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## European Technical Assessment

## ETA 21/0542 of 23/06/2021

English translation prepared by IETcc. Original version in Spanish language

### General Part

**Technical Assessment Body issuing the ETA designated according to Art. 29 of Regulation (EU) 305/2011:**

Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)

**Trade name of the construction product:**

**IDCAHEHO  
IDCAHECLO  
IDCAHEHC  
IDCAHEA4**

**Product family to which the construction product belongs:**

Deformation controlled anchor made of galvanized steel or stainless steel or stainless steel of sizes M6, M8, M10, M12, M16 and M20 for use in concrete for redundant non-structural systems

**Manufacturer:**

**Inka Yapi Baglanti Elemanlari Sanayi ve Ticaret A.S.**  
IAYOSB Gazi Bulvari No 7  
34953 Tuzla. Istanbul. Turkey.  
website: [www.inkafixing.com](http://www.inkafixing.com)

**Manufacturing plant:**

Inka plant 1

**This European Technical Assessment contains:**

12 pages including 3 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 330747-00-0601, "Fasteners for use in concrete for redundant non-structural systems", ed. May 2018.

*English translation prepared by IETcc*

This European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission according to article 25 (3) of Regulation (EU) No 305/2011.

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## SPECIFIC PART

### 1. Technical description of the product

The Inka IDCAHEHO, IDCAHECLO, IDCAHEHC, in the range of M6 to M20, is an anchor made of galvanised steel. The Inka IDCAHEA4 in the range of M6 to M20, is an anchor made of stainless steel. They are placed into a drilled hole and anchored by deformation-controlled expansion. The anchorage is characterised by friction between the sleeve and concrete.

Product and installation descriptions are given in annexes A1 and A2.

### 2. Specification of the intended use in accordance with the applicable European Assessment Document

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 verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 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 mean to 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	Anchorage satisfies requirements for class A1 according to EN13501-1
Resistance to fire	See annex C5

#### 3.2 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance under static or quasi static loading	See annexes C3 and C4

### 4. Assessment and Verification of Constancy of Performances (hereinafter AVCP) system applied, with reference to its legal base

The applicable European legal act for the system of Assessment and Verification of Constancy of Performances (see annex V to Regulation (EU) No 305/2011) is 97/161/EC.

The system to be applied is 2+.

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## 5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

The technical details necessary for the implementation of the AVCP system are laid down in the quality plan deposited at Instituto de Ciencias de la Construcción Eduardo Torroja.



Instituto de Ciencias de la Construcción Eduardo Torroja  
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On behalf of the Instituto de Ciencias de la Construcción Eduardo Torroja  
Madrid, 23<sup>rd</sup> of June 2021



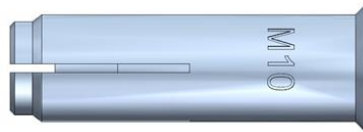
Director IETcc - CSIC

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**Product**



**IDCAHEHO anchor**



**IDCAHECLO anchor**



**IDCAHEHC anchor**



**IDCAHEA4 anchor**

Identification on sleeve: Inka logo + "IDCA HO (IDCA CL, IDCA HC, IDCA A4)" + Metric

**Table A1: Dimensions**

Anchor dimensions	M6	M8	M10	M12	M12D	M16	M20
<b>IDCAHEHO, IDCAHECLO</b>							
ØD: External diameter [mm]	8	10	12	15	16	20	25
Ød: internal diameter [mm]	M6	M8	M10	M12	M12	M16	M20
L: total length [mm]	25	30	40	50	50	65	80
<b>IDCAHEHC</b>							
ØD: External diameter [mm]	--	10	12	15	--	--	--
Ød: internal diameter [mm]	--	M8	M10	M12	--	--	--
L: total length [mm]	--	25	25	25	--	--	--
<b>IDCAHEA4</b>							
ØD: External diameter [mm]	8	10	12	15	--	20	25
Ød: internal diameter [mm]	M6	M8	M10	M12	--	M16	M20
L: total length [mm]	25	30	40	50	--	65	80

**Table A2: Materials**

Item	Designation	Material for IDCAHEHO, IDCAHECLO, IDCAHEHC	Material for IDCAHEA4
1	Sleeve	Carbon steel, zinc plated $\geq 5 \mu\text{m}$ ISO 4042 Zn5/An/T0	Stainless steel, grade A4
2	Cone	Carbon steel, zinc plated $\geq 5 \mu\text{m}$ ISO 4042 Zn5/An/T0	Stainless steel, grade A4
3	Retention disc	Plastic	Plastic

