



IT

**DICHIARAZIONE DI PRESTAZIONE**

No. HAC-C\_2451-CPR-EAD-2017.0003

**1. Codice di identificazione unico del prodotto-tipo:**

Hilti HAC-C

**2. Uso/i previsto/i:**

| Prodotto              | Uso previsto  |
|-----------------------|---|
| Binario di ancoraggio | Per fissare e/o sostenere nel calcestruzzo degli elementi strutturali (che contribuiscono alla stabilità delle opere) o elementi molto pesanti. |

**3. Fabbricante:**

Hilti Corporation, Business Unit Anchors, 9494 Schaan, Principato del Liechtenstein

**4. Systema/i di AVCP:** Systema 1**5. Documento per la valutazione europea:**

EAD 330008-02-0601 (Edizione 02-2016)

**Valutazione tecnica europea:**

ETA-17/0336 (11.07.2017)

**Organismo di valutazione tecnica:**

DIBt - Deutsches Institut für Bautechnik

**Organismo/i notificato/i:**

NB 2451 - DVS Zert GmbH

**6. Prestazione/i dichiarata/e:****Stabilità e resistenza meccanica (BWR 1)**

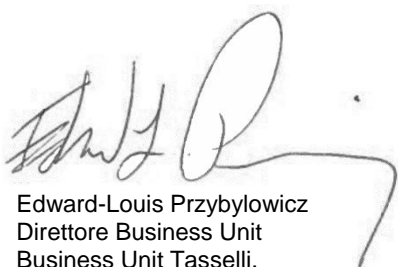
| Caratteristiche essenziali   | Prestazione                |
|--|----------------------------|
| Resistenza caratteristica per carichi statici e quasi statici, spostamenti | Vedere Allegato da C1 a C6 |

**Sicurezza in caso d'incendio (BWR 2)**

| Caratteristiche essenziali | Prestazione  |
|----------------------------|--|
| Reazione al fuoco          | Gli ancoraggi soddisfano i requisiti della Classe A1 |
| Resistenza al fuoco        | Vedere l'allegato C7                                 |

La prestazione del prodotto sopra identificato è conforme all'insieme delle prestazioni dichiarate. La presente dichiarazione di responsabilità viene emessa, in conformità al regolamento (UE) n. 305/2011, sotto la sola responsabilità del fabbricante sopra identificato.

Firmato a nome e per conto del fabbricante da:



Edward-Louis Przybylowicz  
Direttore Business Unit  
Business Unit Tasselli.



Gunnar Wald  
Direttore della Qualità  
Business Unit Tasselli

Hilti Corporation  
Schaan, 28.07.2017



**Table 10: Characteristic resistances under tension load – steel failure of anchor channel**

| Anchor channel HAC-C   |                       |      | 28/15 | 38/17 | 40/25 | 40/22 | 49/30 | 50/30 | 54/33 | 52/34 |
|--|-----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Steel failure: Failure of anchor</b>                                |                       |      |       |       |       |       |       |       |       |       |
| Characteristic resistance  | $N_{Rk,s,a}$          | [kN] | 9     | 18    | 20    |       | 31    |       | 55    |       |
| Partial safety factor  | $\gamma_{Ms}^{1)}$    | [-]  | 1,8   |       |       |       |       |       |       |       |
| <b>Steel failure: Failure of connection between anchor and channel</b> |                       |      |       |       |       |       |       |       |       |       |
| Characteristic resistance  | $N_{Rk,s,c}$          | [kN] | 9     | 18    | 20    |       | 31    |       | 55    |       |
| Partial safety factor  | $\gamma_{Ms,ca}^{1)}$ | [-]  | 1,8   |       |       |       |       |       |       |       |
| <b>Steel failure: Local failure by flexure of channel lips</b>         |                       |      |       |       |       |       |       |       |       |       |
| Characteristic spacing of the channel bolts for $N_{Rk,s,l}$           | $s_{l,N}$             | [mm] | 56    | 76    | 80    | 79    | 100   | 98    | 107   | 105   |
| Characteristic resistance  | $N_{Rk,s,l}^0$        | [kN] | 9     | 18    | 20    | 35    | 31    | 36    | 55    | 65    |
| Partial safety factor  | $\gamma_{Ms,l}^{1)}$  | [-]  | 1,8   |       |       |       |       |       |       |       |

