TEST REPORT
EN 12467+A1
Fibre-cement flat sheets - Product specification and test methods

Report Reference No.....:	160303096GZU-001
Tested by (name and signature).....:	Kelming Wang
Approved by (name and signature) ..:	Jones Zhong
Date of issue.....:	August 26, 2016
Contents.....:	Total test report 23 pages including: Report text: 10 pages. Appendix A for copy of test report (Issued by: NB 1390): 10 pages. Appendix B for ISO 9001 certificate: 1 page. Appendix C for Product photos: 1 page. Appendix D for Revision page: 1 page.
Testing Laboratory name .....:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address.....:	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
Testing location.....:	Same as above and Notified Body No. 1390
Applicant's name.....:	Jiangsu Aifuxi New Building Material Stock Co., Ltd.
Address.....:	Tunnan Village, Tongli Town, Wujiang District, Suzhou City, China.
Test specification:	
Standard.....:	EN 12467:2012+A1:2016
Non-standard test method.....:	N/A
Test Report Form No.....:	TTRF EN 12467:2012 B
TTRF Originator.....:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Master TTRF.....:	Dated 2016-08
Test item description.....:	Fiber Cement Board
Trade Mark.....:	FC®
Model and/or type reference.....:	8mm, 9mm, 10mm, 12mm, 15mm, 18mm, 20mm
Manufacturer.....:	Jiangsu Aifuxi New Building Material Stock Co., Ltd.
Rating(s).....:	Reaction to fire Class A1 Weather resistance: Category A Bending strength (wet condition): Class 3 (20mm) and Class 4 (8mm) Method of installation: Large size sheet Dimensional tolerance: Level I

Copy of marking plate:

Marking on accompanied document

Take model 8mm as an example:

CE

Jiangsu Aifuxi New Building Material Stock Co., Ltd.
Tunnan Village, Tongli Town, Wujiang District, Suzhou City, China.
16
XXXXX-CPR-2016/8/26

EN 12467:2012+A1:2016
Fiber Cement Board for internal and external wall cladding, eaves and soffit ceiling, flooring etc.
NT
Length 2440mm, Width 1220mm, Thickness 8mm
Mechanical resistance: A4
Reaction to fire: Class A1
Water impermeability: No water drops
Release of dangerous substances: NPD
Durability against：

Warm water:	$R_L \geq 0.75$
Soak/ dry:	$R_L \geq 0.75$
Freeze-thaw:	$R_L \geq 0.75$
Heat-rain:	Pass

Note:
1. If the CE marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.
2. The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5 mm.
3. CE marking and label shall be affixed visibly, legibly and indelibly.
4. “XXXXX-CPR-2016/8/26” should be the reference number of the Declaration of Performance.

Summary of testing:

The submitted samples were tested and found to comply with applicable requirements of EN 12467:2012+A1:2016.

Test item particulars	
Intend use ..... :	For internal and external wall cladding, eaves and soffit ceiling, flooring etc.
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement ..... :	P(Pass)
- test object does not meet the requirement ..... :	F(Fail)
Testing	
Date of receipt of test item ..... :	March 03, 2016
Date (s) of performance of tests ..... :	March 03, 2016 to August 22, 2016

General remarks:

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

"(See remark #)" refers to a remark appended to the report.
"(See Appendix #)" refers to an appendix appended to the report.
Throughout this report a comma (point) is used as the decimal separator.

When determining the test result, measurement uncertainty has been considered.

The clause which indicated with * is the subcontract test item.

General product information:

Submitted samples are fiber cement boards, intended use as internal and external wall cladding, eaves and soffit ceiling, flooring etc. The product includes 8mm, 9mm, 10mm, 12mm, 15mm, 18mm and 20mm thickness, the client claimed that all the models are the same in formula, product process and material (Portland Cement, quartz sand, wood pulp etc.), the only difference is thickness.

All test results based on 8mm and 20mm thickness.

Reaction to fire (Class A1) was conducted by Notified Body Lab No.1390.Centrum stavebního inženýrství a.s. Fire Technical Laboratory.

See Appendix C for products' appearance.

