



SOLUTIONS FOR ACOUSTIC INSULATION FALSE CEILING



## ACOUSTIC INSULATION FALSE CEILING



## Acoustic insulation guarantees higher living standards

For more than 50 years, Isolgomma has been developing products and solutions for acoustic and thermal-acoustic insulation geared towards improving the quality of life.

Ever since its foundation in 1972, the launch of innovative products, covered by international patents, the expansion towards new markets and sectors and the achievement of quality certifications have made Isolgomma a well-known and appreciated brand all over the world, result of high experience and continuous research. We use cutting-edge technologies to create highperformance products providing appropriate solutions for every customer need.

The study and creation of eco-compatible products and the creation of highly performing articles have made Isolgomma a company of excellence both for the Italian and foreign markets in the construction, industry, transport and safety flooring sectors. Our specialized, dynamic and innovative staff is very attentive to customer needs. Our mission is innovation and eco-sustainability: investing in the development of new solutions and ensuring acoustic comfort for end users and offering eco-compatible solutions created through low environmental impact production processes. The use of advanced technologies, the continuous implementation of production processes and constant research and development activities allow us to create products composed of recycled rubber granules and fibres conferring unique technical characteristics; moreover, we offer global and tailormade solutions for any soundproofing requirement. Isolgomma has two laboratories specialized in research, testing and control for the construction and railway sectors, in compliance with the ISO 9001 quality system procedures.





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## Living comfort

Comfort within a home, a hotel or a working environment depends on four main parameters: Temperature, Lighting, Air quality and Acoustic. There is a high living comfort only when all these parameters reach an optimal value.

The quality of the air inside a building is influenced by many factors including the volatile organic compounds (VOC) released by the building materials. The use of certified VOC products ensures that there are no harmful emissions that reduce the air quality in the rooms for the users' welfare.

Even a disturbing noise can significantly affect the psychophysical comfort of the individual so to represent one of the most common factors of harmfulness for workplace and home environments. For this reason, a building with high levels of sound insulation is a condition sine qua non to achieve a high standard of living.





## ACOUSTIC INSULATION FALSE CEILING



### **ACOUSTIC BASICS**

Sound is a pressure wave, produced by a vibrating object which is propagated in an elastic means with an oscillator mechanism to produce a pressure variation and a particle movement around an equilibrium point.

The sound is propagated through the air (or other physical element) as a longitudinal wave. The sound velocity is a function of the air property and not from the frequency or sound wave shape.

Sound from a pressure unit point of view involves 8 units of magnitude, from 0.00001 Pa up to 100 Pa. This wide range is not practical for acoustical analysis, evaluation and measurement and does not reflect the behaviour and sensibility of the human hearing system.



The sound pressure scale "Lp", compresses all the various pressure levels into a very narrow range of values. This scale allows us to handle values with a maximum of three digits and no decimals. In the above scale, a small variation in "dB" value corresponds to a large variation of the pressure level "Pa".

### EUROPEAN LAWS AND STANDARDS

In Europe minimum requirements concerning acoustical conditions for new dwelling are specified in building regulations. Different acoustic limits define impact sound and airborne insulation, noise levels from technical installations and traffics as well as other acoustical and noise aspects. Sound classification schemes have been adopted from several countries to satisfy more levels of acoustic guality of dwellings.

Then, acoustic requirements for a dwelling can be specified as the legal minimum requirements or as a specific class in a classification scheme. Higher classes than the regulatory minimum requirements are requested as an option for new housing. For existing housing, and especially for those restored, it's often not a realistic option to comply with current regulations and thus there is also a need for lower classes to enable specification of performance class for such housing. The following graphs show different acoustical indexes and levels adopted from European countries.

