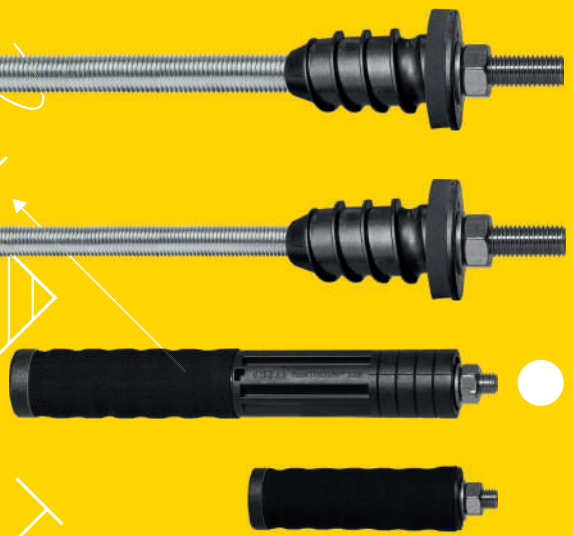


# CELO

Made in Germany



**Distance  
mounting system  
ResiTHERM®**



# ResiTHERM® Systems in comparison



	ResiTHERM® 16	ResiTHERM® 12	ResiTHERM® 37/200	ResiTHERM® 37/160	ResiTHERM® 37/120	ResiTHERM® 37S
European Technical Assessment (ETA)	✓	✓			✓	
Ageing-, weather-, and UV resistant nylon	✓	glass fibre reinforced			glass fibre reinforced	
Made in Germany	✓	✓			✓	
Attachment parts made of stainless steel A4	✓	✓			✓	
Halogen-free, no release of toxic or corrosive gases in case of fire	✓	✓			✓	
Thermal separation	✓	✓			✓	
With EPDM sealing, watertightness based on DIN EN 1027 <small>Gepüft auf Schlagregendichtheit vom Prüfzentrum für Bauelemente</small>	✓	✓			✗	
Recommended base materials	<p>Concrete, aerated concrete, Masonry (solid and perforated brick)</p>		<p>Perforated brick, aerated concrete</p>			
Suitable insulation thicknesses [mm]	<p>✓ <b>Concrete:</b> 60 - 300</p> <p><b>Masonry, aerated concrete:</b> 60 - 280</p> <p><b>Hollow brick:</b> 60 - 250</p>	<p>✓ <b>Concrete:</b> 60 - 220</p> <p><b>Masonry, aerated concrete:</b> 60 - 190</p> <p><b>Hollow brick:</b> 60 - 160</p>	<p>✓ 160 - 200</p>	<p>✓ 120-160</p>	<p>✓ 80-120</p>	<p>✗ only for non-insulated façades</p>
Area of application: heavy-duty fixings	Suitable for fastening heavy loads such as canopies, awnings, sun sails, railings, air conditioning units, French balconies and many more					
Connection thread	<p><b>M12,</b> <b>M10</b> with threaded stud adapter M12/M10 (see accessories p. 7)</p>					

# Distance mounting system

## ResiTHERM®

### 16 & 12



#### Advantages



- The perfect solution for mounting heavy loads on insulated facades without thermal bridges
- Suitable for concrete, aerated concrete and masonry made of perforated and solid bricks
- Wide range of applications, such as awnings, canopies, french balconies, satellite dishes, air conditioners, etc.
- High application flexibility: One set for all insulation types and thicknesses from 60-300 mm in concrete and 60-250 mm in perforated bricks (ResiTHERM® 16), from 60-220 mm in concrete and 60-160 mm in perforated bricks (ResiTHERM® 12)
- Time and cost savings due to simple and quick installation
- Reliable, durable, ETA-tested fixing
- Thermal separation module eliminates heat bridges efficiently and protects against mould and heat loss
- Pre-assembled, weather resistant EPDM sealing ensures safe sealing against driving rain up to wind force 11 (violent storm) and up to 3 mm displacement, watertightness based on DIN EN 1027
- No risk of corrosion due to high-quality materials such as stainless steel A4 and glass-fibre reinforced nylon

#### Suitable building materials

##### Very suitable

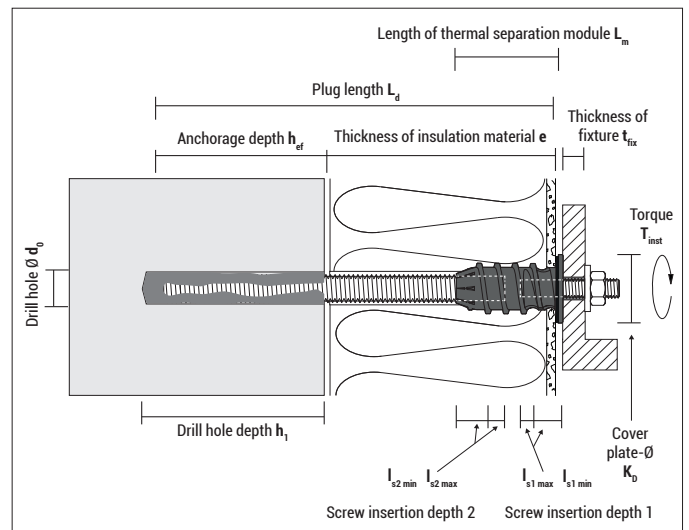


- |                                     |  |  |  |
|-------------------------------------|--|--|--|
| • Concrete                          |  | • Hollow brick                           |  |
| • Solid brick                       |  | • Hollow sand-lime brick                 |  |
| • Solid sand-lime brick             |  | • Lightweight hollow concrete blocks     |  |
| • Lightweight solid concrete blocks |  | • Natural stone (risk of discolouration) |  |
| • Aerated concrete                  |  |  |  |

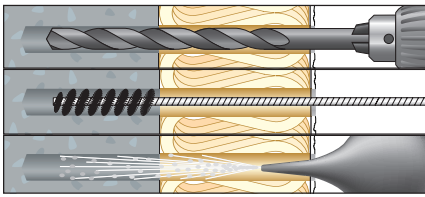
#### Approvals and certificates



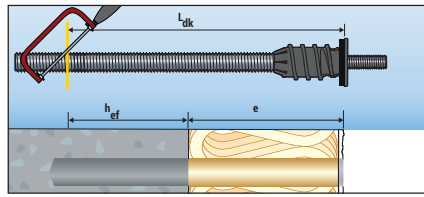
#### Mounting



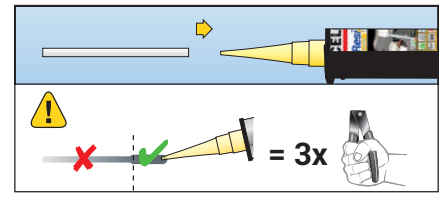
## Mounting in concrete



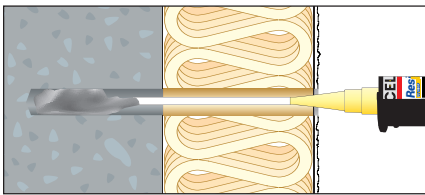
1. Drill a hole: Drill hole depth + insulation thickness
2. Clean the drill hole properly according to ETA:  
4x blow - 4x brush - 4x blow



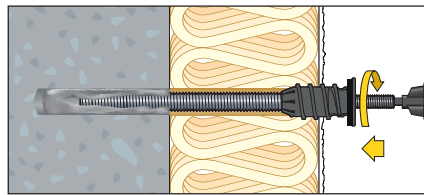
3. Cut the ResiTHERM® 16 or 12 to length:  
After determining the correct length, cut the threaded rod to length with a metal saw or similar.



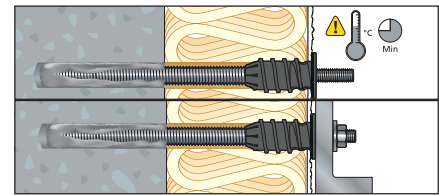
4. Attach the mixing nozzle extension MDV to the mixing nozzle MD.  
Squeeze out the injection mortar until the mortar has a uniform grey mixing colour - discard the pre-run of the first at least 3 strokes.



5. Fill at least 2/3 of the drill hole with composite mortar (start from the beginning). For number of strokes see mounting instructions at [www.celofixings.com](http://www.celofixings.com).  
**Important:** Follow the installation instructions and processing time of the ResiFIX injection mortar used in accordance with the approval/assessment.

