SILENT LINE
LEADING INNOVATION

THE SOUND OF
SILENCE

IMO APPROVED EASY TO INSTALL FLOATING FLOOR SYSTEM AND MORE

ENJOY YOUR LUXURY IN SILENCE

Yenisehir Mh. Orkide Sk. Kurtkoy Paragon Site B Block No:6
Pendik | Istanbul | Turkey

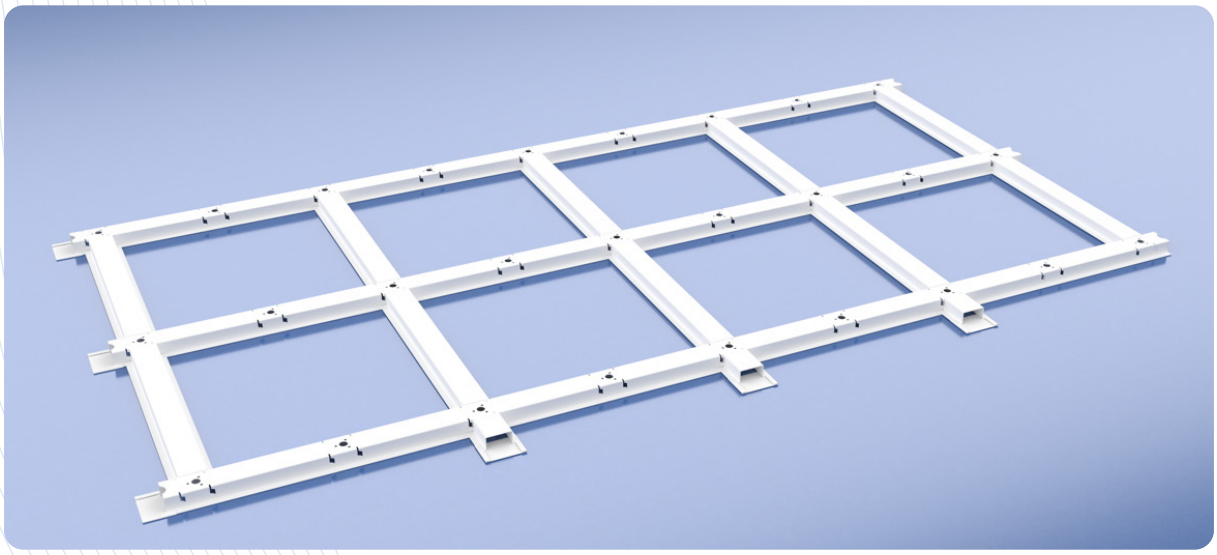
+90 543 147 14 10 | sales@silentlinegroup.com

THE CONCEPT:

Silent Line in close cooperation with Drumarkon BV (The Netherlands) developed an easy to install IMO approved floating floor system which can easily upgraded with an A-class structural insulation and or with B-15 class panels and sound reducing B-15 partition walls.

All is outlined in this technical datasheet.

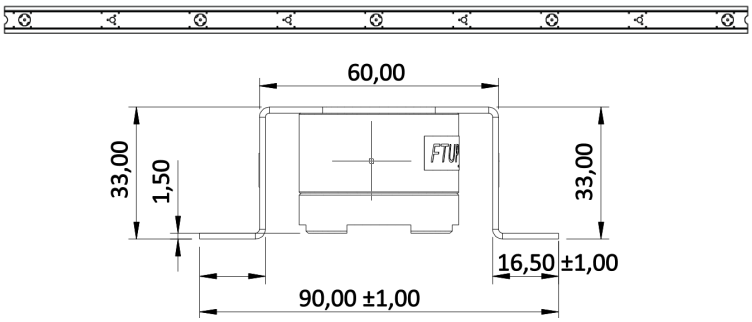
THE BASE | HEIGHT ADJUSTABLE FLOOR GRIDWORK SYSTEM



1. Long Profile

Steel
Size:2537 mm x 90 mm x 33 mm
Thickness: 1.5 mm
Weight:5.7 kg

Aluminium
Size:2537 mm x 90 mm x 33 mm
Thickness: 1.5 mm
Weight:1.97 kg

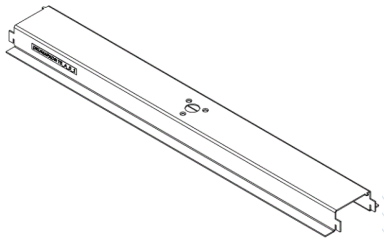


2. Transverse Profiles

Profile 1

Steel
Size:540 mm x 90 mm x 31 mm
Thickness: 1.5 mm
Weight:0.92 kg

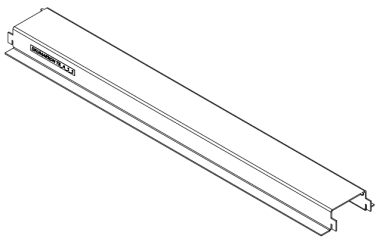
Aluminium
Size:540 mm x 90 mm x 31 mm
Thickness: 1.5 mm
Weight:0.32 kg



Profile 2

Steel
Size:540 mm x 90 mm x 31 mm
Thickness: 1.5 mm
Weight:0.92 kg

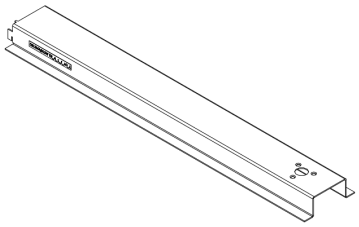
Aluminium
Size:540 mm x 90 mm x 31 mm
Thickness: 1.5 mm
Weight:0.32 kg



Profile 3

Steel
Size:540 mm x 90 mm x 31 mm
Thickness: 1.5 mm
Weight:0.92 kg

Aluminium
Size:540 mm x 90 mm x 31 mm
Thickness: 1.5 mm
Weight:0.32 kg

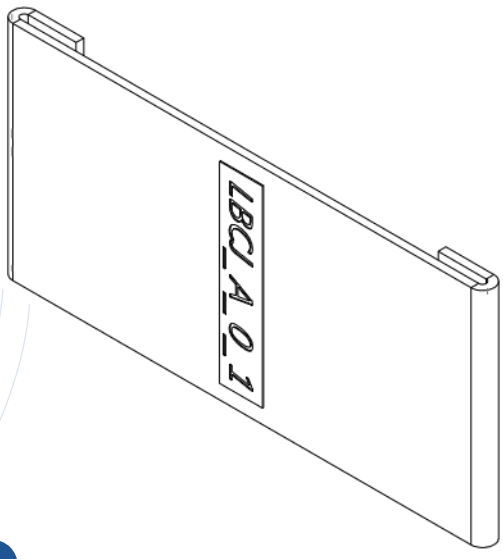


3. Joint – Connection Parts

Long Profile Connection Joint

Steel
Size:95 mm x 44 mm x 4.5 mm
Thickness: 1.5 mm
Weight:60 gr

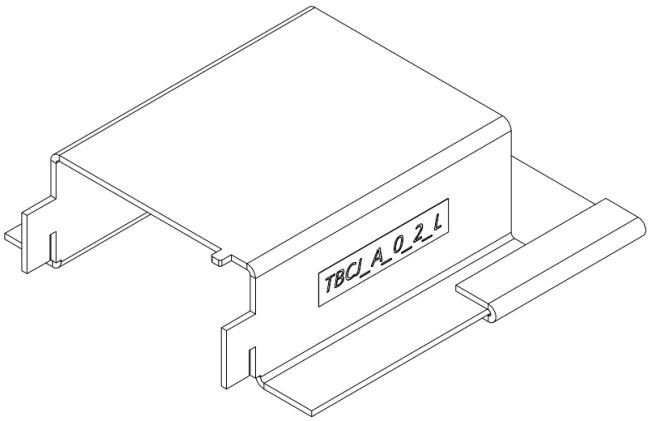
Aluminium
Size: 95 mm x 44 mm x 4.5 mm
Thickness: 1.5 mm
Weight:22 gr



