

Technical data sheet

SIMPSON
Strong-Tie

KEM V

Vinylester High Strength Anchoring Adhesive with Seismic Certification

KEM V is a high performance vinylester anchoring adhesive for heavy-duty structural fixings in seismic areas.

This formula provides high performances when anchoring threaded rods and rebar in cracked and uncracked concrete as well as in masonry. Working temperature: from -40 up to +120°C short period and from -40 up to +72°C long period.

Features

Advantages

- Excellent mechanical and thermal characteristics
- Seismic performance C1 and C2
- High chemical resistance suitable in highly aggressive atmospheres
- Suitable for damp concrete and flooded holes
- Minimum installation temperature -10°C (-20°C for Winter version)
- Fire resistance R120

Material

Vinylester

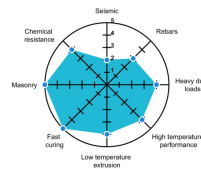
Applications

Applications

- Steel constructions
- Wood to concrete structural fixings
- Industrial construction
- Steel and metal construction (railings, brackets, etc.)
- Anchorages for gates and machines
- Post-installed rebar connections

Suitable for

- Threaded rods and rebar in cracked and uncracked concrete
- Threaded rods in masonry
- **Suitable base materials:**
 - Concrete**
 - Solid brick**
 - Honeycomb**
 - Cell like clay brick**
 - Light weight honeycomb brick**
 - Hollow dense aggregate block**
 - Hollow light aggregate block**
 - Aerated concrete (partially suitable)**
 - Solid stone1)**



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Technical Data

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References	Name	Color of resin	Content	Storage months	Packaging qty
9430200000200	KEM V 943	Grey	300	18	12

Spacing, edge distance and member thickness - Concrete

References	Spacing, edge distance and member thickness				
	BFK embedment depths				
	Characteristic spacing - scr,N	min. spacing - smin	Characteristic edge distance - ccr,N	min. edge distance - cmin	Min. member thickness - hmin
KEM V + M8	240	40	120	40	110
KEM V + M10	270	50	135	50	120
KEM V + M12	330	60	165	60	140
KEM V + M16	380	80	190	80	161
KEM V + M20	510	100	255	100	218
KEM V + M24	630	120	315	120	266
KEM V + M30	810	150	405	150	340

Design resistance - Tension - NRd [kN] – Carbon steel 5.8

References	embedment depth	Design resistance – Carbon steel 5.8	
	hef	Tension - NRd [kN]	
		Cracked concrete	Non-cracked concrete
		C20/25	C20/25
KEM V + M8	80	5.4	12
KEM V + M10	90	7.9	18.9
KEM V + M12	110	12.7	27.6
KEM V + M16	125	19.2	38.2
KEM V + M20	170	32.6	60.6
KEM V + M24	210	48.4	83.2
KEM V + M30	270	84.9	121.3

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Design resistance - Shear - V_{Rd} [kN]

References	embedment depth	Design resistance	
	hef	Shear - V_{Rd}	
		Static and quasi-static loads	
		Carbon steel 5.8	Stainless steel A4 70
KEM V + M8	80	8.8	8.3
KEM V + M10	90	13.9	12.8
KEM V + M12	110	20.2	19.2
KEM V + M16	125	37.7	35.3
KEM V + M20	170	58.8	55.1
KEM V + M24	210	84.7	79.5
KEM V + M30	270	134.6	58.8

Masonry - Clay solid brick - $f_{bk} \geq 28 \text{ MPa}$ - $\rho \geq 1,6 \text{ kg/dm}^3$ EN 771-1

References	permissible tension and shearloads [kN] for a single anchor without effects of distances and spacings						
	embedment depth hef	drill hole d ₀	Clay solid brick - f _{bk} ≥ 28 MPa - ρ ≥ 1,6 kg/dm ³ EN 771-1		edge distance Ccr = Cmin	spacing Scr = Smin	max torque Tinst max
			Tension - N [kN]	Shear - V [kN]			
KEM V + M8	80	10	1.6	1.6	120	240	2
KEM V + M10	90	12	1.7	1.6	135	270	2
KEM V + M12	100	14	2	1.6	150	300	2

1kN $\approx$ 100 kgf

(1) Single anchor without influence from anchor spacing and edge distances

(2) Design method according to EOTA TR054

(3) The recommended loads N and V derive from the characteristic loads on the ETA certification and are inclusive of the partial safety factors $\gamma_f=1.4$ and γ_m

(4) Values valid for temperature 24°C on the long term and up to 40°C on the short term. For higher temperatures see the certification ETA

(5) For all other conditions, more detailed information or different types of masonry please refer to ETA certification

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Masonry - Clay hollow brick double UNI - $f_{bk} \geq 28 \text{ MPa}$ - $\rho \geq 1,2 \text{ kg/dm}^3$ EN 771-1