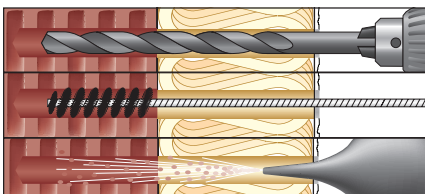


6. Screw in the ResiTHERM® 16 or 12 with the hexagon bit (included) and a cordless screwdriver until the seal is pressed against the plaster.  
**Note:** The thermal separation module drills itself through the insulation (additional sealing is not necessary, unless the plaster is very rough)

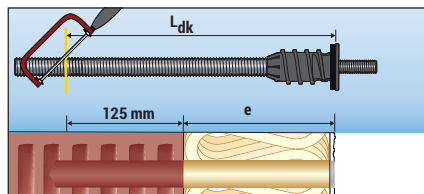


7. Observe curing time of the injection system, see cartridge label of the ResiFIX injection mortar.
8. Afterwards, the attachment can be mounted, max. torque  $T_{inst} = 25 \text{ Nm}$  (ResiTHERM® 16) or  $19 \text{ Nm}$  (ResiTHERM® 12)

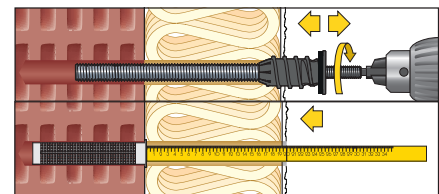
## Mounting in masonry [hollow brick]



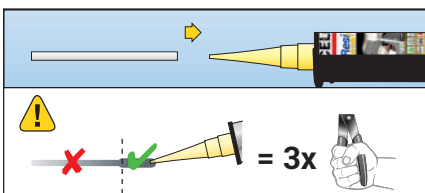
1. Drill a hole: Drill hole diameter = 20 mm.  
Drill hole depth  $\geq 140 \text{ mm}$  + insulation thickness (incl. plaster). Observe the drilling procedure of the approval/ assessment of ResiFIX injection mortar.  
**Perforated bricks and aerated concrete:** Rotary drilling - without impact
2. Clean the drill hole properly according to ETA:  
2x blow - 2x brush - 2x blow



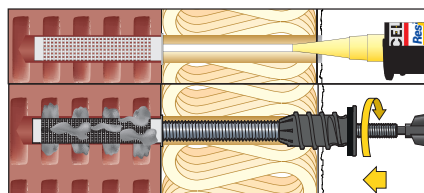
3. Cut the ResiTHERM® 16 or 12 to length:  
Correct length  $L_{dk}$ : Anchorage depth in plastic sleeve (125 mm) + insulation thickness  $e$  (incl. plaster)  
After determining the correct length, cut the threaded rod to length with a metal saw or similar.



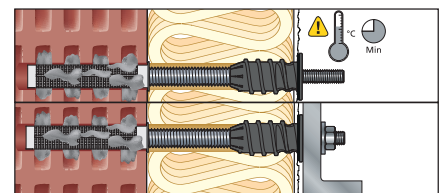
4. Enlarge the opening in the plaster for the collar of the plastic sleeve to 26 mm. To do this, briefly screw the thermal separation module in and out through the plaster for only approx. 2 thread turns or ream the plaster with a drill or drill with a bigger 26 mm drill.
5. Push the plastic sleeve into the drill hole with the help of a folding ruler or similar.



6. Attach the mixing nozzle extension MDV to the mixing nozzle MD.  
Squeeze out the injection mortar until the mortar has a uniform grey mixing colour - discard the pre-run of the first at least 3 strokes.



7. Fill the plastic sleeve completely with composite mortar (start from the beginning). For number of strokes see mounting instructions at [www.celofixings.com](http://www.celofixings.com)  
**Important:** Follow the installation instructions and processing time of the ResiFIX injection mortar used in accordance with the approval/assessment.



8. Screw in the ResiTHERM® 16 or 12 with the hexagon bit (included) and a cordless screwdriver until the seal is pressed against the plaster.  
**Note:** The thermal separation module drills itself through the insulation (additional sealing is not necessary, unless the plaster is very rough)

9. Observe curing time of the injection system, see cartridge label of the ResiFIX injection mortar.
10. Afterwards, the attachment can be mounted, max. torque  $T_{inst} = 25 \text{ Nm}$  (ResiTHERM® 16) or  $19 \text{ Nm}$  (ResiTHERM® 12)  
(Observe possible deviating max. installation torque in the ETA of the injection system used)



**ResiTHERM 16® Sets**



**ResiTHERM® 8.8 16/250 M12**

Type	Art-No	Content Set [preassembled]	Length L [mm]	Con-nection thread	Thickness of insula-tion e [mm]		€ / set		
								[set]	[sets]
Set ResiTHERM® 8.8 16/250 M12, 2 pieces	9250RTH162	2x ResiTHERM® 16, thermal separation module M16 / M12 2x Threaded rod M16x350, DIN 976, zinc plated, steel quality 8.8 2x Threaded stud M12x70, DIN 913, A4 2x Hexagon nut M12, DIN 934, A4 2x Washer M12, DIN 125, A4 1x Hexagon socket bit, size 6 1x Mixing nozzle extension 245 mm 2x Plastic sleeve SH 20x130 mm 1x Instruction manual ResiTHERM® 16	385	M12	Concrete: 60- 300 Solid brick, Aerated concrete: 60 - 280 Hollow brick: 60 - 250			1	8
Set ResiTHERM® 8.8 16/250 M12, 20 pieces	9250RTH1620	20x ResiTHERM® 16, thermal separation module M16 / M12 20x Threaded rod M16x350, DIN 976, zinc plated, steel quality 8.8 20x Threaded stud M12x70, DIN 913, A4 20x Hexagon nut M12, DIN 934, A4 20x Washer M12, DIN 125, A4 1x Hexagon socket bit, size 6 8x Mixing nozzle extension 245 mm 20x Plastic sleeve SH 20x130 mm 4x Instruction manual ResiTHERM® 16	385	M12	Concrete: 60- 300 Solid brick, Aerated concrete: 60 - 280 Hollow brick: 60 - 250			1	-



**ResiTHERM® A4 16/250 M12**



Type	Art-No	Content Set [preassembled]	Length L [mm]	Con-nection thread	Thickness of insula-tion e [mm]		€ / set		
								[set]	[sets]
Set ResiTHERM® A4 16/250 M12, 2 pieces	9X250RTH162	2x ResiTHERM® 16, thermal separation module M16 / M12 2x Threaded rod M16x350, DIN 976, stainless steel A4 2x Threaded stud M12x70, DIN 913, A4 2x Hexagon nut M12, DIN 934, A4 2x Washer M12, DIN 125, A4 1x Hexagon socket bit, size 6 1x Mixing nozzle extension 245 mm 2x Plastic sleeve SH 20x130 mm 1x Instruction manual ResiTHERM® 16	385	M12	Concrete: 60- 300 Solid brick, Aerated concrete: 60 - 280 Hollow brick: 60 - 250			1	8
Set ResiTHERM® A4 16/250 M12, 20 pieces	9X250RTH1620	20x ResiTHERM® 16, thermal separation module M16 / M12 20x Threaded rod M16x350, DIN 976, stainless steel A4 20x Threaded stud M12x70, DIN 913, A4 20x Hexagon nut M12, DIN 934, A4 20x Washer M12, DIN 125, A4 1x Hexagon socket bit, size 6 8x Mixing nozzle extension 245 mm 20x Plastic sleeve SH 20x130 mm 4x Instruction manual ResiTHERM® 16	385	M12	Concrete: 60- 300 Solid brick, Aerated concrete: 60 - 280 Hollow brick: 60 - 250			1	-

**ResiTHERM 12® Sets**



**ResiTHERM® 8.8 12/160 M12**

Type	Art-No	Content Set [preassembled]	Length L [mm]	Con-nection thread	Thickness of insula-tion e [mm]		€ / set		
								[set]	[sets]
Set ResiTHERM® 8.8 12/160 M12, 2 pieces	9160RTH122	2x ResiTHERM® 12, thermal separation module M12 / M12 2x Threaded rod M12x260, DIN 976, zinc plated, steel quality 8.8 2x Threaded stud M12x70, DIN 913, A4 2x Hexagon nut M12, DIN 934, A4 2x Washer M12, DIN 125, A4 1x Hexagon socket bit, size 6 1x Mixing nozzle extension 245 mm 2x Plastic sleeve SH 20x130 mm 1x Instruction manual ResiTHERM® 12	295	M12	Concrete: 60 - 220 Solid brick, Aerated concrete: 60 - 190 Hollow brick: 60 - 160			1	8
Set ResiTHERM® 8.8 12/160 M12, 20 pieces	9160RTH1220	20x ResiTHERM® 12, thermal separation module M12 / M12 20x Threaded rod M12x260, DIN 976, zinc plated, steel quality 8.8 20x Threaded stud M12x70, DIN 913, A4 20x Hexagon nut M12, DIN 934, A4 20x Washer M12, DIN 125, A4 1x Hexagon socket bit, size 6 8x Mixing nozzle extension 245 mm 20x Plastic sleeve SH 20x130 mm 4x Instruction manual ResiTHERM® 12	295	M12	Concrete: 60 - 220 Solid brick, Aerated concrete: 60 - 190 Hollow brick: 60 - 160			1	-



