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Authorised and notified according
to Article 29 of the Regulation (EU)
No 305/2011 of the European
Parliament and of the Council of
9 March 2011

MEMBER OF EOTA



European Technical Assessment ETA- 24/0388 of 2024/09/18

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:

SPIT TAPCON 5 XTREM

Product family to which the above construction product belongs:

Mechanical fasteners for use in cracked and uncracked concrete

Manufacturer:

SPIT SAS
150 Avenue de Lyon – BP 104
26501 Bourg-Les-Valence Cedex
France

Manufacturing plant:

SPIT SAS
150 Avenue de Lyon – BP 104
26501 Bourg-Les-Valence Cedex
France

This European Technical Assessment contains:

18 pages including 11 annexes which form an integral part of the document

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:

EAD 330232-01-0601; Mechanical fasteners for use in concrete

Note:

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es) referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

The SPIT concrete screw TAPCON 5 XTREM is an anchor made of zinc plated steel. The TAPCON 5 XTREM comes in size 6 with an embedment depth of 40 mm or 55 mm. The anchor is screwed into a predrilled cylindrical drill hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterized by mechanical interlock in the special thread.

The product description is given in Annex A and the intended use specifications of the product are detailed in Annex B.

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 Annex B.

The provisions made in this European Technical Assessment are based on an assumed intended 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 or Assessment Body, 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

| Characteristic | Assessment of characteristic |
|----------------|------------------------------|
|----------------|------------------------------|

3.1 Mechanical resistance and stability (BWR1)

Characteristic resistance to tension load (static and quasi-static loading) Method A

| | |
|---|---------|
| Resistance to steel failure | Annex C |
| Resistance to pull-out failure | Annex C |
| Resistance to concrete cone failure | Annex C |
| Robustness | Annex C |
| Minimum edge distance and spacing | Annex B |
| Edge distance to prevent splitting under load | Annex B |

Characteristic resistance to shear load (static and quasi-static loading)

| | |
|--|---------|
| Resistance to steel failure under shear load | Annex C |
| Resistance to pry-out failure | Annex C |

Characteristic resistance for simplified design

| | |
|----------|---------|
| Method B | Annex C |
| Method C | Annex C |

Displacements

| | |
|---|---------|
| Displacements under static and quasi-static loading | Annex C |
|---|---------|

Characteristic resistance and displacements for seismic performance categories C1 and C2

| | |
|---|---------|
| Resistance to tension load, displacements | Annex C |
| Resistance to shear load, displacements | Annex C |
| Factor for annual gap | Annex C |

3.2 Safety in case of fire (BWR2)

| | |
|------------------|----------|
| Reaction to fire | Class A1 |
|------------------|----------|

| Characteristic | Assessment of characteristic |
|----------------|------------------------------|
|----------------|------------------------------|

Resistance to fire

| | |
|--|---------|
| Fire resistance to steel failure (tension load) | Annex C |
| Fire resistance to pull-out failure (tension load) | Annex C |
| Fire resistance to steel failure (shear load) | Annex C |

3.3 Aspects of durability

| | |
|------------|---------|
| Durability | Annex B |
|------------|---------|

See additional information in section 3.9

3.9 General aspects related to the performance of the product

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with ETA-Danmark, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to ETA-Danmark before the changes are introduced. ETA-Danmark will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

4 Assessment and verification of constancy of performance (AVCP) (hereinafter AVCP) system applied, with reference to its legal base.

4.1 AVCP system

According to the decision 1996/582/EC of the European Commission, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No. 305/2011) is 1.

