

ZIPS PANEL SYSTEM

INNOVATIVE SYSTEM FOR ADDITIONAL SOUND ISOLATION
PROTECTED BY THE PATENT ON INVENTION IN RUSSIAN
FEDERATION № 2140498

DEVELOPED FOR FRAMELESS MOUNTING
FASTENED ON THE AREA TO BE PROTECTED ONLY THROUGH
VIBROISOLATING JOINTS

EFFECTIVELY ENHANCES THE SOUND ISOLATION PROPERTIES
OF COMMON SINGLE LAYER SUPPORTING STRUCTURES



ZIPS

THE PANEL SYSTEM FOR ADDITIONAL
SOUND ISOLATION GENERAL

INFORMATION.....	5
ZIPS-VECTOR.....	6
ZIPS-MODULE.....	7
ZIPS-CINEMA.....	8
INSTALLATION.....	9-10

ZIPS-FLOOR

THE PANEL SYSTEM FOR ADDITIONAL
SOUND ISOLATION ASSEMBLY GUIDELINES

INFORMATION.....	11
ZIPS-POL VECTOR.....	12
ZIPS-POL MODULE.....	13
INSTALLATION.....	14-16

INFORMATION

Description

As a result of long-term research, it is now experimentally established and theoretically proved that acoustical vibrations passing through the framework (both by direct and indirect routes) play a major role in diminishing the sound isolation properties of single-stud linings of all types. As soon as the framework of the single-stud lining has the solid connection with the supporting structure (the wall, the ceiling slab or the floor slab), acoustical vibrations are transmitted with no significant loss from the supporting structure via the fastening joints to the light finishing layer of the single-stud lining (usually made of gypsum boards). Thus, instead of providing the significant additional sound isolation, excited gypsum boards themselves act as a source of secondary noise.

In 1999 the company «Acoustic Materials and Technologies» has developed and patented **innovative multilayer frameless system for additional sound isolation**, which was registered as an invention in Russian Federation (patent N 2140498 - the panel system for additional sound isolation «ZIPS»). The key elements of the panel system ZIPS were designed to overcome the major constructional disadvantages diminishing efficacy for additional sound isolation of common single-stud linings. During the next ten years, the design of the key elements of the panel system ZIPS was constantly improved. Today, the panel system ZIPS is comprised of two-layer sandwich panels with total thickness from 40 mm to 120 mm and gypsum boards (12,5 mm), providing the finishing layer of the system.

Distinctive features

The panel system ZIPS contains no direction framework -. The panels represent sandwiches, which consist of the gypsum-fiber boards with the comb-groove protruding ends and the layers of sound absorbing material from mineral fiberboard. The stiffness of the sound absorbing layer was selected to ensure the safety of the frameless mounting of the system under condition to minimize the transmission of acoustical vibrations through the skeleton of sound absorbing material to the front surface of the system.

In order to prevent at most the transmission of acoustical vibration from the area to be isolated (the wall or the ceiling slab) to the sandwich panel through the fastening screws, the panels have vibroisolating joints, which are designed specifically for mounting purposes. To diminish the negative influence of «acoustical bridges», the rigid connections between the flanks of the panels and adjacent surfaces of supporting structures (the wall, the floor or the ceiling slab) are excluded. This is accomplished by applying two layers (each of 4 mm thickness) of elastic padding «VIBROSTEK-M» on the perimeter where the panel system ZIPS is connecting with the surfaces of supporting structures.

In order to exclude the possible slits between the panels at mounting, the sandwich panels are connected together through the comb-groove junction. Once the panels are assembled at the protected area, the whole surface is overlaid by gypsum boards. This finishing layer ensures the integrity of the vibroisolating joints during the further decoration procedures and also increases the sound isolation properties of the system due to dampening of the gypsum-fiber layer of sandwich panel by gypsum layer at the frequencies of wave coincidence.

1

ZIPS-Vector (basic level):

thickness: 40mm

the total thickness of the system: 53mm

2

ZIPS-Module (standard level):

thickness: 70mm

the total thickness of the system: 83mm

3

ZIPS-Cinema (advanced level):

thickness: 120mm

the total thickness of the system: 133mm.

