



TEST REPORT
EN 12467:2012
Fibre-cement flat sheets – Product specification and test methods

Report Reference No.....: 160222001SHF-BP-1

Prepared by (name and signature) ...: Daniel Zhang

Daniel Zhang

Approved by (name and signature) ...: Jodie Zhou

Jodie Zhou

Date of issue.....: February 23, 2016

Contents: Total test report 12 pages including:
Report text: 5 pages
Appendix A for product photos: 1 page
Appendix B for copy of ISO 9001 certificate report: 1 page
Appendix C for copy of Test Report (Issued by NB 2137): 4 pages
Appendix D for marking plate: 1 page

Testing Laboratory name: Intertek Testing Services Ltd., Shanghai

Address.....: Plant 7, No 6958 Daye Road, Fengxian District, Shanghai

Testing location.....: Same as above

Applicant's name: Zhejiang Terasun Air Duct Co., Ltd.

Address.....: (Maren) Chongren Industrial Clustering Area, Shengzhou, 312473, China

Test specification:

Standard: EN 12467:2012

Non-standard test method.....: N/A

Test item description.....: Fiber Cement Board

Trade Mark: TERASUN

Model and/or type reference.....: TSM

Manufacturer: Zhejiang Terasun Air Duct Co., Ltd.

Rating(s): Reaction to fire Class A1

Summary of testing:

The submitted samples were tested in accordance with specified standards, and listed the result accordingly, refer to text for detail.

Test item particulars
Classification of installation and use : Category A
Supply Connection : —
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 : August 26, 2015
Date (s) of performance of tests : From August 27, 2015 to December 1, 2015
General remarks:
<p>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.</p> <p>Throughout this report a comma (point) is used as the decimal separator.</p> <p>When determining the test result, measurement uncertainty has been considered.</p>

General product information:
Sample Description: Fiber Cement Board (12mm thickness sheets)
Detail information refers to appendix A Product photos.

EN 12467:2012				
Clause	Requirement - Test	Result - Remark	Verdict	
5.3	Dimensions and tolerances			
5.3.2	Nominal length and Width The manufacture shall specify the nominal length and width of the sheets	2400 mm*1200 mm	—	
5.3.3	Thickness The manufacture shall specify the nominal thickness of the sheets	12 mm thickness sheets	—	
5.3.4	Tolerance on nominal dimensions			
5.3.4.1	Tolerance on length and width Tolerance on length and width shall be in accordance with Table 1, for the appropriate level.		Measured: average 2402 mm*1201 mm Deviation: 0% and +2mm Complied Level I	
	Nominal Dimension	Level I		Level II
	A ≤600mm	±3mm		±4mm
	600mm < a ≤1000mm	±3mm		±5mm
	1000mm < a ≤1600mm	±0.3%a		±0.5%a
	1600mm < a	±5mm		±8mm
a is the nominal width or length				
5.3.4.2	Tolerance on thickness For textured sheets, tolerance shall be in accordance with Table 3.		Measured: average 11.65 mm Max. 11.77 mm Min. 11.54 mm Nominal thickness was 12 mm	
	e ≤6mm	±0.6mm		
	6mm < e ≤20mm	-10%e +15%e		
	e >20mm	-2mm +3mm		
5.3.5	Tolerance on shape			
5.3.5.1	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.		Measured: Max. 0.04% Complied Level I	
	Level I	Level II		
	0.1%	0.3%		
5.3.5.2	Squareness of edges The tolerance on squareness of sheets shall be in accordance with table 5, for the appropriate level.	Measured: Max. 0.57 mm/m Complied Level I	P	

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	Level I	Level II		
	2 mm/m	4mm/m		
5.4	Physical requirement and characteristics			
5.4.2	<p>Apparent density</p> <p>The manufacture 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</p>		<p>Measured: average 0.95 g/cm³ From 0.94 g/cm³ to 0.99 g/cm³</p> <p>Nominal apparent density: <1 g/cm³</p>	P
5.4.4	<p>Mechanical characteristics – Bending strength</p> <p>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.</p>		<p>Wet condition:</p> <p>average 6.2 MPa</p> <p>Class 1 (Category A&B requirement)</p>	P
5.4.5	<p>Water impermeability for Categories A, B and D</p> <p>When tested in accordance with 7.3.3, traces of moisture may appear on the under face of the sheet, but in no instance shall there be any formation of drops of water.</p>		<p>The product is Category A.</p> <p>There was no formation of drops of water.</p>	P
5.5	Durability requirements			
5.5.2	<p>Freeze-thaw for categories A, B and D</p> <p>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.</p>		<p>The product is Category A.</p> <p>R_L = 0.96</p>	P
5.5.3	<p>Heat-rain for categories A and B</p> <p>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.</p> <p>a) Water tightness is tested according to 5.4.5. b) Warping and bowing are visually assessed.</p>		<p>The product is Category A.</p> <p>1) No formation of drops of water; 2) No visible cracks, delamination, warping and bowing or other defects in the sheets</p>	P
5.5.4	<p>Warm water for categories A, B, C and D</p> <p>When tested in accordance with 7.3.5, after 56days at 60°C, the radio R_L as defined in 7.3.5.4 shall be not less than 0,75.</p>		<p>The product is Category A.</p> <p>R_L=0.92</p>	P
5.5.5	<p>Soak-dry for categories A, B, C and D</p> <p>When tested in accordance with 7.3.6, after 50 soak-dry cycles for category A and 25 cycles for</p>		<p>The product is Category A.</p> <p>R_L=0.95</p>	P

