

TECHNICAL DATA SHEET

Cicoanchor[®] 200 EA

Epoxy Acrylate Anchoring Adhesive

DESCRIPTION

CicoAnchor[®] 200 EA is an epoxy acrylate (vinyl ester) chemical anchoring mortar containing styrene, intended for medium- to heavy-duty anchoring in concrete and masonry. It offers higher performance than polyester-based systems and is suitable for use in both dry and wet drill holes, including natural stone. The cured adhesive exhibits excellent adhesion to concrete, natural stone, masonry, and steel, together with good chemical resistance and durability in both dry and damp environments. CicoAnchor[®] 200EA is suitable for a wide range of structural and industrial anchoring applications and maintains excellent application characteristics at ambient temperatures up to 80°C.

USES

Cicoanchor[®] 200 EA is ideal to be used as a structural chemical anchoring adhesive for:

- Fast setting steel reinforcement anchoring
- Post-installed reinforcing bars
- Threaded rod anchoring
- Structural steel connections
- Base plates and machinery fixing
- Handrails, balustrades, and safety barriers
- Facade support systems
- Pipe supports and cable trays
- Industrial equipment installation
- Anchoring in concrete, solid brick, hollow brick (with sleeves), and natural stone

ADVANTAGES

- Structural anchoring product.
- European approval in concrete:
- Overhead application
- Suitable for use in dry & damp conditions.
- High bending- and pressure strength
- Resisting wastewater and most known chemicals.
- High mechanical properties.
- Cartridge can be reused till the end of the shelf life.

STANDARDS COMPLIANCE

European Assessment Document EAD 330499-00-0601
"Chemical Anchors for Use in Concrete"
European Assessment Document EAD 330076-00-0604
"Metal Injection Anchors for Masonry Use"

PACKAGING

300 ml cartridge

SHELF LIFE & STORAGE

12 months storage life if stored in its original unopened containers under dry and shaded place in a temperature from 5°C to 25°C.

TECHNICAL PROPERTIES

Appearance	Grey Mortar
Volume solids, %	100
Density kg/ltr @ 25°C	1.66 ± 0.05
Water absorption after 24 hrs. ASTM D 570	0.2 %

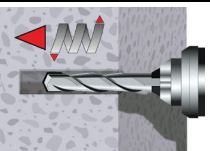
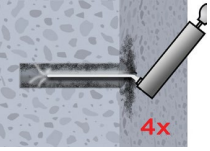
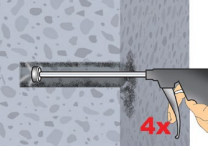
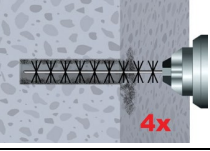
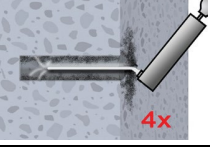
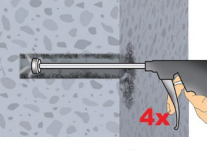
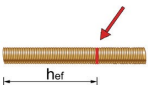
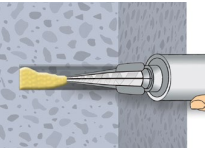
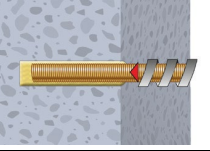
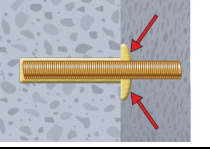
Curing time

Substrate Temperature	working time	Full curing time
-5°C	90 Min.	360 Min.
0°C	45 Min.	180 Min.
+5°C	25 Min.	120 Min.
+10°C	15 Min.	80 Min.
+20°C	6 Min.	45 Min.
+30°C	4 Min.	25 Min.
+35°C	2 Min.	20 Min.

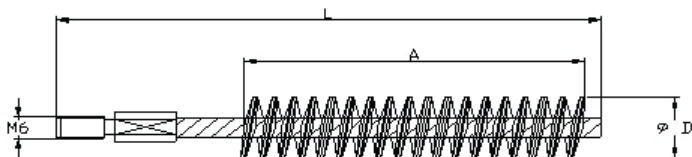
MECHANICAL CHARACTERISTICS-EN 196 part 1

Compressive Strength (ASTM C579)	108 Mpa
Flexural Strength (ASTM C 580 @ 7 days)	56 Mpa
Adhesion to concrete (ASTM D 4541)	2.5Mpa (concrete failure)
Dynamic Modulus of elasticity	3300 Mpa