ZIPS-VECTOR



Description

The panel system for sound isolation of basic level ZIPS-Vector is an effective solution for the problem of additional sound isolation for the existing walls. It allows to solve the problems of sound isolation for everyday noise - speech, dogs barking, low intensity sound from radio/TV, etc. (the effective range of the system is from 125 Hz).

Application

The panel system for additional sound isolation ZIPS is designed to be used during construction and renovation of buildings in order to enhance sound isolation properties of common single layer structures such as: brick and concrete/foam concrete walls or partitions. It's preferentially used in living premises (for additional sound isolation in apartments and cottages).

Composition

The panel system for sound isolation ZIPS is comprised of two-layer sandwich panels with total thickness of 40mm and gypsum boards (12,5 mm), providing the finishing layer of the system. The sandwich panel consists of a combination of a «dense» (gypsum-fiber board) and - «light» (glass fiberboard) layer.

Dimensions

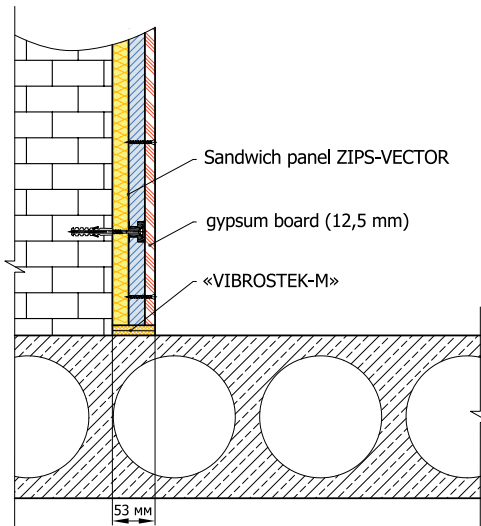
Dimensions of the sandwich panel (not including area of the protruding edges): 1200 x 600 mm.

Thickness of the sandwich panel: 40 mm. The total thickness of the system with the finishing single layer of 12,5 mm gypsum board: 52,5 mm.

Physical characteristics

The weight of a single panel: 18 kg.

The surface density of the system: 25 kg/m².



Sound isolation for airborne noise:

Based on results from measurements performed at the department of acoustic NNGASU, N. Novgorod								
Frequency, Hz	100	125	160	200	250	315	400	500
The additional sound isolation index for airborne noise of the panel system ZIPS-Vector®, dB	-3,0	4,0	6,0	9,0	13,0	13,0	18,0	16,0
Total sound isolation index for airborne noise of the panel system ZIPS-Vector® mounted on a brick wall (with thickness of 120mm), dB	37,0	37,0	46,0	47,0	52,0	53,0	58,0	62,0
Frequency, Hz	630	800	1000	1250	1600	2000	2500	3150
The additional sound isolation index for airborne noise of the panel system ZIPS-Vector®, dB	18,0	16,0	17,0	14,0	20,0	20,0	19,0	17,0
Total sound isolation index for airborne noise of the panel system ZIPS-Vector® mounted on a brick wall (with thickness of 120mm), dB	66,0	68,0	72,0	74,0	79,0	82,0	82,0	82,0

The additional sound isolation index for airborne noise for the ZIPS-Vector: $\Delta R_w = 9 - 11$ dB.

ZIPS-MODULE



Description

The panel system for sound isolation of standard level ZIPS-Module is an effective solution for the problem of additional sound isolation for the existing walls and ceiling slabs. It allows increasing sound isolation in residential and public premises with airborne noise of average intensity: shops, restaurants, cafes, etc. (the effective range of the system is from 100 Hz).

Application

The panel system for additional sound isolation ZIPS is designed to be used during construction and renovation of buildings in order to enhance sound isolation properties of common single layer structures such as: brick and concrete/foam concrete walls or partitions, as well as ceilings. It may be used in any indoor premises (for additional sound isolation in apartments, cottages, offices etc.).

Composition

The panel system for sound isolation ZIPS is comprised of two-layer sandwich panels with total thickness of 70mm and gypsum boards (12,5 mm), providing the finishing layer of the system. The sandwich panel consists of a combination of a «dense» (gypsum-fiber board) and a «light» (mineral fiberboard) layer.

