MOPURE

CHARACTERISTICS

- Assessed for every kind of cracked and non- cracked concrete and all concrete applications.
- Assessed studs from M10 to M30.
- Rebar used as stud from Ø10 to Ø32.
- Post-installed rebar Ø8 to Ø32.
- Pure Epoxy 1:1, cartridges of 300 + 300 ml.
- Use for high loads.
- Styrene free.
- Use for static or quasi-static loads.
- Versions in zinc plated steel and stainless steel A2 and A4.
- Temperature range: from -40ºC to +80ºC (long term maximum temperature +40ºC).

CERTIFICATES

APPLICATIONS

- Use in indoor and outdoor environments.
- Structural applications.
- Fixing of building substructures.
- Rebar and start rebar.
- Safety barriers, billboards, heavy engine, etc.
- Large metric sizes, retaining walls.

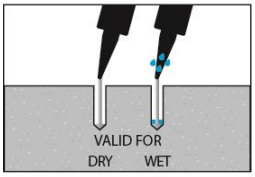
BASE MATERIAL

VALID FOR

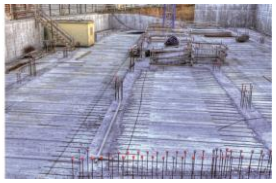
M10-M30 Stud

Ø10 – ø32 Rebar

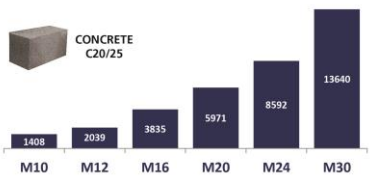
DRILL HOLE CONDITION



APPLICATION EXAMPLES



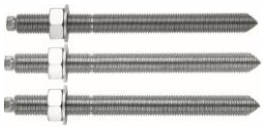
MAXIMUM RECOMMENDED LOADS [kg]



1. RANGE

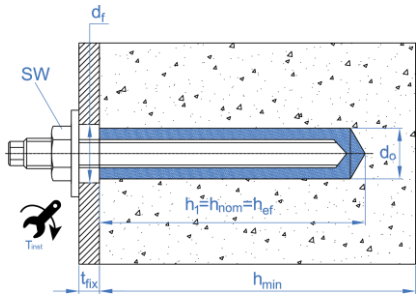
ITEM	CODE	SIZE	PHOTO	COMPONENT	MATERIAL	
1	**MOPURE600**	600 ml.		PURE EPOXY MORTAR	Pure Epoxy mortar. Format: side by side cartridges of 600 ml	12

2. ACCESORIES

ITEM	CODE	PHOTO	COMPONENT	MATERIAL
1	**MOPISPUR6**		APPLICATION GUN	Gun for 600 ml cartridges
2	**EQ-AC** **EQ-A2** **EQ-A4**		STUD BOLTS	Threaded steel stud, class 5.8 ISO 898-1 Threaded stainless steel stud A2-70 Threaded stainless steel stud A4-70
3	**MORCEPKIT**		CLEANING BRUSHES	3 Cleaning brushes kit of ø14, ø20 and ø29 mm.
4	**MOBOMBA**		CLEANING PUMP	Pump for cleaning dust and drill hole fragments
5	**MORCAPU**		MIXING NOZZLE	Plastic. Helix static mixer.