**IDCAHEHO, IDCAHECLO, IDCAHEHC, IDCAHEA4 anchor**

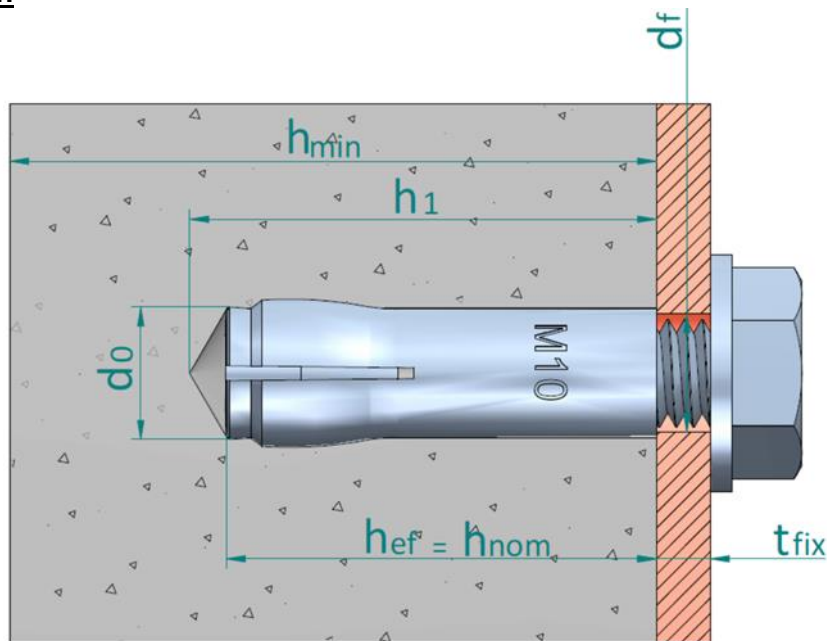
**Product description**

Product and materials

**Annex A1**

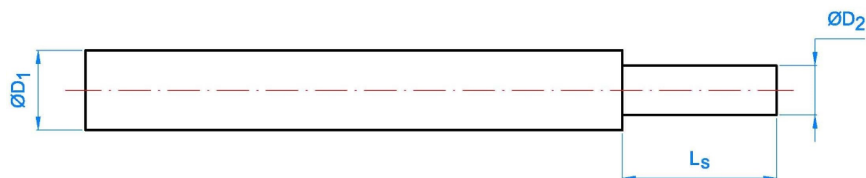
English translation prepared by IETcc

**Installed condition**



- $h_{ef}$ : Effective anchorage depth
- $h_1$ : Depth of drilled hole
- $h_{nom}$ : Overall anchor embedment depth in the concrete
- $h_{min}$ : Minimum thickness of concrete member
- $t_{fix}$ : Thickness of fixture
- $d_0$ : Nominal diameter of drill bit
- $d_f$ : Fixture clearance hole diameter

**Setting tool**



**Table A3: Setting tool dimensions**

Setting tool dimensions		M6	M8	M10	M12	M16	M20
<b>IDCAHEHO, IDCAHECLO, IDCAHEA4</b>							
Ø D <sub>1</sub>	[mm]	8.0	10.0	12.0	15.0	20.0	25.0
Ø D <sub>2</sub>	[mm]	4.9	6.4	8.2	10.0	13.5	17.0
L <sub>s</sub>	[mm]	15.0	18.0	21.0	30.0	36.0	40.0
<b>IDCAHEHC</b>							
Ø D <sub>1</sub>	[mm]	--	10.0	12.0	15.0	--	--
Ø D <sub>2</sub>	[mm]	--	6,4	8,2	10,0	--	--
L <sub>s</sub>	[mm]	--	15.0	16.0	10.4	--	--

Setting tool can be assembled with a plastic handle for hand protection purposes

**IDCAHEHO, IDCAHECLO, IDCAHEHC, IDCAHEA4 anchor**

**Product description**

Installed condition and setting tool

**Annex A2**

**Specifications of intended use**

**Anchorage subjected to:**

- Static or quasi static loads for redundant non-structural systems
- Fire exposure
- The anchor may only be used if in the design and installation specifications for the fixture the excessive slip or failure of one anchor will not result in a significant violation of the requirements on the fixture in the serviceability and ultimate state.

