Centre Scientifique et Technique du Bâtiment
84 avenue Jean Jaurès
CHAMPS-SUR-MARNE
F-77447 Marne-la-Vallée Cedex 2

Tél. : (33) 01 64 68 82 82
Fax : (33) 01 60 05 70 37

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# European Technical Assessment

# ETA-26/0139 of 21/03/2026

*English translation prepared by CSTB - Original version in French language*

## General Part

| | |
|---|---|
| **Technical Assessment Body issuing the European Technical Assessment:** Centre Scientifique et Technique du Bâtiment (CSTB) | |
| **Trade name of the construction product:** | **DI-PLUS** |
| **Product family to which the construction product belongs:** | Deformation-controlled expansion anchor made of galvanized steel for multiple use and for non-structural applications in concrete |
| **Manufacturer:** | Sympafix BV<br>Fluorietweg 25E<br>1812RR Alkmaar<br>The Netherlands |
| **Manufacturing plants:** | 1 MT-2 |
| **This European Technical Assessment contains:** | 10 pages including 7 pages of annexes which form an integral part of this assessment |
| **This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:** | European Assessment Document (EAD)<br>EAD 330747-00-0601, Version May 2018 |
| **This Assessment replaces:** | - |

**Specific Part**

## 1 Technical description of the product

The SYMPAFIX CA-PLUS anchor is an anchor made of zinc electroplated steel which is placed into a drilled hole and anchored by deformation-controlled expansion.

The illustration and the description of the product are given in Annexes A.

## 2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annexes B.

The provisions made in this European technical assessment are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

## 3 Performance of the product and references to the methods used for its assessment

### 3.1 Safety in case of fire (BWR 2)

| Essential characteristic | Performance |
|---|---|
| Reaction to fire | Anchorages satisfy requirements for Class A1 |
| Resistance to pull out failure under fire exposure | See Annex C2 |

### 3.2 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances contained in this European technical approval, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

### 3.3 Safety in use (BWR 4)

| Essential characteristic | Performance |
|---|---|
| Characteristic resistance for all load directions and modes of failure for simplified design | See Annex C1 |

### 3.4 General aspects relating to fitness for use

Durability and Serviceability are only ensured if the specifications of intended use according to Annex B1 are kept.

## 4 Assessment and verification of constancy of performance (AVCP)

In accordance with the European Assessment Document EAD n° 330747-00-0601, the applicable European act is [976/161/EC]. The

The system to be applied is: 2+

## 5 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

Technical details necessary for the implementation of the Assessment and verification of constancy of performance (AVCP) system are laid down in the control plan deposited at Centre Scientifique et Technique du Bâtiment.

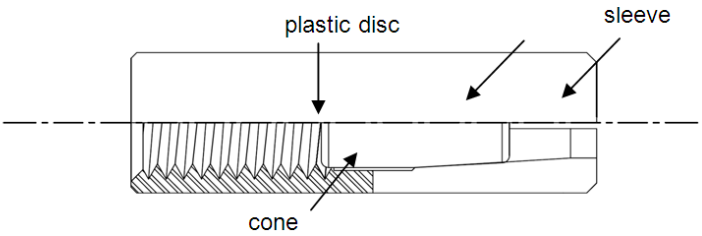
The manufacturer shall, on the basis of a contract, involve a notified body approved in the field of anchors for issuing the certificate of conformity CE based on the control plan.

