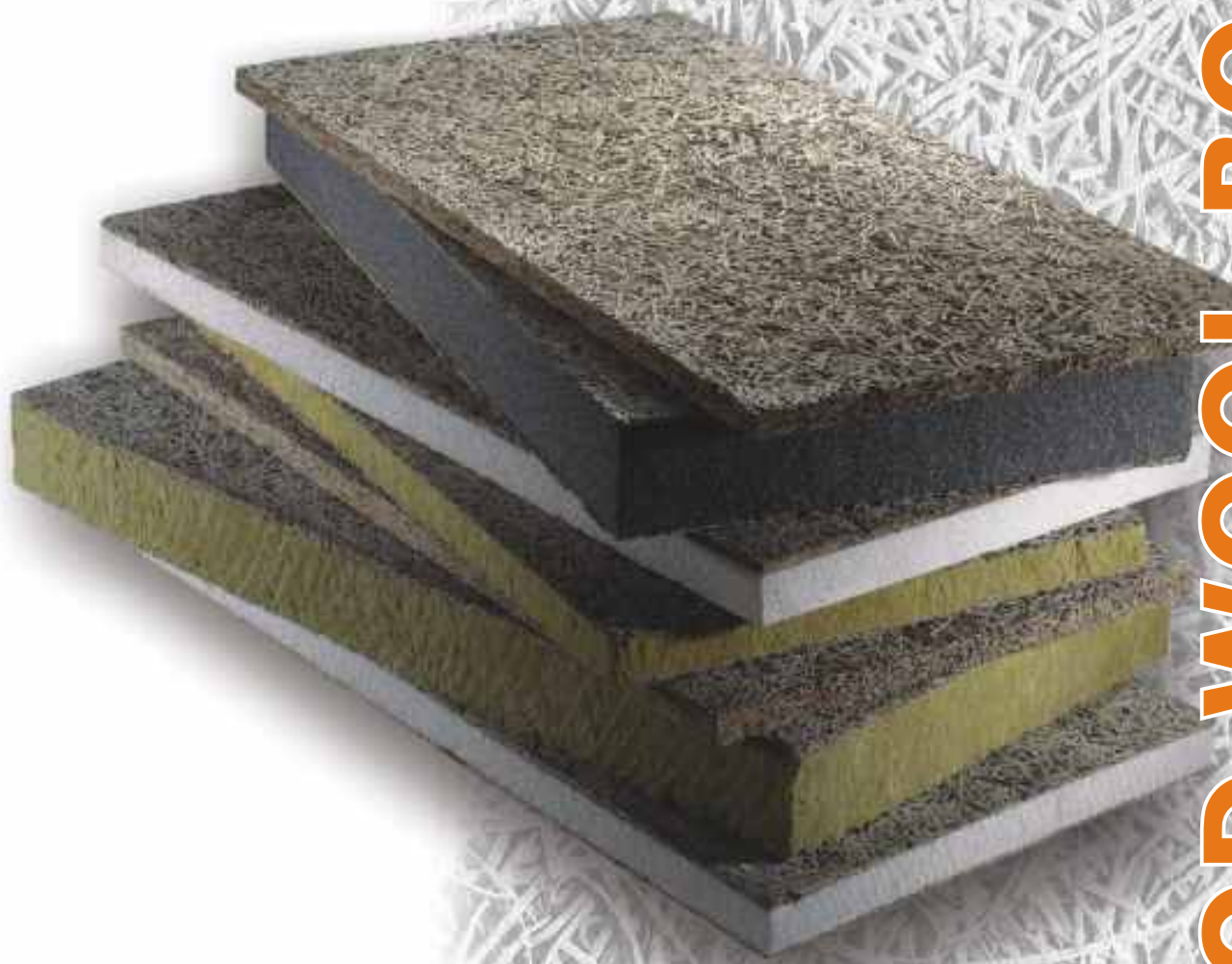
FRAGMAT



WOOD WOOL BOARDS

DRVONEO

DRVOPOR

DRVOTERM

DRVOLIT

DRVOLIT AKUSTIK

WOOD WOOL BOARDS

The Varping company, cooperating with FRAGMAT since 1991, became a member of the FRAGMAT Group in 2010.

Wood-wool cement boards and composite boards

Boards made of wood wool bound with a magnesite binding agent started to be produced around 1925. The technology of manufacturing boards with cement-binding agents which is now used by all international manufacturers was also developed at the same time.

The basic raw material is wood wool which is made flame retardant by impregnation procedure and, in addition, bound with a cement-binding agent into a coherent structure. Wood fibres are therefore resistant against decomposition and insects, and their water absorption is very low. The wood wool hardening process continues for several years after the boards are produced. Before the emergence of other insulation materials, wood wool cement boards had served as the main material for thermal insulation, while today they are used for acoustic insulation in particular, since boards with untreated surface (without any rendering coat, only painted) absorb sound extremely well. Boards made of finer wood wool are used for internal acoustic insulation in classrooms, sport halls, workshops, concert halls, cinemas, studios etc. and at the same time as a decorative element of such premises.

