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BUILDING RESEARCH INSTITUTE [ITB]

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Series: TECHNICAL APPROVALS

ITB TECHNICAL APPROVAL AT-15-6633/2012

Pursuant to the Ordinance of the Minister of Infrastructure dated 8 November 2004 on technical approvals and organizational bodies authorized to issue the same (Journal of Laws No. 249, item 2497), following the approval procedure conducted in the Construction Technology Institute in Warsaw, on application of:

VTM HOLDING Sp. z o. o.
ul. Cieszyńska 36, 43-200 Pszczyna

it is hereby certified that the set of products under the following names is suitable for building industry:

XPS extruded polystyrene Panel-Base Products

in the scope and on terms specified in the Schedule hereto which is an integral part of this ITB Technical Approval.

Term of validity:
17 May 2017

DIRECTOR
Deputy Director
for Cooperation with Business

Jan Bobrowicz

Schedule:
General and Technical Provisions

Warsaw, 17 May 2012

Technical Approval ITB AT-15-6633/2012 is a renewal of the ITB Technical Approval AT-15-6633/2009. ITB Technical Approval document AT-15-6633/2012 consists of 13 pages. The text hereof may only be translated in its entirety. Publishing or distributing in any other form fragments of the text of the Technical Approval requires written consent of the Building research institute.

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1. SUBJECT THE APPROVAL

The subject of the Approval are products for making bases for wooden and wood-based floors with the trade name PANEL-BASE, made of XPS extruded polystyrene. The manufacturer of the products is VTM HOLDING Sp. z o.o., ul. Cieszyńska 36, 43-200 Pszczyna.

The Approval covers the following types of products:

- sheets, thickness of 3.0, 4.0, 5.0, 5.5 and 6.0mm, width: 500 mm and length 1200 mm,
- rolls, thickness of 1.6, and 2.0 mm, width: 1100 mm and length 15000 mm,

The products may be manufactured with different width and length, following an agreement between the manufacturer and client.

The colour of the products is grey, green or other, consistent with manufacturer's samples. One surface of the panel is smooth, the other is grooved. The rolls have a smooth surface or with piercing at regular distances.

The required technical properties of PANEL-BASE are in point 3.

2. INTENDED USE, SCOPE AND CONDITIONS OF USAGE

PANEL-BASE products are intended for making immediate base for indoor wooden and wood-based floors.

PANEL-BASE sheets are used in floors classified according to their acoustic insulation, pursuant to ITB Instruction No. 463/2011, to light flooring structures, and are intended for:

- levelling cement bases before laying floors made of laminated floor elements and wooden or wood-based floor elements, so called panels, multi-layer wooden or wood-based flooring elements made,
- increasing the impact sound absorption power of ceilings (muffling layer).

Light floor covering structures with PANEL-BASE sheets and the above floor coverings are characterized by the weighted reduction of impact level (enhancement of insulation of impact sound) classifying the floors to the acoustic class PL_n-14 pursuant to the ITB Instruction 463/2011, ($PL-18$ according to the Floor Catalogue B-1/91). The Panels may be applied as a muffling layer if the required ratio of the reduction of the impact sound pressure, specified in a building's technical design and resulting from the acoustic properties of the floor slab, the flanking transmission and the requirements of the norm PN-B-02151-3:1999 conforms the acoustic class referred to above.

PANEL-BASE rolls are intended for levelling cement bases before laying floors made of laminated floor elements and wooden or wood-based floor elements, so called panels, multi-layer wooden or wood-based floor covering elements.

While designing, in thermal calculations, the following value of the heat transfer coefficient should be assumed: 0.031 W/(m·K).

Floors with PANEL-BASE products may be made in residential and public buildings, both new and modernized ones, except wet rooms. The rolls may be applied in rooms with floor heating systems.

PANEL-BASE products should be applied in line with the technical design drawn up for a particular construction object, taking into account the norms, and technical and construction regulations in force, and in particular:

- the Ordinance of the Minister of Infrastructure dated 12 April 2002 on the technical conditions which buildings should meet and the location thereof (Journal of Laws No. 75 of 2002, item 690, as amended),
- the provisions hereof,

and the installation manual drawn up by the Manufacturer and supplied to clients with each batch of the products.

