

CERTIFICATE OF CONFORMITY

Certificate No.: GRT120316008

The Certification Body of
GREATEK TESTING AND CERTIFICATION LTD

Certifies that

Applicant: Landy (Guangzhou) Plastic Products Co.,Ltd
Address: Building C101,Shibei Industrial Zone,Dashi Town,Panyu
District,Guangzhou,China
Product: Bubble heat insulation sheet

Complies with the requirements of the European Community **CPD 89/106/EEC**.
The submitted products have been tested by us and found in compliance with the
following European Standards:

EN 13163:2008

This certificate of conformity is based on an evaluation of a sample of the above
mentioned product. It does not imply an assessment of the whole production. The CE
markings as shown below can be affixed on the product after preparation of necessary
technical documentation.

Signature: Stephen Alabi

Stephen Alabi

Date of issue: March 16, 2012



CERTIFICATE

EC Declaration of Conformity

We,

Landy (Guangzhou) Plastic Products Co.,Ltd

Building C101,Shibei Industrial Zone,Dashi Town,Panyu

District,Guangzhou,China

declare under our sole responsibility that the product

Product: Bubble heat insulation sheet

to which this declaration relates is in compliance with the European Community CPD 89/106/EEC. and comply with the standards listed below:

EN 13163:2008

Signature:



(manager)

Date of issue :

March 16, 2012



Test Report

Report No.: GTE12031608

Product: Bubble heat insulation sheet
Client: Landy (Guangzhou) Plastic Products Co.,Ltd
Standard: EN 13163:2008

Greatek Testing and Certification Co., Ltd.

TEST REPORT

EN 13163

Thermal insulation products for buildings - Factory made products of expanded polystyrene - Specification

Report:

Report reference No.: GTE12031608
 Compiled by (+ signature): Andrew Hoo
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Manufacturer

Name: Landy (Guangzhou) Plastic Products Co., Ltd
 Address: Building C101, Shibe Industrial Zone, Dashi Town, Panyu District, Guangzhou, China

Factory

Name: Landy (Guangzhou) Plastic Products Co., Ltd
 Address: Building C101, Shibe Industrial Zone, Dashi Town, Panyu District, Guangzhou, China

Test specification

Standard: EN 13163:2008
 Test procedure: CE scheme
 Non-standard test method: N

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EN 13163			
Clause	Requirement - Test	Result- Remark	Verdict
4	Requirements		P
4.1	General		P
	Product properties shall be assessed in accordance with Clause 5. To comply with this standard, products shall meet the requirements of 4.2, and the requirements of 4.3 as appropriate.		P
	One test result for a product property is the average of the measured values on the number of test specimens given in Table 13		P
4.2	For all applications		P
4.2.1	Thermal resistance and thermal conductivity		P
	The thermal resistance and thermal conductivity shall be based upon measurements carried out in accordance with EN 12667 or EN 12939 for thick products.	Complied to EN 12667	P
	The thermal resistance and thermal conductivity shall be determined in accordance with Annex A and Annex C and declared by the manufacturer according to the following:		P
	-the reference mean temperature shall be 10 °C		P
	-the measured values shall be expressed with three significant figures;		P
	-for products of uniform thickness, the thermal resistance, R_D , shall always be declared. The thermal conductivity, λ_D , shall be declared where possible. Where appropriate, for products of non-uniform thickness (e.g. for sloped and tapered products) only the thermal conductivity, λ_D , shall be declared.		P
	-the declared thermal resistance, R_D , and the declared thermal conductivity, λ_D , shall be given as limit values representing at least 90 % of the production, determined with a confidence level of 90 %		P
	-the value of thermal conductivity, $\lambda_{90/90}$, shall be rounded upwards to the nearest 0,001 W/(m · K) and declared as λ_D in levels with steps of 0,001 W/(m · K)		P
	-the declared thermal resistance, R_D , shall be calculated from the nominal thickness, d_N , and the corresponding declared thermal conductivity value, $\lambda_{90/90}$		P

