



ABM®



## Marine & Offshore Insulation



2023-ABM-樱花  
Copyright belongs to  
Shanghai ABM Rock  
Wool Co., Ltd.

### Shanghai ABM Rock Wool Co., Ltd.

401A, No.189 Shenwu Road,Hongqiao CBD,Shanghai,China  
Tel:+86 21 39291299 Fax: +86 21 59753024 P.C.: 201106

### Shanghai ABM Rock Wool Dafeng Co.,Ltd.

No.99, West Zhangjian Road,Dafeng district,Jiangsu,China  
Tel:+86 515 83369988 Fax: +86 515 83369986 P.C.: 224110



ABM WeChat Official Accounts

上海新型建材岩棉有限公司  
SHANGHAI ABM ROCK WOOL CO., LTD.



#### Corridor and stairway

Corridors and stairways are important emergency escape routes. It's very important to secure a high level of fire protection.



#### Cabin

Cabins are the living places for staff and passengers on board. It is very important to have a right fire protection, sound and thermal insulation.



#### Bridge

The high level of fire protection and sound insulation at the bridge are very important.



#### Engine room & control room

Engine room is a main source of fire risks and noise. The control room is the last place where all of the technical equipments can be controlled. It is essential to have a high level of fire protection and acoustic insulation of engine room and control room.



#### Storage and tank areas

To save energy, reduce cost and human protection, it is important to make right insulation of the surfaces of boilers, pipes and tanks.



#### Public entertainment area

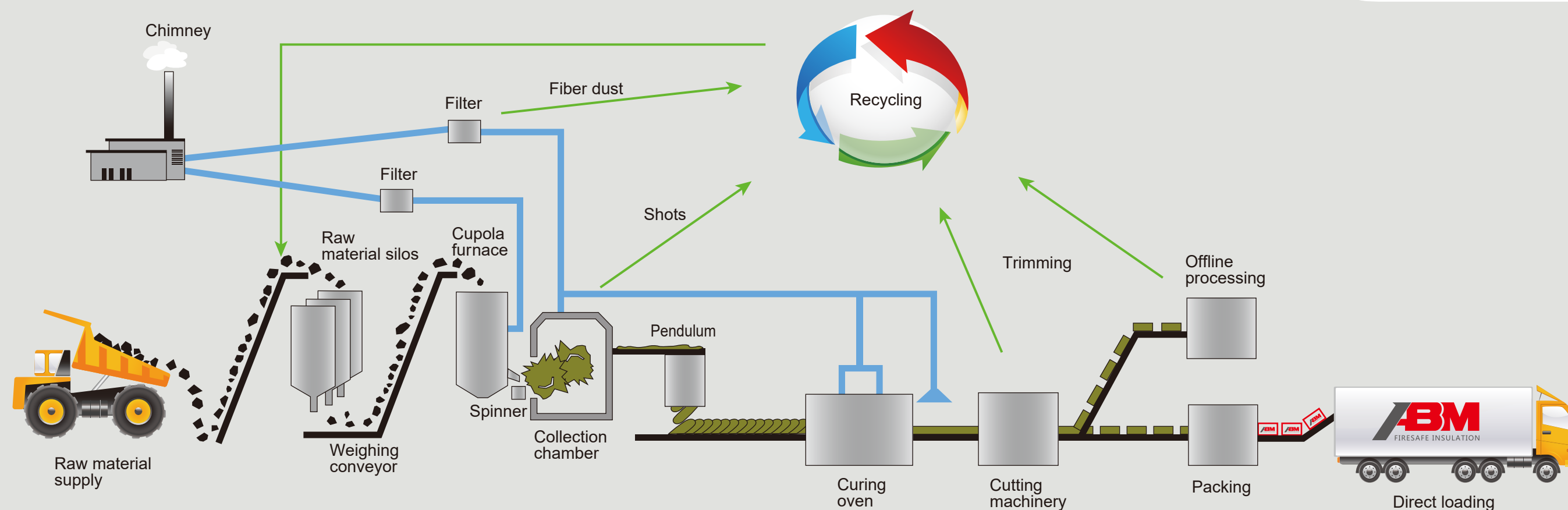
Entertainment areas including cinema, disco and bar are the main sources of noise, it's very important to make the right insulation to avoid noise transferring to around and neighboring areas.



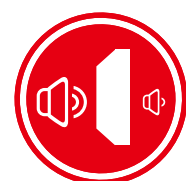
#### Galley

In the galley, there is always a risk of fire, and because of oil vapor in the air, it is necessary to have the right facing materials to avoid oil vapor concentration in the insulation while securing a high level fire protection.

## Production Process

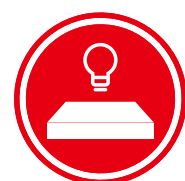


## Product Properties



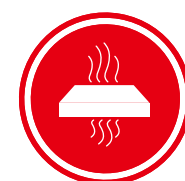
### Sound Control

ABM® rock wool products are made of numerous fibers, and the numerous fibers form the porous structure which can efficiently reduce sound transmission and reflection.



### Energy Saving

In the whole life cycle, averagely, ABM® rock wool can save more than 100 times energy than it consumes during production and recycling.



### Permeability

The open porous fiber structure makes ABM rock wool products permeable, and the vapor can transfer ABM® rock wool products easily. Due to this perfect vapor permeability, ABM rock wool products can reduce condensation effectively.



### Thermal Insulation

Due to the very thin diameter, low shot content and porous structure, ABM® rock wool has low thermal conductivity coefficient and therefore excellent thermal insulation performance.



### Environment Friendly

ABM® rock wool does not contain any CFCs, HCFCs, HFCs which can damage the ozone in the atmosphere; Asbestos free, and be classified as not classifiable as to carcinogenicity to humans (Group 3) by IARC which belongs to WTO; ABM® Rock wool is neutral or alkalescence, doesn't damage, corrode the touching materials.



### Fire Control

ABM® Rock wool is made of natural rock, and therefore is non-combustible material with the melting point above 1000°C, retards the fire spreading; When setting on fire, ABM rock wool doesn't generate any poisonous gas or flaming droplets; The excellent resistance to high temperature and low thermal conductivity at high temperature can make much more time to save life and reduce property loss.



### Water Repellence

ABM® rock wool products can be water repellent, moisture absorption can be lower than 1%, and does not accumulate moisture in itself, can keep the insulated media dry, therefore fungi-proofing



### Easy Handling

ABM® rock wool products are easy to cut, cutting can be done with a wide blade knife very easily. The small size, lightness and flexibility of the products make the installation very convenient.

# ABM<sup>®</sup> Marine & Offshore Insulation

ABM<sup>®</sup> is the leading supplier of stone wool insulation for marine and offshore sector in China. We provide a wide variation of tested and approved stone wool products and constructions specially developed for marine and offshore. Except the approved products, we also offer high cost performance solutions for fire safety, thermal insulation and acoustic insulation.

Ships sail in very different conditions which makes the shipbuilding industry set very high requirements for fire safety, thermal and acoustic comfort on board. Products and constructions to be used for marine and offshore insulations must be tested and approved according to the rules and regulations of IMO (International Maritime Organization).

## Test Requirements

According to IMO FTP Code, the stone wool products and all facing materials must be tested for combustibility characteristics as per standardized test methods, and are required to be non-combustible and low flame spread respectively. The Deck, Bulkhead or Penetration constructions must be tested for fire in standardized furnace, where the construction specimen is exposed to a fire according to a standardized time/temperature curve. All tests are carried out at the institutes recognized by IMO.

The accepted methods for the test are:

IMO A-799(19) or ISO 1182 for non-combustibility  
IMO A-653(16) for low flame spread  
IMO A-754(18) for fire resistance of A or B construction

## Approval Requirements

After finishing all required tests, based on the approved test results, the Classification Societies and National Marine Authorities grant the required approvals and certificates stating permission that the specific materials and constructions can be used on marine and offshore.

ABM<sup>®</sup> Marine & Offshore insulations are manufactured from natural stone. ABM<sup>®</sup> Stone wool has excellent properties as a passive guarantee of the fire safety of ships, is capable of withstanding high temperatures. The binder in stone wool products starts to evaporate when its temperature exceeds approximately 200 °C, while the insulating properties remain unchanged, and the stone wool products' softening temperature is over 1,000°C.

All ABM<sup>®</sup> Marine & Offshore insulations are proved to be of non-combustibility in accordance with IMO FTP Code Part 1, and all fire resistance constructions are proved to conform with the rules and regulations of IMO according to IMO FTP Code Part 3. ABM<sup>®</sup> Marine & Offshore insulations hold the approvals from the Classification Societies of ABS, CCS, DNV, GL, KR, LR, MED and NK. A-constructions of Deck and Bulkhead hold approvals from ABS, CCS, DNV, GL, JG, KR, and LR are under application. All of these specially developed products are already widely used in A-constructions, deck and bulkhead constructions, panels and doors, floating floors, air duct and pipe insulations.

## Brand Guarantee

The company has professional service from pre to after sales to provide customers with one-stop exclusive services, and propose practical and reasonable solutions for users' various problems. 櫻花<sup>®</sup> glass wool have passed the strict internal quality inspection system, each batch of products are under strict testing. The company has unique label traceability and anti-counterfeiting technology, which makes product related information clear at a glance to achieve product traceability and authenticity identification.



櫻花<sup>®</sup> Warranty System

For tracing or inspection, please use the 櫻花<sup>®</sup> official query: <http://qc.cnabm.com:8300/>

# ABM<sup>®</sup> Marine & Offshore Insulation

## FIRE SAFETY AND COMFORT



# ABM® FR60



## Product Description

ABM-FR60 is a semi-rigid board made of stone wool. It is specially developed for fire protection of A-constructions of deck and bulkhead. This product can be customized with reinforced aluminium foil, aluminium glass cloth(ALGC) or white glass cloth(GC).

## Standard Specification

| Product Type           | ABM-FR60                    |        |        |
|------------------------|-----------------------------|--------|--------|
| Class                  | A60                         |        | A30    |
| Nominal Density, kg/m³ | 120                         | 90     | 120    |
| Thickness, mm          | 25, 40, 65                  | 50, 75 | 25, 75 |
| L×W*, mm               | 1000×600, 910×605, 1200×600 |        |        |

\*Other size or density may be available on request.