Dimensions

Dimensions of the sandwich panel (not including area of the protruding edges): 1200 x 600 mm.

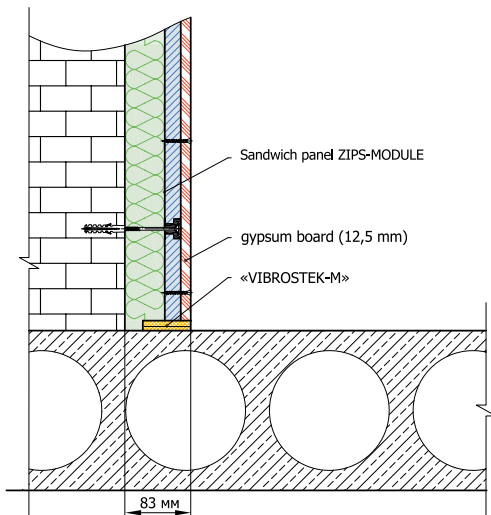
Thickness of the sandwich panel: 70 mm.

The total thickness of the system with the finishing single layer of 12,5 mm gypsum board: 83 mm.

Physical characteristics

The weight of a single panel: 19 kg.

The surface density of the system: 26,5 kg/m².



Sound isolation for airborne noise:

Based on results from measurements performed at the department of acoustic NNGASU, N. Novgorod								
Frequency, Hz	100	125	160	200	250	315	400	500
The additional sound isolation index for airborne noise of the panel system ZIPS-Vector®, dB	1,0	6,0	10,0	12,0	16,0	16,0	20,0	19,0
Total sound isolation index for airborne noise of the panel system ZIPS-Vector® mounted on a brick wall (with thickness of 120mm), dB	41,0	39,0	50,0	50,0	55,0	56,0	60,0	65,0
Frequency, Hz	630	800	1000	1250	1600	2000	2500	3150
The additional sound isolation index for airborne noise of the panel system ZIPS-Vector®, dB	20,0	20,0	19,0	19,0	28,0	21,0	21,0	18,0
Total sound isolation index for airborne noise of the panel system ZIPS-Vector® mounted on a brick wall (with thickness of 120mm), dB	68,0	72,0	74,0	79,0	81,0	83,0	84,0	83,0

The additional sound isolation index for airborne noise for the ZIPS-Vector: $\Delta R_w = 12 - 14$ dB.

ZIPS-CINEMA



Description

The panel system for sound isolation of advanced level ZIPS-Cinema - is an effective solution for the problem of additional sound isolation for the existing walls and ceiling slabs. It will allow achieving normative values for sound isolation in public places with airborne noise of high intensity such as: concert halls, night clubs etc. (the effective range of the system is from 80 Hz).

Application

The panel system for additional sound isolation ZIPS is designed to be used during construction and renovation of buildings in order to enhance sound isolation properties of common single layer structures such as: brick and concrete/foam concrete walls or partitions, as well as ceilings. It may be used in any indoor premises (public places, apartments, cottages, offices etc.).

Composition

The panel system for sound isolation ZIPS is comprised of two-layer sandwich panels with total thickness of 120mm and gypsum boards (12,5 mm), providing the finishing layer of the system. The sandwich panel consists of a combination of a «dense» (gypsum-fiber board and a «light» (mineral fiberboard) layer.

Dimensions

Dimensions of the sandwich panel (not including area of the protruding edges): 1200 x 600 mm.

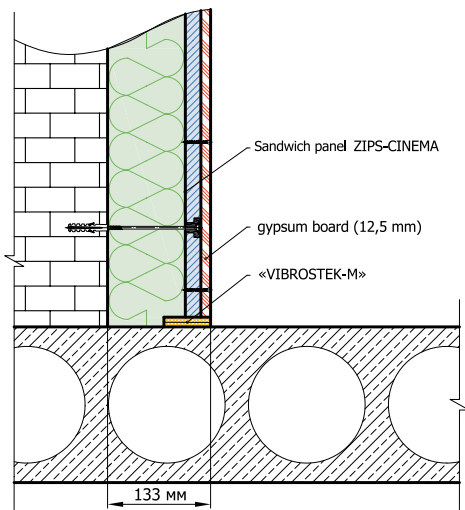
Thickness of the sandwich panel: 120 mm.

