

Intended use or uses of the construction product according to EAD 330499-00-0601	
Generic type	Bonded anchor for anchorage of threaded rod and rebar.
Base material	cracked and un-cracked concrete C20/25 to C50/60 acc. to ENV 206:2000-12 un-cracked concrete M8 to M30, Rebar 8mm to 32mm cracked concrete : M8 and M30, Rebar 8mm to 32mm seismic option C1: M8 and M30, Rebar 8mm to 32mm seismic option C2: M12, M16 and M20
Material	a) Carbon galvanized steel class 4.6, 4.8, 5.6, 5.8, 8.8 and 10.9 according to EN ISO 898-1 for dry internal conditions. b) Stainless steel A2 and A4 class 50, 70 and A80 according to EN ISO 3506 for dry internal conditions, external atmospheric exposure (including industrial and marine environment) or exposure in permanently damp internal conditions if no particular aggressive conditions exist. c) High resistant corrosion stainless steel class 50,70 and 80 (ISO 3506) – material 1.4529, 1.4565 to EN 10088 d) Post-installed reinforcing bars may be used as anchor designed in accordance with the EOTA Technical Report TR 029. Such applications are e.g. concrete overlay or shear dowel connections or the connections of a wall predominantly loaded by shear and compression forces with the foundation, where the reinforcing bars act as dowels to take up shear forces. Connections with post-installed reinforcing bars in concrete structures designed in accordance with EN1992-1-1: 2004 are not covered by this European Technical Approval.
Durability	50 years
Loading	static, quasi-static, seismic action
Service temperature range	a) -40°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C), b) -40°C to +80°C (max. short term temperature +80°C and max. long term temperature +50°C). c) -40°C to +120°C (max. short term temperature +120°C and max. long term temperature +72°C).
Use category	- dry and wet concrete. - Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel A4 or high corrosion resistant steel). - Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions exist (high corrosion resistant steel).
Fire Resistance	NPD
Fire Reaction	A1
ETA - 18/0797 issued by	ETA Denmark
On the basis of	EAD 330499-00-0601

Installation parameters for threaded rod

Anchor size		M 8	M 10	M 12	M 16	M 20	M 24	M 27	M 30
Outer diameter of anchor	d_{nom} [mm] =	8	10	12	16	20	24	27	30
Nominal drill hole diameter	d_0 [mm] =	10	12	14	18	24	28	32	35
Effective anchorage depth	$h_{ef,min}$ [mm] =	60	60	70	80	90	96	108	120
	$h_{ef,max}$ [mm] =	160	200	240	320	400	480	540	600
Diameter of clearance hole in the fixture	d_f [mm] ≤	9	12	14	18	22	26	30	33
Diameter of steel brush	d_b [mm] ≥	12	14	16	20	26	30	34	37
Maximum torque moment	T_{inst} [Nm] ≤	10	20	40	80	120	160	180	200
Minimum thickness of member	h_{min} [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$			$h_{ef} + 2d_0$				
Minimum spacing	s_{min} [mm]	40	50	60	80	100	120	135	150
Minimum edge distance	c_{min} [mm]	40	50	60	80	100	120	135	150

Installation parameters for rebar

Rebar size		Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 20	Ø 25	Ø 28	Ø 32
Outer diameter of anchor	d_{nom} [mm] =	8	10	12	14	16	20	25	28	32
Nominal drill hole diameter	d_0 [mm] =	12	14	16	18	20	24	32	35	40
Effective anchorage depth	$h_{ef,min}$ [mm] =	60	60	70	75	80	90	100	112	128
	$h_{ef,max}$ [mm] =	160	200	240	280	320	400	500	580	640
Diameter of steel brush	d_b [mm] ≥	14	16	18	20	22	26	34	37	41,5
Minimum thickness of member	h_{min} [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$			$h_{ef} + 2d_0$					
Minimum spacing	s_{min} [mm]	40	50	60	70	80	100	125	140	160
Minimum edge distance	c_{min} [mm]	40	50	60	70	80	100	125	140	160

Declared performances according to EAD 330499-00-0601

Characteristic values for steel tension resistance and steel shear resistance of threaded rods

