



Test Report

No.: SHD2707620

Date: AUG.03,2007

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DEZHOU ZHENHUA DECORATION GLASS CO., LTD.
NO.55 HUBIN SOUTH ROAD DEZHOU SHANDONG, CHINA

The following sample(s) was/were submitted and identified by the client as:

Sample Description : GLASS BLOCK
Buyer : KINGFISHER
Manufacturer : DEZHOU ZHENHUA DECORATION GLASS CO., LTD.
Country of Origin : CHINA
Supplier : DEZHOU ZHENHUA DECORATION GLASS CO., LTD.
Country of Destination : FRANCE
Sample Receiving Date : JUL.04,2007
Testing Period : JUL.04,2007 TO AUG.03,2007
Test Performed : SELECTED TEST(S) AS REQUESTED BY APPLICANT
Test Requested : EN 1051-1:2003 GLASS IN BUILDING- GLASS BLOCKS
AND GLASS PAVERS- PART 1: DEFINITIONS AND
DESCRIPTION
Test Result(s) : FOR FURTHER DETAILS, PLEASE REFER TO THE
FOLLOWING PAGE(S)
Conclusion : THE SUBMITTED SAMPLE MET THE TEST
REQUIREMENT.

Signed for and on behalf of
SGS-CSTC Ltd.

Steven Xi
Sr. Section Head

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Shanghai Branch. Testing Center-Hardgoods Laboratory

7/F& 10/F, THE 3RD BUILDING, NO. 889, YISHAN ROAD,
XUHUI DISTRICT, SHANGHAI, CHINA 200333

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Test Conducted :

EN 1051-1:2003 Glass in building - Glass blocks and glass pavers - Part 1: Definitions and description

Test result:

Test Property	Test Method	Test Principle / Requirements	Rating
4. Material			
Glass composition	Clause 4.1	Glass blocks and glass pavers shall be manufactured from soda lime silicate glass conforming to EN 572-1.	Pass (See Result 1)
Edge treatment	Clause 4.2	Edge coating(s), when applied, shall be compatible with and bonded to the glass blocks and glass pavers.	Pass
5. Dimensional requirements			
General	Clause 5.1	Glass blocks and glass pavers are specified by their form/shape, dimensions and mass (rather than thickness).	/
Available forms/shapes	Clause 5.2	Glass blocks and glass pavers are manufactured in square, rectangular and circular forms/shapes. Examples of the available forms/shapes are shown for glass blocks in Figure 1 and for glass pavers in Figure 2.	/ (Glass Block)
Dimension	Clause 5.3	<p>5.3.1.1 Measure the dimensions, of the specimens, using a sliding caliper or another measuring device with an accuracy of not less than 0,1 mm. The following dimensions shall be measured:</p> <ul style="list-style-type: none"> • for square and rectangular faced glass blocks and glass pavers, measure the length (l) and width (b) of the faces and the height (h) at the four corners; • for circular faced glass pavers, measure the diameter (d) of the faces in two perpendicular directions and measure the height (h) at the edge. <p>When measured, the dimensions of glass blocks and glass pavers shall be acceptable for the appropriate class if they comply with the tolerances in Table 1.</p>	Pass (See Result 2) (Class 1)

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		Table 1 — Dimensional tolerances for glass blocks/glass pavers									
		<table border="1"> <thead> <tr> <th>Class of glass block/paver</th> <th>Tolerance (mm)</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>± 1,0</td> </tr> <tr> <td>II</td> <td>± 1,5</td> </tr> <tr> <td>III</td> <td>± 2,0</td> </tr> </tbody> </table>	Class of glass block/paver	Tolerance (mm)	I	± 1,0	II	± 1,5	III	± 2,0	
Class of glass block/paver	Tolerance (mm)										
I	± 1,0										
II	± 1,5										
III	± 2,0										
		<p>5.3.1.2 Measure the squareness of the corners of square and rectangular faced glass blocks and glass pavers to an accuracy of 1°.</p> <p>When measured, square and rectangular faced glass blocks and glass pavers shall be acceptable when the squareness of the corners is 90.± 2.</p>	<p>Pass (Squareness: 89.8°)</p>								
		<p>5.3.1.3 Measure depressions and bulges on the visible surfaces of samples with an upright steel rule and a tapered ruler, or another device, to an accuracy of 0, 1 mm.</p> <p>When measured, glass blocks and glass pavers shall be acceptable as follows:</p> <ul style="list-style-type: none"> - the bulges on the visible surface are ≤ 2,0 mm; - the depressions on the visible surface are ≤ 1,0 mm; - the seal does not protrude above the edges of the block/pavers. 	<p>Pass (Bulges: 0.64mm Depression: 0.69mm)</p>								

