**Trutek Fasteners Polska Sp. z o.o.**
Al. Krakowska 38, Janki
05-090 Raszyn
NIP: PL 5342256188 REGON: 015722173

# Declaration of Performance

**Nr: TCM_CPRO/01/20190424/ETA-19/0141**

| | |
|---|---|
| Revision No: | 1 |
| Revision carried out by: | Tomasz Golon |
| Revision date: | 24. 04. 2019 |

| | | |
|---|---|---|
| **1.** | **Unique identyfiaction code of product-type:** | |
| | TCM CPRO Injection system | |
| **2.** | **Indended use/es:** | |
| | The anchors are intended to be used for anchorages in non cracked concrete for static and quasi-static loads: M8 to M24, Rebar Ø8 to Ø25, reinforced or unreinforced normal weight concrete of strength class C20/25 at minimum to C50/60 at maximum according to EN 206-1. | |
| **3.** | **Manufacturer:** | |
| | Name: | Trutek Fasteners Polska Sp. z o.o. |
| | Address: | Al. Krakowska 38, Sękocin Janki<br>05-090 Raszyn, Polska |
| **4.** | **System/s of AVCP:** | |
| | System: | 1 |
| **5.** | **European Assessment Document:** | |
| | In accordance with regulation (EU) No 305/2011 on the basis of European Assessment Document EAD EOTA 330499-00-0601, “Bonded fasteners for use in concrete” | |
| | European Technical Assessment | ETA-19/0141 of 28th of February 2019 |
| | Issued by: | ETA-DANMARK A/S |
| **6.** | **Notyfied body/ies:** | |
| | Name: | ZAG ZAWOD ZA GRADBENIŠTVO SLOWENIJE |
| | Notified body/ies No: | 1404 |
| | No of Certificate of Constancy of Performance: | 1404-CPR-3132 |
| **7.** | **Declared performance/es:** | |
| | **Mechanical resistance and stability (BWR 1)** | |
| | **Essential chracteristic** | **Performance** |
| | Design method A, characteristic tension load values | Table C1 |
| | Displacements under tension load | Table C2 |
| | Design method A, Characteristic shear load values | Table C3 |
| | Displacements under shear load | Table C4 |
| | Design method A, characteristic tension load values | Table C5 |
| | Displacements under tension load | Table C6 |
| | Design method A, Characteristic shear load values | Table C7 |
| | Displacements under shear load | Table C8 |
| | **Safety in case of fire (BWR 2)** | **Safety in case of fire (BWR 2)** |
| | **Essential chracteristic** | **Essential chracteristic** |
| | Resistance to fire | Table C9 |
| | Reaction to fire | Table C10 |

**Trutek Fasteners Polska Sp. z o.o.**
Al. Krakowska 38, Janki
05-090 Raszyn
NIP: PL 5342256188 REGON: 015722173

| | | | |
|---|---|---|---|
| **Declaration of Performance**<br><br>**Nr: TCM_CPRO/01/20190424/ETA-19/0141** | | Revision No: | 1 |
| | | Revision carried out by: | Tomasz Golon |
| | | Revision date: | 24. 04. 2019 |

The performance of the product indentified above is in conformity with the set of declared performance/es. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Janki, 24th of April 2019
Signed for and on behalf of the manufacturer by:

***Tomasz Golon***

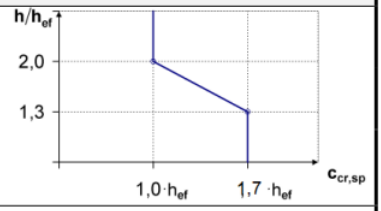
*Kierownik Produktu / Product Manager*

**Trutek Fasteners Polska Sp. z o.o.**
Al. Krakowska 38, Janki
05-090 Raszyn
NIP: PL 5342256188 REGON: 015722173



**Table C1: Design method A, characteristic tension load values**

| TCM CPRO with threaded rods | | | M8 | M10 | M12 | M16 | M20 | M24 |
|---|---|---|---|---|---|---|---|---|
| **Steel failure** | | | | | | | | |
| Characteristic resistance, class 4.6 and 4.8 | $N_{Rk,s}$ | [kN] | 15 | 23 | 34 | 63 | 98 | 141 |
| Characteristic resistance, class 5.6 and 5.8 | $N_{Rk,s}$ | [kN] | 18 | 29 | 42 | 78 | 122 | 176 |
| Characteristic resistance, class 8.8 | $N_{Rk,s}$ | [kN] | 29 | 46 | 67 | 125 | 196 | 282 |
| Characteristic resistance, class 10.9 | $N_{Rk,s}$ | [kN] | 38 | 60 | 87 | 163 | 255 | 367 |
| Characteristic resistance, class 12.9 | $N_{Rk,s}$ | [kN] | 44 | 70 | 103 | 190 | 299 | 431 |
| Characteristic resistance, A2, A4 and HCR, Property class 50 | $N_{Rk,s}$ | [kN] | 18 | 29 | 42 | 78 | 122 | 176 |
| Characteristic resistance, A2, A4 and HCR, Property class 70 | $N_{Rk,s}$ | [kN] | 26 | 41 | 59 | 110 | 171 | 247 |
| Characteristic resistance, A4 and HCR, Property class 80 | $N_{Rk,s}$ | [kN] | 29 | 46 | 67 | 126 | 196 | 282 |
| Partial safety factor 4.6 and 5.6 | $\gamma_{Ms,N}$ [1] | [-] | 2 | | | | | |
| Partial safety factor 4.8, 5.8, 8.8, 10.9 and 12.9 | $\gamma_{Ms,N}$ [1] | [-] | 1,5 | | | | | |
| Partial safety factor A2, A4 and HCR class 70 | $\gamma_{Ms,N}$ [1] | [-] | 1,87 | | | | | |
| Partial safety factor A2, A4 and HCR class 80 | $\gamma_{Ms,N}$ [1] | [-] | 1,60 | | | | | |
| **Combined Pull-out and Concrete cone failure** [2] | | | | | | | | |
| Diameter of threaded rod | d | [mm] | 8 | 10 | 12 | 16 | 20 | 24 |
| Characteristic bond resistance in non-cracked concrete C20/25 – dry or wet concrete | | | | | | | | |
| Temperature range a [3] : 40°C/24°C | $\tau_{Rk,ucr}$ | [N/mm²] | 7 | 7 | 6.5 | 6.5 | 6 | 5.5 |
| Partial safety factor – dry or wet concrete | $\gamma_{inst}$ | [-] | 1,2 | | | 1,4 | | |
| Characteristic bond resistance in non-cracked concrete C20/25 – flooded holes | | | | | | | | |
| Temperature range a [3] : 40°C/24°C | $\tau_{Rk,ucr}$ | [N/mm²] | 7 | 7 | 6.5 | 6 | 5 | 4.5 |
| Partial safety factor – flooded holes | $\gamma_{inst}$ | [-] | 1,2 | | 1,4 | | | |
| Increasing factor for $\tau_{Rk,ucr}$ in non-cracked concrete | $\psi_c$ | C30/37 | 1,0 | | | | | |
| | | C40/50 | 1,0 | | | | | |
| | | C50/60 | 1,0 | | | | | |
| Factor for determination of the concrete cone failure | $k_{ucr,N}$ | [-] | 11,0 (based on concrete cylinder strength $f_{ck}$) 10,1 (based on concrete strength $f_{ck,cube}$) | | | | | |
| **Splitting failure**[2] | | | | | | | | |
| Edge distance $c_{cr,sp}$ [mm] for | $h / h_{ef}$ [4] ≥ 2,0 | | 1,0 $h_{ef}$ | | | | | |
| | 2,0 > $h / h_{ef}$ [4] > 1,3 | | 3 $h_{ef}$ - 1 h | | | | | |
| | $h / h_{ef}$ [4] ≤ 1,3 | | 1.7 $h_{ef}$ | | | | | |
| Spacing | $s_{cr,sp}$ | [mm] | 2 $c_{cr,sp}$ | | | | | |




[1] In absence of national regulations
[2] Calculation of concrete and splitting, see annex B1
[3] Explanations, see annex B1
[4] h concrete member thickness, $h_{ef}$ effective anchorage depth

| TCM CPRO | Annex C1 of European Technical Assessment ETA-19/0141 |
|---|---|
| Performance for static and quasi-static loads: Resistances | |

**Trutek Fasteners Polska Sp. z o.o.**
Al. Krakowska 38, Janki
05-090 Raszyn
NIP: PL 5342256188 REGON: 015722173



**Table C2: Displacements under tension load**

| TCM CPRO with threaded rods | | | M8 | M10 | M12 | M16 | M20 | M24 |
|---|---|---|---|---|---|---|---|---|
| **Temperature range a [5]: 40°C / 24°C** | | | | | | | | |
| Displacement | $\delta_{N0}$ | [mm/(N/mm²)] | 0,03 | 0,04 | 0,04 | 0,04 | 0,09 | 0,30 |
| Displacement | $\delta_{N\infty}$ | [mm/(N/mm²)] | - | - | 0,15 | - | - | - |