## Main Properties and Technical Data

| Properties                           | Value                                           | Standard                                         |
|--------------------------------------|-------------------------------------------------|--------------------------------------------------|
| Fire Classification                  | Non-combustible<br>Approval for A constructions | IMO A.799(19)<br>IMO A.754(18)<br>IMO A. 653(16) |
| Max Service Temperature, °C          | 750 for slab<br>80 for facings                  | ASTM C411                                        |
| Thermal Conductivity (10°C), W/(m•K) | ≤0.034                                          | EN 12667                                         |
| Thermal Conductivity (70°C), W/(m•K) | ≤0.040                                          | ASTM C518                                        |
| Moisture Absorption, %               | ≤1.0                                            | GB/T 10295                                       |
| Water Repellence *, %                | ≥99                                             | ASTM C1104M                                      |
| Melting Point, °C                    | ≥1000                                           | GB/T 10299                                       |
| Environment                          | Asbestos, CFCs, HCFCs and HFCs free             | --                                               |

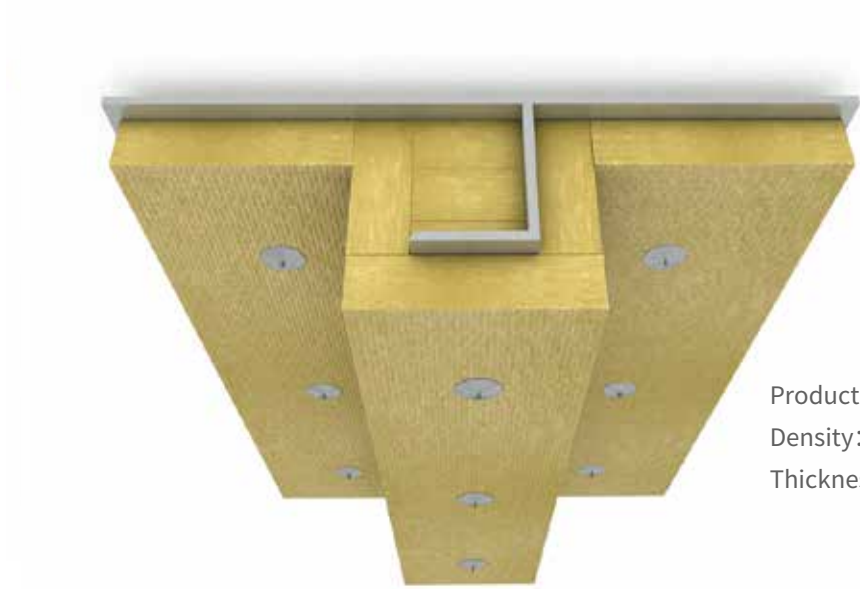
Other properties conform to GB/T 11835 or JIS A9504;

\*Refer to water repellent products only.

## Applications:

ABM-FR60 is normally used as fire insulation of A-60 and A-30 constructions of Deck and Bukhead, which has excellent thermal and sound insulation.

# A-60 Deck(120K,40mm)



Product: ABM-FR60-FS120  
Density: 120kg/m³  
Thickness: Plate 40mm, Stiffener 40mm

## Construction:

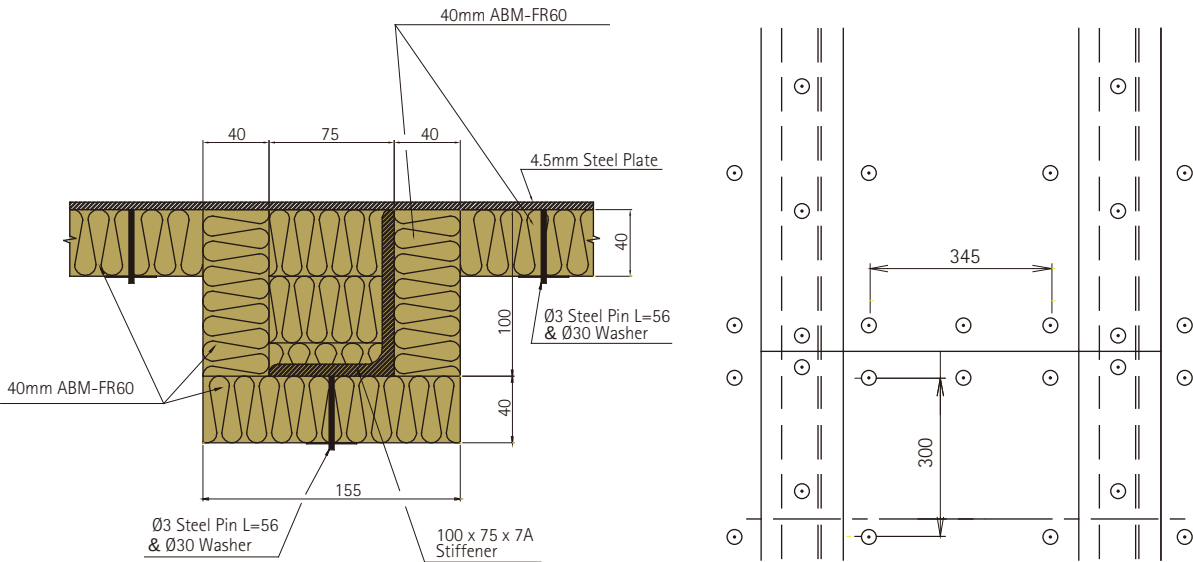
- ◎ Plate between stiffeners insulated with one layer of 40mm ABM-FR60.
- ◎ Stiffeners insulated with one layer of 40mm ABM-FR60.
- ◎ Standard steel plate thickness 4.5(±0.5)mm.
- ◎ Insulations secured with pins of Ø3mm and washers of Ø30mm at approximate 300mm/345mm distance.

## Applications notes:

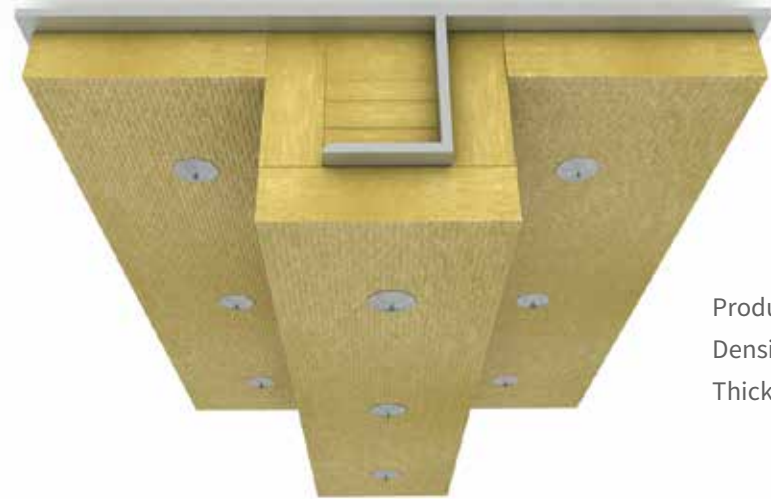
- ◎ All connections must be tight, no air gaps.
- ◎ The gap under the stiffeners must be filled with insulations completely
- ◎ The pins shall exceed the insulation at about 10mm.

## Advantages:

- ◎ One layer solution, easy handling and fast installation



## A-60 Deck(90K,50mm)



Product: ABM-FR60-FS90  
Density: 90kg/m<sup>3</sup>  
Thickness: Plate 50mm, Stiffener 50mm

### Construction:

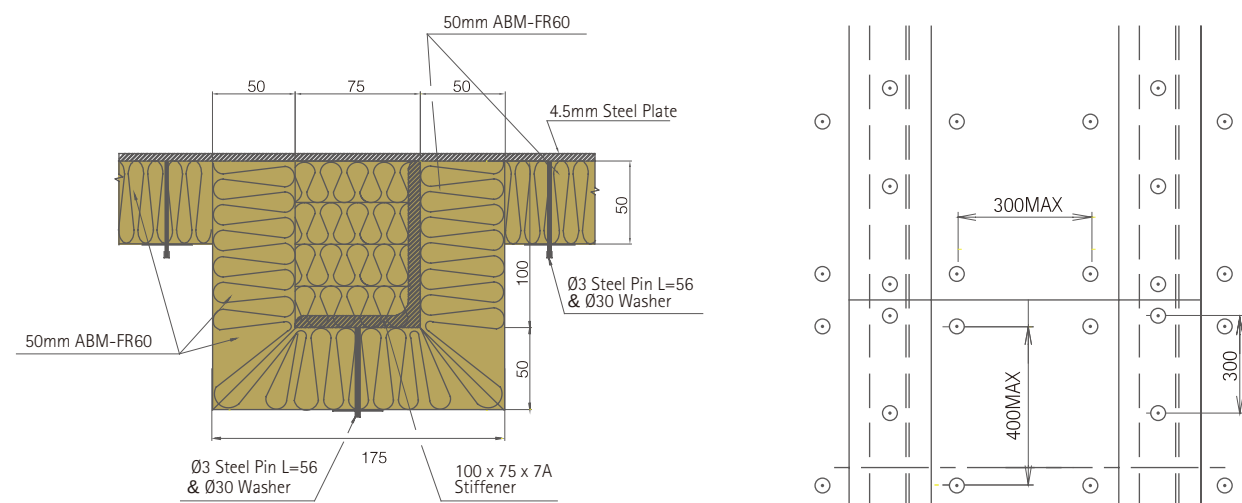
- ◎ Plate between stiffeners insulated with one layer of 50mm ABM-FR60.
- ◎ Stiffeners insulated with one layer of 50mm ABM-FR60.
- ◎ Standard steel plate thickness 4.5(±0.5)mm.
- ◎ Insulations secured with pins of Ø3mm and washers of Ø30mm at approximate 300mm/400mm distance.

### Applications notes:

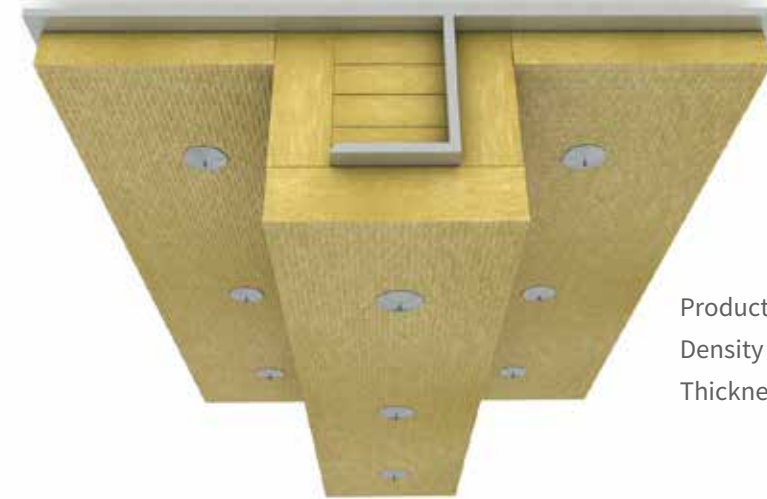
- ◎ All connections must be tight, no air gaps.
- ◎ The gap under the stiffeners must be filled with insulations completely
- ◎ The pins shall exceed the insulation at about 10mm.

### Advantages:

- ◎ One layer solution, easy handling and fast installation
- ◎ Low construction weight
- ◎ Optimal sound insulation



## A-30 Deck(120K,25mm)



Product: ABM-FR60-FS120  
Density: 120kg/m<sup>3</sup>  
Thickness: Plate 25mm, Stiffener 25mm

### Construction:

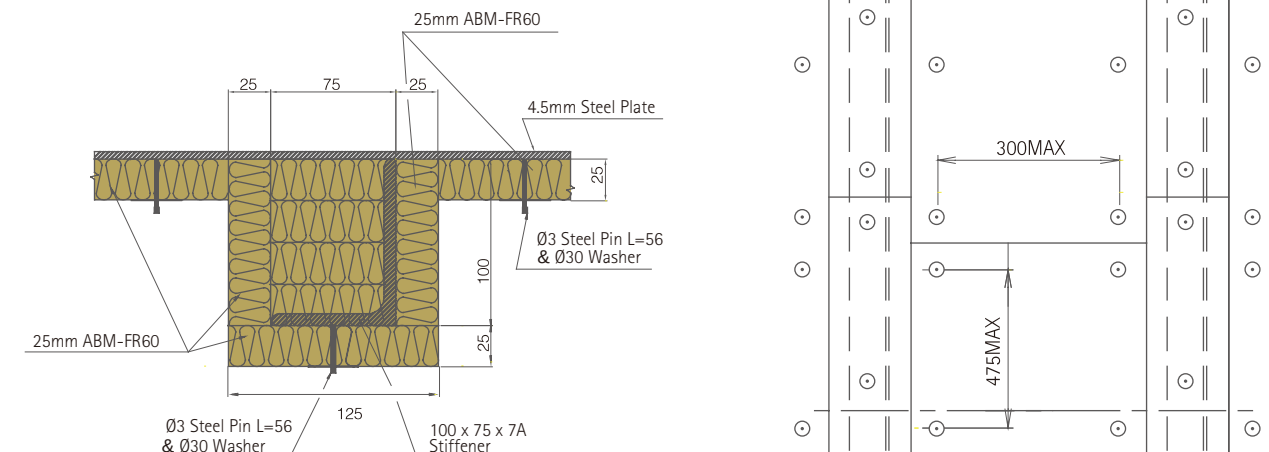
- ◎ Plate between stiffeners insulated with one layer of 25mm ABM-FR60.
- ◎ Stiffeners insulated with one layer of 25mm ABM-FR60.
- ◎ Standard steel plate thickness 4.5(±0.5)mm.
- ◎ Insulations secured with pins of Ø3mm and washers of Ø30mm at approximate 300mm/470mm distance.

