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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 WOODEN GLAZED FIRE DOOR AND FRAME, MODEL MFM-MLKDAS-GL-1224 A90MINS

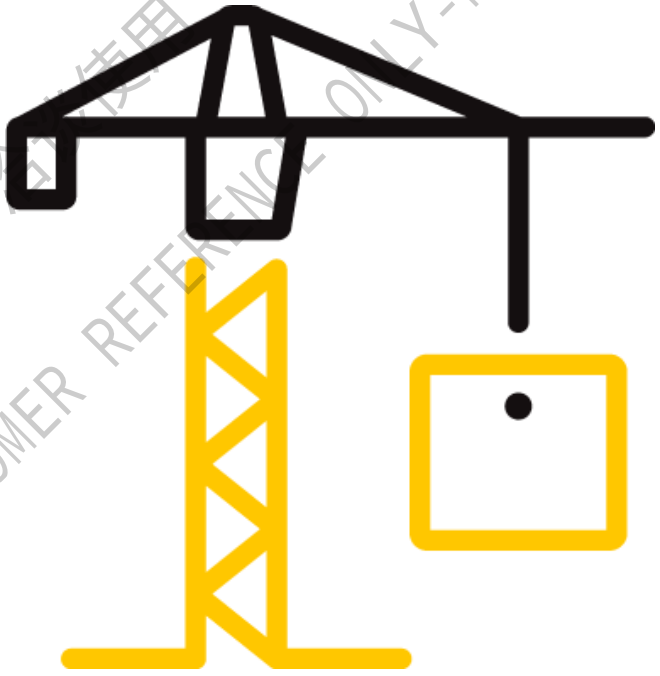
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Issue Date: 2026-03-13 Intertek Report No.: 250612025SHF-003

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 wooden glazed fire door and frame, model MFM-MLKDas-gL-1224 A90Mins for a 90-minute exposure period with hose stream. This evaluation began on June 12, 2025 and was completed on March 13, 2026. The test was conducted on December 31, 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 & Construction
SIGNATURE:		**SIGNATURE:**	
DATE:	2026-03-13	**DATE:**	2026-03-13

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SECTION 2
SUMMARY OF TEST RESULTS

Product Name: Single-leaf wooden glazed fire door and frame
Series/Model: MFM-MLKDas-gL-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 wooden composite door
	Nominal Size	1100 mm (wide) x 2400 mm (high) x 45 mm thick
	Facing	3 mm thick MDF, density of 833 kg/m^3
	Core	38.5 mm thick 700 type Light mineral board, density of 744 kg/m^3
	Rail & Stile	Top rail: One strip of 7 mm wide x 38.5 mm thick LVL and three strips of 40 mm wide x 38.5 mm thick 1400 type Mineral boards glued side by side; Bottom rail and Stile: One strip of 7 mm wide x 38.5 mm thick LVL and two strips of 40 mm wide x 38.5 mm thick 1400 type Mineral boards glued side by side.
		LVL, density of 631 kg/m^3 1400 type Mineral board, density of 1488 kg/m^3
	Lock block	Two strips of 300 mm long x 40 mm wide x 38.5 mm thick 1400 type Mineral boards glued side by side, density of 1488 kg/m^3, at each stile edge
	Reinforcement for Glazing Aperture	One piece of 40 mm wide x 38.5 mm thick 1400 type Mineral boards, density of 1488 kg/m^3, around the glazing aperture forming a square opening with a size of 335 x 335 mm
	Glazing assembly	Glazing panel: KCMZ.R38890-Fire-protection-rated glassing materials Product designation: SCHOTT PYRAN®Platinum, Platinum F** Glass size: 330 x 330 x 5 mm thick Visible size: 305 mm high x 305 mm wide Opening size: 335 mm high x 335 mm wide
		Glazing gasket: 15 x 1 mm Intumescent seal