Transverse Profile Connection Joint

Steel
Size:95 mm x 95 mm x 32 mm
Thickness: 1.5 mm
Weight:190 gr

Aluminium
Size: 95 mm x 95 mm x 32 mm
Thickness: 1.5 mm
Weight:70 gr

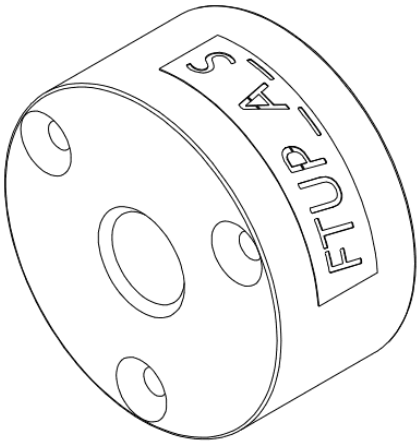


4. Foots

Upper Part

Steel
Size:40 Ø
Height: 20 mm (Adjustable according to Projects)
Weight:179 gr

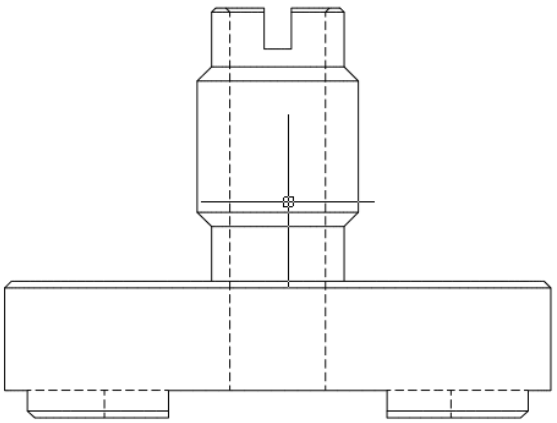
Aluminium
Size: 40 Ø
Thickness: 1.5 mm
Weight:60 gr



Lower Part

Steel
Size:40 Ø
Height: 20 mm (Adjustable according to Projects)
Weight:179 gr

Aluminium
Size: 40 Ø
Thickness: 1.5 mm
Weight:60 gr



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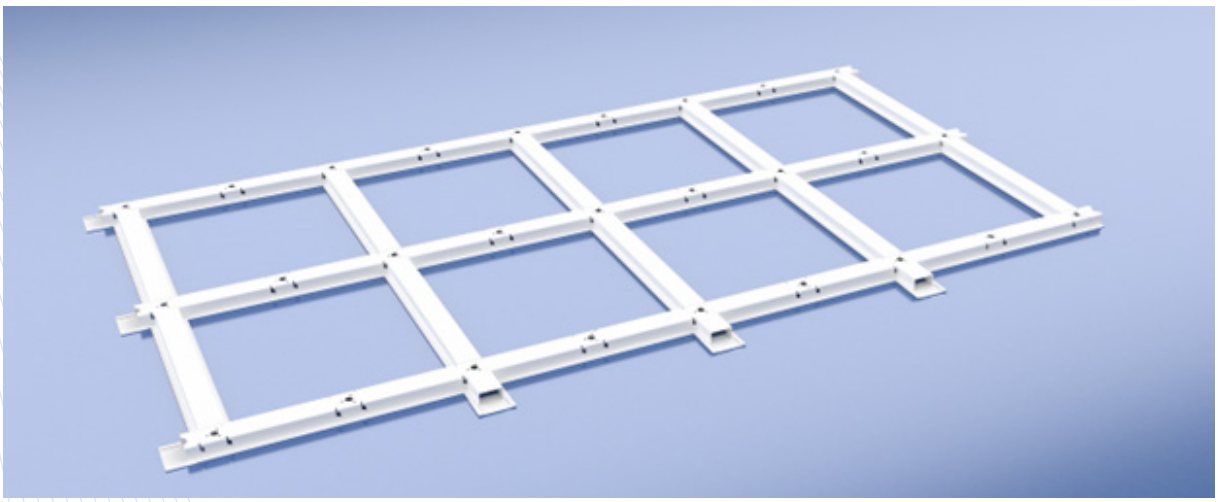