With the introduction of new construction technologies it was crucial to find appropriate insulation materials to comply with the thermal and acoustic insulation requirements. Wood-wool-board manufacturers were looking for a material to be used as thermal insulation layer, since the insulation characteristics of wood wool cement boards alone are not the best. In 1952, BASF found an effective solution: expanded polystyrene Styropor®.

Light construction boards, known on our market as composite boards, very quickly gained ground in construction industry. For a long time they had no competition in façade insulation, because conventional mortar with mineral binders (lime, cement) did not provide adequately strong keying directly to styropor boards, whereas wood wool cement layers serve as an ideal surface for the application of rendering coats.

Later on, mineral (stone) wools also started to be used as insulation core in composite boards. A novelty in the field of light construction boards on the Slovenian market is the DRVONEO board with a core made of Neopor® and excellent thermal insulation properties.

Still today, these boards are irreplaceable as the base for multi-layer façades, resistant to mechanical loads and hail. Recently, wood wool cement boards and composite boards have started to be used again for the construction of light partition walls and attics with tick-layer rendering coats or wall mounted heating.

DRVONEO

FRAGMAT

Three-layer composite wood wool board with EPS Neopor® core

The board is made of the Neopor® type expandable polystyrene with improved insulation properties and two layers of mineralized wood wool whereby the cement-binding agent and additives bind the wood wool and the core into a compact coherent structure. The surface provides for mechanical resistance of the board and good grip for mortar and adhesives.

Characteristics

- Highly effective insulation thermal conductivity for Neopor®: λ_D = 0,032 W/mK
- Good grip for concrete and ideal surface for rendering
- Flame retardant (self-extinguishing) material: E in conformity with EN 13501-1, B1 in conformity with DIN 4102
- Neutral in combination with construction materials and metals
- Very good mechanical characteristics
- Simple formatting and installation

Purpose and scope of application

- Thermal insulation for façades in thick-layer mineral rendering systems
- Thermal insulation for ceilings, underpass ceilings, pillars etc.
- In insulation systems for sloped roofing - attics
- Installation in the manner of *coated concrete* and *lost formwork*

WW-C/3 EPS-EN 13168-L1-W1-T(1)-S2-P1-BS(2)-CS(10)75-TR40-CI3

Board thickness	d [mm]	25	35	50	75	100	125	150
(1) Class for thickness tolerance	T(1)	1					3	
(2) Level for bending strength	BS(2)	1200(500)	850(700)	600(1000)	400(1500)	300(2000)	250(2500)	200(3000)

DRVONEO DN3		DN3 25	DN3 35	DN3 50	DN 75	DN3 100	DN 125	DN3 150
Board format		2000 × 500 mm = 1 m²						
Board thickness	[mm]	25	35	50	75	100	125	150
Layer thickness	[mm]	5-15-5	5-25-5	5-40-5	5-65-5	5-90-5	5-115-5	5-140-5
Average specific mass	[kg/m²]	8,2	8,4	8,6	9,0	9,4	9,7	10,2
Thermal resistance R_D	[m²K/W]	0,55	0,85	1,35	2,10	2,90	3,65	4,45
Pallet quantity	[m²]	80	60	40	28	20	16	14

DRVOPOR

FRAGMAT

Cement-bound two/three-layer composite wood-wool board with EPS core

The board is made of expandable polystyrene (styropor) and one/two layers of mineralized wood wool whereby the cement-binding agent and additives bind the wood wool and the core into a compact coherent structure. The surface provides for mechanical resistance of the board and good grip for mortar and adhesives.

Characteristics

- Highly effective insulation thermal conductivity for EPS: λ_D = 0,039 W/mK
- Good grip for concrete and ideal surface for rendering
- Flame retardant (self-extinguishing) material: E in conformity with EN 13501-1, B1 in conformity with DIN 4102
- Neutral in combination with construction materials and metals
- Very good mechanical characteristics
- Simple formatting and installation

Purpose and scope of application

- Thermal insulation for façades in thick-layer mineral rendering systems
- Thermal insulation for ceilings, underpass ceilings, pillars etc.
- In insulation systems for sloped roofing - attics
- Installation in the manner of *coated concrete* and *lost formwork*

WW-C/2 EPS-EN 13168-L1-W1-T(1)-S2-P1-CS(10)75-TR40-CI3
WW-C/3 EPS-EN 13168-L1-W1-T(1)-S2-P1-BS(2)-CS(10)75-TR40-CI3

Board thickness	d [mm]	25	35	50	75	100	125	150
(1) Class for thickness tolerance	T(1)	1					3	
(2) Level for bending strength	BS(2)	1200(500)	850(700)	600(1000)	400(1500)	300(2000)	250(2500)	200(3000)

