Intertek Testing Services Shenzhen Ltd. Shanghai Fengxian Branch
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Tel: 021-61136116 Fax: 021-61189921
Website: www.intertek.com

TEST REPORT

Issue Date: 2022-02-18 Intertek Report No.: 211229003SHF-001

REPORT ISSUED TO

SHANGHAI GALLFORD FIRE SEALING MATERIAL CO., LTD.
BUILDING 2, NO.390 MAOLIAN ROAD, JIUTING TOWN, SONGJIANG DISTRICT
SHANGHAI, CHINA

SECTION 1

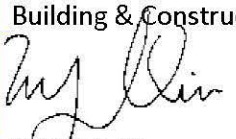
SCOPE

Intertek has conducted an evaluation for Shanghai Gallford Fire Sealing Material Co., Ltd. to determine the fire resistance characteristics of Intumescent Fire Seal, Model YZ1504, YZ2004, YZ1004 and YZ3004; Intumescent Fire and Smoke Seal, Model YZ1014 and YZ1514; Smoke Seal, Model AD006T; Automatic Door Bottom Seal, Model GF-B17; Fire Glazing Aperture Liner, Model RM5301; Fire Glazing Seal, Model F8028; Lock Kit, Model GF0037; Hinge Pad, Model GF10040 in single swing wooden composite fire doorset, Model GF-001. Intumescent Fire Seal, Model RM1002, RM1502, RM3002, RM2002 and RM2502; Smoke Seal, Model AD005T; Automatic Door Bottom Seal, Model GF-B08; Fire Glazing Aperture Liner, Model RM5301; Fire Glazing Seal, Model YZ2504; Lock Kit, Model GF0037; Hinge Pad, Model GF10040; Fire Door Viewer, Model FV25; Fire Grille, Model FG3030; Fire Grille Faceplate, Model FGP3030 in single swing wooden composite fire doorset, model GF-002. This evaluation began on December 29, 2021 and was completed on January 25, 2022. The test was conducted on January 10, 2022.

The test was conducted in accordance with EN 1634-1:2014+A1:2018, Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Ivy Qiu	**REVIEWED BY:**	Jason Xu
TITLE:	Project Engineer – Building & Construction	**TITLE:**	Operation Supervisor – Building & Construction
SIGNATURE:		**SIGNATURE:**	
DATE:	2022-02-18	**DATE:**	2022-02-18

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SECTION 2
SUMMARY OF TEST RESULTS

Summary of specimens installed on Single Swing Wooden Composite Fire Doorset, Model GF-001:
Intumescent Fire Seal, Model YZ1504, YZ2004, YZ1004 and YZ3004;
Intumescent Fire and Smoke Seal, Model YZ1014 and YZ1514;
Smoke Seal, Model AD006T;
Automatic Door Bottom Seal, Model GF-B17;
Lock kit, Model GF0037;
Hinge Pad, Model GF10040;
Fire Glazing Aperture Liner and Fire Glazing Seal, Model RM5301 and Model F8028

Summary of specimens installed on Single Swing Wooden Composite Fire Doorset, Model GF-002:
Intumescent Fire Seal, Model RM1002, RM1502, RM3002, RM2002 and RM2502;
Smoke Seal, Model AD005T;
Automatic Door Bottom Seal, Model GF-B08;
Lock kit, Model GF0037;
Hinge Pad, Model GF10040;
Fire Door Viewer, Model FV25;
Fire Grille and Fire Grille Faceplate, Model FG3030 and FGP3030;
Fire Glazing Aperture Liner and Fire Glazing Seal, Model RM5301 and Model YZ2504

These two test doorsets satisfied the performance requirements for the following periods:

Single Swing Wooden Composite Fire Doorset, Model GF-001

PERFORMANCE CRITERIA	RESULTS	
Integrity	Sustained flaming	68 minutes, no failure
	Gap gauge	68 minutes, no failure
	Cotton pad	68 minutes, no failure
Insulation	Area 1 (Doorset excluding glazed area)	68 minutes, no failure
	Area 2 (Glazed area)	68 minutes, no failure

Single Swing Wooden Composite Fire Doorset, Model GF-002

PERFORMANCE CRITERIA	RESULTS	
Integrity	Sustained flaming	68 minutes, no failure
	Gap gauge	68 minutes, no failure
	Cotton pad	68 minutes, no failure

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Insulation	Area 1 (Doorset excluding glazed area and Grille area)	68 minutes, no failure
	Area 2 (Glazed area)	68 minutes, no failure
	Area 3 (Grille area)	0 minutes

The test was discontinued after a period of 68 minutes at the request of the sponsor.