The total thickness of the system with the finishing single layer of 12,5 mm gypsum board: 133 mm.

Physical characteristics

The weight of a single panel: 20,5 kg.

The surface density of the system: 28,5 kg/m².



Sound isolation for airborne noise:

Based on results from measurements performed at the department of acoustic NNGASU, N. Novgorod

Frequency, Hz	100	125	160	200	250	315	400	500
The additional sound isolation index for airborne noise of the panel system ZIPS-Vector®, dB	8,0	10,0	13,0	16,0	18,0	19,0	24,0	24,0
Total sound isolation index for airborne noise of the panel system ZIPS-Vector® mounted on a brick wall (with thickness of 120mm), dB	48,0	43,0	53,0	54,0	57,0	59,0	64,0	70,0
Frequency, Hz	630	800	1000	1250	1600	2000	2500	3150
The additional sound isolation index for airborne noise of the panel system ZIPS-Vector®, dB	25,0	23,0	24,0	24,0	26,0	25,0	24,0	22,0
Total sound isolation index for airborne noise of the panel system ZIPS-Vector® mounted on a brick wall (with thickness of 120mm), dB	73,0	75,0	79,0	84,0	85,0	87,0	87,0	87,0

The additional sound isolation index for airborne noise for the ZIPS-Vector: $\Delta R_w = 16 - 18$ dB.

ZIPS WALL / CEILING INSTALLATION GUIDE

1 SURFACE PREPARATION AND INSTALLATION.



ZIPS Panel system is mounted on existing walls, made of concrete blocks or bricks, monolithic reinforced concrete column and slabs. It is not recommended to mount a panel system for the construction of a thickness of less than 80 mm. Before the commencement of installation, the surface of walls and ceiling shall be leveled plaster mixture. Allowed irregularities and deviations of not more than 10 mm per linear meter of the surface.

2 BEGINNING INSTALLATION.



By the side walls and the ceiling, the ends of the sandwich panels should be placed through two layers of anti-vibration tape «**Vibrostek-M**». The ribbon is glued and fixed with sealant «**Vibrosil**». On the floor panel system is based through two layers of anti-vibration tape «**Vibrostek-M**». Strip «**Vibrostek-M**» also must be placed under the ends of gypsum and gypsum fiber boards, applied in the system. If the panel system is mounted on the ceiling, all adjacency to the side surfaces of the vibration-insulating tape "**Vibrostek-M**" in **2 layers**.

3 INSTALLATION OF SANDWICH PANELS.



Each sandwich panel has 8 vibroisolating joints for its fastening to the surface. The panels must be mounted strictly through vibroisolating joints. Installation of sandwich panels it is easier to engage from the bottom up, from left to right. In the first panel, the ridges are cut short and the long side, following panel the first row only on the long side. The panel set as follows: the panel is applied to the wall, directly through vibroisolating joints drill the holes in the ceiling/wall depth of 60 mm. Insert the screws with washer slightly attached to the plastic duwel (do not let the duwel to expand) into the hole. After the dowel is inserted in the drilled hole, hammer it until it stops and tighten placed under his head conical washer. **ATTENTION!** The screw head has to be recessed into the surface of attachment joint no more than 1-2 mm!

4 TRIM PANELS.



Sandwich panels are joined together by means of a tongue-and-groove connection, tongue-and-groove joints are additionally tightening the screws for gypsum-fiber Board 3x25mm, pitch of screws 150 mm. When the closure of a number of the panel can be pruned, wherein the trimmed portion goes to the next row. Cut out sandwich panels using a jigsaw, a layer of mineral wool is trimmed with a sharp knife.

ZIPS WALL / CEILING INSTALLATION GUIDE

5 SPACING OF THE CONJUNCTIONS.



ZIPS Panel system is mounted on existing walls, made of concrete blocks or bricks, monolithic reinforced concrete column and slabs. It is not recommended to mount a panel system for the construction of a thickness of less than 80 mm. Before the commencement of installation, the surface of walls and ceiling shall be leveled plaster mixture. Allowed irregularities and deviations of not more than 10 mm per linear meter of the surface.