EN 13163			
Clause	Requirement - Test	Result- Remark	Verdict
	-the value of thermal resistance, $R_{90/90}$, when calculated from the nominal thickness, d_N , and the corresponding thermal conductivity, $\lambda_{90/90}$, shall be rounded downwards to the nearest $0,05 \text{ m}^2 \cdot \text{K/W}$, and declared as R_D in levels with steps of $0,05 \text{ m}^2 \cdot \text{K/W}$		P
	-the value of $R_{90/90}$ for those products for which only the thermal resistance is measured directly, shall be rounded downwards to the nearest $0,05 \text{ m}^2 \cdot \text{K/W}$ and declared as R_D in levels with steps of $0,05 \text{ m}^2 \cdot \text{K/W}$.		P
4.2.2	Length and width		P
	Length, l , and width, b , shall be determined in accordance with EN 822	Complied to EN 822	P
	No test result shall deviate from the nominal values by more than the tolerances given in Table 1		P

Table 1 — Classes of dimensional tolerances

Property	Class	Tolerances	
		Boards	Rolls
Length	L1	$\pm 0,6 \%$ or $\pm 3 \text{ mm}^a$	-1 %
	L2	$\pm 2 \text{ mm}$	+ unrestricted
Width	W1	$\pm 0,6 \%$ or $\pm 3 \text{ mm}^a$	$\pm 0,6 \%$
	W2	$\pm 2 \text{ mm}$	or $\pm 3 \text{ mm}^a$
Thickness ^b	T1	$\pm 2 \text{ mm}$	
	T2	$\pm 1 \text{ mm}$	
Squareness	S1	$\pm 5 \text{ mm} / 1\ 000 \text{ mm}$	
	S2	$\pm 2 \text{ mm} / 1\ 000 \text{ mm}$	
Flatness ^c	P1	30 mm	
	P2	15 mm	
	P3	10 mm	
	P4	5 mm	

4.2.3	Thickness		P
	Thickness, d , shall be determined in accordance with EN 823.	Complied to EN 823	P
	No test result shall deviate from the nominal thickness, d_N , by more than the tolerances given in Table 1 for the labelled class.		P
4.2.4	Squareness		P
	Squareness shall be determined in accordance with EN 824.	Complied to EN 824	P

EN 13163			
Clause	Requirement - Test	Result- Remark	Verdict
	The deviation from Squareness on length and width, S_b , shall not exceed the tolerances given in Table 1, for the declared class.		P
4.2.5	Flatness		P
	Flatness shall be determined in accordance with EN 825.	Complied to EN 825	P
	The maximum deviation from Flatness, S_{max} , shall not exceed the tolerances given in Table 1, for the declared class.		P
4.2.6	Dimensional stability		P
4.2.6.1	Dimensional stability under constant normal laboratory conditions		P
	Dimensional stability under constant normal laboratory conditions shall be determined in accordance with EN 1603.	23°C, 50%RH	P
	The relative changes in length and width shall not exceed the values given in table 2 for declared class		P
	-DS(N) 5: $\pm 0,5\%$	0,3%	P
	-DS(N) 2: $\pm 0,2\%$		N
4.2.6.2	Dimensional stability under specified temperature and humidity conditions		P
	Dimensional stability under specified temperature and humidity conditions shall be determined in accordance with EN 1604.	Complied to EN 1604	P
	The test shall be carried out after storage for 48 h at $(23 \pm 2)^\circ\text{C}$ and $(90 \pm 5)\%$ relative humidity.	24 °C, 90%RH, for 50hrs	P
	The relative changes in length, width and thickness shall not exceed 1%.	0.04%	
	The test shall not be performed when the more severe test, described in 4.3.2, is used for a product in a specific application		P
4.2.7	Bending strength		P
	Bending strength shall be determined in accordance with EN 12089.	Complied to EN 12089	P
	For handling purposes, products shall have a minimum level of bending strength of 50kPa		P
4.2.8	Reaction to fire classification (Euroclasses) shall be determined in accordance with EN 13501-1		P
4.3	For specific applications		P
4.3.1	General		P