Before laying the products hereunder, the partitions in the room should be plastered. The cement base should be clean, smooth and dried until it reaches the strength parameters specified in the design. The humidity of the cement base should not exceed 3%, and the irregularity of surface should not exceed 3 mm, when measured with a 2-meter rule. Before laying the immediate base, the cement base should be insulated with a 0.2mm thick vapour retarder membrane. PANEL-BASE products should be laid with the grooved side down. PANEL-BASE sheets should be arranged with a 50 cm shift of neighbouring sheets and stabilized with paper adhesive tape. The sheets should be in parallel arrangement with the floor panels.

While laying floors on PANEL-BASE products, mechanical damage should be avoided. While laying the floor, the work should be performed in a manner so as to reduce walking directly on the products under the Approval to a minimum.

Pursuant to the Hygiene Approvals No. HK/B/0146/01/2005 and HK/B/0700/01/2008, issued by the National Institute of Hygiene in Warsaw, the PANEL-BASE products have a positive health assessment.

3. TECHNICAL PROPERTIES. REQUIREMENTS

3.1. Raw materials

The properties of the raw materials applied for the production of PANEL-BASE products, and the manner of testing and collection thereof are not covered hereby, and they should be specified in Manufacturer's quality assurance system.

3.2. Panel-Base Sheets

The required technical properties of PANEL-BASE sheets are in table 1.

Table 1

#	Properties	of Sheets of the following thickness, mm					Methods of testing					
		3.0	4.0	5.0	5.5	6.0						
1	2	3	4	5	6	7	8					
1.	Appearance, colour, shape	rectangular panels with grooved lower and smooth upper surface, without mechanical damage, without thickened patches and foreign bodies, colour consistent with Manufacturer's samples					ZUAT-15/III.21/2008					
2.	Dimensional deviations, mm, direction:						PN-EN 822:1998 PN-EN 823:1998					
	– length							± 1.0				
	– width							± 2.0				
	– thickness	± 0.25										
3.	Deviation from:						PN-EN 824:1998					
	– squareness lengthwise and thickness, mm/m							≤ 2				
	– rectilinearity, mm/m											
4.	bulk density, kg/m ³	≥ 23					PN-EN 1602:1999					
5.	mass per unit area, g/m ²	135 ± 5%	139 ± 5%	141 ± 5%	142 ± 5%	142 ± 5%	PN-EN 430:1999					
6.	water absorption, %, long-term (28 days) total immersion	≤ 1.0					PN-EN 12087:2000					
7.	Resistance to concentrated momentary load expressed by permanent deformation, mm, after 24h of concentrated load (1.5 kN)	≤ 0.5 of thickness					ZUAT-15/III.21/2008					
8.	Resistance to concentrated cyclical load, expressed by permanent deformation, mm, after 4 (0.5 kN) cycles of loading and unloading	≤ 0.6 of thickness					ZUAT-15/III.21/2008					

#	Properties	of Sheets of the following thickness, mm					Methods of testing
		3.0	4.0	5.0	5.5	6.0	
1	2	3	4	5	6	7	8
9.	Ability to compensate uneven surface of the base, mm	≤ 2.0	≤ 3.0	≤ 4.0		≤ 5.0	ZUAT-15/VIII.21/2008
10.	Heat conductivity coefficient, λ_D , W/(m·K)	0.031					PN-EN ISO 10456:2009 PN-EN 12667:2002
11.	Acoustic class resulting from the weighted reduction of impact sound pressure level of a standard floor ΔL_W in dB after installing the floor with a layer of PANEL-BASE sheets	PL _n -14 $16 \leq \Delta L_W \leq 18$					p. 5.6.1

3.3. PANEL-BASE Rolls

The required technical properties of PANEL-BASE rolls are in table 2.

