



(2004)量认(国)字(R0137)号



(2004)国认推认字(036)号



检测  
CNAS L1433

## CHINA NATIONAL SAFETY GLASS & QUARTZ GLASS TEST CENTER

Address: Guanzhuang, Chaoyang District, Beijing 100024, P.R. China

Tel: 86-10-51167363 65723841 Fax: 86-10-65711591 <http://www.csgc.org.cn>



Product Quality

# Test Report

Code Number: WT20070919

Description of 6.0 mm Shower enclosures Tempered Glass  
product:

Authorized by: Hangzhou Fulaite Plastic Development Co., Ltd.  
(Submitted by entrusting party)

Test Type: Entrusted



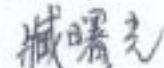
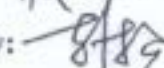
Entrusted by: Hangzhou Boray Import & Export Co.,Ltd.

国家质量监督检验检疫总局

CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER  
Test Report

Code Number: WT20070919

Page 1 of 17

Authorized by	Hangzhou Fulaite Plastic Development Co., Ltd.		
Address	Nanyang Town, Xiaoshan, Hangzhou, P. R. China		
Type of product	Tempered glass for shower enclosures		
Product dimension or model	1938X874X6.0mm 1829X340X6.0mm 300X300X6.0 mm	1829X390X6.0mm 1100X500X6.0mm	
Status of samples	O.K.		
Reception of sample	Samples are submitted by Hangzhou Boray Import & Export Co.,Ltd.		
Date of reception	June 18 <sup>th</sup> , 2007	Quantity of samples (piece)	Product: 10 Test piece: 18
Standard	EN 12150-1:2000 Glass in Building --Thermally toughened soda lime silicate safety glass—Part 1: Definition and description (Claus 8 is excluded.) Sub-clause 5.1 in EN14428:2004 Shower enclosures — Functional requirements and test methods		
Conclusion	Width and length, nominal thickness and thickness tolerance, edge working, diameter of holes, limitation on position of holes, fragmentation test and thermal durability test, twin tyre pendulum test, mechanical strength test have been conducted for 6mm shower enclosures tempered glass submitted by Hangzhou Boray Imp & Exp Co.,Ltd. according to <i>EN 12150-1:2000 Glass in Building—Thermally toughened soda lime silicate safety glass—Part 1: Definition and description (Claus 8 is excluded.) and Sub-clause 5.1 in EN 14428:2004 Shower enclosures — Functional requirements and test methods.</i> The results are reported on each item test report.		
Reported by: 	Seal: 		
Checked by: 	Issued on: Sept. 2th, 2007		
Approved by: 			

Remark:

1. Test report is invalid without the seal of SQGTC and/or without being checked by authorized person.
2. SQGTC is responsible only for the test results in the report for the samples submitted.
3. Test report can not be partly copied without permission of SQGTC.
4. Any doubt can be put forward to SQGTC within 15 days after receiving the test report.

CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 2 of 17

Sample Dimension: <u>1829X340X6.0</u> (mm)		Test equipment Apparatus: <u>Tape Ruler</u>	
Ambient Temperature: <u>22°C</u>		Relative Humidity: <u>56 %</u>	
Test item	Width and Length		
Test requirements	For horizontal toughened glass, when the nominal dimension of side, B or H, is less than or equal to 2000 mm, and the nominal thickness is less than or equal to 12 mm, the tolerance, t, is $\pm 2.5$ mm.		
Test Result			
Sample No.	Length H (mm)	Width B (mm)	Dimension Tolerance(mm)
385-16	1829	340	0.0/0.0
385-17	1829	339	0.0/-1.0
385-18	1830	340	+1.0/0.0
Item test conclusion	Pass		
Remarks			

Reported by: 朱强生

Checked by: 臧曙光

Date: 07/09/2007

The test report is invalid if altered.