<sup>1)</sup> In absence of other national regulations

**Table 11: Characteristic flexural resistance of channel under tension load**

| Anchor channel HAC-C                                |                         |                 | 28/15 | 38/17 | 40/25 | 40/22 | 49/30 | 50/30 | 54/33 | 52/34 |      |
|---|-------------------------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| <b>Steel failure: Failure by flexure of channel</b> |                         |                 |       |       |       |       |       |       |       |       |      |
| Characteristic flexural resistance of channel       | carbon steel            | $M_{Rk,s,flex}$ | [Nm]  | 316   | 538   | 979   | 1013  | 1669  | 2084  | 2929  | 3435 |
|   | stainless steel         |                 |       |       | 527   |       |       | 1702  |       | 2832  |      |
| Partial safety factor                               | $\gamma_{Ms,flex}^{1)}$ | [-]             | 1,15  |       |       |       |       |       |       |       |      |

<sup>1)</sup> In absence of other national regulations

**Anchor channels (HAC-C) with channel bolts (HBC)**

**Performance Data**

Characteristic resistances of anchor channels under tension load

Annex C1

**Table 12: Characteristic resistances under tension load – concrete failure**

| Anchor channel HAC-C                                   |   |                       | 28/15 | 38/17 | 40/25 | 40/22 | 49/30 | 50/30 | 54/33 | 52/34 |      |      |
|--|---|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| Type of anchor   |   |                       | R     | R     | R     | I     | R     | I     | R     | I     | R    |      |
| <b>Pullout failure</b>                                 |   |                       |       |       |       |       |       |       |       |       |      |      |
| Characteristic resistance in cracked concrete C12/15   | N <sub>Rk,p</sub>                                   | [kN]                  | 7,6   | 13,6  | 27,0  | 13,6  | 21,2  | 33,8  | 21,2  | 33,2  | 68,4 | 33,2 |
| Characteristic resistance in uncracked concrete C12/15 |   |                       | 10,7  | 19,0  | 37,8  | 19,0  | 29,7  | 47,3  | 29,7  | 46,5  | 95,8 | 46,5 |
| Amplification factor of N <sub>Rk,p</sub>              | C16/20  | ψ <sub>c</sub><br>[-] | 1,33  |       |       |       |       |       |       |       |      |      |
|  | C20/25  |                       | 1,67  |       |       |       |       |       |       |       |      |      |
|  | C25/30  |                       | 2,08  |       |       |       |       |       |       |       |      |      |
|  | C30/37  |                       | 2,50  |       |       |       |       |       |       |       |      |      |
|  | C35/45  |                       | 2,92  |       |       |       |       |       |       |       |      |      |
|  | C40/50  |                       | 3,33  |       |       |       |       |       |       |       |      |      |
|  | C45/55  |                       | 3,75  |       |       |       |       |       |       |       |      |      |
|  | C50/60  |                       | 4,17  |       |       |       |       |       |       |       |      |      |
|  | ≥ C55/67  |                       | 4,58  |       |       |       |       |       |       |       |      |      |
| ≥ C60/75   | 5,00  |                       |       |       |       |       |       |       |       |       |      |      |
| Partial safety factor                                  | γ <sub>Mp</sub> =<br>γ <sub>Mc</sub> <sup>1)</sup>  | [-]                   | 1,5   |       |       |       |       |       |       |       |      |      |
| <b>Concrete cone failure</b>                           |   |                       |       |       |       |       |       |       |       |       |      |      |
| Product factor k <sub>1</sub>                          | cracked concrete                                    | k <sub>cr,N</sub>     | [-]   | 7,2   | 7,8   | 7,9   |       | 8,1   |       | 8,7   |      |      |
|  | uncracked concrete                                  | k <sub>ucr,N</sub>    | [-]   | 10,3  | 11,2  | 11,2  |       | 11,6  |       | 12,4  |      |      |
| Partial safety factor                                  | γ <sub>Mc</sub> <sup>1)</sup>                       | [-]                   | 1,5   |       |       |       |       |       |       |       |      |      |
| <b>Splitting</b>                                       |   |                       |       |       |       |       |       |       |       |       |      |      |
| Characteristic edge distance                           | C <sub>cr,sp</sub>                                  | [mm]                  | 135   | 228   | 237   |       | 282   |       | 465   |       |      |      |
| Partial safety factor                                  | γ <sub>Msp</sub> =<br>γ <sub>Mc</sub> <sup>1)</sup> | [-]                   | 1,5   |       |       |       |       |       |       |       |      |      |