Size				M 8	M 10	M 12	M 16	M 20	M 24	M 27	M 30
Characteristic tension resistance, Steel failure											
Steel, Property class 4.6 and 4.8		N _{Rk,s}	[kN]	15	23	34	63	98	141	184	224
Steel, Property class 5.6 and 5.8		N _{Rk,s}	[kN]	18	29	42	78	122	176	230	280
Steel, Property class 8.8		N _{Rk,s}	[kN]	29	46	67	125	196	282	368	449
Steel, Property class 10.9		N _{Rk,s}	[kN]	38	60	87	163	255	367	477	583
Stainless steel A2, A4 and HCR, Property class 50		N _{Rk,s}	[kN]	18	29	42	79	123	177	230	281
Stainless steel A2, A4 and HCR, Property class 70		N _{Rk,s}	[kN]	26	41	59	110	171	247	-	-
Stainless steel A4 and HCR, Property class 80		N _{Rk,s}	[kN]	29	46	67	126	196	282	-	-
Characteristic tension resistance, Partial factor											
Steel, Property class 4.6		γ _{Ms,N} ¹⁾	[-]	2,0							
Steel, Property class 4.8		γ _{Ms,N} ¹⁾	[-]	1,5							
Steel, Property class 5.6		γ _{Ms,N} ¹⁾	[-]	2,0							
Steel, Property class 5.8, 8.8 and 10.9		γ _{Ms,N} ¹⁾	[-]	1,5							
Stainless steel A2, A4 and HCR, Property class 50		γ _{Ms,N} ¹⁾	[-]	2,86							
Stainless steel A2, A4 and HCR, Property class 70		γ _{Ms,N} ¹⁾	[-]	1,87							
Stainless steel A4 and HCR, Property class 80		γ _{Ms,N} ¹⁾	[-]	1,6							
Characteristic shear resistance, Steel failure											
Without lever arm	Steel, Property class 4.6 and 4.8	V ⁰ _{Rk,s}	[kN]	9	14	20	38	59	85	110	135
	Steel, Property class 5.6 and 5.8	V ⁰ _{Rk,s}	[kN]	9	15	21	39	61	88	115	140
	Steel, Property class 8.8	V ⁰ _{Rk,s}	[kN]	15	23	34	63	98	141	184	224
	Steel, Property class 10.9	V ⁰ _{Rk,s}	[kN]	19	30	43	81	127	183	238	224
	Stainless steel A2, A4 and HCR, Property class 50	V ⁰ _{Rk,s}	[kN]	9	15	21	39	61	88	115	140
	Stainless steel A2, A4 and HCR, Property class 70	V ⁰ _{Rk,s}	[kN]	13	20	30	55	86	124	-	-
	Stainless steel A4 and HCR, Property class 80	V ⁰ _{Rk,s}	[kN]	15	23	34	63	98	141	-	-
With lever arm	Steel, Property class 4.6 and 4.8	M ⁰ _{Rk,s}	[Nm]	15	30	52	133	260	449	666	900
	Steel, Property class 5.6 and 5.8	M ⁰ _{Rk,s}	[Nm]	19	37	65	166	324	560	833	1123
	Steel, Property class 8.8	M ⁰ _{Rk,s}	[Nm]	30	60	105	266	519	896	1333	1797
	Steel, Property class 10.9	M ⁰ _{Rk,s}	[Nm]	37	75	131	333	649	1123	1664	2249
	Stainless steel A2, A4 and HCR, Property class 50	M ⁰ _{Rk,s}	[Nm]	19	37	66	167	325	561	832	1125
	Stainless steel A2, A4 and HCR, Property class 70	M ⁰ _{Rk,s}	[Nm]	26	52	92	232	454	784	-	-
	Stainless steel A4 and HCR, Property class 80	M ⁰ _{Rk,s}	[Nm]	30	59	105	266	519	896	-	-
Characteristic shear resistance, Partial factor											
Steel, Property class 4.6		γ _{Ms,V} ¹⁾	[-]	1,67							
Steel, Property class 4.8		γ _{Ms,V} ¹⁾	[-]	1,25							
Steel, Property class 5.6		γ _{Ms,V} ¹⁾	[-]	1,67							
Steel, Property class 5.8		γ _{Ms,V} ¹⁾	[-]	1,25							
Steel, Property class 8.8		γ _{Ms,V} ¹⁾	[-]	1,25							
Steel, Property class 10.9		γ _{Ms,V} ¹⁾	[-]	1,50							
Stainless steel A2, A4 and HCR, Property class 50		γ _{Ms,V} ¹⁾	[-]	2,38							
Stainless steel A2, A4 and HCR, Property class 70		γ _{Ms,V} ¹⁾	[-]	1,56							
Stainless steel A4 and HCR, Property class 80		γ _{Ms,V} ¹⁾	[-]	1,33							

¹⁾ in absence of national regulation

Characteristic values of tension loads under static, quasi-static action and seismic action (performance category C1 and C2)