EN 12467+A1			
Clause	Requirement - Test	Result - Remark	Verdict
5	Requirements		
5.1	General		
5.1.1	Composition Sheets shall consist essentially of cement or a calcium silicate formed by a chemical reaction of a siliceous and a calcareous material, reinforced by fibres. The cement shall comply with EN 197-1 or with technical specifications relevant in the country of use. This European Standard covers fibre-reinforced cement flat sheets of type NT. The reinforcing fibres shall be one or more of the following forms: —discrete elements randomly dispersed; —continuous strands or tapes; —nets or webs. Process aids, fillers, aggregates and pigments may be added.	Claimed composition: Portland Cement, quartz sand, wood pulp etc.; And the cement complied with EN 197-1. Samples were tested with reference to NOISH 9002, no asbestos was detected.	—
5.1.2	Appearance and finish The exposed face of the sheets can be with or without texture. The sheets can be coloured or left in their natural colour. The sheets can also receive adherent coloured or uncoloured coatings on their surface. Variations of the surface appearance which do not impair the fitness for purpose of the sheets are permitted. The sheets may be supplied with holes for fixing and/or cut to size.	Model 8mm: No major defect was found. Model 20mm: No major defect was found.	P
5.2	Classification		
5.2.1	General Sheets covered by this document are divided into: —four categories in accordance with their weather resistance (see 5.2.2 to 5.2.5); —five classes in accordance with their bending strength (see 5.4.3); —two groups of sizes in accordance with their method of installation (see 5.2.6); — two levels in accordance with their dimensional tolerances (see 5.3.4). Type tests for each category are specified in Table 7.	Model 8mm: Weather resistance: Category A Bending strength (wet condition): Class 4 Method of installation: Large size sheet Level of tolerance: Level I Model 20mm: Weather resistance: Category A Bending strength (wet condition): Class 3 Method of installation: Large size sheet Level of tolerance: Level I	—
5.3	Dimensions and tolerances		

<table>
<tr><td colspan="4">EN 12467+A1</td></tr>
<tr><td>Clause</td><td>Requirement - Test</td><td>Result - Remark</td><td>Verdict</td></tr>
<tr><td>5.3.1</td><td>General
There are two levels of tolerances for length, width, straightness and squareness of edges. Sheets shall comply with the requirements of the same level for the four sets of tolerances.</td><td>Refer to below clause 5.3.2 to 5.3.5.</td><td>–</td></tr>
<tr><td>5.3.2</td><td>Nominal length and width
The manufacturer shall specify the nominal length and width of the sheets.</td><td>1220*2440mm</td><td>–</td></tr>
<tr><td>5.3.3</td><td>Thickness
The manufacturer shall specify the nominal thickness of the sheets.</td><td>8mm, 9mm, 10mm, 12mm, 15mm, 18mm, 20mm</td><td>–</td></tr>
<tr><td>5.3.4</td><td colspan="2">Tolerance on nominal dimensions</td><td>–</td></tr>
<tr><td>5.3.4.1</td><td>Tolerance on length and width
Tolerance on length and width shall be in accordance with Table 1, for the appropriate level.
<table>
<tr><td>Nominal dimension a</td><td>Level I</td><td>Level II</td></tr>
<tr><td>a≤ 600mm</td><td>±3mm</td><td>±4mm</td></tr>
<tr><td>600mm<a≤1000mm</td><td>±3mm</td><td>±5mm</td></tr>
<tr><td>1000mm<a≤1600mm</td><td>±0,3% a</td><td>±0,5% a</td></tr>
<tr><td>1600mm<a</td><td>±5mm</td><td>±8mm</td></tr>
<tr><td colspan="3">a is the nominal width or length</td></tr>
</table></td><td>Model 8mm:
Length: 1219mm
Deviation: -0.08%~0%
Width: 2439mm
Deviation:-1mm~0mm

Model 20mm:
Length: 1220mm
Deviation: -0.08%~0%
Width: 2439mm
Deviation:-1mm~0mm</td><td>P</td></tr>
<tr><td>5.3.4.2</td><td>Tolerance on thickness
For textured sheets, tolerance shall be in accordance with Table 3.
<table>
<tr><td>e≤6mm</td><td>±0,6mm</td></tr>
<tr><td>6< e ≤20mm</td><td>±10% e</td></tr>
<tr><td>e> 20mm</td><td>±2mm</td></tr>
</table></td><td>Model 8mm:
Thickness : 8.17mm
Deviation: -0.88%~3.75%

Model 20mm:
Thickness : 20.05mm
Deviation: -3.25%~1.90%</td><td>P</td></tr>
<tr><td>5.3.5.1</td><td>Straightness of edges
The tolerance on the straightness of edges are defined as a percentage of the length of the edge of the relevant dimensions (length or width), and shall be in accordance with Table 4 for the appropriate level.
<table>
<tr><td>Level I</td><td>Level II</td></tr>
<tr><td>0,1%</td><td>0,3%</td></tr>
</table></td><td>Model 8mm:
Straightness of edge:
0.03%~0.07%

Model 20mm:
Straightness of edge:
0.03%~0.06%
Complied Level I</td><td>P</td></tr>
</table>