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

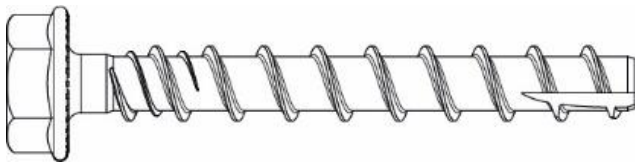
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking

Issued in Copenhagen on 2024-09-18 by



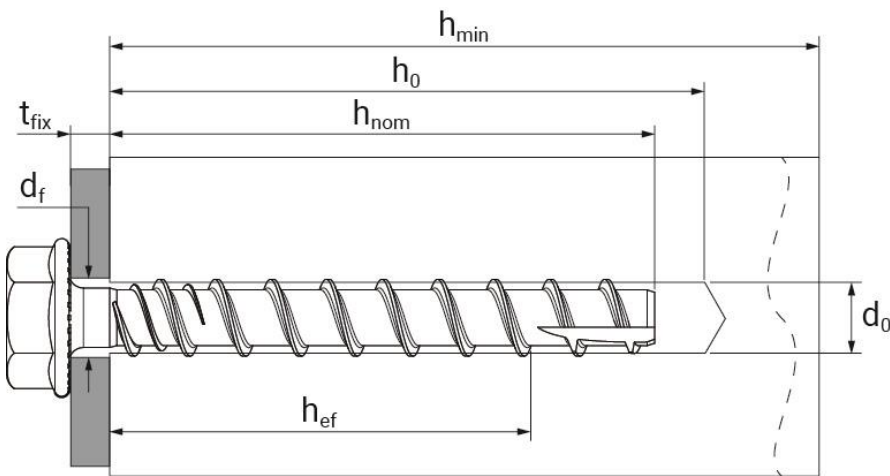
Thomas Bruun
Managing Director, ETA-Danmark

SPIT TAPCON 5 XTREM



Installed condition in concrete

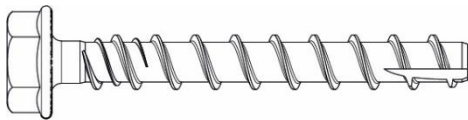
e.g. SPIT TAPCON 5 XTREM concrete screw, with hexagon head and fixture



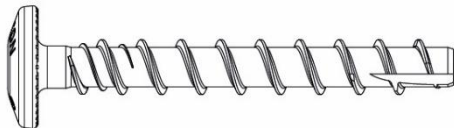
- h_{min} : Minimum thickness of member
- d_0 : Nominal drill hole diameter
- h_0 : Drill hole depth
- d_f : Clearance hole diameter
- h_{nom} : Nominal embedment depth
- h_{ef} : Effective embedment depth
- t_{fix} : Thickness of fixture

| | | |
|---|--|----------|
| SPIT TAPCON 5 XTREM | | Annex A1 |
| Product description Installation condition | | |

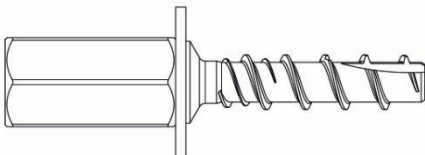
Product version



HFL Version with washer
Hexagon head SW13 and TORX drive30
e.g. TAPCON 5 XTREM HFL 6x80



DOMÉ Version with large pan head
TORX drive 30
e.g. TAPCON 5 XTREM DOMÉ 6x60



ROD Version Hexagon drive SW13
e.g. TAPCON 5 XTREM ROD 6x55 M8/M10

Marking:

- Designation: TAPCON
- Screw size: 6
- Screw length: 60



Material

Table A1: Material

| Product name | Material |
|----------------|---|
| TAPCON 5 XTREM | Steel EN 10263-4:2017 galvanized acc. to EN ISO 4042:2022 |

SPIT TAPCON 5 XTREM

Product description
Product versions, Marking,and Material

Annex A2

Dimensions

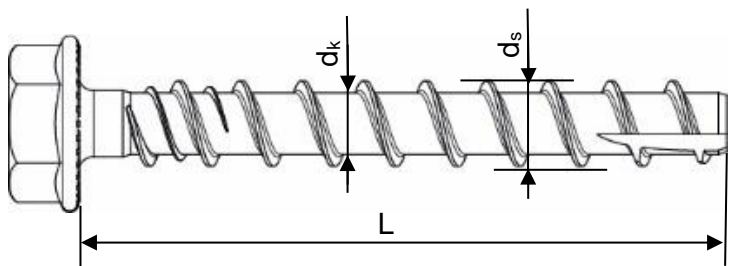


Table A2: Dimensions

| Fastener size TAPCON 5 XTREM | | | 6 |
|------------------------------|----------|------|-----|
| Screw length | $\leq L$ | [mm] | 100 |
| Core diameter | d_k | [mm] | 5,8 |
| Thread outer diameter | d_s | [mm] | 8,0 |