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		<p>5.3.1.4 Measure glass blocks, of forms B and E, and glass pavers, of form parts fused or bonded together using a measurement plate as shown in Figure 3 or with measuring devices of at least equal accuracy. Measure to an accuracy of 0, 1 mm.</p> <p>When measured the non-alignment of the pressed edges of the glass blocks and glass pavers shall be acceptable as follows:</p> <ul style="list-style-type: none"> - differences of 1,0 mm per 100 mm of edge up to a maximum of 2,0 mm, for square/rectangular shaped blocks/pavers; - differences of 0,8 mm per 100 mm length at the seal where two sections of glass block/pavers are fused or bonded together. 	Pass (Difference of edge: 0.10mm/100mm Difference of length: 0.05mm/100mm)
Mass	Clause 5.4	<p>Determine the mass of the glass block or glass pavers by weighing.</p> <p>When measured, the average mass of the glass block/pavers shall be within $\pm 10\%$ of the nominal mass.</p>	Pass (Nominal: 2.50kg Actual: 2.51kg)
6. Compression strength and breakage load requirements			
		<p>The bearing surfaces of glass blocks shall be covered with cement mortar to produce parallel bearing surfaces for the test. The thickness of leveling layer shall be 10 mm \pm 2 mm, when measured at the outer glass edges.</p> <p>When glass blocks are tested, they shall comply with the following:</p> <ul style="list-style-type: none"> • average value of compressive strength 7,0 N/mm² • minimum single value of compressive strength 6,0 N/mm² 	Pass (Average: 9.30N/m ² Minimum: 6.81N/mm ²)
Optical requirements	Clause 7	<p>Visual faults shall be permitted as long as they are not visible when viewed as following.</p> <p>The glass block/pavers to be examined are illuminated in conditions approximating to diffuse daylight. The specimen is lit from underneath and viewed at an approximate distance of 3 m at right angles to the visible face of the glass block or glass pavers.</p>	Pass

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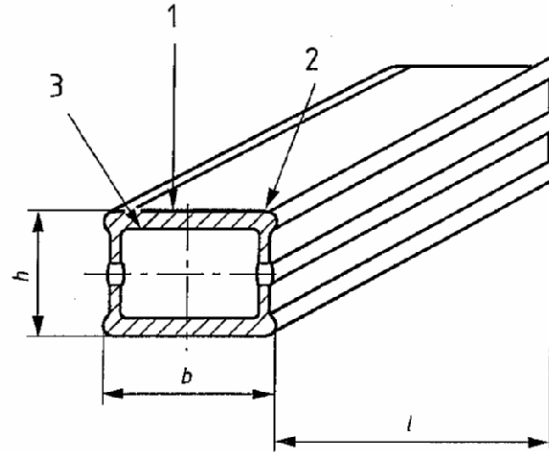
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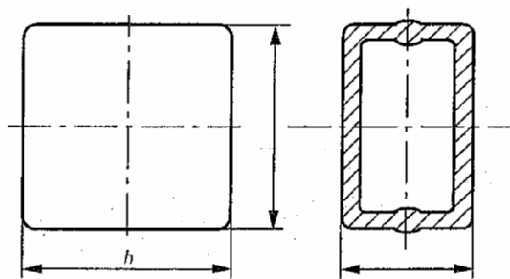
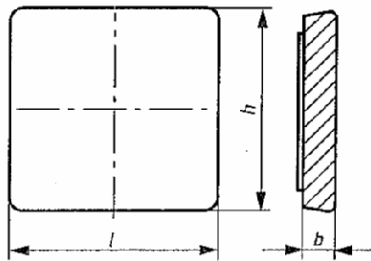
Key

