

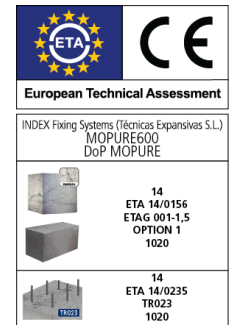
MOPURE

CHARACTERISTICS

CERTIFICATES



- Assessed for non-carbonated concrete class from C12/15 to C50/60.
- Post-installed rebar from $\varnothing 8$ to $\varnothing 32$.
- Use for high loads.
- Styrene free.
- Easy set up.
- Use for static or quasi-static loads.
- Temperature range: from -40°C to $+80^{\circ}\text{C}$ (long term maximum temperature $+40^{\circ}\text{C}$).
- Suitable for dry and wet concrete holes.



APPLICATIONS

- Overlapping joints with existing reinforcement in a building component.
- Anchoring of the reinforcement at a slab or beam support, end support/bearing of a slab designed as simply supported as well as its reinforcement for restraint forces.
- Anchoring of reinforcement of building components stressed primarily in compression.
- Anchoring of reinforcement to cover the line of acting tensile force.



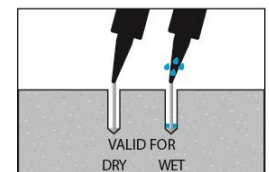
BASE MATERIAL



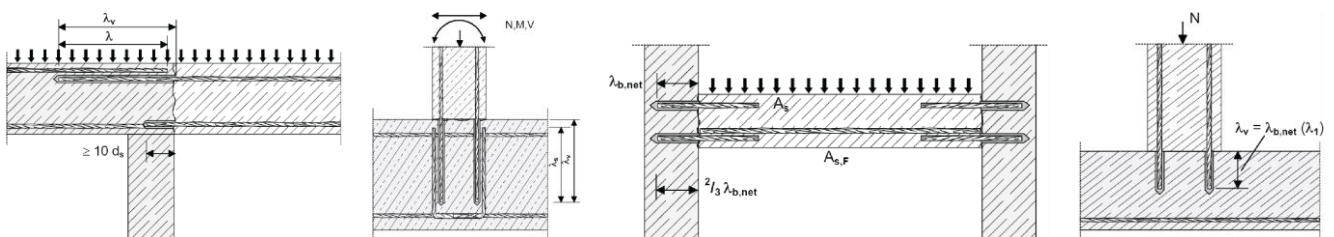
VALID FOR



DRILL HOLE CONDITION



APPLICATION EXAMPLES



1. RANGE

ITEM	CODE	SIZE	PHOTO	COMPONENT	MATERIAL	
1	MOPURE600	600 ml.		PURE EPOXY MORTAR	Pure Epoxy mortar. Format: side by side cartridges of 600 ml	12

2. ACCESORIES

ITEM	CODE	PHOTO	COMPONENT	MATERIAL
1	MOISPUR6		APPLICATION GUN	Gun for 600 ml cartridges
2	MORCEPKIT		CLEANING BRUSHES	3 Cleaning brushes kit of $\varnothing 14$, $\varnothing 20$ and $\varnothing 29$ mm.
3	MOBOMBA		CLEANING PUMP	Pump for cleaning dust and drill hole fragments
4	MORCAPU		MIXING NOZZLE	Plastic. Helix static mixer.

3. PRODUCT SET UP

3.1. SETTING UP PROCEDURE

0. PROTECT YOURSELF

Always use and wear your personal protective equipment (PPE)

1. DRILLING THE HOLE

Check the concrete base is compact and porosity is insignificant.

Suitable for wet or dry drill holes.

Cartridge installation temperature: ≥ 5 °C.

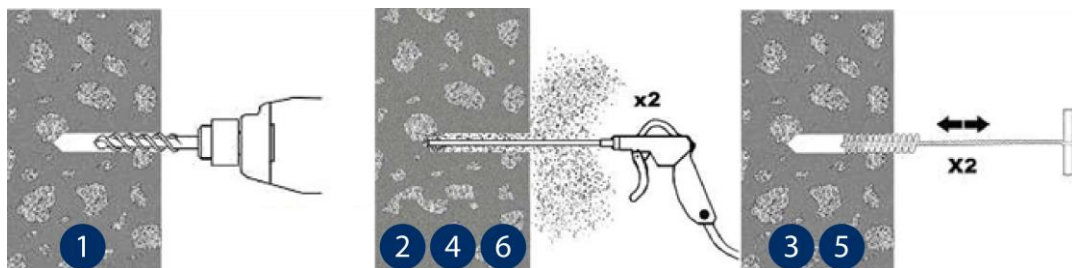
Base material installation temperature: MOPURE $\geq +5$ °C

Use drill in hammer mode.