**Base materials:**

- Reinforced or unreinforced normal weight concrete without fibres according to EN 206-1:2013+A1:2016
- Strength classes C12/15 to C50/60 according to EN 206-1:2013+A1:2016: IDCAHEHO / IDCAHECLO anchors
- Strength classes C20/25 to C50/60 according to EN 206-1:2013+A1:2016: IDCAHEHC / IDCAHEA4 anchors
- Cracked or uncracked concrete

**Use conditions (environmental conditions):**

- IDCAHEHO, IDCAHECLO, IDCAHEHC: anchorages subjected to dry internal conditions.
- IDCAHEA4: anchorages subjected to dry internal conditions, to external atmospheric exposure (including industrial and marine environment) or to permanent internal damp conditions if no particular aggressive conditions exist. Such particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used). Atmospheres under Corrosion Resistance Class CRC III according to EN 1993-1-4:2006+A1:2015 annex A.

**Design:**

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete.
- Verifiable calculation rules and drawings are prepared taking into 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.).
- Anchorages under static or quasi-static actions are designed for design method B in accordance with EN 1992-4:2018
- Anchorages under fire exposure are designed in accordance to EN 1992-4:2018. It must be ensured that local spalling of the concrete cover does not occur.

**Installation:**

- Hole drilling by rotary plus hammer mode.
- Anchor installation carried out by appropriately qualified personal and under the supervision of the person responsible for technical matters of the site.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of aborted hole or smaller distance if the aborted hole is filled with high strength mortar and if under shear or oblique tension load it is not the direction of the load application.
- IDCAHEHO, IDCAHECLO, IDCAHEHC: the bolt or threaded rod to be used shall be property class 4.6, 5.6, 5.8, 6.8 or 8.8 according to ISO 898-1.
- IDCAHEA4: the bolt or threaded rod to be used shall be property class A4-50, A4-70 or A4-80 according to EN 3506-1:2009
- The length of the bolt shall be determined as:
  - Minimum bolt length =  $t_{fix} + l_{s,min}$
  - Maximum bolt length =  $t_{fix} + l_{s,max}$

<b>IDCAHEHO, IDCAHECLO, IDCAHEHC, IDCAHEA4 anchor</b>	<b>Annex B1</b>
<b>Intended use</b>	
Specifications	

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**Table C1: Installation parameters for IDCAHEHO, IDCAHECLO, IDCAHEHC, IDCAHEA4 anchor**

Installation parameters			Performances						
			M6	M8	M10	M12	M12D	M16	M20
d <sub>0</sub>	Nominal diameter of drill bit:	[mm]	8	10	12	15	16	20	25
D	Thread diameter:	[mm]	M6	M8	M10	M12	M12	M16	M20
d <sub>f</sub>	Fixture clearance hole diameter ≤	[mm]	7	9	12	14	14	18	22
T <sub>inst</sub>	Maximum installation torque:	[Nm]	4	11	17	38	38	60	100
<b>IDCAHEHO, IDCAHECLO</b>			<b>M6 x 25</b>	<b>M8 x 30</b>	<b>M10 x 40</b>	<b>M12 x 50</b>	<b>M12 x 50</b>	<b>M16 x 65</b>	<b>M20 x 80</b>
l <sub>s,min</sub>	Minimum screwing depth:	[mm]	6	8	10	12	12	16	20
l <sub>s,max</sub>	Maximum screwing depth:	[mm]	10	13	17	21	21	27	34
h <sub>1</sub>	Depth of drilled hole:	[mm]	27	33	43	54	54	70	86
h <sub>nom</sub>	Overall anchor embedment depth:	[mm]	25	30	40	50	50	65	80
h <sub>ef</sub>	Effective anchorage depth:	[mm]	25	30	40	50	50	65	80
h <sub>min</sub>	Minimum thickness of concrete member:	[mm]	100	100	100	100	100	130	160
s <sub>min</sub>	Minimum allowable spacing:	[mm]	60	60	80	100	100	130	160
c <sub>min</sub>	Minimum allowable distance:	[mm]	105	105	140	175	130	230	280
<b>IDCAHEHC</b>			-	<b>M8 x 25</b>	<b>M10 x 25</b>	<b>M12 x 25</b>	-	-	-
l <sub>s,min</sub>	Minimum screwing depth:	[mm]	--	7	8	10	--	--	--
l <sub>s,max</sub>	Maximum screwing depth:	[mm]	--	12	13	13	--	--	--
h <sub>1</sub>	Depth of drilled hole:	[mm]	--	28	28	29	--	--	--
h <sub>nom</sub>	Overall anchor embedment depth:	[mm]	--	25	25	25	--	--	--
h <sub>ef</sub>	Effective anchorage depth:	[mm]	--	25	25	25	--	--	--
h <sub>min</sub>	Minimum thickness of concrete member:	[mm]	--	80	80	80	--	--	--
s <sub>min</sub>	Minimum allowable spacing:	[mm]	--	75	75	75	--	--	--
c <sub>min</sub>	Minimum allowable distance:	[mm]	--	60	60	60	--	--	--
<b>IDCAHEA4</b>			<b>M6 x 25</b>	<b>M8 x 30</b>	<b>M10 x 40</b>	<b>M12 x 50</b>	-	<b>M16 x 65</b>	<b>M20 x 80</b>
l <sub>s,min</sub>	Minimum screwing depth:	[mm]	6	8	10	12	--	16	20
l <sub>s,max</sub>	Maximum screwing depth:	[mm]	10	13	17	21	--	27	34
h <sub>1</sub>	Depth of drilled hole:	[mm]	27	33	43	54	--	70	86
h <sub>nom</sub>	Overall anchor embedment depth:	[mm]	25	30	40	50	--	65	80
h <sub>ef</sub>	Effective anchorage depth:	[mm]	25	30	40	50	--	65	80
h <sub>min</sub>	Minimum thickness of concrete member:	[mm]	80	80	80	100	--	130	160
s <sub>min</sub>	Minimum allowable spacing:	[mm]	60	60	100	100	--	130	160
c <sub>min</sub>	Minimum allowable distance:	[mm]	65	80	100	130	--	175	210