ACOUSTICAL PARAMETERS					
ISO 717:2013 descriptions for evaluation of field sound insulation	Impact sound insulation between rooms (ISO 717-1)				
Basic descriptors (single-number- quantities)	R′ w D <sub>n,w</sub> D <sub>nT,w</sub>	Ľ <sub>n,w</sub> Ľ <sub>nT,w</sub>			



### PERFORMANCE STANDARDS IMPACT SOUND INSULATION BETWEEN DWELLINGS MAIN REQUIREMENTS EUROPEAN COUNTRIES

Country	Descriptor	Multi-storey housing dB	Row housing dB
Austria	Ľ <sub>nT,w</sub>	≤ 48	≤ 43
Belgium	L′ <sub>nT,w</sub>	≤ 58	≤ 50
Bulgaria	Ľ <sub>n,w</sub>	≤ 53	≤ 53
Denmark	Ľ <sub>n,w</sub>	≤ 53	≤ 53
England & Wales	L' <sub>nT,w</sub>	≤ 62	None
Estonia	L' <sub>n,w</sub>	≤ 53	≤ 53
Finland	L' <sub>n,w</sub> (4)	≤ 53	≤ 53
France	L′ <sub>nT,w</sub>	≤ 58	≤ 58
Germany	Ľ <sub>n,w</sub>	≤ 53	≤ 48
Ireland	L′ <sub>nT,w</sub>	≤ 58	None
North Ireland	L′ <sub>nT,w</sub>	≤ 62	None
Latvia	L' <sub>n,w</sub>	≤ 54	≤ 54
Netherlands	L' <sub>nT,w</sub> + C <sub>1</sub>	≤ 54	≤ 54
Norway	L' <sub>n,w</sub> (4)	≤ 53	≤ 53
Poland	L' <sub>n,w</sub>	≤ 58	≤ 53
Portugal	L′ <sub>nT,w</sub>	≤ 60	≤ 60
Scotland	L' <sub>nT,w</sub>	≤ 56	None
Spain	L' <sub>nT,w</sub>	≤ 65	≤ 65
Sweden	L' <sub>n,w</sub> + C <sub>1,50-2500</sub>	≤ 56	≤ 56
Switzerland	L' <sub>nT,w</sub> + C <sub>1</sub>	≤ 58	≤ 50

### PERFORMANCE STANDARDS AIRBORNE SOUND INSULATION BETWEEN DWELLINGS MAIN REQUIREMENTS EUROPEAN COUNTRIES

Country	Descriptor	Multi-storey housing dB	Row housing dB
Austria	D <sub>nT,w</sub>	≥ 55	≥ 60
Belgium	D <sub>nT,w</sub>	≥ 54	≥ 58
Bulgaria	R' <sub>w</sub>	≥ 53	≥ 53
Denmark	R'w	≥ 55	≥ 55
England & Wales	D <sub>nT,w</sub> + C <sub>Tr</sub>	≥ 45	≥ 45
Estonia	R'w	≥ 55	≥ 55
Finland	R′ <sub>w</sub>	≥ 55	≥ 55
France	D <sub>nT,w</sub> + C	≥ 53	≥ 53
Germany	R'w	≥ 53	≥ 57
Ireland	D <sub>nT,w</sub>	≥ 53	≥ 53
North Ireland	D <sub>nT,w</sub> + C <sub>Tr</sub>	≥ 45	≥ 45
Latvia	R'w	≥ 54	≥ 54
Netherlands	R' <sub>w</sub> + C	≥ 52	≥ 52
Norway	R′ <sub>w</sub> (3)	≥ 55	≥ 55
Poland	R' <sub>w</sub> + C	≥ 50	≥ 52
Portugal	D <sub>nT,w</sub>	≥ 50	≥ 50
Scotland	D <sub>nT,w</sub>	≥ 56	≥ 56
Spain	$D_{nT,A} \approx D_{nT,w} + C$	≥ 50	≥ 50
Sweden	R' <sub>w</sub> + C <sub>50-3150</sub>	≥ 53	≥ 53
Switzerland	D <sub>nT,w</sub> + C	≥ 52	≥ 55



# ACOUSTIC INSULATION FALSE CEILING CONCRETE SLAB



## Improvement for high performance floors

The reinforced concrete floor is increasingly used, especially for its structural performance. Thanks to its mass, the acoustic insulation can be very good and with the right engineered solutions can achieve the highest standards and a superior acoustic comfort.

