

## R-KEM II with Threaded Rods for Masonry (stone colour)

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



### Approvals and Reports

- ETA-12/0528
- UKTA-22/6108



### Product information

#### Features and benefits

- Approved for use in cracked and non-cracked concrete (EAD 330499-01-0601), working life up to 100 years
- 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 electric gun
- Option of use standard manual silicone gun
- Suitable for multiple use. Partly used product can be reused after fitting new nozzle

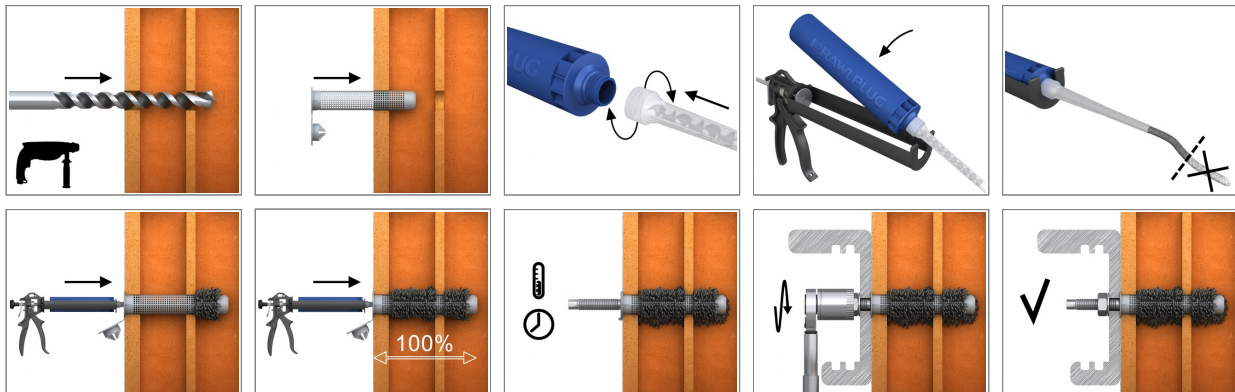
#### Applications

- 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
  - Aerated Concrete Block

### Installation guide



## Product information

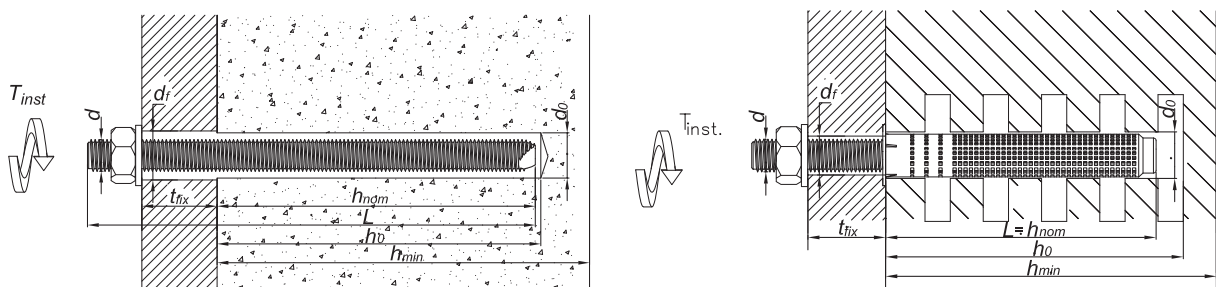
1. Drill hole to the required diameter and depth for stud size being used.
2. Solid substrates: Clean the drill hole thoroughly with brush and hand pump at least four times before installation.
3. Hollow substrates: insert mesh sleeve into the hole.
4. Insert cartridge into gun and attach nozzle.
5. Dispense to waste until even colour is obtained.
6. Solid substrates: Insert the mixer nozzle to the bottom of the drill hole and inject resin, slowly withdrawing the nozzle as the hole is filled to 70% of its depth.
7. Hollow substrates: Insert the mixer nozzle to the bottom of the drill hole and inject resin, slowly withdrawing the nozzle as the hole is filled to 100% of its depth.
8. 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.
9. Attach fixture and tighten the nut to the required torque.

Product Code	Resin	Description / Resin Type	Volume
			[ml]
R-KEM-II-300-STONE	R-KEMII	Stone colour Styrene Free Polyester Resin	300
R-KEM-II-410-STONE			410

