    | 1,2              | 1,2              | 1,6    |
|                                    | $\delta_{V\infty}$ | [mm] | 1,3   | 1,3   | 1,5   | 2,3    | 0,9    | 1,9              | 1,9              | 2,4    |
| <b>Stainless steel A4 / HCR</b>    |                    |      |       |       |       |        |        |                  |                  |        |
| Shear load in non-cracked concrete | V                  | [kN] | 3,5   | 5,2   | 5,2   | -      | 6,5    | 11,5             | 19,2             | 30,4   |
| Displacement                       | $\delta_{V0}$      | [mm] | 1,9   | 1,1   | 0,7   | -      | 1,0    | 1,7              | 2,4              | 2,6    |
|                                    | $\delta_{V\infty}$ | [mm] | 2,8   | 1,6   | 1,0   | -      | 1,5    | 2,6              | 3,6              | 3,8    |

**Drop-in Anchor E / ES**Performance  
Displacements**Annex C5**