<sup>1)</sup> In absence of other national regulations

**Table 13: Displacements under tension load**

| Anchor channel HAC-C                  |                 |      | 28/15 | 38/17 | 40/25 | 40/22 | 49/30 | 50/30 | 54/33 | 52/34 |
|---------------------------------------|-----------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Tension load                          | N               | [kN] | 3,6   | 7,1   | 7,9   | 13,9  | 12,3  | 14,3  | 21,8  | 25,8  |
| Short-term displacement <sup>1)</sup> | δ <sub>N0</sub> | [mm] | 0,6   | 1,3   | 1,4   | 2,3   | 1,4   | 2,2   | 1,6   | 1,4   |
| Long-term displacement <sup>1)</sup>  | δ <sub>N∞</sub> | [mm] | 1,2   | 2,6   | 2,8   | 4,6   | 2,8   | 4,4   | 3,2   | 2,8   |

<sup>1)</sup> Displacements in midspan of the anchor channel, including slip of channel bolt, deformation of channel lips, bending of the channel and slip of the anchor channel in concrete

**Anchor channels (HAC-C) with channel bolts (HBC)**

**Performance Data**

Characteristic resistances of anchor channels and displacements under tension load

Annex C2

**Table 14: Characteristic resistances under shear load – steel failure of anchor channel**

| Anchor channel HAC-C   |                       |      | 28/15 | 38/17 | 40/25 | 40/22 | 49/30 | 50/30 | 54/33 | 52/34 |
|--|-----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Steel failure: Failure of anchor</b>                                |                       |      |       |       |       |       |       |       |       |       |
| Characteristic resistance  | $V_{Rk,s,a}$          | [kN] | 9,0   | 18,0  | 20,0  | 26,0  | 31,0  | 40,3  | 55,0  | 71,5  |
| Partial safety factor  | $\gamma_{Ms}^{1)}$    | [-]  | 1,5   |       |       |       |       |       |       |       |
| <b>Steel failure: Failure of connection between anchor and channel</b> |                       |      |       |       |       |       |       |       |       |       |
| Characteristic resistance  | $V_{Rk,s,c}$          | [kN] | 9,0   | 18,0  | 20,0  | 26,0  | 31,0  | 40,3  | 55,0  | 71,5  |
| Partial safety factor  | $\gamma_{Ms,ca}^{1)}$ | [-]  | 1,8   |       |       |       |       |       |       |       |
| <b>Steel failure: Local failure by flexure of channel lips</b>         |                       |      |       |       |       |       |       |       |       |       |
| Characteristic spacing of channel bolts for $V_{Rk,s,l}$               | $s_{l,v}$             | [mm] | 56    | 76    | 80    | 79    | 100   | 98    | 107   | 105   |
| Characteristic resistance  | $V_{Rk,s,l}^0$        | [kN] | 9,0   | 18,0  | 20,0  | 26,0  | 31,0  | 40,3  | 55,0  | 71,5  |
| Partial safety factor  | $\gamma_{Ms,l}^{1)}$  | [-]  | 1,8   |       |       |       |       |       |       |       |

<sup>1)</sup> In absence of other national regulations

**Anchor channels (HAC-C) with channel bolts (HBC)**

**Performance Data**

Characteristic resistances of anchor channels under shear load

Annex C3

**Table 15: Characteristic resistances under shear load – concrete failure**

| Anchor channel HAC-C         |                    |             | 28/15 | 38/17 | 40/25 | 40/22 | 49/30 | 50/30 | 54/33 | 52/34 |
|------------------------------|--------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Pry out failure</b>       |                    |             |       |       |       |       |       |       |       |       |
| Product factor               | $k_8$              | [-]         | 1,0   | 2,0   |       |       |       |       |       |       |
| Partial safety factor        | $\gamma_{Mc}^{1)}$ | [-]         | 1,5   |       |       |       |       |       |       |       |
| <b>Concrete edge failure</b> |                    |             |       |       |       |       |       |       |       |       |
| Product factor $k_{12}$      | cracked concrete   | $k_{cr,V}$  | [-]   | 6,9   | 7,5   |       |       |       |       |       |
|                              | uncracked concrete | $k_{ucr,V}$ | [-]   | 9,6   | 10,5  |       |       |       |       |       |
| Partial safety factor        | $\gamma_{Mc}^{1)}$ | [-]         | 1,5   |       |       |       |       |       |       |       |