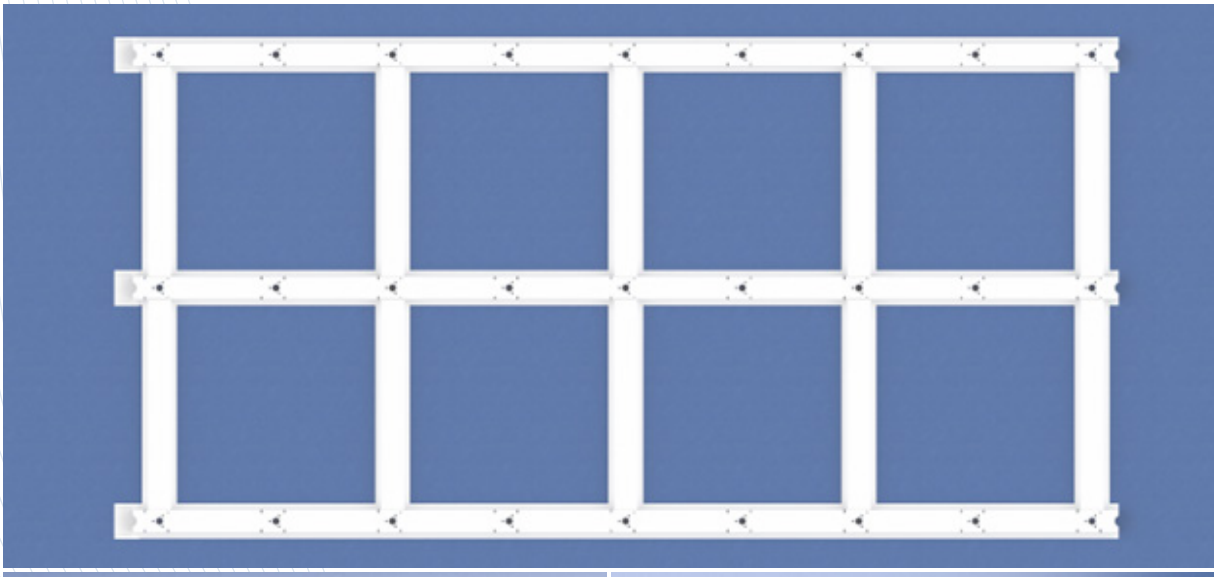

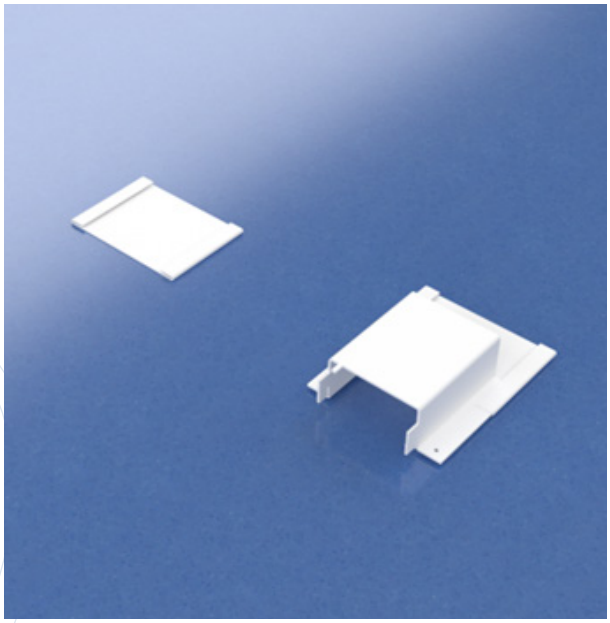

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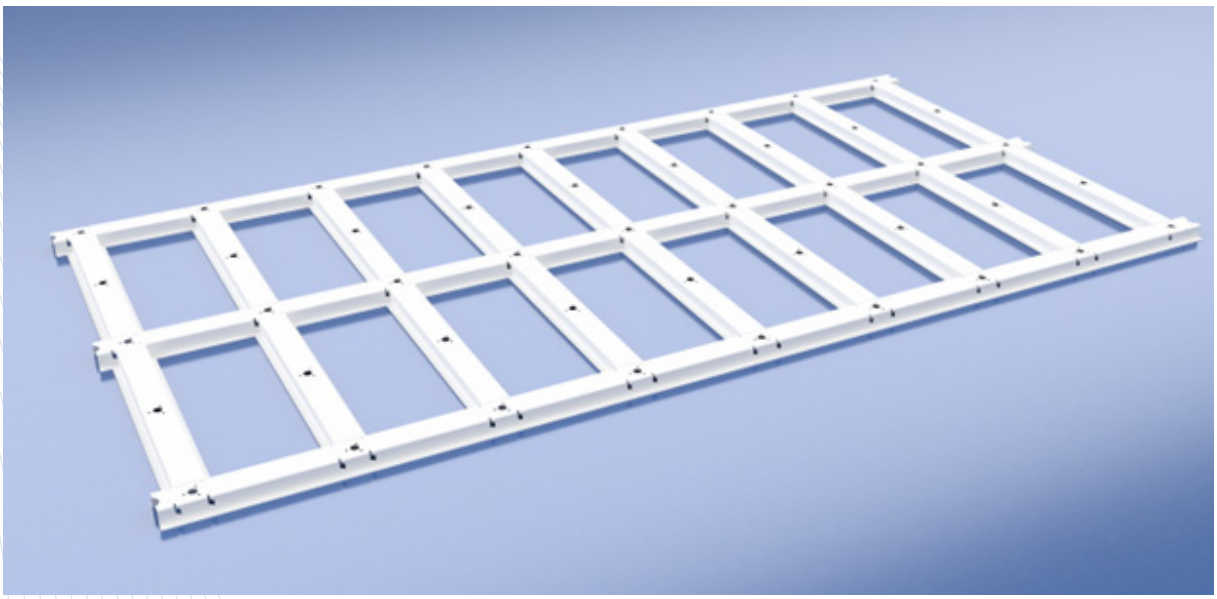

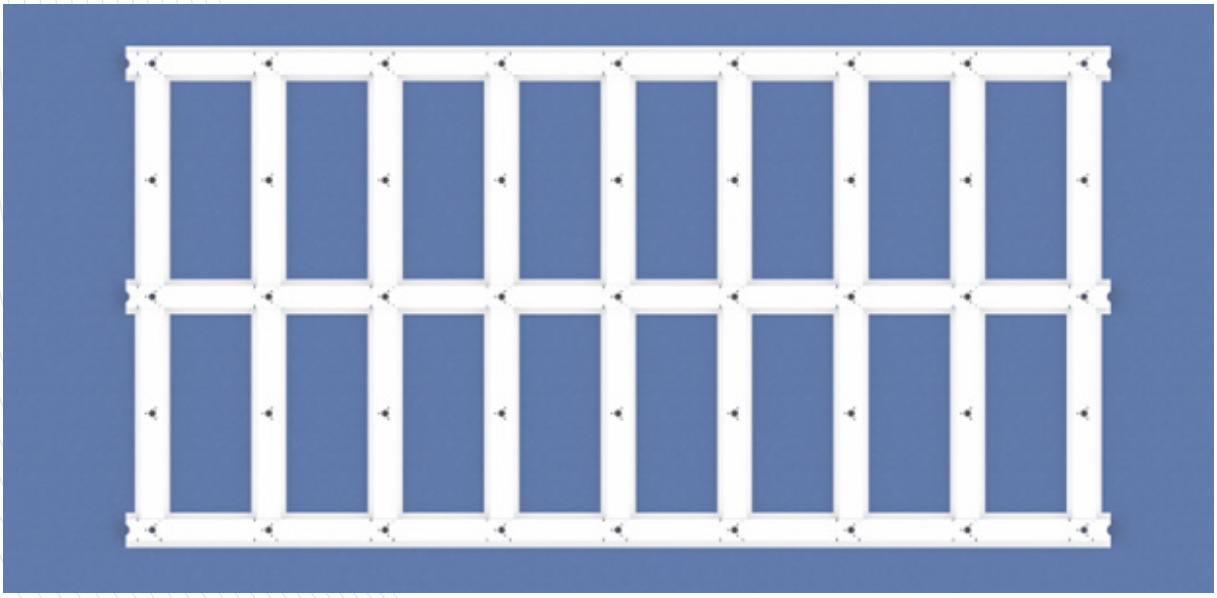

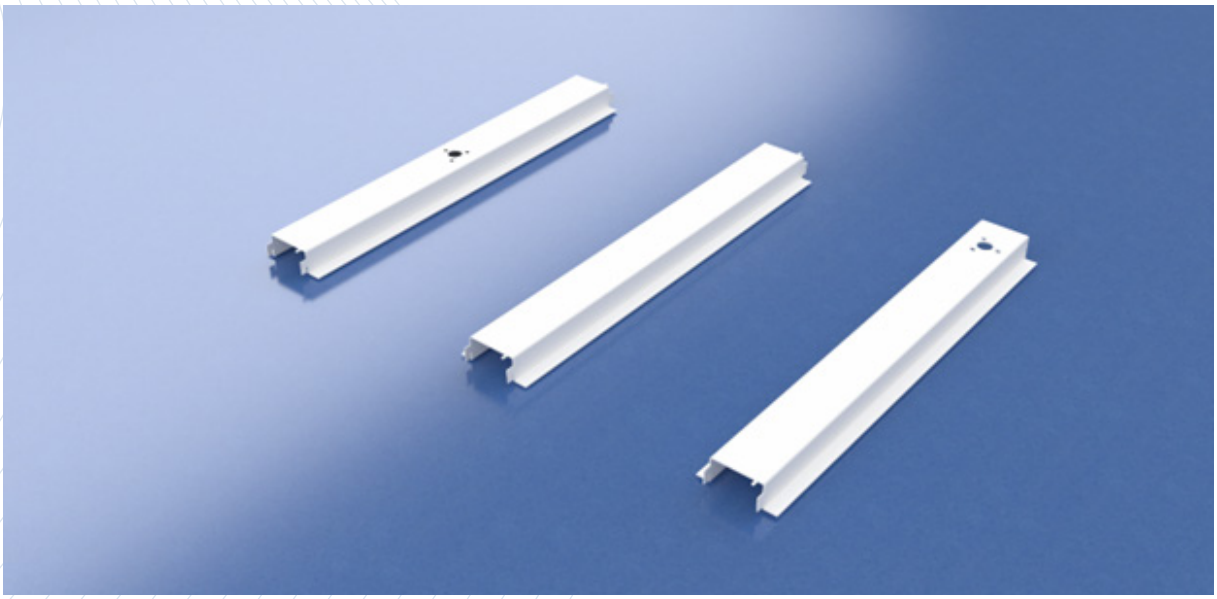

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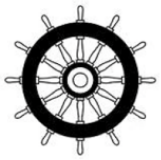
FLOATING FLOOR | IMO APPROVED FLOATING FLOOR SYSTEM

A floating floor is a must when you require low noise and vibration levels onboard your vessel or yacht. The previous shown base (height adjustable easy to install floor gridwork) comes in the following sizes: 300 x 600 mm | 600 x 600 mm or 1200 x 600 mm.

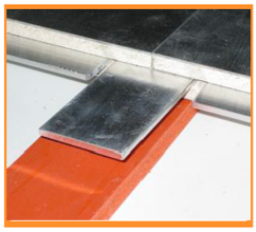
Pending on the size and major disturbing frequencies emitted by sound sources which are causing excitation frequencies, the correct type of elastomer (BISCO) must be calculated to avoid resonance and or annoying vibrations.

BISCO TECHNICAL DATA:

Material:	Bisco MA 20S/70M/100F
Weight:	Approx. 240-430 Kg/m3
Certification:	Low flame spread en smoke & toxicity: IMO Res. MSC 61 (67)
Available sizes:	40 mm
Thickness:	10 mm
Application:	Combined with sound absorbing floor (Druma-Floor NC-SR)



Bisco MA is a replacement of traditional polyurethane foams which are used for damping and eliminating vibration and noise on board of ships, but do not contribute to fire safety.