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	category B, C and D the radio RL as defined in 7.3.6.4 shall be not less than 0,75		
5.6	Fire and safety		
5.6.1	Reaction to fire When subject to the regulatory requirements, the reaction to fire of the sheets shall be declared in accordance with 7.5.	Classification: A1 Details see the report in Appendix C issued by NB 2137.	P
5.6.2	Release of dangerous substances Materials used in products shall not release any dangerous substances in excess of the maximum permitted levels specified in a relevant European Standard for the material or permitted in the national regulations of the member state of destination.	N/A	/
6	Evaluation of conformity		
6.1	General The conformity of the component with the requirements of this document shall be demonstrated by: Clause 6.2 and 6.3		
6.2	Initial type testing Shall be performed to demonstrate conformity with this standard or be demonstrated according to information given in this standard	Refer to clause 5.3 to 5.6	P
6.3	Factory production control The producer shall maintain, establish, document and have a production control system to ensure that the products placed on the market conform to that stated performance characteristics.	The manufacture has established a Quality management system according to ISO 9001. See Appendix B	P
8	Marking, labelling and packaging The packaging of sheets shall be marked with at least the following: a) Manufactures identification; b) Number of this European Standard (EN 12467); c) Size and/or name; d) Category; e) Class; f) Level of manufacture; g) Date of manufacture; h) "NT"; i) Trade name.	See Appendix D 'Copy of marking plate'	P

*****End of Page*****

Appendix A

Product photos

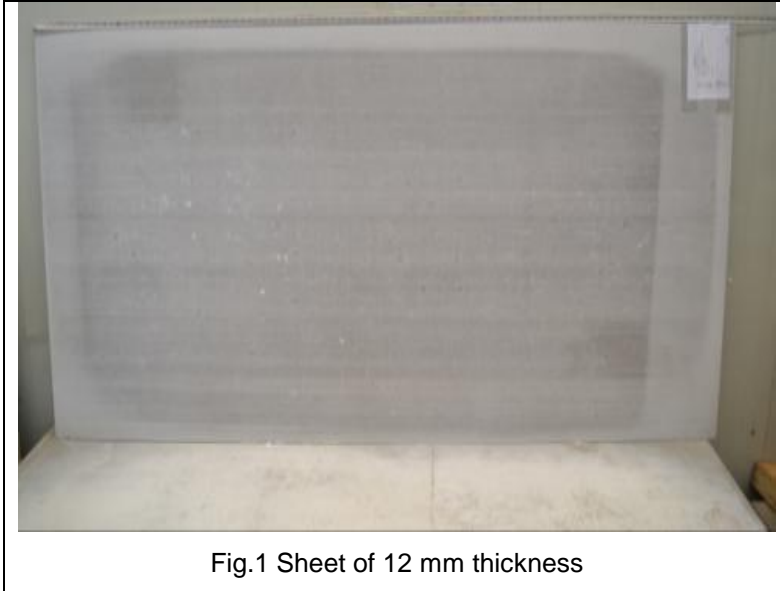


Fig.1 Sheet of 12 mm thickness

*****End of Page*****

Appendix B

ISO 9001 Certificate Report


QUALITY MANAGEMENT SYSTEM CERTIFICATE
 Registration No. : 0350215Q20395R1M
 This is to certify that the quality management system of
Zhejiang Terasun Air Duct Co., Ltd.
 Maren, Chongren Industry Area, Shengzhou City, Zhejiang, 312473
 Organization Code: 79437249-7
 is in conformity with
GB/T 19001-2008 / ISO 9001:2008 Standard
 This certificate is valid to the following product(s)
 Design, Produce and Service of Terasun Machine-made Glass Fibre Reinforced
 Magnesium Oxychloride Cement Compound Ventiduct, Sale and Service for the
 Terasun Composite Board (Site Covered: Maren, Chongren Industry Area,
 Shengzhou City, Zhejiang).
 Date of issue: October 21, 2015
 Date of expiry at most: October 20, 2018
 Representative: *Wang Honglin*

MANAGEMENT SYSTEM
CNAS C035-Q

 Note: The registration continuity depends on the demonstration of QMS effectiveness by
 planned annual surveillance. The information of this certification can be available
 in <http://www.cnca.gov.cn>, The website of CNCA. Detailed information can also be
 available in our website <http://www.xqcc.com.cn>.