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in EN 1363-1, and where appropriate EN 1363-2. Any significant deviation with respect to size, constructional details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

SECTION 3
TEST METHODS

The specimens were evaluated in accordance with the following:

EN 1634-1:2014+A1:2018, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows*

EN 1363-1:2020, *Fire resistance tests – Part 1: General Requirements*

tested was checked for operability in the fire test frame by operating from fully closed to fully open, for 25 cycles. The test measurement data was shown in Section 9.

Two doorsets were mounted in one test frame. Both doorsets were mounted so that each leaf swung towards the fire and tested at the same time at the request of the client.

The nominal dimension of the test wall was 3 m high by 3 m wide.

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 approximately 500 mm above notional floor level. Periodic observations were made of the surfaces of the test assembly during the fire resistance test.

Door deflection relative to the frame, where applicable, was monitored throughout the test. Position for measurement of deflection and unexposed temperature were presented in the drawing of Section 9.

SECTION 5
TEST RESULTS

Integrity

The Doorset GF-001 withstood the fire resistance test without passage of flame or gases hot enough to ignite cotton waste for 68 minutes. No through openings or penetrations were evident at this 68 minutes fire exposure portion of the test and the door latch remained engaged to the strike. During this 68 minutes fire exposure period no flaming was observed on the unexposed face of the assembly.

The Doorset GF-001 therefore met the criteria of the test standards for integrity performance of 68 minutes.

The Doorset GF-002 withstood the fire resistance test without passage of flame or gases hot enough to ignite cotton waste for 68 minutes. No through openings or penetrations were evident at this 68 minutes fire exposure portion of the test and the door latch remained engaged to the strike. During this 68 minutes fire exposure period no flaming was observed on the unexposed face of the assembly.

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The Doorset GF-002 therefore met the criteria of the test standards for integrity performance of 68 minutes.

Insulation

Transmission of heat through doorset GF-001 excluding glazed area during the fire resistance test of 68 minutes did not raise the average temperature on the unexposed surface by more than 140°C above its initial value and did not raise the maximum temperature on the unexposed surface by more than 180°C above the initial mean unexposed face temperature. In addition, the transmission of heat through the assembly did not raise the maximum temperature of the unexposed surface of the frame by more than 360°C for 68 minutes.

Doorset GF-001 excluding glazed area therefore met the criteria of the test standards for insulation performance of 68 minutes.

Transmission of heat through glazed area of dooset GF-001 during the fire resistance test of 68 minutes did not raise the average temperature on the unexposed surface by more than 140°C above its initial value and did not raise the maximum temperature on the unexposed surface by more than 180°C above the initial mean unexposed face temperature.

Glazed area of doorset GF-001 therefore met the criteria of the test standards for insulation performance of 68 minutes.

Transmission of heat through doorset GF-002 excluding glazed area and Fire grillearea during the fire resistance test of 68 minutes did not raise the average temperature on the unexposed surface by more than 140°C above its initial value and did not raise the maximum temperature on the unexposed surface by more than 180°C above the initial mean unexposed face temperature. In addition, the transmission of heat through the assembly did not raise the maximum temperature of the unexposed surface of the frame by more than 360°C for 68 minutes.

Doorset GF-002 excluding glazed area and Fire grille area therefore met the criteria of the test standards for insulation performance of 68 minutes.

Transmission of heat through glazed area during the fire resistance test of 68 minutes did not raise the average temperature on the unexposed surface by more than 140°C above its initial value and did not raise the maximum temperature on the unexposed surface by more than 180°C above the initial mean unexposed face temperature.

Glazed area of Doorset GF-002 therefore met the criteria of the test standards for insulation performance of 68 minutes.

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When exposed to the fire for a period of 1 minutes, the maximum temperature of T37, T38 and T39 on Fire grille increase by more than 180°C above its initial mean unexposed face temperature.

