

R-KEM II with Threaded Rods for Masonry

Universal polyester (styrene free) resin - European Approval for 15 substrates



Approvals and Reports

- ETA-12/0528



Product information

Features and benefits

- The most convenient bonded anchor for general purpose use
- Approved for 15 substrates
- Quick, secure and simple installation
- Product with wide spectrum of use in the medium load capacity area
- Ideal for applications where mechanical anchors are not suitable
- Easy dosage thanks to patented self-opening system and use of manual or pneumatic gun
- Option of use standard manual silicone gun
- Suitable for multiple use. Partly used product can be reused after fitting new nozzle

Applications

- Gates
- Window elements
- Canopies
- Sanitary appliances
- Railings
- Handrails
- Consoles
- Ladders
- Cable trays

Base materials

Approved for use in:

- Solid Concrete Block
- Solid Brick
- Solid Sand-lime Brick
- Hollow Sand-lime Brick
- Hollow Brick
- Hollow Lightweight Concrete Block
- Hollow-core Slab

Installation guide



Product information

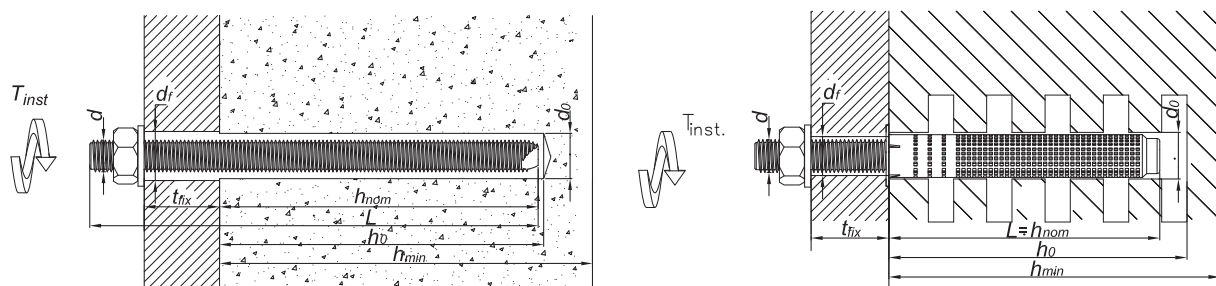
1. Drill hole to the required diameter and depth for stud size being used.
2. Solid substrates: clean the hole with brush and hand pump at least four times each. It is very important and necessary before installation. Hollow substrates: insert mesh sleeve into the hole.
3. Insert cartridge into gun and attach nozzle.
4. Dispense to waste until even colour is obtained.
5. Solid substrates: Insert the mixing nozzle to the far end of the hole and inject resin, slowly withdrawing the nozzle as the hole is filled to 2/3 of its depth. Hollow substrates: Insert the mixing nozzle to the far end of the hole and inject resin, slowly withdrawing the nozzle as the hole is filled to the surface.
6. Immediately insert the stud, slowly and with slight twisting motion. Remove any excess resin around the hole before it sets and leave it undisturbed until the curing time elapses.
7. Attach fixture and tighten the nut to the required torque.

Product Code	Resin	Description / Resin Type	Volume
			[ml]
R-KEM-II-175	R-KEMII	Styrene Free Polyester Resin	175
R-KEM-II-175-SET		Set with 4 studs and plastic sleeves	
R-KEM-II-300		Styrene Free Polyester Resin	300
R-KEM-II-300-SET		Set with 4 studs and plastic sleeves	
R-KEM-II-300-S	R-KEMII-S	High Temperature (Summer) / Slow Cure Styrene Free Polyester Resin	300
R-KEM-II-300-W	R-KEMII-W	Low Temperature (Winter) / Rapid Cure Styrene Free Polyester Resin	
R-KEM-II-380	R-KEMII	Styrene Free Polyester Resin	380