6 FASTENING ELEMENTS USAGE.



If the sandwich panel is completely placed on the surface of the wall – its installation is carried out only with the help of six vibroisolating joints (Central nodes are not used). If the wall panel is subject to pruning – using all the available mounts. When mounting the panels on the ceiling use in two central vibroisolating joints with metal anchor screws. Mount ZIPS-Cinema panel to the wall similarly. There are two types of anchor screws coming for installation of sandwich panels on the ceiling: standard (50 mm longer than the thickness of the sandwich panel) and shortened. Shortened anchor screws are used for installation on hollow core of floor slabs.

7 FINISHING GYPSUM BOARD LAYER.



The joints between sandwich panels should be treated with a sealant «**Vibrosil**» after installation. Lean finish layer of gypsum Board (12,5 mm thickness) to the resulting surface. The gypsum Boards should adjoin to adjacent surfaces through the double layer of vibration-insulating tape «**Vibrostek-M**» in accordance with point 2 of this manual. When installing gypsum boards use self-tapping screws 3,9 x 41 mm. Screws should not hit the vibrojoints of sandwich panels. The distance between screws has to be 200 mm vertically and 400 mm horizontally.

8 THE FINAL STAGE.



The excess of protruding tape «**Vibrostek-M**» is cut flush with the finish layer of gypsum Board. Joints filled acoustic silicone sealant «**Vibrosil**». To obtain a perfect weld, it is recommended to use masking tape, which is pasted on the surface, forming an angle. If necessary, the surface panel systems are additionally aligned for final finish.

ZIPS-FLOOR

General information

ZIPS-Floor is lightweight and quickly assembling panel system, which is used to increase the sound insulation of impact and airborne noise by floor decks.

ZIPS-Floor panel system consists of the following elements: the sandwich-panels, Gypsum Fibre Board (GFB) compensating layer and finishing plywood. ZIPS-Floor system provides high insulation value of both impact (up to 38 dB) and airborne noise (up to 7 dB). For the successful application of the system ZIPS-floor base should be smooth or pre-aligned. The high speed of installation, lack of "wet" construction processes and rapid results allow to use the system locally in living quarters or office premises without damage to the surrounding facilities.

Similarly the requirements for the "floating" floors, for construction of ZIPS-FLOOR the fundamental importance is the lack of rigid connections between finish subfloor and walls, columns and engineering utilities. To do this, along the perimeter of the room is used rubber material named VIBROSTEK-M, or special edge mats SHUMOSTOP-K2. Seams and joints in the construction of sound insulating floors are filled with sealant Vibrosil.



Features

- protected by RF patent №2140498
- strong impact noise isolation characteristics and strong additional isolation from air-born noise characteristics
- fast mounting, the ability of local use
- lack of «wet» manipulations during soundproofing floor mounting
- subfloor is ready for use within 24 hours after installation

Layouts of typical engineering solutions for floor constructions with sound insulation systems ZIPS-FLOOR please see in "Booklet of engineering solutions". It is available as an album, and online on the website acoustic.ru in "insulation technology."

1

ZIPS-Floor Vector:
sandwich panel with thickness of 45 mm, the total thickness of the panel system is 85 mm.

2

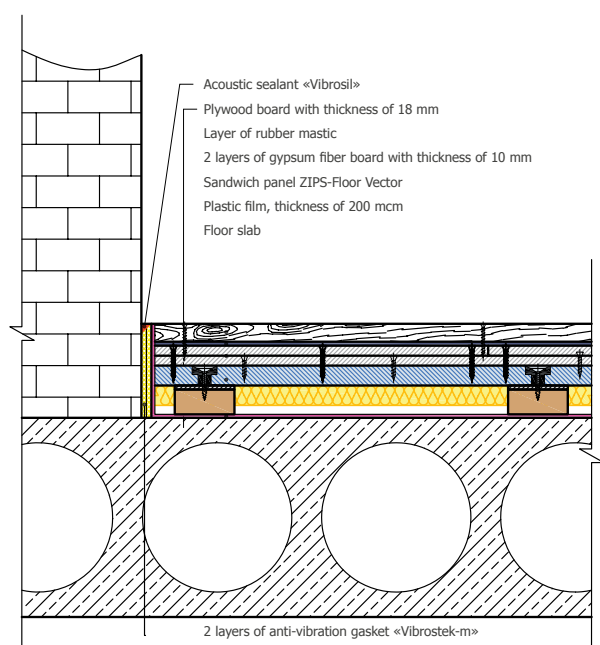
ZIPS-Floor Module:
sandwich panel with thickness of 75 mm, the total thickness of the panel system is 115 mm.