With the application of an acoustic false ceiling, fixed with acoustic hangers and pre-assembled insulating boards, a disconnection is created, increasing the airborne and impact noise insulation in just a limited space.

Starting phase	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)	
Concrete slab	82	53	
	+		
False Ceiling	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)	
MUSTWALL 33B	57	63	
MUSTWALL 18B	61	61	
	+		
False Ceiling and Under Screed	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)	
MUSTWALL 33B	47	64	

49

62



- 1. Ceramic flooring, th. 15 mm
- 2. Sand and cement bonded screed, th. 50 mm
- 3. Acoustic insulation in roll

- 4. Concrete slab, th. 140 mm
- 5. Anti-vibration brackets REDFIX C28
- 6. Steel profile 50/27/0.6
- 7. Acoustic insulation MUSTWALL B

## **HOLLOW CORE SLAB**



## Improvement for typical residential floors in multi-storey buildings

Hollow core slab is a very common floor used in building construction, capable of optimizing the self weight and enhancing the load capability. When completed with the structural screed, this floor can grant a good sound insulation, however the installation of an acoustic false ceiling improves the acoustic performance to an excellent level. The use of pre-assembled Isolgomma acoustic boards, installed on acoustic hangers, is a simple and very efficient solution to reach the best insulation values.

Starting phase	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)	
Hollow core slab	80	52	
	+		
False Ceiling	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)	
MUSTWALL 33B	57	62	
MUSTWALL 18B	59 60		
	+		
False Ceiling and Under Screed	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)	

48

50

63

61



- 1. Ceramic flooring, th. 15 mm
- 2. Sand and cement bonded screed, th. 50 mm
- 3. Acoustic insulation in roll

MUSTWALL 33B

- 4. Hollow core slab, th. 200 mm
- 5. Anti-vibration brackets REDFIX C28
- 6. Steel profile 50/27/0.6
- 7. Acoustic insulation MUSTWALL B



# ACOUSTIC INSULATION FALSE CEILING TIMBER JOISTS FLOOR



## Sound insulation below the beams

The timber joists floor has weak sound insulation properties, with a particularly critical behavior at low frequencies. Together with an efficient acoustic treatment on top of the floor, the use of a false ceiling below the beams is crucial to reach the best insulation. The use of REDFIX acoustic hangers with Isolgomma pre-assembled acoustic boards, reduces the footfall noise and sensibly improves the overall airborne sound insulation.

Starting phase	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)		
Timber joists floor	93 27			
-	F .			
False Ceiling	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)		
MUSTWALL 33B	56	59		
MUSTWALL 18B	58 5			
+				
False Ceiling and Under Screed	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)		

42

44

68

67



1. Ceramic flooring, th. 15 mm

MUSTWALL 33B

- 2. Sand and cement bonded screed, th. 50 mm
- 3. Acoustic insulation in roll
- 4. Timber joists floor, th. 220 mm
- 5. Acoustic and thermal insulation FYBRO 50 double layer
- 6. Anti-vibration brackets REDFIX C28
- 7. Steel profile50/27/0.6
- 8. Acoustic insulation MUSTWALL B



## Sound insulation between the beams

On an existent timber joists floor, improving the sound insulation with a full false ceiling is not always possible. However in particular situations a good solution can be achieved also working in the space between the beams. Closing this space with Isolgomma pre-assembled acoustic boards and filling the cavity with sound absorbing polyester fiber panels, the overall acoustic insulation of the floor can significantly increase, with a minimal and pleasant solution.

