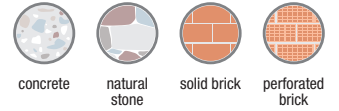


chemical anchors

Vorpa VIN+

Styrene free epoxy acrylate resin with European Technical Assessment for non cracked concrete, post installed rebars and masonry



products group



Approved for

- non cracked concrete M8-M24
- masonry use category b,c,d M8-M16

To fix

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

Also suitable for

- perforated brick
- natural stone

Ideale per barre filettate e ferri da ripresa su calcestruzzo
Suitable for threaded bars and rebars in concrete



EAD 330499-00-0601
non cracked concrete
M8-M24

EAD 330076-00-0604
masonry cat. b,c,d M8-M16



product code

Code	Description	Content ml	Gun to be used	Shelf life
2320	VIN+ 300	300	silicone type	12 months
2321	VIN+ 400	400	coaxial	18 months



+5°C/+25°C

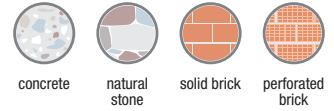
Store upright

Examples of applications



Vorpa VIN+

Styrene free epoxy acrylate resin with European Technical Assessment for non cracked concrete, post installed rebars and masonry



product information

Characteristics

- epoxy acrylate styrene free chemical anchoring injection system with very high bond strength, developed to anchor threaded rods and rebar into concrete
- overhead application allowed
- fast working times for early loading in time sensitive applications
- no styrene allows for use indoors and in enclosed spaces
- good durability formulation, resistance to chemicals
- fixing in concrete, wood, or other high strength materials
- performance based on clean holes

Approval/certifications/testing

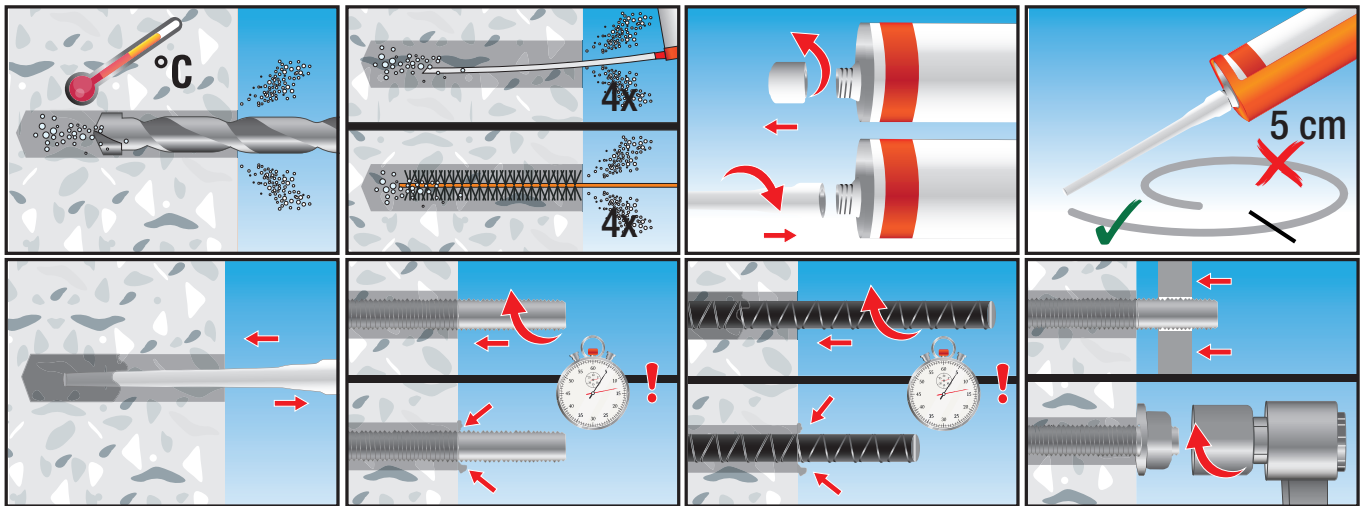
- EAD 330499-00-0601 M8-M24 Threaded rods for non cracked concrete
- EAD 330076-00-0804 M8-M16 Hollow Wall/Masonry Installations
- LEED Test Report
- VOC A+ Rating (Volatile Organic Content)

