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HILTIRAN RV-500

High Performance Injectable Epoxy Anchor Adhesive

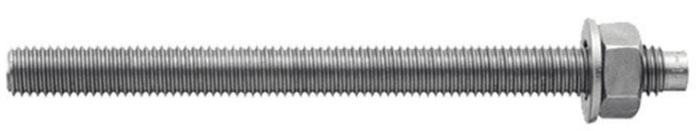
Technical Datasheet
Update: 2021

HILTIRAN RV-500 injection mortar

Anchor design (ETAG 001) / Rods & Rebars / Concrete

Injection mortar system

Foil pack:
HILTIRAN RV500
(available in 500 ml cartridges)



threaded rod:
Gr 5.6 (DIN)
Gr 8.8 (DIN)
Gr 10.9 (DIN)
(M10 - M40)

rebar :
St 37
St 52
(Ø8 _ Ø32)

Application Range

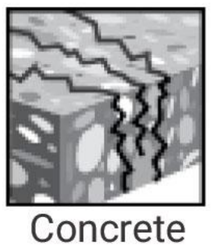
- Planting steel bars and bolts in concrete
- Building structure reinforcement & framework anchoring
- Various equipments' basic fixation
- Steel structures and concrete structures anchoring connection
- Reinforcement for highway, bridges, water conservancy projects rebuilding
- Reinforcement for advertisement boards,the noise barriers&barricades

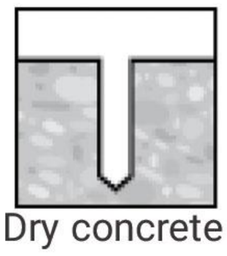
Advantages

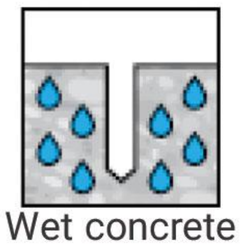
- Acid & alkali resistance
- Seismic resistance, no expansion forces
- Excellent thixotropy, suitable for side and top anchoring
- Binocular straight mixed package with HDM 500 dispenser and static mixer
- Modified epoxy resin, no styrene
- High strength & modulus, good toughness
- Aging resistance & thermal resistance
- Moisture tolerant, stable in a humid environment

Base material

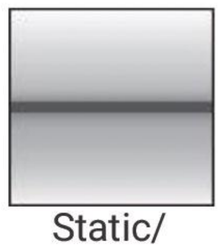

Concrete (non-cracked)


Concrete (cracked)


Dry concrete

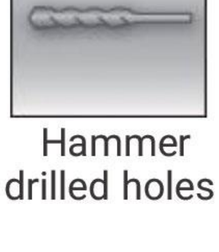

Wet concrete

Load conditions

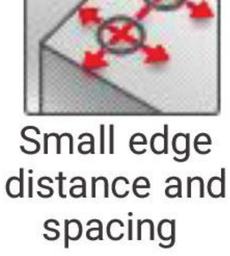

Static/ quasi-static

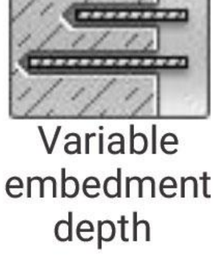

Fire resistance

Installation conditions

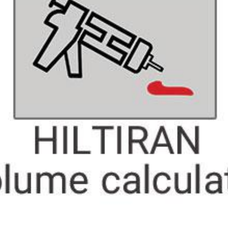

Hammer drilled holes


Diamond drilled holes


Small edge distance and spacing


Variable embedment depth

Volume calculator



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Setting information

Installation temperature

-5°C to +40°C

Service temperature range

Hiltiran RV 500 injection mortar may be applied in the temperature ranges given below.
An elevated base material temperature may lead to a reduction of the design bond resistance.

Working time and curing time

Temperature of the base material T	Working time t_{work}	Curing time t_{cure} [1)]
-5°C to -1°C	60 min	72 h
0°C to 9°C	45 min	48 h
10°C to 19°C	30 min	24 h
20°C to 29°C	25 min	12 h
30°C to 40°C	20 min	6 h

1) The curing time data are valid for dry base material only. In wet base material, the curing times must be increased.