Starting phase	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)
Timber joists floor	93 2	
	+	
False Ceiling	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)
MUSTWALL 33B	79	42
MUSTWALL 18B	81	40
	+	
False Ceiling and Under Screed	L <sub>nw</sub> (dB)	R <sub>w</sub> (dB)
MUSTWALL 33B	54	62

56

59



- 1. Ceramic flooring, th. 15 mm
- 2. Sand and cement bonded screed, th. 50 mm
- 3. Acoustic insulation in roll

- 4. Timber joists floor, th. 220 mm
- 5. Acoustic and thermal insulation FYBRO 50
- 6. Acoustic insulation MUSTWALL BB



# ACOUSTIC INSULATION FALSE CEILING **MUSTWALL 33B**





## Acoustic insulation for false ceiling

MUSTWALL 33B is a product with high acoustic performance and it is very easy to be installed. It is a pre-coupled panel made of a high density SBR rubber sheet and a plasterboard layer. Mustwall 33B is used in existing building to increase the acoustic performance of ceiling when it's impossible to build new masonry or when the floor finishing is not removed.

### **APPLICATION FIELDS**

- Acoustic insulation of ceilings of existing apartments
- Acoustic insulation in low thickness



Technical features		Norm	MUSTWALL 33B
Thickness	mm	-	33
Dimensions	m	UNI EN 822	1,2 x 2
Mass per unit area	kg/m²	UNI EN 1602	19,5
Thermal resistance R	m² K/W	UNI EN 12667	0,229
Reaction to fire	Class	UNI EN 13501-1	B - s1, d0



#### IMPACT SOUND INSULATION UNI EN ISO 10140 E UNI EN ISO 717-2



#### TRANSMISSION LOSS UNI EN ISO 10140 E UNI EN ISO 717-1



Fr.		R
Hz		dB
100	57,3	36,8
125	55,1	39,6
160	55,5	46,4
200	53,9	48,9
250	51,3	53,5
315	43,8	59,5
400	40,8	65,6
500	35,6	67,9
630	31,2	68,8
800	28,1	71,1
1000	24,4	73,0
1250	22,0	72,3
1600	20,6	71,6
2000	19,0	74,1
2500	14,2	76,9
3150	13,1	76,2
4000	12,4	74,7
5000	9,2	68,4

#### Floor composition

- False ceiling with MUSTWALL 33B and anti-vibration brackets REDFIX C 50

- Concrete slab 140 mm

- Acoustic insulation 10 mm

- Sand & cement screed 50 mm

Total thickness 280 mm

ACCESSORIES



**REDFIX C** 



# ACOUSTIC INSULATION FALSE CEILING **MUSTWALL 18B**





## Acoustic insulation for false ceiling

MUSTWALL 18B is a product with high acoustic performance and it is very easy to be installed. It is a pre-coupled panel made of a high density SBR rubber sheet and a plasterboard layer. Mustwall 33B is used in existing building to increase the acoustic performance of ceiling when it's impossible to build new masonry or when the floor finishing is not removed.

### **APPLICATION FIELDS**

- Acoustic insulation of ceilings of existing apartments
- Acoustic insulation in low thickness



Technical features		Norm	MUSTWALL 18B
Thickness	mm	-	18
Dimensions	m	UNI EN 822	1,2 x 2
Mass per unit area	kg/m²	UNI EN 1602	14,5
Thermal resistance R	m² K/W	UNI EN 12667	0,127
Reaction to fire	Class	UNI EN 13501-1	B - s1, d0