<sup>1)</sup> In absence of other national regulations

**Table 16: Displacements under shear load**

| Anchor channel HAC-C                  |                    |      | 28/15 | 38/17 | 40/25 | 40/22 | 49/30 | 50/30 | 54/33 | 52/34 |
|---------------------------------------|--------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Shear load                            | V                  | [kN] | 3,6   | 7,1   | 7,9   | 10,3  | 12,3  | 16,0  | 21,8  | 28,4  |
| Short-term displacement <sup>1)</sup> | $\delta_{V0}$      | [mm] | 0,6   | 1,3   | 1,4   | 2,1   | 1,4   | 2,6   | 1,6   | 3,7   |
| Long-term displacement <sup>1)</sup>  | $\delta_{V\infty}$ | [mm] | 0,9   | 2,0   | 2,1   | 3,1   | 2,1   | 3,9   | 2,4   | 5,5   |

<sup>1)</sup> Displacements in midspan of the anchor channel, including slip of channel bolt, deformation of channel lips and slip of the anchor channel in concrete

**Table 17: Characteristic resistances under combined tension and shear load**

| Anchor channel HAC-C   |          |     | 28/15             | 38/17 | 40/25 | 40/22 | 49/30 | 50/30 | 54/33 | 52/34 |
|--|----------|-----|-------------------|-------|-------|-------|-------|-------|-------|-------|
| <b>Steel failure: Local failure by flexure of channel lips and failure by flexure of channel</b> |          |     |                   |       |       |       |       |       |       |       |
| Product factor   | $k_{13}$ | [-] | 1,0 <sup>1)</sup> |       |       |       |       |       |       |       |
| <b>Steel failure: Failure of anchor and connection between anchor and channel</b>                |          |     |                   |       |       |       |       |       |       |       |
| Product factor   | $k_{14}$ | [-] | 1,0 <sup>2)</sup> |       |       |       |       |       |       |       |

<sup>1)</sup>  $k_{13}$  can be taken as 2,0 if  $V_{Rd,s,l}$  is limited to  $N_{Rd,s,l}$

<sup>2)</sup>  $k_{14}$  can be taken as 2,0 if  $\max(V_{Rd,s,a}; V_{Rd,s,c})$  is limited to  $\min(N_{Rd,s,a}; N_{Rd,s,c})$

**Anchor channels (HAC-C) with channel bolts (HBC)**

**Performance Data**

Characteristic resistances of anchor channels and displacements under shear load  
Characteristic resistances under combined tension and shear load