Drill to the specified diameter and depth values

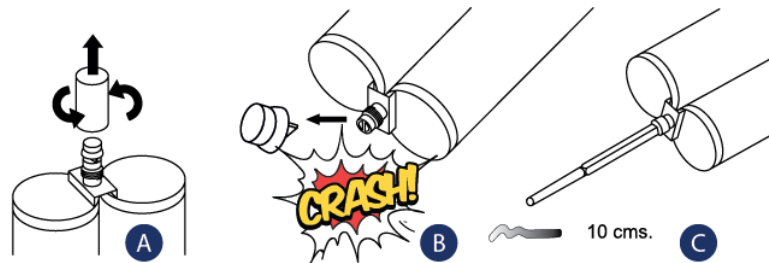
2 - 6. BLOW AND CLEAN

Clear the drill holes completely of dust and fragments by following the procedure shown in the picture. If the drill hole is flooded, the water must be removed before mortar is injected.



A – B – C. OPEN CARTRIDGE

Remove the plug from the cartridge and hit the cartridge against a rigid surface. The mouth must be hit above the thread otherwise, threading won't be possible. Once the mouth has been opened, insert the mixing nozzle in the gun. Pull the trigger repeatedly until the mortar comes out of the nozzle in a uniform grey color. Any iridescence indicates improper mixing. Always discard the first two doses of each cartridge: these should never be used for fixing.

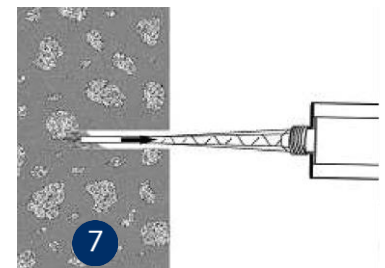


7. INJECT MORTAR

Insert the nozzle to the bottom of the drill hole and apply mortar: gradually remove the nozzle, ensuring there are no air bubbles.

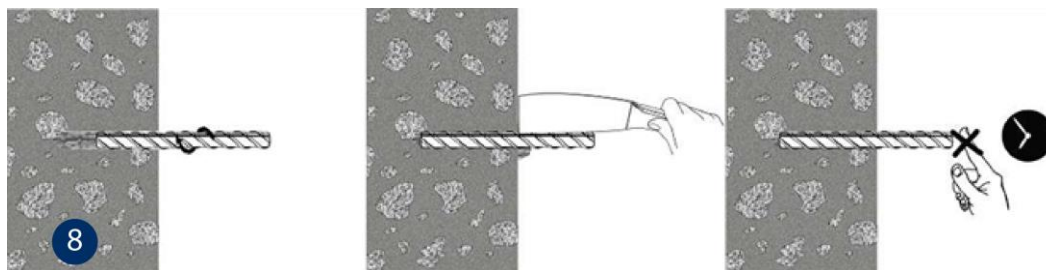
Fill the hole to 1/2 and 3/4 of its depth.

In the event of not fully using the cartridge, leave nozzle attached. Only change if using again and handling time has expired, remembering to discard the first two doses of mortar



8. INSERT THE REBAR

Introduce the rebar to be installed by screwing it lightly down to the installation depth value manually; ensuring the mortar covers the rebar rivet. The introduction of the anchor must take place within the handling time. The mortar must seep from the top of the drill hole to ensure it is completely full and there are no gaps between the rebar and the drill hole.



3.2 TEMPERATURE AND CURING TIME

TYPE	Base material temperature [°C]	Handling time [min]	Curing time [hrs]
MOPURE	+5 to +10	20	24
	+10 to +15	20	12
	+15 to +20	15	8
	+20 to +25	11	7
	+25 to +30	8	6
	+30 to +35	6	5
	+35 to +40	4	4
	+40	3	3

4. STORAGE CONDITIONS

Keep the product stored in a cool, dry place, away from direct sunlight and heat sources, at an average temperature between +5 °C and +25 °C.



Shelf life of unopened cartridge: 24 months from the date of manufacture. The expiration date is indicated on the cartridge.