#### IMPACT SOUND INSULATION UNI EN ISO 10140 E UNI EN ISO 717-2



### TRANSMISSION LOSS **UNI EN ISO 10140 E UNI EN ISO 717-1**



100	61,6	34,0	
125	59,8	39,0	
160	59,4	43,7	
200	55,9	46,2	
250	54,8	50,3	
315	44,2	58,3	
400	41,8	63,9	
500	36,0	67,0	
630	31,3	68,4	
800	28,6	69,5	
1000	24,8	71,8	
1250	22,1	71,6	
1600	20,8	71,1	
2000	21,6	72,6	
2500	19,8	75,8	
3150	17,9	77,0	
4000	11,6	76,4	
5000	9,9	70,6	

**Floor composition** 

- False ceiling with MUSTWALL 18B and anti-vibration brackets REDFIX C 50
- Concrete slab 140 mm Acoustic insulation 10 mm
- Sand & cement screed 50 mm

Total thickness 270 mm

### ACCESSORIES



**REDFIX C** 

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# ACOUSTIC INSULATION FALSE CEILING **FYBRO**



## Acoustic insulation for false ceiling

The polyester fiber panels FYBRO are used both for acoustic and thermal insulation, and they're ideal for light walls and false ceilings.

The products of the Fybro line are regenerated from PET fibres. Their composition makes them hypoallergenic, free from toxic substances and ideals for avoiding dust release.

Easy to install and simple to cut, it can be reused or recycled at the end of its life.

The product does not fear humidity and is resistant to microorganisms, molds and insects.

### **APPLICATION FIELDS**

- Acoustic and thermal insulation for ceiling
- Acoustic insulation in low thickness
- Can be used in multiple layers



Technical features		FYBRO 30	FYBRO 50
Thickness mm		30	50
Dimensions	m	0,6 X 1	
Density	kg/m³	40	
Thermal conductivity coefficient $\lambda$		0,0	36

#### IMPACT SOUND INSULATION UNI EN ISO 10140 E UNI EN ISO 717-2



## ACCESSORIES



**REDFIX C** . . . . . . . . . . . . . . . . . .

#### TRANSMISSION LOSS UNI EN ISO 10140 E UNI EN ISO 717-1



Fr.	5	R
Hz	dB	dB
100	50,8	37,6
125	54,2	46,4
160	51,7	50,7
200	49,6	56,5
250	49,6	58,6
315	47,3	60,2
400	46,0	64,4
500	44,1	65,6
630	40,4	68,3
800	36,4	70,7
1000	32,2	73,9
1250	28,1	77,5
1600	25,3	81,1
2000	18,0	82,9
2500	14,3	87,2
3150	12,0	89,4
4000	6,0	89,9
5000	6,2	91,5

#### Floor composition

- False ceiling with MUSTWALL 18B and anti-vibration brackets REDFIX C 50

FYBRO 50 double layer
Timber joists floor 220 mm
Acoustic insulation 10 mm

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- Sand & cement screed 50 mm

Total thicness 350 mm



# ACOUSTIC INSULATION FALSE CEILING **REDFIX C**



## Acoustic insulation for false ceiling

REDFIX C are brackets for decoupling plasterboard profiles. Once they're drilled to the ceiling, they function as a complete decoupling between the metal support structure and the coupled panels used for closing the false ceiling.

Their use can avoid the transmission of noise and vibrations between the upper floor and the suspended system.

### **APPLICATION FIELDS**

- Acoustic insulation of ceilings of existing apartments
- Acoustic insulation in low thickness



Technical features	REDFIX C			
lechnical features		C28	C50	C100
Base dimension	mm	50 x 50		
Length	mm	28	50	100
Thickness of antivibration support	mm		10	



NATURAL FREQUENCY









# SPECIFIC LAYING INSTRUCTIONS FOR REDFIX IN CEALING

Load class	Distance REDFIX (A)	Distance REDFIX (B)
up to 15 kg/m²	1000 mm	400 mm
up to 30 kg/m²	900 mm	400 mm
up to 50 kg/m²	750 mm	400 mm



# ACOUSTIC INSULATION FALSE CEILING LAYING INSTRUCTIONS



### **MUSTWALL B IN ADHERENCE**



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