ZIPS-FLOOR VECTOR

Basic level soundproofing assembling panel system for additional sound insulation of floors

Basic soundproofing assembling panel ZIPS-Floor Vector is an effective solution to the problem of additional insulation of floor decks. It completely solves the impact noise insulation problem, and increases the insulation of the airborne sound - speech, dogs barking, low-power TV and radio equipment, etc. (operating frequency range of the system for airborne sound insulation is above 100 Hz).

ZIPS-FLOOR Vector system is used in the construction and renovation of buildings to increase the sound insulation of reinforced concrete floor decks. It is mainly used in living quarters when the local repair without the use of "wet" processes is carried out.



Composition

ZIPS-Floor Vector Soundproofing panel system consists of dual layer sandwich-panels 45 mm width and two layers of Gypsum Fibre Board (GFB) 10 mm width and extra 18 mm finishing plywood, glued to the elastic mastic. Sandwich panel consists of «dense» layer of GFB, «light» layer of staple fibre and has 8 vibroisolating S-shape pillars, made from Sylomer® elastomer.

Impact and air-born noise isolation

According to the field tests taking into account indirect sound transmission the index of impact noise decrease of ZIPS-Floor Vector system was $\Delta L_{n,w} = 32$ dB.

According to the field tests taking into account indirect sound transmission the index of extra isolation from air-born noise was $\Delta R_w = 3 - 5$ dB.

Certificates

ZIPS-Floor Vector Soundproofing panel system has acoustical, sanitary and fire certificate (fire resistance class B1).

Technical characteristics

- panel working size: 1200 x 600 mm (without grooves)
- sandwich panel width: 45 mm
- entire width including finishing plywood: 83 mm
- single sandwich panel weight: 19 kg
- surface density 61,5 kg/m²

Features

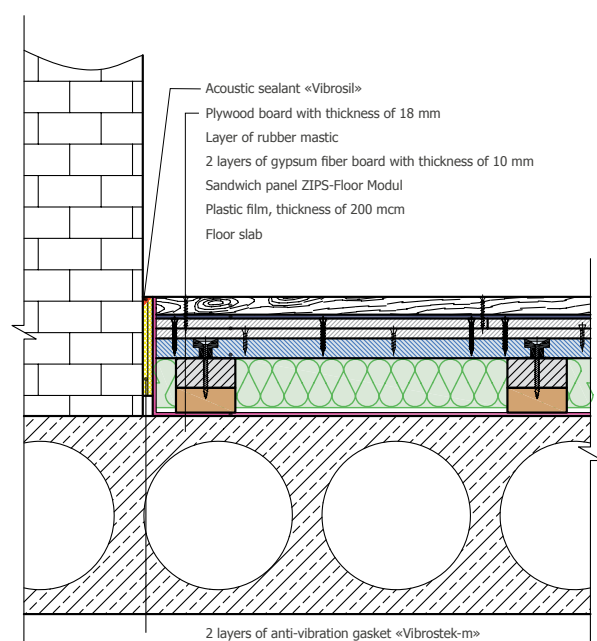
- lack of «wet» manipulations during soundproofing floor mounting
- protected by Russian patent №2140498
- strong impact noise isolation characteristics
- strong additional isolation from air-born noise characteristics
- fast mounting
- special S-shape pillars and tongue-groove joint

ZIPS-FLOOR MODULE

Standard level soundproofing assembling panel system for additional sound insulation of floors

Standard soundproofing assembling panel ZIPS-Floor Module is an effective solution to the problem of additional insulation of floordecks. It completely solves the problem of impact noise insulation, and increases the insulation of the airborne sound - speech, dogs barking, low-power TV and radio equipment, etc. (operating frequency range of the system for airborne sound insulation is above 80 Hz).