Table 2

#	Properties	of Rolls of the following thickness, mm		Methods of testing
		1,6	2,0	
1	2	3	4	5
1.	Appearance, colour, shape	rectangular rolls with grooved lower and smooth upper surface, with piercing at regular distances, without mechanical damage, without thickened patches and foreign bodies, colour consistent with Manufacturer's samples		ZUAT-15/VIII.21/2008
2.	Dimensional deviations, mm,	± 2.0		PN-EN 822:1998 PN-EN 823:1998
	– width			
	– thickness	± 0.25		
3.	bulk density, kg/m ³	≥ 45		PN-EN 1602:1999
4.	mass per unit area, g/m ²	75 ± 5%	115 ± 5%	PN-EN 430:1999
5.	water absorption, %, long-term (28 days) total immersion	≤ 2.0		ZUAT-15/VIII.21/2008
6.	Resistance to concentrated cyclical load, expressed by permanent deformation mm after 4 loading cycles	≤ 0.5 of thickness		
7.	Ability to compensate uneven surface of the base, mm	≤ 1.5		
8.	Resistance to higher temperature (change of linear dimensions, %, after 48h at +40 °C longwise, widewise and thickwise)	± 1.0		

4. PACKAGING, STORAGE AND TRANSPORT

PANEL-BASE products should be delivered in Manufacturer's original packaging, and stored and transported in accordance with Manufacturer's manual, in a manner ensuring that the parameters remain unchanged.

Each packaging should be accompanied with a label with at least the following information:

- name and address of Manufacturer,
- name of product and its use, in accordance with the ITB Technical Approval
- ITB TECHNICAL APPROVAL number AT-15-6633/2012,
- number and date of issue of national declaration of conformity,
- nominal dimensions,
- construction product marking.

The manner of product labelling with the construction product marking should be consistent with the Ordinance of the Minister of Infrastructure dated 11 August 2004, on the manner of declaring the compliance of construction products and manner of labelling thereof with the construction product marking (Journal of Laws of 2004, No. 198, item 2041).

5. ASSESSMENT OF CONFORMITY

5.1. General rules

Pursuant to Article 4, 5(1)(3) and Article 8(1) of the Construction Materials Law dated 16 April 2004 (Journal of Laws No. 92/2004, item 881, as amended), the products hereunder, may be introduced to the market and used in construction work consistent with their performance characteristics and purpose, if the Manufacturer has assessed the compliance thereof, issued a national declaration of conformity with the ITB Technical Approval AT-15-6633/2012 and labelled the products with the construction product marking, in compliance with the regulations in force.

the Ordinance of the Minister of Infrastructure dated 11 August 2004, on the manner of declaring the compliance of construction products and the manner of labelling thereof with the construction product marking (Journal of Laws No. 198/2004, item 2041), the assessment of the conformity of the PANEL-BASE products with the ITB Technical Approval AT-15-6633/2012 is performed by the Manufacturer, applying the 3 system.

In case of the 3 system of conformity assessment, the Manufacturer may issue the national certificate of conformity with the ITB Technical Approval AT-15-6633/2012 on the basis of:

- a) initial testing of the product conducted by an accredited laboratory,
- b) in-plant production supervision.

5.2. Initial type testing

Initial type testing is a test confirming the required technical and performance properties, conducted before the introduction of the product to the market.

Initial type testing covers:

- for sheets
 - mass per unit of area,
 - water absorption,
 - resistance to concentrated momentary load,
 - resistance to concentrated momentary load,
 - ability to compensate uneven surface,
 - λ_D heat conductivity coefficient,
 - weighted reduction of impact level for a floor with the PANEL-BASE

- for rolls:
 - mass per unit of area,
 - water absorption,
 - resistance to concentrated momentary load,
 - ability to compensate uneven surface,
 - resistance to higher temperature.

The testing which in the approval procedure was the basis for the determination of the technical and performance properties of the products, are the initial type testing in the assessment of conformity.