### R-STUDS

Size	Product Code			Anchor		Fixture				
	Steel class 5.8	Steel class 8.8	Steel grade A4	Diameter	Length	Max. thickness $t_{fix}$ for:		Hole diameter	Max. thickness $t_{fix}$ for: R-STUDS	Max. thickness $t_{fix}$ for: R-STUDS HYBRID
						$h_{nom, 6d}$	$h_{nom, 12d}$			
				$d$	$L$	$h_{nom, 6d}$	$h_{nom, 12d}$	$d_f$	$h_{nom, 12d}$	$h_{nom, 12d}$
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			
M8	R-STUDS-08110	R-STUDS-08110-88	R-STUDS-08110-A4	8	110	52	4	9	4	4
	R-STUDS-08160	-	R-STUDS-08160-A4	8	160	102	54	9	54	54
M10	R-STUDS-10130	R-STUDS-10130-88	R-STUDS-10130-A4	10	130	58	-	12	-	-
	R-STUDS-10170	-	-	10	170	98	38	12	38	38
	R-STUDS-10190	-	-	10	190	118	58	12	58	58
M12	R-STUDS-12160	R-STUDS-12160-88	R-STUDS-12160-A4	12	160	73	1	14	1	1
	R-STUDS-12190	-	R-STUDS-12190-A4	12	190	103	31	14	31	31
	R-STUDS-12220	-	-	12	220	133	61	14	61	-
	R-STUDS-12260	-	-	12	260	173	101	14	101	101
	R-STUDS-12300	-	R-STUDS-12300-A4	12	300	213	141	14	141	141
M16	R-STUDS-16190	R-STUDS-16190-88	R-STUDS-16190-A4	16	190	75	-	18	-	-
	R-STUDS-16220	-	-	16	220	105	9	18	9	9
	R-STUDS-16260	-	-	16	260	145	49	18	49	49
	R-STUDS-16300	-	-	16	300	185	89	18	89	89
	R-STUDS-16380	-	-	16	380	265	169	18	169	169

## Installation data



## Installation data

### AERATED CONCRETE

Size			M8	M10	M12	M16
Thread diameter	d	[mm]	8	10	12	16
Hole diameter in substrate	d <sub>0</sub>	[mm]	10	12	14	18
Installation torque	T <sub>inst</sub>	[Nm]	3	4	6	10
Min. hole depth in substrate	h <sub>0</sub>	[mm]	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5
Min. installation depth	h <sub>nom</sub>	[mm]	80	85	95	105
Min. spacing	s <sub>min</sub>	[mm]	50	50	50	54
Min. edge distance	c <sub>min</sub>	[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 <sub>0</sub>	[mm]	10	12	14	18
Installation torque	T <sub>inst</sub>	[Nm]	5	8	10	15
Min. hole depth in substrate	h <sub>0</sub>	[mm]	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5
Min. installation depth	h <sub>nom</sub>	[mm]	80	85	95	105
Min. spacing	s <sub>min</sub>	[mm]	50	50	50	54
Min. edge distance	c <sub>min</sub>	[mm]	50	50	50	54

### HOLLOW SUBSTRATES

Size			M8		M10		M12		M16
Thread diameter	d	[mm]	8	8	10	10	12	12	16
Hole diameter in substrate	d <sub>0</sub>	[mm]	12	12	16	16	16	16	20
Installation torque	T <sub>inst</sub>	[Nm]	3	3	4	4	6	6	10
Min. hole depth in substrate	h <sub>0</sub>	[mm]	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5	h <sub>nom</sub> + 5
Min. installation depth	h <sub>nom</sub>	[mm]	50	80	85	125	85	125	85
Min. spacing	s <sub>min</sub>	[mm]	100	100	100	100	100	100	120
Min. edge distance	c <sub>min</sub>	[mm]	100	100	100	100	100	100	120
Plastic mesh sleeve size		[mm]	12x50	12x80	16x85	16x130	16x85	16x130	20x85

## 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	-	-

\*For wet concrete the curing time must be doubled

## 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	-	-

\*For wet concrete the curing time must be doubled

### 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

\*For wet concrete the curing time must be doubled

## Mechanical properties

Size			M8	M10	M12	M16
<b>R-STUDS Metric Threaded Rods - Steel Class 5.8</b>						
Nominal ultimate tensile strength - tension	$f_{uk}$	[N/mm <sup>2</sup> ]	500	500	500	500
Nominal yield strength - tension	$f_{yk}$	[N/mm <sup>2</sup> ]	400	400	400	400
Cross sectional area - tension	$A_s$	[mm <sup>2</sup> ]	37	58	84	157
Elastic section modulus	$W_{el}$	[mm <sup>3</sup> ]	31	62	109	278
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

## Mechanical properties

Size			M8	M10	M12	M16
<b>R-STUDS Metric Threaded Rods - Steel Class 8.8</b>						
Nominal ultimate tensile strength - tension	$f_{uk}$	[N/mm <sup>2</sup> ]	800	800	800	800
Nominal yield strength - tension	$f_{yk}$	[N/mm <sup>2</sup> ]	640	640	640	640
Cross sectional area - tension	$A_s$	[mm <sup>2</sup> ]	37	58	84	157
Elastic section modulus	$W_{el}$	[mm <sup>3</sup> ]	31	62	109	278
Characteristic bending resistance	$M_{Rk,s}^0$	[Nm]	30	60	105	266
Design bending resistance	M	[Nm]	24	48	84	213
Allowable bending resistance	$M_{rec}$	[Nm]	17	34	60	152
<b>R-STUDS Metric Threaded Rods - Steel Class A4</b>						
Nominal ultimate tensile strength - tension	$f_{uk}$	[N/mm <sup>2</sup> ]	700	700	700	700
Nominal yield strength - tension	$f_{yk}$	[N/mm <sup>2</sup> ]	350	350	350	350
Cross sectional area - tension	$A_s$	[mm <sup>2</sup> ]	37	58	84	157
Elastic section modulus	$W_{el}$	[mm <sup>3</sup> ]	31	62	109	278
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	[mm]	12x50	12x80	16x85	16x130	16x85	16x130	20x85
<b>MEAN ULTIMATE LOAD</b>								
<b>TENSION AND SHEAR LOAD <math>F_{R,u,m}</math></b>								
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 Hz 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