ZIPS-FLOOR Module system is used in the construction and renovation of buildings to increase the sound insulation of reinforced concrete floor decks. It is mainly used in living quarters when the local repair without the use of "wet" processes is carried out.



Composition

ZIPS-Floor Module Soundproofing panel system consists of dual layer sandwich-panels 75 mm width and two layers of Gypsum Fibre Board (GFB) 10 mm width and extra 18 mm finishing plywood, glued to the elastic mastic. Sandwich panel consists of «hard» layer of GFB, «soft» layer of staple fibre and has 8 vibroisolating S-shape pillars, made from Sylomer® elastomer.

Impact and air-born noise isolation

According to the field tests taking into account indirect sound transmission the index of impact noise decrease of ZIPS-Floor Module system was $\Delta L_{n,w} = 38$ dB.

According to the field tests taking into account indirect sound transmission the index of extra isolation from air-born noise was $\Delta R_w = 5-7$ dB.

Certificates

ZIPS-Floor Module Soundproofing panel system has an acoustical, fire safety (KM1 class) and hygienic safety certificates.

Technical characteristics

- panel working size: 120 x 600 mm (without grooves)
- sandwich panel width: 75 mm
- entire width including finishing plywood: 113 mm
- single sandwich panel weight: 19,5 kg
- surface density 62 kg/m²

Features

- lack of «wet» manipulations during soundproofing floor mounting
- protected by Russian patent №2140498
- strong impact noise isolation characteristics
- strong additional isolation from air-born noise characteristics
- fast mounting
- special S-shape pillars and tongue-groove joint

ZIPS WALL / CEILING INSTALLATION GUIDE

1 PREPARING THE FLOOR FOR INSTALLATION.



As a surface for mounting panel systems «ZIPS-FLOOR» can serve as a floor slab or screed. To minimize the space losses it is recommended to disassemble the old floor construction. Before installation, the floor surface should be thoroughly cleared. The floor must be flat and smooth. In case of irregularities or the presence of defects and inhomogeneities the layer of self-leveling from mixes must be done. The thickness of the screed is determined by the place.

2 BEGINNING INSTALLATION.



To avoid straight contact of soundproofing floor with the side surfaces of the walls on the perimeter of the room, bond anti-vibration tape «Vibrostek-M» (100 mm width) in 2 layers. In case of «ZIPS-FLOOR Vector» soundproofing system the tape is pasted on the wall close to the floor, when «ZIPS-FLOOR Module» is used the tape is pasted 30 mm above the floor level. You can use acoustic silicon sealant «Vibrosil» as a glue, the sealant is applied in the «helix shape» with a plunger gun.

3 LAYING VAPOR BARRIER.



To exclude the of moisture penetration in the absorbent layer of the sandwich panels, the surface of the subfloor is closed with plastic reinforced film 200 microns thickness. The film starts on the walls to a height of 150 mm. The film has 100mm overlaps and should be fixed with reinforced tape.

4 INSTALLATION OF SANDWICH PANELS.



Each panel has 8 vibration-insulating pillars. The panel must be installed on the floor only via anti-vibration mounts. The installation is carried out from left to right. 1-panel ridges are cut short and the long side, all subsequent panels of the 1st series only on the long side. Panels connected to one another by means of a tongue-and-groove connection, tongue-and-groove joints are also held together with screws for gypsum-fiber Board 3 x 25 mm, pitch of screws 150 mm.

ZIPS WALL / CEILING INSTALLATION GUIDE

5 TRIM PANELS / SPACING OF JOINTS.



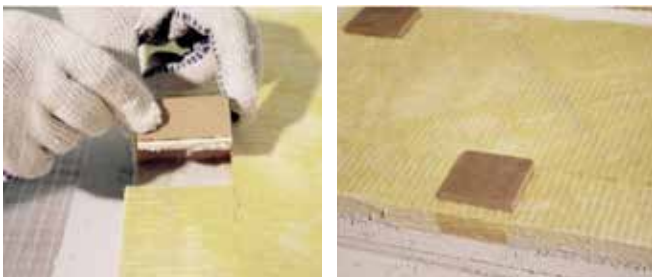
With the closure of a number of the panel can be cropped. In this case, a layer of gypsum sheets is cut by jigsaw, a layer of insulation material is cut with a sharp knife. The trimmed portion of the panel goes to the next row. The portion of the panel length less than 300 mm is not used. The panels are stacked with an offset transverse joints in adjacent rows. The distance between joints shall be not less than 250 mm. If the last row of panels not cut a groove into the slots of the stacked strips of fiber corresponding width.