- 1 External face
- 2 Edge profile
- 3 Internal face

Figure 1 — Glass blocks (examples)

Form A : square, solid

Form B : square, hollow



Form C : square, open and rectangular

Form D : circular

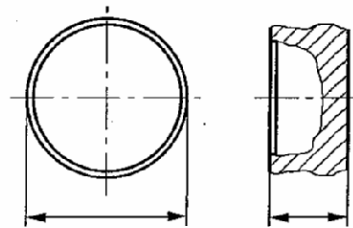
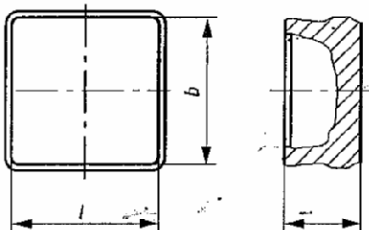
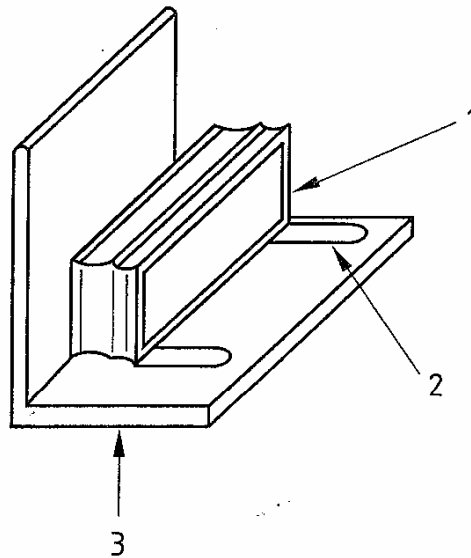


Figure 2 — Glass pavers (examples)



Key

- 1 Glass block
- 2 Tapered wedge
- 3 Measurement plate

Figure 3 — Method of measuring form B and E glass blocks and glass pavers

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Result1: The test result of glass composition content:

Major compositions	Requirements	Results
Silicon dioxide (SiO ₂)	69%-74%	72.51%
Calcium oxide (CaO)	5%-14%	6.74%
Sodium oxide (Na ₂ O)	10%-16%	14.42%
Magnesium oxide (MgO)	0%-6%	3.78%
Aluminum oxide (Al ₂ O ₃)	0%-3%	2.17%

Other compositions	Requirements	Results
K ₂ O	0%-5%	0.077%
TiO ₂	0%-5%	0.018%
Li ₂ O	0%-5%	0%
MnO ₂	0%-5%	0%
ZrO ₂	0%-5%	0%
Fe ₂ O ₃	0%-5%	0.059%
BaO	0%-5%	0.011%
SrO	0%-5%	0.0047%
ZnO	0%-5%	0%

Result 2. Dimension of the pavers (: mm)

	No.1	No.2	No.3	No.4	No.5	No.6	Average
Length	188.55	189.04	189.30	189.62	189.41	189.54	189.24
Width	188.72	189.11	189.42	189.33	189.58	189.61	189.30
Height	80.26	80.04	80.40	79.97	79.98	80.20	80.14
Squareness	89.7	90.0	89.6	89.9	89.9	89.6	89.8
Weight	2.51	2.50	2.51	2.52	2.51	2.52	2.51
Bulges	0.68	0.58	0.62	0.43	1.02	0.51	0.64
Depressions	0.08	0.77	0.71	0.89	0.88	0.82	0.69

Note: Normal dimension: 190x190x80mm

Remark: -The photo appendix is attached.

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Product Name : Glass Block



End of Report

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