The tables below are referred to EN 1992-1-1 Annex C Table C.1 and C.2N Properties of reinforcement:

5. REBAR PROPERTIES

Product form		Bars and de-coiled rods	
Class		B	C
Characteristic yield strength f_{yk} or $f_{0,2k}$ (MPa)		400 to 600	
Minimum value of $k = (f_t / f_y)k$		$\geq 1,08$	$\geq 1,15$ $< 1,35$
Characteristic strain at maximum force ϵ_{uk} (%)		$\geq 5,0$	$\geq 7,5$
Bendability		Bend / Rebend test	
Maximum deviation from nominal mass (individual bar) (%)	Nominal bar size (mm) ≤ 8	$\pm 6,0$	
	> 8	$\pm 4,5$	
Bond: Minimum relative rib area, $f_{R,min}$	Nominal bar size (mm) 8 to 12	0,040	
	> 12	0,056	

6. MINIMUM/MAXIMUM LENGTHS

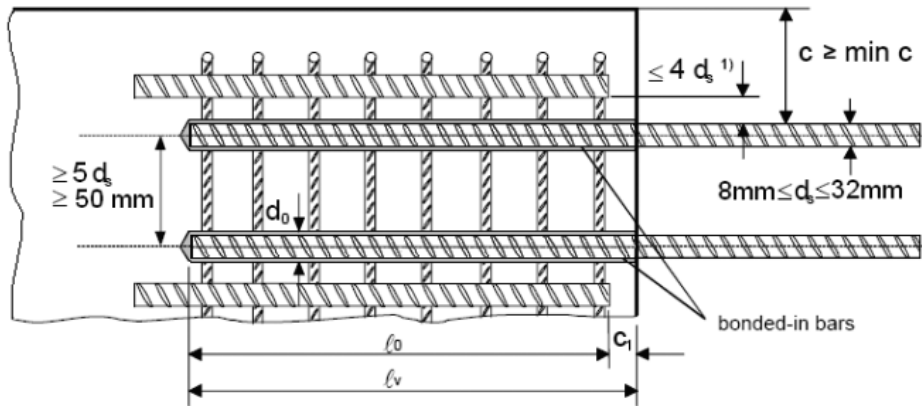
Rebar		Minimum		Maximum
ϕd_s [mm]	$f_{y,k}$ [N/mm ²]	Anchorage $\ell_{b,min}$ [mm]	Overlap $\ell_{o,min}$ [mm]	ℓ_{max} [mm]
8	500	170	300	400
10	500	212	300	500
12	500	255	300	600
14	500	298	315	700
16	500	340	360	800
20	500	425	450	1000
25	500	532	563	1000
28	500	595	630	1000
32	500	681	720	1000

7. DESIGN BOND RESISTANCE [N/mm²]

Rebar \varnothing d_s [mm]	Concrete Class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
8 a 25					3,0	3,4	3,7	4,0	4,3
28	1,6	2,0	2,3	2,7				3,7	
32							2,7		

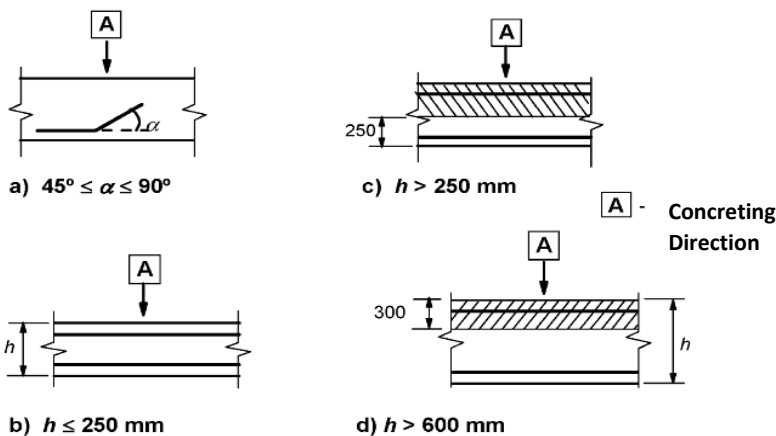
8. PRECALCULATED VALUE TABLES

- Design Load Approach according to Eurocode 2 and EOTA technical report 023.
- Data information according to ETA 13/0780.
- Non-cracked concrete, dry or wet conditions
- Temperature range: -40°C to +80°C (long term maximum temperature +50°C).
- Minimum spacing conditions $\geq 5d_s$, min 50 mm:



- Minimum concrete covering
 - compressed air drilling $\geq 50 + 0,06 L_b$
 - hammer drilling $\geq 30 + 0,08 L_b \geq 2\phi$

- Good bond Conditions (EU2, figure 8.2):



a) y b) "good" bond conditions for all types of rebars
 c) y d) no shaded area – "good" bond conditions
 shaded area – "poor" bond conditions

* For other bond conditions, multiply resistance by 0,7.