### Applications notes:

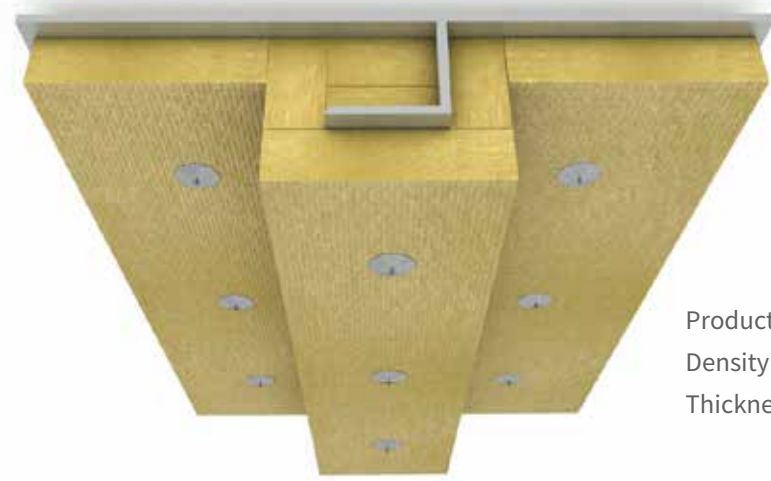
- ◎ All connections must be tight, no air gaps.
- ◎ The gap under the stiffeners must be filled with insulations completely
- ◎ The pins shall exceed the insulation at about 10mm.

### Advantages:

- ◎ One layer solution, easy handling and fast installation



## A-60 Bulkhead(120K,40mm)



Product: ABM-FR60-FS120  
Density: 120kg/m<sup>3</sup>  
Thickness: Plate 40mm, Stiffener 40mm

### Construction:

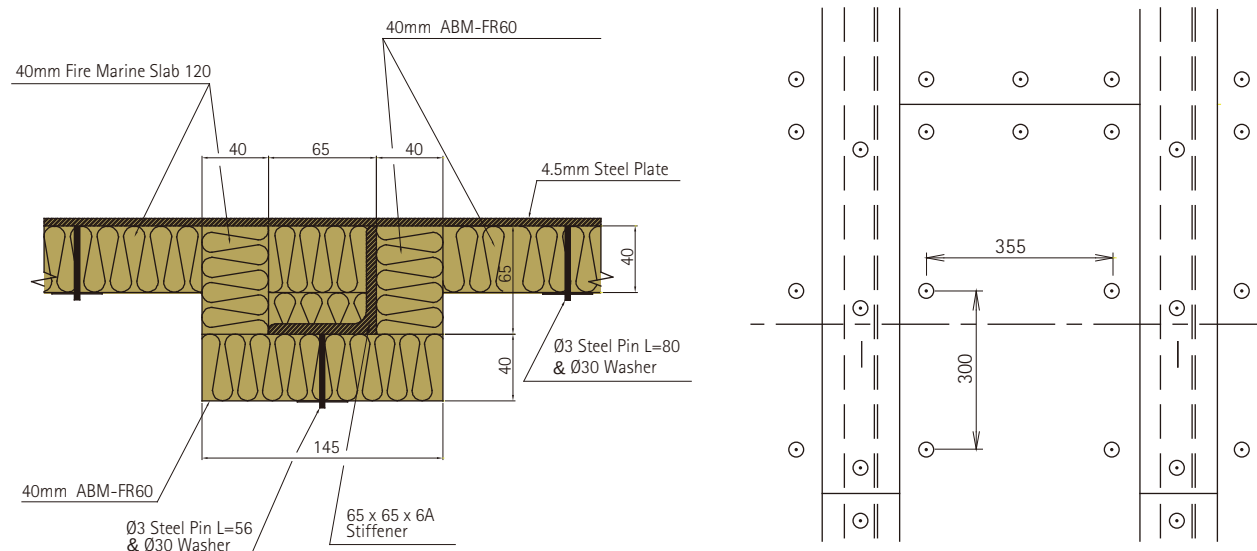
- ◎ Plate between stiffeners insulated with one layer of 40mm ABM-FR60.
- ◎ Stiffeners insulated with one layer of 40mm ABM-FR60.
- ◎ Standard steel plate thickness 4.5(±0.5)mm.
- ◎ Insulations secured with pins of Ø3mm and washers of Ø30mm at approximate 300mm/355mm distance.

### Applications notes:

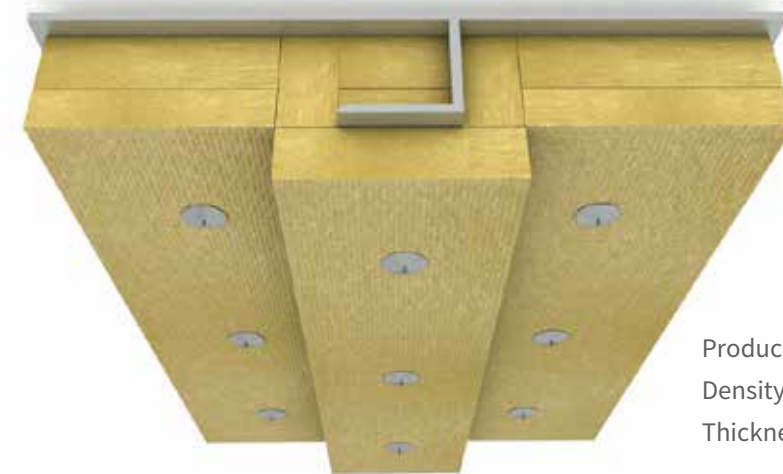
- ◎ Insulation side exposure to fire only
- ◎ All connections must be tight, no air gaps.
- ◎ The gap under the stiffeners must be filled with insulations completely
- ◎ The pins shall exceed the insulation at about 10mm.
- ◎ The plate can be insulated on either side.

### Advantages:

- ◎ One layer solution, easy handling and fast installation



## A-60 Bulkhead(120K,40+25mm)



Product: ABM-FR60-FS120  
Density: 120kg/m<sup>3</sup>  
Thickness: Plate 25+40mm, Stiffener 40mm

### Construction:

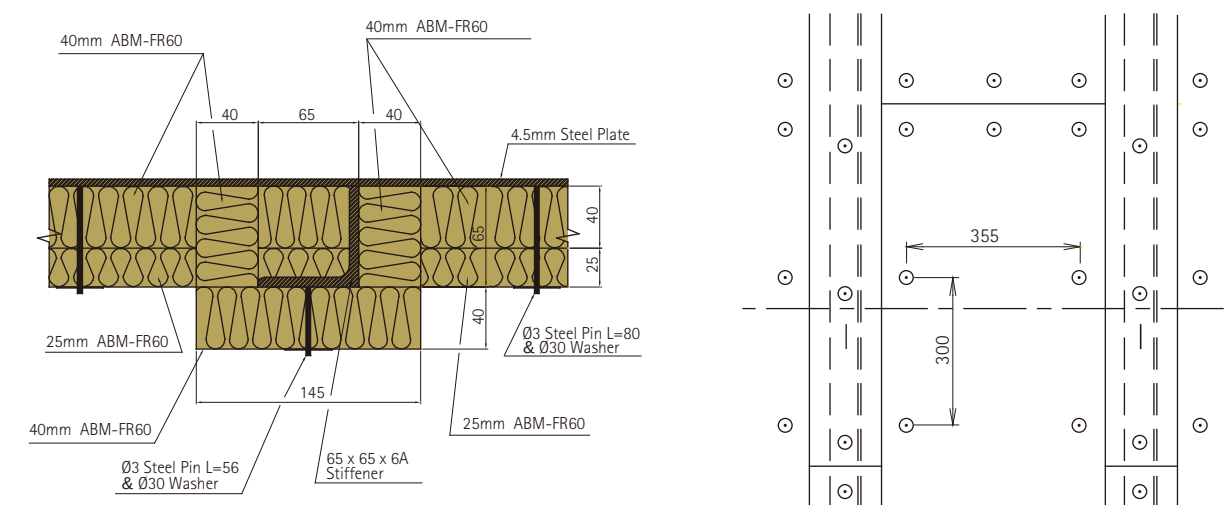
- ◎ Plate between stiffeners insulated with one layer of 40mm and one layer of 25mm ABM-FR60.
- ◎ Stiffeners insulated with one layer of 40mm ABM-FR60.
- ◎ Standard steel plate thickness 4.5(±0.5)mm.
- ◎ Insulations secured with pins of Ø3mm and washers of Ø30mm at approximate 300mm/355mm distance.

### Applications notes:

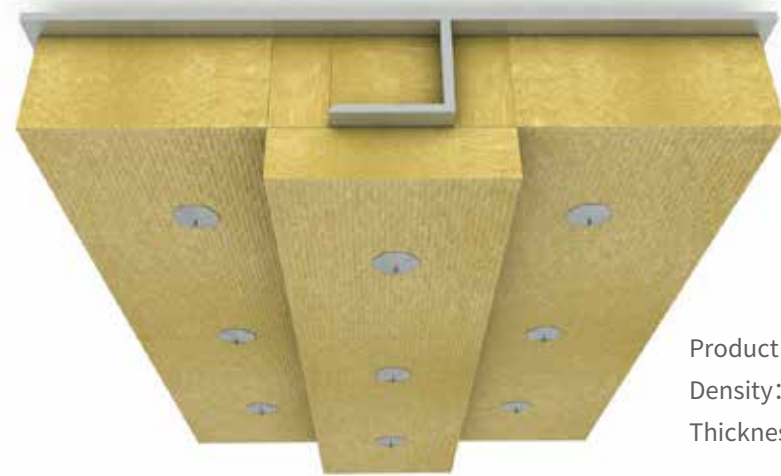
- ◎ Fire can be against insulation or steel either.
- ◎ All connections must be tight, no air gaps.
- ◎ The joints of two layers must be staggered and 150mm overlap is recommended.
- ◎ The gap under the stiffeners must be filled with insulations completely
- ◎ The pins shall exceed the insulation at about 10mm.
- ◎ The plate can be insulated on either side.

### Advantages:

- ◎ Two layer safe solution, optimal sound property.