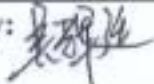
CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER


Item Test Report

Code Number: WT20070919

Page 3 of 17

<b>Sample Dimension:</b> 1829X390X6.0 (mm)		<b>Test equipment Apparatus:</b> Tape Ruler	
<b>Ambient Temperature:</b> 22℃		<b>Relative Humidity:</b> 56%	
<b>Test item</b>	<b>Width and Length</b>		
<b>Test requirements</b>	For horizontal toughened glass, when the nominal dimension of side, B or H, is less than or equal to 2000 mm, and the nominal thickness is less than or equal to 12 mm, the tolerance, t, is $\pm 2.5$ mm.		
<b>Test Result</b>			
<b>Sample No.</b>	<b>Length H (mm)</b>	<b>Width B (mm)</b>	<b>Dimension Tolerance(mm)</b>
385-21	1830	389	+1.0/-1.0
385-22	1829	389	0.0/-1.0
385-23	1830	390	+1.0/0.0
<b>Item test conclusion</b>	<b>Pass</b>		
<b>Remarks</b>			

Reported by: 

Checked by: 

Date: 07/09/2007



The test report is invalid if altered.

**CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER**

**Item Test Report**

Code Number: WT20070919

Page 4 of 17

<b>Sample Dimension :</b> <u>1829X340X6.0</u> (mm)		<b>Test equipment Apparatus :</b> <u>Micrometer</u>				
<b>Ambient Temperature:</b> <u>22°C</u>		<b>Relative Humidity:</b> <u>56%</u>				
<b>Test item</b>	<b>Nominal thickness and thickness tolerance</b>					
<b>Test requirements</b>	Thickness of a pane shall be determined as for the basic product. The measurement shall be taken at the centers of the 4 sides, and away from the area of any tong marks. When nominal thickness for float glass is 6.0mm, thickness tolerance is $\pm 0.2$ mm.					
<b>Test Result</b>						
<b>Sample No.</b>	<b>Nominal thickness(mm)</b>	<b>Measurement value(mm)</b>				<b>Thickness tolerance(mm)</b>
385-16	6.0	5.81	5.83	5.83	5.84	-0.17
385-17	6.0	5.82	5.82	5.83	5.84	-0.17
385-18	6.0	5.83	5.84	5.83	5.85	-0.16
<b>Item test conclusion</b>	<b>Pass</b>					
<b>Remarks</b>						

Reported

Checked by:

*臧曙光*

Date: 07/09/2007

The test report is invalid if altered.



CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 5 of 17

Sample Dimension : 1829X390X6.0 (mm)		Test equipment Apparatus : Micrometer				
Ambient Temperature: 22°C		Relative Humidity: 56%				
Test item	Nominal thickness and thickness tolerance					
Test requirements	Thickness of a pane shall be determined as for the basic product. The measurement shall be taken at the centers of the 4 sides, and away from the area of any tong marks. When nominal thickness for float glass is 6.0mm, thickness tolerance is $\pm 0.2$ mm.					
<b>Test Result</b>						
Sample No.	Nominal thickness(mm)	Measurement value(mm)				Thickness tolerance(mm)
385-21	6.0	5.81	5.84	5.82	5.84	-0.17
385-22	6.0	5.83	5.83	5.81	5.83	-0.17
385-23	6.0	5.81	5.82	5.84	5.83	-0.17
Item test conclusion	Pass					
Remarks						

Reported by: 

Checked by: 

Date: 07/09/2007

The test report is invalid if altered.



CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 6 of 17

<b>Sample Dimension :</b> 1829X340X6.0 (mm) 1829X390X6.0 (mm)		<b>Test equipment Apparatus :</b> NA
<b>Ambient Temperature:</b> 22°C		<b>Relative Humidity:</b> 56%
<b>Test item</b>	Edge working	
<b>Test requirements</b>	Every glass which is to be thermally toughened has to be edged worked prior to toughening. The types of edge working can be: Arrised Edge(with blank spots), Ground Edge(with blank spots),Smooth Ground Edge(no blank spots) and Polished Edge, etc.	
<b>Test Result</b>		
<b>Sample No.</b>	<b>Length H (mm)</b>	<b>Width B (mm)</b>
385-16	Arrised - smooth ground Edge, without blank spots	Arrised - smooth ground Edge, without blank spots
385-21	Arrised - smooth ground Edge, without blank spots	Arrised - smooth ground Edge, without blank spots
<b>Item test conclusion</b>	NA	
<b>Remarks</b>		

Reported by: *姜军生*

Checked by: *臧曙光*

Date: 0709/2006

The test report is invalid if altered.



CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 7 of 17

Sample Dimension : <u>1829X340X6.0</u> (mm)		Test equipment Apparatus : <u>Caliper</u>	
Ambient Temperature: <u>22℃</u>		Relative Humidity: <u>56%</u>	
Test item	Diameter of Holes		
Test requirements	The diameter of holes, $\Phi$ , shall not, in general, be less than the nominal thickness of the glass. Nominal hole diameter $4\text{mm} \leq \Phi \leq 20\text{mm}$ , tolerances is $\pm 1.0\text{mm}$ .		
Test Result			
Sample No.	385-16		
Hole	Nominal hole diameter (mm)	Measurement Value (mm)	Tolerance (mm)
Hole 1	11.0	10.84	-0.16
Hole 2	11.0	10.86	-0.14
Hole 3	8.0	8.02	+0.02
Hole 4	8.0	8.02	+0.02
Hole 5	11.0	10.82	-0.18
Hole 6	11.0	10.84	-0.16
Item test conclusion	Pass		
Remarks			

Reported by: 吴梅生

Checked by: 臧曙光

Date: 07/09/2007

The test report is invalid if altered.





CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 8 of 17

<b>Sample Dimension :</b> <u>1829X390X6.0</u> (mm)		<b>Test equipment Apparatus :</b> <u>Caliper</u>	
<b>Ambient Temperature:</b> <u>22℃</u>		<b>Relative Humidity:</b> <u>56%</u>	
Test item	Diameter of Holes		
Test requirements	The diameter of holes, $\Phi$ , shall not, in general, be less than the nominal thickness of the glass. Nominal hole diameter $4\text{mm} \leq \Phi \leq 20\text{mm}$ , "tolerances is $\pm 1.0\text{mm}$ .		
Test Result			
Sample No.	385-21		
Hole	Nominal hole diameter (mm)	Measurement Value (mm)	Tolerance (mm)
Hole 1	11.0	10.84	-0.16
Hole 2	11.0	10.84	-0.16
Hole 3	8.0	8.02	+0.02
Hole 4	8.0	8.02	+0.02
Hole 5	11.0	10.82	-0.18
Hole 6	11.0	10.82	-0.18
Item test conclusion	Pass		
Remarks			

Reported by: 魏辉

Checked by: 臧磊

Date: 07/09/2007

The test report is invalid if altered.



CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 9 of 17

<b>Sample Dimension :</b> <u>1829X340X6.0</u> (mm)		<b>Test equipment Apparatus :</b> <u>Tape ruler</u>					
<b>Ambient Temperature:</b> <u>22°C</u>		<b>Relative Humidity:</b> <u>56%</u>					
<b>Test item</b>	<b>Limitations on position of holes</b>						
<b>Test requirements</b>	The distance, a, of the edge of a hole to the glass edge should be not less than 2d; The distance, b, between the edges of two holes should be not less than 2d; The distance, c, of the edge of a hole to the corner of the glass should be not less than 6d. The tolerances on positions of holes for horizontal toughening glass is $\pm 2.5\text{mm}$ .						
<b>Test Result</b>							
<b>Sample No.</b>	<b>385-16</b>						
<b>Hole</b>	<b>a</b>	<b>b</b>	<b>c</b>	<b>Nominal Position of X (mm)</b>	<b>Measured Value of X (mm)</b>	<b>Nominal Position of Y (mm)</b>	<b>Measured Value of Y (mm)</b>
Hole 1	$a > 2d$	$b > 2d$	$c > 6d$	90	91	18	18
Hole 2	$a > 2d$	$b > 2d$	$c > 6d$	250	250	18	18
Hole 3	$a > 2d$	$b > 2d$	$c > 6d$	30	30	844.5	845
Hole 4	$a > 2d$	$b > 2d$	$c > 6d$	30	30	984.5	985
Hole 5	$a > 2d$	$b > 2d$	$c > 6d$	90	90	1811	1812
Hole 6	$a > 2d$	$b > 2d$	$c > 6d$	250	250	1811	1812
<b>Item test conclusion</b>	<b>Pass</b>						
<b>Remarks</b>	see attachment 1 for the datum of the figure						

Reported by: 张辉生

Checked by: 臧曙光

Date: 07/09/2007

The test report is invalid if altered.



CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 10 of 17

<b>Sample Dimension :</b> <u>1829X390X6.0</u> (mm)		<b>Test equipment Apparatus :</b> <u>Tape ruler</u>					
<b>Ambient Temperature:</b> <u>22℃</u>		<b>Relative Humidity:</b> <u>56%</u>					
<b>Test item</b>	<b>Limitations on position of holes</b>						
<b>Test requirements</b>	The distance, a, of the edge of a hole to the glass edge should be not less than 2d; The distance, b, between the edges of two holes should be not less than 2d; The distance, c, of the edge of a hole to the corner of the glass should be not less than 6d. The tolerances on positions of holes for horizontal toughening glass is $\pm 2.5\text{mm}$ .						
<b>Test Result</b>							
<b>Sample No.</b>	<b>385-21</b>						
	b	c	Nominal Position of X (mm)	Measured Value of X (mm)	Nominal Position of Y (mm)	Measured Value of Y (mm)	
<b>Hole 1</b>	a>2d	b>2d	c>6d	90	90	18	18
<b>Hole 2</b>	a>2d	b>2d	c>6d	300	300	18	18
<b>Hole 3</b>	a>2d	b>2d	c>6d	30	30	844.5	845
<b>Hole 4</b>	a>2d	b>2d	c>6d	30	30	984.5	985
<b>Hole 5</b>	a>2d	b>2d	c>6d	90	90	1811	1812
<b>Hole 6</b>	a>2d	b>2d	c>6d	300	300	1811	1812
<b>Item test conclusion</b>	<b>Pass</b>						
<b>Remarks</b>	see attachment 2 for the datum of the figure						

Reported by: 张明生

Checked by: 张明生

Date: 07/09/2007

The test report is invalid if altered.



CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 11 of 17

<b>Sample Dimension :</b> <u>1829X340X6.0</u> (mm)	<b>Test equipment Apparatus :</b> <u>SGE-III Fragmentation Apparatus</u>		
<b>Ambient Temperature:</b> <u>22°C</u>	<b>Relative Humidity:</b> <u>56%</u>		
<b>Test item</b>	<b>Fragmentation test</b>		
<b>Test requirements</b>	<p>Each of five test specimens shall be impacted, using a pointed steel tool, at a position 13mm in from the longest edge of the test specimen at the mid-point of that edge, until breakage occurs. The radius of curvature of the point shall be approximately 0.2mm.</p> <p>The particle count and measuring of the dimensions of the largest particle shall be made between 4 min to 5 min after fracture. An area of radius 100 mm, centered on the impact point, and a border of 25mm, round the edge of the test specimen shall be excluded from the assessment.</p> <p>The particle count shall be made in the region of coarsest fracture, by placing a mask of (50±1)mm X (50±1)mm on the test piece.</p> <p>The particle count of each test specimen shall not be less than 40. The length of the longest particles shall not exceed 100 mm.</p>		
<b>Test Result</b>			
<b>Sample No.</b>	<b>Nominal thickness (mm)</b>	<b>Particle count in any 50mmX 50mm square</b>	<b>Particle with length exceeding 100mm</b>
385-16	6.0	77	No
385-17	6.0	94	No
385-18	6.0	82	No
385-19	6.0	88	No
385-20	6.0	86	No
<b>Item test conclusion</b>	<b>Pass</b>		
<b>Remarks</b>			

Reported by: 魏华

Checked by: 魏华

Date: 07/09/2007

检验报告专用章  
(1)

The test report is invalid if altered.

CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 12 of 17

<b>Sample Dimension :</b> <u>1829X390X6.0</u> (mm)	<b>Test equipment Apparatus :</b> <u>SGE-III Fragmentation Apparatus</u>		
<b>Ambient Temperature:</b> <u>22°C</u>	<b>Relative Humidity:</b> <u>56%</u>		
<b>Test item</b>	<b>Fragmentation test</b>		
<b>Test requirements</b>	<p>Each of five test specimens shall be impacted, using a pointed steel tool, at a position 13mm in from the longest edge of the test specimen at the mid-point of that edge, until breakage occurs. The radius of curvature of the point shall be approximately 0.2mm.</p> <p>The particle count and measuring of the dimensions of the largest particle shall be made between 4 min to 5 min after fracture. An area of radius 100 mm, centered on the impact point, and a border of 25mm, round the edge of the test specimen shall be excluded from the assessment.</p> <p>The particle count shall be made in the region of coarsest fracture, by placing a mask of (50±1)mm X (50±1)mm on the test piece.</p> <p>The particle count of each test specimen shall not be less than 40. The length of the longest particles shall not exceed 100 mm.</p>		
<b>Test Result</b>			
Sample No.	Nominal thickness (mm)	Particle count in any 50mmX 50mm square	Particle with length exceeding 100mm
385-21	6.0	102	No
385-22	6.0	124	No
385-23	6.0	108	No
385-24	6.0	113	No
385-25	6.0	120	No
<b>Item test conclusion</b>	<b>Pass</b>		
<b>Remarks</b>			

Reported by: 魏军性

Checked by: 臧曙光

Date: 07/09/2007



The test report is invalid if altered.

CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 13 of 17

<b>Sample Dimension :</b> <u>300X300X6.0</u> (mm)		<b>Test equipment Apparatus :</b> <u>702 High temperature chamber</u>
<b>Ambient Temperature:</b> <u>23℃</u>		<b>Relative Humidity:</b> <u>60%</u>
<b>Test item</b>	<b>Thermal durability</b>	
<b>Test requirements</b>	The mechanical properties of thermally toughened soda lime silicate safety glass are unchanged for continuous service up to 250℃ and are unaffected by sub-zero temperature. Thermally toughened soda lime silicate safety glass is capable of resisting both sudden temperature changed and temperature differentials up to 200K.	
<b>Test Result</b>		
<b>Sample No.</b>	<b>Nominal Thickness (mm)</b>	<b>Status after test</b>
385-30	6.0	Not broke.
385-31	6.0	Not broke.
385-32	6.0	Not broke.
385-33	6.0	Not broke.
<b>Item test conclusion</b>	<b>Pass</b>	
<b>Remarks</b>		

Reported by: 张进

Checked by: 臧曙光

Date: 07/09/2007

The test report is invalid if altered.





CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 15 of 17

<b>Sample Dimension :</b> <u>1100X500X6.0</u> (mm)		<b>Test equipment Apparatus :</b> <u>CMTS105</u> <u>Electromechanical universal testing machine</u>	
<b>Ambient Temperature:</b> <u>23°C</u>		<b>Relative Humidity:</b> <u>60%</u>	
<b>Test item</b>	<b>Mechanical strength</b>		
<b>Test requirements</b>	The mechanical strength values apply to quasi-static loading over a short time, e.g. wind loading, and relate to a 5% probability of breakage at the lower limit of the 95% confidence interval. For the float glass, values for the mechanical strength of thermally toughened soda lime silicate safety glass shall be no less than 120N/mm <sup>2</sup>		
<b>Test Result</b>			
<b>Sample No.</b>	<b>Mechanical Strength (N/mm<sup>2</sup>)</b>		
385-1	146.3		
385-2	163.8		
385-3	170.2		
385-4	171.1		
385-5	169.6		
385-6	144.9		
385-7	157.0		
385-8	145.1		
385-9	166.1		
385-10	168.4		
<b>Item test conclusion</b>	<b>Pass</b>		
<b>Remarks</b>			

Reported by: 魏生

Checked by: 戴瑞光

Date: 07/09/2007

The test report is invalid if altered.