EN 12467+A1			
Clause	Requirement - Test	Result - Remark	Verdict
5.3.5.2	Squareness of edges The tolerances on squareness of sheets shall be in accordance with Table 5, for the appropriate level. Level I: 2mm/m; Level II: 4mm/m	Model 8mm: Squareness of edge: 0.30 mm/m ~0.52 mm/m Model 20mm: Squareness of edge: 0.35 mm/m ~0.60 mm/m Complied Level I	P
5.4	Physical requirement and characteristics		
5.4.1	General Mechanical and material properties are normally determined on sheets as delivered. The results shall be indentified as applying to coated or uncoated material.	Refer to below clause 5.4.1 to 5.4.6.	—
5.4.2	Apparent density The manufacturer shall specify in his literature the minimum apparent density for each category of sheet. When tested in accordance with the method specified in 7.3.1 the density shall be not less than this value.	No claims Model 8mm: Apparent density: 1.57g/cm^3 Measured: 1.56g/cm^3 to 1.58g/cm^3 Model 20mm: Apparent density: 1.60g/cm^3 Measured: 1.59g/cm^3 to 1.61g/cm^3	—
5.4.3	Moisture movement The manufacturer's literature shall state the percentage value of linear sheet moisture movement measured when the sheet is exposed to a relative humidity change from 30 % to 90 %. The stated value shall be determined in accordance with 7.3.7 using the test method given in Annex C.	Model 8mm: The percentage value of linear sheet moisture movement: 0.04% Model 20mm: The percentage value of linear sheet moisture movement: 0.03%	—

<table>
<tr><th colspan="4">EN 12467+A1</th></tr>
<tr><th>Clause</th><th>Requirement - Test</th><th>Result - Remark</th><th>Verdict</th></tr>
<tr><td>5.4.4</td><td>Mechanical characteristics –Bending strength (MOR) – Modulus of elasticity (MOE)
When tested as specified in 7.3.2, the minimum modulus of rupture of the sheets, expressed in megapascals, shall be as specified in Table 6. The MOR shall be the average of the values obtained from testing the sample in both directions.
Category A and B sheet strengths are specified in the wet condition (see Table 10).
Category C and D sheet strengths are specified in the ambient condition (see Table 10).
<table>
<tr><th colspan="2">Minimum modulus of rupture</th></tr>
<tr><th rowspan="2">Classes</th><th>min. MOR in the wet condition, MPa</th></tr>
<tr><th>Category A & B</th></tr>
<tr><td>1</td><td>4</td></tr>
<tr><td>2</td><td>7</td></tr>
<tr><td>3</td><td>13</td></tr>
<tr><td>4</td><td>18</td></tr>
<tr><td>5</td><td>24</td></tr>
</table>
The manufacturer shall specify the characteristic value for mechanical strength. Characteristic values of bending strength are based on statistical data on results of tests in ambient conditions.
The modulus of elasticity of the sheets, expressed in Giga- or Megapascals, shall be specified on test results of tests in ambient conditions. The MOE shall be the average of the values obtained from testing the sampling in both directions with indication of the standard deviation.</td><td>Category A
Wet condition:
Model 8mm:
MOR average: 19.3MPa,
minimum: 18.1MPa
Class 4

Model 20mm:
MOR average: 18.2MPa,
minimum: 16.4MPa
Class 3

Ambient condition:
Model 8mm:
MOR average: 19.9MPa,
minimum: 17.8MPa
MOE average: 3074MPa
Standard deviation: 242MPa
Model 20mm:
MOR average: 18.0MPa,
minimum: 15.4MPa
MOE average: 1410MPa
Standard deviation: 149MPa</td><td>P</td></tr>
<tr><td>5.4.5</td><td>Water impermeability for Categories A, B and D
When tested in accordance with 7.3.3, traces of moisture may appear on the under surface of the sheet, but in no instance shall there be any formation of drops of water.</td><td>Model 8mm:
No formation of drops of water after being tested.

Model 20mm:
No formation of drops of water after being tested.</td><td>P</td></tr>
<tr><td>5.4.6</td><td>Water vapour permeability for Category D</td><td>The products belong to Category A</td><td>N/A</td></tr>
<tr><td>5.5</td><td colspan="3">Durability requirements</td></tr>
</table>