Anchor size threaded rod				M 8	M 10	M 12	M 16	M 20	M24	M27	M30
Combined pull-out and concrete failure											
Characteristic bond resistance in non-cracked concrete C20/25											
Temperature range I: 40°C/24°C	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	10	12	12	12	12	11	10	9
	flooded bore hole	$\tau_{Rk,ucr}$	[N/mm²]	7,5	8,5	8,5	8,5	No Performance assessed			
Temperature range II: 80°C/50°C	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	7,5	9	9	9	9	8,5	7,5	6,5
	flooded bore hole	$\tau_{Rk,ucr}$	[N/mm²]	5,5	6,5	6,5	6,5	No Performance assessed			
Temperature range III: 120°C/72°C	dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	5,5	6,5	6,5	6,5	6,5	6,5	5,5	5,0
	flooded bore hole	$\tau_{Rk,ucr}$	[N/mm²]	4,0	5,0	5,0	5,0	No Performance assessed			
Characteristic bond resistance in cracked concrete C20/25											
Temperature range I: 40°C/24°C	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	4,0	5,0	5,5	5,5	5,5	5,5	6,5	6,5
		$\tau_{Rk,C1}$	[N/mm²]	2,5	3,1	3,7	3,7	3,7	3,8	4,5	4,5
		$\tau_{Rk,C2}$	[N/mm²]	-	-	2	2	2	-	-	-
	flooded bore hole	$\tau_{Rk,cr}$	[N/mm²]	4,0	4,0	5,5	5,5	No Performance assessed			
		$\tau_{Rk,C1}$	[N/mm²]	2,5	2,5	3,7	3,7	No Performance assessed			
		$\tau_{Rk,C2}$	[N/mm²]	-	-	1,4	1,4	1,4	-	-	-
Temperature range II: 80°C/50°C	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	2,5	3,5	4,0	4,0	4,0	4,0	4,5	4,5
		$\tau_{Rk,C1}$	[N/mm²]	1,6	2,2	2,7	2,7	2,7	2,8	3,1	3,1
		$\tau_{Rk,C2}$	[N/mm²]	-	-	1,4	1,4	1,4	-	-	-
	flooded bore hole	$\tau_{Rk,cr}$	[N/mm²]	2,5	3,0	4,0	4,0	No Performance assessed			
		$\tau_{Rk,C1}$	[N/mm²]	1,6	1,9	2,7	2,7	No Performance assessed			
		$\tau_{Rk,C2}$	[N/mm²]	-	-	1,1	1,1	1,1	-	-	-
Temperature range III: 120°C/72°C	dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	2,0	2,5	3,0	3,0	3,0	3,0	3,5	3,5
		$\tau_{Rk,C1}$	[N/mm²]	1,3	1,6	2,0	2,0	2,0	2,1	2,4	2,4
		$\tau_{Rk,C2}$	[N/mm²]	-	-	1,1	1,1	1,1	-	-	-
	flooded bore hole	$\tau_{Rk,cr}$	[N/mm²]	2,0	2,5	3,0	3,0	No Performance assessed			
		$\tau_{Rk,C1}$	[N/mm²]	1,3	1,6	2,0	2,0	No Performance assessed			
		$\tau_{Rk,C2}$	[N/mm²]	-	-	1,1	1,1	1,1	-	-	-
Increasing factors for concrete (only static or quasi-static actions) ψ_c		C25/30		1,02							
		C30/37		1,04							
		C35/45		1,07							
		C40/50		1,08							
		C45/55		1,09							
		C50/60		1,10							
Concrete cone failure											
Non-cracked concrete		$k_{ucr,N}$	[-]	11,0							
Cracked concrete		$k_{cr,N}$	[-]	7,7							
Edge distance		$c_{cr,N}$	[mm]	1,5 h_{ef}							
Axial distance		$s_{cr,N}$	[mm]	2 $c_{cr,N}$							
Splitting											
Edge distance	$h/h_{ef} \geq 2,0$	$c_{cr,sp}$	[mm]	1,0 h_{ef}							
	$2,0 > h/h_{ef} > 1,3$			$2 \cdot h_{ef} \left(2,5 - \frac{h}{h_{ef}} \right)$							
	$h/h_{ef} \leq 1,3$			2,4 h_{ef}							
Axial distance		$s_{cr,sp}$	[mm]	2 $c_{cr,sp}$							
Installation factor (dry and wet concrete)		γ_{inst}	[-]	1,0	1,2						
Installation factor (flooded bore hole)		γ_{inst}	[-]	1,4				No Performance assessed			

Characteristic values of tension loads under static, quasi-static action and seismic action (performance category C1)