Annex C4

**Table 18: Characteristic resistances under tension and shear load – steel failure of channel bolts**

| Channel bolt                      |                     |      |                       |                     | M8   | M10       | M12                 | M16   | M20  |       |       |  |
|-----------------------------------|---------------------|------|-----------------------|---------------------|------|-----------|---------------------|-------|------|-------|-------|--|
| <b>Steel failure</b>              |                     |      |                       |                     |      |           |                     |       |      |       |       |  |
| Characteristic tension resistance | $N_{Rk,s}^{1)}$     | [kN] | HBC-28/15             | 4.6                 | -    |           |                     |       |      |       |       |  |
|                                   |                     |      |                       | 8.8                 | 22,4 | 35,4      | 44,3                | -     |      |       |       |  |
|                                   |                     |      |                       | A4-50 <sup>2)</sup> | 17,2 | -         |                     |       |      |       |       |  |
|                                   |                     |      | HBC-38/17             | A4-70 <sup>2)</sup> | 25,6 | 38,9      | 51,3                | -     |      |       |       |  |
|                                   |                     |      |                       | 4.6                 | -    |           | 23,2                | -     |      |       |       |  |
|                                   |                     |      |                       | 8.8                 | -    |           | -                   | 35,4  | 55,8 | -     |       |  |
|                                   |                     |      | HBC-40/22             | A4-70 <sup>2)</sup> | 20,5 | 47,2      | 53,0                | -     |      |       |       |  |
|                                   |                     |      |                       | 4.6                 | -    |           | 23,2                | -     |      |       |       |  |
|                                   |                     |      |                       | 8.8                 | -    |           | -                   | 35,4  | 55,8 | -     |       |  |
|                                   |                     |      | HBC-50/30             | A4-70 <sup>2)</sup> | 20,5 | 58,6      | 91,0                | -     |      |       |       |  |
|                                   |                     |      |                       | 4.6                 | -    |           | -                   | -     |      |       |       |  |
|                                   |                     |      |                       | 8.8                 | -    |           | -                   | 35,4  | 55,8 | 183,1 |       |  |
|                                   |                     |      |                       |                     |      |           | A4-70 <sup>2)</sup> | -     | 58,6 | 109,0 | 129,0 |  |
|                                   |                     |      | Partial safety factor | $\gamma_{Ms}^{3)}$  | [-]  | HBC-28/15 | 4.6                 | 2,00  |      |       |       |  |
|                                   |                     |      |                       |                     |      | HBC-38/17 | 8.8                 | 1,50  |      |       |       |  |
| HBC-40/22                         | A4-50 <sup>2)</sup> | 2,86 |                       |                     |      |           |                     |       |      |       |       |  |
| HBC-50/30                         | A4-70 <sup>2)</sup> | 1,87 |                       |                     |      |           |                     |       |      |       |       |  |
| Characteristic shear resistance   | $V_{Rk,s}^{1)}$     | [kN] | HBC-28/15             | 4.6                 | -    |           |                     |       |      |       |       |  |
|                                   |                     |      |                       | 8.8                 | 14,6 | 23,2      | 33,7                | -     |      |       |       |  |
|                                   |                     |      |                       | A4-50 <sup>2)</sup> | 11,0 | -         |                     |       |      |       |       |  |
|                                   |                     |      | HBC-38/17             | A4-70               | 15,4 | 24,4      | 35,4                | -     |      |       |       |  |
|                                   |                     |      |                       | 4.6                 | -    |           | 13,9                | -     |      |       |       |  |
|                                   |                     |      |                       | 8.8                 | -    |           | -                   | 33,7  | 62,8 | -     |       |  |
|                                   |                     |      | HBC-40/22             | A4-70 <sup>2)</sup> | 24,4 | 35,4      | 65,9                | -     |      |       |       |  |
|                                   |                     |      |                       | 4.6                 | -    |           | 13,9                | -     |      |       |       |  |
|                                   |                     |      |                       | 8.8                 | -    |           | -                   | 33,7  | 62,8 | -     |       |  |
|                                   |                     |      | HBC-50/30             | A4-70 <sup>2)</sup> | 24,4 | 35,4      | 65,9                | -     |      |       |       |  |
| 4.6                               | -                   |      |                       | -                   | -    |           |                     |       |      |       |       |  |
| 8.8                               | -                   |      |                       | -                   | 33,7 | 62,8      | 98,0                |       |      |       |       |  |
|                                   |                     |      |                       | A4-70 <sup>2)</sup> | -    | 35,4      | 65,9                | 102,9 |      |       |       |  |
| Partial safety factor             | $\gamma_{Ms}^{3)}$  | [-]  | HBC-28/15             | 4.6                 | 1,67 |           |                     |       |      |       |       |  |
|                                   |                     |      | HBC-38/17             | 8.8                 | 1,25 |           |                     |       |      |       |       |  |
|                                   |                     |      | HBC-40/22             | A4-50 <sup>2)</sup> | 2,38 |           |                     |       |      |       |       |  |
|                                   |                     |      | HBC-50/30             | A4-70               | 1,56 |           |                     |       |      |       |       |  |

