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ANHUI MEILIN KAIDI WOOD INDUSTRY CO., LTD

TEST REPORT

SCOPE OF WORK
UL 10(C) (2016) ED. 3 (R:27 MAY 2021), NFPA 252 (2022), CAN / ULC S104 (2015) (R2020) AND UL 10(B) (2008) (R2020) TESTING ON SINGLE-LEAF STEEL FIRE DOOR AND FRAME, MODEL GFM-MLKDAS-L-1224 A90MINS

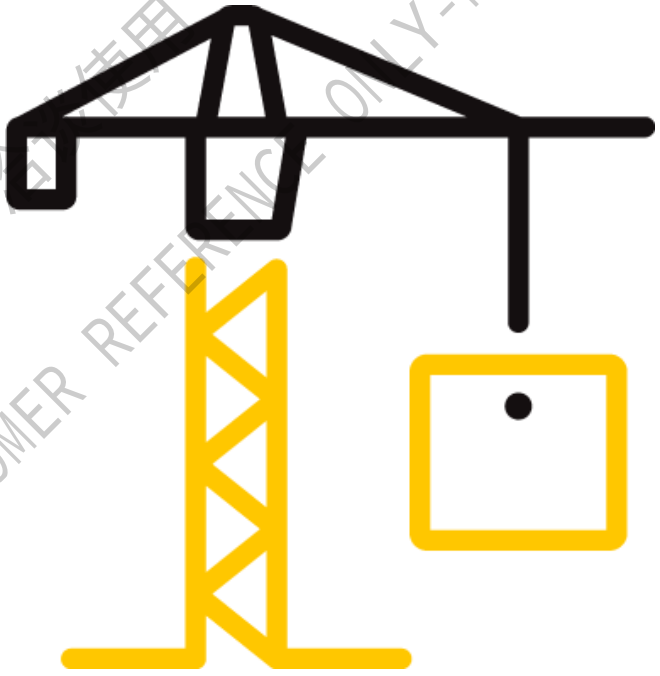
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REPORT ISSUED TO

Anhui Meilin Kaidi Wood Industry Co., Ltd
Anhui Meilin Kaidi Wood Industry Co., Ltd, No 1 Road, Yingjiang Industrial Park, Yingjiang District, Anqing City, Anhui Province, China

SECTION 1

SCOPE

Intertek has conducted an evaluation for Anhui Meilin Kaidi Wood Industry Co., Ltd to determine the fire resistance characteristics of Single-leaf steel fire door and frame, model GFM-MLKDas-L-1224 A90Mins for a 90-minute exposure period with hose stream. This evaluation began on June 12, 2025 and was completed on March 27, 2026. The test was conducted on December 29, 2025.

The test was conducted in accordance with UL 10(C) (2016) ED. 3 (R:27 MAY 2021) and NFPA 252 (2022) under positive furnace pressure. This test was also designed to demonstrate evaluation according to CAN / ULC S104 (2015) (R2020) and UL 10(B) (2008) (R2020) under neutral furnace pressure. All the conditions of acceptance applying to the test door in UL 10(C) (2016) ED. 3 (R:27 MAY 2021) and NFPA 252 (2022) under positive furnace pressure, and in CAN / ULC S104 (2015) (R2020) and UL 10(B) (2008) (R2020) under neutral furnace pressure were taken into account simultaneously in this test.

Intertek B&C will service this report for the entire test record retention period. The test record retention period ends ten years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens (where required by Certification or Accreditation bodies), or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C:

COMPLETED BY:	Ivy Qiu	**REVIEWED BY:**	Jason Xu
TITLE:	Project Engineer – Building & Construction	**TITLE:**	Operation Supervisor – Building &
SIGNATURE:		**SIGNATURE:**	
DATE:	2026-03-27	**DATE:**	2026-03-27

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SECTION 2
SUMMARY OF TEST RESULTS

Product Name: Single-leaf steel fire door and frame
Series/Model: GFM-MLKDas-L-1224 A90Mins

TEST RESULT:

TITLE	RESULTS
Fire resistance with hose stream test	Met the requirements for a 90-minute exposure period with hose stream

SECTION 3
TEST METHODS

The specimen was evaluated in accordance with the following:

UL 10(C) (2016) ED. 3 (R:27 MAY 2021), *Standard for Positive Pressure Fire Tests of Door Assemblies*

CAN / ULC S104 (2015) (R2020), *Standard Method for Fire Tests of Door Assemblies*

NFPA 252 (2022), *Standard Methods of Fire Tests of Door Assemblies*

UL 10(B) (2008) (R2020), *Standard for Fire Tests of Door Assemblies*

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SECTION 4
MATERIAL SOURCE/INSTALLATION

The test specimens were randomly selected by Intertek B&C personnel at Anhui Meilin Kaidi Wood Industry Co., Ltd, located at Anhui Meilin Kaidi Wood Industry Co., Ltd, No 1 Road, Yingjiang Industrial Park, Yingjiang District, Anqing City, Anhui Province, China. The specimens were witnessed during production and signed prior to shipment from December 16, 2025 to December 18, 2025. The specimen was received at the Evaluation Center on December 23, 2025.

The subject test specimen was a traceable sample selected from the manufacturer's facility. Intertek selected the specimen and had verified the composition, manufacturing techniques and quality assurance procedures. All values quoted below are nominal, unless tolerances are given.

TESTED ASSEMBLY DESCRIPTION		
Door	Type	Single Leaf Single Action Swing Steel Fire Door
	Nominal Size	1120 mm wide by 2355 mm high by 52 mm thick
	Facing	0.8 mm thick galvanized steel sheet, Q195
	Astragal	20 mm wide extend from the leading edge including three layers 0.8 mm thick galvanized steel sheet
	Door core	50 mm thick Lightweight mineral board, density of 438 kg/m^3
	Edge Channel	Material: 30 x 50 x 1mm rectangular steel tube channel, Q195, filled with mineral board, density of 977 kg/m^3
		Location: One strip around the door inner perimeter
	Inner Stiffener	Material: 30 x 50 x 1mm rectangular steel tube channel, Q195, filled with mineral board, density of 977 kg/m^3
		Vertical inner stiffener: One strip placed between top and bottom edge channel spacing 110 mm from the leading edge channel
		Horizontal inner stiffeners: Four strips placed between edge channel and vertical inner stiffener, spacing 740 mm, 1515 mm from top edge channel respectively
	Hardware Reinforcement	Hinge Reinforcement: 46 mm wide x 200 mm long x 3 mm thick steel sheet, Q215B
Frame	Nominal Size	1200 mm wide by 2400 mm high by 100 mm deep
	Material	1.5 mm thick galvanized steel, Q195
	Hardware Reinforcement	Hinge Reinforcement: 46 mm wide x 200 mm long x 3 mm thick steel sheet, Q215B
		Strike plate reinforcement: 40 mm wide x 150 mm long x 1.5 mm thick steel sheet, Q195
		Strike-plate dust shield case: 22 mm wide x 125 mm long x 0.8 mm thick steel sheet, Q195