## Basic performance data

Size		M8	M10	M12	M16			
<b>CHARACTERISTIC LOAD</b>								
TENSION AND SHEAR LOAD $F_{Rk}$								
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 Hz 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
<b>DESIGN LOAD</b>								
TENSION AND SHEAR LOAD $F_{Rd}$								
Silicate hollow block min 12MPa (eg KS Ratio Block 8 DF)	[kN]	1.00	1.00	1.00	1.40	1.20	1.20	1.20
Perforated ceramic blocks min 12MPa (eg Proton Hz 12/0.9 DF)	[kN]	0.88	1.00	1.20	1.40	1.40	1.60	1.60
Perforated ceramic blocks min 15MPa (eg Wienerberger Porotherm)	[kN]	0.60	0.80	1.00	1.00	1.40	1.40	1.00
Perforated ceramic blocks min 10MPa (eg Leiter Thermopor)	[kN]	0.60	0.80	0.80	1.00	1.00	1.40	1.20
Perforated ceramic blocks min 15MPa (eg MEGA MAX)	[kN]	0.80	1.00	1.40	1.40	1.60	1.60	1.60
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Mono Rect)	[kN]	0.36	0.36	0.80	0.80	0.80	0.80	0.60
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Rect)	[kN]	0.48	0.48	0.60	0.60	0.80	0.80	0.60
Perforated ceramic blocks min 6.0MPa (eg LS Monomur)	[kN]	0.36	0.36	0.60	0.60	0.60	0.60	0.60
Perforated ceramic blocks min 6MPa (eg SM BGV Thermo)	[kN]	0.36	0.36	0.60	0.60	0.60	0.60	0.60
Perforated ceramic blocks min 6.0MPa (eg SM BGV Thermo Plus)	[kN]	0.48	0.48	0.48	0.48	0.48	0.60	0.48
Lightweight concrete hollow block min 2.0MPa	[kN]	0.48	0.60	1.00	1.00	1.00	1.40	1.40

## Basic performance data

Size		M8	M10	M12	M16			
<b>RECOMMENDED LOAD</b>								
TENSION AND SHEAR LOAD $F_{rec}$								
Silicate hollow block min 12MPa (eg KS Ratio Block 8 DF)	[kN]	0.71	0.71	0.71	1.00	0.86	0.86	0.86
Perforated ceramic blocks min 12MPa (eg Proton Hz 12/0.9 DF)	[kN]	0.63	0.71	0.86	1.00	1.00	1.14	1.14
Perforated ceramic blocks min 15MPa (eg Wienerberger Porotherm)	[kN]	0.43	0.57	0.71	0.71	1.00	1.00	0.71
Perforated ceramic blocks min 10MPa (eg Leiter Thermopor)	[kN]	0.43	0.57	0.57	0.71	0.71	1.00	0.86
Perforated ceramic blocks min 15MPa (eg MEGA MAX)	[kN]	0.57	0.71	1.00	1.00	1.14	1.14	1.14
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Mono Rect)	[kN]	0.26	0.26	0.57	0.57	0.57	0.57	0.43
Perforated ceramic blocks min 6.0MPa (eg LS Tableau Rect)	[kN]	0.34	0.34	0.43	0.43	0.57	0.57	0.43
Perforated ceramic blocks min 6.0MPa (eg LS Monomur)	[kN]	0.26	0.26	0.43	0.43	0.43	0.43	0.43
Perforated ceramic blocks min 6MPa (eg SM BGV Thermo)	[kN]	0.26	0.26	0.43	0.43	0.43	0.43	0.43
Perforated ceramic blocks min 6.0MPa (eg SM BGV Thermo Plus)	[kN]	0.34	0.34	0.34	0.34	0.34	0.43	0.34
Lightweight concrete hollow block min 2.0MPa	[kN]	0.34	0.43	0.71	0.71	0.71	1.00	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	-	-	-	-	-
<b>MEAN ULTIMATE LOAD</b>					
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
<b>CHARACTERISTIC LOAD</b>					
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
<b>DESIGN LOAD</b>					
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
<b>RECOMMENDED LOAD</b>					
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

Product Code	Volume [ml]	Quantity [pcs]			Weight [kg]			Bar Codes
		Box	Outer	Pallet	Box	Outer	Pallet	
R-KEM-II-300-STONE <sup>1)</sup>	300	10	10	840	6.0	6.0	534.0	5906675038124
R-KEM-II-410-STONE <sup>1)</sup>	410	10	10	560	8.4	8.4	498.7	5906675424958

1) ETA-12/0528