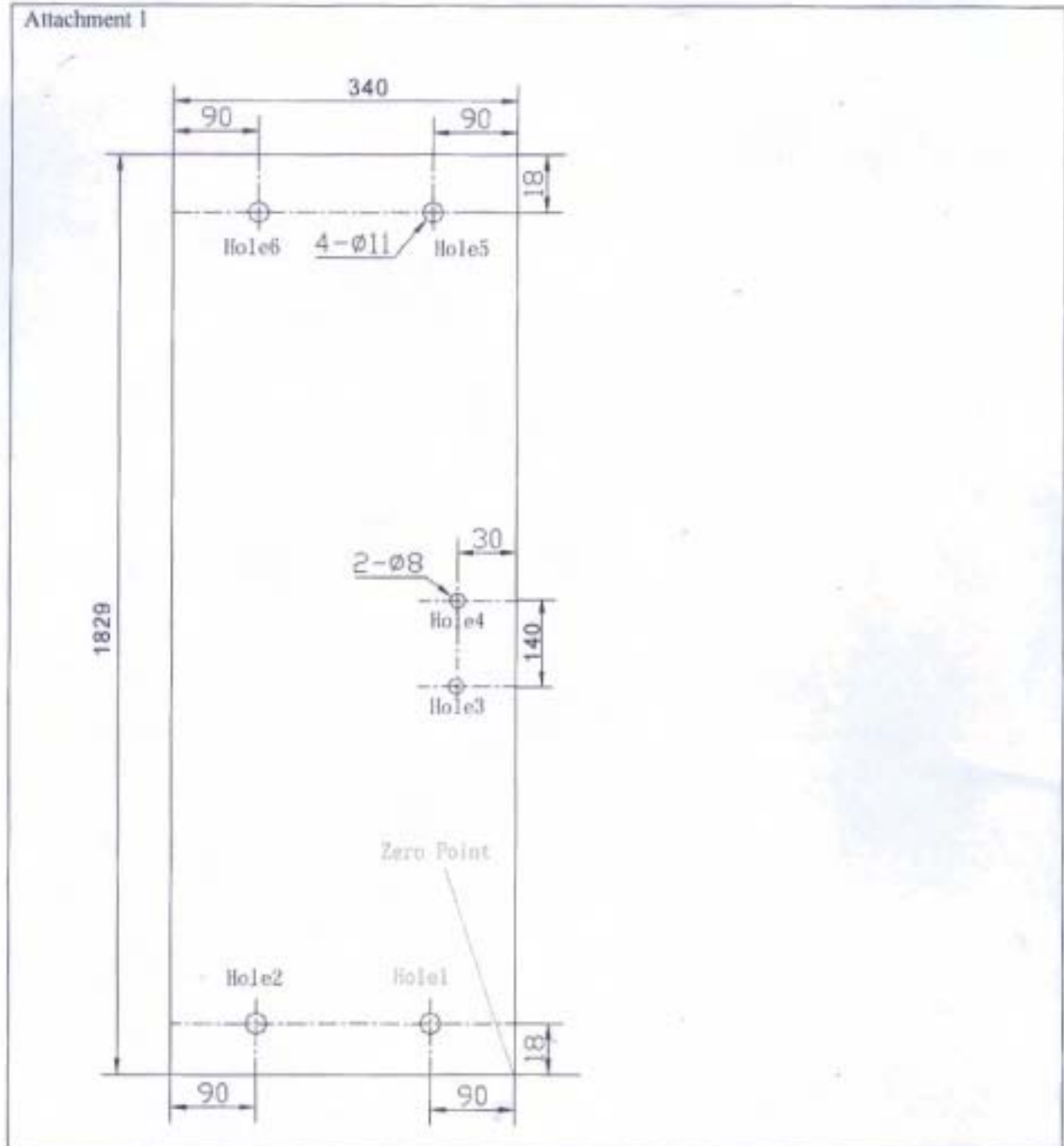
CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 16 of 17

Attachment 1



Reported by:

*[Handwritten signature]*

Checked by:

*[Handwritten signature]*

Date: 07/09/2007

The test report is invalid if altered.

