

Section 1. PRODUCT DESCRIPTION

SPECIAL-HAMMER DRIVEN METAL FASTENER FOR FASTENING OF MINERAL WOOL – MLN/MLN-A2

Special hammer-driven metal fastener for fastening of mineral wool MLN is made from galvanized steel or MLN-A2 is made from stainless steel, for improved resistance to corrosion. It comprises support washer and pin. Fastener MLN/MLN-A2 should be used to transfer loads of wind suction forces and applied as an additional mechanical fixing for the whole system (fastening of thermal insulation materials above 25m). MLN and MLN-A2 fasteners are classified as A1 reaction to fire class in accordance with PN-EN 13501-1. Fasteners recommended for:

- mineral wool
- mineral wool lamella board

Types of substrates on which fastener MLN/MLN-A2 can be installed:



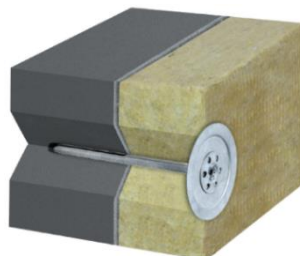
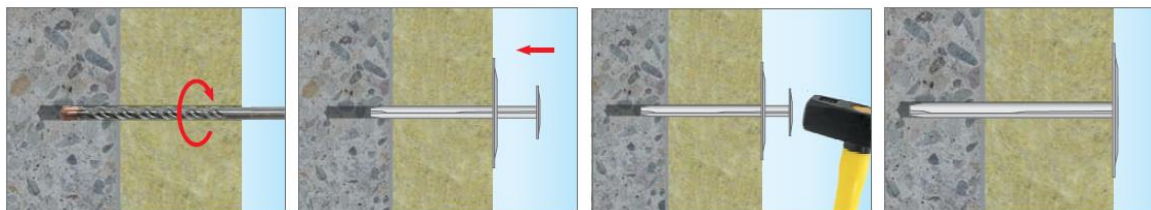
Beton Cegła ceramiczna pełna, silikatowa Pustak ceramiczny Gazobeton

Fasteners hold National Technical Assessment: ITB-KOT-2021/1815 edition 1



Section 2. METHOD OF INSTALLATION

1. Before installation identify the substrate and select suitable fasteners
2. Select adequate length of the fastener so that expansion zone is in the construction material of the wall
3. Minimum length of the fastener is: $L_d = t_{fix} + t_{tol} + h_{eff}$, where: t_{fix} - thickness of insulation material to be fixed, t_{tol} - thickness of sub-crusts (adhesive + existing plaster), h_{eff} - depth of fastener anchorage in the substrate (given in the sheet and in Technical Approval)
4. Before installation prepare the substrate as recommended by ETICS manufacturer
5. Fix thermal insulation panels correctly using an adhesive
6. Diameter of drilled holes should match diameter of the fasteners used
7. Drilled holes in substrates of solid materials should be deeper by min. 10 mm compared to the fastener anchorage depth
8. Clean the holes drilled in solid materials of drillings with a back and forth motion of the drill at a reduced speed, repeating it four times
9. Drill the holes in aerated concrete substrates without impact as this will cause breakage of walls of the substrate and reduce pull-out resistance of fasteners
10. **Number of fasteners per 1m² should be defined in thermal insulation design.** Recommended number of fasteners:
FOR WOOL:
 - up to the height of 15m from the ground, as minimum use 8pcs/m² in the middle area of a wall and 10pcs/m² in a corner area
 - above 15m from the ground, as minimum use 10pcs/m² in the middle area of a wall and 12pcs/m² in a corner area**Recommendation shall not replace thermal insulation design!!**
11. Fix the fasteners so that the installation spot matches the area where adhesive is placed on a thermal insulation panel
12. Embed the fastener body so that the fastener washer is faced with thermal insulation material
13. Then using a hammer drive the fastener pin to firmly attach the fastener