Therefore, Fire grille area of Doorset GF-002 had insulation performance of 0 minutes.

A full set of test data is included in Section 10, and photographs have been presented in Section 11.

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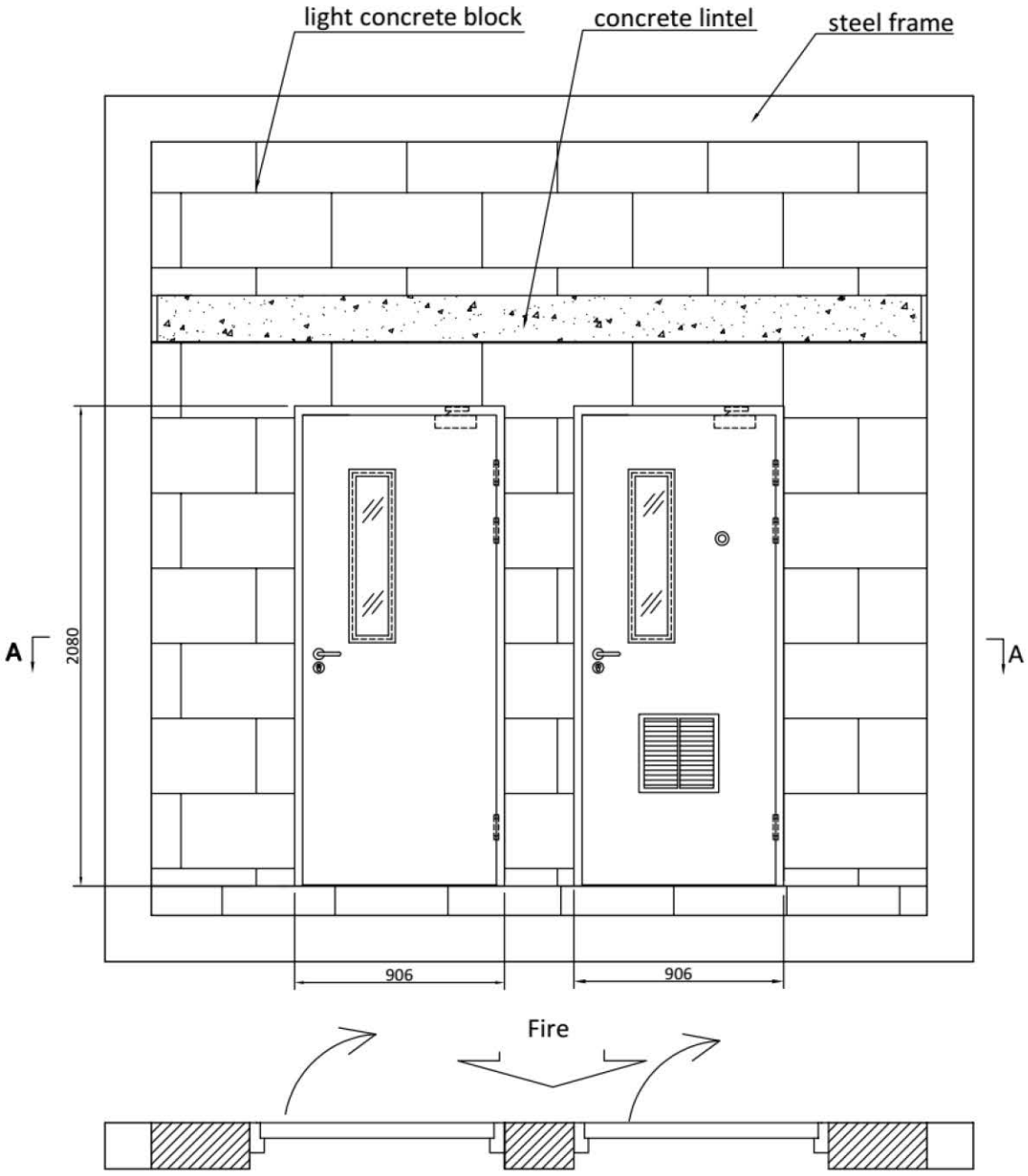
SECTION 8