Resistances values can be increased in the following scenarios:

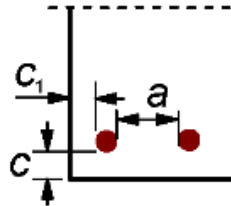
- In case of transverse tension / compression pressure (α_2)
- In case of concreting cover (α_5)
- In case of overlapping (α_6)

VALUES FOR α_2 , α_5 AND α_6

INFLUENCING FACTOR	REINFORCEMENT BAR	
	IN TENSION	IN COMPRESSION
Concrete Cover	$\alpha_2 = 1 - 0,15 (c_d - \phi) / \phi$ $\geq 0,7$ $\leq 1,0$	$\alpha_2 = 1,0$
Confinement by transverse pressure	$\alpha_5 = 1 - 0,004p$ $\geq 0,7$ $\leq 1,0$	$\alpha_5 = 1$
Overlapping length	$\alpha_6 = (p_1/25)^{0,25}$ $\geq 1,0$ $\leq 1,5$	

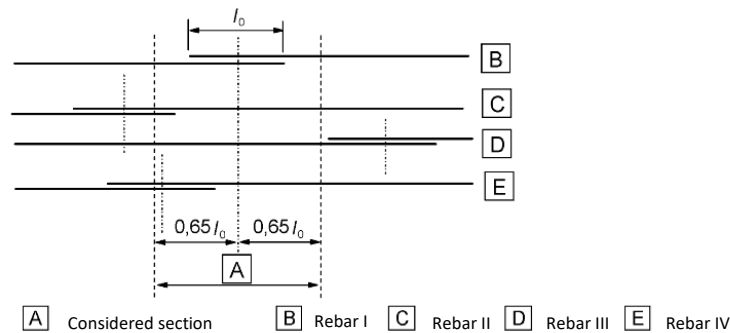
Where:

$c_d = \min (a/2, c_1, c)$



p : transverse pressure [MPa] at ultimate limit state along l_{bd}

p_1 is the percentage of reinforcement lapped within 0,65 l_0 from the center of the lap length considered



CONCRETE CLASS 20/25

Concrete compressive strength [$f_{ck,cube}$]: 25 N/mm²

Rebar \varnothing	d_s	[mm]	$\varnothing 8$	$\varnothing 10$	$\varnothing 12$	$\varnothing 14$	$\varnothing 16$	$\varnothing 20$	$\varnothing 25$	$\varnothing 28$	$\varnothing 32$				
Rebar Size	d_s	[mm]	8	10	12	14	16	20	25	28	32				
Cross-sectional area	A_s	[mm ²]	50,3	78,5	113,1	153,9	201,1	314,2	490,9	615,8	804,2				
Steel Yield	f_{yd}	[kN]	500	500	500	500	500	500	500	500	500				
Partial safety factor	$\gamma_{M,s}$	[mm ²]	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15				
Design steel resistance	$N_{Rd,s}$	[kN]	21,9	34,1	49,2	66,9	87,4	136,6	213,4	267,7	349,7				
Bond stress	f_{bd}	[N/mm ²]	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30				
Drilled hole diameter	d_h	[mm]	12	14	16	18	20	25	32	35	40				
Bar spacing \geq	s	[mm]	50	50	60	70	80	100	125	140	160				
Edge distance (compressed air drilling) \geq	c	[mm]	50 + 0,06 L_b												
Edge distance (hammer drilling) \geq	c	[mm]	30 + 0,08 $L_b \geq 2\phi$												
Anchorage length, L_b [mm]	Design tensile pull-out bond resistance, N_{Rd} [kN]														
170	9,8	NOT ALLOWED AREA													
212	12,3											15,3			
255	14,7											18,4	22,1		
298	17,2											21,5	25,8	30,1	
300	17,3											21,7	26,0	30,3	
315	18,2											22,8	27,3	31,9	
340	19,7											24,6	29,5	34,4	39,3
360	20,8											26,0	31,2	36,4	41,6
400	21,9											28,9	34,7	40,5	46,2
425	REBAR YELDING AREA											30,7	36,9	43,0	49,1
450			32,5	39,0	45,5	52,0	65,0								
500			34,1	43,4	50,6	57,8	72,3								
532			46,1	53,8	61,5	76,9	96,1								
563			48,8	57,0	65,1	81,4	101,7								
595			49,2	60,2	68,8	86,0	107,5	120,4							
600			60,7	69,4	86,7	108,4	121,4								
630			63,7	72,8	91,0	113,8	127,5								
REBAR			REBAR YELDING AREA		66,9	78,7	98,4	123,0	137,8	157,5					
700					66,9	80,9	101,2	126,4	141,6	161,9					
720	83,2	104,0			130,1	145,7	166,5								
800	87,4	115,6			144,5	161,9	185,0								
1000	136,6	180,6			202,3	231,2									
Length to develop steel yield, $L_{b,rd}$ [mm]	378	473			567	662	756	945	1.181	1.323	1.512				

