

DECLARATION OF PERFORMANCE
HALFEN Anchor Channel HZA-PS

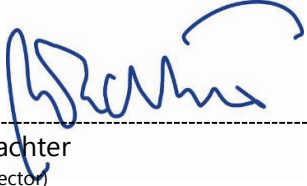
CONF-DOP_HZA-PS 06/19-E
Nr. H01-17/0728

1.	Unique identification code of the product-type	HALFEN Anchor channel HZA-PS 53/34		
2.	Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4)	See ETA-17/0728, 07.06.2019, Annex A2 and A4		
3.	Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:			
	Generic type and use	Cast-in, C-shaped serrated anchor channel with at least 2 metal anchors fixed on the profile back in combination with HALFEN serrated channel bolts		
	Product size covered (anchor channels and corresponding screws)	HZA-PS 53/34 with HALFEN serrated channel bolts HZA 53/34 M16 + M20		
	For use in	Cracked and non-cracked concrete C12/15 to C90/105 according to EN 206-1:2000-12		
	Anchor material / Screw material and intended use	<ul style="list-style-type: none"> • Hot-dip galv. steel / electroplated steel for dry internal conditions • Hot-dip galv. steel / hot-dip galv. steel or electroplated steel with special coating also for internal conditions with normal humidity 		
	Loading	Static & quasi static tension and shear loads perpendicular and parallel to the longitudinal channel axis		
4.	Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5)	HALFEN GmbH (part of Leviat), Liebigstraße 14, 40764 Langenfeld, Germany		
5.	Where applicable, name and contact address of the authorized representative whose mandate covers the tasks specified in Article 12(2)	-		
6.	System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V	System 1		
7.	In case of the declaration of performance concerning a construction product covered by a harmonised standard	-		
8.	In case of the declaration of performance concerning a construction product for which a European Technical Assessment has been issued	Deutsches Institut für Bautechnik (DIBt) issued ETA-17/0728 on the basis of EAD 330008-03-0601. The notified body 0432 performed under system 1 (ii) Initial inspection of the manufacturing plant and of factory production control; (iii) Continuous surveillance, assessment and evaluation of factory production control under system 1.		
9.	Declared performance			
	Essential Characteristics	Design Method	Performance	Harmonized Technical Specification
	Characteristic resistance for tension	EOTA TR 047,	ETA-17/0728, Annex C1-C2	EAD 330008-03-0601
	Characteristic resistance for shear perpendicular to		ETA-17/0728, Annex C3-C4	

	the longitudinal axis of the channel	EN 1992-4		EAD 330008-03-0601
	Characteristic resistance for shear in direction of the longitudinal axis of the channel		ETA-17/0728, Annex C3	
	Characteristic resistance for combined tension and shear	EOTA TR 047, EN 1992-4	ETA-17/0728, Annex C4	
	Characteristic resistance of serrated channel bolt for tension and shear		ETA-17/0728, Annex C1+C4	
	Displacements for serviceability limit state		ETA-17/0728, Annex C2-C3	
	Where pursuant to Article 37 or 38 in the Specific Technical Documentation has been used, the requirements with which the product complies:		-	
10.	The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9.			
This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.				

Langenfeld, 01.10.2020

Signed for and on behalf of the manufacturer by



Richard Wachter
(Managing Director)



ppa. Dr.-Ing. Dirk Albartus
(Manager Engineering)

H-967-10/20-E

Annex 1:

Table C1: Characteristic resistances under tension load – steel failure serrated anchor channel

Anchor channel			PS 53/34
Steel failure, anchor			
Characteristic resistance	$N_{Rk,s,a}$	[kN]	80,3
Partial safety factor	$\gamma_{Ms,a}^{1)}$		1,59
Steel failure, connection channel / anchor			
Characteristic resistance	$N_{Rk,s,c}$	[kN]	113,4
Partial safety factor	$\gamma_{Ms,c}^{1)}$		1,8
Steel failure, local flexure of the channel lips			
Spacing of serrated channel bolts for $N_{Rk,s,l}^0$	$S_{l,N}$	[mm]	105
Characteristic resistance	$N_{Rk,s,l}^0$	[kN]	78,7
Partial safety factor	$\gamma_{Ms,l}^{1)}$		1,8

¹⁾ In absence of other national regulations

Table C2: Characteristic flexure resistance of channel

Anchor channel				PS 53/34
Characteristic flexure resistance of channel	$M_{Rk,s,flex}$	[Nm]	Steel	4069
Partial safety factor	$\gamma_{Ms,flex}^{1)}$			1,15

¹⁾ In absence of other national regulations

Table C3: Charact. resistance under tension load – steel failure of HALFEN serrated channel bolt