R-STUDS

Size	Product Code			Anchor		Fixture			
	Steel class 5.8	Steel class 8.8	Steel grade A4	Diameter	Length	Hole diameter	Max. thickness Solid substrates	Max. thickness Hollow substrates	
				d	L	d _f	t _{fix} Standard	t _{fix} Standard	t _{fix} Maximum
				[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
M8	R-STUDS-08110	R-STUDS-08110-88	R-STUDS-08110-A4	8	110	9	20	50	20
	R-STUDS-08160	-	R-STUDS-08160-A4	8	160	9	70	100	70
M10	R-STUDS-10130	R-STUDS-10130-88	R-STUDS-10130-A4	10	130	12	33	33	-
	R-STUDS-10170	-	R-STUDS-10170-A4	10	170	12	73	73	33
	R-STUDS-10190	-	R-STUDS-10190-A4	10	190	12	93	93	53
M12	R-STUDS-12160	R-STUDS-12160-88	R-STUDS-12160-A4	12	160	14	50	60	20
	R-STUDS-12190	-	R-STUDS-12190-A4	12	190	14	80	90	50
	R-STUDS-12220	-	R-STUDS-12220-A4	12	220	14	110	120	80
	R-STUDS-12260	-	R-STUDS-12260-A4	12	260	14	150	160	120
	R-STUDS-12300	-	R-STUDS-12300-A4	12	300	14	190	200	160
M16	R-STUDS-16190	R-STUDS-16190-88	R-STUDS-16190-A4	16	190	18	66	86	-
	R-STUDS-16220	-	R-STUDS-16220-A4	16	220	18	96	116	-
	R-STUDS-16260	-	R-STUDS-16260-A4	16	260	18	136	156	-
	R-STUDS-16300	-	R-STUDS-16300-A4	16	300	18	176	196	-
	R-STUDS-16380	-	R-STUDS-16380-A4	16	380	18	256	276	-

Installation data



Installation data

AERATED CONCRETE

Size			M8	M10	M12	M16
Thread diameter	d	[mm]	8	10	12	16
Hole diameter in substrate	d ₀	[mm]	10	12	14	18
Installation torque	T _{inst}	[Nm]	3	8	6	10
Min. hole depth in substrate	h ₀	[mm]	h _{nom} + 5	h _{nom} + 5	h _{nom} + 5	h _{nom} + 5
Installation depth	h _{nom}	[mm]	80	85	95	105
Min. spacing	s _{min}	[mm]	50	50	50	54
Min. edge distance	c _{min}	[mm]	50	50	50	54

CERAMIC SOLID SUBSTRATES

Size			M8	M10	M12	M16
Thread diameter	d	[mm]	8	10	12	16
Hole diameter in substrate	d ₀	[mm]	10	12	14	18
Installation torque	T _{inst}	[Nm]	5	8	10	15
Min. hole depth in substrate	h ₀	[mm]	h _{nom} + 5	h _{nom} + 5	h _{nom} + 5	h _{nom} + 5
Installation depth	h _{nom}	[mm]	80	85	95	105
Min. spacing	s _{min}	[mm]	50	-	50	54
Min. edge distance	c _{min}	[mm]	50	-	50	54

HOLLOW SUBSTRATES

Size			M8		M10		M12		M16
Plastic mesh sleeve size	d _{xl}		12x50	12x80	15x125	15x85	15x125	15x85	20x85
Thread diameter	d	[mm]	8	8	10	10	12	12	16
Hole diameter in substrate	d ₀	[mm]	12	12	16	16	16	16	20
Installation torque	T _{inst}	[Nm]	3	3	4	4	6	6	10
Min. hole depth in substrate	h ₀	[mm]	h _{nom} + 5	h _{nom} + 5	h _{nom} + 5	h _{nom} + 5	h _{nom} + 5	h _{nom} + 5	h _{nom} + 5
Min. spacing	s _{min}	[mm]	100	100	100	100	100	100	120
Min. edge distance	c _{min}	[mm]	100	100	100	100	100	100	120
STANDARD EMBEDMENT DEPTH									
Installation depth	h _{nom,s}	[mm]	50	-	-	85	-	85	85
MAXIMUM EMBEDMENT DEPTH									
Installation depth	h _{nom,max}	[mm]	-	80	125	-	125	-	-

Minimum working and curing time

R-KEM II

Resin temperature	Concrete temperature	Curing time*	Working time
[°C]	[°C]	[min]	[min]
5	-20	-	-
5	-15	-	-
5	-10	-	-
5	-5	8 h	70
5	0	4 h	45
5	5	2 h	25
10	10	1.5 h	15
15	15	1 h	9
20	20	45	5
25	30	30	2
25	35	-	-
25	40	-	-

Installation data

R-KEMII-W

Resin temperature	Concrete temperature	Curing time*	Working time
[°C]	[°C]	[min]	[min]
5	-20	24 h	45
5	-15	18 h	30
5	-10	8 h	20
5	-5	5 h	11
5	0	2 h	7
5	5	1 h	5
10	10	45	2
15	15	30	1.5
20	20	15	1
25	30	-	-
25	35	-	-
25	40	-	-