Anchor size reinforcing bar				Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 20	Ø 25	Ø 28	Ø 32
Steel failure												
Characteristic tension resistance		N _{Rk,s}	[kN]	A _s • f _{uk} ¹⁾								
		N _{Rk,s, eq}	[kN]	1,0 • A _s • f _{uk} ¹⁾								
Cross section area		A _s	[mm²]	50	79	113	154	201	314	491	616	804
Partial factor		γ _{Ms,N}	[-]	1,4 ²⁾								
Combined pull-out and concrete failure												
Characteristic bond resistance in non-cracked concrete C20/25												
Temperature range I: 40°C/24°C	dry and wet concrete	τ _{Rk,ucr}	[N/mm²]	10	12	12	12	12	12	11	10	8,5
	flooded bore hole	τ _{Rk,ucr}	[N/mm²]	7,5	8,5	8,5	8,5	8,5	No Performance Assessed			
Temperature range II: 80°C/50°C	dry and wet concrete	τ _{Rk,ucr}	[N/mm²]	7,5	9	9	9	9	9	8,0	7,0	6,0
	flooded bore hole	τ _{Rk,ucr}	[N/mm²]	5,5	6,5	6,5	6,5	6,5	No Performance Assessed			
Temperature range III: 120°C/72°C	dry and wet concrete	τ _{Rk,ucr}	[N/mm²]	5,5	6,5	6,5	6,5	6,5	6,5	6,0	5,0	4,5
	flooded bore hole	τ _{Rk,ucr}	[N/mm²]	4,0	5,0	5,0	5,0	5,0	No Performance Assessed			
Characteristic bond resistance in cracked concrete C20/25												
Temperature range I: 40°C/24°C	dry and wet concrete	τ _{Rk,cr}	[N/mm²]	4,0	5,0	5,5	5,5	5,5	5,5	5,5	6,5	6,5
		τ _{Rk,eq}	[N/mm²]	2,5	3,1	3,7	3,7	3,7	3,7	3,8	4,5	4,5
	flooded bore hole	τ _{Rk,cr}	[N/mm²]	4,0	4,0	5,5	5,5	5,5	No Performance Assessed			
		τ _{Rk,eq}	[N/mm²]	2,5	2,5	3,7	3,7	3,7	No Performance Assessed			
Temperature range II: 80°C/50°C	dry and wet concrete	τ _{Rk,cr}	[N/mm²]	2,5	3,5	4,0	4,0	4,0	4,0	4,0	4,5	4,5
		τ _{Rk,eq}	[N/mm²]	1,6	2,2	2,7	2,7	2,7	2,7	2,8	3,1	3,1
	flooded bore hole	τ _{Rk,cr}	[N/mm²]	2,5	3,0	4,0	4,0	4,0	No Performance Determined (NPD)			
		τ _{Rk,eq}	[N/mm²]	1,6	1,9	2,7	2,7	2,7	No Performance Determined (NPD)			
Temperature range III: 120°C/72°C	dry and wet concrete	τ _{Rk,cr}	[N/mm²]	2,0	2,5	3,0	3,0	3,0	3,0	3,0	3,5	3,5
		τ _{Rk,eq}	[N/mm²]	1,3	1,6	2,0	2,0	2,0	2,0	2,1	2,4	2,4
	flooded bore hole	τ _{Rk,cr}	[N/mm²]	2,0	2,5	3,0	3,0	3,0	No Performance Determined (NPD)			
		τ _{Rk,eq}	[N/mm²]	1,3	1,6	2,0	2,0	2,0	No Performance Determined (NPD)			
Increasing factors for concrete (only static or quasi-static actions) ψ _c		C25/30		1,02								
		C30/37		1,04								
		C35/45		1,07								
		C40/50		1,08								
		C45/55		1,09								
		C50/60		1,10								
Concrete cone failure												
Non-cracked concrete		k _{ucr,N}	[-]	11,0								
Cracked concrete		k _{cr,N}	[-]	7,7								
Edge distance		c _{cr,N}	[mm]	1,5 h _{ef}								
Axial distance		s _{cr,N}	[mm]	2 c _{cr,N}								
Splitting												
Edge distance	h/h _{ef} ≥ 2,0	c _{cr,sp}	[mm]	1,0 h _{ef}								
	2,0> h/h _{ef} > 1,3			$2 \cdot h_{ef} \left(2,5 - \frac{h}{h_{ef}} \right)$								
	h/h _{ef} ≤ 1,3			2,4 h _{ef}								
Axial distance		s _{cr,sp}	[mm]	2 c _{cr,sp}								
Installation factor (dry and wet concrete)		γ _{inst}	[-]	1,0	1,2							
Installation factor (flooded bore hole)		γ _{inst}	[-]	1,4					No Performance Determined (NPD)			

¹⁾ f_{uk} shall be taken from the specifications of reinforcing bars ²⁾ in absence of national regulation

The performances of the product identified by the above identification code are in conformity with the declared performance.
 This declaration of performance is issued under the sole responsibility of Chemfix Products Ltd.
 Signed for and behalf of the manufacturer by:

Name and functions	Place and date of issue	Signature
EMANUEL GHERMANACHI- LUNGU PRODUCT ENGINEERING MANAGER	DEWSBURY 04.01.2021	