**The original French version is signed by**

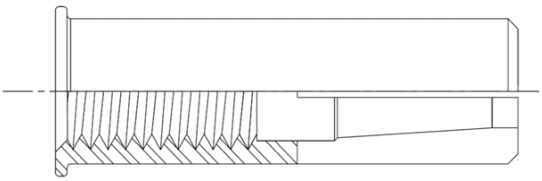
Loic PAYET

Responsable de la division Structure, Maçonnerie et Partition

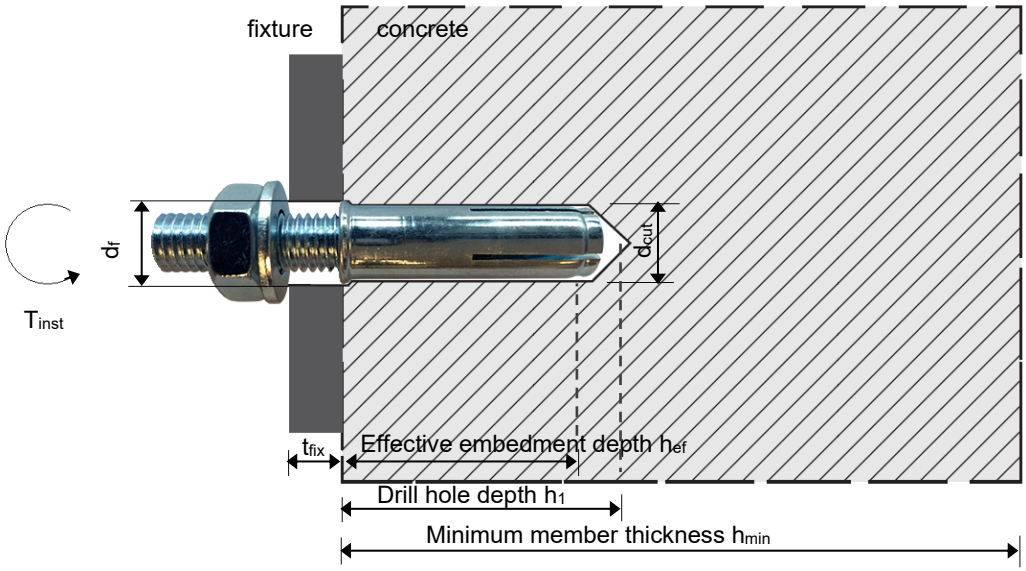
## General working principle of a drop-in anchor




Marking of the sleeve: e.g. “DI-PLUS M8”



## Anchor in use:




## Intended use:

- Only for multiple use for non-structural applications
- Anchorages with requirements related to resistance to fire
- Use for dry internal conditions
- For use in cracked or uncracked concrete

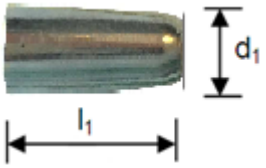
| SYMPAFIX DROP-IN ANCHOR DI-PLUS | Annex A1 |
|---|---|
| **Product description**<br>Installation condition | |

**Different anchor versions and different parts of the anchor:**

**Anchor sleeves**

Drop-in anchor


**Expansion cone**




Lipped drop-in anchor


**Table 1: Materials**

| Part | Designation | Product | Materials | Protection |
|---|---|---|---|---|
| **1** | Anchor sleeves | DI-PLUS | Cold formed steel, grade SWRCH8A | Zinc plated > 5 µm |
| | | DI-LIP-PLUS | | |
| **2** | Expansion cones | DI-PLUS | Cold formed steel, grade SWRCH8A | Zinc plated > 5 µm |
| | | DI-LIP-PLUS | | |
| **3** | Screw of threaded road for fastening | DI-PLUS | Steel strength class 4.6, 5.6, 5.8 or 8.8 according to ISO898-1 | Zinc plated > 5 µm |
| | | DI-LIP-PLUS | | |

**Table 2: Anchor dimensions**

| | | | | M8 | M10 | M12 |
|---|---|---|---|---|---|---|
| **Length sleeve** | DI-PLUS | **L = $h_{ef}$** | [mm] | 30 | 40 | 50 |
| | DI-LIP-PLUS | | [mm] | 30 | 40 | 50 |
| **Nom. diameter** | DI-PLUS | **$d_{nom}$** | [mm] | 9,9 | 11,9 | 15,9 |
| | DI-LIP-PLUS | | [mm] | 9,9 | 11,8 | 15,9 |
| **Cone diameter** | | **$d_1$** | [mm] | 5,6 | 7,4 | 9,6 |
| **Cone length** | | **$l_1$** | [mm] | 11,8 | 15,3 | 20,8 |

The length of the fastening screw shall be determined depending on thickness of fixture $t_{fix}$, admissible tolerance and available tread length $l_{smax}$ as well as minimum screwing length $l_{smin}$.