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		Glazing Vision Light Kit: One strip of 30 mm wide x 27 mm thick 1400 type Mineral board, clad with one layer of 2 mm thick MDF on both faces. 2 mm thick MDF, density of 833 kg/m^3 1400 type Mineral board, density of 1488 kg/m^3
		Installation: A layer of 15 x 1 mm Intumescent seal attached on inner face of each Light Kit and a bead of fireproof glue applied on the right-angle position of each Light Kit. One piece of glazing panel placed between the Light Kits of the opening. Twelve self-drilling screws M4 × 29 mm were applied around the Light Kits on each side.
Frame	Nominal Size	1170 mm wide x 2442 mm high x 120 mm deep
	Material	Jamb: 3 mm MDF + 11 mm Plywood + 15 mm 1200 type Mineral board + 3 mm MDF Stop: 15 mm 850 type Mineral board + 3 mm MDF
		3 mm MDF, density of 833 kg/m^3 11 mm Plywood, density of 625 kg/m^3 15 mm 1200 type Mineral board, density of 1250 kg/m^3 15 mm 850 type Mineral board, density of 917 kg/m^3
	Installation	The frame was installed in an aerated concrete block wall opening by five (5) sets of steel bar and nail on each frame jamb, spaced approx. 536 mm and at approx. 150 mm from top and bottom of frame jamb. The clearance between the door frame and the wall was filled with mineral wool and clad with quick-setting cement on both sides.
Hardware	Lock	Mortise type, Model: ML024 Latch bolt length: 3/4” Backset: 2-3/4” Latch bolt: Engaged; Dead bolt: Disengaged Bedding material: 1 mm thick Intumescent seal
	Hinge	Model: SSA002-4.5x4.0x3.4 Size: 4.5” x 4” x 3.4 mm Quantity: 4 pieces, at 200 mm, 700 mm, 1450 mm and 2200 mm from the top door edge respectively. Bedding material: 1 mm thick Intumescent seal
Anti-collision strip		Size: 11 x 2 mm Location: One strip surface mounted on the frame stop
Intumescent seal		Size: 30 x 4 mm Location: a. One strip mortise mounted around the frame rabbet

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	b. One strip mortise mounted around the door

The sample ID number assigned by the test lab is S250612025SHF.003.

The specimen is described by the client as Single-leaf wooden glazed fire door and frame, model MFM-MLKDas-gL-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 wooden glazed fire door and frame, model MFM-MLKDas-gL-1224 A90Mins for certification is maintained on Intertek file.

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 90 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 90 minutes fire test. The actual measurements are presented in test data in Section 10.

