HIGH PERFORMANCE REINFORCEMENT PRODUCTS

PRESTATIEVERKLARING No. DoP-HRC400-23.07

Unieke identificatiecode van het producttype:	**HRC400 series wapeningskoppeling (HRC410/420 standaardkoppeling, HRC410/490 positiekoppeling)**
Beoogd gebruik:	**Mechanische verbinding van betonstaal**
Fabrikant:	**HRC Europe, Lierstranda 107, N-3414 Lierstranda, Norway**
Systeem/systemen ter beoordeling en controle van de prestatiebestendigheid:	**Systeem 1+**
Europees beoordelingsdocument:	**EAD 160129-00-0301**
Europese technische beoordeling:	**ETA-22/0573**
Technische beoordelingsinstantie:	**SINTEF (NB 1071)**
Aangemelde instantie:	**Kontrollrådet (NB 1111)**

Aangegeven prestaties:

Belangrijkste kenmerken	Prestatie	Geharmoniseerde technische specificatie
Sterkte onder statische of quasi-statische belasting Slip onder lasten Slip na het ontlasten Vermoeiingssterkte (Wöhlercurve met specifiek gedefinieerd k1 of k2) Sterkte onder lage cyclusbelasting (seismische actie)	zie ETA-22/0573, Annex C	EAD 160129-00-0301
Reactie bij brand	Klasse A1	

De prestatie van het product komt overeen met de gecertificeerde prestatie. Verantwoordelijk voor de opstelling van de prestatieverklaring is alleen de fabrikant.

Ondertekend voor de fabrikant en namens de fabrikant door:

Lisette Berg,
Managing Director (Sign.)
Lier, 03.07.2023

Annex to DoP-HRC400-23.07:

HRC400 Series Rebar Couplers (B500B and B500C) – essential characteristics acc. ETA-22/0573, Annex C

Copupler type	Nominal Rebar diameter Ø [mm]	Resistance to static or quasi static loading: Failure of rebar $f_{u,min,bar,outside}$ [1] [MPa]	Resistance to static or quasi static loading: Failure of coupler $f_{u,min,coupler}$ [2] [MPa]	Slip: under loading S_1 [3] [mm]	Slip: after loading S_2 [4] [mm]	Fatigue strength [5] (S-N-curve with specific defined k_1 and k_2): $\Delta\sigma_{Rsk}$ [MPa]	k_1	k_2	Resistance to low cycle loading (seismic action): u_{20} [6] [mm]	Ultimate tensile load, $F_{u,min}$ [7]: B500B [kN]	Ultimate tensile load, $F_{u,min}$ [7]: B500C [kN]	Failure mode [8]
Standard Coupler HRC 410/420	12	B500B: 540 B500C: 575	> 850	< 0,06	< 0,10	49 ($N = 10^7$) 69 ($N = 2 \cdot 10^6$)	4,6	8,3	0,2	61,1	65,0	Ductile rupture of the rebar outside splice
	16		> 850							108,6	115,6	
	20		> 850							169,6	180,6	
	25		> 850							265,1	282,3	
	32		> 740							434,3	462,4	
	40		> 850							678,6	722,6	
Positional Coupler HRC 410/490	25	B500B: 540 B500C: 575	> 670	< 0,10	< 0,10	49 ($N = 10^7$) 69 ($N = 2 \cdot 10^6$)	4,6	8,3	0,2	265,1	282,3	
	32									434,3	462,4	
	40									678,6	722,6	

1) $f_{u,min,bar,outside}$ according to *EN 1992-1-1*, *Annex C.1*:
For B500B: $f_{u,min,bar,outside} = k_{B500B} \cdot f_{yk} = 1{,}08 \cdot 500\ MPa = 540\ MPa$
For B500C: $f_{u,min,bar,outside} = k_{B500C} \cdot f_{yk} = 1{,}15 \cdot 500\ MPa = 575\ MPa$
Failure loads are determined by the strength of the parent rebar, not the HRC400 mechanical coupler.
The full specified elongation A_{gt} of the rebar can be developed, according to *EN 1992-1-1*, *Annex C.1*.

2) $f_{u,min,coupler}$ = minimum rebar stress equivalent to failure of the coupler. Values from test results with larger rebar than the coupler are intended for ("oversized rebar"). The full actual elongation $A_{gt,act}$ of the intended rebar size will be developed.

3) Slip across the mechanical splice under loading at $0{,}6 \cdot f_{yk} = 0{,}6 \cdot 500\ MPa = 300\ MPa$

4) Slip across the mechanical splice after unloading from $0{,}6 \cdot f_{yk}$ to a load level of $0{,}02 \cdot f_{yk} = 0{,}02 \cdot 500\ MPa = 10\ MPa$

5) Fatigue strength $\Delta\sigma_{Rsk}$ for S-N-curve with specific defined stress exponents k_1 and k_2

6) u_{20} = Residual max deformation

7) $F_{u,min} = A_{s,nom,bar,outside} \cdot f_{u,min,bar,outside} = \pi/4 \cdot Ø^2 \cdot f_{u,min,bar,outside}$

8) The actual failure loads are determined by the strength of the parent rebar, not the HRC400 couplers. Splices of rebar with lower/higher actual tensile strength will therefore achieve lower/higher actual capacities than given in the table. The failure mode remains unchanged: ductile rupture of the parent rebar.