## A-60 Bulkhead(120K,65mm)



Product: ABM-FR60-FS120  
Density: 120kg/m<sup>3</sup>  
Thickness: Plate 65mm, Stiffener 40mm

### Construction:

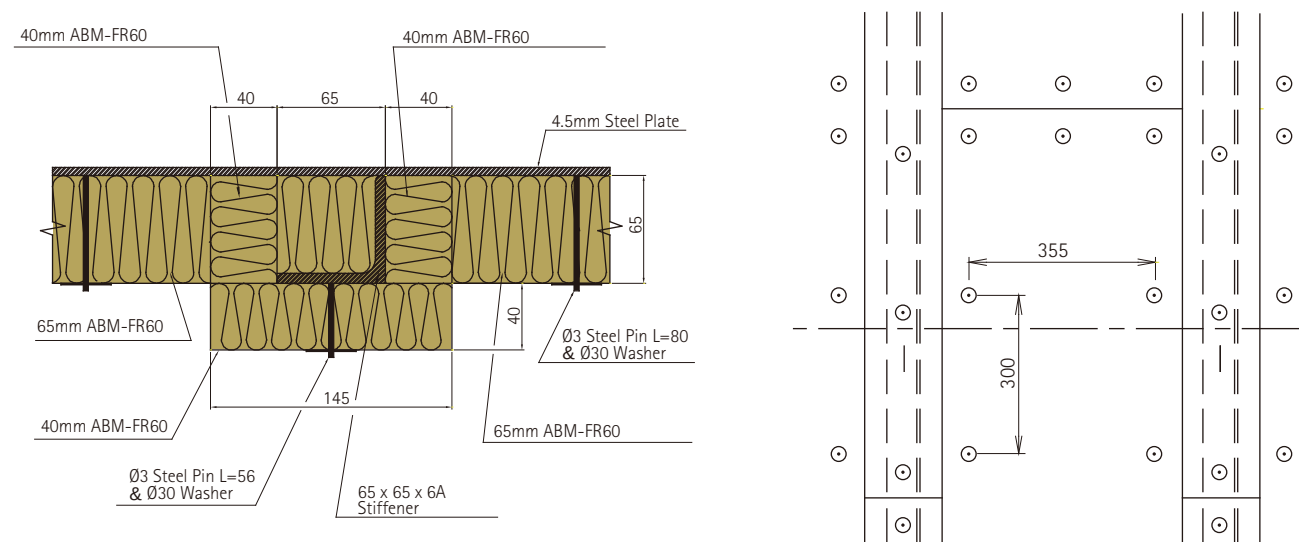
- ◎ Plate between stiffeners insulated with one layer of 65mm ABM-FR60.
- ◎ Stiffeners insulated with one layer of 40mm ABM-FR60.
- ◎ Standard steel plate thickness 4.5(±0.5)mm.
- ◎ Insulations secured with pins of Ø3mm and washers of Ø30mm at approximate 300mm/355mm distance.

### Applications notes:

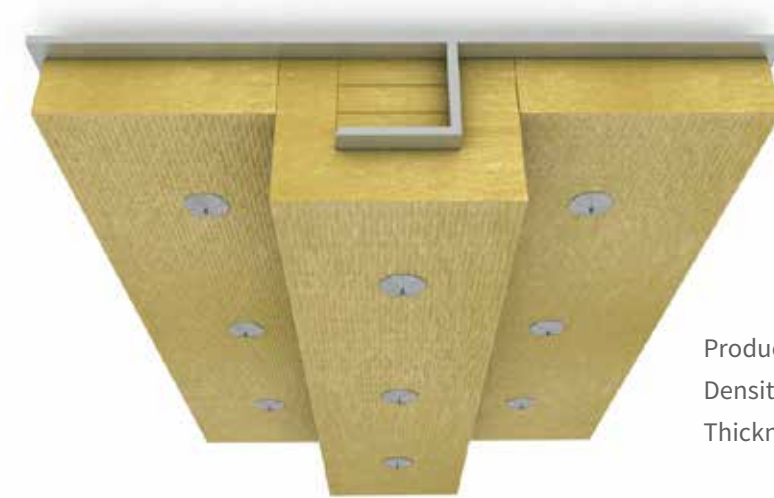
- ◎ Fire can be against insulation or steel either.
- ◎ All connections must be tight, no air gaps.
- ◎ The gap under the stiffeners must be filled with insulations completely
- ◎ The pins shall exceed the insulation at about 10mm.
- ◎ The plate can be insulated on either side.

### Advantages:

- ◎ One layer solution, easy handling and fast installation.



## A-60 Bulkhead(90K,50mm)



Product: ABM-FR60-FS90  
Density: 90kg/m<sup>3</sup>  
Thickness: Plate 50mm, Stiffener 50mm

### Construction:

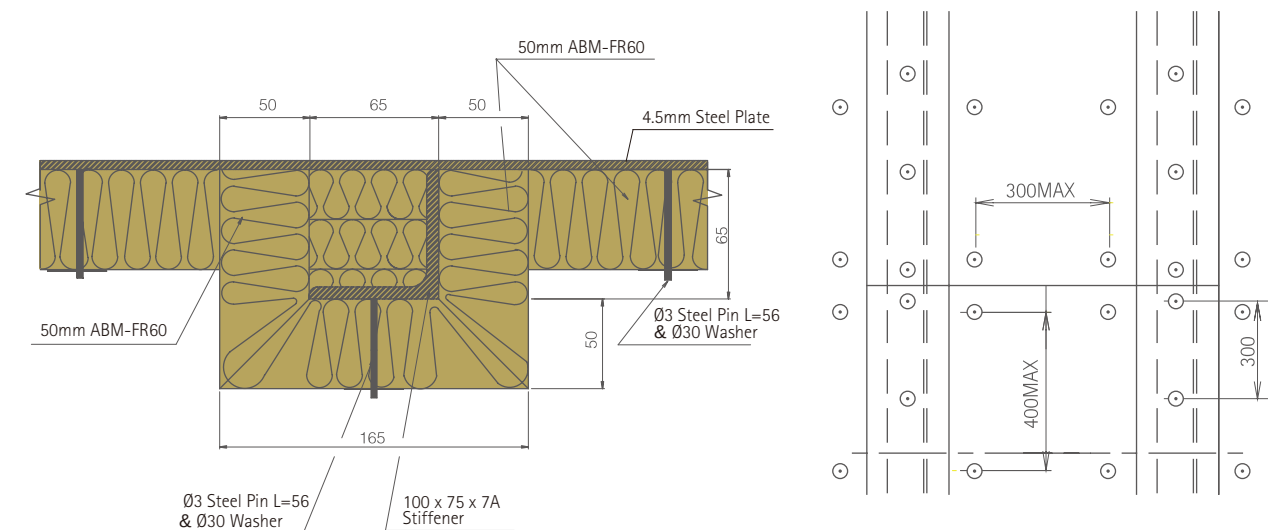
- ◎ Plate between stiffeners insulated with one layer of 50mm ABM-FR60.
- ◎ Stiffeners insulated with one layer of 50mm ABM-FR60.
- ◎ Standard steel plate thickness 4.5(±0.5)mm.
- ◎ Insulations secured with pins of Ø3mm and washers of Ø30mm at approximate 300mm/400mm distance.

### Applications notes:

- ◎ Insulation exposure to fire only.
- ◎ All connections must be tight, no air gaps.
- ◎ The gap under the stiffeners must be filled with insulations completely
- ◎ The pins shall exceed the insulation at about 10mm.
- ◎ The plate can be insulated on either side.

### Advantages:

- ◎ One layer solution, easy handling and fast installation
- ◎ Optimal sound insulation



## A-60 Bulkhead(90K,75mm)



Product: ABM-FR60-FS90  
Density: 90kg/m<sup>3</sup>  
Thickness: Plate 75mm, Stiffener 25mm

### Construction:

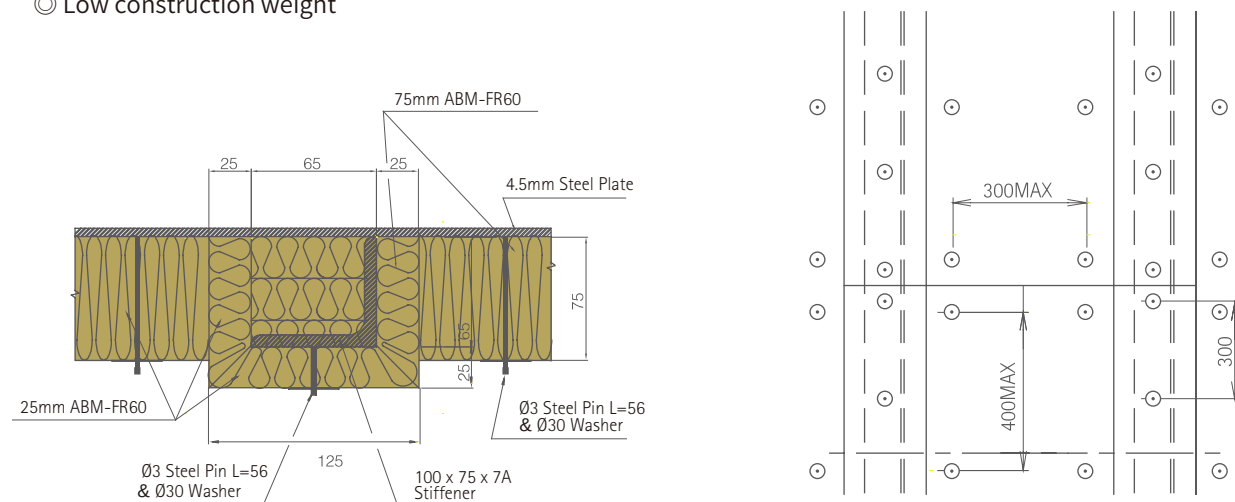
- ◎ Plate between stiffeners insulated with one layer of 75mm ABM-FR60.
- ◎ Stiffeners insulated with one layer of 25mm ABM-FR60.
- ◎ Standard steel plate thickness 4.5(±0.5)mm.
- ◎ Insulations secured with pins of Ø3mm and washers of Ø30mm at approximate 300mm/400mm distance.

### Applications notes:

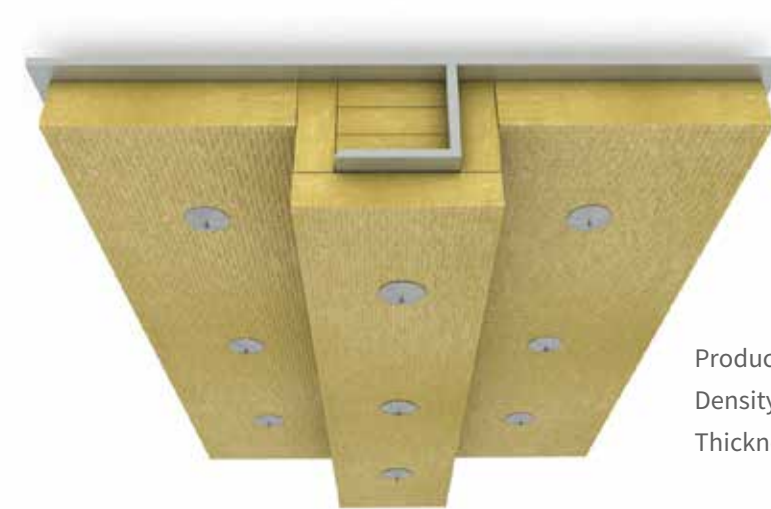
- ◎ Insulation exposure to fire only.
- ◎ All connections must be tight, no air gaps.
- ◎ The gap under the stiffeners must be filled with insulations completely
- ◎ The pins shall exceed the insulation at about 10mm.
- ◎ The plate can be insulated on either side.