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	Fixing plate	Type 1: 19 mm wide x 95 mm long x 1 mm thick steel sheet, Q195 Location: One piece spot weld at both ends of hinge jamb and strike jamb respectively.
		Type 2: 43 mm wide x 95 mm long x 1.2 mm thick steel sheet, Q195 Location: a. Four pieces spot weld at the throat opening of the hinge jamb and strike jamb respectively, spaced approx. 667 mm and at approx. 200 mm from top and bottom of frame jamb. b. One piece spot weld at the throat opening of the head located in the middle.
	Installation	Cement mortar grouted and mounted to light concrete block by four T-shape anchors at each jamb.
Hardware	Lock	Mortise type, Model: ML024 Latch bolt length: 3/4” Backset: 2-3/4” Latch bolt: Engaged; Dead bolt: Disengaged
	Hinge	Model: SSA002-4.5x4.0x3.4 Size: 4.5” x 4” x 3.4 mm Quantity: 4 pieces, located at 300 mm, 800 mm, 1600 and 2055 mm from the top door edge respectively.
Intumescent seal	Type 1	Size: 25 x 4 Location: One strip mortise mounted on leading edge of the door leaf
	Type 2	Size: 20 x 4 Location: One strip mortise mounted on hinge edge, top edge and bottom edge of the door leaf
	Type 3	Size: 15 x 4 Location: One strip surface mounted around the frame stop

The sample ID number assigned by the test lab is S250612025SHF.004.

The specimen is described by the client as Single-leaf steel fire door and frame, model GFM-MLKDas-L-1224 A90Mins. The drawings of the specimen and test wall construction can be found in Section 7 and 8 respectively.

A comprehensive description of Single-leaf steel fire door and frame, model GFM-MLKDas-L-1224 A90Mins for certification is maintained on Intertek file.

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The test assembly was installed in a moveable restraint frame and the hardware was installed by the client. The test assembly was placed in front of the furnace for fire exposure, and was moved away from the furnace for the hose stream test. The test door was built into a concrete masonry unit partition, with fully mortared joints. The door clearances were adjusted so that they complied with installation instruction provided by the customer. The test measurement data was shown in Section 9.

The test door was mounted so as to open into the furnace.

The nominal dimensions of the test wall were 3 m high and 2 m wide.

After positioning the assembly frame over the furnace opening, the burners were ignited and the timer 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 40 in. (1016mm) above the bottom of the door as specified in the applicable positive pressure test standards. Periodic observations were made of the surface 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 is presented in the drawing of Section 9.

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SECTION 5
TEST RESULTS

Fire Endurance Test

The measured deflection did not exceed the allowable deflection limit of one time the door thickness during the 99 minutes fire endurance test. The edge adjacent to the door frame did not move from its original position in a direction perpendicular to the plane of the door for a distance greater than the door thickness during the 99 minutes fire test. The actual measurements are presented in test data in Section 10.

During the 99 minutes fire exposure period no 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.

The tested assembly therefore met the criteria of the fire endurance test for 90 minutes.

Hose Stream Test

According to test methods, hose stream test should be conducted for 47 seconds based on a total assembly area of 2.88 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 of the edge adjacent to the door frame neither exceed the allowable deflection limit of 1-1/2 times the door thickness, nor more than 73 mm of tested assembly after the hose stream test.

The tested assembly therefore met the hose stream portion of the test.

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

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SECTION 6
CONCLUSION

The Single-leaf steel fire door and frame, model GFM-MLKDas-L-1224 A90Mins identified in this report have been tested in accordance with UL 10(C) (2016) ED. 3 (R:27 MAY 2021) and NFPA 252 (2022) under positive furnace pressure. This test has also demonstrated evaluation according to CAN / ULC S104 (2015) (R2020) and UL 10(B) (2008) (R2020) under neutral furnace pressure.

The tested assembly met the requirements for a 90-minute exposure period with hose stream.