EN 13163			
Clause	Requirement - Test	Result- Remark	Verdict
	If there is no requirement for a property described in 4.3 for a product in use, then the property does not need to be determined and declared by the manufacturer		P
4.3.2	Dimensional stability under specified temperature and humidity conditions		P
	Dimensional stability under specified temperature and humidity conditions shall be determined in accordance with EN 1604.	Complied to EN 1604	P
	The test shall be carried out for the conditions given in table 3.	70 °C, 1%RH, for 48hrs	P
	The relative changes in length, in width and in thickness shall not exceed the values given in table 3 for the declared level		P
4.3.3	Deformation under specified compressive load and temperature conditions		P
	Deformation under specified compressive load and temperature conditions shall be determined in accordance with EN 1605.	80 °C, 4%RH, 40kPa, for 168hrs	P
	For each test condition the difference between the relevant deformation after step A and after step B as described in EN 1605 shall not exceed the values given in table 4 for the declared level		P
4.3.4	Compressive stress at 10% deformation		P
	Compressive stress at 10% deformation shall be determined in accordance with EN 826.		P
	No test result shall be less than the values given in table 5 for the declared level		P
4.3.5	Tensile strength perpendicular to faces		P
	Tensile strength perpendicular to faces, shall be determined in accordance with EN 1607.		P
	No test result shall be less than the value given in Table 5 for the declared level		P
4.3.6	Bending strength		P
	Bending strength shall be determined in accordance with EN 12089.		P
	No test result shall be less than the value given in Table 7 for the declared level		P
4.3.7	Point load		N
	The effects of foot traffic shall be assessed by means of determination of compressive stress at 10% deformation in accordance with EN 826.		N

EN 13163			
Clause	Requirement - Test	Result- Remark	Verdict
4.3.8	Compressive creep		N
	Compressive creep, ϵ ct, and total thickness reduction shall be determined after at least one hundred twenty two days of testing at a declared compressive stress given in steps of at least 1 kPa, and the results extrapolated thirty times, corresponding to ten years, to obtain the declared levels in accordance with EN 1606		N
	Compressive creep shall be declared in levels, and the total thickness reduction shall be declared in levels with steps of 0,5 % at the declared stress.		N
	No test result shall exceed the declared levels at the declared stress.		N
4.3.9	Water absorption		P
4.3.9.1	Long term water absorption by immersion		P
	Long term Water absorption by total immersion, shall be determined in accordance with EN 12087		P
	No test result of Water absorption by total immersion shall exceed the value given in table 8 for the declared levels at the declared stress.		P
	No test result of Water absorption by partial immersion shall exceed $0,5\text{kg/m}^2$.		P
4.3.9.2	Long term water absorption by diffusion		P
	Long term Water absorption by diffusion, WdV, shall be determined in accordance with EN 12088.		P
	No test result shall be higher than the value given in Table 9 for the declared level.		P
4.3.10	Freeze-thaw resistance		P
	Freeze-thaw resistance shall be determined in accordance with EN 12091 using samples prepared by total immersion in accordance with EN 12087.		P
	The reduction of compressive stress at 10% deformation shall be less than 10% after 300 freeze-thaw cycles		P
4.3.11	Water vapour transmission		P
	Water vapour transmission properties shall be determined in accordance with EN 12086, and declared as the water vapour diffusion resistance factor, for homogeneous products and as the water vapour resistance, for faced products.		P

EN 13163			
Clause	Requirement - Test	Result- Remark	Verdict
	No test result of μ shall be greater than the declared level, no test result shall be less than the declared value.		P
4.3.12	Dynamic stiffness		N
	Dynamic stiffness shall be determined in accordance with EN 29052-1, without preloading.		N
	No test result shall exceed the value given in table 10, the declared value.		N
4.3.13	Compressibility		N
4.3.13.1	Thickness		N
	The thickness shall be determined in accordance with EN 12431 under a load of 250Pa		N
	No test result shall deviate from the declared thickness, by more than the tolerance given in table 11 for the labelled class		N
4.3.13.2	Thickness		N
	The thickness shall be determined in accordance with EN 12431 with a pause of 300s		N
4.3.13.3	Compressibility		N
	Compressibility shall be determined as the difference between d_L and d_B .		N
	No test result shall exceed the value given in table 12 for the declared value.		N
4.3.13.4	Long term thickness reduction		N
4.3.14	Apparent density		N
4.3.15	Release of dangerous substances		N

5	Test methods		P
5.1	Sampling		P
	Test specimens shall be taken from the same sample, with a total area of not less than one board, sufficient to cover the needed tests.		P
	The shorter side of the sample shall not be less than 300 mm or a full size of the product, whichever is smaller.		P
5.2	Conditioning		P