DRVOPOR DP2		DP2 25	DP2 35	DP2 50	DP2 75	DP2 100	DP2 125	DP2 150
Board format		2000 × 500 mm = 1 m²						
Board thickness	[mm]	25	35	50	75	100	125	150
Layer thickness	[mm]	5-20	5-30	5-45	5-70	5-95	5-120	5-145
Average specific mass	[kg/m²]	4,2	4,4	4,6	5,0	5,4	5,7	6,0
Thermal resistance R_D	[m²K/W]	0,55	0,80	1,20	1,80	2,45	3,10	3,75

DRVOPOR DP3		DP3 25	DP3 35	DP3 50	DP3 75	DP3 100	DP3 125	DP3 150
Board format		2000 × 500 mm = 1 m²						
Board thickness	[mm]	25	35	50	75	100	125	150
Layer thickness	[mm]	5-15-5	5-25-5	5-40-5	5-65-5	5-90-5	5-115-5	5-140-5
Average specific mass	[kg/m²]	8,2	8,4	8,6	9,0	9,4	9,7	10,2
Thermal resistance R_D	[m²K/W]	0,45	0,70	1,10	1,75	2,40	3,00	3,65
Pallet quantity	[m²]	80	60	40	28	20	16	14

DRVOTERM

FRAGMAT

Cement-bound three-layer composite wood wool board with stone wool

This board is made of stone wool segments (stone wool fibres are perpendicular to the board surface) and two layers of mineralized stone wool whereby the cement binding agents and additives bind the wood wool and the core into a compact coherent structure. The surface provides for mechanical resistance of the board and good grip for mortar and adhesives.

Characteristics

- Flame retardant material: B – s1, d0 (EN 13501-1)
- Thermal conductivity for stone wool: λ_D = 0,040 W/mK
- Improved acoustic insulation properties
- Fire resistance up to F90 AB (rendered boards)
- Good grip for concrete and ideal surface for rendering
- Neutral in combination with construction materials and metals
- Very good mechanical properties
- Simple formatting and installation

Purpose and scope of application

- Thermal insulation for façades in thick-layer mineral rendering systems
- Thermal and sound insulation for internal walls
- Thermal insulation for ceilings, underpass ceilings, pillars etc.
- In insulation systems for sloped roofing - attics
- Installation in the manner of *coated concrete* and *lost formwork*

WW-C/3 MW-EN 13168-L1-W1-T(1)-S2-P1-BS(2)-CS(10)30-TR15-CI3

Board thickness	d [mm]	50	75	100	125	150
(1) Class for thickness tolerance	T(1)	1			3	
(2) Level for bending strength	BS(2)	600(1000)	400(1500)	300(2000)	250(2500)	200(3000)

DRVOTERM DTO3		DTO3 50	DTO3 75	DTO3 100	DTO3 125	DTO3 150
Board format		2000 × 500 mm = 1 m²				
Board thickness	[mm]	50	75	100	125	150
Layer thickness	[mm]	7,5-35-7,5	7,5-60-7,5	7,5-85-7,5	7,5-110-7,5	7,5-135-7,5
Average specific mass	[kg/m²]	13,5	16	18,5	21	23,5
Thermal resistance R_D	[m²K/W]	1,00	1,65	2,25	2,90	3,50
Pallet quantity	[m²]	110	80	60	40	28

DRVOLIT

FRAGMAT

Mineralized wood wool cement board

The board is made of mineralized wood wool, bound by cement-binding agent and additives into a compact coherent structure. The mineralisation process strongly increases the fire resistance of wood wool. Due to its internal pore structure and surface form it serves as an excellent insulator in sound insulation systems.

Characteristics

- Thermal conductivity: λ_D = 0,074 W/mK
- Good grip for concrete and ideal surface for rendering
- Flame retardant material: B – s1, d0 (EN 13501-1)
- Resistant against ageing, chem. impacts, parasites and moulds
- Neutral in combination with construction materials and metals
- Very good mechanical characteristics
- Good sound absorption
- Highly vapour diffusion permeable
- Simple formatting and installation

Purpose and scope of application

- Improved acoustic and thermal insulation
- Fire protection for wooden and metal load-bearing structures
- Surface for rendering in rear-ventilated façade systems
- Construction of partition walls with panelling on one or both sides
- In insulation systems for sloped roofing attics
- Acoustic visible plaster systems for walls and ceilings
- Installation in the manner of *coated concrete* and *lost formwork*

WW-EN 13168-L1-W1-T1-S1-P1-BS(1)-CS(10)150-CI3

Board thickness	d [mm]	15	25	35	50	75
(1) Level for bending strength	BS(1)	2000(300)	1200(500)	850(700)	600(1000)	400(1500)