3. INSTALLATION DATA - CONCRETE FIXING (SET UP PARAMETERS)

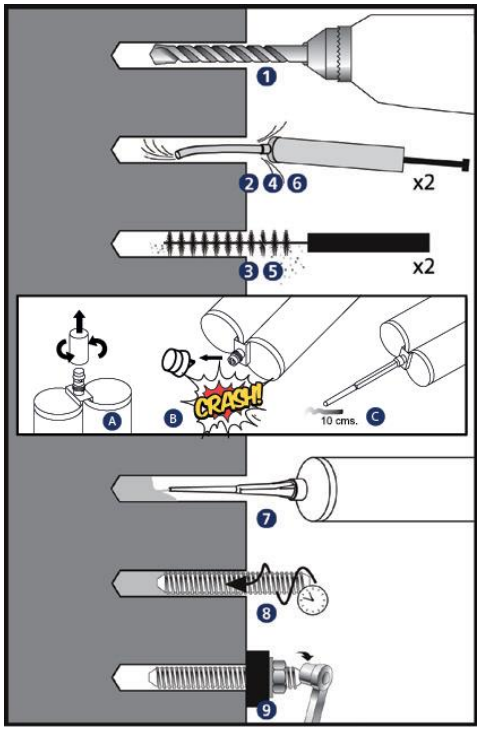
SIZE		M10	M12	M16	M20	M24	M30
d_0: nominal diameter	[mm]	12	14	18	22	26	35
d_f: fixture hole diameter ≤	[mm]	12	14	18	22	26	33
T_{ins}: torque ≤	[Nm]	20	40	80	135	200	270
Circular cleaning brush diameter		Ø14	Ø20		Ø29	Ø40	
$h_{ef,min}$ = 8d							
h_1: drill hole depth	[mm]	60	70	80	90	96	120
$s_{cr,N}$: critical spacing	[mm]	180	210	240	270	288	360
$c_{cr,N}$: critical edge distance	[mm]	90	105	120	135	144	180
c_{min}: minimum distance to edge	[mm]	40	40	45	50	55	65
s_{min}: minimum spacing	[mm]	40	40	45	50	55	65
h_{min}: minimum concrete thickness	[mm]	100	100	115	130	160	200
Standard stud							
h_1: drill hole depth	[mm]	90	110	128	170	210	280
$s_{cr,N}$: critical spacing	[mm]	270	330	384	510	630	840
$c_{cr,N}$: critical edge distance	[mm]	135	165	192	255	315	420
c_{min}: minimum distance to edge	[mm]	45	56	65	85	105	140
s_{min}: minimum spacing	[mm]	45	56	65	85	105	140
h_{min}: minimum concrete thickness	[mm]	115	140	165	220	270	350
$h_{ef,max}$ = 20d							
h_1: drill hole depth	[mm]	200	240	320	400	480	600
$s_{cr,N}$: critical spacing	[mm]	600	720	940	1200	1440	1800
$c_{cr,N}$: critical edge distance	[mm]	300	360	470	600	720	900
c_{min}: minimum distance to edge	[mm]	40	40	45	50	55	65
s_{min}: minimum spacing	[mm]	40	40	45	50	55	65
h_{min}: minimum concrete thickness	[mm]	224	268	336	444	532	670
Zinc plated stud code 		EQAC10130	EQAC12160	EQAC16190	EQAC20260	EQAC24300	EQAC30330
Stainless steel stud code A2 / A4 		EQA210130 EQA410130	EQA212160 EQA412160	EQA216190 EQA416190	EQA220260 EQA420260	EQA224300 EQA424300	EQA230330 EQA430330



- **The h_{ef} depth value may be selected by the user ranging between $h_{ef,min}$ = 8d and $h_{ef,max}$ = 20d. Any intermediate values may be interpolated.**
- **Critical distances are those where anchors in a group of anchors are not influenced by one another with regard to tension load effects. For smaller distances, down to minimum distances, corresponding reduction coefficients must be applied.**
- **Standard studs are available for each measurement, as shown in the table.**

4. PRODUCT SET UP

4.1. CONCRETE SET UP



1. DRILL
Check the concrete base is compact and porosity is insignificant.
Suitable for wet, dry or flooded drill holes.
Cartridge installation temperature: ≥ 5 ºC.
Base material installation temperature: MOPURE ≥ +5 ºC
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 ½ and ¾ 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. INSTALLATION
Introduce the stud to be installed by screwing it lightly down to the installation depth value manually; ensuring the mortar covers the stud thread. 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 stud and the drill hole.

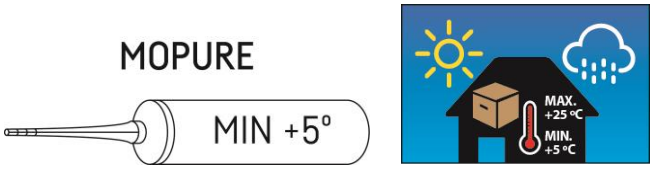
TEMPERATURE AND CURING TIME

TYPE	Base material temperature [ºC]	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

9. APPLY TORQUE
Once the curing time has elapsed, apply torque, never exceeding the values indicated in the table.

5. STORAGE CONDITIONS

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



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

6. RESISTANCES

6.1 CONCRETE FIXATION

Characteristic resistances for C20/25 concrete for an isolated anchor (without considering anchor-to-anchor or anchor-to-edge distance effects) and class 5.8 studs or A4-70 stainless steel are shown in tables below.