R-KEMII-S

Resin temperature	Concrete temperature	Curing time*	Working time
[°C]	[°C]	[min]	[min]
5	-20	-	-
5	-15	-	-
5	-10	-	-
5	-5	24 h	180
5	0	18 h	120
5	5	12 h	60
10	10	8 h	45
15	15	6 h	25
20	20	4 h	15
25	30	1.5 h	7
25	35	1 h	6
25	40	45	5

Mechanical properties

Size			M8	M10	M12	M16
R-STUDS Metric Threaded Rods - Steel Class 5.8						
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm ²]	500	500	500	500
Nominal yield strength - tension	f_{yk}	[N/mm ²]	400	400	400	400
Cross sectional area - tension	A_s	[mm ²]	36.6	58	84.3	157
Elastic section modulus	W_{el}	[mm ³]	31.2	62.3	109.2	277.5
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	19	37	65	166
Design bending resistance	M	[Nm]	15	30	52	133
Allowable bending resistance	M_{rec}	[Nm]	11	21	37	95
R-STUDS Metric Threaded Rods - Steel Class 8.8						
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm ²]	800	800	800	800
Nominal yield strength - tension	f_{yk}	[N/mm ²]	640	640	640	640
Cross sectional area - tension	A_s	[mm ²]	36.6	58	84.3	157
Elastic section modulus	W_{el}	[mm ³]	31.2	62.3	109.2	277.5
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	30	60	105	266
Design bending resistance	M	[Nm]	24	48	84	213
Allowable bending resistance	M_{rec}	[Nm]	17	34	60	152

Mechanical properties

Size			M8	M10	M12	M16
R-STUDS Metric Threaded Rods - A4						
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm ²]	700	700	700	700
Nominal yield strength - tension	f_{yk}	[N/mm ²]	350	350	350	350
Cross sectional area - tension	A_s	[mm ²]	36.6	58	84.3	157
Elastic section modulus	W_{el}	[mm ³]	31.2	62.3	109.2	277.5
Characteristic bending resistance	$M_{Rk,s}^0$	[Nm]	26	52	92	233
Design bending resistance	M	[Nm]	17	34	59	149
Allowable bending resistance	M_{rec}	[Nm]	12	24	42	107

Basic performance data

R-STUDS LIGHT

Performance data for single anchor without influence of edge distance and spacing

Size		M8		M10		M12		M16	
Substrate type		-	Hollow substrates						
Plastic mesh sleeve size		-	12x50	12x80	15x85	15x125	15x85	15x125	20x85
MEAN ULTIMATE LOAD									
TENSION AND SHEAR LOAD $F_{R,m}$									
Silicate hollow block min 12MPa (eg KS Ratio Block 8 DF)	[kN]	3.42	3.50	3.73	5.11	4.16	4.48	4.24	
Perforated ceramic blocks min 12MPa (eg Proton Hlz 12/0.9 DF)	[kN]	3.21	3.54	3.87	4.03	3.97	4.16	3.69	
Perforated ceramic blocks min 15MPa (eg Wienerberger Porotherm)	[kN]	2.04	2.84	3.07	3.68	3.74	3.99	3.51	
Perforated ceramic blocks min 10MPa (eg Leiter Thermopor)	[kN]	2.08	2.98	3.19	3.78	3.68	4.03	3.77	
Perforated ceramic blocks min 15MPa (eg MEGA MAX)	[kN]	2.86	3.43	3.74	3.59	3.71	3.94	3.80	
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Mono Rect)	[kN]	1.24	1.25	2.49	2.74	2.82	2.78	2.14	
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Rect)	[kN]	1.73	1.60	2.37	2.51	2.41	2.68	2.10	
Perforated ceramic blocks min 6.0MPa (eg LS Monomur)	[kN]	1.30	1.39	1.99	2.06	2.05	2.12	2.05	
Perforated ceramic blocks min 6MPa (eg SM BGV Thermo)	[kN]	1.45	1.45	2.22	2.17	2.19	2.24	2.25	
Perforated ceramic blocks min 6.0MPa (eg SM BGV Thermo Plus)	[kN]	1.51	1.60	1.39	1.45	1.86	2.07	1.75	
Lightweight concrete hollow block min 2.0MPa	[kN]	1.73	2.38	3.52	3.00	3.93	3.75	3.92	
CHARACTERISTIC LOAD									
TENSION AND SHEAR LOAD $F_{R,k}$									
Silicate hollow block min 12MPa (eg KS Ratio Block 8 DF)	[kN]	2.50	2.50	2.50	3.50	3.00	3.00	3.00	
Perforated ceramic blocks min 12MPa (eg Proton Hlz 12/0.9 DF)	[kN]	2.00	2.50	2.50	2.50	2.50	2.50	2.50	
Perforated ceramic blocks min 15MPa (eg Wienerberger Porotherm)	[kN]	1.50	2.00	2.00	2.50	2.50	2.50	2.50	
Perforated ceramic blocks min 10MPa (eg Leiter Thermopor)	[kN]	1.50	2.00	2.00	2.50	2.50	2.50	2.50	
Perforated ceramic blocks min 15MPa (eg MEGA MAX)	[kN]	2.00	2.50	2.50	2.50	2.50	2.50	2.50	
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Mono Rect)	[kN]	0.90	0.90	1.50	2.00	2.00	2.00	1.20	
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Rect)	[kN]	0.90	1.20	1.50	1.50	1.50	2.00	1.50	
Perforated ceramic blocks min 6.0MPa (eg LS Monomur)	[kN]	0.90	0.90	1.20	1.50	1.50	1.50	1.50	
Perforated ceramic blocks min 6MPa (eg SM BGV Thermo)	[kN]	0.90	0.90	1.50	1.50	1.50	1.50	1.50	
Perforated ceramic blocks min 6.0MPa (eg SM BGV Thermo Plus)	[kN]	0.90	1.20	0.90	0.90	1.20	1.50	1.20	
Lightweight concrete hollow block min 2.0MPa	[kN]	1.20	1.50	2.50	2.00	2.50	2.50	2.50	