For that reason these polyurethane foams can not be used on board of ships and large yachts anymore, which are built under IMO / SOLAS regulations.

Bisco MA is a new material with superior properties, is MED certified (low flame spread en smoke & toxicity IMO Resolution MSC 61 (67)) and is resistant to oil, grease and water.

Bisco MA remains dimensionally stable under load and performs well as vibration isolator, and is therefore suited for use in combination with our newly developed floor system, which is sound insulating and also MED fire-rated as B-15 floor.

Bisco MA is available in three versions: Soft, Medium and Firm with respective densities of 240 kgs/m3, 380 kgs/m3 and 430 kgs/m3.

On request Bisco MA can be supplied in different widths or thicknesses.

Bisco MA has following advantages:

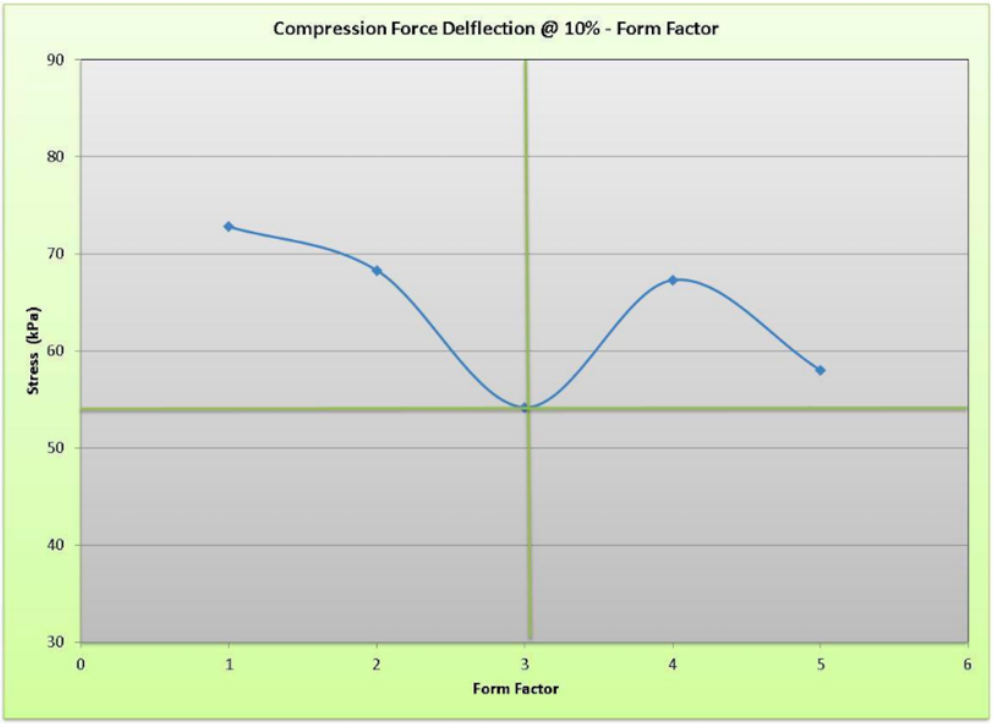
- Long Term Durability:
  Excellent dimensional stability, compression set and stress relaxation.
- Exceptional Vibration Isolation:
  Designed to exhibit low natural frequencies with high isolation efficiency.
- Superior Fire Resistance:
  Certified to Low Flame Spread, Smoke and Toxicity per IMO MSC.307(88).

Physical Properties

	MA-20S	MA-70M	MA-100F		
				Units	Method
Color	Black	Orange	Gray		
Thickness	10			mm	
Static Load Range	20	70	100	kPa	Internal
Compression Force Deflection	28	110	152	kPa	ASTM D1056
Compression Set	<5			%	ASTM D1056
Temperature Range	-55C to 200C			Deg C	Internal
Specifications	IMO FTP Part 5 & Part 2				
	MED Module B Certificate				
	MED Module D Certificate (MED-D-1693)				

