

Technický list

SIMPSON
Strong-Tie

KEM V Winter Winter Vinylester Anchoring Adhesive for Low Temperature Installation (-20°)

KEM V Winter is a high performance vinylester anchoring adhesive for heavy-duty structural fixings installed in low temperatures. This formula provides high performances when anchoring threaded rods and rebar in cracked and uncracked concrete and masonry. Working temperature: from -40 up to +120°C short period and from -40 up to +72°C long period.

Features

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

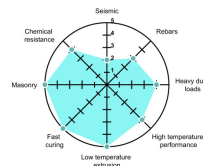
Aerated concrete (partially suitable)

Solid stone¹⁾

Wood

1) For application on natural stone or marble, carry out test and wait 24/48 hours for any reactions

For installation instructions and information please refer to technical documents



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Technical Data

KEM V Winter

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Spacing, edge distance and member thickness - Concrete

Art. nr.	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 Winter + M8	120	40	110	8	18
KEM V Winter + M10	135	50	120	14.1	29
KEM V Winter + M12	165	60	140	22.8	42
KEM V Winter + M16	190	80	161	34.5	68.8
KEM V Winter + M20	255	100	218	58.7	109
KEM V Winter + M24	315	120	266	87	149.7
KEM V Winter + M30	405	150	340	152.8	218.3

Characteristic resistance - Tension - NRk [kN] - Carbon Steel 5.8

Art. nr.	embedment depth	Characteristic resistance – Carbon steel 5.8	
	hef	Tension - NRk [kN]	
		Cracked concrete	Non-cracked concrete
		C20/25	C20/25
KEM V Winter + M8	80	240	40
KEM V Winter + M10	90	270	50
KEM V Winter + M12	110	330	60
KEM V Winter + M16	125	380	80
KEM V Winter + M20	170	510	100
KEM V Winter + M24	210	630	120
KEM V Winter + M30	270	810	150

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Characteristic resistance - Shear - V_{Rk} [kN]

Art. nr.	embedment depth	Characteristic resistance	
	hef	Shear - V_{Rk}	
		Static and quasi-static loads	
		Carbon steel 5.8	Stainless steel A4 70
KEM V Winter + M8	80	11	13
KEM V Winter + M10	90	17	20
KEM V Winter + M12	110	25	30
KEM V Winter + M16	125	47	55
KEM V Winter + M20	170	74	86
KEM V Winter + M24	210	106	124
KEM V Winter + M30	270	168	140

Design resistance - Tension - N_{Rd} [kN] – Carbon steel 5.8

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

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

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

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Permissible resistance - Tension - N [kN] – Carbon steel 5.8

Art. nr.	embedment depth	Permissible resistance – Carbon steel 5.8	
	hef	Tension - N [kN]	
		Cracked concrete	Non-cracked concrete
		C20/25	C20/25
KEM V Winter + M8	80	3.8	8.6
KEM V Winter + M10	90	5.6	13.5
KEM V Winter + M12	110	9.1	19.7
KEM V Winter + M16	125	13.7	27.3
KEM V Winter + M20	170	23.3	43.3
KEM V Winter + M24	210	34.5	59.4
KEM V Winter + M30	270	60.6	86.6

Permissible resistance - Shear - V [kN]

Art. nr.	embedment depth	Permissible resistance	
	hef	Shear - V	
		Static and quasi-static loads	
		Carbon steel 5.8	Stainless steel A4 70
KEM V Winter + M8	80	6.3	5.9
KEM V Winter + M10	90	9.9	9.2
KEM V Winter + M12	110	14.5	13.7
KEM V Winter + M16	125	26.9	25.2
KEM V Winter + M20	170	42	39.3
KEM V Winter + M24	210	60.5	56.7
KEM V Winter + M30	270	96.2	42

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

Art. nr.	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 Winter + M8	80	10	1.6	1.6	120	240	2
KEM V Winter + M10	90	12	1.7	1.6	135	270	2
KEM V Winter + 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

Art. nr.	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 $C_{cr} = C_{min}$	spacing $S_{cr} = S_{min}$	max torque $T_{inst \max}$
	min embedment depth hef	Stud diameter	drill hole d_0	Tension - N	Shear - V			
KEM V Winter + BRP Ø12	50	M6 M8	12	0.3	0.7	100	250	2
KEM V Winter + BRP Ø15	85	M8 M10	16	0.3	0.7	100	250	2
KEM V Winter + 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

Art. nr.	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 Winter + BRP Ø12	50	M6 M8	12	0.1	0.7	100	250	2
KEM V Winter + BRP Ø15	85	M8 M10	16	0.1	0.7	100	250	2
KEM V Winter + 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

Art. nr.	embedment depth	Installation parameteres				
	hef	Ø drilling - d_0	drilling depth (zyl.) - $h_0 \geq$	Max. fixture hole Ø - $d_f \leq$	Wrench size DIN 934 (ISO 4032) - SW	Max installation torque - $T_{inst,max}$
KEM V Winter + M8	80	10	80	9	13	10
KEM V Winter + M10	90	12	90	12	17	20
KEM V Winter + M12	110	14	110	14	19	40
KEM V Winter + M16	125	18	125	18	24	80
KEM V Winter + M20	170	24	170	22	30	120
KEM V Winter + M24	210	28	210	26	36	160
KEM V Winter + M30	270	35	270	33	46	200

Notes to the load charts of threaded rods on concrete:

1kN $\approx$ 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 $a_{eq} = 0,85$ (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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