CHARACTERISTIC RESISTANCES

CONCRETE CLASS			SIZE			M10	M12	M16	M20	M24	M30
NON-CRACKED CONCRETE	ZINC PLATED	Tension	$h_{ef,min}$ = 8d	N_{Rk}	[kN]	27,6	39,8	70,7	**102,0**	**134,0**	**187,3**
			Standard stud	N_{Rk}	[kN]	31,1	45,6	69,1	**111,7**	**153,4**	**236,1**
			$h_{ef,max}$ = 20d	N_{Rk}	[kN]	*29,0*	*42,0*	*79,0*	*123,0*	*177,0*	*281,0*
		Shear	All depths	V_{Rk}	[kN]	*15,0*	*21,0*	*39,0*	*61,0*	*88,0*	*140,0*
	STAINLESS STEEL	Tension	$h_{ef,min}$ = 8d	N_{Rk}	[kN]	27,6	39,8	70,7	**102,0**	**134,0**	**187,3**
			Standard stud	N_{Rk}	[kN]	31,1	45,6	69,1	**111,7**	**153,4**	**236,1**
			$h_{ef,max}$ = 20d	N_{Rk}	[kN]	*41,0*	*59,0*	*110,0*	*172,0*	*247,0*	*393,0*
		Shear	All depths	V_{Rk}	[kN]	*20,0*	*30,0*	*55,0*	*86,0*	*124,0*	*196,0*
CRACKED CONCRETE	ZINC PLATED	Tension	$h_{ef,min}$ = 8d	N_{Rk}	[kN]	21,3	30,7	54,6	55,2	79,6	124,4
			Standard stud	N_{Rk}	[kN]	24,0	35,2	**50,3**	58,7	87,1	145,1
			$h_{ef,max}$ = 20d	N_{Rk}	[kN]	*29,0*	*42,0*	*79,0*	138,2	199,0	311,0
		Shear	All depths	V_{Rk}	[kN]	*15,0*	*21,0*	*39,0*	*61,0*	*88,0*	*140,0*
	STAINLESS STEEL	Tension	$h_{ef,min}$ = 8d	N_{Rk}	[kN]	21,3	30,7	54,6	55,2	79,6	124,4
			Standard stud	N_{Rk}	[kN]	24,0	35,2	**50,3**	58,7	87,1	145,1
			$h_{ef,max}$ = 20d	N_{Rk}	[kN]	*41,0*	*59,0*	*110,0*	138,2	199,1	311,0
		Shear	All depths	V_{Rk}	[kN]	*20,0*	*30,0*	*55,0*	*86,0*	*124,0*	*196,0*

DESIGN RESISTANCES

CONCRETE CLASS			SIZE			M10	M12	M16	M20	M24	M30
NON-CRACKED CONCRETE	ZINC PLATED	Tension	$h_{ef,min}$ = 8d	N_{Rd}	[kN]	15,3	18,9	33,7	**48,5**	**63,8**	**89,2**
			Standard stud	N_{Rd}	[kN]	17,2	21,7	32,9	**53,2**	**73,0**	**112,4**
			$h_{ef,max}$ = 20d	N_{Rd}	[kN]	*19,3*	*28,0*	*52,6*	82,0	118,0	187,3
		Shear	All depths	V_{Rd}	[kN]	*12,0*	*16,8*	*31,2*	*48,8*	*70,4*	*112,0*
	STAINLESS STEEL	Tension	$h_{ef,min}$ = 8d	N_{Rd}	[kN]	15,3	18,9	33,7	**48,5**	**63,8**	**89,2**
			Standard stud	N_{Rd}	[kN]	17,2	21,7	32,9	**53,2**	**73,0**	**112,4**
			$h_{ef,max}$ = 20d	N_{Rd}	[kN]	*21,5*	*31,0*	*57,8*	*90,5*	*130,0*	*206,4*
		Shear	All depths	V_{Rd}	[kN]	*12,8*	*19,2*	*35,2*	*55,1*	*79,4*	*125,4*
CRACKED CONCRETE	ZINC PLATED	Tension	$h_{ef,min}$ = 8d	N_{Rd}	[kN]	11,8	14,6	26,0	26,3	37,9	59,2
			Standard stud	N_{Rd}	[kN]	13,3	16,7	**23,9**	27,9	41,4	69,1
			$h_{ef,max}$ = 20d	N_{Rd}	[kN]	*19,3*	*28,0*	*52,6*	65,8	94,7	148,1
		Shear	All depths	V_{Rd}	[kN]	*12,0*	*16,8*	*31,2*	*48,8*	*70,4*	*112,0*
	STAINLESS STEEL	Tension	$h_{ef,min}$ = 8d	N_{Rd}	[kN]	11,8	14,6	26,0	26,3	37,9	59,2
			Standard stud	N_{Rd}	[kN]	13,3	16,7	**23,9**	27,9	41,4	69,1
			$h_{ef,max}$ = 20d	N_{Rd}	[kN]	*21,5*	*31,0*	*57,8*	65,8	94,7	148,1
		Shear	All depths	V_{Rk}	[kN]	*12,8*	*19,2*	*35,2*	*55,1*	*79,4*	*125,4*