5.3. In-plant production control

In-plant production control covers:

1. specification and checking of the raw materials and components,
2. supervision and testing in the production process, and testing finished products (p. 5.4), conducted by manufacturer in line with an established testing plan and in accordance with rules and procedures specified in the documentation of in-plant production control, adjusted to the production technology and intended to achieve products with the required properties. The production control should ensure that the products are compliant with the ITB Technical Approval AT-15-6633/2012. The results of the control should be recorded on a regular basis. The records should confirm that the products meet the conformity criteria. Individual products or batches of product, and the related production details must be fully identifiable and retrievable.

5.4. Testing of finished products

5.4.1 Testing programme. The testing programme covers:

- a) on-going testing,
- b) periodic testing.

5.4.2 On-going testing. On-going testing includes checking of the following:

- shape and colour,
- dimensional deviations,
- squareness and rectilinearity (applicable to sheets)
- bulk density.

5.4.3 Periodic testing. Periodic testing includes checking of the following:

- for sheets
 - absorption,
 - resistance to concentrated momentary load,
 - resistance to concentrated momentary load,
 - ability to compensate surface,
- for rolls
 - absorption,
 - resistance to concentrated momentary load,
 - ability to compensate surface,

5.5. Frequency of testing

On-going testing should be performed in line with an established testing plan, but not less frequently than for each batch of product. The size of the product batch should be specified in the in-plant production control documentation.

Periodic testing should be performed not less frequently than once in three years.

5.6. Testing methods

The methods of testing of the properties specified in p. 5.2 and 5.4 should be assumed in line with Table 1 column 8, Table 2 column 5 and the description below. The findings should be compared with the requirements in columns 3, 4, 5, 6 and 7 of Table 1 and in columns 3 and 4 of Table 2 respectively.

5.6:1 Determination of the weighted reduction of impact level of the floor. The test should be performed according to PN-EN ISO 10140-3:2011. The ΔL_W indicator should be determined according to PN-EN ISO 717-2:1999. The classification should be performed according to the ITB instruction No. 463/2011. A test of this type was conducted on a standard reinforced concrete floor, on which PANEL-BASE sheets and 8mm wood-based floor were laid, in accordance with the technology.

5.7. Sampling

Sampling should be performed randomly according to the norm PN-N-03010:1983.

5.8. Assessment of test results

The manufacture products should be deemed as conforming the requirements hereof if the results of all the tests are positive.

6. FORMAL AND LEGAL PROVISIONS

6.1. ITB Technical Approval AT-15-6633/2012 replaces ITB Technical Approval AT-15-6633/2009.

6.2. ITB Technical Approval AT-15-6633/2012 is a document confirming the suitability of PANEL-BASE products made of XPS extruded polystyrene for application in construction in a scope resulting from the provisions hereof.

Pursuant to Article 4, 5(1)(3) and Article 8(1) of the Construction Materials Law dated 16 April 2004 (Journal of Laws No. 92/2004, item 881, as amended), the products hereunder, may be introduced to the market and used in construction work consistent with their performance characteristics and purpose, if the Manufacturer has assessed the compliance thereof, issued a national declaration of conformity with the ITB Technical Approval AT-15-6633/2012 and labelled the products with the construction product marking, in compliance with the regulations in force.

6.3. The Technical Approval does not violate the rights under the industrial property law regulations, in particular the Announcement of the Marshal of the Sejm of the Republic of Poland dated 13 June 2003 on the announcement of the consolidated text of the Industrial Property Law dated 30 June 2000 (Journal of Laws No. 119, item 1117). Users of the Technical Approval are liable for the observance of the rights.

6.4. ITB, issuing the Technical Approval, does not accept liability for potential infringement of exclusive and acquired rights.

6.5. The ITB Technical Approval does not release the Manufacturer of products covered by this approval from liability for their adequate quality and contractors of building works from liability for proper application of these products.

6.6. In text of the issued prospectus and announcements and other documents related to application in building industry PANEL-BASE products made of XPS extruded polystyrene, information on the granted ITB Technical Approval AT-15-6633/2012 should be placed.

7. TERM OF VALIDITY

ITB Technical Approval AT-15-6633/2012 is valid until 17 May 2017.