Technical Parameters

Performance Indexes

Non-volatile matter content (solid content) ≥99%

Colloidal performance	
Tensile strength (ASTM D638)	≥55Mpa
Tensile modulus (ASTM D638)	≥3500Mpa
Elongation at break (ASTM D638)	≥1.7%
Flexural strength (ASTM D790)	≥70Mpa
Compressive strength (ASTM D695)	≥82Mpa
Thixotropy index	≥4.0
Sagging mobility (25°C)	≤2.0mm
Distortion temperature	≥65°C

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Adhesion performance	
Steel-steel tensile anti-shear strength	≥16Mpa
Under the constraint drawing condition, ribbed steel bars and C30, Φ25, L=150mm tensile strength	≥11Mpa
Boding strength with concrete C60, Φ25, L=125 mm	≥17Mpa
Steel-steel T impact stripping length	≤25mm

Long-term performance	
Wet and heat ageing	Compared with the short-term results at room temperature, the decrease rate of shear strength: ≤12%
Heat aging resistance	Compared with the short-term results at same temperature 10min, the decrease rate of shear strength: ≤5%
Freezing and thawing	Compared with room temperature, short-term results, the shear strength decrease rate is not greater than 5%
Fatigue stress	After2×10^6 times continuous sine wave fatigue loads, specimen does not destroy
Resistance to stress	Steel - steel tensile shear specimens does not destroy, and creep deformation value is less than 0.4 mm

Resistance to corrosion medium	
Resistance to salt	Compared with the control group, the strength decrease rate: ≤5%, and shall not have cracks or come unglued
Alkaline medium	Compared with the control group, the strength does not decrease, and as the concrete damage, and shall not have cracks or come unglued
Acid medium	Concrete damage, and shall not have cracks or degumming

Performance Parameters

Appearance A Part (Epoxy)	White paste
Appearance B Part (Hardener)	Red
Viscosity of mixture	18-22 pa·s
Density after curing	1.5±0.1 g/cm³
Mixture ratio (volume ratio)	3:1

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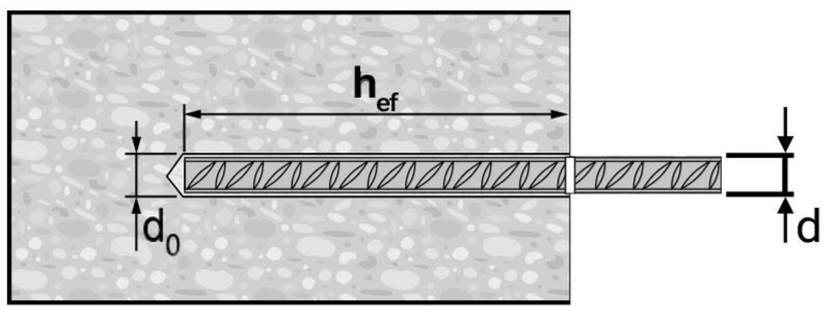
Setting Bonding Force Renference Sheet

The reference table of HILTIRAN RV500 anchor adhesive planting and anchoring binding force

The anchoring adhesion when planting steel bars

- Contcrete strength is C30
- Steel yield strength is 335 N/mm^2



The steel bardiameter d (mm)	10	12	14	16	18	20	22	25	28	32	40	The steel bar buried depth (mm)
The diameter of drilled hole d_0 (mm)	13	16	18	20	22	25	28	32	35	40	50	
The yield characteristic value of steel bars (kN)	26.3	37.9	51.6	67.4	85.2	105.2	127.3	164.4	206.3	269.4	421.0	
The anchoring adhesion (characteristic value) RK(kN)	26.1											80
	26.3	36.2										90
	26.3	37.9	45.2									100
	26.3	37.9	49.8									110
		37.9	51.6	60.3								120
			51.6	67.4	74.6							135
			51.6	67.4	82.9	94.2						150
				67.4	85.2	100.5	112.5					160
				67.4	85.2	105.2	126.6	144.8				180
					85.2	105.2	127.3	160.8	175.9			200
						105.2	127.3	164.4	193.4			220
							127.3	164.4	206.3	241.3		240
								164.4	206.3	251.3		250
								164.4	206.3	269.4	339.3	270
									206.3	269.4	383.3	305
										269.4	421.0	350
											421.0	400
											421.0	440
The steel bar yield planting depth h_{ef} (mm)	105	125	150	175	200	220	240	270	305	350	440	

Note: The yield buried depth value of the steel bars should consider safety factors,and select the design values.