During the 90 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 46 seconds based on a total assembly area of 2.86 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 67.5 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 wooden glazed fire door and frame, model MFM-MLKDas-gL-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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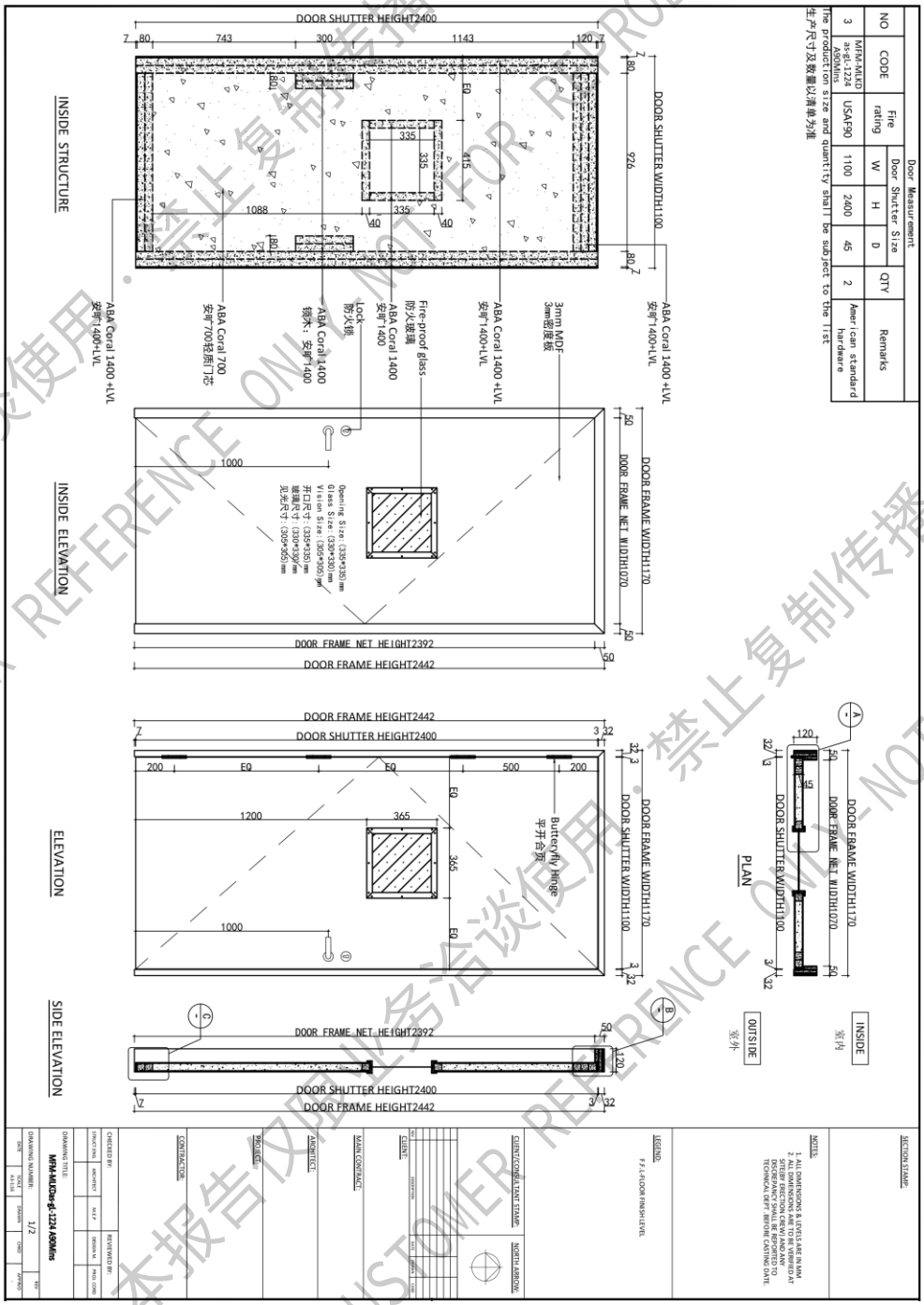
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SECTION 7