**IDCAHEHO, IDCAHECLO, IDCAHEHC, IDCAHEA4 anchor**

**Performances**

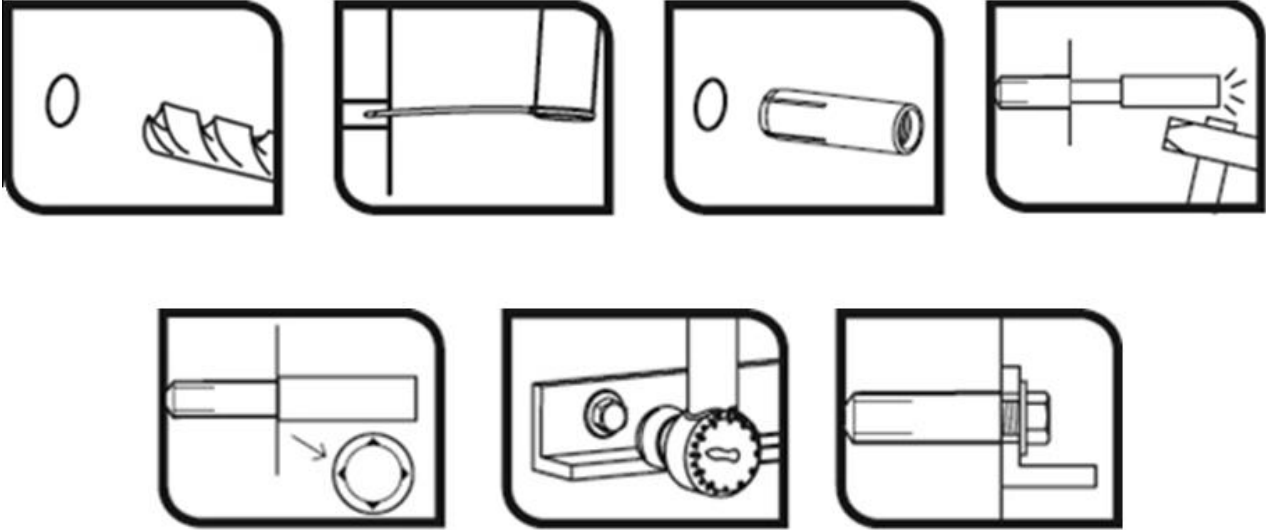
Installation parameters

**Annex C1**



English translation prepared by IETcc

**Installation process**



IDCAHEHO, IDCAHECLO, IDCAHEHC, IDCAHEA4 anchor

Performances

Installation procedure

Annex C2

English translation prepared by IETcc

**Table C2: Characteristic values to loads of design method B according to EN 1992-4 for IDCAHEHO, IDCAHECLO, IDCAHEHC anchor**