EN 13163			
Clause	Requirement - Test	Result- Remark	Verdict
	Conditioning of the test specimens shall be carried out for at least 6h at $(23 \pm 5)^\circ\text{C}$ unless otherwise specified in the test standard.		P
	In the case of dispute, the test specimens shall be stored at $(23 \pm 2)^\circ\text{C}$ and $(50 \pm 5)\%$ relative humidity for at least fourteen days prior to testing		P
5.3	Testing		P
5.3.1	General		P
	Table 13 gives the dimensions of the test specimens, the minimum number of measurements required to get one test result and any specific conditions which are necessary.		P
5.3.2	Thermal resistance and thermal conductivity		P
	Thermal resistance and thermal conductivity shall be determined in accordance with EN 12667 or EN 12939 for thick products and under the following conditions:		P
	-at a mean temperature of $(10 \pm 0,3)^\circ\text{C}$		P
	-after conditioning in accordance with 5.2		P
	-after preparation in accordance with the procedure in Table 13		P
	Thermal resistance and thermal conductivity shall be determined directly at the measured thickness. In the event that this is not possible, they shall be determined by measurements on other thicknesses of the product providing that		P
	-the product is of similar chemical and physical characteristics and is produced on the same production unit		P
	-it can be demonstrated in accordance with EN 12939 that the thermal conductivity does not vary more than 2 % over the range of thicknesses where the calculation is applied		P

6	Designation code		P
	-The expanded polystyrene abbreviated term	See user manual	P
	-This EU standard number	See user manual	P
	-Thickness tolerances	See user manual	P

EN 13163			
Clause	Requirement - Test	Result- Remark	Verdict
	-Length tolerances	See user manual	P
	-Width tolerances	See user manual	P
	-Squareness tolerances	See user manual	P
	-Flatness tolerances	See user manual	P
	-Dimensional stability under specified temperature and humidity conditions	See user manual	P
	-Bending strength	See user manual	P
	-Compressive stress at 10% deformation	See user manual	P
	-Dimensional stability under laboratory conditions	See user manual	P
	-Deformation under specified compressive load and temperature conditions	See user manual	P
	-Tensile strength perpendicular to faces	See user manual	P
	-Compressive creep	See user manual	P
	-Long term water absorption	See user manual	P
	-Water absorption by diffusion	See user manual	P
	-Water vapour diffusion transmission	See user manual	P
	-Dynamic stiffness		N
	-Compressibility		N

7	Evaluation of Conformity		P
	The manufacturer or his authorised representative shall be responsible for the conformity of his product with the requirements of this European Standard. The evaluation of conformity shall be carried out in accordance with EN 13172 and shall be based on initial type testing (ITT), factory production control (FPC) by the manufacturer, including product assessment and tests on samples taken at the factory.		P

8	Marking and labelling		P
	product name or other identifying characteristic		P
	name or identifying mark and address of the manufacturer or his authorised representative		P

EN 13163			
Clause	Requirement - Test	Result- Remark	Verdict
	shift or time of production and manufacturing plant or traceability code		P
	reaction to fire class		P
	declared thermal resistance		P
	declared thermal conductivity		P
	nominal thickness		P
	designation code as given in Clause 6		P
	type of facing/coating, if any		P
	nominal length, nominal width		P
	number of pieces and area in the package, as appropriate		P