**ResiTHERM® A4 12/160 M12**



Type	Art-No	Content Set [preassembled]	Length L [mm]	Con-nection thread	Thickness of insula-tion e [mm]		€ / set		
								[set]	[sets]
Set ResiTHERM® A4 12/160 M12, 2 pieces	9X160RTH122	2x ResiTHERM® 12, thermal separation module M12 / M12 2x Threaded rod M12x260, DIN 976, stainless steel A4 2x Threaded stud M12x70, DIN 913, A4 2x Hexagon nut M12, DIN 934, A4 2x Washer M12, DIN 125, A4 1x Hexagon socket bit, size 6 1x Mixing nozzle extension 245 mm 2x Plastic sleeve SH 20x130 mm 1x Instruction manual ResiTHERM® 12	295	M12	Concrete: 60 - 220 Solid brick, Aerated concrete: 60 - 190 Hollow brick: 60 - 160			1	8
Set ResiTHERM® A4 12/160 M12, 20 pieces	9X160RTH1220	20x ResiTHERM® 12, thermal separation module M12 / M12 20x Threaded rod M12x260, DIN 976, stainless steel A4 20x Threaded stud M12x70, DIN 913, A4 20x Hexagon nut M12, DIN 934 A4 20x Washer M12, DIN 125, A4 1x Hexagon socket bit, size 6 8x Mixing nozzle extension 245 mm 20x Plastic sleeve SH 20x130 mm 4x Instruction manual ResiTHERM® 12	295	M12	Concrete: 60 - 220 Solid brick, Aerated concrete: 60 - 190 Hollow brick: 60 - 160			1	-

## ResiTHERM® 16 &amp; 12 accessories



## Two-hole nut driver DIN 3116C for adjusting ResiTHERM® 16 &amp; 12

Type	Art-No	Length L [mm]	Width W [mm]	Sheet thickness $t_m$ [mm]	Suitable for	€ / pc	[pcs]	[pcs]
Two-hole nut driver	155253AMT	155	25	3	ResiTHERM® 16 & 12		1	15



## Threaded stud adapter M12/M10, stainless steel A4 incl M10 nut and washer



Type	Art-No	Length L [mm]	Suitable for	€ / pc	[pcs]	[pcs]
Threaded stud adapter	X70M12M10ECT4	70	ResiTHERM® 16 & 12		4	60



## Vinylester VYSF (styrene free)

Type	Art-No	Content [ml]	Mixing nozzles included [pcs]	Shelf life [months]		€ / pc	[pcs]
VY 300 SF	300VSF	280	2	18	●		12
VY 345 SF	345VSF	345	2	18	●		12
VY 410 SF	410VYSF	410	1	18	●		12



## Vinylester VY ECO SF (styrene free)

Type	Art-No	Content [ml]	Mixing nozzles included [pcs]	Shelf life [months]		€ / pc	[pcs]
VY ECO 300 SF	300VYECOSF	300	2	18	●		12



## Polyester PYSF (styrene free)

Type	Art-No	Content [ml]	Mixing nozzles included [pcs]	Shelf life [months]		€ / pc	[pcs]
PY 165 SF	165PSF	165	2	18	●		1/12
PY 300 SF	300PSF	300	1	18	●		12
PY 345 SF	345PSF	345	1	18	●		12
PY 410 SF	410PYSF	410	1	18	●		12



Type	Art-No	Length [mm]	Suitable for drill hole Ø [mm]	Suitable for anchor rod	Connecting thread	€ / pc	[pcs]
RBS Ø20 for concrete and masonry	9M20RBK	200	18	M16	M6		5
Extension for RBS Ø20	MRBKH	–	all	all	M6		5
Handle for RBS Ø20	MRBKV	140	all	all	M6		5
RBK Ø20 for masonry*	9PLRBK	300	20	M16	–		5
Blow out pump AB	BOP	300	8	–	–		1

\*) not part of the ETA assessments of the ResiFIX injection mortars

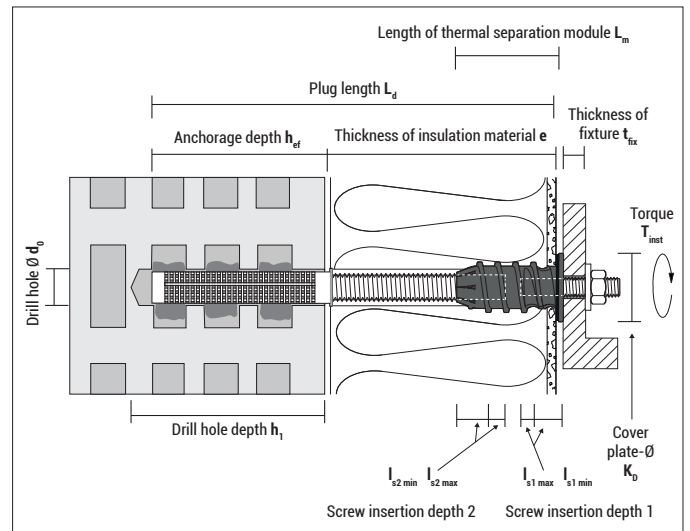
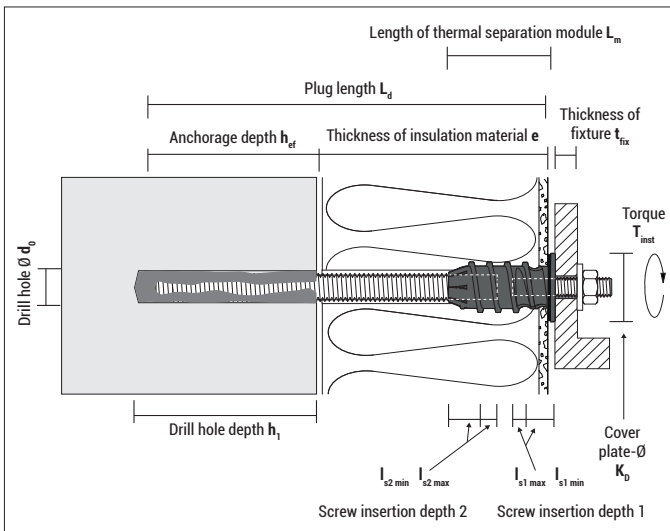
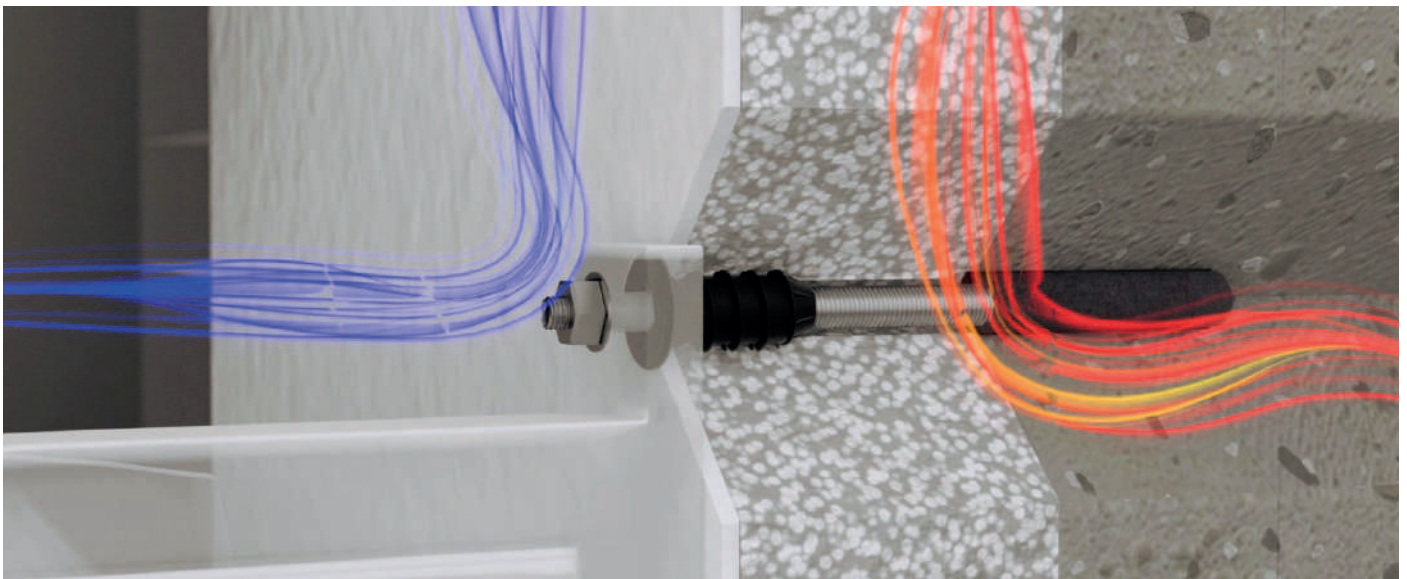