EN 12467+A1			
Clause	Requirement - Test	Result - Remark	Verdict
5.5.1	Mechanical and material properties are normally determined for sheets as delivered. The results shall be identified as applying to coated or uncoated material. The performance of the coating in the following tests shall not be considered in the assessment of the product.	Refer to below clause 5.5.2 to 5.5.5.	—
5.5.2	Freeze-thaw for categories A, B and D When tested in accordance with 7.4.1, after 100 freeze-thaw cycles for Category A and 25 cycles for Category B and D, the ratio R_L as defined in 7.4.1.4 shall be not less than 0,75.	Model 8mm: Wet condition: MOR average: 18.5MPa, minimum: 17.1MPa R_L=0.90 Model 20mm: Wet condition: MOR average: 16.3MPa, minimum: 14.0MPa R_L=0.84	P
5.5.3	Heat-rain for categories A and B When tested in accordance with 7.4.2,after 50 heat-rain cycles for Category A and 25 cycles for Category B, any visible cracks, delamination, warping and bowing or other defects in the sheets shall not be of such a degree as to affect their performance in use. Water tightness is tested according to 5.5.4. Warping and bowing are visually assessed.	Model 8mm and 20mm 1.No formation of drops of water; 2.No visible cracks, delamination, warping and bowling or other defects in the sheets.	P
5.5.4	Warm water for categories A, B, C and D When tested in accordance with 7.3.5, after 56 days at 60℃, the ratio R_L as defined in 7.3.5.4 shall be not less than 0, 75.	Model 8mm: Wet condition: MOR average: 18.7MPa, minimum: 16.9MPa R_L=0.92 Model 20mm: Wet condition: MOR average: 17.1MPa, minimum: 14.8MPa R_L=0.89	P
5.5.5	Soak-dry for categories A, B, C and D When tested in accordance with 7.3.6, after 50 soak-dry cycles for category A and 25 cycles for Category B, C and D the ratio R_L as defined in 7.3.6.4 shall be not less than 0, 75.	Model 8mm: Wet condition: MOR average: 19.0MPa, minimum: 17.1MPa R_L=0.93 Model 20mm: Wet condition: MOR average: 16.5MPa, minimum: 12.5MPa R_L=0.79	P
5.6	Fire and safety		

EN 12467+A1			
Clause	Requirement - Test	Result - Remark	Verdict
5.6.1	Reaction to fire When subject to regulatory requirements, the reaction to fire of the sheets shall be declared in accordance with 7.5.	Class A1, refer to copy of the report (Issue by: NB 1390)	P
5.6.2	Release of dangerous substances For products containing substance(s) defined in Council Directive 76/769/EEC, the content shall be declared by the manufacturer. This applies to substances contained in the original formulation or created during the manufacturing process. In addition see Annex ZA.	Declared	—
5.7	Product information The manufacturer shall include the following in his literature: a) designation of the sheet: - type of product: NT (see 5.1.1); - name of the sheet, - category - class, - level of tolerances; b) nominal values for: - thickness - length and width c) minimum apparent density d) instructions relevant to the handling and installation.	See “Copy of marking plate”, instruction was not provided.	—
6	Assessment and verification of constancy of performance — AVCP		
6.1	General The compliance of fibre-cement flat sheets with the requirements of this standard and with the performances declared by the manufacturer in the DoP shall be demonstrated by: —determination of the product type; —factory production control by the manufacturer, including product assessment. The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the conformity of the product with its declared performance(s).		—

EN 12467+A1			
Clause	Requirement - Test	Result - Remark	Verdict
6.2	Type testing Type tests shall be carried out on products as delivered. If several formats or sizes of the same category and class are being produced from the same composition and by the same production method, type tests only need to be carried out on maximum and minimum thickness. If the ratio of the maximum to minimum thickness is greater than three then an additional intermediate thickness shall be tested.	Refer to clause 5.3 to 5.6	P
6.3	Factory product control (FPC) The manufacturer shall establish, document and maintain a FPC system to ensure that the products placed on the market comply with the declared performance of the essential characteristics. The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. Manufacturers having an FPC system, which complies with EN ISO 9001 and which addresses the provisions of the present European Standard are considered as satisfying the FPC requirements of the Regulation (EU) No 305/2011.	Factory operates in accordance with ISO 9001, and is deemed to satisfy the requirement of FPC.	P

**********End of page**********

Appendix A
Copy of Test Report (Issued by: NB 1390)

Centrum stavebního inženýrství a.s.

Fire Technical Laboratory

AUTHORIZED BODY No. 212

NOTIFIED BODY No. 1390

CLASSIFICATION OF REACTION TO FIRE IN ACCORDANCE WITH ČSN EN 13501-1+A1:2010

Applicant: Jiangsu Aifuxi New Building Material Stock Co., Ltd
Tunnan Village, Tongli Town
Wujiang District, Suzhou City
China

Prepared by: Centrum stavebního inženýrství a.s.
Pražská 16
102 00 Praha 10
Czech Republic

Product name: *Fiber Cement Board / Fibre cement plank siding*

Classification report No.: PK-16-090

Issue number: 1/2

Date of issue: 4th August 2016

This classification report consists of 4 pages and may only be used or reproduced in its entirety.