Basic performance data

Size		M8	M10	M12	M16
DESIGN LOAD					
TENSION AND SHEAR LOAD F_{Rd}					
Silicate hollow block min 12MPa (eg KS Ratio Block 8 DF)	[kN]	1.00	1.00	1.00	1.20
Perforated ceramic blocks min 12MPa (eg Proton Hlz 12/0.9 DF)	[kN]	0.88	1.00	1.20	1.40
Perforated ceramic blocks min 15MPa (eg Wienerberger Porotherm)	[kN]	0.60	0.80	1.00	1.40
Perforated ceramic blocks min 10MPa (eg Leiter Thermopor)	[kN]	0.60	0.80	0.80	1.00
Perforated ceramic blocks min 15MPa (eg MEGA MAX)	[kN]	0.80	1.00	1.40	1.60
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Mono Rect)	[kN]	0.36	0.36	0.80	0.80
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Rect)	[kN]	0.48	0.48	0.60	0.80
Perforated ceramic blocks min 6.0MPa (eg LS Monomur)	[kN]	0.36	0.36	0.60	0.60
Perforated ceramic blocks min 6MPa (eg SM BGV Thermo)	[kN]	0.36	0.36	0.60	0.60
Perforated ceramic blocks min 6.0MPa (eg SM BGV Thermo Plus)	[kN]	0.48	0.48	0.48	0.60
Lightweight concrete hollow block min 2.0MPa	[kN]	0.48	0.60	1.00	1.40
RECOMMENDED LOAD					
TENSION AND SHEAR LOAD F_{rec}					
Silicate hollow block min 12MPa (eg KS Ratio Block 8 DF)	[kN]	0.71	0.71	0.71	0.86
Perforated ceramic blocks min 12MPa (eg Proton Hlz 12/0.9 DF)	[kN]	0.63	0.71	0.86	1.00
Perforated ceramic blocks min 15MPa (eg Wienerberger Porotherm)	[kN]	0.43	0.57	0.71	1.00
Perforated ceramic blocks min 10MPa (eg Leiter Thermopor)	[kN]	0.43	0.57	0.57	0.71
Perforated ceramic blocks min 15MPa (eg MEGA MAX)	[kN]	0.57	0.71	1.00	1.14
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Mono Rect)	[kN]	0.26	0.26	0.57	0.57
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Rect)	[kN]	0.34	0.34	0.43	0.57
Perforated ceramic blocks min 6.0MPa (eg LS Monomur)	[kN]	0.26	0.26	0.43	0.43
Perforated ceramic blocks min 6MPa (eg SM BGV Thermo)	[kN]	0.26	0.26	0.43	0.43
Perforated ceramic blocks min 6.0MPa (eg SM BGV Thermo Plus)	[kN]	0.34	0.34	0.34	0.43
Lightweight concrete hollow block min 2.0MPa	[kN]	0.34	0.43	0.71	1.00

R-STUDS LIGHT

Performance data for single anchor without influence of edge distance and spacing

