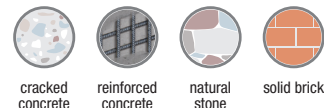


chemical anchors



Vorpa VPE 385ml - Fixing in seismic C1+C2

High performance styrene free pure epoxy chemical anchor with European Technical Assessment for cracked concrete, post installed rebar and seismic zone

products group



Approved for

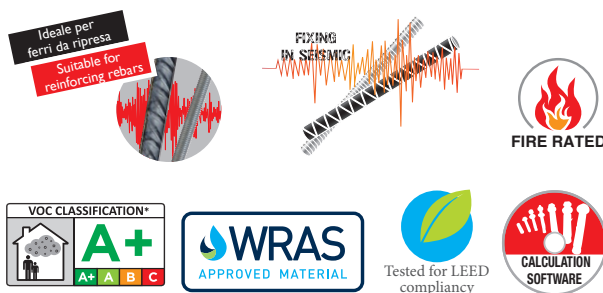
- cracked concrete M8-M30, rebar Ø8-Ø32mm
- non-cracked concrete M8-M30, rebar Ø8-Ø32mm
- seismic action for performance category C1: M8-M16
- seismic action for performance category C2: M12-M16
- diamond coring in non-cracked concrete
- post-installed rebar Ø8-Ø40mm

To fix

- structural fixings
- heavy duty metal structures
- heavy structural works
- construction joints
- scaffolding links
- wall ties, starter bars, studs, bolts & large screws
- electric installations plumbing

Also suitable for

- natural stone
- solid brick



EAD 330499-00-0601
non cracked concrete:
M8-M30, cracked concrete:
M8-M30, rebar Ø8-Ø32mm
Seismic action Cat.C1: M8-
M16, Seismic action Cat. C2:
M12-M16

EAD 330087-00-0601
post-installed rebar Ø8-
Ø40mm

Fire resistance in ETA for
post-installed rebar

product code

Code	Description	Content ml	Gun to be used	Shelf life
1300	VPE 385	385	side by side 3:1	24 months



Store upright

Examples of applications



Vorpa VPE 385ml - Fixing in seismic C1+C2

High performance styrene free pure epoxy chemical anchor with European Technical Assessment for cracked concrete, post installed rebar and seismic zone



product information

Characteristics

- a two component chemical anchoring injection system in 3:1 ratio derived from pure epoxy with very high bond strength, developed to anchor threaded rods and rebar into concrete
- suitable for high loads featuring large diameter and deep embedment
- longer working times make it suitable for large holes, and high temperature
- use in wet or flooded environments and fixing holes, or underwater.
- high durability, resistance to chemicals
- performance based on clean holes

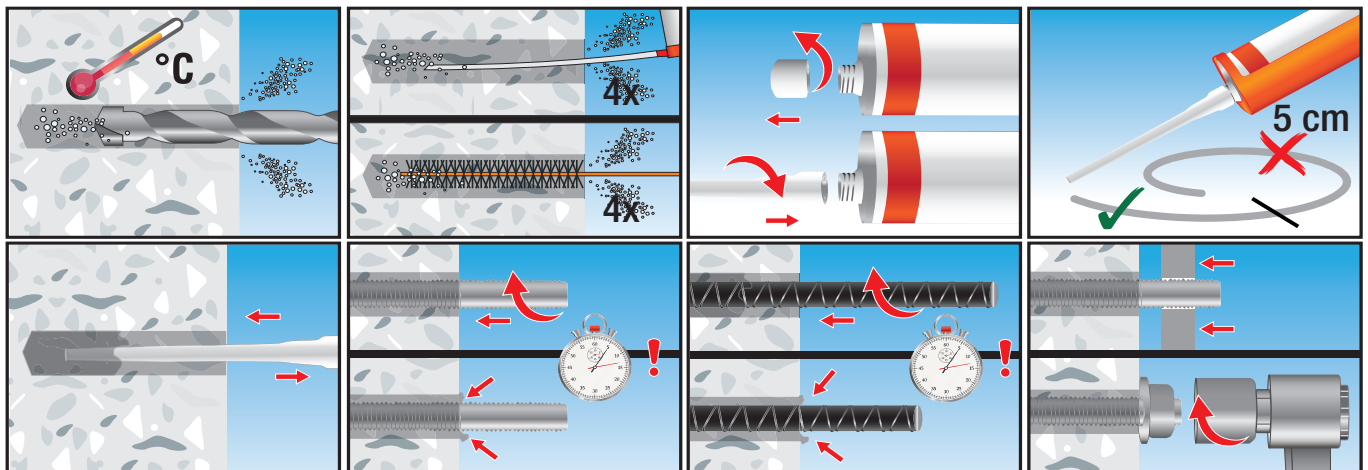
Approval/certifications/testing

- 19/0705 – ETA Option1 Cracked Concrete EAD 330499-00-0601 EN 1992-4:2018/TR 055/ Seismic action C1+C2
- 18/1157 – EAD 330087-00-0601 EN 1992-1-1+2004+ACi 2010 Post Installed Rebar Installations
- Fire Test Report in ETA for post-installed rebar
- Wras Approved for use with Potable drinking water approval no. 2108531
- LEED tested 2009 EQ c4.1 SCAQMD rule 1168 (2005)
- VOC A+ Rating (Volatile Organic Content)