<sup>1)</sup> In conformity to EN ISO 898-1:1999

<sup>2)</sup> Materials according to Table 6, Annex A6

<sup>3)</sup> In absence of other national regulations

**Anchor channels (HAC-C) with channel bolts (HBC)**

**Performance Data**

Characteristic resistances of channel bolts under tension and shear load

Annex C5

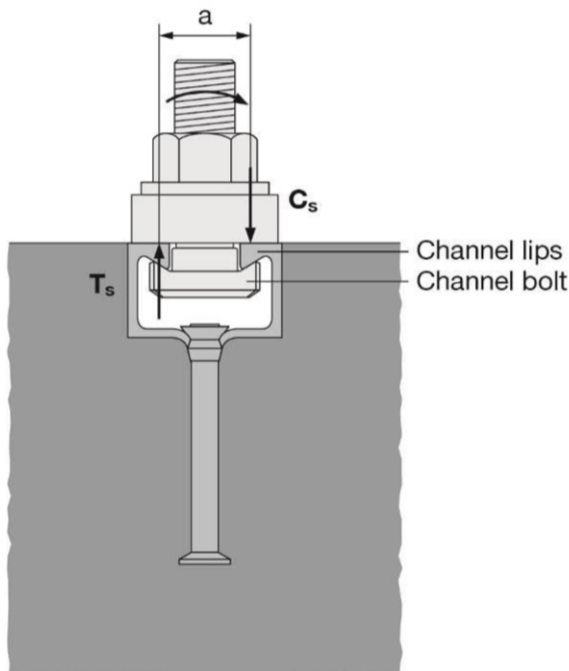
**Table 19: Characteristic resistances under shear load with lever arm – steel failure of channel bolts**

| Channel bolt <sup>1)</sup>         |                    |      |           | M8                  | M10  | M12                | M16   | M20   |       |  |
|------------------------------------|--------------------|------|-----------|---------------------|------|--------------------|-------|-------|-------|--|
| <b>Steel failure</b>               |                    |      |           |                     |      |                    |       |       |       |  |
| Characteristic flexural resistance | $M^{0}_{Rk,s}$     | [Nm] | HBC-28/15 | 4.6                 | -    | 29,9 <sup>3)</sup> | -     |       |       |  |
|                                    |                    |      | HBC-38/17 | 8.8                 | 30,0 | 59,8               | 104,8 | 266,4 | 519,3 |  |
|                                    |                    |      | HBC-40/22 | A4-50 <sup>2)</sup> | 18,7 | -                  |       |       |       |  |
|                                    |                    |      | HBC-50/30 | A4-70 <sup>2)</sup> | 26,2 | 52,3               | 91,7  | 233,1 | 454,4 |  |
| Partial safety factor              | $\gamma_{Ms}^{1)}$ | [-]  | HBC-28/15 | 4.6                 | 1,67 |                    |       |       |       |  |
|                                    |                    |      | HBC-38/17 | 8.8                 | 1,25 |                    |       |       |       |  |
|                                    |                    |      | HBC-40/22 | A4-50 <sup>2)</sup> | 2,38 |                    |       |       |       |  |
|                                    |                    |      | HBC-50/30 | A4-70 <sup>2)</sup> | 1,56 |                    |       |       |       |  |
| Internal lever arm                 | a                  | [mm] | HBC-28/15 | 28/15               | 17,3 | 18,7               | 20,0  | -     |       |  |
|                                    |                    |      | HBC-38/17 | 38/17               | -    | 23,0               | 24,3  | 26,3  | -     |  |
|                                    |                    |      | HBC-40/22 | 40/22               |      | 24,3               | 25,7  | 27,3  |       |  |
|                                    |                    |      | HBC-50/30 | 50/30               | -    | -                  | 29,9  | 31,7  | 33,9  |  |

1) In absence of other national regulations

2) Materials according to Table 6, Annex A6

3) Not applicable for HBC-28/15 and HBC-50/30



3) The characteristic flexure resistance according to Table 19 is limited as follows:

$$M^{0}_{Rk,s} \leq 0,5 \cdot N_{Rk,s,l} \cdot a \quad (N_{Rk,s,l} \text{ according to Table 10})$$

$$M^{0}_{Rk,s} \leq 0,5 \cdot N_{Rk,s} \cdot a \quad (N_{Rk,s} \text{ according to Table 18})$$