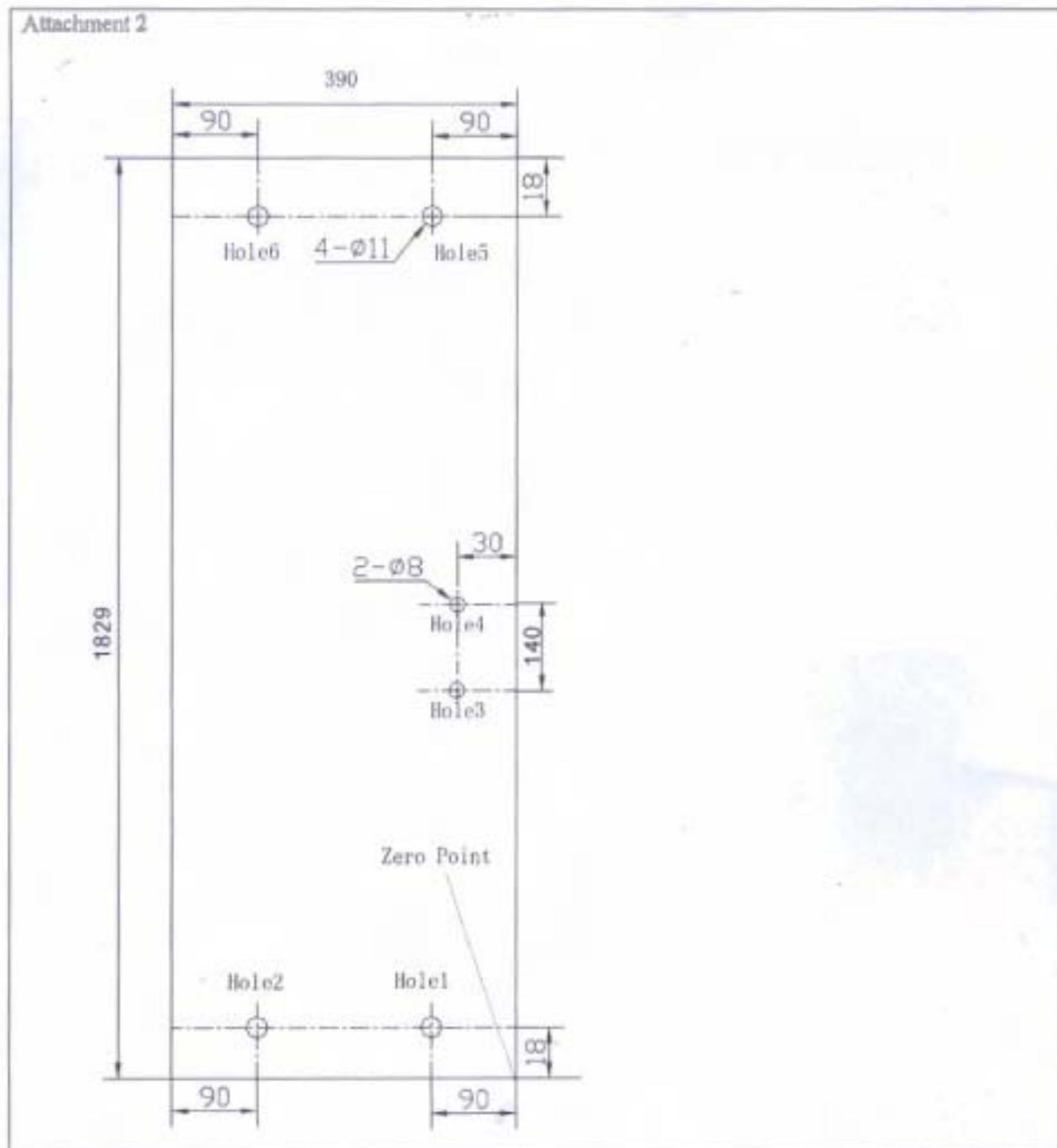
CHINA NATIONAL SAFETY GLASS &  
QUARTZ GLASS TEST CENTER

Item Test Report

Code Number: WT20070919

Page 17 of 17

Attachment 2



Reported by:

*[Handwritten signature]*

Checked by:

*[Handwritten signature]*

Date: 07/09/2007

The test report is invalid if altered.