Address:
PRAŽSKÁ 16, 102 00 PRAHA 10, Czech Republic, E mail: cslas@cslas.cz, http://www.cslas.cz
Reg. No. 45274860, VAT No. CZ45274860. The Company is registered in the Commercial Register administered by the Municipal Court of Prague (section B, Inset 1595).
Fire Technical Laboratory, E-mail: ptl@cslas.cz
Phone: +420 281 017 111, Fax: +420 281 017 455

Appendix A (continued)
Copy of Test Report (Issued by: NB 1390)

REACTION TO FIRE CLASSIFICATION REPORT No. PK-16-090

Page 2

1. DETAILS OF CLASSIFIED PRODUCT

Nature and end use application:

Classification of the product *Fiber Cement Board / Fibre cement plank siding* is valid for the following end use application:

for internal and external wall cladding, eaves and soffit ceilings, flooring etc.

Description:

The product *Fiber Cement Board / Fibre cement plank siding* is fully described in the test reports in support of the classification listed in clause 2.

2. TEST REPORTS AND TEST RESULTS IN SUPPORT OF THIS CLASSIFICATION

Test reports

Name of laboratory	Name of sponsor	Test report ref. no.	Test method
CSI a.s. Fire Technical Laboraratory	Intertek testing service Shenzen Ltd.	16/595/P345	ČSN EN ISO 1716
		16/596/P346	ČSN EN ISO 1182

Measured values and test results

Test method	Parameter	Number of test	Results	
			Continuous parameter mean (m)	Compliance parameters
ČSN EN ISO 1716	PCS (MJ/kg)	3	0,63	≤ 2 (A1)
ČSN EN ISO 1182	ΔT (°C) Δm (%) t_f (s)	5 5 5	15,0 12,4 0	≤ 30 (A1) ≤ 50 (A1) = 0 (A1)

Appendix A (continued)
Copy of Test Report (Issued by: NB 1390)

REACTION TO FIRE CLASSIFICATION REPORT No. PK-16-090

Page 3

3. CLASSIFICATION AND DIRECT FIELD OF APPLICATION

Reference and direct field of application

This classification has been carried out in accordance with the clauses 11.8.1 of ČSN EN 13501-1+A1:2010.

Classification

The product *Fiber Cement Board / Fibre cement plank siding* in relation to its reaction to fire behaviour is classified:

A1

The additional classification in relation to smoke production is:

not classified

The additional classification in relation to flaming droplets/particles is:

not classified

The format of the reaction to fire classification for *Fiber Cement Board / Fibre cement plank siding* is:

Fire behaviour		Smoke production			Flaming droplets	
A1	-	s	not classified	,	d	not classified

Reaction to fire classification: A1

Field of application

This classification is valid for the following product parameters:

- density ≥ 1580 kg/m^3
- thickness: without limitation

Appendix A (continued)
Copy of Test Report (Issued by: NB 1390)

REACTION TO FIRE CLASSIFICATION REPORT No. PK-16-090

Page 4

4. LIMITATIONS

Restrictions

This classification report is valid until 4th August 2021, provided that the technical specifications of the product will not be changed.

Warning

This document does not represent type approval or certification of the product.

Prepared: Reviewed:

Jiří Socha

Vít Slaboch
technical manager of laboratory

Appendix A (continued)
Copy of Test Report (Issued by: NB 1390)

CENTRUM STAVEBNÍHO INŽENÝRSTVÍ a.s.

Zkušebna fyzikálních vlastností materiálů, konstrukcí a budov - Praha
Zkušební laboratoř č. 1007.4 akreditovaná ČIA dle ČSN EN ISO/IEC 17025
Pražská 16, 102 00 Praha 10 Hostivař

TEST REPORT
Nr. 16/595/P345

L 1007.4

Job Nr.:	Z-16/413/P163
Nr. of pages:	2
Nr. of copies:	2
Copy Nr.:	1

Name of test:	Determination of heat of combustion and calorific value of liquid and solid materials
Material/product/construction:	Fiber Cement Board
Sponsor:	Intertek testing service Shenzen Ltd. Guangzhou Branch, Block E, No 7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, CETDD Guangzhou China 510663
Manufacturer:	Jiangsu Aifuxi New Building Material Stock Co., Ltd Tunnan Village, Tongli Town, Wujiang District, Suzhou City, China
Test specimens delivery date:	11th July 2016
Workplace:	Fire technical laboratory
Location:	Pražská 16, Praha 10 - Hostivař
Date of test:	21th July 2016
Date of issue:	3rd August 2016

CENTRUM STAVEBNÍHO INŽENÝRSTVÍ a.s. Praha AKREDITOVANÁ ZKUŠEBNÍ LABORATOŘ č. 1007.4

Vít Slaboch
technical manager of fire technical laboratory

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Ing. Petr Školník
head of laboratory

email: azl@cslas.cz
phone: +420 261 017 417
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Appendix A (continued)
Copy of Test Report (Issued by: NB 1390)

Centrum stavebního inženýrství a.s., Zkušebna fyzikálních vlastností materiálů, konstrukcí a budov - Praha
Zkušební laboratoř č. 1007.4 akreditovaná ČIA dle ČSN EN ISO/IEC 17025
Pražská 16,102 00 Praha 10; tel.: 281017417, fax: 271751122; email: azl@cslas.cz

1. **Test assignment**

The test has been done on the base of formal quotation No. Z-16/334/P084 II issued on 1st June 2016.