Type	Art-No	Outer-Ø [mm]	Length [mm]	€ / pc	[pcs]
MD	9MRMEA	–	215		20
MDV 10	9MDV	10	200		10
MDV 10	9500MDV	10	500		10



Type	Art-No	suitable for ResiFIX type	€ / pc	[pcs]
APP 300	300APP	300 / 165 / 280		1
APVM	345APVM	345 / 300 / 280 / 165		1
APP 380	380APP	410		1

ResiTHERM® 16 & 12 technical data



Installation parameters	Installation in concrete		Installation in aerated concrete/solid brick		Installation in perforated brick			
	ResiTHERM® 16	ResiTHERM® 12	ResiTHERM® 16	ResiTHERM® 12	ResiTHERM® 16	ResiTHERM® 12		
Plug length	$L_d$	[mm]	385 <sup>1)</sup>	295 <sup>1)</sup>	385 <sup>1)</sup>	295 <sup>1)</sup>	385 <sup>1)</sup>	295 <sup>1)</sup>
<b>Thickness of insulation material (incl. plaster)</b>	$e$	[mm]	<b>60 - max. 300</b>	<b>60 - max. 220</b>	<b>60 - max. 280</b>	<b>60 - max. 190</b>	<b>60 - max. 250</b>	<b>60 - max. 160</b>
Length of thermal separation module (to lower edge of cover plate)	$L_m$	[mm]	60	60	60	60	60	60
Diameter cover plate	$K_D$	[mm]	42	42	42	42	42	42
Threaded rod		[mm]	M16 x 350 <sup>1)</sup>	M12 x 260 <sup>1)</sup>	M16 x 350 <sup>1)</sup>	M12 x 260 <sup>1)</sup>	M16 x 350 <sup>1)</sup>	M12 x 260 <sup>1)</sup>
Insertion depth of threaded stud	$l_{s2 \text{ min-max}}$	[mm]	24-27	24-27	24-27	24-27	24-27	24-27
Drill hole diameter	$d_0$	[mm]	18	14	18	14	20	20
Drill hole depth	$h_1 \geq$	[mm]	90 + e	80 + e	110 + e	110 + e	140 + e	140 + e
Anchorage depth	$h_{ef}$	[mm]	80	70	100	100	125	125
Plastic sleeve SH			-	-	-	-	20-130	20-130
Connecting thread		[mm]	M12 <sup>3)</sup>	M12 <sup>3)</sup>	M12 <sup>3)</sup>	M12 <sup>3)</sup>	M12 <sup>3)</sup>	M12 <sup>3)</sup>
Insertion depth of M12 threaded stud	$l_{s1 \text{ min-max}}$	[mm]	30-34	30-34	30-34	30-34	30-34	30-34
Thickness of fixture	$t_{fix} \leq$	[mm]	24 <sup>2)</sup>	24 <sup>2)</sup>	24 <sup>2)</sup>	24 <sup>2)</sup>	24 <sup>2)</sup>	24 <sup>2)</sup>







<sup>1)</sup> Threaded rod has to be cut as needed.

For further technical values, see assessment of the ResiFIX injection system used.

<sup>2)</sup> When using the threaded stud with length  $L=70$  mm. Otherwise, a longer threaded stud or a longer metric screw can be used.

<sup>3)</sup> Alternative: Threaded stud adapter M12/M10, length 70 mm, stainless steel A4, Art-No X70M12M10ECT4

Permissible tension load and pressure load ResiTHERM® 16 <sup>1)</sup> at 24°C/40°C <sup>2)</sup>

M16 anchor rod in 8.8	applied injection mortar ResiFIX VY SF acc. ETA-10/0134		applied injection mortar ResiFIX VY SF acc. ETA-15/0320			
Base material	 Concrete C20/25 <sup>3)</sup>	 Solid sand-lime brick KS KS28-2,0 <sup>3)</sup>	 Solid brick MZ 20-2,0 <sup>1)</sup>	 Hollow sand-lime brick KSL 12-1,4 <sup>4)</sup>	 Hollow brick HLZ 12-1,25 <sup>4)</sup>	 Aerated concrete AAC 2 <sup>3)</sup>
Insulation thickness e	Permissible tension load $N_{per}$					
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
60-300 mm	4,57	2,00	2,29	1,65	1,11	0,71
Insulation thickness e	Permissible pressure load $P_{per}$					
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
60 - 220 mm	5,14	2,00	2,29	1,65	1,11	0,71
221 - 300 mm	5,14	2,00	2,29	1,65	1,11	0,71
Min. anchorage depth $h_{ef}$	80	100	100	130	130	100







<sup>1)</sup> Loads include the partial safety factors of the material given in the ETA as well as a partial safety factor for the actions of  $\gamma_F = 1.4$ .

<sup>2)</sup> For other temperature ranges see ETA-assessment.

<sup>3)</sup> In full material the tension load resistance can be used also for the pressure load resistance.

<sup>4)</sup> In hollow materials the pressure load resistance specified in the ETA can be applied, if the setting depth is deep enough to include minimum 5 webs with the injection mortar. If the setting depth is lower and does not include 5 webs, then the pressure load resistance must be reduced.

Permissible tension load and pressure load ResiTHERM® 12 <sup>1)</sup> at 24°C/40°C <sup>2)</sup>

M12 anchor rod in 8.8	applied injection mortar ResiFIX VY SF acc. ETA-10/0134		applied injection mortar ResiFIX VY SF acc. ETA-15/0320			
Base material	 Concrete C20/25 <sup>3)</sup>	 Solid sand-lime brick KS KS28-2,0 <sup>3)</sup>	 Solid brick MZ 20-2,0 <sup>1)</sup>	 Hollow sand-lime brick KSL 12-1,4 <sup>4)</sup>	 Hollow brick HLZ 12-1,25 <sup>4)</sup>	 Aerated concrete AAC 2 <sup>3)</sup>
Insulation thickness e	Permissible tension load $N_{per}$					
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
60 - 220 mm	5,14	2,00	2,00	1,65	1,11	0,71
Insulation thickness e	Permissible pressure load $P_{per}$					
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
60 - 120 mm	5,14	2,00	2,00	1,65	1,11	0,71
121 - 160 mm	5,14	2,00	2,00	1,65	1,11	0,71
161 - 220 mm	2,86	2,00	2,00	1,65	1,11	0,71
Min. anchorage depth $h_{ef}$	70	100	100	130	130	100

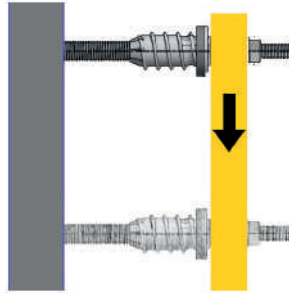
<sup>1)</sup> Loads include the partial safety factors of the material given in the ETA as well as a partial safety factor for the actions of  $\gamma_F = 1.4$ .

<sup>2)</sup> For other temperature ranges see ETA-assessment.

<sup>3)</sup> In full material the tension load resistance can be used also for the pressure load resistance.

<sup>4)</sup> In hollow materials the pressure load resistance specified in the ETA can be applied, if the setting depth is deep enough to include minimum 5 webs with the injection mortar. If the setting depth is lower and does not include 5 webs, then the pressure load resistance must be reduced.