SPIT TAPCON 5 XTREM

Product description
Dimensions

Annex A3

Specification of Intended use

Table B1 : Anchorages subject to:

| Fastener size TAPCON 5 XTREM | | 6 | |
|---------------------------------|--------------------------|-------------------|-------------------|
| Nominal embedment depth | h _{nom} [mm] | h _{nom1} | h _{nom2} |
| | | 40 | 55 |
| Static and quasi-static loads | | ✓ | ✓ |
| Fire exposure | | ✓ | ✓ |
| C1 seismic category performance | | ✓ | ✓ |

Base materials:

- Compacted reinforced and unreinforced concrete without fibres of concrete Strength classes C20/25 to C50/60 according to EN 206:2013.
- Cracked or uncracked concrete.

Use conditions (Environmental conditions):

- Concrete screws subject to dry internal conditions: all screw types.

Design:

- Anchorages are designed in accordance with EN 1992-4:2018 and EOTA Technical Report TR 055
- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are to be prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on site.
- In case of aborted hole: new drilling must be drilled at a minimum distance of twice the depth of aborted hole or closer, if the aborted hole is filled with high strength mortar and only if the hole is not in the direction of the oblique tensile or shear load.
- After installation further turning of the anchor must not be possible. The head of the anchor is supported in the fixture and is not damaged.

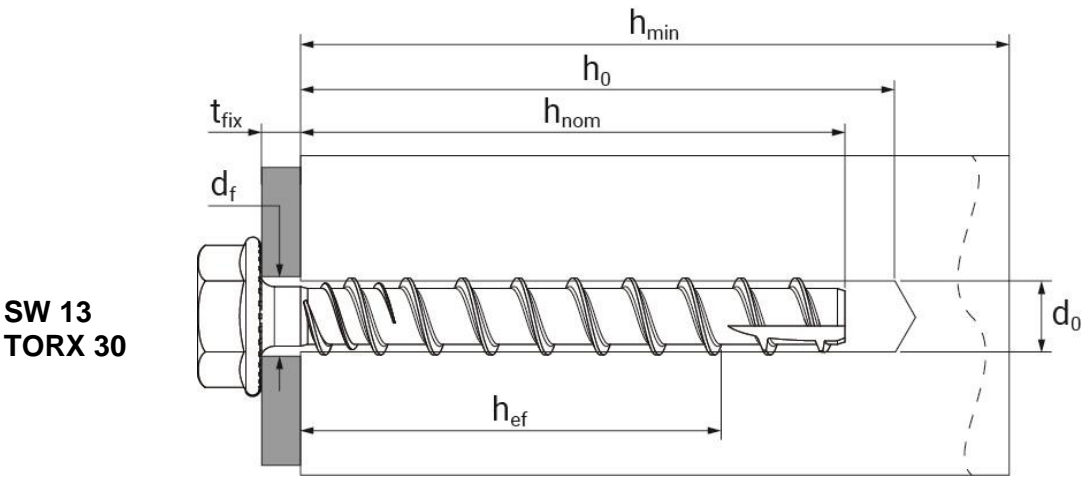
SPIT TAPCON 5 XTREM

Intended use
Specification

Annex B1

Table B2 : Setting data in concrete for TAPCON 5 XTREM

| Fastener size TAPCON 5 XTREM | | | 6 | | | | | |
|---|--------------------|------------------|-------------------|------|-----|-------------------|------|-----|
| Type | | | HFL | DOME | ROD | HFL | DOME | ROD |
| Nominal embedment depth | | h _{nom} | h _{nom1} | | | h _{nom2} | | |
| | | [mm] | 40 | | | 55 | | |
| Nominal drill hole diameter | d ₀ | [mm] | 6 | | | | | |
| Cutting diameter of drill bit | d _{cut} ≤ | [mm] | 6,40 | | | | | |
| Drill hole depth | h ₀ ≥ | [mm] | 50 | | | 65 | | |
| Clearance hole diameter | d _f ≤ | [mm] | 9 | | | | | |
| Wrench size | SW | [mm] | 13 | - | 13 | 13 | - | 13 |
| Torx Size | TX | [-] | 30 | 30 | - | 30 | 30 | - |
| Torque impact screw driver (Max. torque according to manufacturer's instructions) | | [Nm] | 170 | | | 210 | | |