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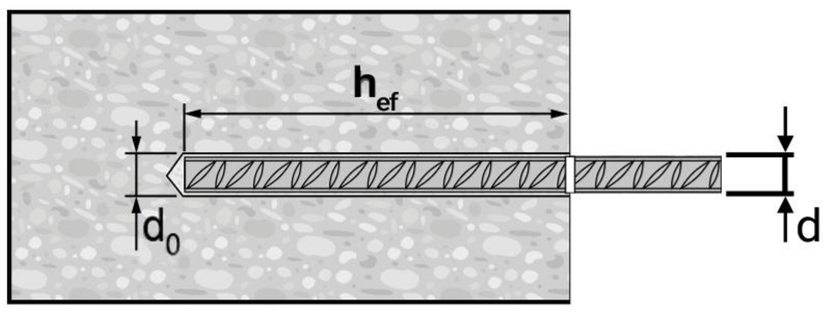
The reference table of HILTIRAN RV500 anchor adhesive planting and anchoring binding force

The anchoring adhesion when planting steel bars

- Contcrete strength is C30
- The designed strength of steel bar is 310 N/mm^2



The steel bardiameter d (mm)	10	12	14	16	18	20	22	25	28	32	40	The steel bar buried depth (mm)
The diameter of drilled hole d_0 (mm)	13	16	18	20	22	25	28	32	35	40	50	
The yield characteristic value of steel bars (kN)	22.9	33.0	44.8	58.5	74.1	91.5	110.7	143.0	179.3	234.2	365.9	
The anchoring adhesion (characteristic value) RK(kN)	17.4											80
	19.6	24.1										90
	21.8	26.8	30.1									100
	22.9	29.5	33.2									110
		33.0	36.2	40.2								120
			40.7	45.1	49.7							135
			44.8	50.1	55.3	62.8						150
				53.5	59.0	67.0	75.0					160
				58.5	66.4	75.3	84.4	96.5				180
					74.1	83.7	93.8	107.2	117.2			200
						91.5	103.2	118.0	128.9			220
							110.7	128.7	140.6	160.8		240
								134.0	146.5	167.3		250
								143.0	158.3	181.0	226.2	270
									179.3	204.4	255.5	305
										234.2	293.1	350
											334.9	400
											365.9	440
The steel bar yield planting depth h_{ef} (mm)	105	125	150	175	200	220	240	270	305	350	440	

Note: The yield buried depth value of the steel bars should consider safety factors,and select the design values.

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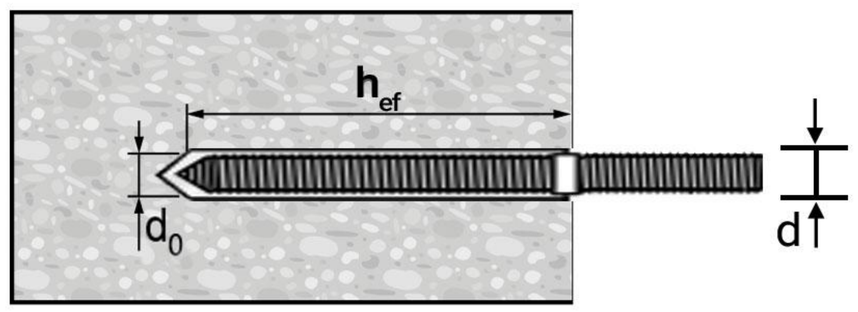
The reference table of HILTIRAN RV500 anchor adhesive planting and anchoring binding force

The anchoring adhesion when planting threaded rods

- Contcrete strength is C30
- Threade rods are categorized in Gr5.6 & Gr8.8



Anchor size	M8	M10	M12	M14	M20	M24	M30
Threaded rods							
Eff. anchorage depth h_{ef} (mm)	80	90	110	125	170	210	280
Hole diameter d_0 (mm)	10	12	14	18	25	28	35
Base material thickness (mm)	110	120	140	161	214	266	340

Characteristic resistance

Anchor size	M8	M10	M12	M14	M20	M24	M30
Tensile resistance (kN)	15.8	22.9	46.9	65.6	85.3	170	206
Shearing resistance (kN)	8.5	13.7	20	37.8	59	85	135.9