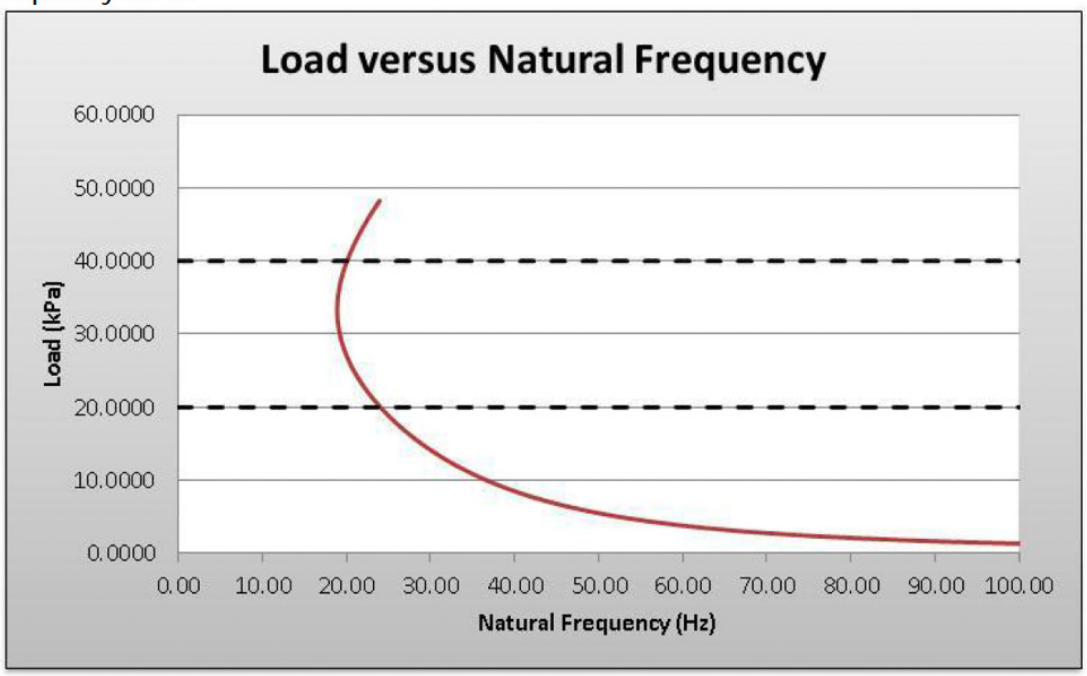
MA-20S

Compression Deflection – Form Factor

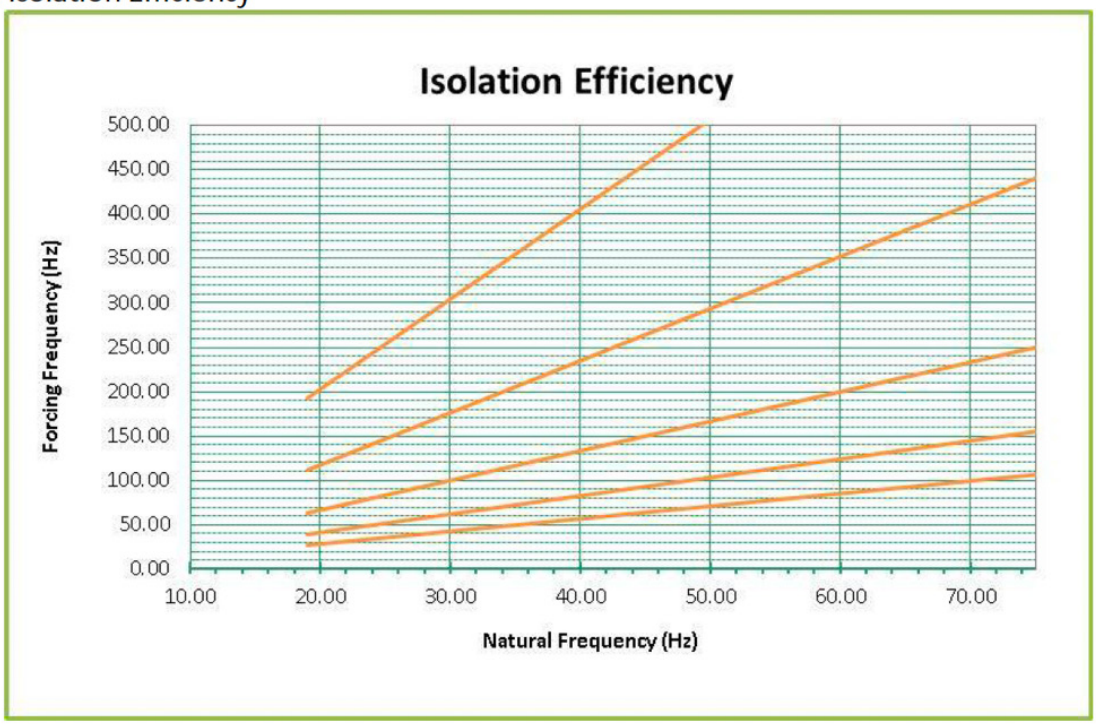


MA-20S

Natural Frequency Curve

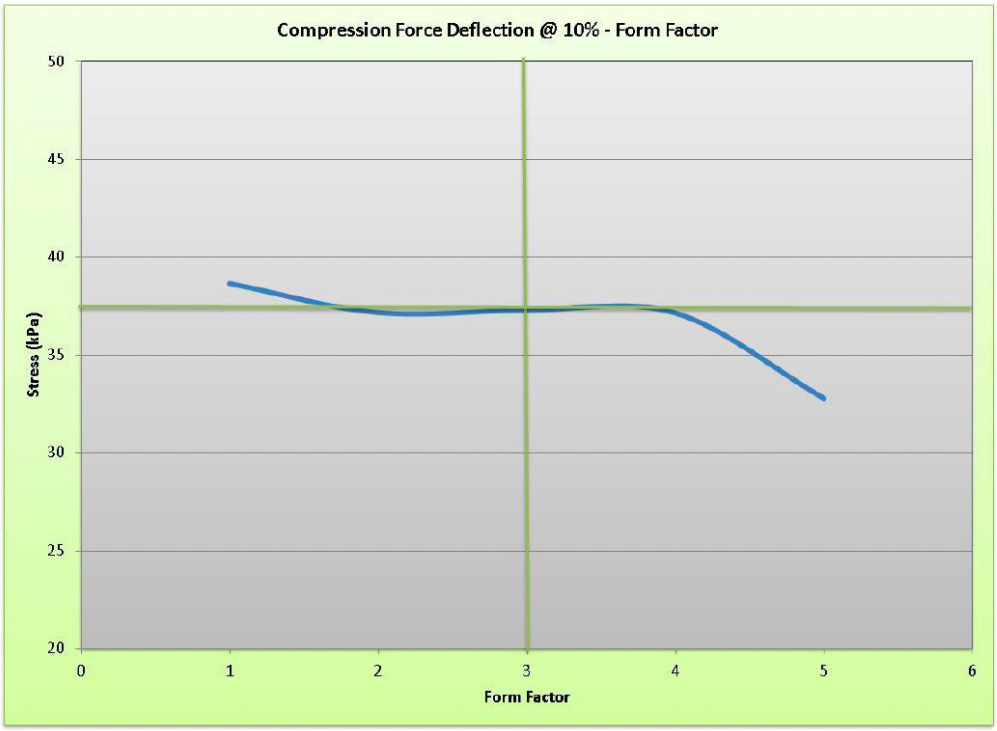


Vibration Isolation Efficiency

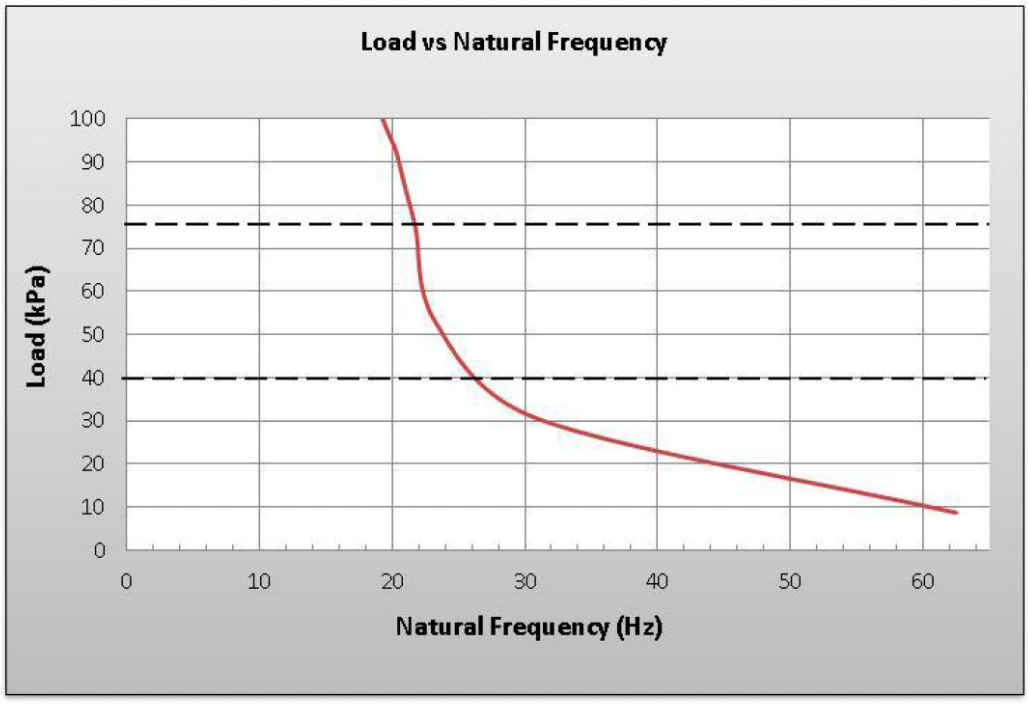


MA-70M

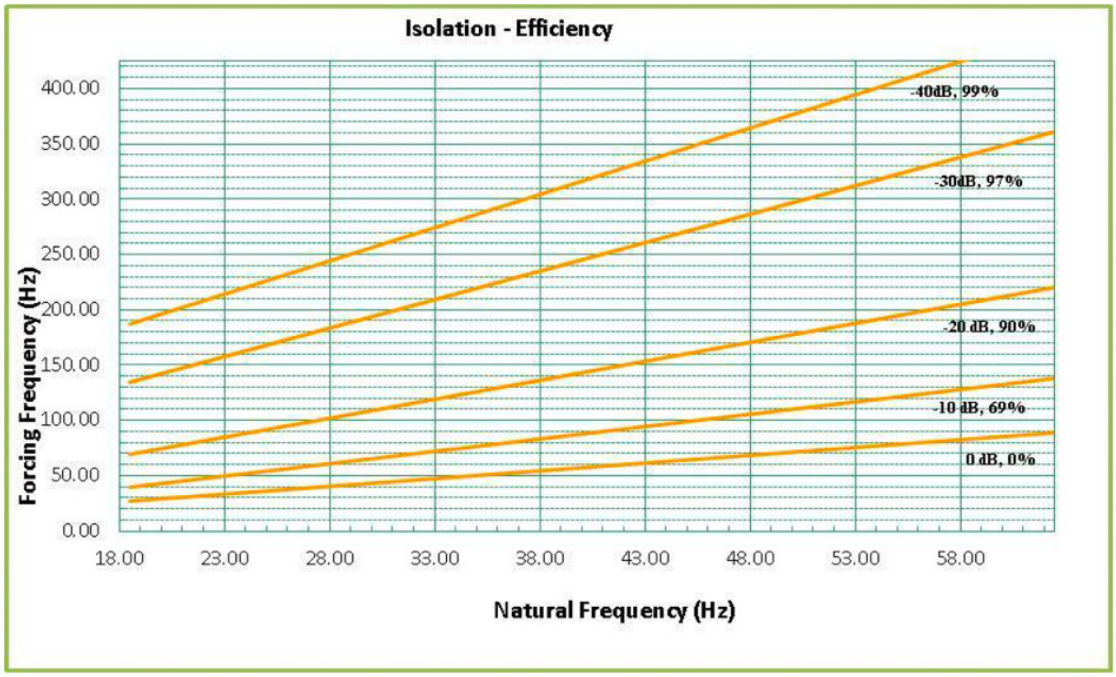
Compression Deflection – Form Factor



Natural Frequency Curve

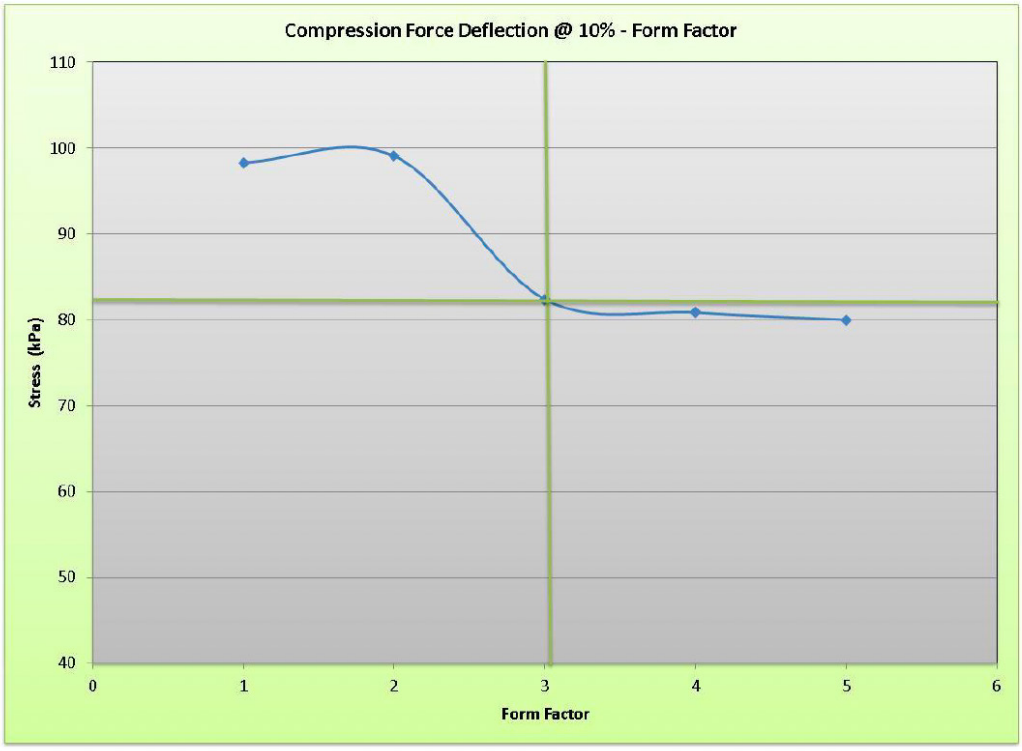


Vibration Isolation Efficiency

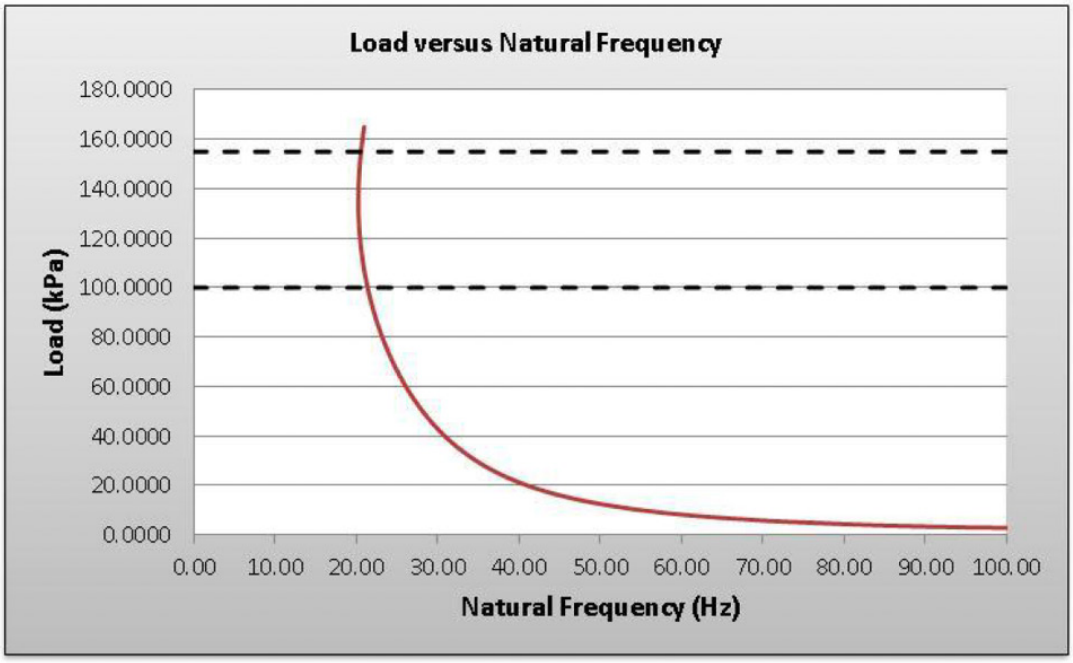


MA-100F

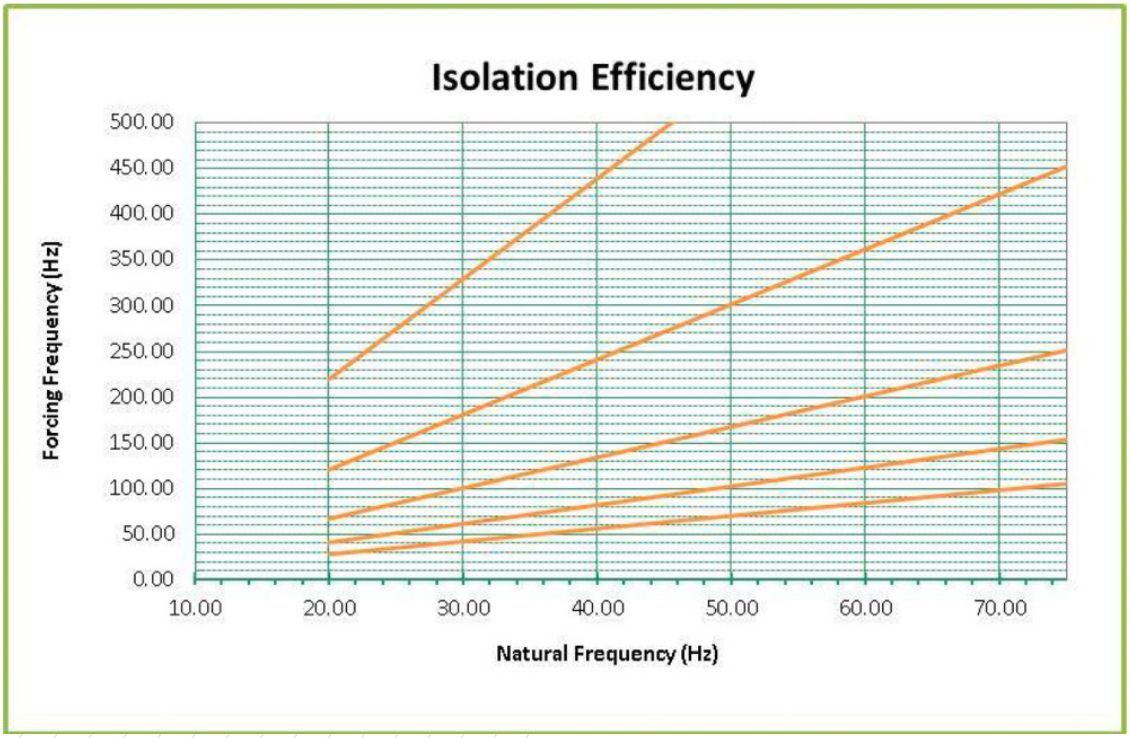
Compression Deflection – Form Factor



Natural Frequency Curve



Vibration Isolation Efficiency



FLOOR PANEL | B15 APPROVED

Druma-floor NC/SR

Product:	Druma-floor NC/SR
Noise reduction:	RW 34 – 37 dB
Thickness:	17 – 26 mm
Sizes:	2400 x 600 mm
System weight:	17.8 – 27.2 kg/m2
Core material:	Calcium silicate, rot, moisture and impact resistant
Certification:	Class B-15 according to IMO Res. 754 (18)
Application:	Sound-absorbing floating floor (Can be used in combination with BISCO MA)

This panel with an RW value of 34 dB is made up of calcium silicate core, with an aluminum plate on both sides, glued with a sound-insulating adhesive.