### Advantages:

- ◎ One layer solution, easy handling and fast installation
- ◎ Optimal sound insulation
- ◎ Low construction weight



## A-30 Bulkhead(120K,50mm)



Product: ABM-FR60-FS120  
Density: 120kg/m<sup>3</sup>  
Thickness: Plate 50mm, Stiffener 25mm

### Construction:

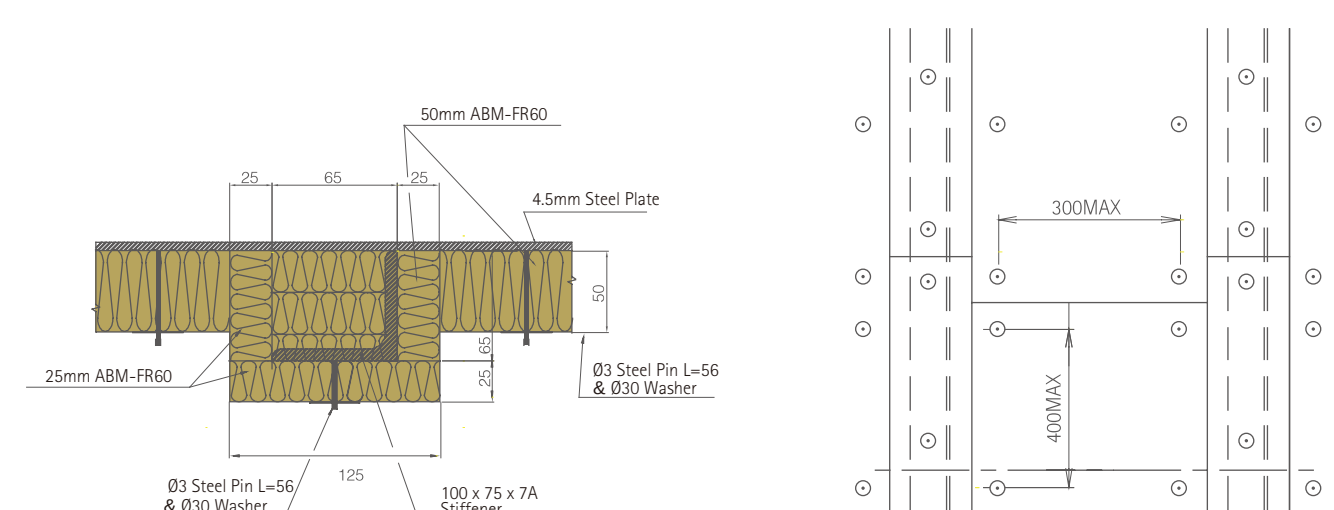
- ◎ Plate between stiffeners insulated with one layer of 50mm ABM-FR60.
- ◎ Stiffeners insulated with one layer of 25mm ABM-FR60.
- ◎ Standard steel plate thickness 4.5(±0.5)mm.
- ◎ Insulations secured with pins of Ø3mm and washers of Ø30mm at approximate 300mm/400mm distance.

### Applications notes:

- ◎ Insulation exposure to fire only.
- ◎ All connections must be tight, no air gaps.
- ◎ The gap under the stiffeners must be filled with insulations completely
- ◎ The pins shall exceed the insulation at about 10mm.
- ◎ The plate can be insulated on either side.

### Advantages:

- ◎ One layer solution, easy handling and fast installation
- ◎ Optimal sound insulation



# ABM® Marine Wire-meshed Blanket



## Product Description

ABM® Marine Wire-meshed Blanket (MWB series) is a flexible and rolled blanket, made of rock wool blanket and metal mesh stitched together by wire. It is high temperature resistant and easy handling. According to different applications and requirements, we can supply the following variants on request:

- Galvanized wire mesh and stitching wire
- Stainless steel mesh and stitching wire
- Wire mesh and stitching wire with addition of aluminium foil between mesh and rock wool blanket

## Standard Specification

| Product Type           | MWB80 |        | MWB100 |        | MWB120 |        |
|------------------------|-------|--------|--------|--------|--------|--------|
| Nominal Density, kg/m³ | 80    |        | 100    |        | 120    |        |
| Width, mm              | 600   |        | 600    |        | 600    |        |
| Thickness, mm          | 25~50 | 60~100 | 25~50  | 60~100 | 25~50  | 60~100 |
| Length, mm             | 5000  | 3000   | 5000   | 3000   | 5000   | 3000   |

\*Other size or density may be available on request.

## Main Properties and Technical Data

| Properties                           | Value                               |        |        | Standard      |
|--------------------------------------|-------------------------------------|--------|--------|---------------|
|                                      | MWB80                               | MWB100 | MWB120 |               |
| Fire Classification                  | Non-combustible                     |        |        | IMO A.799(19) |
| Max Service Temperature, °C          | 650                                 | 750    | 750    | ASTM C411     |
| Thermal Conductivity (10°C), W/(m•K) | ≤0.034                              | ≤0.034 | ≤0.034 | GB/T 10295    |
| Thermal Conductivity (70°C), W/(m•K) | ≤0.040                              | ≤0.040 | ≤0.040 | ASTM C518     |
| Moisture Absorption, %               | ≤1.0                                |        |        | ASTM C1104M   |
| Water Repellence*, %                 | ≥99                                 |        |        | GB/T 10299    |
| Melting Point, °C                    | ≥1000                               |        |        | --            |
| Environment                          | Asbestos free, no CFCs, HCFCs, HFCs |        |        | --            |

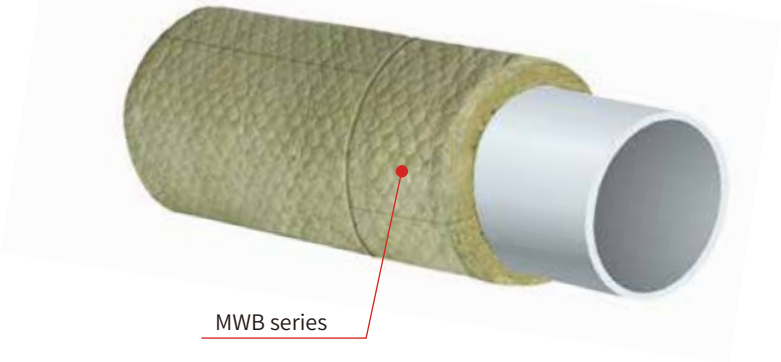
Other properties conform to GB/T 11835 or JIS A9504;

\*Refer to water repellent products only.

## Application:

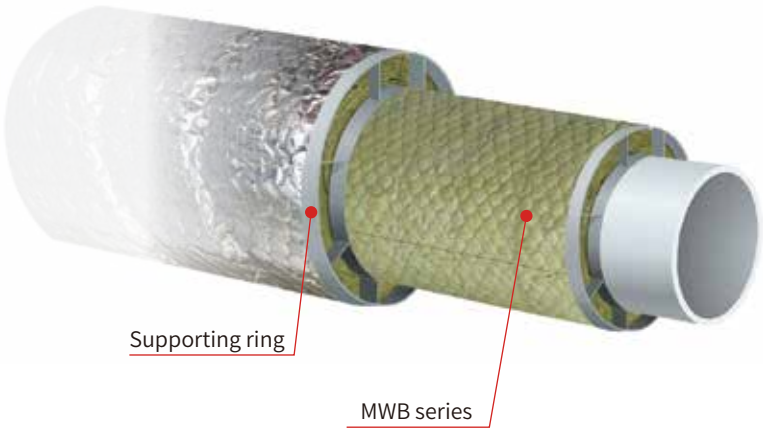
It is suitable for thermal and comfortable insulation of marine applications, especially for pipes, big vessels and tanks with temperature more than 250 .

### For pipe insulation



Cut the mats to the required length and wrapped around the pipes and fixed tightly at all lateral joints

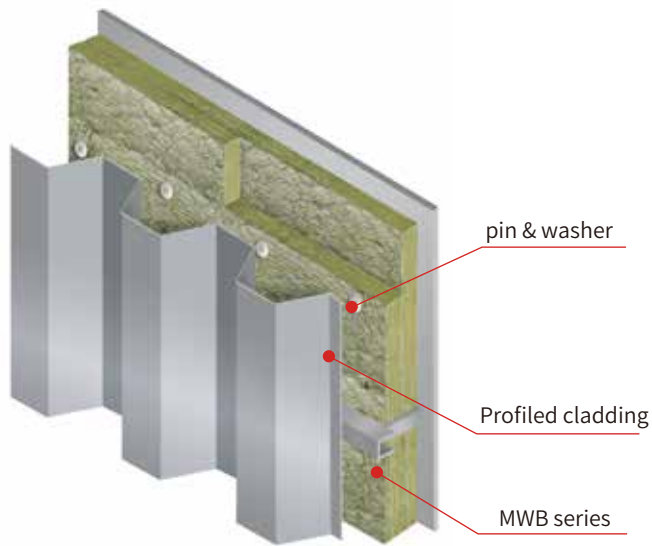
To avoid thermal bridges, the joints should be staggered and the mats should be secured tightly at all of the joints.



To avoid compression, some supporting rings are needed, the gaps of ring should be filled with loose wool.

In case of multi-layers insulation, the mats should be secured tightly at all lateral and longitudinal joints of each layer, and the joints of two layers should be staggered.

### For big diameter vessel and tank insulation



To avoid thermal bridges, the joints shall be tightly secured and staggered. The joints of two layers staggered at about 150mm.

The mats are fixed with pins and washers, and the pins length should be 15mm bigger than the whole insulation thickness, and the pins should be bent over the washer to keep mats against the tank wall.

The mats should be covered with a flat or profiled external cladding to protect them from mechanical or weather damage.

# ABM® Marine Lamella Mat



## Product Description

ABM® Marine Lamella Mat(MLM series) is made of lamellas cut from slabs in the length direction attaching with some facing materials such as glass tissue, aluminium foil or aluminium glass cloth(ALGC). The majority of the fibers are perpendicular to the facing. It is not only very flexible but also with good compression strength, can be easily installed on pipes, ducts, tanks and other curve surfaces.

## Standard Specification

| Product Type              | MLM70               | MLM80 | MLM120 |
|---------------------------|---------------------|-------|--------|
| Thickness, mm             | 70                  | 80    | 120    |
| Nominal Density, kg/m³    | 25, 50, 75,100      |       |        |
| Size (length x width), mm | 1820×605, 2000×1200 |       |        |

\*Other size or density may be available on request.



## Main Properties and Technical Data

| Properties                           | Value                                                       |        |                                       | Standard                                         |
|--------------------------------------|-------------------------------------------------------------|--------|---------------------------------------|--------------------------------------------------|
|                                      | MLM70                                                       | MLM80  | MLM120                                |                                                  |
| Compression Strength, kPa            | 15                                                          | 20     | 30                                    | EN826                                            |
| Fire Classification                  | Non-combustible for lamella<br>Low-flame spread for facings |        |                                       | IMO A.799(19)<br>IMO A.653(16)<br>IMO A. 653(16) |
| Max Service Temperature, °C          | 450°C for lamella<br>80°C for facings                       |        | 650°C for lamella<br>80°C for facings | ASTM C411                                        |
| Thermal Conductivity (10°C), W/(m•K) | ≤0.037                                                      | ≤0.037 | ≤0.038                                | GB/T 10295<br>EN 12667<br>ASTM C518              |
| Thermal Conductivity (70°C), W/(m•K) | ≤0.048                                                      | ≤0.048 | ≤0.049                                |                                                  |
| Moisture Absorption, %               | ≤1.0                                                        |        |                                       | ASTM C1104M                                      |
| Water Repellence*, %                 | ≥99                                                         |        |                                       | GB/T 10299                                       |
| Melting Point, °C                    | ≥1000                                                       |        |                                       | --                                               |
| Environment                          | Asbestos free, no CFCs, HCFCs, HFCs                         |        |                                       | --                                               |

Other properties conform to GB/T 11835 or JIS A9504;

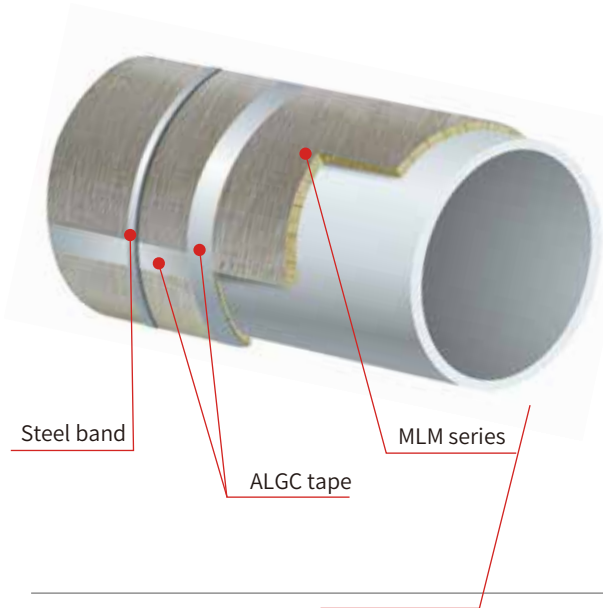
\*Refer to water repellent products only.