References	permissible tension and shearloads [kN] for a single anchor without effects of distances and spacings							
	Clay hollow brick double UNI - $f_{bk} \geq 28 \text{ MPa}$ - $\rho \geq 1,2 \text{ kg/dm}^3$ EN 771-1					edge distance Ccr = Cmin	spacing Scr = Smin	max torque Tinst max
	min embedment depth hef	Stud diameter	drill hole d0	Tension - N	Shear - V			
KEM V + BRP Ø12	50	M6 M8	12	0.3	0.7	100	250	2
KEM V + BRP Ø15	85	M8 M10	16	0.3	0.7	100	250	2
KEM V + BRP Ø20	85	M12	22	0.3	0.7	120	250	2

1kN $\approx$ 100 kgf

- (1) Single anchor without influence from anchor spacing and edge distances
- (2) Design method according to EOTA TR054
- (3) The recommended loads N and V derive from the characteristic loads on the ETA certification and are inclusive of the partial safety factors $\gamma_f=1.4$ and γ_m
- (4) Values valid for temperature 24°C on the long term and up to 40°C on the short term. For higher temperatures see the certification ETA
- (5) M6 stud not included in ETA certification
- (6) For all other conditions, more detailed information or different types of masonry please refer to ETA certification

Masonry - Clay hollow brick - $f_{bk} \geq 6 \text{ MPa}$ - $\rho \geq 0,6 \text{ kg/dm}^3$ EN 771-1

References	permissible tension- and shearloads [kN] for a single anchor without effects of distances and spacings							
	Clay hollow brick - $f_{bk} \geq 6 \text{ MPa}$ - $\rho \geq 0,6 \text{ kg/dm}^3$ EN 771-1					edge distance Ccr = Cmin	spacing Scr = Smin	max torque Tinst max
	min embedment depth hef	Stud diameter	drill hole d0	Tension - N [mm]	Shear - V [mm]			
KEM V + BRP Ø12	50	M6 M8	12	0.1	0.7	100	250	2
KEM V + BRP Ø15	85	M8 M10	16	0.1	0.7	100	250	2
KEM V + BRP Ø20	85	M12	22	0.1	0.7	120	250	2

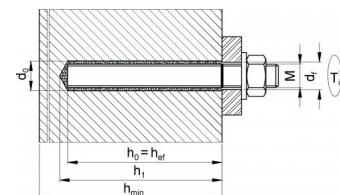
1kN $\approx$ 100 kgf

- (1) Single anchor without influence from anchor spacing and edge distances
- (2) Design method according to EOTA TR054
- (3) The recommended loads N and V derive from the characteristic loads on the ETA certification and are inclusive of the partial safety factors $\gamma_f=1.4$ and γ_m
- (4) Values valid for temperature 24°C on the long term and up to 40°C on the short term. For higher temperatures see the certification ETA
- (5) M6 stud not included in ETA certification
- (6) For all other conditions, more detailed information or different types of masonry please refer to ETA certification

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Installation



Installation parameters - Concrete

References	embedment depth	Installation parameters				
	hef	Ø drilling - d ₀	drilling depth (zyl.) - h ₀ ≥	Max. fixture hole Ø - d _f ≤	Wrench size DIN 934 (ISO 4032) - SW	Max installation torque - T _{inst,max}
KEM V + M8	80	10	80	9	13	10
KEM V + M10	90	12	90	12	17	20
KEM V + M12	110	14	110	14	19	40
KEM V + M16	125	18	125	18	24	80
KEM V + M20	170	24	170	22	30	120
KEM V + M24	210	28	210	26	36	160
KEM V + M30	270	35	270	33	46	200

Notes to the load charts of threaded rods on concrete:

1kN ≈ 100 kgf

(1) Single anchor without influence from anchor spacing and edge distances in concrete C20/25

(2) Design Method acc. to EN 1992-4:2018 ($\gamma_c = 1,5$; $\psi_{sus} = 1$)

(3) The design loads N_{rd} and V_{rd} derive from the characteristic loads on the ETA certification and are inclusive of the partial safety factors γ_m

(4) The recommended loads N and V derive from the characteristic loads on the ETA certification and are inclusive of the partial safety factors $\gamma_f = 1.4$ and γ_m

(5) Values valid for temperature 24°C on the long term and up to 40°C on the short term. For higher temperatures see the certification ETA

(6) M30 stainless steel threaded rod class A4 50

(7) Value of pure shear with distance from the edge $C \geq 10 \times h_{nom}$

(8) Seismic resistances include the factors $\alpha_{eq} = 0,85$ (single anchor under tension in the case of concrete cone failure)

(9) For all other conditions and more detailed information please refer to Technical Sheet and ETA certification

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Technical Notes

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