Values shaded in light blue are not allowed for overlapping joints

CONCRETE CLASS 30/37

Concrete compressive strength [$f_{ck,cube}$]: 37 N/mm²

Rebar \emptyset	d_s	[mm]	$\emptyset 8$	$\emptyset 10$	$\emptyset 12$	$\emptyset 14$	$\emptyset 16$	$\emptyset 20$	$\emptyset 25$	$\emptyset 28$	$\emptyset 32$				
Rebar Size	d_s	[mm]	8	10	12	14	16	20	25	28	32				
Cross-sectional area	A_s	[mm ²]	50,3	78,5	113,1	153,9	201,1	314,2	490,9	615,8	804,2				
Steel Yield	f_{yd}	[kN]	500	500	500	500	500	500	500	500	500				
Partial safety factor	$\gamma_{M,s}$	[mm ²]	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15				
Design steel resistance	$N_{Rd,s}$	[kN]	21,9	34,1	49,2	66,9	87,4	136,6	213,4	267,7	349,7				
Bond stress	f_{bd}	[N/mm ²]	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	2,70				
Drilled hole diameter	d_h	[mm]	12	14	16	18	20	25	32	35	40				
Bar spacing \geq	s	[mm]	50	50	60	70	80	100	125	140	160				
Edge distance (compressed air drilling) \geq	c	[mm]	50 + 0,06 L_b												
Edge distance (hammer drilling) \geq	c	[mm]	30 + 0,08 $L_b \geq 2\phi$												
Anchorage length, L_b [mm]	Design tensile pull-out bond resistance, N_{Rd} [kN]														
170	12,8	NOT ALLOWED AREA													
212	16,0											20,0			
255	19,2											24,0	28,8		
298	21,9											28,1	33,7	39,3	
300	21,9											28,3	33,9	39,6	
315	21,9											29,7	35,6	41,6	
340	21,9											32,0	38,5	44,9	51,3
360	21,9											33,9	40,7	47,5	54,3
400	21,9											34,1	45,2	52,8	60,3
425	REBAR YELDING AREA											34,1	48,1	56,1	64,1
450			34,1	49,2	59,4	67,9	84,8								
500			34,1	49,2	66,0	75,4	94,2								
532	REBAR YELDING AREA		49,2		66,9	80,2	100,3	125,3							
563			49,2		66,9	84,9	106,1	132,7							
595			49,2		66,9	87,4	112,2	140,2	157,0						
600	REBAR YELDING AREA		66,9		87,4	113,1	141,4	158,3							
630			66,9		87,4	118,8	148,4	166,3							
681			66,9		87,4	128,4	160,5	179,7	184,8						
700	REBAR YELDING AREA		66,9		87,4	131,9	164,9	184,7	190,0						
720			66,9		87,4	135,7	169,6	190,0	195,4						
800			66,9		87,4	136,6	188,5	211,1	217,1						
1000	REBAR YELDING AREA		136,6		213,4	263,9	271,4								
Length to develop steel yield, $L_{b,req}$ [mm]			290	362	435	507	580	725	906	1.014	1.288				