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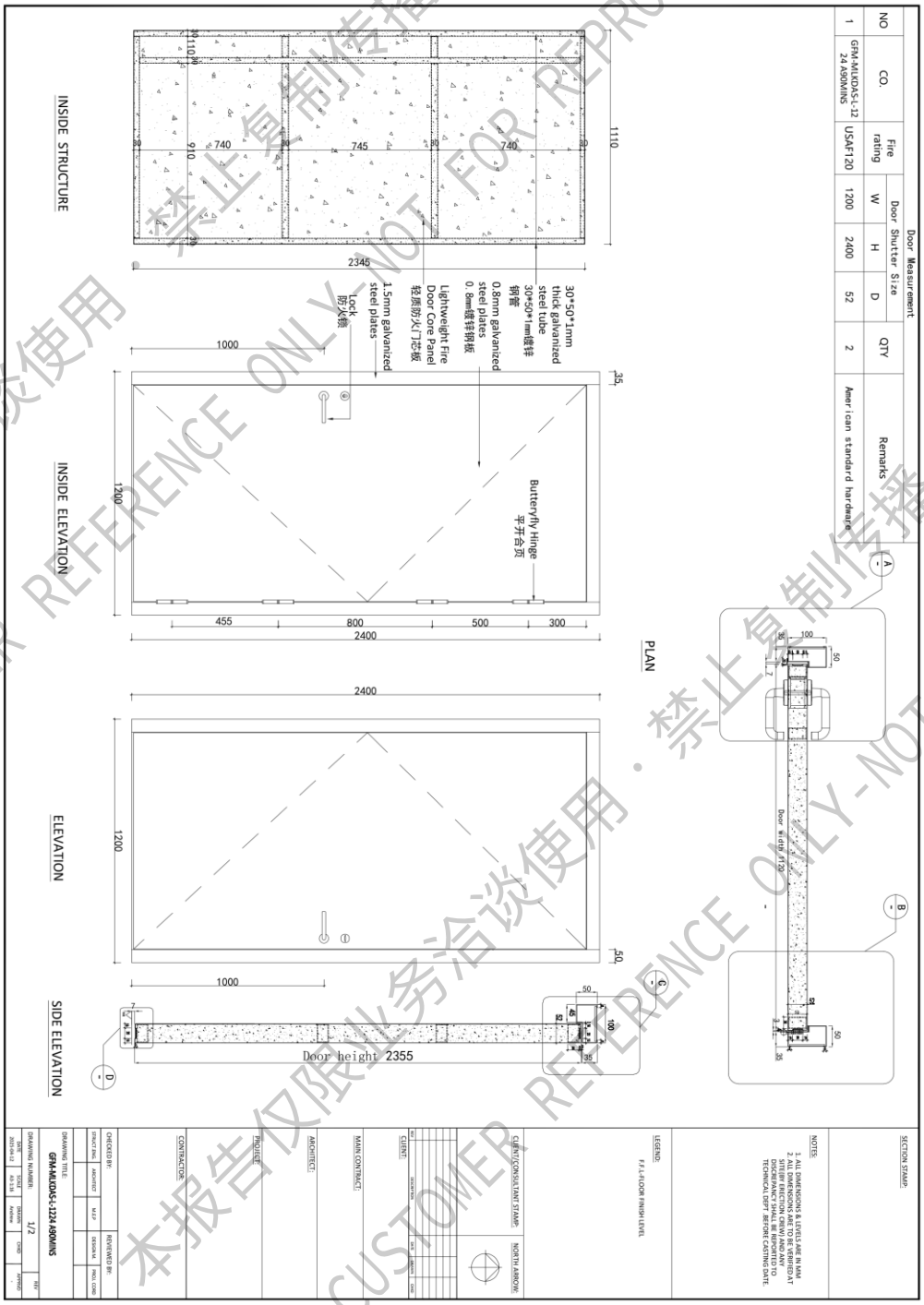
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SECTION 7

FIRE DOOR ASSEMBLY DRAWINGS



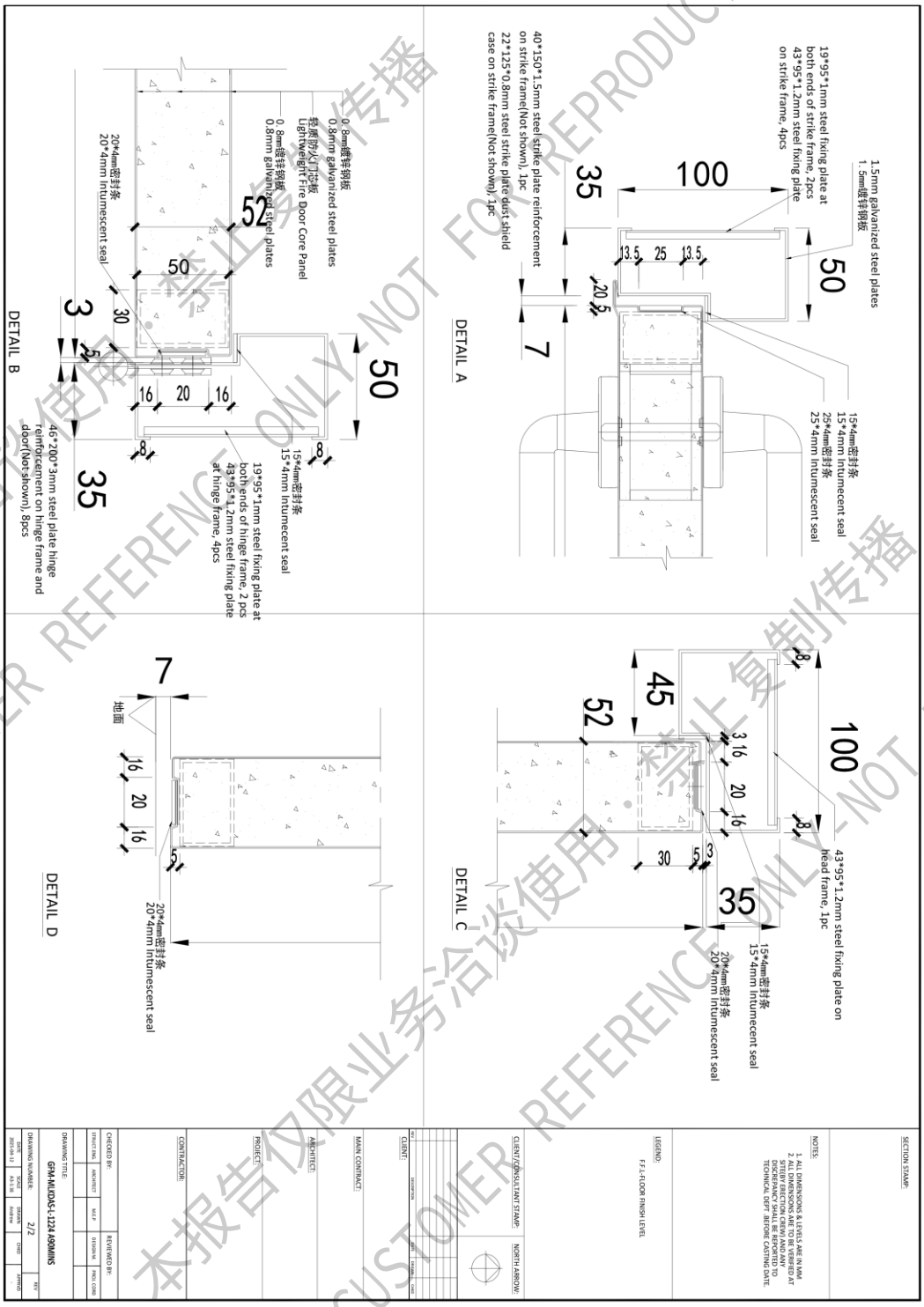
The drawing of Single-leaf steel fire door and frame, model GFM-MLKDas-L-1224 A90Mins