PRODUCT DATA SHEET – MLN/MLN-A2

Section 3. TECHNICAL DATA

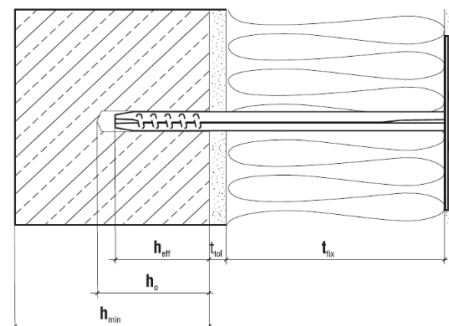
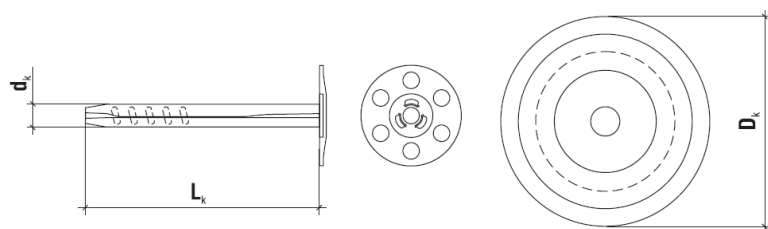
TECHNICAL PARAMETERS		
Parameter	Unit	Value
Plug diameter	d_k [mm]	8
Plate diameter	D_k [mm]	70/85*
Anchorage depth	h_{eff} [mm]	50
Drilled hole depth	h_0 [mm]	60
Plug material	[-]	galvanized steel/ A2 stainless steel*
National Technical Assessment	[-]	ITB-KOT-2021/1815 edition 1

*for MLN/MLN-A2

STRENGTH PARAMETERS			
Substrate type	Density [kg/dm ³]	Characteristic resistance for pulling out of the substrate N_{Rk} and shear V_{Rk} [kN]	
		MLN	MLN-A2
Concrete C20/25 ÷ C50/60	$\geq 2,30$	0,65	0,80
Solid clay brick	$\geq 1,60$	0,60	0,60
Calcium silica solid brick	$\geq 1,60$	0,60	0,60
Ceramic brick	$\geq 1,60$	0,20	0,20
Silicate block	$\geq 1,60$	0,45	0,45
Autoclaved aerated concrete	$\geq 0,35$	0,85	0,85

Partial pull/shear safety factor:

$\gamma_M=1,8/1,25$ for concrete base, $\gamma_M=2,5$ for other substrates



SELECTION TABLE					
Product code		Fastener diameter and length ($d_k \times L_k$) [mm]	Insulation material thickness [mm]		Number of pieces in a box [pcs]
MLN (galvanized steel)	MLN-A2 (A2 stainless steel)		New buildings (t_{tol} adhesive layer of 10mm included)	Old buildings (t_{tol} adhesive layer of 10mm + old plaster of 20mm included)	
MLN08080	MLN08080-A2*	8x80	20	-	50
MLN08090	MLN08090-A2*	8x90	30	10	50
MLN08100	MLN08100-A2*	8x100	40	20	50
MLN08110	MLN08110-A2*	8x110	50	30	50
MLN08120	MLN08120-A2*	8x120	60	40	50
MLN08135	MLN08135-A2*	8x135	75	55	50
MLN08140	MLN08140-A2*	8x140	80	60	50
MLN08150	MLN08150-A2*	8x150	90	70	50
MLN08160	MLN08160-A2*	8x160	100	80	50
MLN08170	MLN08170-A2*	8x170	110	90	50
MLN08185	MLN08185-A2*	8x185	125	105	50
MLN08190	MLN08190-A2*	8x190	130	110	50
MLN08200	MLN08200-A2*	8x200	140	120	50
MLN08210	MLN08210-A2*	8x210	150	130	50
MLN08220	MLN08220-A2*	8x220	160	140	50
MLN08230	MLN08230-A2*	8x230	170	150	50
MLN08240	MLN08240-A2*	8x240	180	160	50
MLN08250	MLN08250-A2*	8x250	190	170	50
MLN08260	MLN08260-A2*	8x260	200	180	50
MLN08270	MLN08270-A2*	8x270	210	190	50
MLN08280	MLN08280-A2*	8x280	220	200	50
MLN08290	MLN08290-A2*	8x290	230	210	50
MLN08300	MLN08300-A2*	8x300	240	220	50

*Product on request

Section 4. REMARKS

- All previous versions of this Product Data Sheet shall cease to be valid
- Data given in this Product Data Sheet is in accordance with current knowledge and published in good faith. KLIMAS Sp. z o.o. is not responsible for correctness and quality of the fixing if recommendations regarding method of use and installation are not followed.