Characteristic values of resistance to loads of design method B		Performances						
		M6	M8	M10	M12	M12D	M16	M20
<b>Any load direction</b>								
<b>IDCAHEHO, IDCAHECLO</b>								
$F_{Rk}^0$	Characteristic resistance in C12/15 concrete: [kN]	1.5	3.0	4.0	6.0	--	9.0	16.0
$F_{Rk}^0$	Characteristic resistance in C20/25 to C50/60 concrete: [kN]	2.0	3.0	5.0	7.5	6.0	12.0	20.0
$\gamma_{ins}$	Installation safety factor: [-]	1.2	1.2	1.4	1.4	1.4	1.4	1.4
$S_{cr}$	Critical spacing: [mm]	75	90	120	150	200	195	240
$C_{cr}$	Critical edge distance: [mm]	40	45	60	75	150	100	120
<b>IDCAHEHC</b>								
$F_{Rk}^0$	Characteristic resistance in C20/25 to C50/60 concrete: [kN]	--	2.5	4.0	4.0	--	--	--
$\gamma_{ins}$	Installation safety factor: [-]	--	1.2	1.2	1.2	--	--	--
$S_{cr}$	Critical spacing: [mm]	--	120	120	120	--	--	--
$C_{cr}$	Critical edge distance: [mm]	--	60	60	60	--	--	--
<b>Shear loads: steel failure with lever arm</b>								
$M_{Rk,s}^0$	Characteristic bending moment, steel class 4.6 [Nm]	6.1	15.0	29.9	52.4	52.4	133.3	259.8
$\gamma_{Ms}^1$	Partial safety factor: [-]	1.67						
$M_{Rk,s}^0$	Characteristic bending moment, steel class 4.8 [Nm]	6.1	15.0	29.9	52.4	52.4	133.3	259.8
$\gamma_{Ms}^1$	Partial safety factor: [-]	1.25						
$M_{Rk,s}^0$	Characteristic bending moment, steel class 5.6 [Nm]	7.6	18.8	37.4	65.5	65.5	166.6	324.8
$\gamma_{Ms}^1$	Partial safety factor: [-]	1.67						
$M_{Rk,s}^0$	Characteristic bending moment, steel class 5.8 [Nm]	7.6	18.8	37.4	65.5	65.5	166.6	324.8
$\gamma_{Ms}^1$	Partial safety factor: [-]	1.25						
$M_{Rk,s}^0$	Characteristic bending moment, steel class 6.8 [Nm]	9.2	22.5	44.9	78.7	78.7	199.9	389.7
$\gamma_{Ms}^1$	Partial safety factor: [-]	1.25						
$M_{Rk,s}^0$	Characteristic bending moment, steel class 8.8 [Nm]	12.2	30.0	59.9	104.9	104.9	266.6	519.7
$\gamma_{Ms}^1$	Partial safety factor: [-]	1.25						

1) In absence of other national regulations

<b>IDCAHEHO, IDCAHECLO, IDCAHEHC anchor</b>	<b>Annex C3</b>
<b>Performances</b>	
Characteristic resistances	

English translation prepared by IETcc

**Table C3: Characteristic values to loads of design method B according to EN 1992-4 for IDCAHEA4 anchor**

Characteristic values of resistance to loads of design method B			Performances					
			M6	M8	M10	M12	M16	M20
<b>All load direction</b>								
$F_{Rk}^0$	Characteristic resistance in C20/25 to C50/60 concrete:	[kN]	2.5	3.5	3.5	6.5	12.5	16.5
$\gamma_{ins}$	Installation safety factor:	[-]	1.4					
$S_{cr}$	Critical spacing:	[mm]	200	200	200	200	260	320
$C_{cr}$	Critical edge distance:	[mm]	150	150	150	150	195	240
<b>Shear loads: steel failure with lever arm</b>								
$M_{Rk,s}^0$	Characteristic bending moment, steel class A4-50	[Nm]	7.6	18.8	37.4	65.6	166.6	324.8
$\gamma_{Ms}^{1)}$	Partial safety factor:	[-]	2.38					
$M_{Rk,s}^0$	Characteristic bending moment, steel class A4-70	[Nm]	10.6	6.3	52.4	91.8	233.1	454.7
$\gamma_{Ms}^{1)}$	Partial safety factor:	[-]	1.56					
$M_{Rk,s}^0$	Characteristic bending moment, steel class A4-80	[Nm]	12.2	30.0	59.9	104.9	266.6	519.7
$\gamma_{Ms}^{1)}$	Partial safety factor:	[-]	1.34					