Design resistance

Anchor size	M8	M10	M12	M14	M20	M24	M30
Tensile resistance (kN)	7.5	12.5	19	29	42.5	59.7	89
Shearing resistance (kN)	5	8	11.8	22.2	34.7	50	79.4

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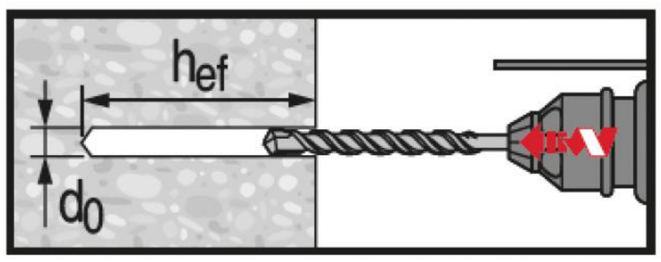
Setting instruction

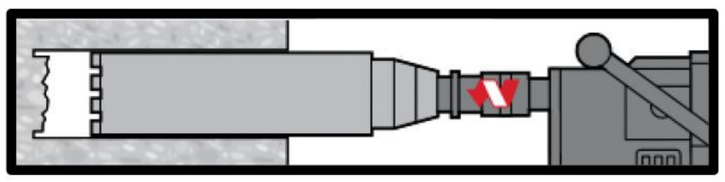
*For detailed information on installation see instruction for use given with the package of the product.

Safety regulations.

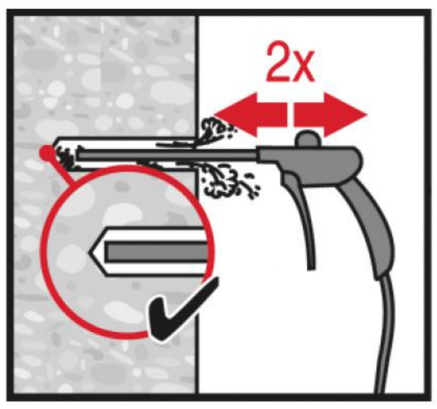
Review the Material Safety Data Sheet before use for proper and safe handling! Wear well-fitting protective goggles and protective gloves when working with HILTIRAN RV 500.

