

**REPORT NUMBER: AU11114050-1**  
ORIGINAL ISSUE DATE: December 16, 2011

**EVALUATION CENTER**

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**RENDERED TO**

**South China Timber Industry, Ltd.**  
**No. 28, Ave. Gongye Dadao, Dist. Xinhui, Jiangmen,**  
**Guangdong, 529100, China**

**PRODUCT EVALUATED**  
Single-leaf Fire Door (S-1)

**EVALUATION PROPERTY**  
90 Minute Positive Pressure Fire Endurance with Hose Stream

**Report of Testing Single-leaf Fire Door for compliance with the applicable requirements of the following criteria: *UL 10C (2009)*.**

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## 2 Introduction

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Intertek has conducted an evaluation for South China Timber Industry, Ltd. to determine the fire resistance characteristics of a fire door assembly for a 90 minute rating. The test was carried out at an Intertek qualified facility, located at Shanghai, China. This test began on December 8, 2011 and was completed on December 9, 2011.

The test was conducted in accordance with UL 10C (2009) under positive furnace pressure.

## 3 Test Samples

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### 3.1. Sample Selection

Samples were submitted to Intertek directly from the client. Samples were not independently selected for testing. The samples were received at evaluation center on December 7, 2011.

### 3.2. Sample and Assembly Description

The description of the samples given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

Door	Type	Single-leaf Fire Door (S-1)
	Nominal Size	1023mm wide by 2220mm high by 55±1mm thick
Frame	Nominal Size	1097mm wide by 2262mm high
Hardware	Latch	Single point lock of the mortise type
	Hinge	Three hinges

The drawings of the fire door assembly and test wall construction can be found in Appendices A, and B respectively. A comprehensive description of the door components for certification is maintained on Intertek file.

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## **4 Testing and Evaluation Methods**

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### **4.1. Fire Endurance with Hose Stream Test**

The test assembly was installed in a moveable restraint frame and the hardware was installed by the client. The test assembly moved in front of the furnace for the fire exposure, and away from the furnace for the hose stream test. The test door was oriented to open into the furnace, and was built into a concrete masonry unit partition, with fully mortared joints. The nominal dimensions of the test wall were 3m high and 3m wide. The door clearances were adjusted so that they complied with installation instruction provided by the customer. The test measurement data was shown in Appendix C.

After positioning the assembly frame over the furnace opening, the burners were ignited and the timer was started. Temperatures within the furnace were monitored using thermocouples and the data was recorded. The burners were controlled to keep the furnace temperatures within the allowable limits specified in the test standards. After 5 minutes, the furnace pressure was adjusted so that the neutral plane was established at a maximum of 40 in. (1016mm) above the sill and bottom of the door as specified in the applicable positive pressure test standards. Periodic observations were made of the surfaces of the test assembly during the fire endurance test.

Immediately after the Fire Endurance Test, the assembly frame was moved into position for the Hose Stream Test. The exposed surface of the test assembly was subjected to the impact, erosion, and cooling effects of a hose stream described in the test standards.

Door deflection relative to the frame, where applicable, was monitored throughout the test. Position for measurement of deflection and unexposed temperature was presented in the drawing of Appendix C.

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## **5 Testing and Evaluation Results**

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### **5.1. Fire Endurance Test**

#### **5.1.1 Door Deflection**

The measured deflection did not exceed the allowable deflection limit of one time the door thickness during the fire endurance test. The actual measurements were presented in test data in Appendix D.

#### **5.1.2 Flaming and Penetration**

During the fire exposure period no significant flaming was observed on the unexposed face of the assembly, nor gases hot enough to ignite the cotton pad. This assembly therefore met the criteria of the test standards for flaming. No through openings or penetrations were evident at the conclusion of the fire exposure portion of the test.

This assembly therefore met the criteria of the fire endurance test.

### **5.2 Hose Stream Test**

A Hose Stream Test was conducted for 45 seconds based on a total assembly area of 2.59 square meters and a required duration of 16 seconds per square meter of assembly area. The hose stream water pressure was 207 kPa. After the hose stream, no through openings were apparent and the door latch remained engaged to the strike. The measured deflection did not exceed the allowable deflection limit of 1-1/2 times the door thickness after the hose stream test. This assembly therefore met the hose stream portion of the test.

A full set of test data is included in Appendix D, and photographs have been presented in Appendix E.

### **5.3 Statement of Measurement Uncertainty**

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

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## 6 Conclusion

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The Single-leaf Fire Door (S-1) assembly identified in this report has been tested in accordance with UL 10C (2009) under positive furnace pressure.

The test assembly met the requirements for a 90 minutes exposure period with hose stream.

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

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