MAXIMUM LOADS RECOMMENDED (when γ_F= 1.4)

CONCRETE CLASS			SIZE			M10	M12	M16	M20	M24	M30
NON-CRACKED CONCRETE	ZINC PLATED	Tension	$h_{ef,min}$ = 8d	N_{rec}	[kN]	10,9	13,5	24,0	**34,6**	**45,6**	**63,7**
			Standard stud	N_{rec}	[kN]	12,3	15,5	23,5	**38,0**	**52,1**	**80,3**
			$h_{ef,max}$ = 20d	N_{rec}	[kN]	*13,8*	*20,0*	*37,6*	58,5	84,2	133,8
		Shear	All depths	V_{rec}	[kN]	*8,5*	*12,0*	*22,2*	*34,8*	*50,2*	*80,0*
	STAINLESS STEEL	Tension	$h_{ef,min}$ = 8d	N_{rec}	[kN]	10,9	13,5	24,0	**34,6**	**45,6**	**63,7**
			Standard stud	N_{rec}	[kN]	12,3	15,5	23,5	**38,0**	**52,1**	**80,3**
			$h_{ef,max}$ = 20d	N_{rec}	[kN]	*15,4*	*22,1*	*41,3*	*64,6*	*92,8*	*147,7*
		Shear	All depths	V_{rec}	[kN]	*9,1*	*13,7*	*25,1*	*39,3*	*56,7*	*89,7*
CRACKED CONCRETE	ZINC PLATED	Tension	$h_{ef,min}$ = 8d	N_{rec}	[kN]	8,4	10,4	18,6	18,8	27,0	42,3
			Standard stud	N_{rec}	[kN]	9,5	11,9	**17,1**	19,9	29,6	49,3
			$h_{ef,max}$ = 20d	N_{rec}	[kN]	*13,8*	*20,0*	*37,6*	47,0	67,7	105,7
		Shear	All depths	V_{rec}	[kN]	*8,5*	*12,0*	*22,2*	*34,8*	*50,2*	*80,0*
	STAINLESS STEEL	Tension	$h_{ef,min}$ = 8d	N_{rec}	[kN]	8,4	10,4	18,6	18,8	27,0	42,3
			Standard stud	N_{rec}	[kN]	9,5	11,9	**17,1**	19,9	29,6	49,3
			$h_{ef,max}$ = 20d	N_{rec}	[kN]	*15,4*	*22,1*	*41,3*	47,0	67,7	105,7
		Shear	All depths	V_{rec}	[kN]	*9,1*	*13,7*	*25,1*	*39,3*	*56,7*	*89,7*

1 KN ≈ 100 kg

The italic font underlined values indicate steel failure; bold values indicate concrete failure, rest indicates pull-out failure.

COEFFICIENTS FOR TENSION LOADS IN PULL-OUT FAILURE IN HIGH-RESISTANCE CONCRETE TYPES			
CONCRETE COEFFICIENT	**C30/37**	**C40/50**	**C50/60**
Ψ_c (Non-cracked)	1,03	1,06	1,07
Ψ_c (Cracked)	1,12	1,23	1,30

6.2 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	Isoproyl 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%	C
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

7. 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.
- Evaluation report from ICC-ES ESR-3807
- Declaration of Performance DoP MOPURE.
- INDEXcal anchor calculation software.
- INDEXmor cartridge calculation needs software.