2. Test method

ČSN EN ISO 1716 Reaction to fire tests for products - Determination of the cross heat of combustion (calorific value)

3. **Test specimens**

The test specimens were delivered by manufacturer.
Marking of the test specimens in laboratory: 16/P345/1 - 3.
Composition: Portland cement, quartz sand, wood pulp etc
Appearance: Fibercement board of thickness 12 mm and density cca 1580 kg/m^3.

4. **Test equipment**

1) Adiabatic calorimeter (Reg. Nr. 708)
2) Analytic weighing scale (Reg. Nr. 101)
3) Weighing scale (Reg. Nr. 102)
4) Digital thermometer (Reg. Nr. 103)
5) Digital stop watch (Reg. Nr. 47)

5. **Test results and conclusion**

Conditioning: according to ČSN EN 13238
Water equivalent of the calorimeter: 9738,3 J/K

Measured values	1st	2nd	3rd	Results	Expanded uncertainty
PCS [MJ/kg]	0,658	0,647	0,578	0,63	0,10

6. **Measurement uncertainty**

The mentioned expanded uncertainties are obtained by multiplying the standard uncertainties by a coverage factor k=2, which corresponded to a level of confidence of 95 %. Standard uncertainties have been determined in accordance with document „EA 4/02".

7. **Declaration**

The test results relate to the behaviour of the test specimen of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product of use. The results of tests are concerned only with the subject of testing. The test report shall be reproduced in full only.

Measured by: Jiří Socha Test report prepared by: Jiří Socha

Distribution of test reports:

Copy Nr. 1 - sponsor
Copy Nr. 2 - laboratory archive

List of appendixes:

Appendix 1: Determination of the gross heat of combustion of each component

END OF TEST REPORT

Appendix A (continued)
Copy of Test Report (Issued by: NB 1390)

CENTRUM STAVEBNÍHO INŽENÝRSTVÍ a.s.
Zkušebna fyzikálních vlastností materiálů, konstrukcí a budov - Praha
Zkušební laboratoř č. 1007.4 akreditovaná ČIA dle ČSN EN ISO/IEC 17025
Pražská 16, 102 00 Praha 10 Hostivař

TEST REPORT
Nr. 16/596/P346

L 1007.4

Job Nr.: Z-16/413/P163
Nr. of pages: 3
Nr. of copies: 2
Copy Nr.: 1

Name of test:	Determination of non-combustibility of construction products
Material/product/construction:	Fiber Cement Board
Sponsor:	Intertek testing service Shenzen Ltd. Guangzhou Branch, Block E, No 7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, CETDD Guangzhou China 510663
Manufacturer:	Jiangsu Aifuxi New Building Material Stock Co., Ltd Tunnan Village, Tongli Town, Wujiang District, Suzhou City, China
Test specimens delivery date:	11th July 2016
Workplace:	Fire technical laboratory
Location:	Pražská 16, Praha 10 – Hostivař
Date of test:	28th July 2016
Date of issue:	3rd August 2016

Vít Slaboch
technical manager of fire technical laboratory

Ing. Petr Školník
head of laboratory

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web: www.csias.cz

Appendix A (continued)
Copy of Test Report (Issued by: NB 1390)

Centrum stavebního inženýrství a.s., Zkušebna fyzikálních vlastností materiálů, konstrukcí a budov - Praha
Zkušební laboratoř č. 1007.4 akreditovaná ČIA dle ČSN EN ISO/IEC 17025
Pražská 16,102 00 Praha 10; tel.: 281017417, fax: 271751122; email: azl@csias.cz

1. Test assignment

The test has been done on the base of formal quotation No. Z-16/334/P084 II issued on 1st June 2016.