HALFEN serrated channel bolt Ø			M16	M20
Steel failure				
Characteristic resistance	$N_{Rk,s}$	[kN]	8.8	125,6
Partial safety factor	$\gamma_{Ms}^{1)}$		8.8	1,50

²⁾ In absence of other national regulations

Annex 2:

Table C4: Characteristic resistances under tension load – concrete failure

Anchor channel			PS 53/34	
Pull-out failure				
Characteristic resistance in cracked concrete C12/15		$N_{Rk,p}$	[kN]	92,6
Characteristic resistance in uncracked concrete C12/15				129,6
Increasing factor for $N_{Rk,p}$	C20/25	ψ_c	[-]	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
	$\geq C60/75$			5,00
Partial safety factor		$\gamma_{Mp} = \gamma_{Mc}^{1)}$		1,5
Concrete cone failure				
Product factor k_1		$k_{cr,N}$		8,8
		$k_{ucr,N}$		12,5
Characteristic edge distance		$c_{cr,N}$	[mm]	266
Characteristic spacing		$s_{cr,N}$		$2,0 c_{cr,N}$
Partial safety factor		$\gamma_{Mc}^{1)}$		1,5
Splitting failure				
Characteristic edge distance		$c_{cr,sp}$	[mm]	498
Characteristic spacing		$s_{cr,sp}$		$2,0 c_{cr,sp}$
Partial safety factor		$\gamma_{Msp}^{1)}$		1,5

¹⁾ In absence of other national regulations

Table C5: Displacements under tension load

Anchor channel			PS 53/34
Tension load	N_{Ek}	[kN]	31,2
Short time displacement	δ_{N0}	[mm]	1,5
Long time displacement	$\delta_{N\infty}$	[mm]	3,0

Annex 3:

Table C6: Characteristic resistances under shear

Anchor channel			PS 53/34
Steel failure, anchor			
Characteristic resistance	$V_{Rk,s,a,y}$	[kN]	78,7
Partial safety factor	$\gamma_{Ms,a,y}^{1)}$		1,56
Characteristic resistance	$V_{Rk,s,a,x}$	[kN]	48,2
Partial safety factor	$\gamma_{Ms,a,x}^{1)}$		1,32
Steel failure, connection channel / anchor			
Characteristic resistance	$V_{Rk,s,c,y}$	[kN]	78,7
	$V_{Rk,s,c,x}$	[kN]	68,0
Partial safety factor	$\gamma_{Ms,c,y} , \gamma_{Ms,c,x}^{1)}$		1,8
Steel failure, local flexure of channel lips			
Spacing of serrated channel bolt for $V_{Rk,s,l}$	$s_{l,v}$	[mm]	105
Characteristic resistance	$V_{Rk,s,l,y}^0$	[kN]	78,7
Partial safety factor	$\gamma_{Ms,l,y}^{1)}$		1,8
Characteristic resistance	$V_{Rk,s,l,x}$	[kN]	59,0
Installation factor	γ_{inst}		1,2
Pry-out failure			
Product factor	$k_B^{2)}$		2,0
Partial safety factor	$\gamma_{Mc}^{1)}$		1,5
Concrete edge failure			
Product factor k_{12}	Cracked concrete	$k_{cr,v}$	7,5
	Uncracked concrete	$k_{ucr,v}$	10,5
Partial safety factor	$\gamma_{Mc}^{1)}$		1,5

¹⁾ In absence of other national regulations

²⁾ Without supplementary reinforcement. In case of supplementary reinforcement factor k_B should be multiplied by 0,75.

Table C7: Displacements under shear load

Anchor channel			PS 53/34
Shear load	V_{Ek}	[kN]	31,2
Short time displacement	δ_{V0}	[mm]	0,9
Long time displacement	$\delta_{V\infty}$	[mm]	1,4

Annex 4:

Table C8: Characteristic resist. under shear load – steel failure of HALFEN serrated channel bolt

HALFEN serrated channel bolt Ø			M16	M20
Steel failure				
Characteristic resistance	$V_{Rk,s}$	[kN]	8.8	62,8
Characteristic flexure resistance	$M_{Rk,s}^0$	[Nm]	8.8	266
Partial safety factor	γ_{Ms} ¹⁾		8.8	1,25

¹⁾ In absence of other national regulations

Table C9: Characteristic resistance under combined tension and shear load

Anchor channel		PS 53/34 ¹⁾
Steel failure: Local failure by flexure of channel lips and failure by flexure of channel		
Product factor	k_{13}	2,0
Steel failure: Failure of anchor and connection between anchor and channel		
Product factor	k_{14}	2,0

¹⁾ Design according EN 1992-4:2018