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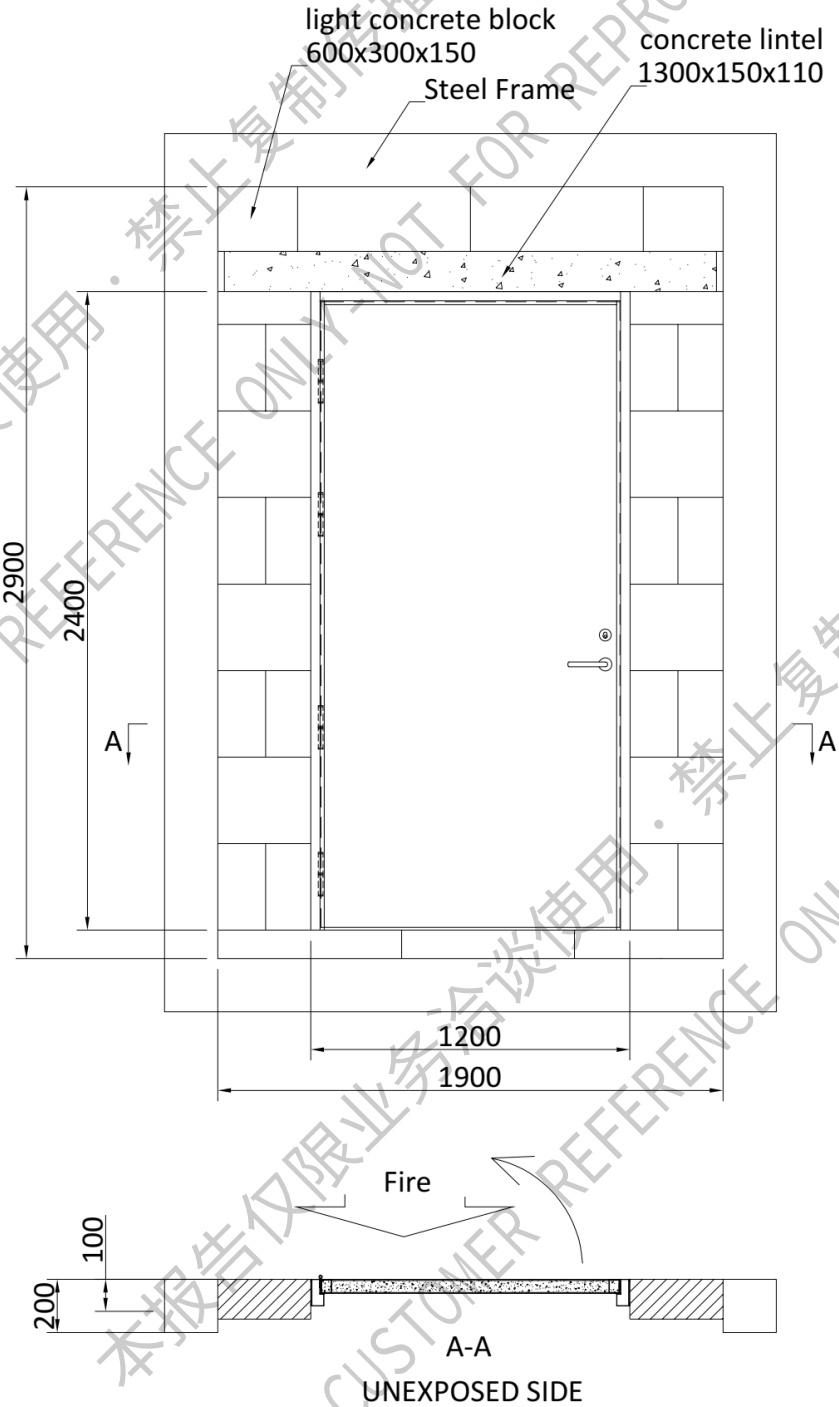
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SECTION 8

TEST WALL CONSTRUCTION



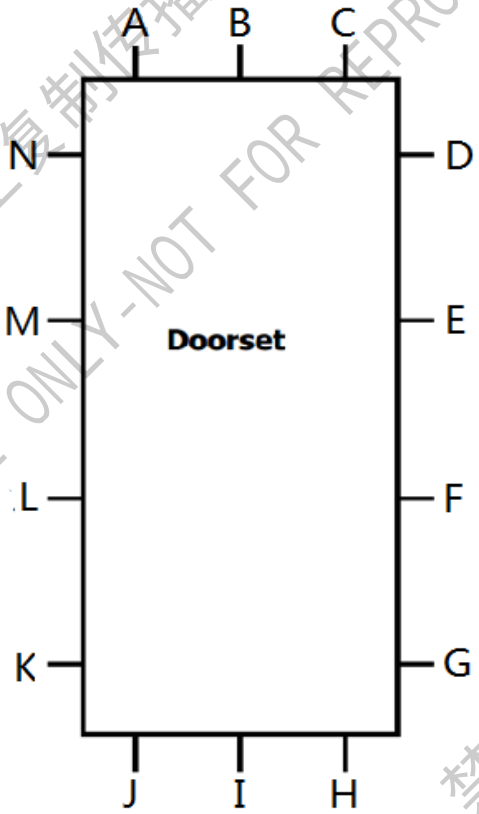
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SECTION 9

TEST MEASUREMENT DATA



EXPOSED SIDE

Clearance dimension in mm at each position						
A	B	C	D	E	F	G
4.0	2.8	2.8	3.1	2.8	2.7	2.5
H	I	J	K	L	M	N
8.9	8.6	8.6	7.4	6.8	6.9	6.7