6 USING THE OPTIONAL S-POLES AND THE OFFSET OF THE EXISTING PILLARS.



Adjacent to the walls stripped portion of the sandwich panels is additionally relying on elastic elements – S-support. An additional elements apply only if the amount remaining in the isolation pad on the cut part is not enough for the stability of the panel.

7 USING THE OPTIONAL S-POLES AND THE OFFSET OF THE EXISTING PILLARS.



On the back side in the layer of insulation material is cut off a cube (60x60 mm). The hole is sealed with S-shape pillar and filled sealant «**Vibrosil**». If the existing isolation pad is shifted, unscrew it. If the pillar is moved it should be replaced with the cover made from sound absorbing plate of the same density and thickness as that used in the sandwich panel.

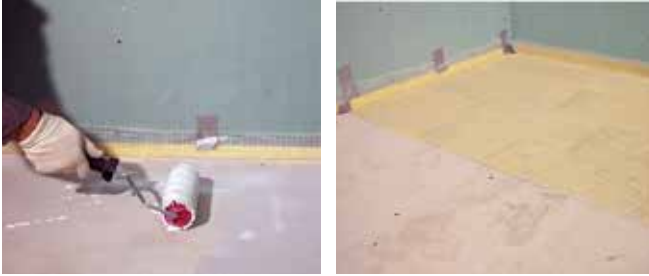
8 INSTALLATION OF GYPSUM SHEETS.



After installation of sandwich panels throughout the area arrange-floor flooring 2 layers of gypsum sheets with thickness of 10 mm each, with the overlap joints of the 1st and 2nd layers. The sheets are fixed with screws for gypsum-fiber Board 3 x 25 mm for 1-layer and 3x35 mm for the 2nd layer. The pitch of screws along the length and width of 200 mm and 400 mm respectively. When laying the sheets where twist screws, optionally stripped from chips and burrs with a putty knife or sandpaper. If during installation between gypsum sheets are formed by the gaps and cracks wider than 3 mm, you need to fill them acoustic silicone sealant «**Vibrosil**».

ZIPS WALL / CEILING INSTALLATION GUIDE

9 A FINISHING PLYWOOD LAYER.



To provide additional strength and stability of the system «ZIPS-FLOOR», and also to prepare the finish flooring the polished sheets of waterproof plywood (18mm thick 1,5x1,5m format) are mounted over gypsum-fiber sheets. The surface is Pre-treated with primer. The area is covered with a layer of rubber mastic evenly using a notched trowel.

10 THE FASTENING OF THE PLYWOOD.



Plywood sheets cut into 4 equal parts and placed with a gap of 3-5 mm. The sheets are fixed with screws on wood 3,9x41mm. The diameter of the drill holes is slightly larger than the diameter of the screw, hole countersunk under the cap screw, which ensures that no squeaks in the future use of the floor. The pitch of screws along the length and width of the sheet of 300 mm. After tightening the screws holes sanding by sandpaper. Full mastic drying time at $t=+18^{\circ}\text{C}$ is 24 hours.

11 THE FINAL STAGE.



At the final stage of mounting the excess protruding tape «**Vibrostek-M**», and a polyethylene film are cutted with the finish layer of plywood. The joints and the gaps between the plywood sheets are filled with acoustic silicone sealant «**Vibrosil**».

12 LAYING THE FINISHING MATERIAL.



Put finished floor and mount the baseboard. The finish flooring could be parquet board, laminate, linoleum or carpet. The baseboard is screwed to only to the floor or to the wall.

CERTIFICATION



PATENT ON INVENTION



FIRE CERTIFICATE

