INSTYTUT TECHNIKI BUDOWLANEJ

TECHNICAL APPROVAL
AT-15-8776/2011

Magnesium Oxide Board
MgO Green-LS-TECH

WARSZAWA

Series: TECHNICAL APPROVAL

ITB TECHNICAL APPROVAL

AT-15-8776/2011

On the basis of Regulation of Minister of Infrastructure dated 8th November 2004 concerning technical approvals and business units authorized to issue them (Dz.U.Nr 249, poz. 2497), as a result of approval action conducted in Building Research Institute in Warsaw, on the motion of:

LS TECH-HOMES SA

Ul. K.Korna 7/4, 43-300 Bielsko-Biała

It is ascertained that the

Magnesium Oxide Board

MgO Green-LS-TECH

Is useful in building industry in the scope of and under conditions described in the Attachment which is integral part of the Technical Approval.

Expiry Time:

7th December 2016

Building Research Institute

Director

Marek Kaproń

Attachments:

General and technical provisions

Warsaw, 7th December 2011

ATTACHMENT

GENERAL AND TECHNICAL PROVISIONS

Contents

1. SUBJECT OF THE APPROVAL

The subject of the Technical Approval are magnesium oxide boards MgO Green-LS-TECH, produced by LS TECH-HOMES company, ul. K.Korna 7/4, 43-300 Bielsko-Biała.

MgO Green-LS-TECH boards with core on the basis of magnesium oxide and magnesium chloride, perlite and wood fibers are from both sides covered with fiberglass net, melted into the surface of the core. The approval includes MgO Green-LS-TECH boards from 6 to 20mm thick.

Required technical properties of the MgO Green-LS-TECH boards are described in point 3.

2. PURPOSE AND POSSIBLE APPLICATION

MgO Green-LS-TECH can be used outside and inside buildings; however they cannot be directly exposed to water or weather conditions. Inside buildings, they can be used to finish walls, ceilings and floors (sleeper walls can be made of 11mm thick boards) and outside buildings – under elevation claddings but only under the condition that the board is protected from weather conditions.

MgO Green-LS-TECH boards mechanically assembled directly to the sleepers or elements being in A2-s3,d0 class of reaction to fire according to PN-EN 13501-1+A1:2010 norm excluding plaster-cardboards, were classified in A2-s1,d0 class of reaction to fire according to PN-EN 13501-1+A1:2010 and according to the Regulation of Minister of Infrastructure dated 12th April 2002 on technical conditions the building and their location should meet (Dz.U.Nr 75/2002, poz. 690 with further changes) as fireproof, no flaming drops products and as products not spreading fire inside and outside buildings (NRO).

MgO Green-LS-TECH boards should be assembled to the surface with mechanical joints marketing authorized. Boards can be also glued to the wooden, metal or concrete surfaces with Teroson Macroplast UR 7225 adhesive produced by Henkel Teroson GmbH.

MgO Green-LS-TECH boards should be used according to technical project prepared for the specified building in compliance with:

- Valid norms and building-technical provisions and especially in compliance with Regulation of Minister of Infrastructure dated 12th April 2002 on technical conditions the building and their location should meet (Dz.U.Nr 75/2002, poz. 690 with further changes),
- Provisions of the Approval
- Assembly instruction prepared by the Producer.

3. TECHNICAL PROPERTIES. REQUIREMENTS

Required technical properties of MgO Green-LS-TECH are presented in table 1.

Table 1

Pos.	Properties	Requirements	Tests method according to
1	2	3	4
1	Outside appearance	Cream colour, smooth top surface, in the bottom surface there can be seen melted net	Visual evaluation
2	Dimensions deviations: • Length, mm • Width, mm • Thickness, % • Boards from 6 to 11mm thick, • Boards from 12 to 20mm thick	 ± 3 ± 2 ± 5 ±10	PN-EN 12467:2009

3	Straightness deviation, mm	±2	
4	Rectangularity deviations, mm/m	≤2	
5	Flatness, mm: - From 6 to 11 mm thick boards, - From 12 to 20 mm thick boards	 ±2 ±5	PN-EN 825:1998
6	Density, g/cm3	0,9±0,1	PN-EN 12467:2009
7	Full water absorption	≤15	
8	Hydrostatic head resistance after 24h, water gauge 5cm	Lack of licking	PN-EN 12467:2009
9	Surface hardness, mm	≤12	PN-EN 15283:A1:2010
10	Bending strength, MPa, - From 6 to 11mm thick board - From 12 to 20 mm thick board	 ≥8 ≥6	PN-EN 12467:2009 in laboratory conditions (50±5)% and (23±2)°C
11	Bending strength (MOR), MPa, after 24 hour steeping; - From 6 to 11mm thick board - From 12 to 20mm thick board	 ≥7 ≥4m5	PN-EN 12467:2009
12*)	Strength of 11mm thick board to - Bending - Compression class	 F 7 C 12	PN-EN 13892-2:2004
14	Dimension stability in specified temperature and humidity conditions, % (in temperature: +70°C and humidity: 90% and temperature: -20°C), - Length and width - thickness	 ≤0,02 ≤1	PN-EN 13892-2:2004
15	Gluing vulnerability to the surface, MPa, with Teroson Macroplast UR 7225 adhesive produced by Henkel: - wooden surface - metal surface - concrete surface	 ≥ 1,4 ≥ 1,6 ≥ 0,9	p. 5.6.1
16	Thermal conduction ratio, W/(m.K)	0,155	PN-EN 12664:2002 PN-EN ISO 10456:2004
17	Volatile organic components emission (VOC) – time necessary to obtain allowable concentration of substances harmful for health, days	≤ 28	PN-EN ISO 16000-9:2009
18	Cadmium and lead content	0	Approval regulations GW VIII.21/2009
19	Classification according to reaction to fire	A2-s1,d0	PN-EN 13501-1+a1:2010
*) It refers to boards for sleeper walls			