Suggestion for use

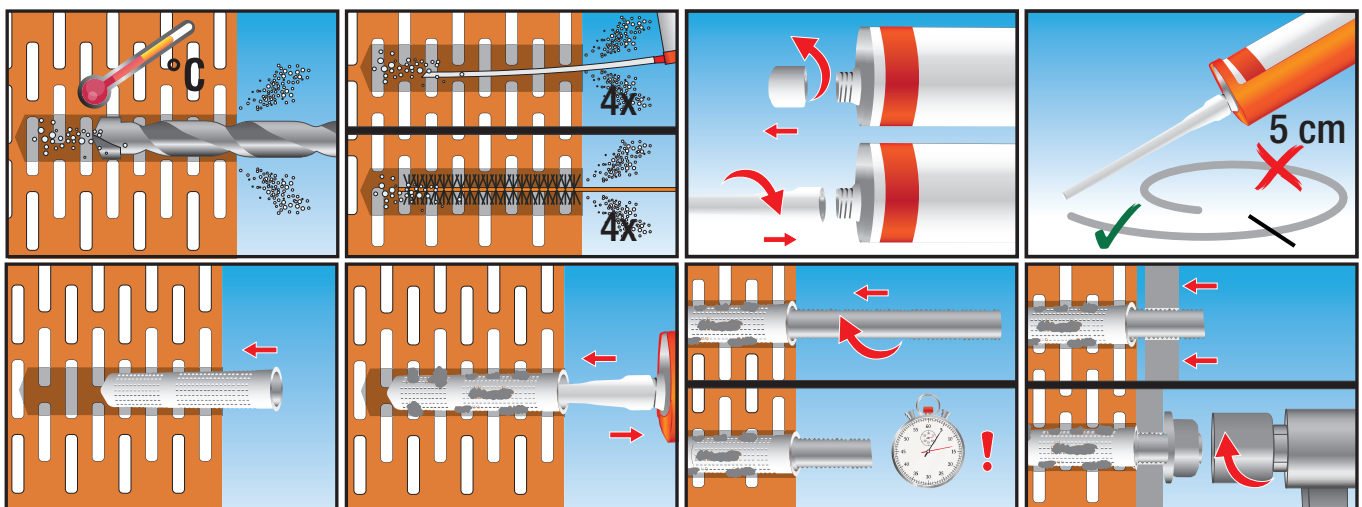
- **Clean the hole before the installation**
- HAMMER DRILLED – blown and then brushed with a stiff metal brush and blown again

installation sequence

On solid brick



On hollow brick



Vorpa **VIN+**

Styrene free epoxy acrylate resin with European Technical Assessment for non cracked concrete, post installed rebars and masonry

technical data



concrete



natural stone



solid brick



perforated brick

Physical Properties	Result	Test Method
UV resistance	Pass	-
Watertightness	0 mm	DIN EN 12390-8
Temperature stability	120° C	-
pH-value	>12	-
Density	1,79 kg / dm ³	-
Compressive strength	88 N / mm ²	EN 196 Teil1
Flexural strength	31 N / mm ²	EN 196 Teil1
E modulus	14.000 N / mm ²	EN 196 Teil1

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

Reactivity

Base material Temperature	Gel-working Time	Full curing time in dry base material
-5° to -1°C	90 min	6 h
0° to 4°C	45 min	3 h
5° to 9°C	25 min	2 h
10° to 14°C	20 min	100 min
15° to 19°C	15 min	80 min
20° to 29°C	6 min	45 min
30° to 34°C	4 min	25 min
35°C to 39°C	2 min	20 min

Setting parameters threaded rods

Anchor size			M8	M10	M12	M16	M20	M24	
Edge distance	1,0 x h _{ef}	C _{Cr,N}	mm	80	90	110	125	170	210
Minimum 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
Minimum axial distance	5,0 x d	S _{min}	mm	40	50	60	80	100	120
Effectivite embedment depth		h _{ef}	mm	80	90	110	125	170	210
Minimum thickness of member		h _{min}	mm	h _{ef} + 30mm		h _{ef} + 30mm		h _{ef} + 2d _o	
Anchor diameter		d	mm	8	10	12	16	20	24
Nominal drill hole diameter		d _o	mm	10	12	14	18	24	28
Torque moment		T _{inst} ≤	Nm	10	20	40	60	120	150

Recommended loads-Threaded rod. Property class 5.8

The recommended loads are only valid for single anchor for a roughly design, if the following conditions are valid

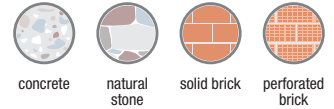
- $C \geq 1,5 \times h_{ef}$ $S \geq 3,0 \times h_{ef}$ $h \geq 2,0 \times h_{ef}$
- If the conditions are not fulfilled the loads must be calculated acc.to EOTA Technical Report TR 029. For further details observe ETA 12/0106
- The safety factors are already included in the recommended loads

Anchor size			M8	M10	M12	M16	M20	M24		
Recommended tension load										
40°C/24°C 2)		N _{rec,stat}	kN	6,1	8,5	13,2	19,9	33,9	50,3	
80°C/50°C 2)		N _{rec,stat}	kN	4,7	6,4	9,9	15,0	25,4	37,7	
Recommended shear load without lever arm 1)		V _{rec,stat}	kN	5,1	8,6	12,0	22,9	35,4	50,9	
Effectivite 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}						