SPIT TAPCON 5 XTREM

Intended use
Installation parameters

Annex B2

Table B3: Minimum thickness of member, minimum edge distance and minimum spacing



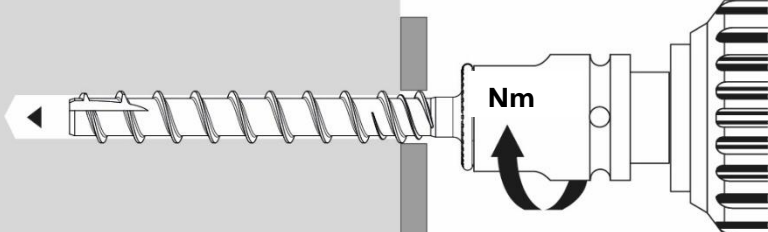
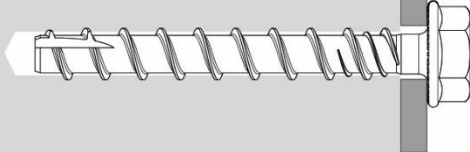
| Fastener size TAPCON 5 XTREM | | | 6 | |
|------------------------------|-----------|-------------------|------------|------------|
| Nominal embedment depth | | h_{nom} [mm] | h_{nom1} | h_{nom2} |
| | | | 40 | 55 |
| Minimum thickness of member | h_{min} | [mm] | 80 | 100 |
| Minimum edge distance | c_{min} | [mm] | 40 | |
| Minimum spacing | s_{min} | [mm] | 40 | |

SPIT TAPCON 5 XTREM

Intended use
Minimum thickness of member, minimum edge distance and minimum spacing

Annex B3

Installation Instructions

| | |
|---|---|
|  | <p>Drill hole perpendicular to concrete surface</p> |
|  | <p>Blow out dust beginning from the depth of the bore hole</p> |
|  | <p>Install with torque Impact screw driver and stop screwing when the head is in contact with the fixture</p> |
|  | <p>The head must be undamagend and in contact with the fixture</p> |

SPIT TAPCON 5 XTREM

Intended use
Installation instructions

Annex B4

Table C1: Characteristic values for static and quasi-static loading

| | | | | | |
|--|-----------------|-----------------|------------|--------------|------|
| Fastener size TAPCON 5 XTREM HFL / DOME / ROD | | | 6 | | |
| Nominal embedment depth | | h_{nom} | h_{nom1} | h_{nom2} | |
| | | [mm] | 40 | 55 | |
| Steel failure for tension and shear loading | | | | | |
| Characteristic tension load | $N_{Rk,s}$ | [kN] | 23,6 | | |
| Partial factor | $\gamma_{Ms,N}$ | [-] | 1,4 | | |
| Characteristic shear load | $V^0_{Rk,s}$ | [kN] | 8,5 | | |
| Partial factor | $\gamma_{Ms,V}$ | [-] | 1,5 | | |
| Ductility factor | k_7 | [-] | 0,98 | | |
| Characteristic bending load | $M^0_{Rk,s}$ | [Nm] | 22,9 | | |
| Pull-out failure | | | | | |
| Characteristic tension load in uncracked concrete C20/25 | | $N_{Rk,p}$ | [kN] | 7,0 | 10,0 |
| Increasing factor for $N_{Rk,p}$ | C25/30 | Ψ_c | [-] | 1,04 | 1,08 |
| | C30/37 | | | 1,07 | 1,14 |
| | C40/50 | | | 1,13 | 1,26 |
| | C50/60 | | | 1,17 | 1,35 |
| Characteristic tension load in cracked concrete C20/25 | | $N_{Rk,p}$ | [kN] | 2,5 | 5,5 |
| Increasing factor for $N_{Rk,p}$ | C25/30 | Ψ_c | [-] | 1,12 | 1,05 |
| | C30/37 | | | 1,22 | 1,08 |
| | C40/50 | | | 1,41 | 1,15 |
| | C50/60 | | | 1,58 | 1,20 |
| Installation safety factor | | γ_{inst} | [-] | 1,4 | 1,2 |
| Concrete cone failure and splitting failure | | | | | |
| Effective embedment depth | | h_{ef} | [mm] | 31,5 | 44,3 |
| k-factor | cracked | $k_{cr,N}$ | [-] | 7,7 | |
| | uncracked | $k_{ucr,N}$ | [-] | 11,0 | |
| Concrete cone failure | spacing | $S_{cr,N}$ | [mm] | 3 h_{ef} | |
| | Edge distance | $C_{cr,N}$ | [mm] | 1,5 h_{ef} | |
| Splitting failure | resistance | $N^0_{Rk,sp}$ | [kN] | $N_{Rk,p}$ | |
| | spacing | $S_{cr,sp}$ | [mm] | 180 | 200 |
| | edge distance | $C_{cr,sp}$ | [mm] | 90 | 100 |
| Installation safety factor | | γ_{inst} | [-] | 1,4 | 1,2 |
| Concrete pryout failure | | | | | |
| Factor for pry-out failure | | k_8 | [-] | 1,0 | |
| Installation safety factor | | γ_{inst} | [-] | 1,0 | |
| Concrete edge failure | | | | | |
| Effective length in concrete | | $l_f = h_{ef}$ | [mm] | 31,5 | 44,3 |
| Nominal outer diameter of screw | | d_{nom} | [mm] | 6 | |
| Installation safety factor | | γ_{inst} | [-] | 1,0 | |