4. PACKING, STORAGE AND TRANSPORT

MgO Green-LS-TECH board should be packed, stored and transported in such a way so that its technical properties remained unchanged.

Every package should contain card with following information:

- Name and address of the Producer,
- Name of the product,
- Technical Approval number ITB AT-15-8776/2011,
- Number and date of declaration of conformity,
- Building mark

Way the products are marked with the building mark should be complied with Regulation of Minister of Infrastructure dated 11th August 2004 concerning declaration of conformity for building products and the way the products are marked (Dz.U. nr 198/2004, poz. 2041).

5. ASSESSMENT OF COMPLIANCE

5.1 General conditions

According to art. 4, art. 5 ust. 1, p. 3 and art.8 ust.1 regulation dated 16th April 2004 on building products (Dz. Z U. nr 92/2004, poz. 881), the building products the Approval refers to can be introduced to the market and used according to their appropriate use and purpose if the producer makes assessment of compliance, issues declaration of compliance with Technical Approval ITB AT-15-8776/2011 and marked products with the building mark according to the applicable regulations.

According to the Regulations of Minister of Infrastructure dated 11th August 2004 on declaration of conformity for building products and the way the products are marked (Dz.U. nr 198/2004, poz. 2041) the evaluation of declaration of compliance with Technical Approval ITB AT-15-8776/2011 is made by the Producer with the use of system 3.

In case of compliance assessment system 3 of, Producer can issue declaration of conformity with Technical Approval ITB AT-15-8776/2011 according to:

a) Initial tests of the type conducted by the authorized laboratory,
b) Plant production control.

5.2 Initial tests of the type

Initial test of the type is a test confirming required technical and application properties, conducted before the products is introduced to the market:

Initial test of the type includes:

a) Density,
b) Full water absorption,
c) Hydrostatic resistance,
d) Hardness of the surface,
e) Bending strength,
f) Bending strength (MOR) after steeping,
g) Class of strength to bending and compression
h) Dimension stability in specified thermal and humidity conditions,
i) Gluing vulnerability to the surface
j) Thermal conduction ratio
k) Volatile organic components emission (VOC)
l) Cadmium and lead content
m) Classification according to reaction to fire.

Tests which were basics to establish technical and use properties in approval procedure are initial tests of the type in compliance assessment.

5.3 Production control in the plant

Production control in the plant includes:

1. specification and test of raw materials and components,
2. control and tests in the process of production and test of finish products (p. 5.4), conducted by the Producer, according to the established plan of tests and according to procedures established in production control plant documentation adapted to production technology and heading to obtain products with required properties.

Production control should assure that the products comply with the Technical Approval ITB AT-15-8776/2011. Results of the production control should be systematically registered. Register should assure that products

meet all criteria of compliance assessment. Particular products or parts and production details connected with them must be fully identifiable and reconstruable.

5.4 Finished products tests

5.4.1 **Tests program.** Tests program includes

a) Current tests
b) Periodical tests

5.4.2 **Current tests.** Current tests include control of:

a) Outside appearance,
b) Dimensions,
c) Flatness,
d) Rectangularity
e) Straightness
f) Density
g) Full water absorption
h) Bending strength

5.4.3 **Periodical tests.** Periodical tests include control of:

a) Hydrostatic resistance
b) Surface hardness
c) Classes of bending and stressing strength
d) Dimension stability in specified thermal and humidity conditions
e) Thermal conduction ratio
f) Volatile organic components emission (VOC)
g) Cadmium and lead content
h) Classification according to reaction to fire

5.5 Tests frequency

Current tests should be conducted according to the established tests schedule but not rarer than for each part of products. Size of the products part should be established in plant documentation of products control.

Periodical tests should be conducted not rarer than once per 3 years.

5.6 Tests methods

Tests should be conducted according to methods included in table 1 column 4 and according to the following description.