a = internal lever arm according to Table 19

$T_s$  = tension force acting on the channel lips

$C_s$  = compression force acting on the channel lips

**Anchor channels (HAC-C) with channel bolts (HBC)**

**Performance Data**

Characteristic flexural resistances of channel bolts under shear load

Annex C6



**Table 20: Characteristic resistance  $F_{Rd,s,fi}$  [kN] of anchor channels under fire exposure**

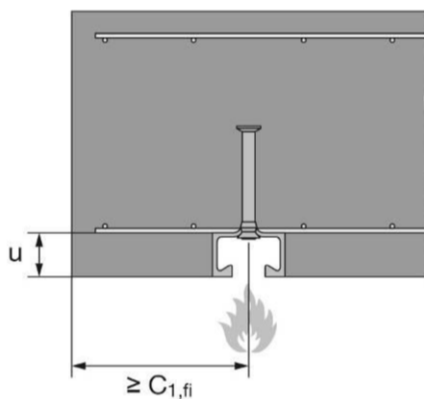
| Channel bolt  |   |      |                                     | M10  | M12                            | ≥ M16 |     |  |  |
|---|---|------|-------------------------------------|------|--------------------------------|-------|-----|--|--|
| <b>Steel failure of anchor, connection between anchor and channel, local flexure of channel lip</b> |   |      |                                     |      |                                |       |     |  |  |
| Characteristic resistance in cracked concrete C20/25  | HAC-C 28/15                               | R60  | $N_{Rk,s,fi}$<br>=<br>$V_{Rk,s,fi}$ | [kN] | 0,8                            |       | -   |  |  |
|   |   | R90  |                                     |      | 0,6                            |       |     |  |  |
|   |   | R120 |                                     |      | 0,5                            |       |     |  |  |
|   | HAC-C 38/17                               | R60  |                                     |      | -                              |       | 1,9 |  |  |
|   |   | R90  |                                     |      | -                              |       | 1,3 |  |  |
|   |   | R120 |                                     |      | -                              |       | 1,0 |  |  |
|   | HAC-C 40/25<br>HAC-C 40/22                | R60  |                                     |      | 1,7                            | 3,5   |     |  |  |
|   |   | R90  |                                     |      | 1,2                            | 2,2   |     |  |  |
|   |   | R120 |                                     |      | 0,9                            | 1,5   |     |  |  |
|   | HAC-C 49/30<br>HAC-C 50/30<br>HAC-C 52/34 | R60  |                                     |      | -                              | 3,8   | 3,9 |  |  |
|   |   | R90  |                                     |      | -                              | 2,5   | 2,9 |  |  |
|   |   | R120 |                                     |      | -                              | 1,9   | 2,4 |  |  |
|   | Partial safety factor                     |      |                                     |      | $\gamma_{Ms,fi}$ <sup>1)</sup> | [-]   | 1,0 |  |  |

<sup>1)</sup> In absence of other national regulations

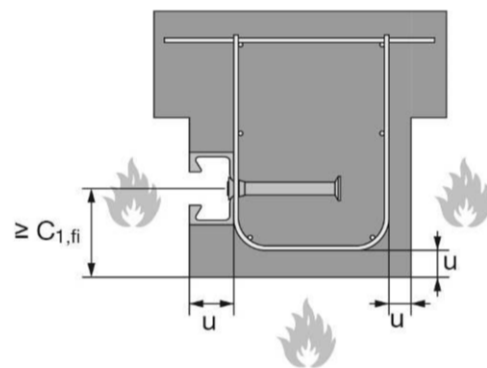
**Table 21: Minimum concrete cover**

| Anchor channel HAC-C |      |   |      | 28/15 | 38/17 | 40/25 | 40/22 | 49/30 | 50/30 | 54/33 | 52/34 |
|----------------------|------|---|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Concrete cover       | R60  | u | [mm] | 35    |       |       |       | 50    | 50    | 50    | 50    |
|                      | R90  |   |      | 45    |       |       |       |       |       |       |       |
|                      | R120 |   |      | 55    |       |       |       |       |       |       |       |

**Fire exposure from one side only**



**Fire exposure from more than one side**



**Anchor channels (HAC-C) with channel bolts (HBC)**

**Performance Data**

Characteristic resistances of anchor channels and channel bolts under fire exposure

Annex C7