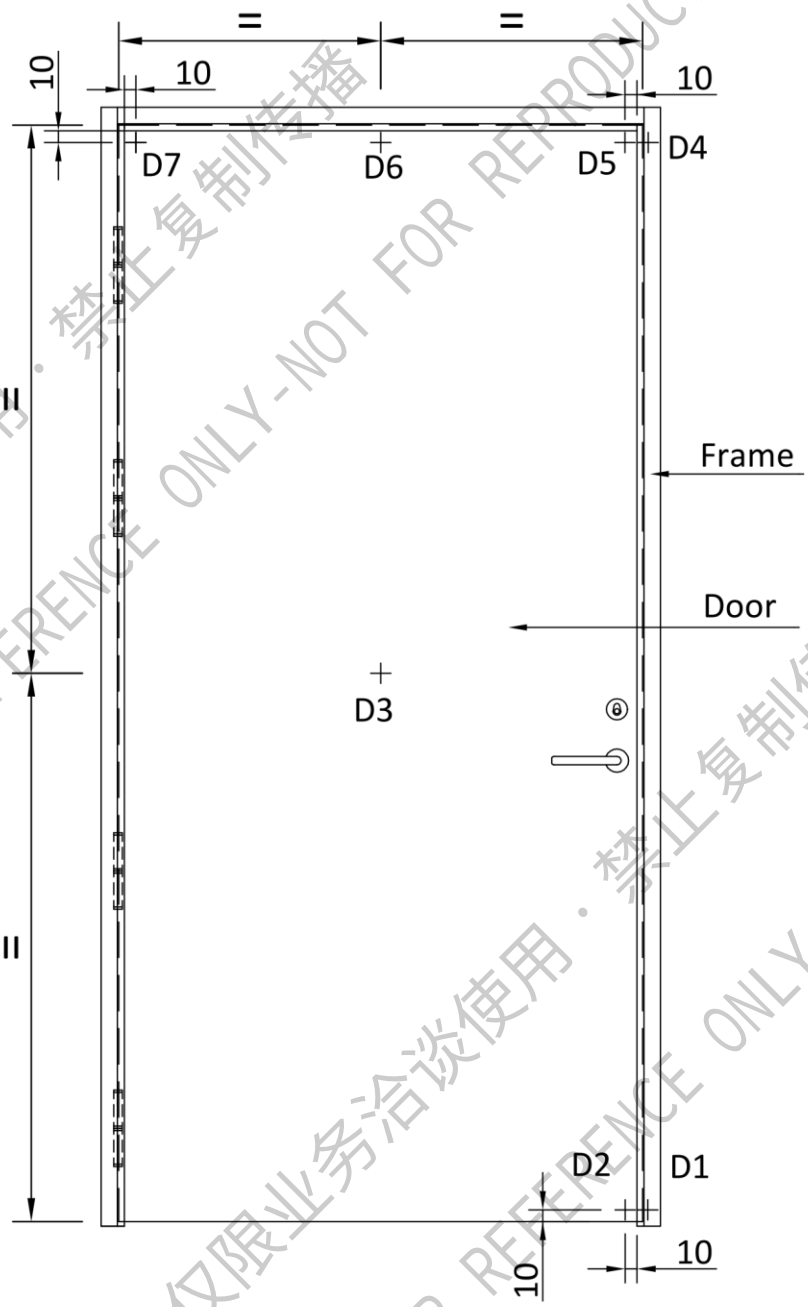
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DOOR ASSEMBLY INITIAL CLEARANCES

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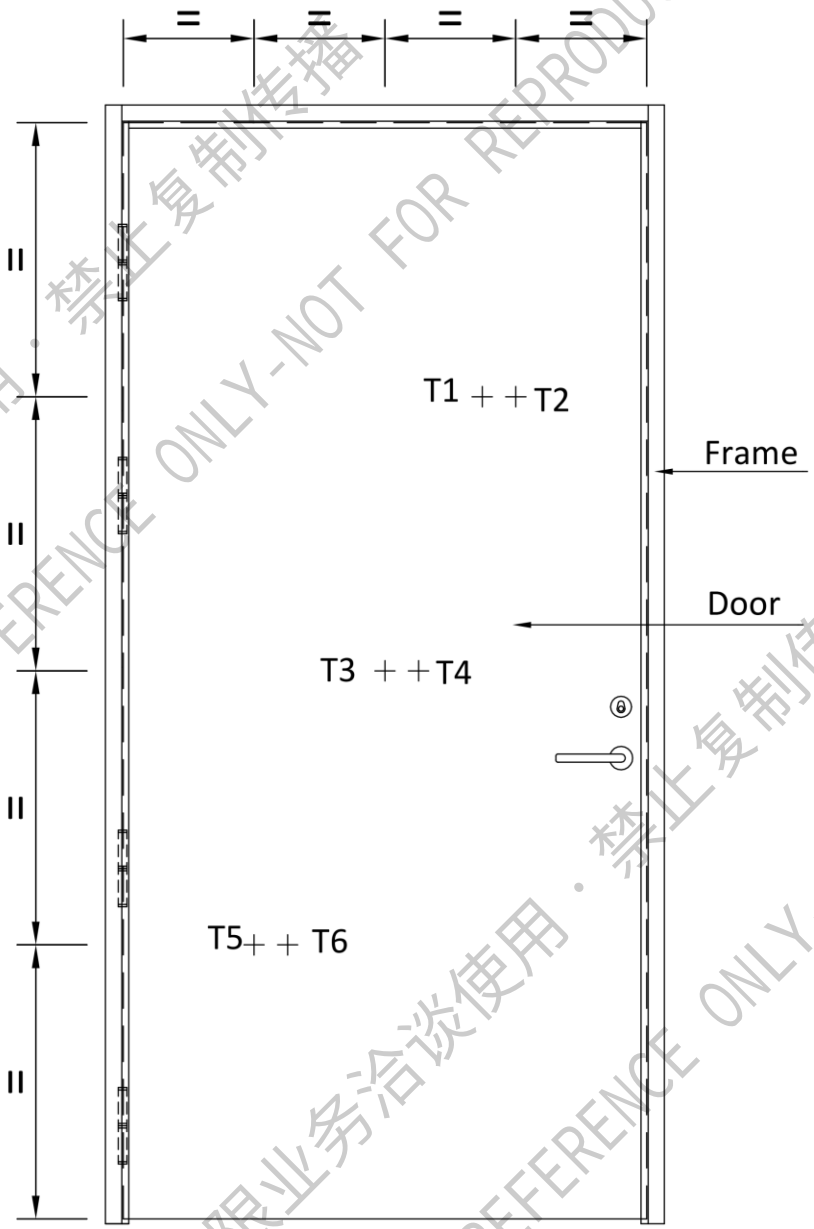
UNEXPOSED SIDE

POSITION FOR MEASUREMENT OF HORIZONTAL DEFLECTION

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POSITION FOR MEASUREMENT OF UNEXPOSED TEMPERATURE

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SECTION 10
TEST DATA

Standards: UL 10(c) (2016) Ed.3 (R:27 May 2021) Standard for Positive Pressure Fire Tests of Door Assemblies