## Application:

It is normally used for thermal insulation with temperature lower than 250°C. Because of the major fiber direction is perpendicular to the facing, the Marine lamella mats have higher compression resistance than wire-meshed blanket whereas remain the flexibility property. It is specially suitable to be used for insulation of:

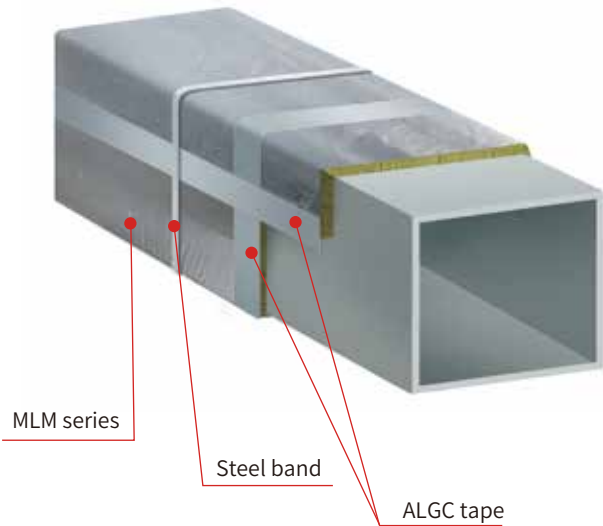
- ◎ Where has heat, operation vibration load.
- ◎ Where need high compression resistance.
- ◎ Where have mechanical impacts.
- ◎ Rectangle HVAC ducts to keep the same insulation thickness all around the ducts even at the angles.

## For pipe insulation



The mats are secured with two steel banding at about 100mm from the lateral joints per mat width.

Neighboring mats joints should be staggered, and all of the joints of longitudinal and latitudinal should be sealed with tape to reduce thermal bridges.

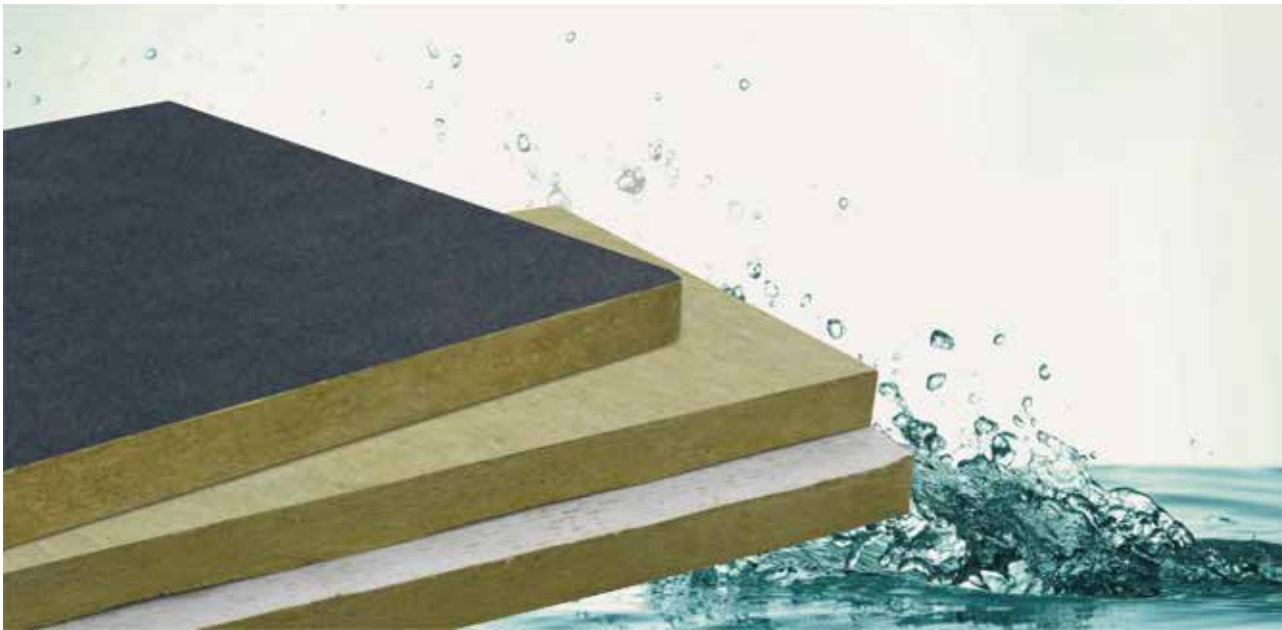


The high compression strength of lamella mat make it very suitable for rectangle air duct insulation to keep the same insulation thickness all around.

All joints should be staggered and sealed with tape

The mats are secured at all lateral and longitudinal joints.

# ABM® Marine Slab



## Product Description

ABM® Marine Slab (MS series) is mainly made from the natural rock of basalt and dolomite. It is preformed porous light or semi-rigid rock wool board with very good performance on thermal, acoustic and fire insulation. According to different applications and requirements, it can be faced with aluminium foil, aluminium glass cloth or glass cloth on one side or both sides.

## Standard Specification

| Product Type              | MS60     | MS80   | MS100  |
|---------------------------|----------|--------|--------|
| Thickness, mm             | 40~100   | 25~150 | 25~150 |
| Nominal Density, kg/m³    | 60       | 80     | 100    |
| Size (length x width), mm | 1200x600 |        |        |

\*Other size or density may be available on request.



## Main Properties and Technical Data

| Properties                                       | MS40                                                            | MS60   | MS80   | MS100  | Standard                                     |
|--------------------------------------------------|-----------------------------------------------------------------|--------|--------|--------|----------------------------------------------|
| Fire Classification                              | Non-combustible for pipe section<br>Low flame spread for facing |        |        |        | ASTM E136<br>IMO A.799(19)<br>IMO A. 653(16) |
| Max Service Temperature, °C                      | 350                                                             | 450    | 650    | 650    | ASTM C411                                    |
| Thermal Conductivity Coefficient (10°C), W/(m•K) | ≤0.034                                                          | ≤0.034 | ≤0.034 | ≤0.033 | GB/T 10294<br>ASTM C518<br>ASTM C177         |
| Thermal Conductivity Coefficient (70°C), W/(m•K) | ≤0.040                                                          | ≤0.040 | ≤0.040 | ≤0.040 |                                              |
| Fire Classification, %                           | ±15%                                                            |        |        |        | GB/T 11835                                   |
| Moisture Absorption, %                           | ≤1.0                                                            |        |        |        | ASTM C1104M                                  |
| Water Repellence*, %                             | ≥99                                                             |        |        |        | GB/T 10299                                   |
| Melting Point, °C                                | ≥1000                                                           |        |        |        | --                                           |
| Environment                                      | Asbestos, CFCs, HCFCs and HFCs free                             |        |        |        | --                                           |

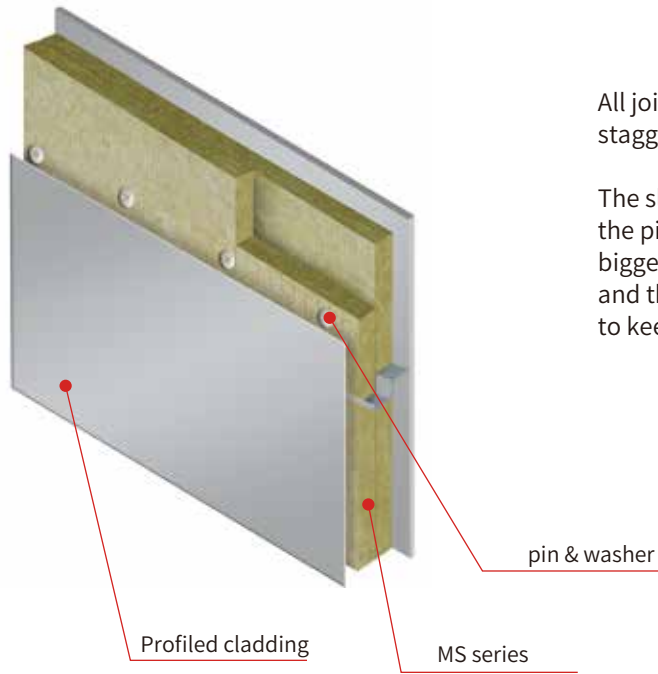
Other properties conform to GB/T 11835 or JIS A9504;

\*Refer to water repellent products only.

## Application:

ABM® Marine Slab is mainly used as thermal, acoustic insulation of deck and bulkhead construction, walls of vessel and big tanks.

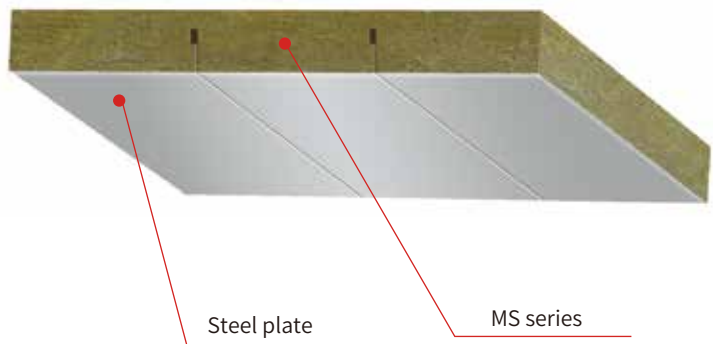
### For tank insulation



All joints should be secured tightly and staggered to avoid thermal bridges.

The slabs are fixed with pin and washers, and the pins length should be 15mm at least bigger than the whole insulation thickness, and the pins should be bent over the washers to keep mats against the tank wall.

### For ceiling insulation



Marine slabs are laid and filled fully in the metal frame.

The joints should be tight, no air gap.

For perforated steel plate, marine slab should be faced with glass cloth or glass tissue.

# ABM® Pipe Section



### Product Description

ABM® Pipe Section (MPS) is preformed through some mould for technical and industry pipeline. For easy installation, the pipe section is split in one side with a joint cutting on the opposite side. The outer face of the pipe section can be polished to make the consistent and exact insulation thickness in all directions or faced with aluminium foil on request.

### Standard Specification

| Product Type           | MPS120    | MPS140 |
|------------------------|-----------|--------|
| Inner Dia, inch        | 120       | 140    |
| Inner Dia, mm          | 25~100    | 25~100 |
| Thickness, mm          | 1/2~12    | 1/2~16 |
| Nominal Density, kg/m³ | 22~325    | 22~406 |
| Length, mm             | 910, 1000 |        |

\*Other size or density may be available on request.