**Maximum shear loads V <sup>1)</sup> at max. 3 or 5 mm displacement per ResiTHERM<sup>®</sup> if the free outer end of the ResiTHERM<sup>®</sup> 16 & 12 is not freely rotatable [e.g. connected double fixing] at 24°C/40°C <sup>2)</sup>**

Not free rotatable anchor rod M16 in 8.8	applied injection mortar ResiFIX VY SF acc. ETA-10/0134						applied injection mortar ResiFIX VY SF acc. ETA-15/0320						
Base material	Concrete C20/25	Solid sand-lime brick KS KS28-2,0	Solid brick MZ 20-2,0	Hollow sand-lime brick KSL 12-1,4	Hollow brick HLZ 12-1,25	Aerated concrete AAC 2							

**if displacement is 3 mm**

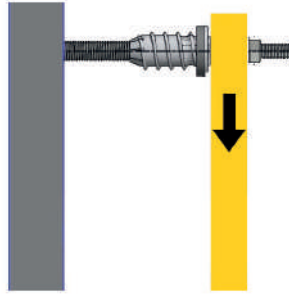
Insulation thickness e [mm]	Maximum shear load V [kN]											
	ResiTHERM <sup>®</sup> 16		ResiTHERM <sup>®</sup> 12		ResiTHERM <sup>®</sup> 16		ResiTHERM <sup>®</sup> 12		ResiTHERM <sup>®</sup> 16		ResiTHERM <sup>®</sup> 12	
	16	12	16	12	16	12	16	12	16	12	16	12
60	2,14	1,43	2,00	1,43	2,14	1,43	1,53	1,43	2,14	1,43	0,89	0,89
80	2,14	1,43	2,00	1,43	2,14	1,43	1,53	1,43	2,14	1,43	0,89	0,89
100	2,14	1,43	2,00	1,43	2,14	1,43	1,53	1,43	2,14	1,43	0,89	0,89
120	1,84	1,01	1,84	1,01	1,84	1,01	1,53	1,01	1,84	1,01	0,89	0,89
140	1,49	0,85	1,49	0,85	1,49	0,85	1,49	0,85	1,49	0,85	0,89	0,85
160	1,15	0,69	1,15	0,69	1,15	0,69	1,15	0,69	1,15	0,69	0,89	0,69
180	0,80	0,54	0,80	0,54	0,80	0,54	0,80	0,54	0,80	0,54	0,80	0,54
200	0,71	0,38	0,71	0,38	0,71	0,38	0,71	0,38	0,71	0,38	0,71	0,38
220	0,61	0,22	0,61	0,22	0,61	0,22	0,61	0,22	0,61	0,22	0,61	0,22
240	0,51	-	0,51	-	0,51	-	0,51	-	0,51	-	0,51	-
250	0,47	-	0,47	-	0,47	-	0,47	-	0,47	-	0,47	-
260	0,42	-	0,42	-	0,42	-	0,42	-	0,42	-	0,42	-
280	0,32	-	0,32	-	0,32	-	0,32	-	0,32	-	0,32	-
300	0,22	-	0,22	-	0,22	-	0,22	-	0,22	-	0,22	-

**if displacement is 5 mm**

Insulation thickness e [mm]	Maximum shear load V [kN]											
	ResiTHERM <sup>®</sup> 16		ResiTHERM <sup>®</sup> 12		ResiTHERM <sup>®</sup> 16		ResiTHERM <sup>®</sup> 12		ResiTHERM <sup>®</sup> 16		ResiTHERM <sup>®</sup> 12	
	16	12	16	12	16	12	16	12	16	12	16	12
60	2,14	1,43	2,00	1,43	2,14	1,43	1,53	1,43	2,14	1,43	0,89	0,89
80	2,14	1,43	2,00	1,43	2,14	1,43	1,53	1,43	2,14	1,43	0,89	0,89
100	2,14	1,43	2,00	1,43	2,14	1,43	1,53	1,43	2,14	1,43	0,89	0,89
120	2,14	1,43	2,00	1,43	2,14	1,43	1,53	1,43	2,14	1,43	0,89	0,89
140	2,14	1,29	2,00	1,29	2,14	1,29	1,53	1,29	2,14	1,29	0,89	0,89
160	1,76	1,06	1,76	1,06	1,76	1,06	1,53	1,06	1,76	1,06	0,89	0,89
180	1,27	0,82	1,27	0,82	1,27	0,82	1,27	0,82	1,27	0,82	0,89	0,82
200	1,12	0,59	1,12	0,59	1,12	0,59	1,12	0,59	1,12	0,59	0,89	0,59
220	0,97	0,35	0,97	0,35	0,97	0,35	0,97	0,35	0,97	0,35	0,89	0,35
240	0,82	-	0,82	-	0,82	-	0,82	-	0,82	-	0,82	-
250	0,74	-	0,74	-	0,74	-	0,74	-	0,74	-	0,74	-
260	0,67	-	0,67	-	0,67	-	0,67	-	0,67	-	0,67	-
280	0,51	-	0,51	-	0,51	-	0,51	-	0,51	-	0,51	-
300	0,36	-	0,36	-	0,36	-	0,36	-	0,36	-	0,36	-

Thickness of structural part h <sub>min</sub> [mm]	112	115	115	195	195	240
Min. edge distance c <sub>min</sub> [mm]	80	60	60	60	50	50
Min. spacing s <sub>min</sub> [mm]	80	75	65	120	50	50
Torque T <sub>inst</sub> [Nm]	25 <sup>3)</sup>	19 <sup>3)</sup>	15 <sup>3)</sup>	10 <sup>3)</sup>	8 <sup>3)</sup>	10 <sup>3)</sup>

All values are based on ResiFIX VY SF  
<sup>1)</sup> Intermediate values can be interpolated/ Values are limited due to the maximum shear load capacity.  
<sup>2)</sup> For other temperature ranges see ETA-assessment.  
<sup>3)</sup> Depending on the base material, see ETA of ResiFIX injection mortar



**Maximum shear loads V <sup>1)</sup> at max. 3 or 5 mm displacement per ResiTHERM® if the free outer end of the ResiTHERM® 16 & 12 is freely rotatable at 24°C/40°C <sup>2)</sup>**

Free rotatable anchor rod M16 in 8.8	applied injection mortar ResiFIX VY SF acc. ETA-10/0134	applied injection mortar ResiFIX VY SF acc. ETA-15/0320					
Base material	Concrete C20/25	Solid sand-lime brick KS KS28-2,0	Solid brick MZ 20-2,0	Hollow sand-lime brick KSL 12-1,4	Hollow brick HLZ 12-1,25	Aerated concrete AAC 2	

**if displacement is 3 mm**

Insulation thickness e [mm]	Maximum shear load V [kN]											
	ResiTHERM® 16		ResiTHERM® 12		ResiTHERM® 16		ResiTHERM® 12		ResiTHERM® 16		ResiTHERM® 12	
	16	12	16	12	16	12	16	12	16	12	16	12
60	1,59	1,25	1,59	1,25	1,59	1,25	1,53	1,25	1,59	1,25	0,89	0,89
80	1,38	0,85	1,38	0,85	1,38	0,85	1,38	0,85	1,38	0,85	0,89	0,85
100	1,06	0,61	1,06	0,61	1,06	0,61	1,06	0,61	1,06	0,61	0,89	0,61
120	0,75	0,36	0,75	0,36	0,75	0,36	0,75	0,36	0,75	0,36	0,75	0,36
140	0,63	0,31	0,63	0,31	0,63	0,31	0,63	0,31	0,63	0,31	0,63	0,31
160	0,52	0,25	0,52	0,25	0,52	0,25	0,52	0,25	0,52	0,25	0,52	0,25
180	0,41	0,20	0,41	0,20	0,41	0,20	0,41	0,20	0,41	0,20	0,41	0,20
200	0,36	0,14	0,36	0,14	0,36	0,14	0,36	0,14	0,36	0,14	0,36	0,14
220	0,31	0,09	0,31	0,09	0,31	0,09	0,31	0,09	0,31	0,09	0,31	0,09
240	0,26	-	0,26	-	0,26	-	0,26	-	0,26	-	0,26	-
250	0,24	-	0,24	-	0,24	-	0,24	-	0,24	-	0,24	-
260	0,21	-	0,21	-	0,21	-	0,21	-	0,21	-	0,21	-
280	0,17	-	0,17	-	0,17	-	0,17	-	0,17	-	0,17	-
300	0,12	-	0,12	-	0,12	-	0,12	-	0,12	-	0,12	-

**if displacement is 5 mm**

Insulation thickness e [mm]	Maximum shear load V [kN]											
	ResiTHERM® 16		ResiTHERM® 12		ResiTHERM® 16		ResiTHERM® 12		ResiTHERM® 16		ResiTHERM® 12	
	16	12	16	12	16	12	16	12	16	12	16	12
60	1,86	1,43	1,86	1,43	1,86	1,43	1,53	1,43	1,86	1,43	0,89	0,89
80	1,86	1,35	1,86	1,35	1,86	1,35	1,53	1,35	1,86	1,35	0,89	0,89
100	1,66	0,96	1,66	0,96	1,66	0,96	1,53	0,96	1,66	0,96	0,89	0,89
120	1,19	0,56	1,19	0,56	1,19	0,56	1,19	0,56	1,19	0,56	0,89	0,56
140	1,00	0,48	1,00	0,48	1,00	0,48	1,00	0,48	1,00	0,48	0,89	0,48
160	0,82	0,40	0,82	0,40	0,82	0,40	0,82	0,40	0,82	0,40	0,82	0,40
180	0,64	0,31	0,64	0,31	0,64	0,31	0,64	0,31	0,64	0,31	0,64	0,31
200	0,56	0,23	0,56	0,23	0,56	0,23	0,56	0,23	0,56	0,23	0,56	0,23
220	0,49	0,15	0,49	0,15	0,49	0,15	0,49	0,15	0,49	0,15	0,49	0,15
240	0,42	-	0,42	-	0,42	-	0,42	-	0,42	-	0,42	-
250	0,38	-	0,38	-	0,38	-	0,38	-	0,38	-	0,38	-
260	0,34	-	0,34	-	0,34	-	0,34	-	0,34	-	0,34	-
280	0,27	-	0,27	-	0,27	-	0,27	-	0,27	-	0,27	-
300	0,19	-	0,19	-	0,19	-	0,19	-	0,19	-	0,19	-