5.6.1 **Control of surface grip**. Samples for tests are made by gluing cladding with Teroson Macroplast UR 7225 produced by Henkel Teroson GmbH to: wood, metal or concrete. Technology of glue spreading, curing window and compression must comply with Producer's recommendations. It is necessary to prepare at least 6 samples: (100X100) mm x board thickness (from one side) and thickness of material 25mm to which board is glued. Glued samples are air conditioned in temperature: (23±2) °C and relative humidity (50±5) % for at least 48 hours, after that steel handles are glued to the sample and after 24 hours the sample undergoes distraction force until it is destroyed. Speed of the measurement cell should be 10mm/min.
Stretching strength (distracting glued joint), in MPa, is counted from the equation:

$$Rr = P/A$$

Where:
P – maximum strength which caused destruction of the sample, N
A – surface of glue joint, mm2
Except for the number value of the distraction strength, character of sample distraction is described – percentage of the destroyed surface. Result is counted mean value from 6 measurements, to two decimal places.

5.7 Samples for tests

Samples for tests should be chosen in random way according to the norm PN-83/N-03010.

5.8 Evaluation of tests results

Manufactured products are recognized as complying with Technical Approval requirements if results of all tests are positive.

6. FORMAL AND LEGAL TERMS

6.1 Technical Approval ITB AT-15-8776/2011 is a document which states that Mgo Green-LS-ETCH board is useful for building industry in the scope concluding from the Approval provisions.
According to art. 4, art. 5 ust. 1, p. 3 and art.8 ust.1 regulation dated 16th April 2004 concerning building products (Dz. Z U. nr 92/2004, poz. 881) products, the Approval refers to can be introduced to the market and used according to their appropriate use and purpose if the producer makes assessment of compliance, issued declaration of compliance with Technical Approval ITB AT-15-8776/2011 and marked products with the building mark according to the applicable regulations.

6.2 Technical Approval
Technical Approval does not violate right concluding from industrial property law and especially announcement of Marshal of the Sejm dated 13th June 2003 concerning announcement of consolidated text dated 30th June 2000. Industrial property law (Dz. U. Nr 119, poz. 1117). Those who use this Approval are obliged to provide these rights.

6.3 Issuing the Approval ITB is not responsible for any violation of exclusive or accrued rights.

6.4 Technical Approval does not free the Producer from responsibility for right quality of the products and contractors of building works from responsibility for their right use.

6.5 Brochures and announcements and other documents connected with introducing MgO Green-LS-TECH boards to the market should include information about the Technical Approval ITB AT-15-8776/2011.

7. EXPIRY TIME

The Technical Approval ITB AT-15-8776/2011 is valid until 7th December 2016.

Expiration time can be revalidated for the following period on the condition that the Mover or formal successor propose appropriate motion to Building Research Institute not later than 3 months before expiration time of the Approval.

THE END

ADDITIONAL INFORMATION

Norms and connected documents

PN-EN 825:1998	*Products for thermal insulation. Flatness evaluation.*
PN-EN 12467:2009	*Flat fiber and cement boards. Product characteristics and tests methods.*
PN-EN 15283+A1:2010	*Plaster boards with reinforced fiber. Definitions, requirements and tests methods. Part 2: plaster fiber boards.*
PN-EN 13892-2:2004	*Tests methods for materials for sleeper walls. Part 2: bending and squeezing strength evaluation.*
PN-EN 1604+AC:1999	*Thermal insulation materials for building industry. Dimension stability evaluation in specified thermal and humidity conditions.*
PN-EN 12664:2002	*Thermal properties of materials and building products. Estimation of performance of thermal resistance with the use of methods of covered flame plate and a sensor of heat flux. Dry and wet products having middle or law heat resistance.*
PN-EN ISO 10456:2004	*Materials and building products. Procedures of declared and counted thermal values.*
PN-EN ISO 16000-9:2009	*Air of the inside. Part 9. Volatile organic components emission from building products and equipment. Emission tests with Chamber methods.*
PN-EN 13501-1+2010	*Fire classification of products and elements of the buildings. Part 1: Classification according to results of reaction to fire tests.*
PN-83/N-03010	*Statistic quality control. Random selection of sample units.*

Reports on tests, evaluation, classification

1. LK01-6011/11/R01NK. Report on 11mm thick magnesium oxide board tests, Construction and Building Elements Department, ITB, Warsaw, 2011.
2. LK 03-6011/11/R01NK. Report on 6 – 20mm thick magnesium oxide board tests, Construction and Building Elements Department, ITB, Warsaw, 2011.
3. 6011/11/R01NK. Tests and technical opinion on magnesium oxide boards. Construction and Building Elements Department, ITB, Warsaw, 2011.
4. 6011/11/R01NK. Magnesium oxide boards tests and composite panel according to ETAG 016 requirements with expanded polystyrene core and MgO boards claddings, Thermal Physics Department, Sanitary Systems and Environment, ITB, Warsaw, 2011.
5. 6011/11/R01NK (LFS01-6011/11/R01NK). Magnesium oxide boards tests and composite panel according to ETAG 016 requirements with expanded polystyrene core and MgO boards claddings, Thermal Physics Department, Sanitary Systems and Environment, ITB, Warsaw, 2011.
6. 6011.1.1/11/R01NK, Classification report on reaction to fire according to PN-EN 13501-1+A1”2010, Fire Testing Department, ITB, Warsaw, 2011.