FIRE DOOR ASSEMBLY DRAWINGS



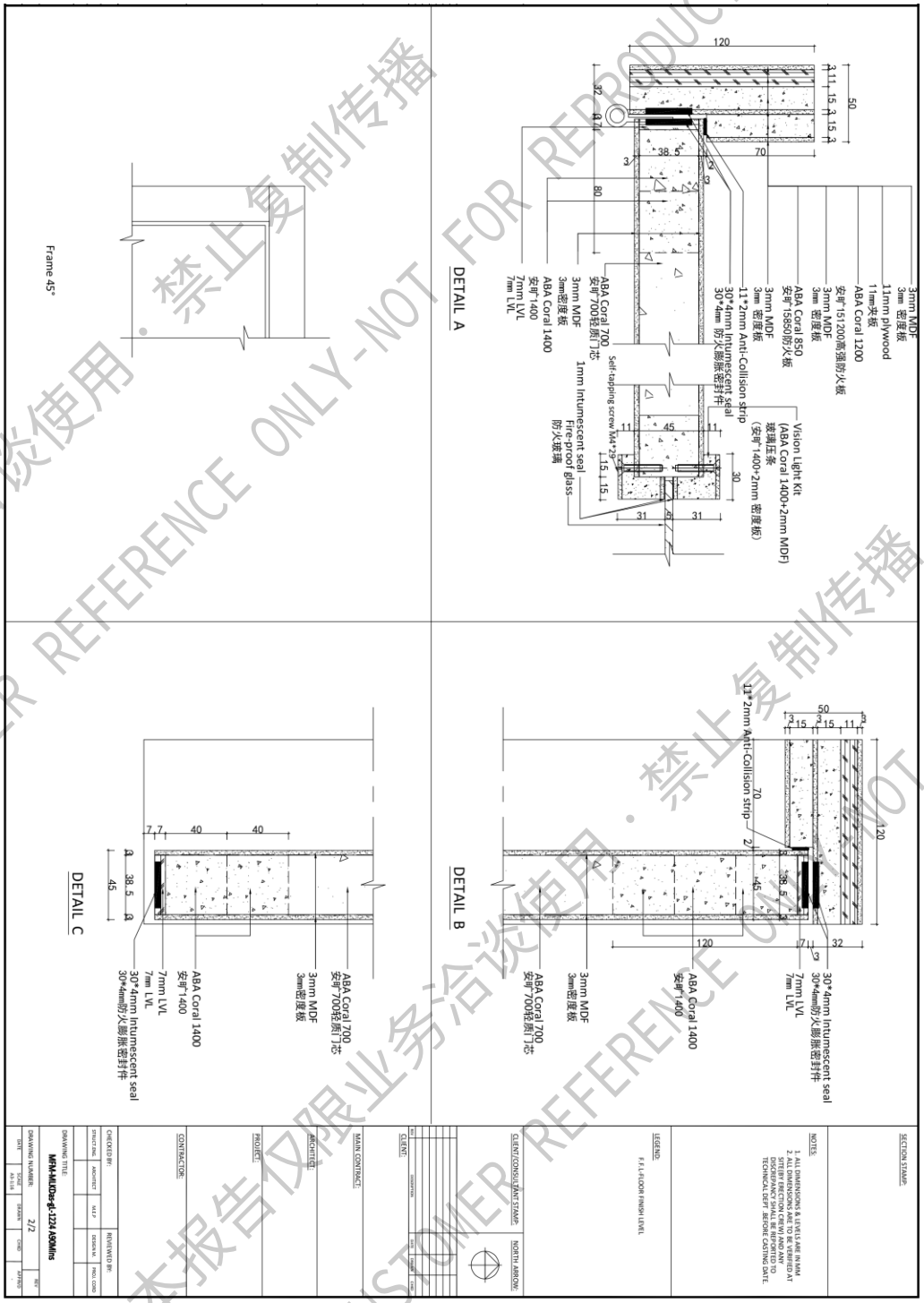
The drawing of Single-leaf wooden glazed fire door and frame, model MFM-MLKDas-gL-1224 A90Mins

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The drawing of Single-leaf wooden glazed fire door and frame, model MFM-MLKDas-gL-1224 A90Mins