2. Test method

ČSN EN ISO 1182: 2010 Reaction to fire tests - Non-combustibility test

3. Test specimens

The test specimens were delivered by manufacturer.
Marking of the test specimens in laboratory: 16/P346/1 - 5.
Composition: Portland cement, quartz sand, wood pulp etc.
Appearance: grey board of density cca 1580 kg/m^3

4. Test equipment

1) Test device according to ČSN EN ISO 1182 (Reg. Nr. 712)
2) Digital stop watch (Reg. Nr. 63)
3) Yardstick (Reg. Nr. 2)
4) Thermometer / relative humidity meter (Reg. Nr. 81)
5) Weighing scale (Reg. Nr. 155)
6) Glass thermometer (Reg. Nr. 261)
7) AD converter OMEGA TC-08 (Reg. Nr. 47)
8) Coated thermocouple 1,5 mm (Reg. Nr. 231)

5. Test results and conclusion

Conditioning: from 11th July 2016 according to ČSN EN 13238
Drying prior testing: 24 hours at temperature 60 °C.
Laboratory conditions: temperature T = 26°C; relative humidity RV = 28 %

Test specimen no.	1	2	3	4	5	∅	Expanded
Date of test	07-28	07-28	07-28	07-28	07-28		uncertainty
ΔT [°C]	15,6	10,4	18,7	14,3	16,1	15,0	8,8
$\Delta T_{surface}$ [°C]	(-)	(-)	(-)	(-)	(-)	(-)	(-)
ΔT_{centre} [°C]	(-)	(-)	(-)	(-)	(-)	(-)	(-)
t_f [s]	0	0	0	0	0	0	(-)
Δm [%]	12,4	11,7	12,2	13,0	12,8	12,4	1,4
Behaviour during the tests: The test specimens did not burn.							

Appendix A (continued)
Copy of Test Report (Issued by: NB 1390)

Centrum stavebního inženýrství a.s., Zkušebna fyzikálních vlastností materiálů, konstrukcí a budov - Praha
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Pražská 16,102 00 Praha 10; tel.: 281017417, fax: 271751122; email: azl@cslas.cz

The product "Fiber Cement Board" gives the average furnace thermocouple temperature rise 15,0 °C, the average mass loss 12,4 % and the mean duration of sustained flaming 0 s.

6. Measurement uncertainty

The mentioned expanded uncertainties are obtained by multiplying the standard uncertainties by a coverage factor k=2, which corresponded to a level of confidence of 95 %. Standard uncertainties have been determined in accordance with document „EA 4/02".

7. Declaration

The test results relate to the behaviour of the test specimen of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product of use. The results of tests are concerned only with the subject of testing. The test report shall be reproduced in full only.

Measured by: Pavel Martan

Test report prepared by: Pavel Martan

Distribution of test reports:
Copy Nr. 1 – sponsor
Copy Nr. 2 – laboratory archive

List of appendixes:
Calibration of the furnace according to ČSN EN ISO 1182 - 1 page

END OF TEST REPORT

Appendix A (continued)
Copy of Test Report (Issued by: NB 1390)

Appendix of the test report no. 16/596/P346

Date of calibration: 2016-04-07
Furnace wall temperature [°C]:

Vertical axis	Level a 30 mm	b 0 mm	c -30 mm
1	778	805	776
2	785	800	781
3	788	809	780

T avg = 789,1 °C

T avg.axis1 = 786,3 °C
T avg.axis2 = 788,7 °C
T avg.axis3 = 792,3 °C

T dev.axis1 = 0,352014 %
T dev.axis2 = 0,056322 %
T dev.axis3 = 0,408336 %

T avg.dev.axis = 0,272224 %

T avg.level a = 783,7 °C
T avg.level b = 804,7 °C
T avg.level c = 779,0 °C

T dev.level a = 0,689946 %
T dev.level b = 1,971276 %
T dev.level c = 1,281329 %

T avg.dev.level = 1,314184 %

Furnace height [mm]	T min [°C]	T max [°C]	T down [°C]	T up [°C]	T avg [°C]
145	639,4	671,0	660,6	644,8	652,7
135	663,5	697,5	671,5	673,7	672,6
125	682,8	716,1	697,3	689,4	693,4
115	697,9	728,9	698,2	717,3	707,8
105	709,3	737,4	720,1	713,9	717,0
95	717,3	742,8	721,0	736,7	728,9
85	721,8	745,9	731,1	734,6	732,9
75	722,7	747,0	737,4	737,4	737,4
65	719,6	746,0	740,4	730,5	735,4
55	711,9	742,5	739,2	728,6	733,9
45	698,8	735,5	726,8	711,3	719,1
35	679,3	723,5	712,8	698,6	705,7
25	652,2	705,0	675,6	688,1	681,8
15	616,2	677,5	632,6	642,2	637,4
5	569,5	638,6	605,6	575,8	590,7

Furnace temperature profile:

**********End of page**********

Appendix B

ISO 9001 certificate

国建认证
GJC CERTIFICATION

QMS CERTIFICATE

Registration No.: 02515Q20446R0M

JIANGSU AIFUXI NEW BUILDING MATERIALS STOCK CO., LTD
(Certificate of Organization Code: 13823449-1)
Tunnan Village ,Tongli, Town, Wujiang District,
Suzhou City, Jiangsu, China. Zip code: 215217
Has been found to comply with
GB/T19001-2008 idt ISO9001:2008
"Quality management systems - Requirements"
This registration is subject to the following area
Jiangsu Aifuxi New Building Materials Stock Co.,Ltd, located at Tunnau Village, Tongli Town, Wujiang , Jiangsu, China, is involved in Design & Development, Management of Fiber Cemnet Products, Fiber Reinforce Calcium Silicate Products, Silicate Access Floor Products.