## Drop-in anchor setting tool:

Basic version without marking function DI-ST


Version with marking function and safety grip DI-ST-SG


The setting tool with marking function produces with correct installation a mark on the collar of the drop in anchor. This mark enables to check after installation the correct expansion of the product.

**Table 3: Dimensions setting tool**

| | | | M8 | M10 | M12 |
|---|---|---|---|---|---|
| **Diameter setting tool** | $d_{st}$ | [mm] | 5,7 | 7,1 | 9,8 |
| **Length setting pin** | $l_{st}$ | [mm] | 19,7 | 23,8 | 24,9 |

## Specifications of intended use

**Anchorages subject to:**

- Static, quasi-static and exposure to fire.

**Base materials:**

- Cracked concrete and uncracked concrete (multiple use)
- Reinforced or unreinforced normal weight concrete of strength classes C20/25 at least to C50/60 at most according to EN 206.

**Use conditions (Environmental conditions):**

- Structures subject to dry internal conditions.

**Design:**

- Verifiable drawings and calculation notes are prepared, considering the loads to be anchored. The position of the anchor is indicated on the design drawings.
- The anchor shall only be used for multiple use in non-structural applications.
- The anchor shall be designed in accordance with EN 1992-4 and EOTA Technical Report TR 055.

**Installation:**

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Use of the anchor only as supplied by the manufacturer without exchanging the components of an anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools.
- Effective anchorage depth, edge distances and spacing not less than the specified values without minus tolerances.
- Hole drilling by hammer drill.
- Cleaning of the hole of drilling dust.
- In case of aborted hole, drilling of new hole at a minimum distance of twice the depth of the aborted hole, or smaller distance provided the aborted drill hole is filled with high strength mortar and no shear or oblique tension loads in the direction of aborted hole.

### Table 4: Installation data

| | | | | | M8 | M10 | M12 |
|---|---|---|---|---|---|---|---|
| **Drill hole diameter** | | | $d_{cut}$ | [mm] | ≤10,45 | ≤12,5 | ≤16,5 |
| **Drill hole depth** | DI-PLUS | | $h_0$ | [mm] | 32 | 42 | 53 |
| | DI-LIP-PLUS | | | | 32 | 42 | 53 |
| **Embedment depth** | DI-PLUS | | $h_{ef}$ | [mm] | 30 | 40 | 50 |
| | DI-LIP-PLUS | | | | 30 | 40 | 50 |
| **Installation torque** | | | $T_{inst}$ | [Nm] | 8 | 15 | 35 |
| **Passage hole diameter** | | | $d_f$ | [mm] | 9 | 12 | 14 |
| **Minimum screwing lengh** | | | $l_{smin}$ | [mm] | 8 | 10 | 12 |
| **Thread lengh** | DI-PLUS | | $l_{smax}$ | [mm] | 13 | 17 | 21 |
| | DI-LIP-PLUS | | $l_{smax}$ | [mm] | 13 | 17 | 21 |
| **Design method C** | | | | | | | |
| **Minimum member thickness** | | | $h_{min}$ | [mm] | 80 | 80 | 80 |
| **Minimum edge distance** | | | $c_{cr}$ | [mm] | 150 | 150 | 150 |
| **Minimum spacing** | | | $s_{cr}$ | [mm] | 200 | 200 | 200 |

**Table 5: Characteristic values for tension loading in case of static and quasi static loading for simplified design method**