SPIT TAPCON 5 XTREM**Performances**

Characteristic values for static and quasi-static loading

Annex C1

Table C2 : Seismic category C1 – Characteristic load values

| | | | |
|--|-----------------|------------|--------------|
| Fastener size TAPCON 5 XTREM HFL / DOME / ROD | | 6 | |
| Nominal embedment depth | h_{nom} | h_{nom1} | h_{nom2} |
| | [mm] | 40 | 55 |
| Steel failure for tension and shear load | | | |
| Characteristic tension load | $N_{Rk,s,C1}$ | [kN] | 23,6 |
| Partial factor | $\gamma_{Ms,N}$ | [-] | 1,4 |
| Characteristic shear load | $V_{Rk,s,C1}$ | [kN] | 4,3 |
| Partial factor | $\gamma_{Ms,V}$ | [-] | 1,5 |
| Pull-out failure | | | |
| Characteristic tension load in cracked concrete C20/25 | $N_{Rk,p,C1}$ | [kN] | 2,2 |
| Installation safety factor | γ_{inst} | [-] | 1,4 |
| Concrete cone failure | | | |
| Effective embedment depth | h_{ef} | [mm] | 31,5 |
| Edge distance | $C_{cr,N}$ | [mm] | 1,5 h_{ef} |
| Spacing | $S_{cr,N}$ | [mm] | 3 h_{ef} |
| Installation safety factor | γ_{inst} | [-] | 1,4 |
| Concrete pry-out failure | | | |
| Factor for pry-out failure | k_8 | [-] | 1,0 |
| Installation safety factor | γ_{inst} | [-] | 1,0 |
| Concrete edge failure | | | |
| Effective length in concrete | $l_f = h_{ef}$ | [mm] | 31,5 |
| Nominal outer diameter of screw | d_{nom} | [mm] | 6 |
| Installation safety factor | γ_{inst} | [-] | 1,0 |

SPIT TAPCON 5 XTREM**Performances**

Seismic category C1 – Characteristic load values

Annex C2

Table C3 : Displacements under static and quasi-static tension load

| Fastener size TAPCON 5 XTREM | | | | 6 | |
|------------------------------|--------------|--------------------|-----------|------------|------------|
| Nominal embedment depth | | | h_{nom} | h_{nom1} | h_{nom2} |
| | | | [mm] | 40 | 55 |
| Cracked concrete | tension load | N | [kN] | 1,2 | 2,4 |
| | displacement | δ_{N0} | [mm] | 0,03 | 0,01 |
| | | $\delta_{N\infty}$ | [mm] | 0,30 | 0,32 |
| Uncracked concrete | tension load | N | [kN] | 3,3 | 4,8 |
| | displacement | δ_{N0} | [mm] | 0,04 | 0,02 |
| | | $\delta_{N\infty}$ | [mm] | 0,07 | 0,17 |