Size		M8	M10	M12	M16
Substrate type	-	Solid substrates			
Plastic mesh sleeve size	-	-	-	-	-
MEAN ULTIMATE LOAD					
TENSION LOAD $N_{Ru,m}$					
Solid clay brick min 20MPa (eg Mz20/2.0)	[kN]	8.78	10.9	11.3	11.5
Autoclaved aerated concrete block min 6.0MPa (AAC7)	[kN]	2.65	3.24	4.11	4.68
Solid silicate brick min 20MPa (eg KS NF 20/2.0)	[kN]	7.54	8.00	8.30	8.50
SHEAR LOAD $V_{Ru,m}$					
Solid clay brick min 20MPa (eg Mz20/2.0)	[kN]	5.79	8.35	11.6	11.5
Autoclaved aerated concrete block min 6.0MPa (AAC7)	[kN]	2.43	3.41	4.36	4.48
Solid silicate brick min 20MPa (eg KS NF 20/2.0)	[kN]	5.86	8.11	7.91	8.23
CHARACTERISTIC LOAD					
TENSION LOAD N_{Rk}					
Solid clay brick min 20MPa (eg Mz20/2.0)	[kN]	6.00	7.00	7.00	7.00
Autoclaved aerated concrete block min 6.0MPa (AAC7)	[kN]	1.50	2.00	2.50	3.00
Solid silicate brick min 20MPa (eg KS NF 20/2.0)	[kN]	5.00	5.00	5.00	5.00
SHEAR LOAD V_{Rk}					
Solid clay brick min 20MPa (eg Mz20/2.0)	[kN]	3.50	5.00	7.00	7.00
Autoclaved aerated concrete block min 6.0MPa (AAC7)	[kN]	1.50	2.00	2.50	2.50
Solid silicate brick min 20MPa (eg KS NF 20/2.0)	[kN]	3.50	5.00	5.00	5.00

Basic performance data

Size		M8	M10	M12	M16
DESIGN LOAD					
TENSION LOAD N_{Rd}					
Solid clay brick min 20MPa (eg Mz20/2.0)	[kN]	2.40	2.80	2.80	2.80
Autoclaved aerated concrete block min 6.0MPa (AAC7)	[kN]	0.75	1.00	1.25	1.50
Solid silicate brick min 20MPa (eg KS NF 20/2.0)	[kN]	2.00	2.00	2.00	2.00
SHEAR LOAD V_{Rd}					
Solid clay brick min 20MPa (eg Mz20/2.0)	[kN]	1.40	2.00	2.80	2.80
Autoclaved aerated concrete block min 6.0MPa (AAC7)	[kN]	0.75	1.00	1.25	1.25
Solid silicate brick min 20MPa (eg KS NF 20/2.0)	[kN]	1.40	2.00	2.00	2.00
RECOMMENDED LOAD					
TENSION LOAD N_{rec}					
Solid clay brick min 20MPa (eg Mz20/2.0)	[kN]	1.71	2.00	2.00	2.00
Autoclaved aerated concrete block min 6.0MPa (AAC7)	[kN]	0.54	0.71	0.89	1.07
Solid silicate brick min 20MPa (eg KS NF 20/2.0)	[kN]	1.43	1.43	1.43	1.43
SHEAR LOAD V_{rec}					
Solid clay brick min 20MPa (eg Mz20/2.0)	[kN]	1.00	1.43	2.00	2.00
Autoclaved aerated concrete block min 6.0MPa (AAC7)	[kN]	0.54	0.71	0.89	0.89
Solid silicate brick min 20MPa (eg KS NF 20/2.0)	[kN]	1.00	1.43	1.43	1.43

Product commercial data

Size	Product Code	Volume [ml]	Quantity [pcs]			Weight [kg]			Bar Codes
			Box	Outer	Pallet	Box	Outer	Pallet	
M30	R-KEM-II-175 ¹⁾	175	10	50	600	6.0	30.0	390.0	5906675050249
	R-KEM-II-175-SET ¹⁾	175	5	5	315	7.1	7.1	477.3	5906675057866
	R-KEM-II-300 ¹⁾	300	10	10	840	5.9	5.9	529.0	5906675050256
	R-KEM-II-300-SET ¹⁾	300	5	5	315	4.9	4.9	341.0	5906675057859
	R-KEM-II-300-S ¹⁾	300	10	50	600	6.0	30.0	390.0	5906675064642
	R-KEM-II-300-W ¹⁾	300	10	50	600	6.0	30.0	390.0	5906675064666
	R-KEM-II-380 ¹⁾	380	10	10	560	7.6	7.6	455.6	5906675097770

¹⁾ ETA-12/0528