TEST WALL CONSTRUCTION



A-A

UNEXPOSED SIDE

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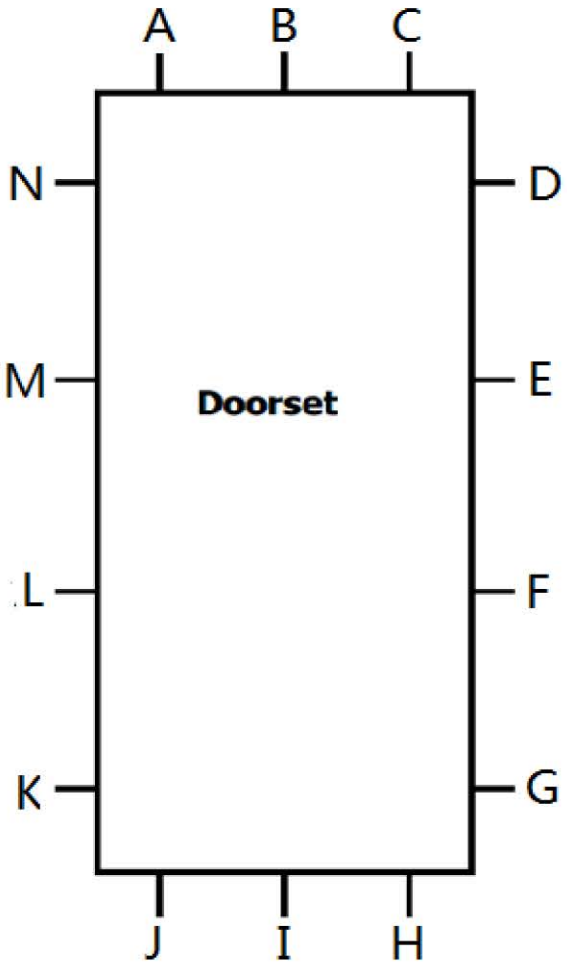
SECTION 9

TEST MEASUREMENT DATA



EXPOSED SIDE

Clearance dimension in mm at each position –DOORSET GF-001													
A	B	C	D	E	F	G	H	I	J	K	L	M	N
2.4	2.2	2.2	2.8	2.2	2.2	2.9	5.0	6.0	8.5	1.0	1.5	1.6	1.8

DO NOT SCALE

DOORSET INITIAL CLEARANCES

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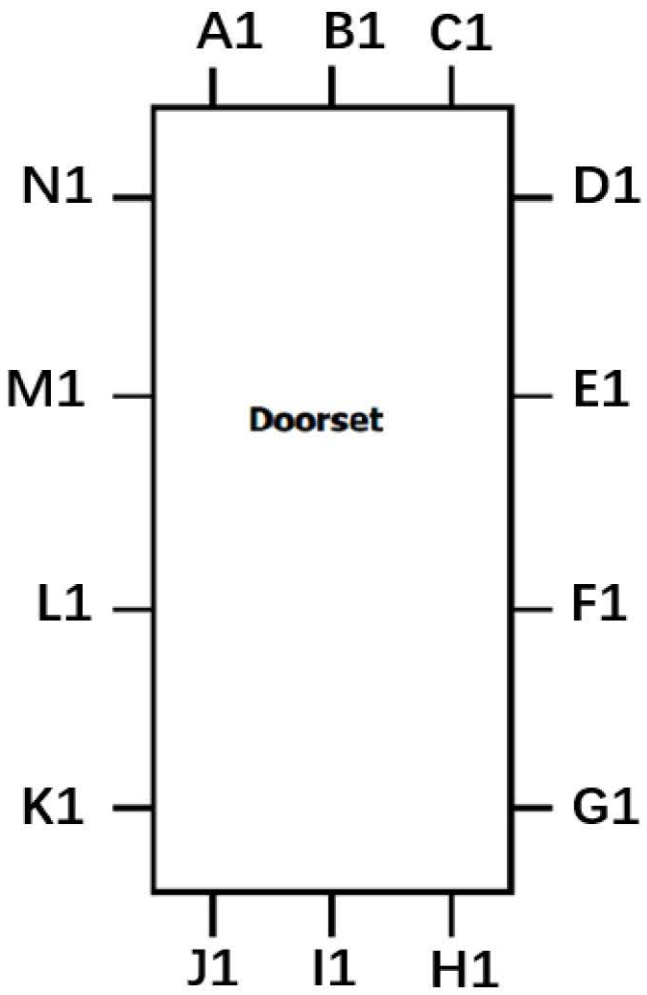