1) In absence of other national regulations

IDCAHEA4 anchor	<b>Annex C4</b>
Performances	
Characteristic resistances	

English translation prepared by IETcc

**Table C4: Characteristic resistance under fire exposure in concrete C20/25 to C50/50 in any load direction according to EN 1992-4 for IDCAHEHO, IDCAHECLO anchor**

Characteristic resistance under fire exposure in concrete C20/25 to C50/60 in any load direction for use in concrete			Performances						
			M6	M8	M10	M12	M12D	M16	M20
R30	Characteristic resistance: $F_{Rk,fi30}^{0\ 1)}$	[kN]	0.2	0.4	0.9	1.7	1.7	3.1	4.9
R60	Characteristic resistance: $F_{Rk,fi60}^{0\ 1)}$	[kN]	0.2	0.3	0.8	1.3	1.3	2.4	3.7
R90	Characteristic resistance: $F_{Rk,fi90}^{0\ 1)}$	[kN]	0.1	0.3	0.6	1.1	1.1	2.0	3.2
R120	Characteristic resistance: $F_{Rk,fi120}^{0\ 1)}$	[kN]	0.1	0.2	0.5	0.8	0.8	1.6	2.5
R30 to	Spacing	$S_{cr,fi}$	4 x hef						
R120	Edge distance	$C_{cr,fi}$	2 x hef						

<sup>1)</sup> in absence of other national regulations the partial safety factor for resistance under fire exposure  $\gamma_{M,fi} = 1.0$  is recommended  
If fire attack is from more than one side, the design method may be taken if edge distance of the anchor is  $c \geq 300$  mm

**Table C5: Characteristic resistance under fire exposure in concrete C20/25 to C50/50 in any load direction according to EN 1992-4 for IDCAHEHC anchor**

Characteristic resistance under fire exposure in concrete C20/25 to C50/60 in any load direction for use in concrete			Performances					
			M6	M8	M10	M12	M16	M20
R30	Characteristic resistance: $F_{Rk,fi30}^{0\ 1)}$	[kN]	--	0.54	0.54	0.54	--	--
R60	Characteristic resistance: $F_{Rk,fi60}^{0\ 1)}$	[kN]	--	0.54	0.54	0.54	--	--
R90	Characteristic resistance: $F_{Rk,fi90}^{0\ 1)}$	[kN]	--	0.44	0.54	0.54	--	--
R120	Characteristic resistance: $F_{Rk,fi120}^{0\ 1)}$	[kN]	--	0.37	0.43	0.43	--	--
R30 to	Spacing	$S_{cr,fi}$	4 x hef					
R120	Edge distance	$C_{cr,fi}$	2 x hef					

<sup>1)</sup> in absence of other national regulations the partial safety factor for resistance under fire exposure  $\gamma_{M,fi} = 1.0$  is recommended  
If fire attack is from more than one side, the design method may be taken if edge distance of the anchor is  $c \geq 300$  mm

**Table C6: Characteristic resistance under fire exposure in concrete C20/25 to C50/50 in any load direction according to EN 1992-4 for IDCAHEA4 anchor**

Characteristic resistance under fire exposure in concrete C20/25 to C50/60 in any load direction for use in concrete			Performances					
			M6	M8	M10	M12	M16	M20
R30	Characteristic resistance: $F_{Rk,fi30}^{0\ 1)}$	[kN]	0.20	0.73	0.87	1.63	3.19	4.12
R60	Characteristic resistance: $F_{Rk,fi60}^{0\ 1)}$	[kN]	0.18	0.59	0.87	1.63	3.19	4.12
R90	Characteristic resistance: $F_{Rk,fi90}^{0\ 1)}$	[kN]	0.14	0.44	0.87	1.63	3.14	4.12
R120	Characteristic resistance: $F_{Rk,fi120}^{0\ 1)}$	[kN]	0.10	0.37	0.69	1.30	2.51	3.30
R30 to	Spacing	$S_{cr,fi}$	4 x hef					
R120	Edge distance	$C_{cr,fi}$	2 x hef					

<sup>1)</sup> in absence of other national regulations the partial safety factor for resistance under fire exposure  $\gamma_{M,fi} = 1.0$  is recommended  
If fire attack is from more than one side, the design method may be taken if edge distance of the anchor is  $c \geq 300$  mm

**IDCAHEHO, IDCAHECLO, IDCAHEHC, IDCAHEA4 anchor**

**Performances**

Resistances under fire exposure

**Annex C5**