APPLICATION INSTRUCTIONS - CONCRETE

	1. Drill with hammer drill mode a hole into the base material to the size and embedment depth required by the selected anchor.
	2a. Standing water must be removed before cleaning. Starting from the bottom or back of the bore hole, blow the hole clean with compressed air or a hand pump a minimum of four times. If the bore hole ground is not reached an extension shall be used. The hand-pump can be used for anchor sizes up to bore hole diameter 20 mm. For bore holes larger than 20 mm or deeper than 240 mm, compressed air (min. 6 bar) must be used.
	2b. Check brush diameter acc. to table 5 and attach the brush to a drilling machine or a battery screwdriver. Brush the hole with an appropriately sized wire brush off four times. If the bore hole ground is not reached with the brush, a brush extension shall be used.
	2c. Finally blow the hole clean again with compressed air or a hand pump a minimum of four times. If the bore hole ground is not reached an extension shall be used. The hand-pump can be used for anchor sizes up to bore hole diameter 20 mm. For bore holes larger than 20mm or deeper than 240mm, compressed air (min. 6 bar) must be used.
	3. Attach a supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. For every working interruption longer than the recommended working time as well as for new cartridges, a new static-mixer shall be used.
 	4. Prior to inserting the anchor rod into the mortar filled bore hole, the position of the embedment depth shall be marked on the anchor rods. Note: Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey color.
	6. Starting from the bottom or back of the cleaned anchor hole fill the hole up to approximately two-thirds with adhesive. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets. Observe the gel-/ working times given.
	7. Push the threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. The anchor should be free of dirt, grease, oil or other foreign material.
	8. Be sure that the anchor is fully seated at the bottom of the hole and that excess mortar is visible at the top of the hole. If these requirements are not maintained, the application has to be renewed.

CLEANING OF THE CONCRETE DRILL HOLE



Brush:

Ø 0,20 mm [A2] Steel wire

Brush length: 80 mm

M6 thread for drilling machine connection



Threaded rod	Bore hole-Ø	Brush-Ø	min. brush-Ø	Brush length
mm	mm	D _{b-min} mm	D _{b-min} mm	170
M 8	10.0	12.0	10.5	170
M 10	12.0	14.0	12.5	170
M 12	14.0	16.0	14.5	200
M 16	18.0	20.0	18.5	300
M 20	24.0	26.0	24.5	300
M 24	28.0	27.0	26.5	300

SETTING PARAMETER - CONCRETE

Anchor size				Ø8	Ø10	Ø12	Ø16	Ø20	Ø24
Edge distance	1,0 x h _{ef}	C _{cr,N}	mm	80	90	110	125	170	210
Min. edge distance	5,0 x d	C _{min}	mm	40	50	60	80	100	120
Axial distance	2,0 x h _{ef}	S _{cr,N}	mm	160	180	220	250	340	420
Min. axial distance	5,0 x d	S _{min}	mm	40	50	60	80	100	120
Embedment depth		h _{ef}	mm	80	90	110	125	170	210
Min. part thickness		h _{min}	mm	h _{ef} +30 mm			h _{ef} +2d _o		
Anchor diameter		d	mm	8	10	12	16	20	24
Drill diameter		d _o	mm	10	12	14	18	24	28
Installation torque		T _{inst}	Nm	10	20	40	60	120	150

PERFORMANCE DATA - CONCRETE

TENSION LOADS - Design method A acc. to ETAG 001 Annex C, characteristic values for tension loading

Anchor size				Ø8	Ø10	Ø12	Ø16	Ø20	Ø24
Steel failure									
Characteristic tension resistance, Steel, zinc plated or hot dip, property class 5.8		N _{Rk,s}	[kN]	18	29	42	78	122	177
Characteristic tension resistance, Steel, zinc plated or hot dip, property class 8.8		N _{Rk,s}	[kN]	29	46	67	125	196	282
Partial safety factor		γ _{Ms,N}		1,50					
Characteristic tension resistance, Stainless steel A4 and HCR		N _{Rk,s}	[kN]	26	41	59	110	172	247
Partial safety factor		γ _{Ms,N}		1,87					
Pullout and concrete cone failure ¹⁾									
Characteristic bond resistance in concrete C20/25									
24°C/40°C ²⁾	uncracked concrete	N _{Rk,p} = N ⁰ _{Rk,c}	[kN]	19	25	35	53	85	127
50°C/80°C ²⁾		N _{Rk,p} = N ⁰ _{Rk,c}	[kN]	16	23	31	47	75	111
Partial safety factor (dry and wet)		γ _{Mp} = γ _{Mc}		1,5			1,8		
Embedment depth		h _{ef}	[mm]	80	90	110	125	170	210
Edge distance		c _{cr,N}	[mm]	80	90	110	125	170	210
Axial distance		s _{cr,N}	[mm]	2 x c _{cr,N}					
Increasing factors for non-concrete concrete☐				(f _{ck} ^{0,30})/2,63					
Splitting failure									
Edge distance		c _{cr,sp}	[mm]	c _{cr,N} 0 2 h _{ef} (2,5 - h/h _{ef}) 0 2,4 h _{ef}					
Axial distance		s _{cr,sp}	[mm]	2 x c _{cr,sp}					
Partial safety factor (dry and wet)		☐ _{Msp}		1,5			1,8		

The data in this table are intended to use together with the design provisions of ETAG 001 Annex C

1) shall be determined acc. this table or acc. to 5.2.2.4, Annex C of ETAG 001. The smaller value is decisive.

2) short term temperature / Long term temperature. Long term concrete temperatures are roughly constant over significant periods of time. Short term elevated temperatures are those that occur over brief intervals, e.g., as a result of diurnal cycling.