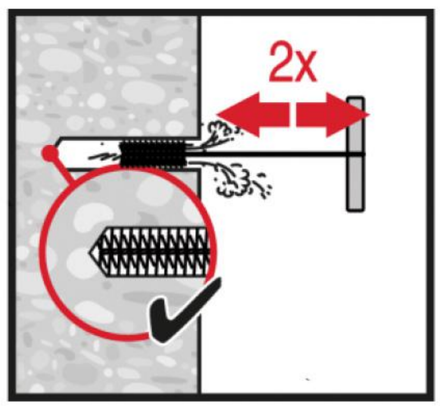


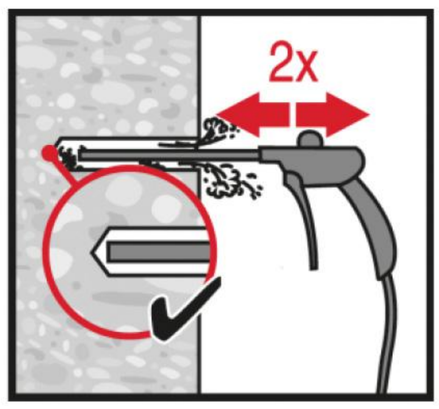
Hammer drilled hole



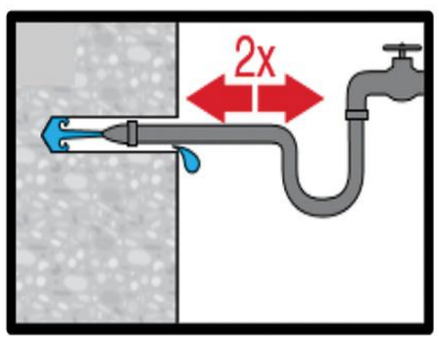
Diamond Coring

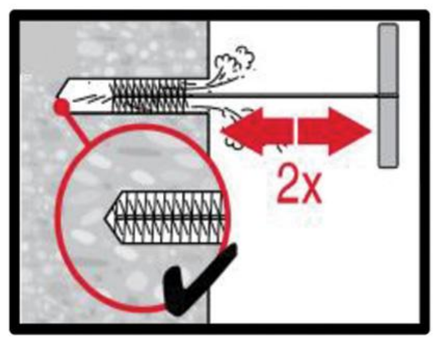


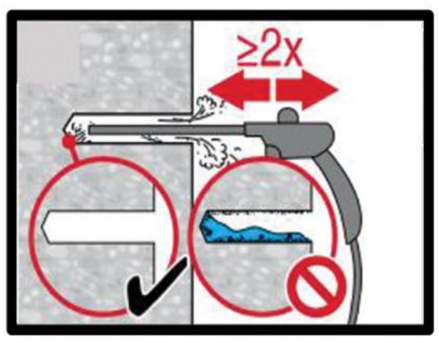




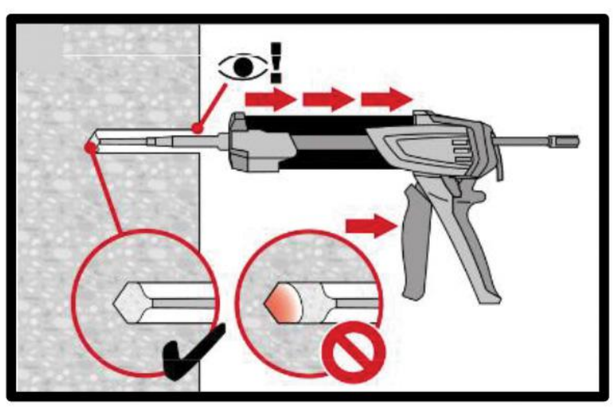
Hammer Drilling:
Compressed air cleaning

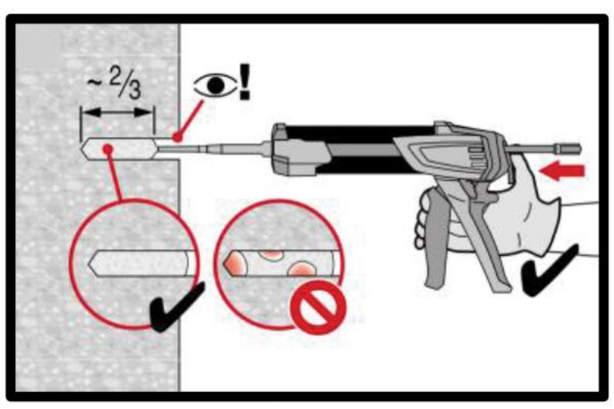




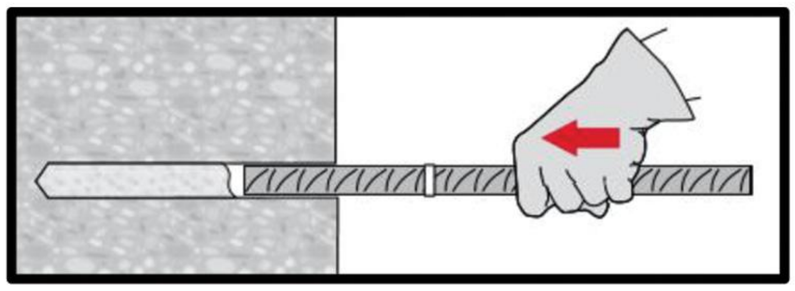


Diamond cored holes
Compressed air cleaning

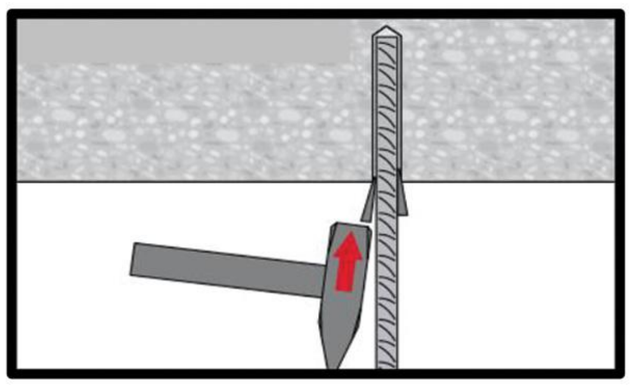




Injection method for drill hole



Setting element, observe working time "t_{work}",



Setting element for overhead applications,
observe working time "t_{work}",

Loading the anchor: After required curing time tcure the anchor can be loaded.

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Note:

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