[5] Explanation see annex B1

| TCM CPRO | **Annex C2** of European Technical Assessment ETA-19/0141 |
|---|---|
| Performance for static, quasi-static: Displacements | |

**Trutek Fasteners Polska Sp. z o.o.**
Al. Krakowska 38, Janki
05-090 Raszyn
NIP: PL 5342256188 REGON: 015722173



**Table C3: Design method A, Characteristic shear load values**

| TCM CPRO with threaded rods | | | M8 | M10 | M12 | M16 | M20 | M24 |
|---|---|---|---|---|---|---|---|---|
| **Steel failure without lever arm** | | | | | | | | |
| Characteristic resistance, class 4.6 and 4.8 | $V_{Rk,s}$ | [kN] | 7 | 12 | 17 | 31 | 49 | 70 |
| Characteristic resistance, class 5.6 and 5.8 | $V_{Rk,s}$ | [kN] | 9 | 15 | 21 | 39 | 61 | 88 |
| Characteristic resistance, class 8.8 | $V_{Rk,s}$ | [kN] | 15 | 23 | 34 | 63 | 98 | 141 |
| Characteristic resistance, class 10.9 | $V_{Rk,s}$ | [kN] | 19 | 30 | 43 | 81 | 127 | 183 |
| Characteristic resistance, class 12.9 | $V_{Rk,s}$ | [kN] | 22 | 35 | 51 | 95 | 149 | 215 |
| Characteristic resistance, A2, A4 and HCR, Property class 50 | $V_{Rk,s}$ | [kN] | 9 | 15 | 21 | 39 | 61 | 88 |
| Characteristic resistance, A2, A4 and HCR, Property class 70 | $V_{Rk,s}$ | [kN] | 13 | 20 | 30 | 55 | 86 | 124 |
| Characteristic resistance, A4 and HCR, Property class 80 | $V_{Rk,s}$ | [kN] | 15 | 23 | 34 | 63 | 98 | 141 |
| **Steel failure with lever arm** | | | | | | | | |
| Characteristic resistance, class 4.6 and 4.8 | $M^0_{Rk,s}$ | [Nm] | 15 | 30 | 52 | 133 | 260 | 449 |
| Characteristic resistance, class 5.6 and 5.8 | $M^0_{Rk,s}$ | [Nm] | 19 | 37 | 65 | 166 | 324 | 560 |
| Characteristic resistance, class 8.8 | $M^0_{Rk,s}$ | [Nm] | 30 | 60 | 105 | 266 | 519 | 896 |
| Characteristic resistance, class 10.9 | $M^0_{Rk,s}$ | [Nm] | 37 | 75 | 131 | 333 | 649 | 1123 |
| Characteristic resistance, class 12.9 | $M^0_{Rk,s}$ | [Nm] | 45 | 90 | 157 | 400 | 779 | 1347 |
| Characteristic resistance, A2, A4, HCR -50 | $M^0_{Rk,s}$ | [Nm] | 19 | 37 | 65 | 166 | 324 | 560 |
| Characteristic resistance, A2, A4, HCR -70 | $M^0_{Rk,s}$ | [Nm] | 26 | 52 | 95 | 232 | 454 | 784 |
| Characteristic resistance, A4, HCR - 80 | $M^0_{Rk,s}$ | [Nm] | 30 | 59 | 105 | 266 | 519 | 896 |
| **Partial safety factor steel failure** | | | | | | | | |
| Steel, Property class 4.6 or 5.6 | $\gamma_{Ms,V}$ [1)] | [-] | 1,67 | | | | | |
| Steel, Property class 4.8, 5.8 or 8.8 | $\gamma_{Ms,V}$ [1)] | [-] | 1,25 | | | | | |
| Steel, Property class 10.9 or 12.9 | $\gamma_{Ms,V}$ [1)] | [-] | 1,50 | | | | | |
| Stainless steel A2, A4 or HCR Property class 50 | $\gamma_{Ms,V}$ [1)] | [-] | 2,38 | | | | | |
| Stainless steel A2, A4 or HCR Property class 70 | $\gamma_{Ms,V}$ [1)] | [-] | 1,56 | | | | | |
| Stainless steel A4 or HCR Property class 80 | $\gamma_{Ms,V}$ [1)] | [-] | 1,33 | | | | | |
| **Concrete pryout failure** | | | | | | | | |
| Factor in equation (27) of CEN/TS 1992-4-5, 6.3.3 | $k_3$ | [-] | 1,0 for $h_{ef}$ < 60mm<br>2,0 for $h_{ef}$ ≥ 60mm | | | | | |
| Partial safety factor | $\gamma_{Mc}$ [1)] | [-] | 1,5 | | | | | |
| **Concrete edge failure** | | | | | | | | |
| Partial safety factor | $\gamma_{Mc}$ [1)] | [-] | 1,5 | | | | | |