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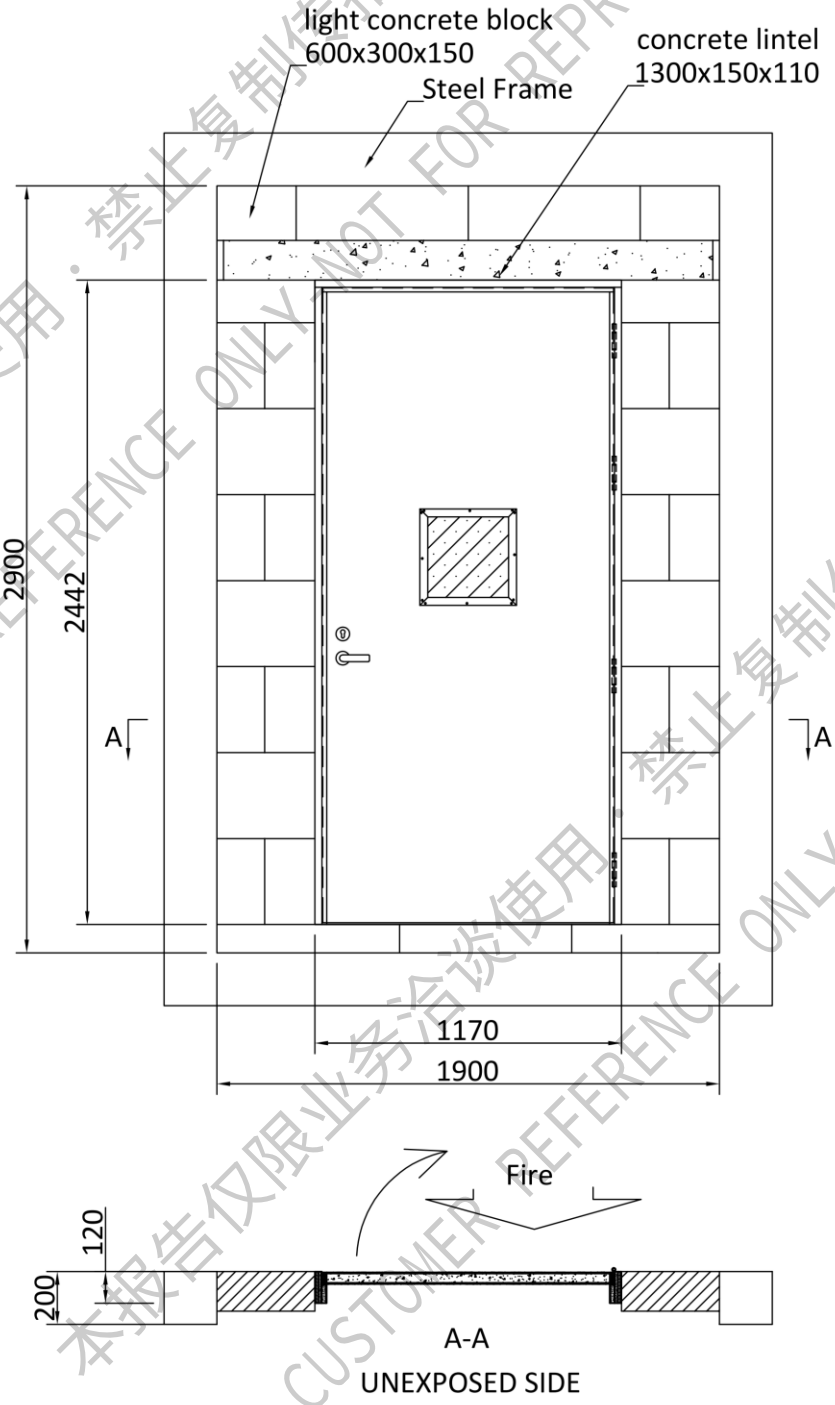
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SECTION 8

TEST WALL CONSTRUCTION



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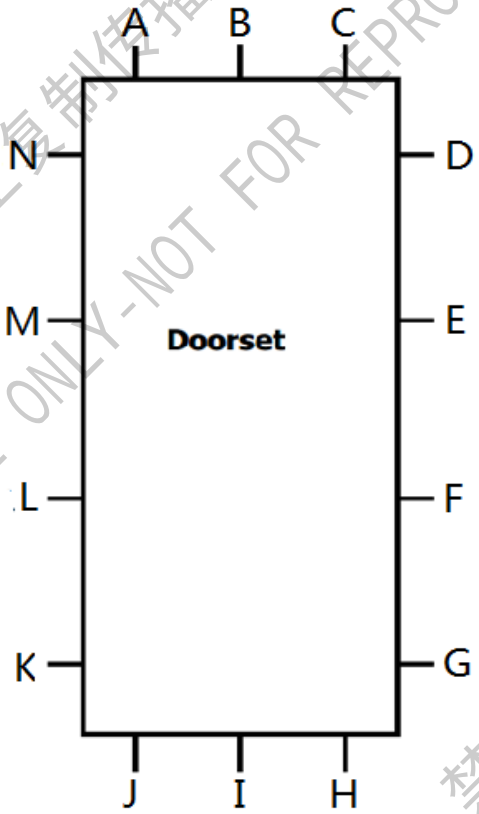
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SECTION 9