The panels have a groove on all sides and are connected by means of an aluminum spring and fixed with steel screws with countersunk head.

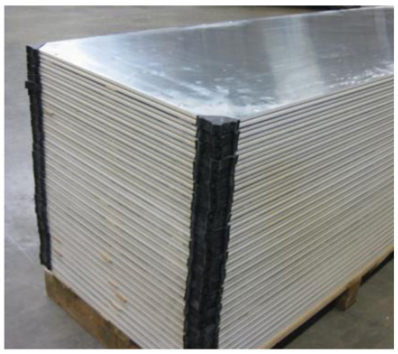
Product features:

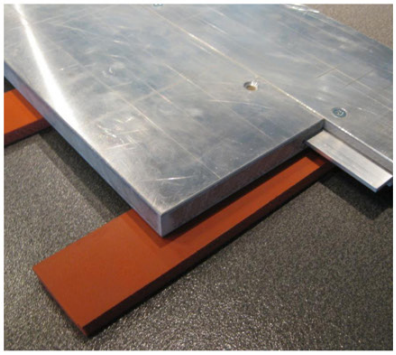
- Complies with IMO Res. 754 (18) requirements
- Floating floor (in combination with BISCO MA)
- Easy installation, no special tools
- Excellent mechanical properties
- Weight and noise reduction in accordance with conventional sandwich panels
- Thread-forming screws (M5x12) are included

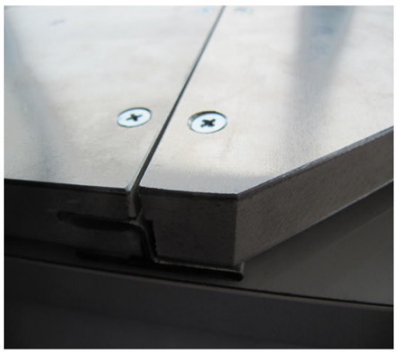
The floating floor can optionally be equipped with an integrated and IMO B-15 approved inspection hatch. This hatch can be used by means of specially developed stainless steel profiles that fit into the standard panel grooves and based on the standard panel width of the floor. The maximum length of the inspection hatch is 520 x 590 mm.

The panels are supplied with sturdy corner protection and the panels are pre-drilled and grooved all around. After installing the panels and the aluminum strip, the spring connection must be drilled (diameter 4.5 mm). After this, the panels can be joined with the supplied thread-forming screws M5 x 12 mm).

It is recommended to protect the floor with hardboard panels after installation to prevent damage to the panels.



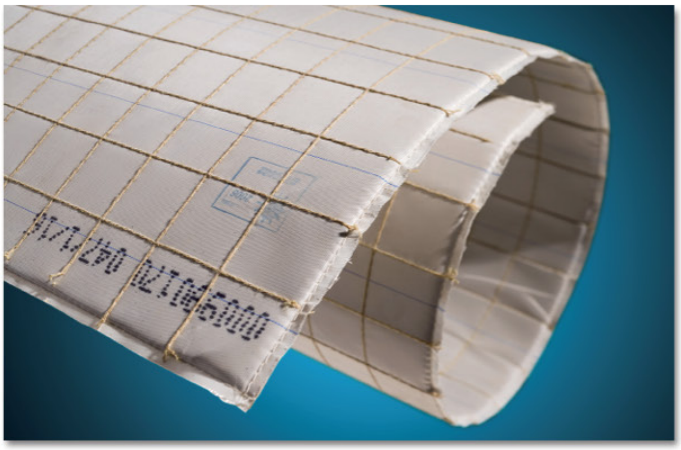




CLASS A | STRUCTURAL FIRE PROTECTION

The floating floor concept as described on the previous pages is IMO approved class B15. This can be combined with a class A structural fire protection using our product PROMAGUARD. See technical data below`:

PROMAGUARD®



High temperature flexible microporous insulation panel

PROMAGUARD® panels are flexible micro-porous insulation panels with very good thermal properties. The panels are produced in a glass cloth outer envelope, making them clean and easy to handle. The formulation is an opacified blend of filament reinforced pyrogenic silica.

PROMAGUARD® is designed to meet SOLAS, IMO, and MCA standards for passive fire protection.

Technical data		
Standard finishing		Glass cloth (E-Glass)* - ALU2
Stitching pitch size	mm	50 x 50
Classification temperature	°C	1000
Nominal density	kg/m³	240
Compressive strength (ASTM C165)	MPa = N/mm²	0.12
Thermal conductivity (ISO 8302, ASTM C177)		
200 °C	W/m K	0.026
400 °C	W/m K	0.030
600 °C	W/m K	0.038
800 °C	W/m K	0.049
Specific heat capacity		
200 °C	kJ/kg K	0.86
400 °C	kJ/kg K	0.96
600 °C	kJ/kg K	1.03
800 °C	kJ/kg K	1.07
Shrinkage		
1-sided 12h - 1000 °C	%	< 0.5
Full soak 24h - 1000 °C	%	< 6

* Special coverings and coatings are available on request.

Delivery sizes		
Length	mm	1200
Width	mm	600
Thickness	mm	6 / 10 / 15

Production tolerances		
Length	mm	± 3
Width	mm	± 3
Thickness	mm	± 1

PROMAGUARD®

Properties & advantages

- Lightweight systems
- Flexible
- Extremely low thermal conductivity
- High thermal stability
- Shock and vibration resistant
- Non-combustible
- Clean and easy to install
  (procedure can be found on our website)
- Simple to cut and shape
  (procedure can be found on our website)
- No harmful respirable fibres
- Environmentally friendly, free of organic binders
- Resistant to most chemicals

Application areas

Microporous insulation offers an extremely low thermal conductivity, close to the lowest theoretically possible at high temperatures. Microporous materials are the preferred choice in demanding PFP (Passive Fire Protection) systems.

MARINE

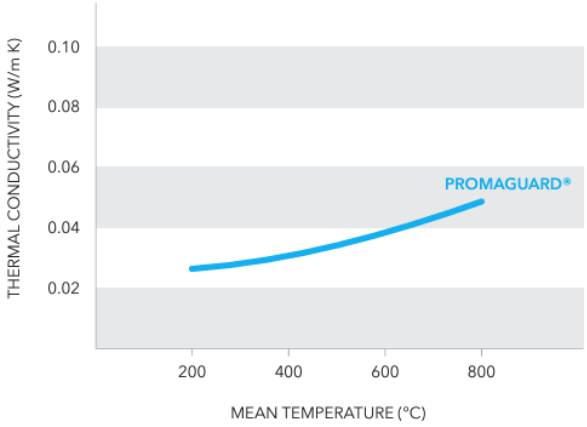
- PFP (Passive Fire Protection) systems for bulkheads, decks, hatches on steel, ALU, or GRP structures
- Exhaust systems
- Scrubbers

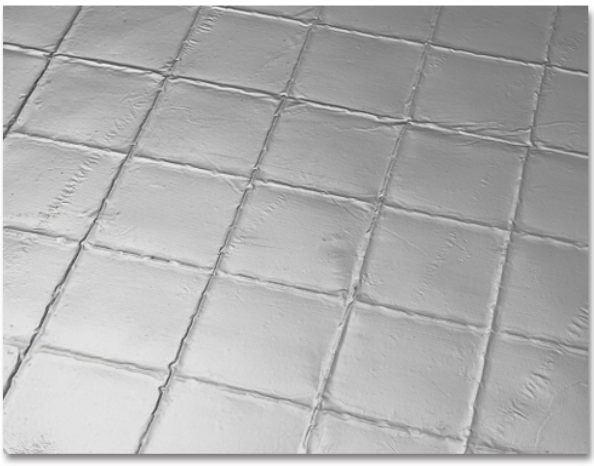
Working & processing

PROMAGUARD® can be shaped easily with a simple cutter (the procedure can be found on our website). The panels can be fixed in place with glue or by mechanical means such as anchors, pins and clips.