PERFORMANCE DATA - CONCRETE

SHEAR LOADS - Design method A acc. to ETAG 001 Annex C, characteristic values for shear loading

Anchor size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø24
Steel failure without leaver arm								
Characteristic shear resistance, Steel, zinc plated or hot dip, property class 5.8	$V_{Rk,s}$	[kN]	9	15	21	39	61	88
Characteristic shear resistance, Steel, zinc plated or hot dip, property class 8.8	$V_{Rk,s}$	[kN]	15	23	34	63	98	141
Partial safety factor	$\gamma_{Ms,V}$		1,25					
Characteristic shear resistance, Stainless steel A4 and HCR	$V_{Rk,s}$	[kN]	13	20	30	55	86	124
Partial safety factor	$\gamma_{Ms,V}$		1,56					
Steel failure with leaver arm								
Characteristic bending moment, Steel, zinc plated or hot dip, property class 5.8	$M_{Rk,s}^0$	[Nm]	19	37	65	166	324	560
Characteristic bending moment, Steel, zinc plated or hot dip, property class 8.8	$M_{Rk,s}^0$	[kN]	30	60	105	266	519	896
Partial safety factor	$\gamma_{Ms,V}$		1,25					
Characteristic bending moment, Stainless steel A4 and HCR	$M_{Rk,s}^0$	[kN]	26	52	92	232	454	784
Partial safety factor	$\gamma_{Ms,V}$		1,56					
Concrete Pryout failure								
Factor k			2,0					
Partial safety factor	$\alpha_{Mc,p}$		1,5					
Concrete edge failure								
Effective length of anchor in shear loading	l_f	[mm]	80	90	110	125	170	210
Outside diameter of anchor	d_{nm}	[mm]	10	12	14	18	24	28
Partial safety factor	α_{Mc}		1,5					

The data in this table is intended to be used together with the design provisions of ETAG 001 Annex C.

RECOMMENDED LOADS - CONCRETE

The recommended loads are only valid for single anchor for a roughly design, if the following conditions are valid:
dry or wet bore hole, uncracked concrete C20/25, steel 5.8

$$C \geq C_{cr,N}$$

$$S \geq S_{cr,N}$$

$$h \geq 2 \times h_{ef}$$

If the conditions are not fulfilled the loads must be calculated acc. to ETAG 001 Annex C. The safety factors are already included in the recommended loads.

Anchor size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø24
Embedment depth	h_{ef}	[mm]	80	90	110	125	170	210
Edge distance	$C_{cr,N}$	[mm]	$1,5 \times h_{ef}$					
Axial distance	$S_{cr,N}$	[mm]	$3,0 \times h_{ef}$					
Recommended tension load 24°C/40°C ²⁾	N_{Rec}	[kN]	8,6	12,1	16,8	21,2	33,9	50,3
Recommended tension load 50°C/80°C ²⁾	N_{Rec}	[kN]	7,7	10,8	14,8	18,7	29,7	44,0
Recommended shear load without lever arm for Steel property class 5.8 ¹⁾	V_{Rec}	[kN]	5,1	8,6	12,0	22,9	35,4	50,9

1) Shear load with lever arm acc. Annex C of ETAG 001.

2) short term temperature / Long term temperature. Long term concrete temperatures are roughly constant over significant periods of time. Short term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling.

APPLICATION INSTRUCTIONS

Surface Preparation

The substrate must be more than 28 days (varies on strength requirement of). The substrate (all types) must be clean, dry, or mat damp (no bonding water), free from contaminants such as dirt, oil, grease, existing surface treatments and coatings etc. Steel substrates must be cleaned to Sa 2.5.

CHEMICAL RESISTANCE

The fully cured Cicoanchor®200EA is resistant to wastewater, sea water and wide range of chemicals including the common acids, alkalis and solvents, such as Sulfuric Acid, Hydrochloric Acid, Ammonium Hydroxide, Xylene, and White Spirit, as well as Diesel, Gasoline, Engine oils, and detergents.

CLEANING

Tools contaminated with Cicoanchor®200 EA can be cleaned using Cicosolvent®. Hardened grout can only be removed by light mechanical means.

LIMITATIONS

Cicoanchor®200 EA is not advisable to be loaded before 24 hours of anchoring to have the safest results.

PRECAUTIONS HEALTH AND SAFETY

Cicoanchor®200 EA is non-hazardous. However, it should not be swallowed or allowed to come into contact with skin or eyes. Suitable protective goggles should be worn.

Splashes on the skin should be removed with water.

In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If swallowed, seek medical attention immediately. Do not induce vomiting.

TECHNICAL SUPPORT

CIC provides on-site assistance and consulting services on projects when requested. Technical data sheets on other CIC products and guidance on their use are available on request.

Warranty

CIC products are guaranteed against defective materials and manufacture and sold subject to CIC's standard terms and conditions of sale. Whilst CIC endeavors to ensure that any advice, information or recommendation given is correct, the company cannot accept any liability either directly or indirectly arising from the use of its products. User of the product must test the product's suitability for the intended application and purpose, since the company has no control over the application of its products. Information contained in this document is given on the best current knowledge. Our Products are in continuous development and CIC reserves the right to change the product without prior notice.