Approved organization will be monitored annually by GJC, and this certificate is valid, when surveillance tag has been sticked to specified site on it, Effective certificate would be inquired to www.cnca.gov.cn or www.gj-c.cn.

Initial Issuing Date: **Nov 05, 2015** General Manager:
Valid Period: **Nov 05, 2015 ~ Nov 04, 2018**

surveillance tag site | surveillance tag site

QMS CERTIFICATION

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

CNAS
MANAGEMENT SYSTEM
CNAS C025-Q

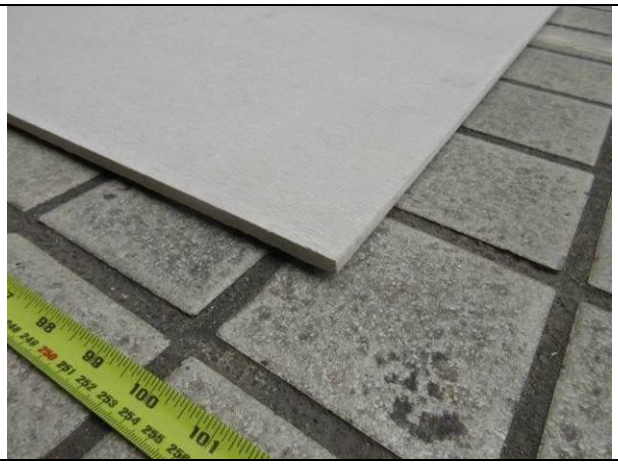
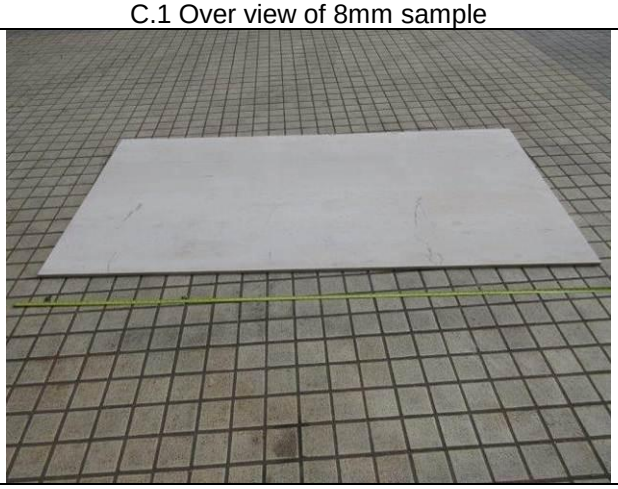
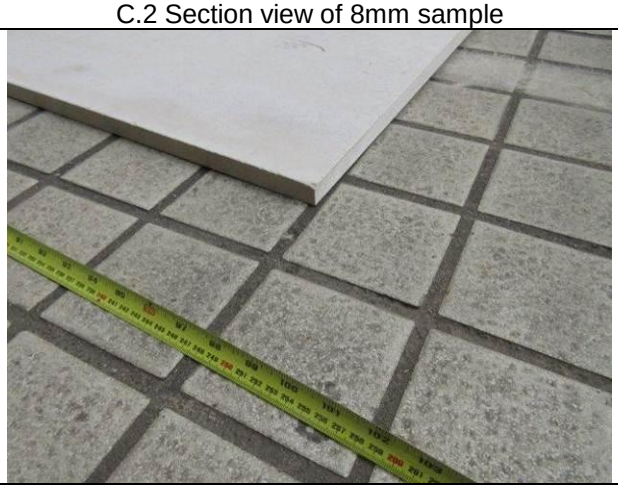
北京国建联信认证中心有限公司 1101080033333

BEIJING GUOJIANLIANXIN CERTIFICATION CENTER, LTD
Add: No. 11, Sanlihe Road, Haidian District, Beijing, China (100831) http://www.gj-c.cn

**********End of page**********

Appendix C

Products photos

	
C.1 Over view of 8mm sample	C.2 Section view of 8mm sample
	
C.3 Over view of 20mm sample	C.4 Section view of 20mm sample

**********End of page**********

Appendix D

Revision page

Revision No.	Date	Changes	Author	Reviewer
0	August 26, 2016	First issue	Kelming Wang	Jones Zhong

**********End of report**********