Values shaded in light blue are not allowed for overlapping joints

CONCRETE CLASS 40/50

Concrete compressive strength [$f_{ck,cube}$]: 50 N/mm²

Rebar \emptyset	d_s	[mm]	$\emptyset 8$	$\emptyset 10$	$\emptyset 12$	$\emptyset 14$	$\emptyset 16$	$\emptyset 20$	$\emptyset 25$	$\emptyset 28$	$\emptyset 32$								
Rebar Size	d_s	[mm]	8	10	12	14	16	20	25	28	32								
Cross-sectional area	A_s	[mm ²]	50,3	78,5	113,1	153,9	201,1	314,2	490,9	615,8	804,2								
Steel Yield	f_{yd}	[kN]	500	500	500	500	500	500	500	500	500								
Partial safety factor	$\gamma_{M,s}$	[mm ²]	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15								
Design steel resistance	$N_{Rd,s}$	[kN]	21,9	34,1	49,2	66,9	87,4	136,6	213,4	267,7	349,7								
Bond stress	f_{bd}	[N/mm ²]	3,70	3,70	3,70	3,70	3,70	3,70	3,70	3,70	2,70								
Drilled hole diameter	d_h	[mm]	12	14	16	18	20	25	32	35	40								
Bar spacing \geq	s	[mm]	50	50	60	70	80	100	125	140	160								
Edge distance (compressed air drilling) \geq	c	[mm]	50 + 0,06 L_b																
Edge distance (hammer drilling) \geq	c	[mm]	30 + 0,08 $L_b \geq 2\phi$																
Anchorage length, L_b [mm]			Design tensile pull-out bond resistance, N_{Rd} [kN]																
170	15,8	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%; background-color: #e0e0e0; padding: 5px;">REBAR YIELDING AREA</div> <div style="width: 45%; background-color: #e0e0e0; padding: 5px;">NOT ALLOWED AREA</div> </div>																	
212	19,7											24,6							
255	21,9											29,6	35,6						
298	21,9											34,1	41,6	48,5					
300	21,9											34,1	41,8	48,8					
315	21,9											34,1	43,9	51,3					
340	21,9											34,1	47,4	55,3	63,2				
360	21,9											34,1	49,2	58,6	67,0				
400	21,9											34,1	49,2	65,1	74,4				
425												34,1	49,2	66,9	79,0	98,8			
450												34,1	49,2	66,9	83,7	104,6			
500												34,1	49,2	66,9	87,4	116,2			
532													49,2	66,9	87,4	123,7	154,6		
563													49,2	66,9	87,4	130,9	163,6		
595													49,2	66,9	87,4	136,6	172,9	193,7	
600														66,9	87,4	136,6	174,4	195,3	
630														66,9	87,4	136,6	183,1	205,0	
681														66,9	87,4	136,6	197,9	221,6	184,8
700														66,9	87,4	136,6	203,4	227,8	190,0
720															87,4	136,6	209,2	234,3	195,4
800					87,4	136,6	213,4	260,4	217,1										
1000						136,6	213,4	267,7	271,4										
Length to develop steel yield, $L_{b,reqd}$ [mm]			235	294	352	411	470	587	734	822	1.288								
Values shaded in light blue are not allowed for overlapping joints																			