Thickness of structural part h <sub>min</sub> [mm]	112	115	115	195	195	240
Min. edge distance c <sub>min</sub> [mm]	80	60	60	60	50	50
Min. spacing s <sub>min</sub> [mm]	80	75	65	120	50	50
Torque T <sub>inst</sub> [Nm]	25 <sup>3)</sup>	19 <sup>3)</sup>	15 <sup>3)</sup>	10 <sup>3)</sup>	8 <sup>3)</sup>	10 <sup>3)</sup>

All values are based on ResiFIX VY SF  
<sup>1)</sup> Intermediate values can be interpolated/ Values are limited due to the maximum shear load capacity.  
<sup>2)</sup> For other temperature ranges see ETA-assessment.  
<sup>3)</sup> Depending on the base material, see ETA of ResiFIX injection mortar

# Distance mounting system ResiTHERM® 37

## Advantages



ResiTHERM® 37/200 M12



ResiTHERM® 37/160 M12

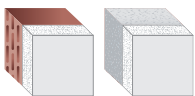


ResiTHERM® 37/120 M12

- The perfect solution for distance installations in hollow bricks with ETA approval
- Heavy-duty system for fastening of awnings, canopies, french balconies, railings, satellite dishes etc. in ETICS
- Excellent thermal separation, almost no thermal bridge
- Outstanding high values in hollow bricks
- Easy and fast installation saves time and money
- Product is ready to use: available in three standard lengths
- Suitable for insulation thicknesses up to 200 mm
- For non-insulated hollow brick walls:  
**ResiTHERM® 37S M12**
- ResiTHERM® 37 was tested together with the injection system ResiFIX VYSF

## Suitable building materials

### Very suitable



- Hollow brick
- Aerated concrete

### Suitable to a limited extent



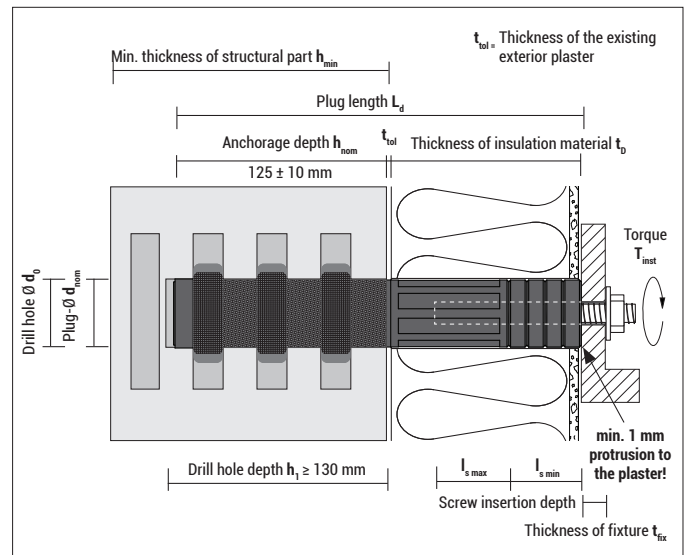
- Hollow sand-lime brick
- Solid brick
- Concrete
- Solid sand-lime brick



## Approvals and certificates



## Mounting



## Distance mounting system ResiTHERM® 37

### Mounting in hollow brick

1. Put drilling aid on core bit; drill with cordless screwdriver (without impact) through the insulation material up to the hollow brick wall (remove drilling aid after the first 10 mm)
2. Measure the thickness of the insulation and cut ResiTHERM® 37 if needed (max. 40 mm)
3. Put drilling aid on core bit and drill min. 130 mm into the hollow brick wall (remove drilling aid after the first 10 mm)
4. Clean hole
5. Press ResiTHERM® 37 onto mixing nozzle and push it carefully into the drill hole
6. Fill ResiTHERM® 37 with injection system ResiFIX; the end of the filling process can be clearly felt
7. Respect curing time
8. Fill annular gap with sealant StickFX XP, MS Polymer
9. Install fixture  $T_{inst} \leq 20 \text{ Nm}$

### Isothermic profile

✓ **Fastening with ResiTHERM® 37**

Almost no disturbance of the ETICS

✗ **Conventional fastening with anchor rod**

The thermal bridge is clearly visible

With a  $\chi$ -value of 0,0034 W/K (ResiTHERM® with 140 mm insulation thickness) ResiTHERM® 37 fulfills the requirement of the „Passivhausinstitut“ (passive house institute) for facade anchors of  $\Delta U_{WB} \leq 0,010 \text{ W/K}$ .

## Distance mounting system ResiTHERM® 37



**Starter set ResiTHERM® 37** in universal box (30 x 40 x 23 cm)

Type	Art-No	Starter set ResiTHERM® 37 contains			ETA	€/box	[box]
		ResiTHERM® 37	Art-No Accessories	Accessories			
SYS120RTH4	Starter set RTH 120	4x ResiTHERM® 37/120 M12	–	4x Threaded stud M12x70 mm, stainless steel A4 4x Washer M12 DIN 125, stainless steel A4 4x Hexagon nut M12 DIN 934, stainless steel A4	●		1
SYS160RTH4	Starter set RTH 160	4x ResiTHERM® 37/160 M12	+	300VSF 39ABH 39220BST 100M16AD 200M16AD BL290MSXP 1x Drilling aid for core bit 1x Core bit Ø 39 x 220 mm 1x Adapter shank hexagon, M16, 100 mm for core bit 1x Adapter shank hexagon, M16, 200 mm for core bit 1x StickFX XP white, MS Polymer	●		1
SYS200RTH4	Starter set RTH 200	4x ResiTHERM® 37/200 M12	–	345APVM 129021AS 1x Manual dispenser APVM 50x Distance washer DIN 9021 for M12 (13x37x3 mm) 1 pair work gloves	●		1

ResiTHERM® 37 may be cut up to 40 mm if needed.



**ResiTHERM® 37/200 M12** for insulation thicknesses 160 - 200 mm

Type	Art-No	Set contains (packed in bag)	L [mm]	Thickness of insulation material $h_b^{1)}$ [mm]	ETA	€/Set	[Set]	[Sets]
RTH 200	200RTH2	2x ResiTHERM® 37/200 M12 2x Threaded stud M12x70 mm, stainless steel A4 2x Washer M12 DIN 125, stainless steel A4 2x Hexagon nut M12 DIN 934, stainless steel A4 1x ResiFIX VY300SF incl. 2 mixing nozzles MD	325	160 - 200	●		1	10

<sup>1)</sup> ResiTHERM® 37 may be cut up to 40 mm if needed.



**ResiTHERM® 37/160 M12** for insulation thicknesses 120 - 160 mm

Type	Art-No	Set contains (packed in bag)	L [mm]	Thickness of insulation material $h_b^{1)}$ [mm]	ETA	€/Set	[Set]	[Sets]
RTH 160	160RTH2	2x ResiTHERM® 37/160 M12 2x Threaded stud M12x70 mm, stainless steel A4 2x Washer M12 DIN 125, stainless steel A4 2x Hexagon nut M12 DIN 934, stainless steel A4 1x ResiFIX VY300SF incl. 2 mixing nozzles MD	285	120 - 160	●		1	10

<sup>1)</sup> ResiTHERM® 37 may be cut up to 40 mm if needed.



**ResiTHERM® 37/120 M12** for insulation thicknesses 80 - 120 mm

Type	Art-No	Set contains (packed in bag)	L [mm]	Thickness of insulation material $h_b^{1)}$ [mm]	ETA	€/Set	[Set]	[Sets]
RTH 120	120RTH2	2x ResiTHERM® 37/120 M12 2x Threaded stud M12x70 mm, stainless steel A4 2x Washer M12 DIN 125, stainless steel A4 2x Hexagon nut M12 DIN 934, stainless steel A4 1x ResiFIX VY300SF incl. 2 mixing nozzles MD	245	80 - 120	●		1	10

<sup>1)</sup> ResiTHERM® 37 may be cut up to 40 mm if needed.