Table C4 : Displacements under static and quasi-static

| Fastener size TAPCON 5 XTREM | | | | 6 | |
|--------------------------------|--------------|--------------------|-----------|------------|------------|
| Nominal embedment depth | | | h_{nom} | h_{nom1} | h_{nom2} |
| | | | [mm] | 40 | 55 |
| Cracked and uncracked concrete | shear load | V | [kN] | 4,0 | |
| | displacement | δ_{V0} | [mm] | 0,83 | |
| | | $\delta_{V\infty}$ | [mm] | 1,25 | |

SPIT TAPCON 5 XTREM**Performances**

Displacements under static and quasi-static loads

Annex C3

Table C3: Fire exposure – characteristic values of resistance

| | | | | | |
|--|--------|--------------------|-------|-------------------|------------|
| Fastener size TAPCON 5 XTREM | | | | 6 | |
| Nominal embedment depth | | h_{nom} | | h_{nom1} | h_{nom2} |
| | | [mm] | | 40 | 55 |
| Steel failure for tension and shear load | | | | | |
| Characteristic resistance | R30 | $N_{Rk,s,fi30}$ | [kN] | 1,00 | 1,50 |
| | R60 | $N_{Rk,s,fi60}$ | [kN] | 1,00 | 1,28 |
| | R90 | $N_{Rk,s,fi90}$ | [kN] | 0,70 | 0,84 |
| | R120 | $N_{Rk,s,fi120}$ | [kN] | 0,54 | 0,62 |
| | R30 | $V_{Rk,s,fi30}$ | [kN] | 1,00 | 1,50 |
| | R60 | $V_{Rk,s,fi60}$ | [kN] | 1,00 | 1,28 |
| | R90 | $V_{Rk,s,fi90}$ | [kN] | 0,70 | 0,84 |
| | R120 | $V_{Rk,s,fi120}$ | [kN] | 0,54 | 0,62 |
| | R30 | $M^0_{Rk,s,fi30}$ | [kNm] | 0,76 | 1,14 |
| | R60 | $M^0_{Rk,s,fi60}$ | [kNm] | 0,76 | 0,97 |
| | R90 | $M^0_{Rk,s,fi90}$ | [kNm] | 0,53 | 0,64 |
| | R120 | $M^0_{Rk,s,fi120}$ | [kNm] | 0,41 | 0,47 |
| Pull-out failure | | | | | |
| Characteristic resistance | R30-90 | $N_{Rk,p,fi}$ | [kN] | 0,60 | 1,4 |
| | R120 | $N_{Rk,p,fi}$ | [kN] | 0,50 | 1,1 |
| Concrete cone failure | | | | | |
| Characteristic resistance | R30-90 | $N_{Rk,c,fi}$ | [kN] | 1,2 | 2,9 |
| | R120 | $N_{Rk,c,fi}$ | [kN] | 1,0 | 2,3 |
| Edge distance | | | | | |
| R30 - R120 | | $C_{cr,N,fi}$ | [mm] | $2 \times h_{ef}$ | |
| In case of fire attack from more than one side, the minimum edge distance shall be $\geq 300\text{mm}$. | | | | | |
| Spacing distance | | | | | |
| R30 - R120 | | $S_{cr,N,fi}$ | [mm] | $4 \times h_{ef}$ | |
| Pryout failure | | | | | |
| R30 - R120 | | k_8 | [-] | 1,0 | 1,0 |
| Characteristic resistance | R30-90 | $V_{Rk,cp,fi}$ | [kN] | 1,2 | 2,9 |
| | R120 | $V_{Rk,cp,fi}$ | [kN] | 1,0 | 2,3 |
| The anchorage depth has to be increased for wet concrete by at least 30 mm compared to the given value. | | | | | |

SPIT TAPCON 5 XTREM**Performances**

Fire exposure – characteristic values of resistance

Annex C4