 (7FL, Tower C, Jiahua Plaza, No. 9
 Shangdi 3 St., Haidian, Beijing)

*****End of Page*****

Appendix C**NB Report**

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E09/07 révision F du 03/09/2014

**CLASSIFICATION OF REACTION TO FIRE PERFORMANCE IN
ACCORDANCE WITH EN 13501-1:2013****European standard:**

EN 12467 :2012 « Fibre-cement flat sheets »

This classification report 960/45/204 A-1 cancels and replaces the classification report 960/45/204 A

Sponsor: **Zhejiang Terasun Air Duct Co.,Ltd**
Chongren Industrial Clustering Area
Shengzhou City 312473, Zhejiang
China

Manufacturer: **Zhejiang Terasun Air Duct Co.,Ltd**
(Maren) Chongren Industrial Clustering Area
Shengzhou City 312473, Zhejiang
China

Prepared by: **CREPIM**
Rue Christophe Colomb
Parc de la Porte Nord
62700 Bruay-la-Buissière
FRANCE

Notified Body No : 2137

Product name : **TSM BOARD**

Classification report No : 960/45/204 A-1

Issue No : 1

Date of issue : 14/10/2015
Date of amendment : 07/12/2015

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

1/4

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Report Template Revision Date: January 1, 2015



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1. Introduction

This classification report defines the classification assigned to “**TSM BOARD**” in accordance with the procedures given in EN 13501-1:2013.

2. Details of classified product

2.1 General

The product, “**TSM BOARD**”, is fully described below or is fully described in the tests reports provided in support of classification listed in Clause 3.1.

Product Description and Composition:

The product, “**TSM BOARD**” is defined as a fibre-cement flat sheet 1,17cm thick composed of High strength cement, EPS foam particle, Reinforced Mesh and Water (Formulation TR GL 14 2014 A1).

Overall Thickness: 1,17 cm.

Overall mass per square meter: 1,11 g/cm²

Overall density: 0,95 g/cm³.

Building method: Calendering and dried during 24 h at 35°C and 55 % of RH.

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2/4



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3. Tests reports and tests results in support of classification

3.1 Tests reports

Name of Laboratory	Name of Sponsor	Test reports No	Test method and date / rules of scope and date
CREPIM	Zhejiang Terasun Air Duct Co.,Ltd	REE 1E 960/45/204 A – Amdt 1	NF EN ISO 1716 :2013
CREPIM	Zhejiang Terasun Air Duct Co.,Ltd	REE 2E 960/45/204 A – Amdt 1	NF EN ISO 1182 :2013

3.2 Test Results

Test method & test number	Parameter	No. Tests ^{a)}	Results	
			Continuous parameter	Compliance with parameters
NF EN ISO 1716	Superior Calorific Power (MJ/kg)	3 tests	0,9	Compliant
NF EN ISO 1182	ΔT (°C)	5 tests	3	Compliant
	Δm (%)		30,7	Compliant
	t_r (s)		0	Compliant

a) Not applicable for extended application

4. Classification and field of application

4.1 Reference of classification

This classification has been carried in accordance with the EN 13501-1:2013.

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4.2 Classification

The product « **TSM BOARD** » has been classified for its reaction to fire behavior: **A1**.
 Complementary classification in relation to smoke production is : /.
 Complementary classification in relation to fall of flaming droplets/particles is: /.

TSM BOARD

Fire behaviour		Smoke production		Flaming droplets
A1	-	/	,	/

Reaction to fire classification:	A1
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4.3 Field of application

This classification, **A1**, is only valid for the parameters specified in the product description.

The classification is valid for the following end-use condition:

- Without substrate or fixation

The classification is valid for the following product parameters :

- Composition : No variation,
- Thickness : No variation,
- Mass per square meter: No variation,
- Density : No variation,
- Manufacturing process: No variation,

5. Limitations

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

Signed
Thomas TURF
Technical Engineer
 Responsible for the classification

Approved
Franck Poutch
President
 Responsible for the report


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4/4

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Appendix D
Copy of Marking Plate

Copy of marking plate


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16
EN 12467:2012 Fiber Cement Board for internal and external application Length 2400mm, Width 1200mm, Thickness 12mm Class 1, Category A Reaction to fire: A1 Release of dangerous substances NPD

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.