Dust is produced during procession. Dust can be harmful to health. Avoid contact with eyes and skin. Do not breathe in the dust. Dust should be removed by suction. The dust limits are to be adhered to. See product safety information sheet.

Thermal conductivity





CLASS B | SOUND REDUCING PARTITION WALLS & CEILING PANELS

Promarine

Material:	Promarine
Weight:	450 / 640 kg/m3
Certification:	Non combustible, B-15, MED, IMO 754 (18)
Available size:	2500 x 1220 mm
Available thickness:	450, 16 – 19 mm / 640, 9.5 | 12.7 | 19.1 mm (Special thicknesses on request)
Surface:	Plain or bonded with laminate
Application:	Walls, ceilings, floors, furniture

Promarine is a non-combustible autoclaved calcium silicate panel, reinforced with minerals and fibers. It is available in 640 Kg/m3 and 450 Kg/m3.

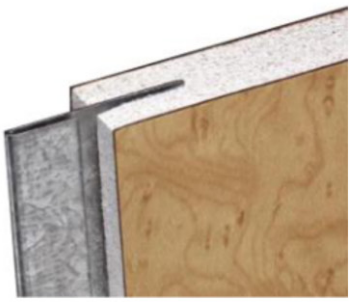
Promarine 640:

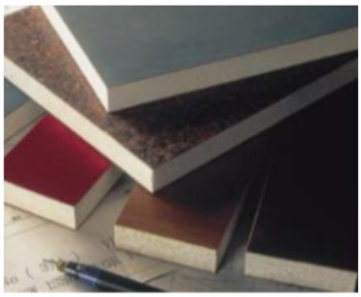
1. Nominal dry density of 640 kg/m3.
2. Certification: Promarine 640 is non combustible, B15. (MED certified 96/98/EC. Directive 98/95 and Directive 2001/53).
3. Standard joinery tools: Promarine can be cut and drilled using standard joinery tools.

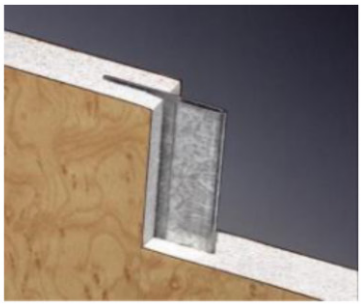
Promarine 450:

1. Weighing 30% less: 450kg/m3 nominal dry density. While installed on vessels where weight of product is of major importance, Promarine 450 offers lightweight solutions.
2. Improved heat insulation properties.
3. Special thicknesses: On request we can provide special thicknesses.

Certificates and safety-and technical data sheets are available on request.







SOUND REDUCING COUPLED OR DECOUPLED PARTITION WALLS

The PROMARINE B15 panels can be combined with sound reducing sandwich panels as a coupled or decoupled wall pending on the required Rw value. Tailor made engineering-based solutions are offered using the below mentioned products.

DrumAcoustic

Material:	Acoustic sandwich panel
Available size:	2490 x 1210 mm or 2490 x 600 mm Other dimensions on request
Connection:	square edges, grooved and plywood keyway or with overlap 30/40/50 or 60 mm cut-out on all four edges
Available thickness:	11 mm – 26 mm
Surface:	Rough or painted

Our sandwich panels are made up of panels with ocouméplex through and through and a core of:

– DrumAcoustic 2150 / Heavy solid rubber (EPDM, PVC free) (2150 kg / m3)
– DrumAcoustic 1050 / Rubber (1050 kg / m3)
– DrumAcoustic 550 / Light composed with cork / rubber (550 kg / m3)
– DrumAcoustic 225 / Ultra Light composed with cork layer (225kg / m3).

These materials dampen the vibration before it is radiated as sound and transferred to other system components. Usually used in sandwich with plywood, but can also be glued with aluminum or steel.

The acoustic sandwich panels are often used for floors and partition walls.

Noise reduction measurements are in accordance with ISO 140-3.

All panels are available with square edges, grooved (on 4 sides) or with an overlap of 30, 40, 50 or 60 mm on all sides.

DrumAcoustic 225
Rw value 27-28 dB

			Weight / m2	
Thickness	Layers	Rw (dB)	Cork	Total incl. ocoume
11 mm	4/4/4	27	0,5 kg	5,5 kg
15 mm	6/4/6	27	0,5 kg	7,5 kg
17 mm	6/6/6	27	0,8 kg	8 kg
21 mm	8/6/8	28	0,8 kg	10 kg
25 mm	10/6/10	28	0,8 kg	12 kg

DrumAcoustic 550
Rw value 30-33 dB

			Weight / m2	
Thickness	Layers	Rw (dB)	Cork rubber	Total incl. ocoume
11 mm	4/4/4	30	2,6 kg	7,1 kg
15 mm	6/4/6	32	2,6 kg	9,1 kg
17 mm	6/6/6	32	4 kg	10,5 kg
21 mm	8/6/8	33	4 kg	12,5 kg
25 mm	10/6/10	33	4 kg	14,5 kg

DrumAcoustic 1050
Rw value 31-34 dB

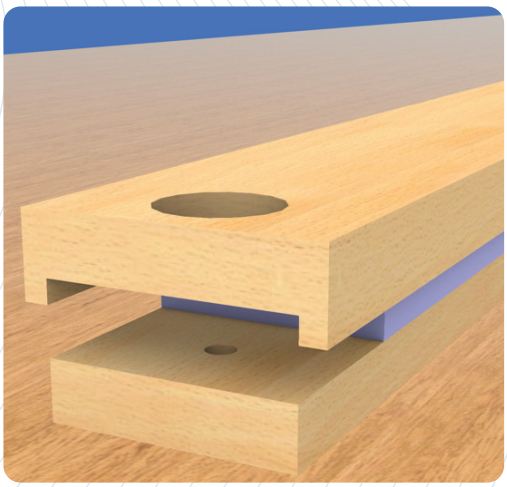
			Weight / m2	
Thickness	Layers	Rw (dB)	Rubber	Total incl. ocoume
11 mm	4/4/4	31	4,2 kg	8 kg
15 mm	6/4/6	33	4,2 kg	10,5 kg
17 mm	6/6/6	34	6,3 kg	12,5 kg
21 mm	8/6/8	34	6,3 kg	14,5 kg
25 mm	10/6/10	34	6,3 kg	16,5 kg

DrumAcoustic 2150
Rw value 34-37 dB

			Weight / m2	
Thickness	Layers	Rw (dB)	EPDM	Total incl. ocoume
11 mm	4/3.7/4	31	8 kg	12,5 kg
15 mm	6/3.7/6	33	8 kg	14,5 kg
17 mm	6/6.5/6	37	14 kg	20,5 kg
21 mm	8/6.5/8	37	14 kg	22,5 kg
25 mm	10/6.5/10	37	14 kg	24,5 kg

THE ULTIMATE SOLUTION

The ultimate solution is offered by means of RAIL ELEMENTS which are installed on top of the floating floor system. The coupled of decoupled walls are mounted on top of this RAIL ELEMENTS to reduce transmission of structure borne noise and therefor to reduce radiated structure- borne noise from the walls ending up with low noise levels in accommodation areas.



Rail Element Dimensions
Scale 1:10