# Heavy-duty sleeve ResiTHERM® 37S

## Advantages



- The perfect solution for heavy-duty applications in hollow / perforated brick walls (not insulated) with ETA approval
- Heavy-duty system for fastening of awnings, canopies, french balconies, railings, satellite dishes etc.
- Outstanding high values also in thin-walled perforated bricks
- Excellent thermal separation, almost no thermal bridge
- For insulated hollow brick walls use **ResiTHERM® 37**
- ResiTHERM® 37S was tested together with the injection system ResiFIX VYSF



## Approvals and certificates



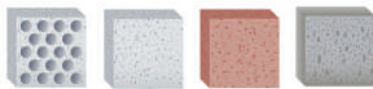
## Suitable building materials

### Very suitable



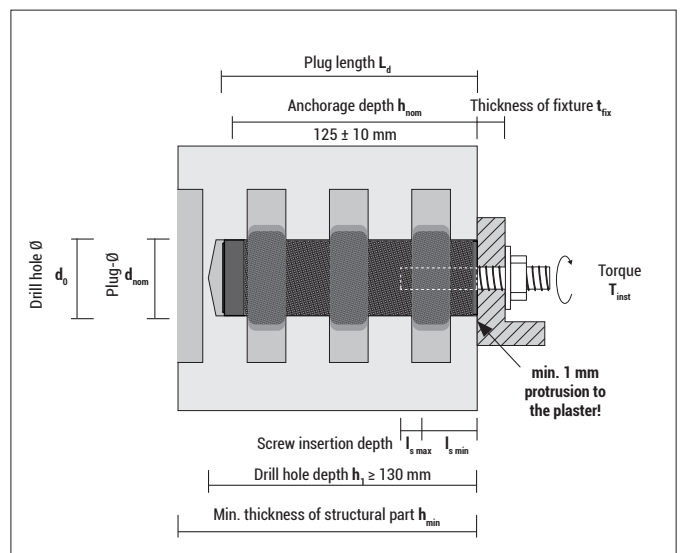
- Hollow brick
- Aerated concrete

### Suitable to a limited extent



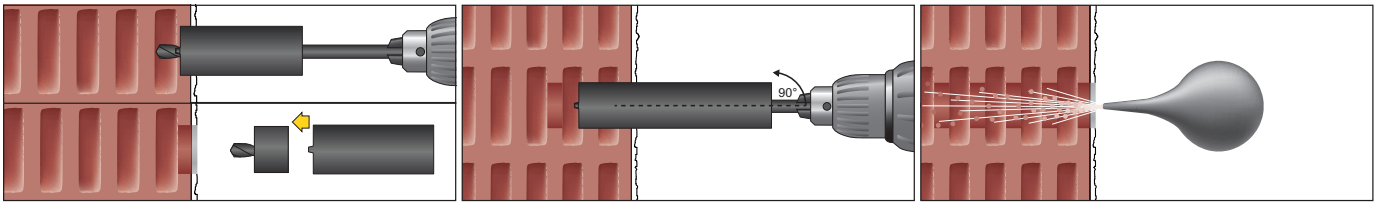
- Hollow sand-lime brick
- Solid sand-lime brick
- Solid brick
- Concrete

## Mounting



## Heavy-duty sleeve ResiTHERM® 37S

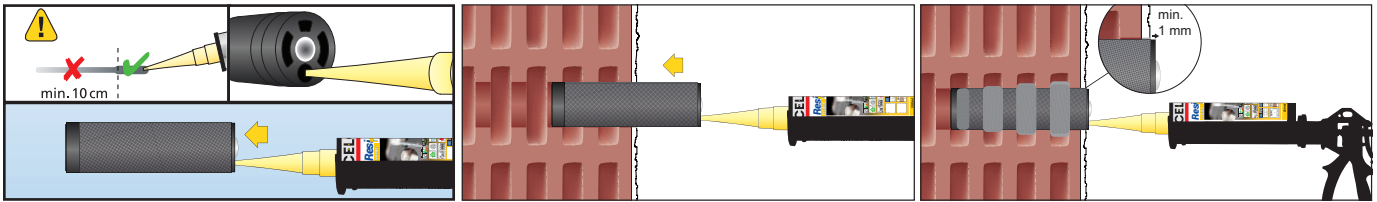
### Mounting in hollow brick



1. Put drilling aid on core bit; drill with cordless screwdriver (without impact) into the hollow brick wall; remove drilling aid after the first 10 mm)

2. Drill hole (without impact); drill hole depth min. 130 mm

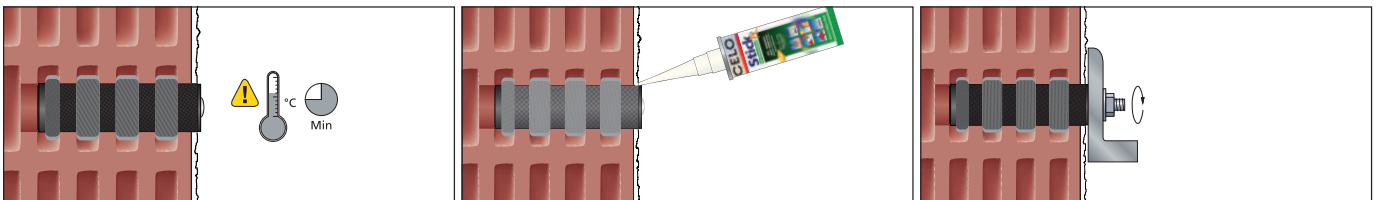
3. Clean hole



4. Press ResiTHERM® 37S onto the mixing nozzle

5. Push ResiTHERM® 37S carefully into the drill hole

6. Fill ResiTHERM® 37S with injection system ResiFIX; the end of the filling process can be clearly felt



7. Respect curing time




8. Fill annular gap with sealant StickFX XP, MS Polymer

9. Install fixture  $T_{inst} \leq 20 \text{ Nm}$



incl.

### Heavy-duty sleeve ResiTHERM® 37S M12 for non-insulated hollow brick walls

Type	Art-No	Set contains (packed in bag)	$L_d$ [mm]	Thickness of insulation material $h_p$ [mm]		€ / Set	 [Set]	 [Sets]
RTH S	RTHS2	2x ResiTHERM® 37S M12 2x Threaded stud M12x70 mm, stainless steel A4 2x Washer M12 DIN 125, stainless steel A4 2x Hexagon nut M12 DIN 934, stainless steel A4 1x ResiFIX VY300SF incl. 2 mixing nozzles MD	125	0	●		1	10

# ResiTHERM® 37 Accessories

Core bit for perforated brick BST

Drilling aid for core bit ABH



## Core bit BST and drilling aid ABH for core bit for ResiTHERM®

Type	Art-No	d [mm]	L [mm]	Connecting thread	€/pc	[pcs]	[pcs]
BST 39 x 220	39220BST	39	220	M16		1	-
ABH	39ABH	35	60	-		1	-

AD 100

AD 200



## Adapter shank AD hexagon for core bit BST for ResiTHERM®

Type	Art-No	L [mm]	Connecting thread	Shank for drilling machine	Insulation thickness [mm]	€/pc	[pcs]	[pcs]
AD 100	100M16AD	100	M16	hexagon	≤ 160		1	-
AD 200	200M16AD	200	M16	hexagon	160 - 260		1	-



## Vinylester VYSF (styrene free)

Type	Art-No	Content [ml]	Mixings nozzles included [pcs]	€/pc	[pcs]
VY 300 SF	300VSF	280	2		12

Curing times see page 173.



## StickFX Professional all-purpose adhesive XP

Type	Art-No	Content [ml]	Colour	Description	€/pc	[pcs]
XP white	BL290MSXP	290	white	All-purpose adhesive, fills gaps		12



## Distance washer AS Polyamid, DIN 9021 for M12

Type	Art-No	Outer Ø [mm]	Disc hole Ø [mm]	Height H [mm]	€/100 pcs	[pcs]	[pcs]
AS	129021AS	37	13	3		50	-

To use as a distance washer for relining (if needed).



APVM

## Manual dispenser APVM

Type	Art-No	Suitable for ResiFIX Type	€/100 pc	[pcs]
APVM	345APVM	345 / 300 / 280 / 165		1

Manual dispenser APVM is recommended to read the scale units of ResiFIX VY (outer rod serves as a pointer).



## Blow out pump AB

Type	Art-No	Tube-Ø [mm]	€/pc	[pcs]	[pcs]
AB	BOP	8		1	-



# ResiTHERM® 37 technical data



Installation parameters			ResiTHERM® 37S	ResiTHERM® 37/120	ResiTHERM® 37/160	ResiTHERM® 37/200
Anchor length	$L_d$	[mm]	125	245	285	325
Thickness of insulation material (incl. external plaster)	$h_D$	[mm]	0	60 <sup>1)</sup> - 120	120 <sup>1)</sup> - 160	160 <sup>1)</sup> - 200
Anchor $\varnothing$	$d_{nom}$	[mm]	37			
Drill hole $\varnothing$	$d_0$	[mm]	39 - 40			
Drill hole depth	$h_1 \geq$	[mm]	130			
Anchorage depth	$h_{nom}$	[mm]	125 $\pm$ 10 <sup>2)</sup>			
Connecting thread		[mm]	M12			
Screw insertion depth of M12 threaded stud	$h_{s \text{ min-max}}$	[mm]	35 - 80			
Thickness of fixture	$t_{fix} \leq$	[mm]	22 <sup>3)</sup>			
$\varnothing$ of clearance hole in fixture	$d_i \geq$	[mm]	13			
Required volume of ResiFIX VY per ResiTHERM® 37		[ml]	ca. 140			
Installation torque for mounting the fixture	$T_{inst} \leq$	[Nm]	20			

<sup>1)</sup> ResiTHERM® 37 may be cut up to 40 mm if needed. ResiTHERM® 37/120 M12: If thickness of insulation material is 60 mm, set 20 mm deeper.