### Main Properties and Technical Data

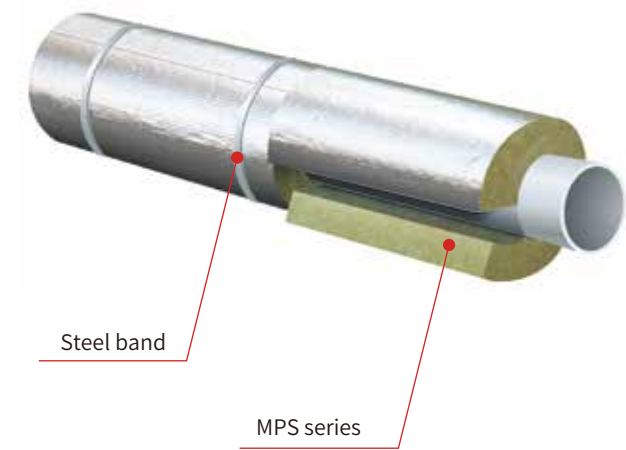
| Property                             | MPS120                                                          | MPS140 | Standard                             |
|--------------------------------------|-----------------------------------------------------------------|--------|--------------------------------------|
| Fire Classification                  | Non-combustible for pipe section<br>Low flame spread for facing |        | IMO A.799(19)<br>IMO A. 653(16)      |
| Max Service Temperature, °C          | 650 for pipe section<br>80 for facing                           |        | ASTM C411                            |
| Thermal Conductivity (10°C), W/(m•K) | ≤0.034                                                          | ≤0.035 | GB/T 10294<br>ASTM C518<br>ASTM C177 |
| Thermal Conductivity(70°C), W/(m•K)  | ≤0.040                                                          | ≤0.041 |                                      |
| Moisture Absorption, %               | ≤1.0                                                            |        | ASTM C1104M                          |
| Water Repellence, %                  | ≥99                                                             |        | GB/T 10299                           |
| Melting Point, °C                    | ≥1000                                                           |        | --                                   |
| Environment                          | Asbestos free, no CFCs, HCFCs or HFCs                           |        | --                                   |

Other properties conform to GB/T 11835 or JIS A9504;

### Application:

ABM® Pipe Section’s main application is heating, warm water or process pipe line for thermal and acoustic insulation, to avoid heat loss or decrease the condensation, to make process stable and improve energy efficiency.

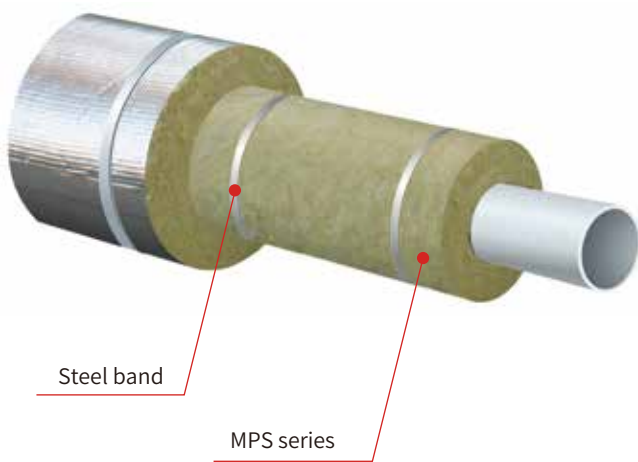
### For pipe insulation



Pipe sections can be applied with one single layer without any additional spaces because of the excellent fitness between different pipe sections.

The pipe section is secured to the pipe by applying three steel bands per section length, two for both ends and one in the middle, the end band will be about 100mm from the edge.

The longitudinal joints of neighboring pipe sections should be staggered.

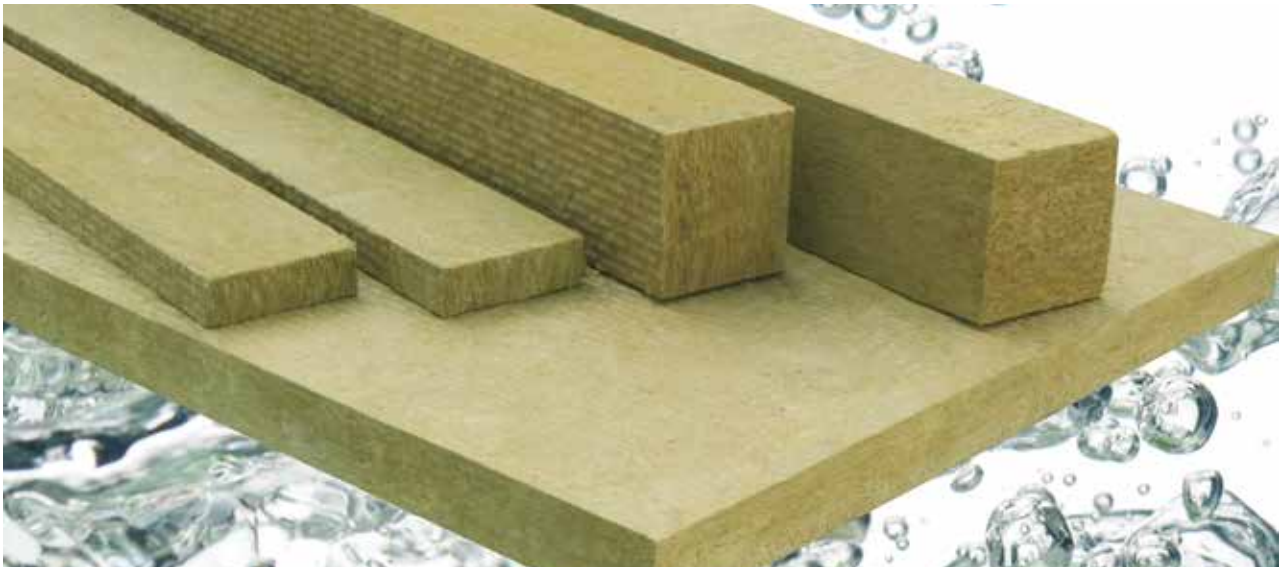


For neighboring pipe sections, the longitudinal joints should be staggered.

The joints in longitudinal and latitudinal directions of two layers shall be staggered, overlap of 150mm in longitudinal is recommended.

Each layer should be banded with three steel bands per pipe section, two for both ends and one in the middle, the end band will be about 100mm from the edge.

# ABM® Marine Rigid Slab



## Product Description

ABM® Marine Rigid Slab is very rigid and strong, has very good compression and tensile strength. It is originally designed for core insulation material of marine panel, also used as insulation of floating floor. We have two different types: SR series and SL series, and the SL series are cut from the SR series along the length direction. The fiber direction of SL series is vertical to metal panel to make even higher mechanical strength and much smoother surface. Both type products are water repellent, and low water and moisture absorption, the fire reaction is Non-combustible.

## Main Properties and Technical Data

| Properties                              | SL120                                 | SL150  | SL200  | SL220  | Standard                             |
|-----------------------------------------|---------------------------------------|--------|--------|--------|--------------------------------------|
| Compression Strength (10%), kPa         | 80                                    | 120    | 180    | 200    | EN 826                               |
| Tensile Strength, kPa                   | 150                                   | 200    | 300    | 350    | EN 1607                              |
| Fire Rating                             | Non-combustible                       |        |        |        | GB/T 8624<br>ISO1182<br>IMO A799(19) |
| SL Thermal Conductivity (10°C), W/(m•K) | ≤0.037                                | ≤0.038 | ≤0.039 | ≤0.040 | GB/T 10295<br>ASTM C518              |
| SL Thermal Conductivity (70°C), W/(m•K) | ≤0.049                                | ≤0.049 | ≤0.050 | ≤0.050 |                                      |
| Moisture Absorption, %                  | ≤1.0                                  | ≤1.0   | ≤1.0   | ≤1.0   | GB/T 5480<br>ASTM C1104M             |
| Water Repellence*, %                    | ≥99                                   | ≥99    | ≥99    | ≥99    | GB/T 10299                           |
| Dimensional Stability, %                | ≤1.0                                  | ≤1.0   | ≤1.0   | ≤1.0   | EN1604                               |
| RS Thickness Tolerance, mm              | ±3                                    | ±3     | ±3     | ±3     | GB/T 19686                           |
| SL Thickness Tolerance, mm              | ±0.5                                  | ±0.5   | ±0.5   | ±0.5   | GB/T 5480                            |
| Melting Point, °C                       | ≥1000                                 | ≥1000  | ≥1000  | ≥1000  | --                                   |
| Environment                             | Asbestos free, no CFCs, HCFCs or HFCs |        |        |        | --                                   |

Other properties conform to GB/T 11835 or JIS A9504;

\*Refer to water repellent products only.

## Standard Specification

RS series

| Products Type          | RS120    | RS150 | RS200 | RS220 |
|------------------------|----------|-------|-------|-------|
| Nominal Density, kg/m³ | 120      | 150   | 200   | 220   |
| Thickness*, mm         | 100      | 100   | 60    | 50    |
| Size(L×W)*, mm         | 1200x600 |       |       |       |

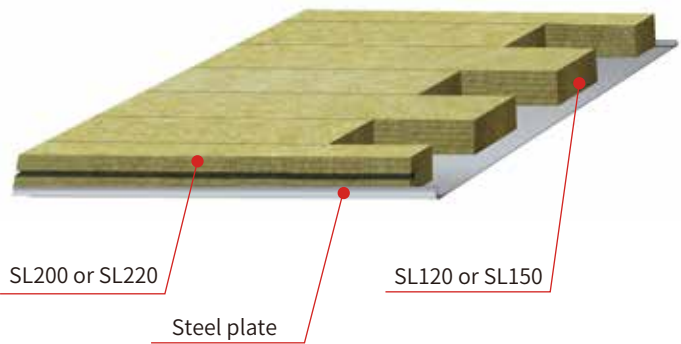
RL series

| Products Type          | SL120    | SL150    | SL200   | SL220   |
|------------------------|----------|----------|---------|---------|
| Nominal Density, kg/m³ | 48.5~100 | 23~100   | 23~100  | 23~100  |
| Thickness*, mm         | 1200x100 | 1200x100 | 1200x60 | 1200x60 |
| Size(L×W)*, mm         | 120      | 150      | 200     | 220     |

## Application:

The main application of SR and SL series products is used as core insulation agent of marine panel which is the ideal products for interior decoration, ceiling of marine and offshore plat, as general insulation of floating floor.

## For marine panel insulation



All joints should be staggered and butted tightly.

The fiber direction should be vertical to metal panel.

To reduce panel weight and cost while remaining strength, the middle parts can be SL120 or SL150, the edge lamella can be SL200 or SL 220.