1) In absence of national regulations

**Table C4: Displacements under shear load**

| TCM CPRO with threaded rods | | | M8 | M10 | M12 | M16 | M20 | M24 |
|---|---|---|---|---|---|---|---|---|
| Displacement | $\delta_{V0}$ | [mm/kN] | 0,06 | 0,06 | 0,05 | 0,04 | 0,04 | 0,03 |
| Displacement | $\delta_{V\infty}$ | [mm/kN] | 0,09 | 0,08 | 0,08 | 0,06 | 0,06 | 0,05 |

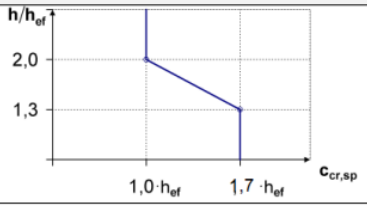
| | |
|---|---|
| **TCM CPRO** | **Annex C3** of European Technical Assessment ETA-19/0141 |
| Performance for static, quasi-static and seismic loads: Displacements | |

**Trutek Fasteners Polska Sp. z o.o.**
Al. Krakowska 38, Janki
05-090 Raszyn
NIP: PL 5342256188 REGON: 015722173



**Table C5: Design method A, characteristic tension load values**

| TCM CPRO with rebar | | | | ϕ 8 | ϕ 10 | ϕ 12 | ϕ 16 | ϕ 20 | ϕ 25 |
|---|---|---|---|---|---|---|---|---|---|
| **Steel failure** | | | | | | | | | |
| Characteristic tension resistance | $N_{Rk,s}$ | [kN] | | $A_s \cdot f_{uk}$ [1] | | | | | |
| Cross section area | $A_s$ | [mm²] | | 50 | 79 | 113 | 201 | 314 | 491 |
| Partial safety factor | $\gamma_{Ms,N}$ [2] | [-] | | 1,4 | | | | | |
| **Combined Pull-out and Concrete cone failure** [3] | | | | | | | | | |
| Diameter of rebar | d | [mm] | | 8 | 10 | 12 | 16 | 20 | 25 |
| Characteristic bond resistance in non-cracked concrete C20/25 – dry or wet concrete | | | | | | | | | |
| Temperature range a [4] : **40°C/24°C** | $\tau_{Rk,ucr}$ | [N/mm²] | | **5.5** | **5.5** | **5.5** | **5** | **5** | **5** |
| Partial safety factor – dry or wet concrete | $\gamma_{inst}$ [2] | [-] | | 1,2 | | | 1,4 | | |
| Characteristic bond resistance in non-cracked concrete C20/25 – flooded holes | | | | | | | | | |
| Temperature range a [4] : **40°C/24°C** | $\tau_{Rk,ucr}$ | [N/mm²] | | **5.5** | **5.5** | **5.5** | **5** | **4.5** | **4** |
| Partial safety factor – flooded holes | $\gamma_{inst}$ | [-] | | 1,2 | | 1,4 | | | |
| Increasing factor for $\tau_{Rk,ucr}$ in non-cracked concrete | $\psi_c$ | | C30/37 | 1,0 | | 1,1 | | | |
| | | | C40/50 | 1,0 | 1,1 | | | | 1,2 |
| | | | C50/60 | 1,0 | 1,1 | 1,2 | | | 1,3 |
| **Splitting failure** [3] | | | | | | | | | |
| Edge distance $c_{cr,sp}$ [mm] for | | | h / $h_{ef}$ [5] ≥ 2,0 | 1,0 $h_{ef}$ | | | | | |
| | | | 2,0 > h / $h_{ef}$ [5] > 1,3 | 3 $h_{ef}$ - 1 h | | | | | |
| | | | h / $h_{ef}$ [5] ≤ 1,3 | 1.7 $h_{ef}$ | | | | | |
| Spacing | $s_{cr,sp}$ | [mm] | | 2 $c_{cr,sp}$ | | | | | |




[1] $f_{uk}$ shall be taken from the specifications of reinforcing bars
[2] in absence of national regulation
[3] Calculation of concrete and splitting, see annex B1
[4] Explanations, see annex B1
[5] h concrete member thickness, $h_{ef}$ effective anchorage depth