1) Shear load with lever arm according to TR 029

2) Short term temperature/Long term temperature

N_{rec,stat} - V_{rec,stat} = Recommended load under static and quasi static action



Tension load-Characteristic values for tension loading ¹⁾ -according to Technical Report TR 029

Anchor size (Threaded rod)		M8	M10	M12	M16	M20	M24
Steel failure							
Characteristic tension resistance, Steel, zinc plated or hot dip, property class 4.6	N_{rk,s} kN	15	23	34	63	98	141
Partial safety factor	$\gamma_{MS,N}$	2,0	2,0	2,0	2,0	2,0	2,0
Characteristic tension resistance, Steel, zinc plated or hot dip, property class 5.8	N_{rk,s} kN	18	29	42	78	122	176
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	$\gamma_{MS,N}$	1,50	1,50	1,50	1,50	1,50	1,50
Characteristic tension resistance, Stainless steel A4 and HCR	N_{rk,s} kN	26	41	59	110	171	247
Partial safety factor	$\gamma_{MS,N}$	1,87	1,87	1,87	1,87	1,87	1,87
Pullout and concrete cone failure ²⁾							
Characteristic bond resistance in concrete C20/25							
40°C/24°C ³⁾	N_{rk,p}=N^o_{rk,c} kN	17,1	22,6	33,2	50,3	85,5	126,7
80°C/50°C ³⁾	N_{rk,p}=N^o_{rk,c} kN	13,1	17,0	24,9	37,7	64,1	95,0
Partial safety factor	$\gamma_{Mp} = \gamma_{Mc}$	1,8	1,8	1,8	1,8	1,8	1,8
Embedment depth	h_{ef} mm	80	80	110	125	170	210
Edge distance	C_{cr,N} mm	74	89	107	143	179	215
Axial distance	S_{cr,N} mm	$2 \times C_{cr,N}$					
Increasing factors for concrete ψ_c		$(f_{ck}^{0,11})/1,42$					
Splitting failure							
Edge distance	C_{cr,sp} mm	$C_{cr,N} \leq 2 h_{ef} (2,5 - h/h_{ef}) \leq 2,4 h_{ef}$					
Axial distance	S_{cr,sp} mm	$2 \times C_{cr,sp}$					
Partial safety factor	γ_{MSP}	1,8	1,8	1,8	1,8	1,8	1,8

The data in this table are intended to use together with the design provisions of TR029

1) For more details, see ETA 12/0106.

2) Shall be determined acc. to this table or to TR 029. The smaller value is decisive

3)) 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.

Shear load-Characteristic values for shear loading ¹⁾ -according to Technical Report TR 029

Anchor size (Threaded rod)		M8	M10	M12	M16	M20	M24
Steel failure without lever arm							
Characteristic shear resistance, Steel, zinc plated or hot dip, property class 4.6	V_{rk,s} kN	7	12	17	31	49	71
Partial safety factor	$\gamma_{MS,V}$	1,67	1,67	1,67	1,67	1,67	1,67
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	1,25	1,25	1,25	1,25	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	1,56	1,56	1,56	1,56	1,56
Steel failure with lever arm							
Characteristic bending moment, Steel, zinc plated or hot dip, property class 4.6	M^o_{Rk,s} kN	15	30	52	133	260	449
Partial safety factor	$\gamma_{Ms,v}$	167	167	167	167	167	167
Characteristic bending moment, Steel, zinc plated or hot dip, property class 5.8	M^o_{Rk,s} kN	19	37	65	166	324	560
Characteristic bending moment, Steel, zinc plated or hot dip, property class 8.8	M^o_{Rk,s} kN	30	60	105	266	519	896
Partial safety factor	$\gamma_{Ms,v}$	1,25	1,25	1,25	1,25	1,25	1,25
Characteristic bending moment, Stainless steel A4 and HCR	M^o_{Rk,s} kN	26	52	92	232	454	784
Partial safety factor	$\gamma_{Ms,v}$	1,56	1,56	1,56	1,56	1,56	1,56
Concrete Pryout failure							
Factor k in equation (5.7) of TR 029		2,0	2,0	2,0	2,0	2,0	2,0
Partial safety factor	$\gamma_{Msp}^{i,j}$	1,5	1,5	1,5	1,5	1,5	1,5
Concrete edge failure							
Partial safety factor	γ_{Msp}	1,5	1,5	1,5	1,5	1,5	1,5

The data in this table is intended to used together with the design provisions of TR029.

1) For more details, as well as values in water filled concrete see ETA 12/0106