<sup>2)</sup> Minimum anchorage depth of 115 mm is possible (see ETA assessment)

<sup>3)</sup> When using a threaded stud with L=70 mm. Otherwise a longer threaded stud or a longer metric screw can be used.

## Loads and displacements/deflections ResiTHERM®37: approved system with injection system ResiFIX VY SF

Building material	System	Thickness of insulation material [mm]	Recommended loads <sup>1)</sup>	Deflection at recommended load*
Permissible tension load			$N_{per}$ [kN]	$\delta_{NO} / \delta_{N=}$ [mm]
Hollow brick T1.0-240 HLZ 12 (Format 12 DF)	Single fastening	all	1,71	0,60/ 1,30
Hollow brick T10-300 HLZ 6 (Format 10 DF)	Single fastening	all	0,86	0,60/ 1,20
Aerated concrete AAC2-0,35 <sup>2)</sup>	Single fastening	all	1,21	0,14/ 0,28
Aerated concrete AAC4-0,55 <sup>2)</sup>	Single fastening	all	2,12	0,32/ 0,64
Permissible pressure load			$F_{per}$ [kN]	$\delta_{FO} / \delta_{F=}$ [mm]
Hollow brick T1.0-240 HLZ 12 (Format 12 DF)	Single fastening	all	1,71	0,60/ 1,30
Hollow brick T10-300 HLZ 6 (Format 10 DF)	Single fastening	all	0,86	0,60/ 1,20
Permissible shear load			$V_{per}$ [kN]	$\delta_{vo} / \delta_{vs}$ [mm] <sup>4)</sup>
Hollow brick T1.0-240 HLZ 12 (Format 12 DF)	Single fastening	0	0,86	0,20/ 0,30
		120	0,34	2,00/ 4,10
		160	0,34	2,10/ 4,30
	Double fastening <sup>3)</sup>	200	0,26	3,40/ 6,70
		0	0,51	0,60/ 1,20
		120	0,43	1,60/ 3,20
Hollow brick T10-300 HLZ 6 (Format 10 DF)	Single fastening	160	0,34	0,70/ 1,40
		200	0,41	1,40/ 2,90
		0	0,43	0,00/ 0,10
	Double fastening <sup>3)</sup>	120	0,26	1,30/ 2,60
		160	0,26	1,70/ 2,50
		200	0,17	2,00/ 4,00
		0	0,17	0,10/ 0,20
		120	0,11	0,20/ 0,30
		160	0,11	0,20/ 0,30
		200	0,09	0,30/ 0,50

\* Movement of ResiTHERM® 37 in load direction at permissible load.

<sup>1)</sup> Recommended loads include the partial safety factor on action of  $v_f = 1,4$ .

<sup>2)</sup> Not part of the ETA-assessment.

<sup>3)</sup> Spacing of 77 mm (standard awning console).

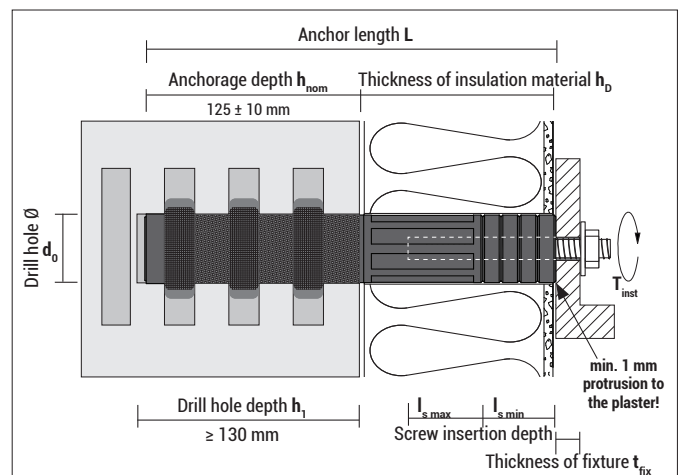
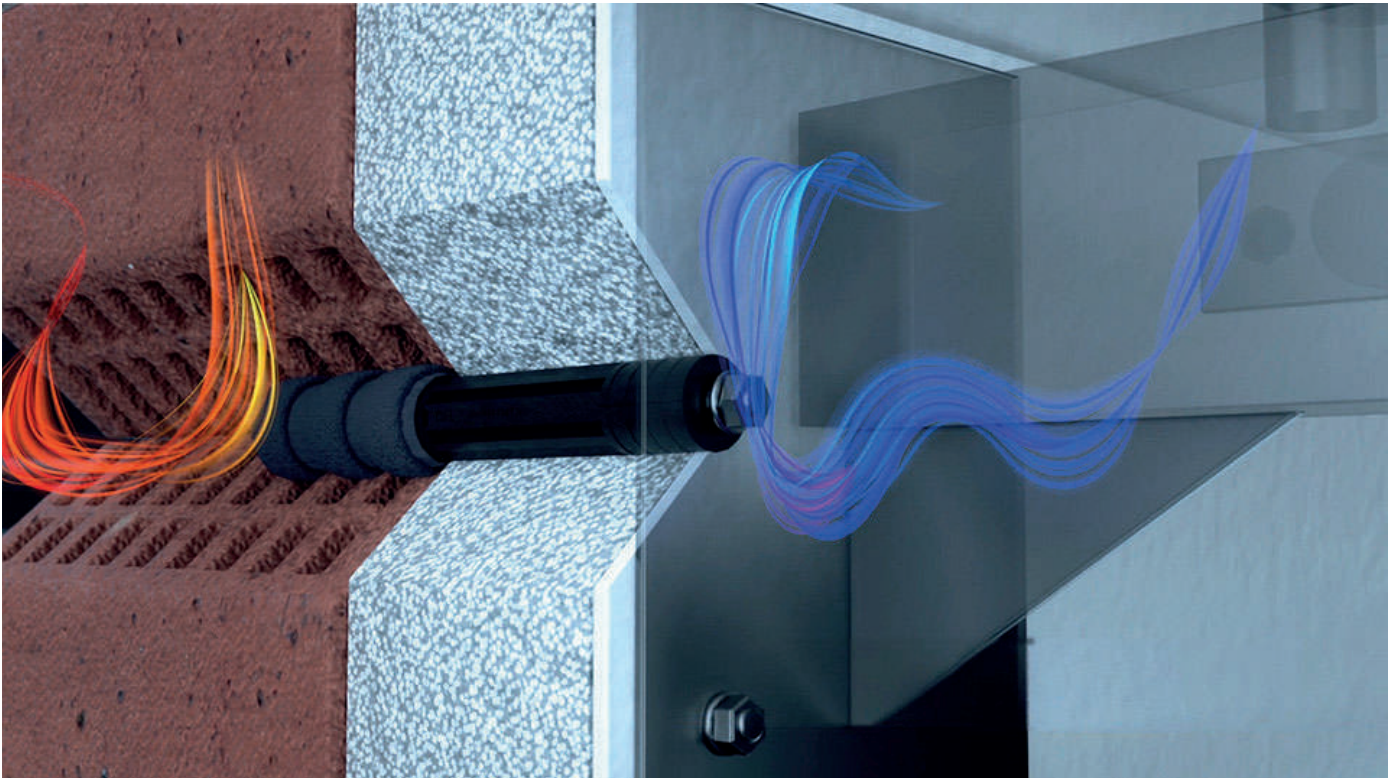
<sup>4)</sup>  $\delta_{vo}$  = Initial deflection /  $\delta_{vs}$  = long-term deflection

Application of ResiTHERM® 37 in solid building materials is possible. Contact CELO for details.

### Spacing and edge distance

ResiTHERM® 37S, 37/120, 37/160, 37/200			HLZ 12	HLZ 6
Minimum spacing	$S_{min}$	[mm]	77 <sup>1)</sup>	77 <sup>1)</sup>
Minimum edge distance	$C_{min}$	[mm]	125	125
Minimum thickness of structural part	$h_{min}$	[mm]	240	300

<sup>1)</sup> Spacing of 77 mm (standard awning console).





# CELO

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