DRVOLIT D		D 15	D 25	D 35	D 50	D 75
Board format		2000 × 500 mm = 1 m²				
Board thickness	[mm]	15	25	35	50	75
Average specific mass	[kg/m²]	8,5	11,5	14,5	19,5	28,0
Thermal resistance R_D	[m²K/W]	0,20	0,30	0,45	0,65	1,00
Pallet quantity	[m²]	110	80	60	40	28

DRVOLIT AKUSTIK

Mineralized wood wool cement board with fine structure

The board is made of mineralized wood wool with fine structure, bound by cement-binding agent and additives into a compact coherent structure. Due to its internal pore structure and surface form, the board highly effectively absorbs sound. The appearance of the board surface is also controlled during the manufacturing process, since these boards remain visible after installation.

Characteristics

- Excellent sound absorption and shorter reverberation time
- Thermal conductivity coefficient: λ_D = 0,074 W/mK
- Good grip for concrete
- Flame retardant material: B – s1, d0 (EN 13501-1)
- Resistant to ageing, chemical impacts, parasites and moulds
- Neutral in combination with construction materials and metals
- Very good mechanical characteristics
- Highly vapour diffusion permeable
- Simple formatting and installation
- Nice and natural look

Purpose and scope of application

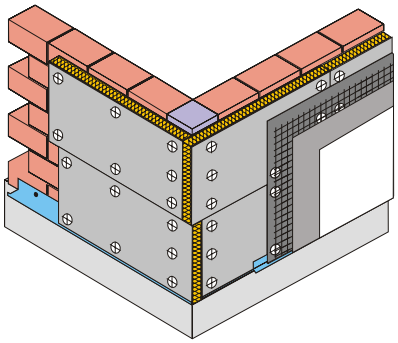
- Acoustic panelling of walls and ceilings in order to reduce the noise level and reverberation time in sports facilities, business premises, concert halls, cinemas, recording studios, catering establishments, production halls, garages etc.

WW-EN 13168-L1-W1-T1-S1-P1-BS(1)-CS(10)150-CI3

Board thickness	d [mm]	25	35	50
(1) Level for bending strength	BS(1)	1200(500)	850(700)	600(1000)

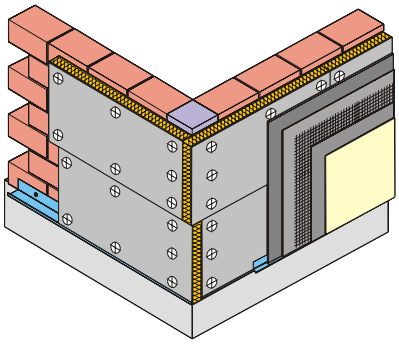
DRVOLIT AKUSTIK DA		DA 25	DA 35	DA 50
Board format		2000 × 500 mm = 1 m²		
Board thickness	[mm]	25	35	50
Average specific mass	[kg/m²]	11,5	14,5	19,5
Thermal resistance R_D	[m²K/W]	0,30	0,45	0,65
Pallet quantity	[m²]	80	60	40

Some examples of composite wood wool board usage



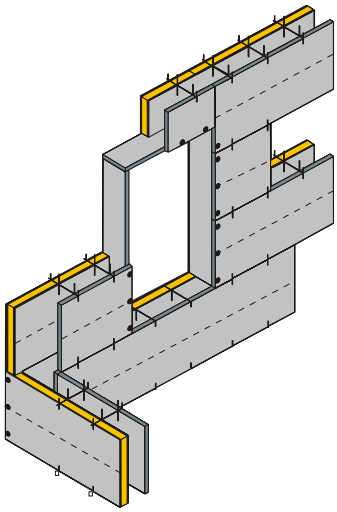
Multi-layer façade with lime cement finery, reinforced with galvanised steel wire mesh

- DRVONEO, DRVOPOR or DRVOTERM boards glued and mechanically fixed by nylon anchors with steel screws,
- Galvanised steel wire mesh fixed to anchors
- Spatterdash coat
- Basic lime cement finery
- Mineral-based finishing coat



Multi-layer façade with light basic finery and reinforced with alkali-resistant fibreglass

- DRVONEO, DRVOPOR or DRVOTERM boards adhered and mechanically fixed with nylon anchors with steel screws
- Light base rendering coat
- Adhesive mortar
- Glass fibre fabric
- Undercoat, finishing coat (mineral, silicone, silicate etc.)



Construction of outer walls using the system of *lost framework* or *coated concrete*

- DRVONEO, DRVOPOR or DRVOTERM boards on the outside
- DRVOLIT boards on the inside
- The boards are joined by anticorrosion steel clamps
- Intermediate space is filled with AB (reinforced concrete)

FRAGMAT

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