Figure 1. Overview

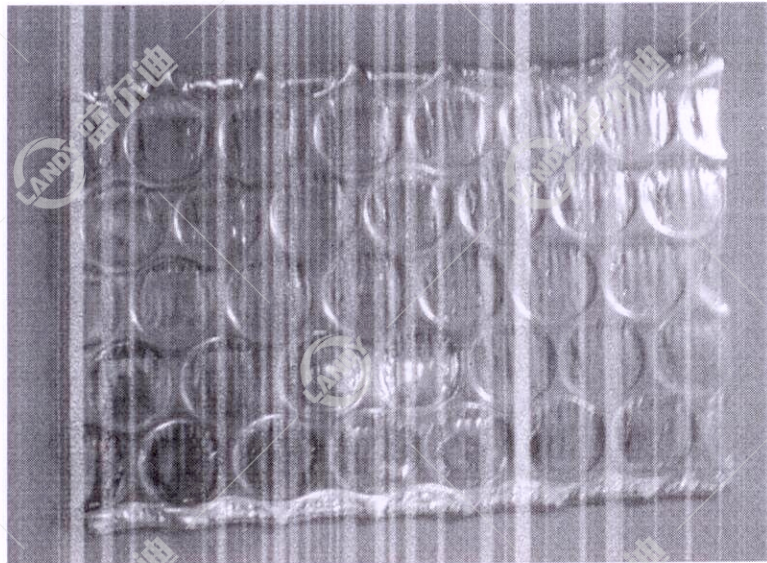


Figure 2. Overview

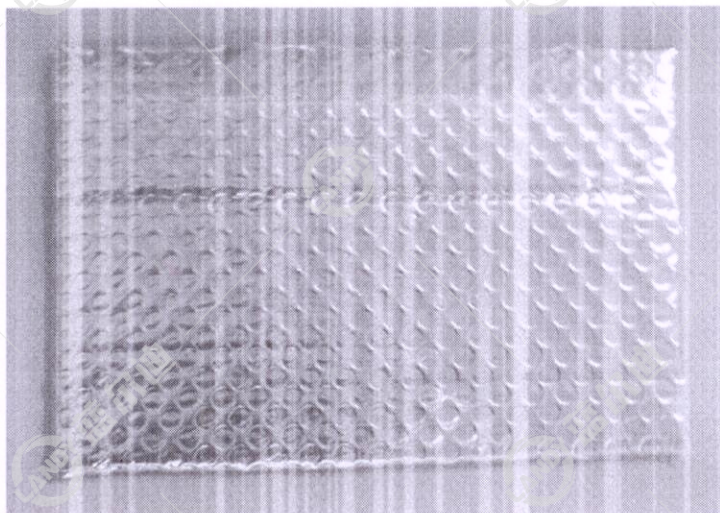


Figure 3. Overview

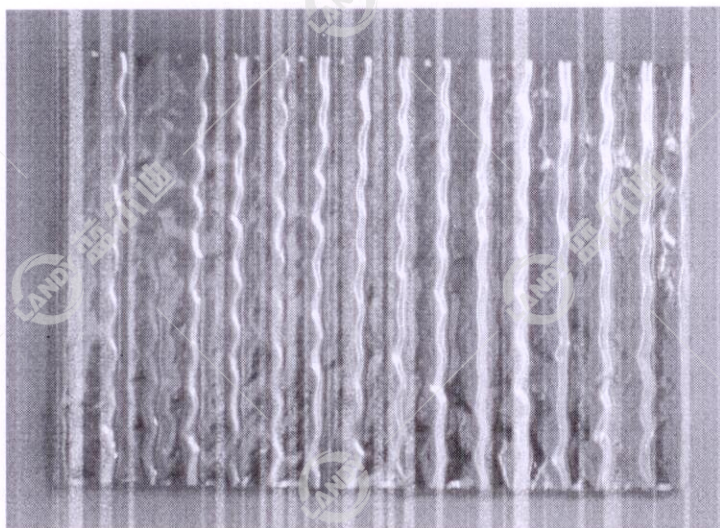
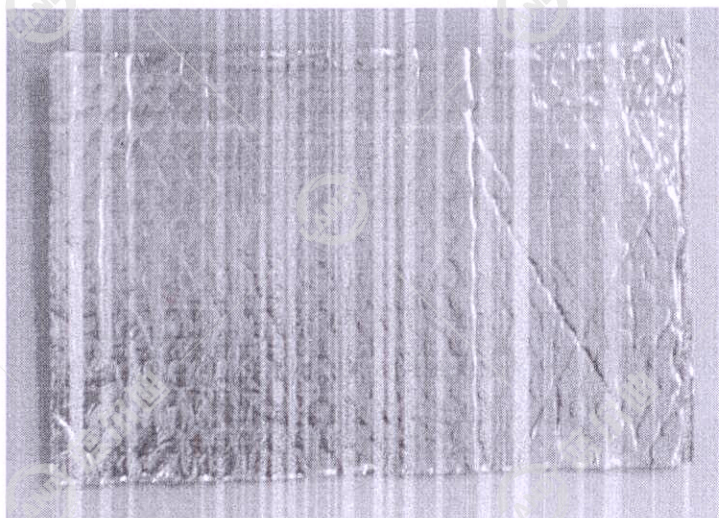


Figure 4. Overview



Remarks:

1. The instructions specified by the standard have to be in official language of each country, however, only English is checked for this report. It is the applicant responsibility to provide instruction in each official language of the EU.
2. This report is submitted for the exclusive use of the client to whom it is addressed. Its significance is subject to the adequacy and representative character of the sample(s) and to the comprehensiveness of the tests, examinations or surveys made.
3. The CE marking may only be used if all relevant and effective EC directives are complied with.
4. The test sample was pre-production samples without serial numbers.
5. The test results are responsible for the tested samples only.
6. A part of this report or certificate should not be duplicated in any way, however, the duplication of the whole document is allowed.
7. Objections to the test report must be submitted to GRT within 15 days.
8. The test report is invalid if altered.

===== End of Test Report =====



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