Equipment:

ITEM	ID
Vertical furnace	SH1098
Furnace pressure gauge	SH1097-15-4 & SH1348
Test Clock	SH1042
Furnace thermocouple	SH1097-1 & SH1097-1-1~5
Ambient temperature gauge	SH1097-11
Unexposed thermocouple	SH1097-12 & SH1097-12-1~5
Clearance Measurements	SH1506
Displacement Measurements	SH1377-1~7
Oxygen Analyzer	SH1318
Nozzle Pressure Gauge	SH1100-3

Temperature-Time Curve:	According to UL 10C, Section 4
Furnace Temperatures:	According to UL 10C, Section 5
Unexposed Temperatures:	According to UL 10C, Section 6, measured in the first 30 minutes
Thermocouple Pads:	Length and width 30 ± 0.5 mm, thickness 2 ± 0.5 mm, conductivity 0.053 ± 0.004 W/m·K at 66°C
Construction and Size:	According to UL 10C, Section 8
Mounting:	According to UL 10C, Section 9.1
Clearances:	According to UL 10C, Section 9.3
Test Wall:	According to UL 10C, Section 10.1
Fire Endurance Test:	According to UL 10C, Section 11
Hose Stream:	According to UL 10C, Section 12

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Other Evaluation Standard:

NFPA 252 (2022)	DESCRIPTION
Positive pressure	After less than 5 minutes, the neutral pressure plane in the furnace is established at 40 in. (1016 mm) or less above the bottom of the door.
Neutral pressure	The neutral pressure in the furnace is established at not more than 152 mm (6 in.) above the top of the door ± 25 mm (±1 in.).
Thermocouple	For unexposed temperatures, thermocouple lead under the pad shall not be heavier than 0.82 mm^2 and shall be electrically insulated with heat resistant and moisture resistant coatings.
Thermocouple Pads	Length and width 152 ± 3 mm, thickness 10.2 ± 1.3 mm, conductivity 0.055 W/m·K at 65°C
Cotton Pad Check	No Requirement.
Hose Stream	Immediately after to within 2 minutes from the termination of the fire endurance test, the exposed side of the fire door assembly is subjected to standard hose stream.

UL 10(B) (2008) (R2020)	DESCRIPTION
Positive Pressure	No requirement.
Neutral pressure	The pressure in the furnace chamber is to be 0 ± 0.01 inches of water at the top of the door.
Thermocouple	No requirement for unexposed temperature thermocouples.
Thermocouple Pads	Length and width 152 ± 3 mm, thickness 9.5 ± 1.6 mm, dry weight of 67 ± 24g, conductivity 0.053 W/m·K at 66°C, modified Brinnell hardness (on soft face) of 2.25 to 4.5.
Cotton Pad Check	No Requirement.
Hose Stream	Immediately after to within 3 minutes from the termination of the fire endurance test, the exposed side of the fire door assembly is subjected to standard hose stream.

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CAN / ULC S104 (2015) (R2020)	DESCRIPTION
Positive pressure	No requirement.
Neutral pressure	The pressure in the furnace chamber shall be controlled such that a pressure of 0 ± 2.5 Pa is maintained at the top of the test assembly.
Thermocouple	For unexposed temperatures, thermocouple lead under the pad shall be not greater than 1 mm in diameter and shall be electrically insulated with heat resistant and moisture resistant coatings.
Thermocouple Pads	Length and width 150 ± 3 mm, thickness 10 ± 1 mm, density 500 ± 10 kg/m^3, thermal conductivity 0.055 W/m·K at 66°C.
Cotton Pad Check	No Requirement.
Hose Stream	Immediately after to within 3.5 minutes from the termination of the fire endurance test, the exposed side of the fire door assembly is subjected to standard hose stream.

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Fire Endurance Test Observations:

Time		All observations are from the unexposed face unless noted otherwise.
Mins	Secs	
00	00	Test started.
00	45	Light smoke issued from the top edge of the door.
01	02	Light smoke issued from upper part of hinge edge of the door.
01	23	Light smoke issued from upper part of leading edge of the door.
05	00	Heavy smoke issued from the middle part of the hinge edge.
10	30	Heavy smoke issued from bottom edge and hinge edge of the door.
14	25	Heavy smoke still issued from bottom edge of the door. Smoke issued from top edge and both vertical edges of the door.
15	00	Door facing bulging was observed.
20	00	Heavy smoke still issued from bottom edge of the door. Smoke still issued from top edge and both vertical edges of the door. Discoloration was observed at the hinge edge of the door.
26	40	Smoke still issued from four edges of the door. There was an unidentified liquid emitted from the handle position of the door.
40	00	Intumescent seal around the frame begun to activate.
46	00	Discoloration was observed on the door facing against the top inner horizontal stiffener.
52	20	All thermocouples were removed.
60	00	Discoloration was observed at bottom edge of the door.
99	50	Fire endurance test was discontinued at the request of the sponsor. Neither flaming nor through openings were observed on the doorset. Test assembly was to be moved into the position for hose stream test.

Hose Stream Test Observations:

Time		All observations are from the unexposed face unless noted otherwise.
Mins	Secs	
101	35	Hose stream test started.
102	22	Hose stream was discontinued. No through openings developed that permitted a projection of water from the stream beyond the unexposed surface during the time of the hose stream.

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Temperature Data:

Mean furnace temperature together with temperature-time relationship specified in the standard

Time Mins	Specified Furnace Temperature (°C)	Furnace Mean Temperature (°C)
0	20	30
3	331	262
6	571	650
9	671	670
12	726	708
15	760	748
18	781	774
21	800	802
24	816	810
27	830	833
30	843	839
33	854	852
36	865	865
39	875	869
42	884	886
45	892	888
48	900	899
51	907	911
54	914	915
57	920	923
60	927	932
63	933	942
66	939	953
69	944	958
72	950	948
75	955	962
78	960	968
81	965	973
84	969	978
87	974	983
90	978	988
93	982	994
96	986	999
99	990	1004