EXPOSED SIDE

Clearance dimension in mm at each position –DOORSET GF-002													
A1	B1	C1	D1	E1	F1	G1	H1	I1	J1	K1	L1	M1	N1
2.7	2.0	1.8	2.8	2.8	2.4	3.0	6.5	10.8	9.0	1.7	1.5	1.8	1.5

DO NOT SCALE

DOORSET INITIAL CLEARANCES

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SECTION 10
TEST DATA

Standards: EN 1634-1:2014+A1:2018, Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows

Procedure: Part 1: Fire resistance test for door and shutter assemblies and openable windows

Conditioning: According to EN 1363-1, Section 8

Equipment:

ITEM	ID
Vertical furnace	SH1097
Furnace pressure gauge	SH1097-15-1~2
Test Clock	SH1042
Furnace thermocouple	SH1097-4
Ambient temperature gauge	SH1097-11
Unexposed thermocouple	SH1097-12
Clearance Measurements	SH1057-1
Displacement Measurements	SH1377-1~14
Force Gauge	SH1211

Heating Conditions: According to EN 1363-1, Section 5.1
Pressure Conditions: According to EN 1363-1, Section 5.2
Ambient Conditions: 10~40°C according to EN 1363-1, Section 5.6
Test Specimen: According to EN 1634-1, Section 6
Installation of test specimen: According to EN 1634-1, Section 7
Furnace Thermocouples: According to EN 1634-1, Section 9.1.1
Unexposed Face Thermocouples: According to EN 1634-1, Section 9.1.2
Thermocouple Pads: Length and width 30 mm, thickness 2.0 ± 0.5 mm, dry density 900 ± 90 kg/m^2
Pressure Measurements: According to EN 1634-1, Section 9.2
Deflection Measurements: According to EN 1634-1, Section 9.3
Pre-test Examination: According to EN 1634-1, Section 10.1
Test Procedure: According to EN 1634-1, Section 10.2

SECTION 11

PHOTOGRAPHS

Fig. 1 Exposed Side Prior to the Fire Test

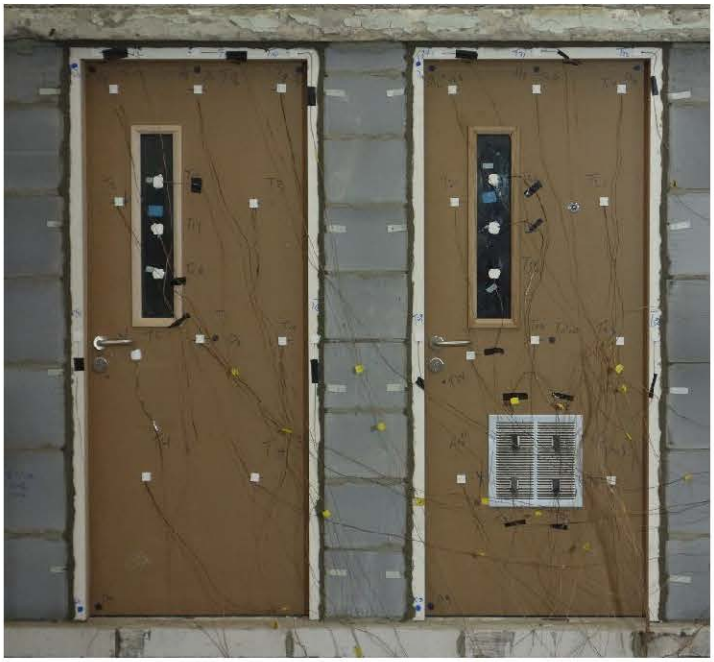

Fig. 2 Unexposed Side Prior to the Fire Test

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Fig. 3 Unexposed Side after 10 Minutes

Fig. 4 Unexposed Side after 30 Minutes

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Fig. 5 Unexposed Side after 50 Minutes

Fig. 6 Unexposed Side after 60 Minutes

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Fig. 7 Unexposed Side after 68 Minutes

Fig. 8 Exposed Side after 68 Minutes

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SECTION 12

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	2022-02-18	N/A	Original Report Issue