The validity of this ITB Technical Approval may be prolonged by successive periods if its Applicant, or formal successor, applies in this purpose to the Building Research Institute (Instytut Techniki Budowlanej) with relevant application, not later than 3 months prior expiration of validity of this document.

END

ADDITIONAL INFORMATION

Related standards and documents

PN-B-02151-03:1999 *Construction Acoustics Protection against noise in buildings. Acoustic insulation of partitions in buildings and acoustic insulation of construction elements.*

- PN-83/N-03010 *Statistical quality control. Random selection of production units for test.*
- PN-EN ISO 10140-3:2011 *Acoustics. Laboratory Measurement Of Sound Insulation Of Building Elements Part 3. Measurement Of Impact Sound Insulation*
- PN-EN 430:1999 *Resilient floor coverings Determination of mass per unit of area.*
- PN-EN 1602:1999 *Thermal insulating products for building applications. Determination of apparent density*
- PN-EN 822:1998 *Thermal insulating products for building applications. Determination of length and width*
- PN-EN 823:1998 *Thermal insulating products for building applications. Determination of thickness*
- PN-EN 824:1998 *Thermal insulating products for building applications. Determination of squareness*
- PN-EN 12087:2000 *Thermal insulating products for building applications. Determination of absorption with long-term immersion*
- PN-EN 12667:2002 *Thermal Performance Of Building Materials And Products. Determination Of Thermal Resistance By Means Of Guarded Hot Plate And Heat Flow Meter Methods. Products Of High And Medium Thermal Resistance*
- PN-EN ISO 717-2:1999 *Acoustics. Rating of sound insulation in buildings and of building elements. Impact sound insulation*
- PN-EN ISO 10456:2009 *Building materials and products Hygrothermal properties - Tabulated design values and procedures for determining declared and design thermal values*
- ZUAT-15/VIII.21/2008 *Flexible immediate bases for wooden and wood-product floors*
- ITB Instruction No. 463/2011 *Sound-absorption performance of floors and rules of selection of floors due to impact sound insulation of high-mass floors', Warsaw 2011.*
- Catalogue of Flooring Solutions for Residential and General Construction B-1/91, COBPO, Warsaw 1992

Reports from ITB tests, reports and assessment

1. 07351/12/Z00NK. Research work as regards PANEL-BASE product made of XPS extruded polystyrene, with respect to the renewal of AT-15-6633/2009. ITB Institute of Construction Structures and Elements
2. 09361/12/Z00NF. Assessment of thermal insulation of bases for flooring based on research. ITB Department of Thermal Physics, Sanitary Systems and Environment
3. NK-02454/A/09. Research work as regards the product with the commercial name PANEL-BASE (roll) made of extruded polystyrene. ITB Institute of Construction Structures and Elements
4. NL-2954/A/04 Stage I (Test Report No. NL-2954/A/LL-293/M/04). Test and technical assessment of bases made of XPS polystyrene sheets, made by VTM Holding, used under floor panels. ITB Department of Light Partitions and Glazing
5. NL-2954/A/LL-293/K04 Stage II (Test Report No. NL-2954/A/LL-293/K/04). Test of immediate base of the thickness of 3.0 mm and 5.5 mm with the commercial name PANEL-BASE, made by VTM Holding Sp. z o.o. in Pszczyna - for the purposes of ITB Technical Approval. ITB Department of Light Partitions and Glazing

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6. LA-1145/2004 NL-2954/A/2004 (Test report No. LA/1145/04. Approval Test and assessment of the acoustic performance of polystyrene sheets named PANEL-BASE, applied as the elastic layer under floor panels. ITB Department of Acoustics.
 7. Hygienic Approvals HK/B/0146/01/2005 and HK/B/0700/01/2008 issued by the National Institute of Hygiene in Warsaw

*****End of translation*****

I, the undersigned Jerzy Paszek, Sworn English Translator TP/2525/06, authorized by the Minister of Justice, hereby certify the foregoing text to be true and faithful translation from Polish into English. Issued on July 6th, 2012 and registered under the Register No. 688/2012. The translation consists of 13 paper pages, 21 official pages.

Witness my hand and official seal