**Table C6: Displacements under tension load**

| TCM CPRO with rebar | | | ϕ 8 | ϕ 10 | ϕ 12 | ϕ 16 | ϕ 20 | ϕ 25 |
|---|---|---|---|---|---|---|---|---|
| **Temperature range a [4]: 40°C / 24°C** | | | | | | | | |
| Displacement | $\delta_{N0}$ | [mm/(N/mm²)] | 0,03 | 0,03 | 0,04 | 0,07 | 0,07 | 0,10 |
| Displacement | $\delta_{N\infty}$ | [mm/(N/mm²)] | - | - | 0,15 | - | - | - |



E-mail: info@trutek.com.pl / www.trutek.com.pl
tel.+48 22 701 93 25-25, fax.+48 22 100 12 31

**Trutek Fasteners Polska Sp. z o.o.**
Al. Krakowska 38, Janki
05-090 Raszyn
NIP: PL 5342256188 REGON: 015722173



**Table C7: Design method A, Characteristic shear load values**

| TCM CPRO with rebar | | | ϕ 8 | ϕ 10 | ϕ 12 | ϕ 16 | ϕ 20 | ϕ 25 |
|---|---|---|---|---|---|---|---|---|
| **Steel failure without lever arm** | | | | | | | | |
| Characteristic shear resistance | $V_{Rk,s}$ | [kN] | $0{,}50 \cdot A_s \cdot f_{uk}$ [1] | | | | | |
| Cross section area | $A_s$ | [mm²] | 50 | 79 | 113 | 201 | 314 | 491 |
| Partial safety factor | $\gamma_{Ms,N}$ [2] | [-] | 1,5 | | | | | |
| **Steel failure with lever arm** | | | | | | | | |
| Characteristic bending moment | $M^0_{Rk,s}$ | [Nm] | $1.2 \cdot W_{el} \cdot f_{uk}$ [1] | | | | | |
| Elastic section modulus | $W_{el}$ | [Nm] | 50 | 98 | 170 | 402 | 785 | 1534 |
| Partial safety factor | $\gamma_{Ms,N}$ [2] | [-] | 1,5 | | | | | |
| **Concrete pryout failure** | | | | | | | | |
| Factor | $k_8$ | [-] | 1,0 for $h_{ef} < 60$mm<br>2,0 for $h_{ef} \geq 60$mm | | | | | |
| Partial safety factor | $\gamma_{MC}$ | [-] | 1,5 | | | | | |
| **Concrete edge failure** | | | | | | | | |
| Partial safety factor | $\gamma_{Mc}$ [1] | [-] | 1,5 | | | | | |

[1] $f_{uk}$ shall be taken from the specifications of reinforcing bars
[2] In absence of national regulations

**Table C8: Displacements under shear load**

| TCM CPRO with rebar | | | ϕ 8 | ϕ 10 | ϕ 12 | ϕ 16 | ϕ 20 | ϕ 25 |
|---|---|---|---|---|---|---|---|---|
| Displacement | $\delta_{V0}$ | [mm/kN] | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 | 0,03 |
| Displacement | $\delta_{V\infty}$ | [mm/kN] | 0,08 | 0,08 | 0,07 | 0,06 | 0,05 | 0,05 |



E-mail: info@trutek.com.pl / www.trutek.com.pl
tel.+48 22 701 93 25-25, fax.+48 22 100 12 31

**Trutek Fasteners Polska Sp. z o.o.**
Al. Krakowska 38, Janki
05-090 Raszyn
NIP: PL 5342256188 REGON: 015722173



**Table C9: Resistance to fire**

| ESSENTIAL CHARACTERISTICS | PERFORMANCE |
|---|---|
| **Resistance to fire** | NPA |

**Table C10: Reaction to fire**

| ESSENTIAL CHARACTERISTICS | PERFORMANCE |
|---|---|
| **Reaction to fire** | In the final application, the thickness of the mortar layer is about 1 to 2 mm and most of the mortar is material classified class A1 according to EC Decision 96/603/EC. Therefore, it may be assumed that the bonding material (synthetic mortar or a mixture of synthetic mortar and cementitious mortar) in connection with the metal anchor in the end use application do not contribute to fire growth or to the fully developed fire and they have no influence to the smoke hazard. |



**E-mail: info@trutek.com.pl / www.trutek.com.pl**
**tel.+48 22 701 93 25-25, fax.+48 22 100 12 31**