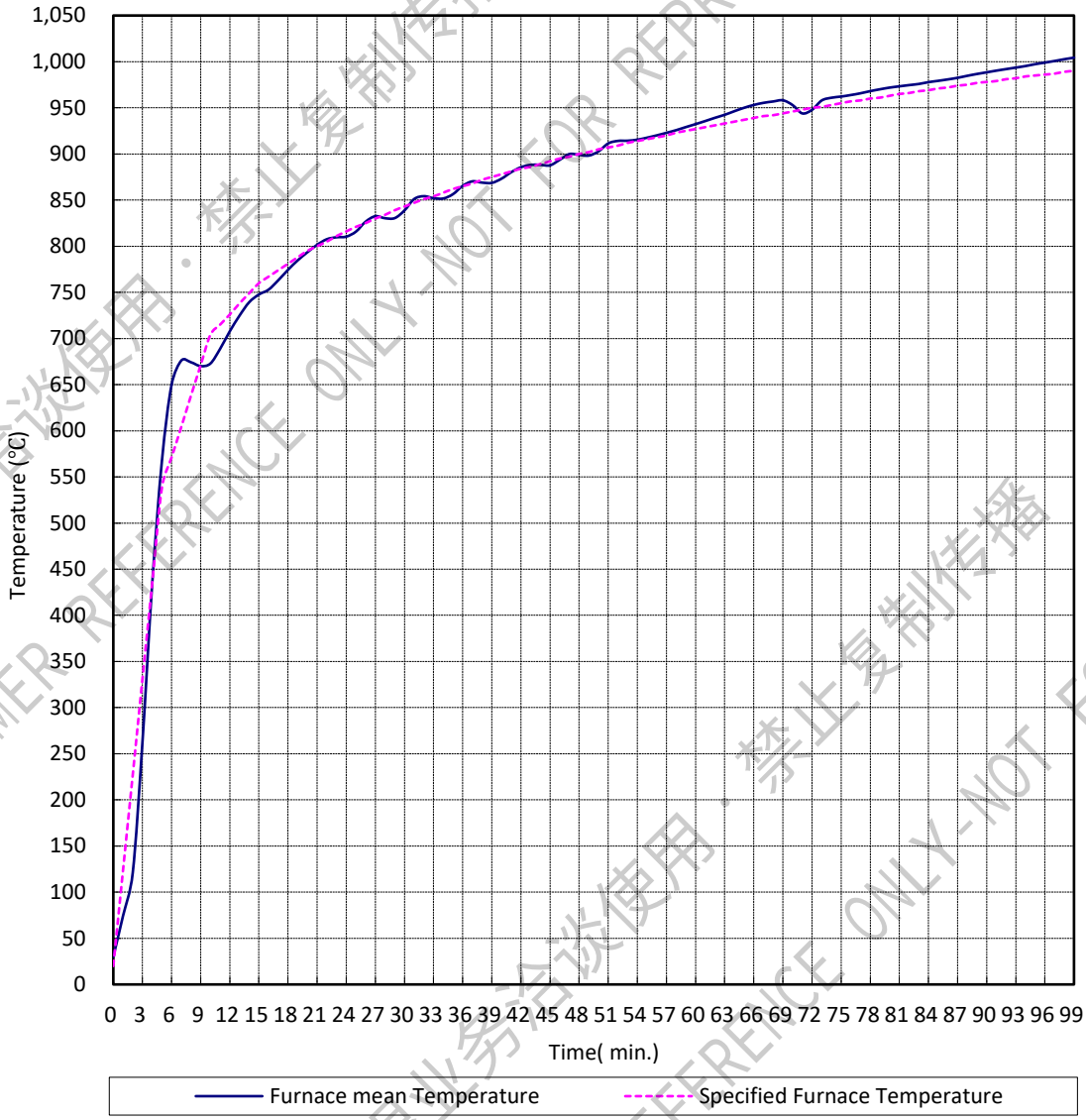
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Graph for mean furnace temperature and temperature-time curve specified in the standard



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Unexposed surface temperatures:

Time Mins	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	T5 (°C)	T6 (°C)
0	13	12	12	12	12	12
2	13	13	12	12	12	12
4	13	13	12	12	12	12
6	13	13	13	13	12	12
8	14	14	13	13	13	13
10	15	15	14	14	13	14
12	18	18	16	16	15	15
14	23	24	21	21	18	18
16	31	34	27	27	24	22
18	40	45	35	36	31	28
20	49	56	44	44	39	34
22	58	65	51	51	47	41
24	64	71	57	56	54	47
26	69	77	62	61	86	59
28	75	81	66	65	90	84
30	79	86	71	69	91	87
32	83	88	75	72	92	88
34	86	89	78	76	93	87
36	88	90	86	78	95	89
38	89	93	94	95	99	92
40	90	94	134	123	100	96
42	92	95	180	158	102	98
44	92	96	213	181	106	100
46	93	96	236	194	110	102
48	93	96	244	198	113	102
50	94	96	243	197	115	104
52	93	96	241	200	118	107

Note:
Thermocouple Pads for T2, T3 and T5 comply with the requirements of NFPA 252.
Thermocouple Pads for T1, T4 and T6 comply with the requirements of UL 10C.
After 52 minutes, the thermocouples on unexposed side were removed and the measurement was discontinued.

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Horizontal Deflection (Positive values indicate movement into the furnace)

Time (Mins)	Door Frame Separation at Latch for Single Door (mm)	Maximum Pair Meeting Edge Displacement (mm)	Maximum Perpendicular Displacement where a positive measurement indicates movement towards the furnace (mm)						
			D1	D2	D3	D4	D5	D6	D7
Initial	< 12.7	NA	0	0	0	0	0	0	0
10	< 12.7	NA	0	-2	-2	2	-1	3	-2
20	< 12.7	NA	2	-3	-4	2	-3	6	-4
30	< 12.7	NA	2	-5	-32	5	-5	5	-10
40	< 12.7	NA	2	-5	-48	4	-5	10	-8
50	< 12.7	NA	2	-5	-43	5	-8	12	-12
60	< 12.7	NA	2	-5	-37	5	-6	14	-13
70	< 12.7	NA	2	-5	-40	6	-5	14	-6
80	< 12.7	NA	2	-7	-49	8	-5	13	-7
90	< 12.7	NA	1	-6	-54	7	-5	13	-5
Requirement	< 12.7	NA	Any portion of the edges adjacent to door frame shall not move more than the thickness of the door.						
Hose Stream	< 12.7	NA	< 73						
Requirement	< 12.7	NA	Any portion of the edges adjacent to door frame shall not move more than 1-1/2 times the door thickness.						