| **Sympafix DI-PLUS** | | | | | |
|---|---|---|---|---|---|
| **Design method C** | | | **M8** | **M10** | **M12** |
| Char. resistance (C20/25 to C50/60) | $F^0_{Rk}$ | [kN] | 4,0 | 4,0 | 6,0 |
| Partial safety factor | $\gamma_{inst}$ | [-] | 1,0 | 1,4 | 1,2 |
| Design value of resistance | $F^0_{Rk} / \gamma_2 / \gamma_M$ | [kN] | 2,7 | 1,9 | 3,3 |
| Char. spacing | $s_{cr}$ | [mm] | 200 | 200 | 200 |
| Char. edge distance | $c_{cr}$ | [mm] | 150 | 150 | 150 |
| **Shear load with lever arm** | | | | | |
| Characteristic bending moment, steel grade 4.6 | $M^0_{Rk,s}$ | [Nm] | 14,9 | 29,8 | 52,3 |
| Partial safety factor | $\gamma_{Ms}$ [1)] | [-] | 1,67 | 1,67 | 1,67 |
| Design value | $M^0_{Rd,s}$ | [Nm] | 8,9 | 17,8 | 31,3 |
| Characteristic bending moment, steel grade 5.6/5.8 | $M^0_{Rk,s}$ | [Nm] | 18,6 | 37,3 | 65,5 |
| Partial safety factor | $\gamma_{Ms}$ [1)] | [-] | 1,67 | 1,67 | 1,67 |
| Design value | $M^0_{Rd,s}$ | [Nm] | 11,1 | 22,3 | 39,2 |
| Characteristic bending moment, steel grade 8.8 | $M^0_{Rk,s}$ | [Nm] | 29,8 | 51,2 | 104,6 |
| Partial safety factor | $\gamma_{Ms}$ [1)] | [-] | 1,25 | 1,25 | 1,25 |
| Design value | $M^0_{Rd,s}$ | [Nm] | 23,8 | 41,0 | 83,7 |

[1)] In absence of other national regulations

**Table 6: Characteristic values under fire exposure in concrete C20/25 to C50/60 in any load direction without lever arm, Design method C**

| Fire resistance class | Sympafix DI-PLUS | | | M8 | M10 | M12 |
|---|---|---|---|---|---|---|
| **Steel failure and pull-out failure under tension loading [1)]** | | | | | | |
| R 30 | Characteristic resistance | $N_{Rk,s,fi}$ | [kN] | 0,37 | 0,87 | 1,69 |
| R 60 | Characteristic resistance | $N_{Rk,s,fi}$ | [kN] | 0,33 | 0,75 | 1,26 |
| R 90 | Characteristic resistance | $N_{Rk,s,fi}$ | [kN] | 0,26 | 0,58 | 1,10 |
| R 120 | Characteristic resistance | $N_{Rk,s,fi}$ | [kN] | 0,18 | 0,46 | 0,84 |
| R 90 | Characteristic resistance | $N_{Rk,p,fi}$ | [kN] | 1,00 | 1,00 | 1,50 |
| R 120 | Characteristic resistance | $N_{Rk,p,fi}$ | [kN] | 0,80 | 0,80 | 1,20 |
| **Steel failure under shear load without lever arm [1)]** | | | | | | |
| R 30 | Char. bending resistance | $V_{Rk,s,fi}$ | [kN] | 0,37 | 0,87 | 1,69 |
| R 60 | Char. bending resistance | $V_{Rk,s,fi}$ | [kN] | 0,33 | 0,75 | 1,26 |
| R 90 | Char. bending resistance | $V_{Rk,s,fi}$ | [kN] | 0,26 | 0,58 | 1,10 |
| R 120 | Char. bending resistance | $V_{Rk,s,fi}$ | [kN] | 0,18 | 0,46 | 0,84 |
| **Steel failure under shear load with lever arm [1)]** | | | | | | |
| R 30 | Char. bending resistance | $M^0_{Rk,fi}$ | [Nm] | 0,37 | 1,12 | 2,62 |
| R 60 | Char. bending resistance | $M^0_{Rk,fi}$ | [Nm] | 0,34 | 0,97 | 1,97 |
| R 90 | Char. bending resistance | $M^0_{Rk,fi}$ | [Nm] | 0,26 | 0,75 | 1,70 |
| R 120 | Char. bending resistance | $M^0_{Rk,fi}$ | [Nm] | 0,19 | 0,60 | 1,31 |

1) In case of fire attack from more than one side, the edge distance shall be ≥ 300mm
2) In absence of other national regulations the partial safety factor for resistance under fire exposure. $\gamma_{M,fi}$ = 1,0 is recommended