CONCRETE CLASS 50/60

Concrete compressive strength [$f_{ck,cube}$]: 60 N/mm²

Rebar \emptyset	d_s	[mm]	$\emptyset 8$	$\emptyset 10$	$\emptyset 12$	$\emptyset 14$	$\emptyset 16$	$\emptyset 20$	$\emptyset 25$	$\emptyset 28$	$\emptyset 32$				
Rebar Size	d_s	[mm]	8	10	12	14	16	20	25	28	32				
Cross-sectional area	A_s	[mm ²]	50,3	78,5	113,1	153,9	201,1	314,2	490,9	615,8	804,2				
Steel Yield	f_{yd}	[kN]	500	500	500	500	500	500	500	500	500				
Partial safety factor	$\gamma_{M,s}$	[mm ²]	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15				
Design steel resistance	$N_{Rd,s}$	[kN]	21,9	34,1	49,2	66,9	87,4	136,6	213,4	267,7	349,7				
Bond stress	f_{bd}	[N/mm ²]	4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,70	2,70				
Drilled hole diameter	d_h	[mm]	12	14	16	18	20	25	32	35	40				
Bar spacing \geq	s	[mm]	50	50	60	70	80	100	125	140	160				
Edge distance (compressed air drilling) \geq	c	[mm]	50 + 0,06 L_b												
Edge distance (hammer drilling) \geq	c	[mm]	30 + 0,08 $L_b \geq 2\phi$												
Anchorage length, L_b [mm]			Design tensile pull-out bond resistance, N_{Rd} [kN]												
170	17,1	NOT ALLOWED AREA													
212	21,3											26,6			
255	21,9											32,0	38,5		
298	21,9											34,1	44,9	52,4	
300	21,9											34,1	45,2	52,8	
315	21,9											34,1	47,5	55,4	
340	21,9											34,1	49,2	59,8	68,4
360	21,9											34,1	49,2	63,3	72,4
400	21,9											34,1	49,2	66,9	80,4
425												34,1	49,2	66,9	85,5
450		34,1	49,2	66,9	87,4	113,1									
500		34,1	49,2	66,9	87,4	125,7									
532			49,2	66,9	87,4	133,7	167,1								
563			49,2	66,9	87,4	136,6	176,9								
595			49,2	66,9	87,4	136,6	186,9	193,7							
600				66,9	87,4	136,6	188,5	195,3							
630				66,9	87,4	136,6	197,9	205,0							
681		REBAR YIELDING AREA			66,9	87,4	136,6	213,4	221,6	184,8					
700				66,9	87,4	136,6	213,4	227,8	190,0						
720					87,4	136,6	213,4	234,3	195,4						
800					87,4	136,6	213,4	260,4	217,1						
1000						136,6	213,4	267,7	271,4						
Length to develop steel yield, $L_{b,req}$ [mm]			217	272	326	380	435	543	679	822	1.288				
Values shaded in light blue are not allowed for overlapping joints															

9. CHEMICAL RESISTANCE

Chemical resistance of the product for different kind of chemical environments and for a specific concentration.

Chemical Environment	Concentration	Result	Chemical Environment	Concentration	Result
Aqueous Solution Acetic Acid	10%	C	Hexane	100%	C
Acetone	100%	X	Hydrochloric Acid	10%	✓
Aqueous Solution Aluminium Chloride	Saturated	✓		15%	✓
Aqueous Solution Aluminium Nitrate	10%	✓		25%	C
Ammonia Solution	5%	✓	Hydrogen Sulphide Gas	100%	✓
Jet Fuel	100%	C	Isopropyl Alcohol	100%	X
Benzene	100%	C	Linseed Oil	100%	✓
Benzoic Acid	Saturated	✓	Lubricating Oil	100%	✓
Benzyl Alcohol	100%	X	Mineral Oil	100%	✓
Sodium Hypochlorite Solution	5 - 15%	✓	Paraffin / Kerosene (Domestic)	100%	C
Butyl Alcohol	100%	C	Phenol Aqueous Solution	1%	C
Calcium Sulphate Aqueous Solution	Saturated	✓	Phosphoric Acid	50%	✓
Carbon Monoxide	Gas	✓	Potassium Hydroxide	10% / pH13	✓
Carbon Tetrachloride	100%	C	Sea Water	100%	C
Chlorine Water	Saturated	X	Styrene	100%	C
Chloro Benzene	100%	X	Sulphur Dioxide Solution	10%	✓
Citric Acid Aqueous Solution	Saturated	✓	Sulphur Dioxide (40°C)	5%	✓
Cyclohexanol	100%	✓	Sulphuric Acid	10%	✓
Diesel Fuel	100%	C		50%	✓
Diethylene Glycol	100%	✓		Turpentine	100%
Ethanol	95%	X	White Spirit	100%	✓
Ethanol Aqueous Solution	20%	C	Xylene	100%	C
Heptane	100%	C	Contact only to a maximum of 25°C.		C
Resistant to 75°C with at least 80% of physical properties retained.		✓	Not Resistant		X

10. OFFICIAL DOCUMENTATION

The following documents are available through our Sales Department or on our official website: www.indexfix.com:

- MOPURE Safety Data Sheet.
- European Technical Assessment ETA 14/0156 for use on cracked and non-cracked concrete according to ETAG 001 Guide, option 1, for M10 to M30. Assessment for seismic loads C1.
- European Technical Approval ETA 14/0325 for the installation of post-installed concrete reinforcements with diameters from 8 to 32 mm according to technical report TR023
- LEED MOPURE Certification of sustainability.
- Certification AVCP 1020-CPR-090-032497 for use in concrete.
- Certification AVCP 1020-CPR-090-032368 for post-installed rebar.
- Assessment report from ICC-ES
- Declaration of Performance DoP MOPURE.
- INDEXcal anchor calculation software.
- INDEXmor cartridge calculation needs software.