Suggestion for use

- **Clean the hole before the installation**
- HAMMER DRILLED – blown and then brushed with a stiff metal brush and blown again

installation sequence



technical data

Physical Properties N/mm ² (MPa)	after 24 hours	after 72 hours	Test Method
Tensile Strength	21,50	21,50	ASTM D638
Compressive Strength	95	100.9	EN 196 PARTE 1
Flexural Strength	34	46	EN 196 PARTE 1
Flexural Modulus	2520.3	2985.2	ASTM D790
E Modulus	5997	12024.3	EN 196 PARTE 1
Density	1,45 kg/dm ³	1,45 kg/dm ³	-
VOC Content	A+	A+	-

Minimum Curing Time

Concrete Temperature	Gel-working Time	Minimum curing time for anchors	Minimum curing time for rebar
5°C	70 min	60 h	40 h
10°C	32 min	40 h	30 h
15°C	28 min	30 h	24 h
25°C	22 min	17 h	11 h
30°C	20 min	16 h	9 h
40°C	18 min	12 h	8 h

Minimum curing time in wet concrete x2

All specifications based on supplied mixer

Store at temperatures between +5 and +25 degrees, away from direct heat, rain and moisture

Temperature Ranges

Range	Concrete Service Temperature	Maximum Long Term Concrete Temperature	Maximum Short Term Concrete Temperature
Range I	-40°C to +40°C	+24°C	+40°C
Range II	-40°C to +60°C	+40°C	+60°C
Range III for rebars only	-40°C to +80°C	+50°C	+80°C

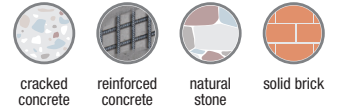
Service temperature range: Range of ambient temperatures after installation and during the lifetime of the anchor. Short term temperature: Temperature within the service temperature range which vary over short intervals, e.g. day/night cycles and freeze/thaw cycles. Long term temperature: Temperature, within the service temperature range, which will be approximately constant over significant periods of time

chemical anchors



Vorpa VPE 385ml - Fixing in seismic C1+C2

High performance styrene free pure epoxy chemical anchor with European Technical Assessment for cracked concrete, post installed rebar and seismic zone



technical data

Typical characteristic and design resistance performance with 5.8 grade studding and associated installation data

Ø mm	Characteristic Resistance (kN)		Design Resistance (kN)		Recommended Load (kN)		Characteristic distances (mm)			Min Edge and Spacing	Nominal Embedment (mm)	Hole diameter concrete (mm)	Hole diameter fixture (mm)	Max Torque (Nm)
	Tension (N _{Rk})	Shear (V _{Rk})	Tension (N _{Rd})	Shear (V _{Rd})	Tension (N _{Rec})	Shear (V _{Rec})	Edge (C _{Cr,N})	Spacing (S _{Cr,N})	Edge (C _{Cr,V})	(mm) (C _{min} S _{min})				
8	18,18		10,10		7,21						40			
	22,86	9,00	12,70	7,20	9,07	5,14	80	160	80	40	80	10	9	10
	22,86		12,70		9,07						160			
10	28,26		15,70		11,21						50			
	36,18	15,00	20,10	12,00	14,36	8,57	100	200	90	40	90	12	12	20
	36,18		20,10		14,36						200			
12	40,68		22,60		16,14						60			
	52,56	21,00	29,20	16,80	20,86	12,00	120	240	110	60	110	14	14	40
	52,56		29,20		20,86						240			
16	59,76		33,20		23,71						80			
	97,92	39,00	54,40	31,20	38,86	22,29	160	320	125	80	125	18	18	80
	97,92		54,40		38,86						320			
20	85,50		47,50		33,93						100			
	152,82	61,00	84,90	48,80	60,64	34,86	200	400	180	100	170	22	22	120
	152,82		84,90		60,64						400			
24	128,16		71,20		50,86						120			
	220,32	88,00	122,40	70,40	87,43	50,29	240	480	220	120	210	26	26	160
	220,32		122,40		87,43						480			
27	149,22		82,90		59,21						135			
	286,38	115,00	159,10	92,00	113,64	65,71	270	540	240	135	240	30	30	180
	286,38		159,10		109,52						540			
30	180,90		100,50		71,79						150			
	350,10	142,50	194,50	114,00	138,93	81,43	300	600	280	150	280	35	32	200
	350,10		194,50		138,93						600			
33	202,14		112,30		80,21						165			
	433,08	173,50	240,60	138,80	171,86	99,14	330	660	310	165	300	37	36	250
	433,08		240,60		171,86						660			
36	237,60		132,00		94,29						180			
	509,76	212,50	283,20	170,00	202,29	121,43	360	720	330	180	340	40	38	300
	509,76		283,20		202,29						720			