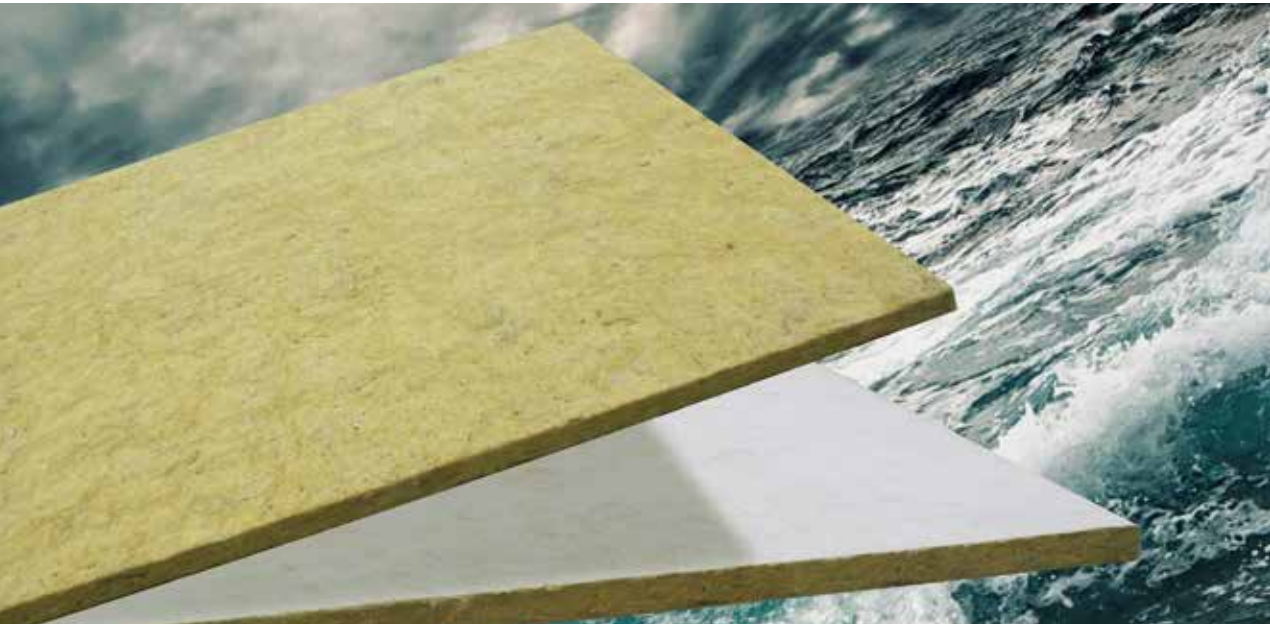
## For floating floor insulation



The upper layer is SL series, the vertical fiber makes high compression strength. The bottom part is SR series, the horizontal fiber makes a good elasticity to reduce the vibration and noise of the floor during ship sails in the sea.

The two layers stone wool products are bonded together tightly, and all of the joints should be staggered.

# ABM® Marine Slab 180



## Product Description

ABM® Marine Slab180 is mainly made from the natural rocks of basalt and dolomite. It is preformed porous rigid stone wool slab with good performance on thermal, acoustic and fire insulation. It is possible to use with aluminium foil, aluminium glass cloth or glass cloth on one side or both sides.

## Standard Specification

| Product Type              | ABM-SR MS 180        |
|---------------------------|----------------------|
| Thickness, mm             | 10~80                |
| Nominal Density, kg/m³    | 180                  |
| Size (length x width), mm | 2160 x492, 1965 x495 |

\*Other size or density may be available on request.

## Main Properties and Technical Data

| Properties                                       | Value                                                           | Standard                                     |
|--------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------|
| Compression Strength (10% deformation), kPa      | ≥40                                                             | EN 826                                       |
| Fire Classification                              | Non-combustible for pipe section<br>Low flame spread for facing | ASTM E136<br>IMO A.799(19)<br>IMO A. 653(16) |
| Max Service Temperature, °C                      | 650 for pipe section<br>80 for facing                           | ASTM C411                                    |
| Thermal conductivity Coefficient (10°C), W/(m•K) | ≤0.038                                                          | GB/T 10294<br>ASTM C518<br>ASTM C177         |
| Thermal conductivity Coefficient (70°C), W/(m•K) | ≤0.044                                                          |                                              |
| Moisture Absorption, %                           | ≤1.0                                                            | ASTM C1104M                                  |
| Water Repellence*, %                             | ≥99                                                             | GB/T 10299                                   |
| Melting Point, °C                                | ≥1000                                                           | --                                           |
| Environment                                      | Asbestos free, no CFCs, HCFCs or HFCs                           | --                                           |

Other properties conform to GB/T 11835 or JIS A9504;

\*Refer to water repellent products only.

## Application:

ABM® Marine slab 180 is mainly used as general insulation of sanitary units and acoustic panels.

### For sanitary units insulation



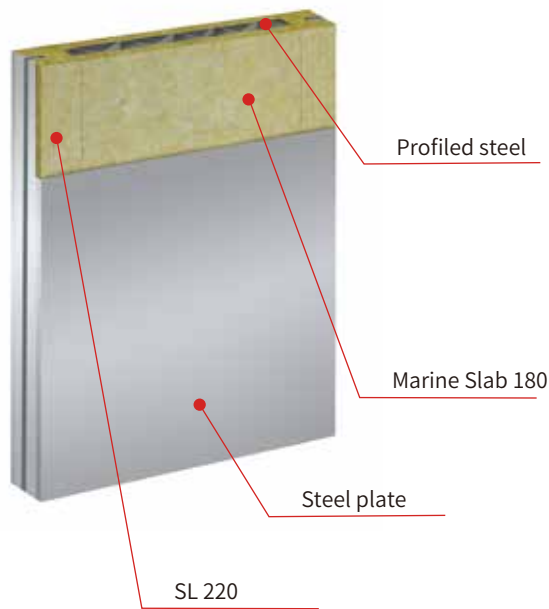
The Marine slab is faced with white glass tissue.

The marine slab is bonded with metal panel of the sanitary frame, and the joints should be butted tightly.

In the whole height, use one piece of marine slab 180 to reduce the joints.

Marine Slab 180

### For panel insulation



The marine slab is bonded with the steel panel on one side and the profiled steel plate on the other side.

For the whole panel, use one piece of the marine slab 180 on each side to reduce the joints.

The joints of Marine slab 180 and SL220 should be butted tightly.

# Approvals & Certificates

| Products Type              |                      | Classification Society |     |         |    |    |    |    |
|----------------------------|----------------------|------------------------|-----|---------|----|----|----|----|
|                            |                      | ABS                    | CCS | EC(MED) | JG | KR | LR | NK |
| Constructions              |                      |                        |     |         |    |    |    |    |
| A-construction             | A-60 DECK(40)        | ⊙                      | ⊙   | ⊙       | ⊙  |    |    | ⊙  |
|                            | A-60 DECK(50)        | ⊙                      |     | ⊙       |    | ⊙  | ⊙  | ⊙  |
|                            | A-30 DECK(25)        | ⊙                      |     | ⊙       |    | ⊙  |    | ⊙  |
|                            | A-60 BULKHEAD(40)    | ⊙                      | ⊙   | ⊙       | ⊙  |    |    | ⊙  |
|                            | A-60 BULKHEAD(10+25) | ⊙                      | ⊙   | ⊙       | ⊙  |    |    | ⊙  |
|                            | A-60 BULKHEAD(65)    | ⊙                      | ⊙   | ⊙       | ⊙  |    |    | ⊙  |
|                            | A-60 BULKHEAD(50)    | ⊙                      |     | ⊙       |    | ⊙  | ⊙  | ⊙  |
|                            | A-60 BULKHEAD(75)    | ⊙                      |     | ⊙       |    | ⊙  | ⊙  | ⊙  |
|                            | A-30 BULKHEAD(50)    | ⊙                      |     | ⊙       |    | ⊙  |    | ⊙  |
| Non Combustible Products   |                      |                        |     |         |    |    |    |    |
| Marine Slab                | MS 40                | ⊙                      | ⊙   | ⊙       |    | ⊙  |    | ⊙  |
|                            | MS 60                | ⊙                      | ⊙   | ⊙       |    | ⊙  |    | ⊙  |
|                            | MS 80                | ⊙                      | ⊙   | ⊙       |    | ⊙  |    | ⊙  |
|                            | MS 100               | ⊙                      | ⊙   | ⊙       |    | ⊙  |    | ⊙  |
|                            | Marine Slab 180      | ⊙                      | ⊙   | ⊙       |    | ⊙  |    | ⊙  |
| Marine Rigid Slab          | SR 120               | ⊙                      | ⊙   | ⊙       |    | ⊙  |    | ⊙  |
|                            | SR 150               | ⊙                      | ⊙   | ⊙       |    | ⊙  |    | ⊙  |
|                            | SR 200               | ⊙                      | ⊙   | ⊙       |    | ⊙  |    | ⊙  |
|                            | SR 220               |                        |     |         |    | ⊙  |    |    |
| Pipe Section               | MPS 120              | ⊙                      | ⊙   |         |    | ⊙  |    | ⊙  |
|                            | MPS 140              | ⊙                      | ⊙   |         |    | ⊙  |    | ⊙  |
| Marine Wire-meshed Blanket | MWB 80               | ⊙                      | ⊙   |         |    | ⊙  |    | ⊙  |
|                            | MWB 100              | ⊙                      | ⊙   |         |    | ⊙  |    | ⊙  |
|                            | MWB 120              | ⊙                      | ⊙   |         |    | ⊙  |    | ⊙  |
| Marine Lamella Mat         | MLM 70               |                        |     |         |    |    |    |    |
|                            | MLM 80               |                        |     |         |    |    |    |    |
|                            | MLM 120              |                        |     |         |    |    |    |    |

# Application Guidline

| Application                |                 | Floating Floor | Panel | Fire Door | Ceilling | Sanitary Unit | Deck & Bulkhead A60 construction | Deck & Bulkhead Thermal insulation | Air ducts | Pipes  |        | Tank   |        |
|----------------------------|-----------------|----------------|-------|-----------|----------|---------------|----------------------------------|------------------------------------|-----------|--------|--------|--------|--------|
| Products Type              |                 |                |       |           |          |               |                                  |                                    |           | <250°C | >250°C | <250°C | >250°C |
| Fire Marine Slab           | ABM-FR60        |                |       | ○         |          |               | ○                                |                                    | ○         |        |        |        |        |
| Marine Slab                | MS 40           |                |       |           |          |               |                                  | ○                                  |           |        |        |        |        |
|                            | MS 60           |                |       |           | ○        |               |                                  | ○                                  |           |        |        | ○      |        |
|                            | MS 80           |                |       |           | ○        |               |                                  | ○                                  |           |        |        |        | ○      |
|                            | MS 100          |                |       |           |          |               |                                  | ○                                  |           |        |        |        | ○      |
| Marine Slab 180            | Marine Slab 180 |                |       |           |          | ○             |                                  |                                    |           |        |        |        |        |
| Marine Rigid Slab          | SR 120          | ○              | ○     | ○         |          |               |                                  |                                    |           |        |        | ○      | ○      |
|                            | SR 150          | ○              | ○     | ○         |          |               |                                  |                                    |           |        |        | ○      | ○      |
|                            | SR 200          | ○              | ○     | ○         |          |               |                                  |                                    |           |        |        |        |        |
|                            | SR 220          |                | ○     |           |          |               |                                  |                                    |           |        |        |        |        |
| Marine Pipe Section        | MPS 120         |                |       |           |          |               |                                  |                                    |           | ○      | ○      |        |        |
|                            | MPS 140         |                |       |           |          |               |                                  |                                    |           | ○      | ○      |        |        |
| Marine Wire-meshed Blanket | MWB 80          |                |       |           |          |               |                                  |                                    |           | ○      | ○      | ○      | ○      |
|                            | MWB 100         |                |       |           |          |               |                                  |                                    |           |        | ○      | ○      | ○      |
|                            | MWB 120         |                |       |           |          |               |                                  |                                    |           |        | ○      | ○      | ○      |
| Marine Lamella Mat         | MLM 70          |                |       |           |          |               |                                  |                                    | ○         | ○      |        | ○      |        |
|                            | MLM 80          |                |       |           |          |               |                                  |                                    | ○         | ○      |        | ○      |        |
|                            | MLM 120         |                |       |           |          |               |                                  |                                    |           | ○      |        |        | ○      |