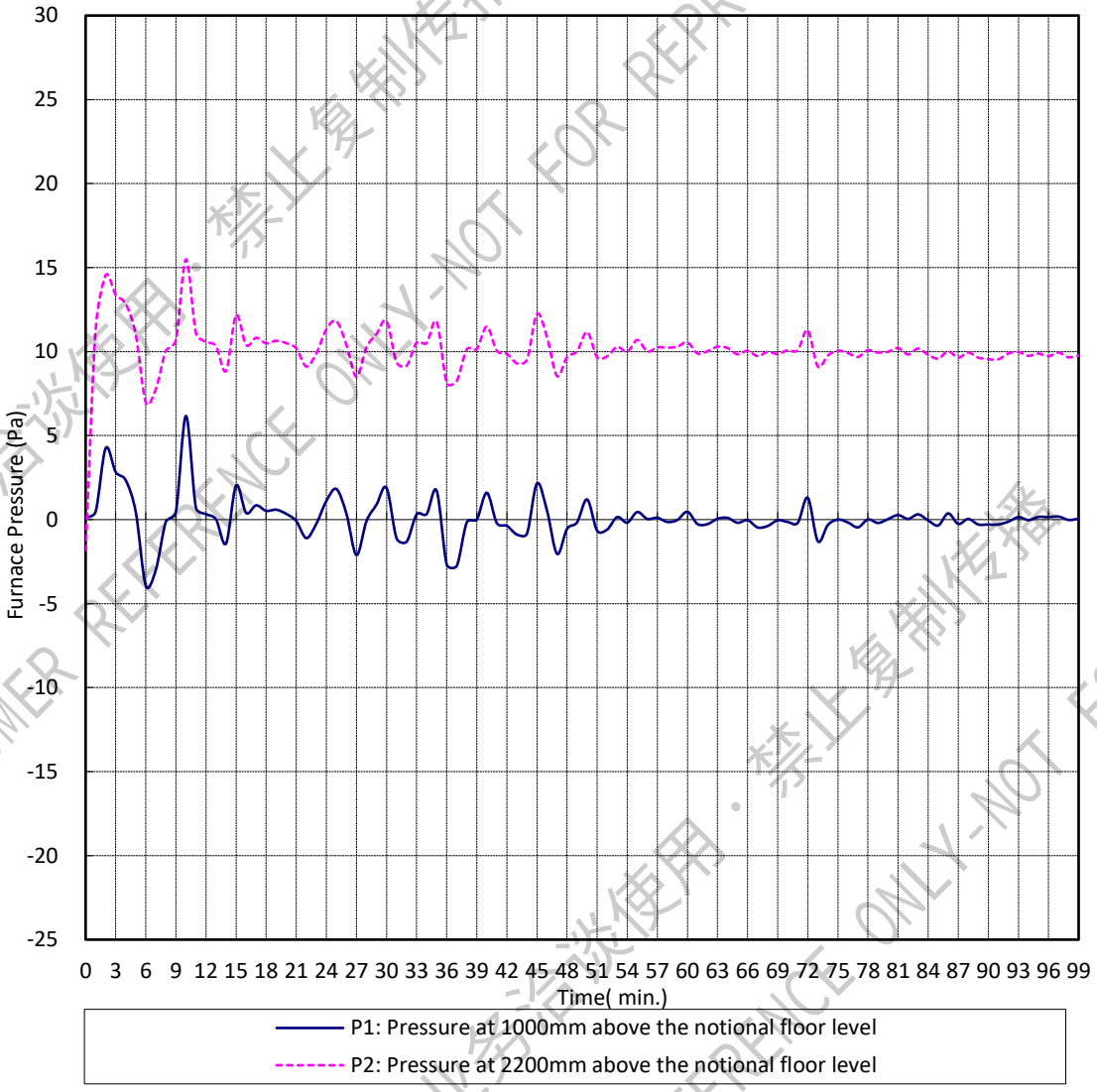
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Graph for Furnace Pressure



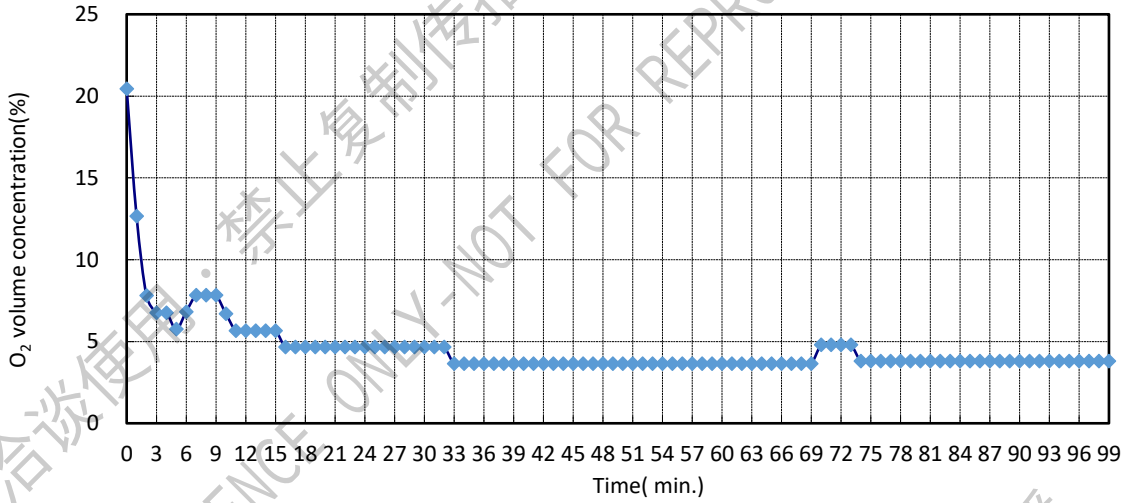
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Graph for oxygen concentration inside furnace



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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 30 Minutes



Fig. 4 Unexposed Side after 60 Minutes

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Fig. 5 Unexposed Side after 80 Minutes



Fig. 6 Unexposed Side after 99 Minutes

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Fig. 7 Exposed Side after 99 Minutes



Fig. 8 Exposed Side during Hose Stream Test

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Fig. 9 Unexposed Side after Hose Stream Test



Fig. 10 Exposed Side after Hose Stream Test

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SECTION 12
REVISION LOG

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