All data is based on correct installation - see instructions - See ETA

No influence of edge and spacing

Minimum base material thickness hef +30mm >100mm for M8 to M12 and for M16 to M30 hef +2 d

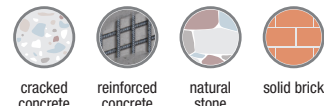
Steel failure

Design resistance of resin with various stud strenghts and rebar. 8.8 grade steel studding

Ø stud (mm)	Ø hole (mm)	embedment depth																		hef failurer (mm)	F _{d,s} design load (kN)				
		40	50	60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720		
8	10	10.1	12.6	15.1	17.6	19.5																		78	19.5
10	12	12.6	15.7	18.9	22.0	25.1	28.3	30.9																98	30.9
12	14		18.9	22.6	26.4	30.2	33.9	37.7	41.5	45.0														119	45.0
16	18				33.2	38.0	42.7	47.5	52.2	57.0	61.7	66.5	76.0	83.7										176	83.7
20	22					47.5	53.4	59.3	65.3	71.2	77.2	83.1	95.0	118.7	130.7									220	130.7
24	26						71.2	78.3	85.5	92.6	99.7	113.9	142.4	170.9	188.3									264	188.3
27	30							82.9	90.5	98.0	105.6	120.7	150.8	181.0	211.1	241.3	244.8							325	244.8
30	35								100.5	108.9	117.3	134.1	167.6	201.1	234.6	268.1	299.2							357	299.2
33	38									112.3	121.0	138.2	172.8	207.4	241.9	276.5	345.6	370.1						428	370.1
36	40										132.0	150.8	188.5	226.2	263.9	301.6	377.0	435.7						462	435.7

Vorpa VPE 385ml - Fixing in seismic C1+C2

High performance styrene free pure epoxy chemical anchor with European Technical Assessment for cracked concrete, post installed rebar and seismic zone



technical data

Characteristic and Design Load resistances for REBAR based on characteristic bond strengths for hef 4d (minimum embedment) to 20d

Ø mm	Non cracked concrete						Cracked concrete						Nominal embedment (mm)
	Characteristic resistance (kN)		Design resistance (kN)		Recommended load (kN)		Characteristic resistance (kN)		Design resistance (kN)		Recommended load (kN)		
	Tension (N _{rk})	Shear (V _{rk})	Tension (N _{rd})	Shear (V _{rd})	Tension (N _{rec})	Shear (V _{rec})	Tension (N _{rk})	Shear (V _{rk})	Tension (N _{rd})	Shear (V _{rd})	Tension (N _{rec})	Shear (V _{rec})	
8	19.26	9,00	10.70	7,20	7.64	5,14	Not applicable						40
	38.52		21.40		15.29								80
	77.22		42.90		30.64								160
10	22.68	15,00	12.60	12,00	9.00	8,57	Not applicable						40
	50.94		28.30		20.21								90
	113.04		62.80		44.86								200
12	26.46	21,00	14.70	16,80	10.50	12,00	13.14	21,00	7.30	16,80	5.21	12,00	50
	58.14		32.30		23.07		110						
	126.72		70.40		50.29		240						
14	34.38	39,00	19.10	31,20	13.64	22,29	18.54	39,00	10.30	31,20	7.36	22,29	60
	68.58		38.10		27.21		120						
	160.20		89.00		63.57		280						
16	45.72	39,00	25.40	31,20	18.14	22,29	24.66	39,00	13.70	31,20	9.79	22,29	70
	81.72		45.40		32.43		125						
	209.16		116.20		83.00		320						
20	42.83	61,00	36.30	48,80	25.93	34,86	35.28	61,00	19.60	48,80	14.00	34,86	80
	138.96		77.20		55.14		170						
	326.70		181.50		129.64		400						
25	94.32	88,00	52.40	70,40	37.43	50,29	54.90	88,00	30.50	70,40	21.79	50,29	100
	198.00		110.00		78.57		210						
	471.24		261.80		187.00		500						
28	106.38	115,00	59.10	92,00	42.21	65,71	67.68	115,00	37.60	92,00	26.86	65,71	110
	232.20		129.00		92.14		240						
	541.98		301.10		215.07		560						
32	130.68	142,50	72.60	114,00	51.86	81,43	91.44	142,50	50.80	114,00	36.29	81,43	130
	281.52		156.40		111.71		280						
	643.50		357.50		255.36		640						
36	158.40	173,50	88.00	138,80	62.86	99,14	110.88	173,50	61.60	138,80	44.00	99,14	140
	361.98		201.10		143.64		320						
	814.32		452.40		323.14		720						
40	201.06	212,50	111.70	170,00	79.79	121,43	140.76	212,50	78.20	170,00	55.86	121,43	160
	427.32		237.40		169.57		340						
	1005.48		558.60		399.00		800						

All data is based on correct installation - see instructions. No influence of edge and spacing. Minimum base material thickness hef +30mm >100mm for M8 to M12 and for M16 to M30 hef +2 d Temperature range i maximum long term / short term temperature +24/40°C

Examples of applications