TEST MEASUREMENT DATA



EXPOSED SIDE

Clearance dimension in mm at each position						
A	B	C	D	E	F	G
1.8	2.0	1.5	2.2	1.2	1.4	2.6
H	I	J	K	L	M	N
8.5	8.5	8.5	2.0	3.0	2.3	2.8

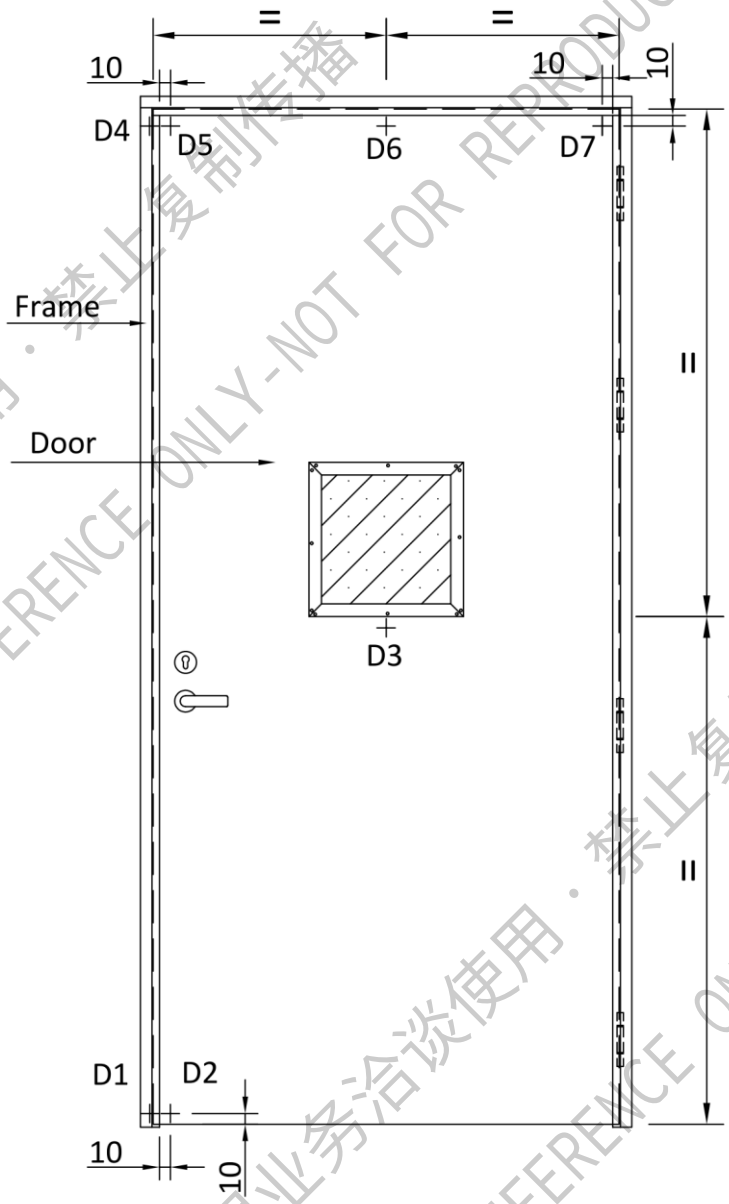
DO NOT SCALE

DOOR ASSEMBLY INITIAL CLEARANCES

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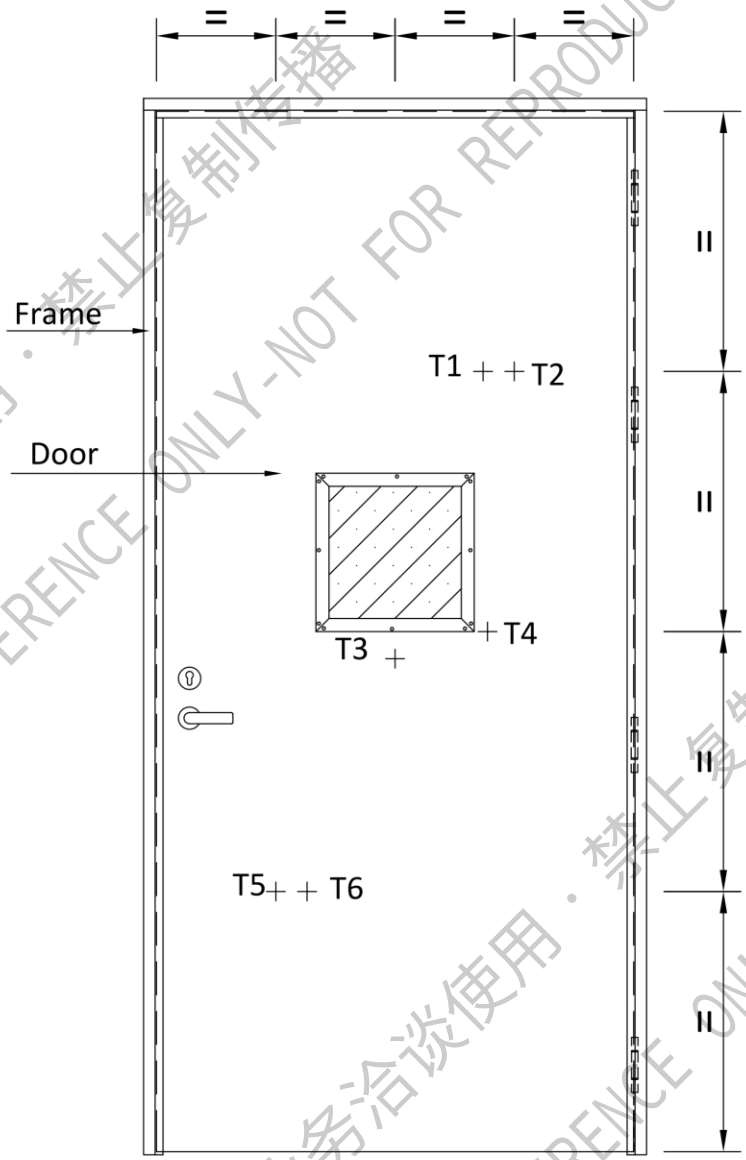
UNEXPOSED SIDE

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	37	Light smoke issued from the top edge of the door.
01	04	Light smoke issued from upper part of both vertical edges.
01	30	Smoke issued from four edges of the door.
03	00	Light smoke issued from top edge and both vertical edges of the door.
08	00	Light smoke issued from top edge and hinge edge of the door.
21	00	Discoloration was observed at top horizontal glazing frame. Intumescent seal around the glass on unexposed side begun to activate.
27	00	Discoloration was observed at door facing above the top glazing frame of the door.
40	00	No significant changes.
41	43	All thermocouples were removed.
59	00	Discoloration was observed at hinge position of the door.
60	15	Discoloration was observed at lock position of the door.
65	00	Darkening was observed at lock position of the door.
87	37	A cotton pad was applied at the lock cylinder position of the door and the cotton pad was not ignited.
90	00	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	
91	50	Hose stream test started.
92	36	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	27
3	331	387
6	571	603
9	671	654
12	726	709
15	760	740
18	781	778
21	800	795
24	816	815
27	830	823
30	843	841
33	854	852
36	865	864
39	875	870
42	884	884
45	892	887
48	900	903
51	907	906
54	914	913
57	920	920
60	927	928
63	933	935
66	939	942
69	944	950
72	950	958
75	955	963
78	960	962
81	965	966
84	969	969
87	974	976
90	978	980

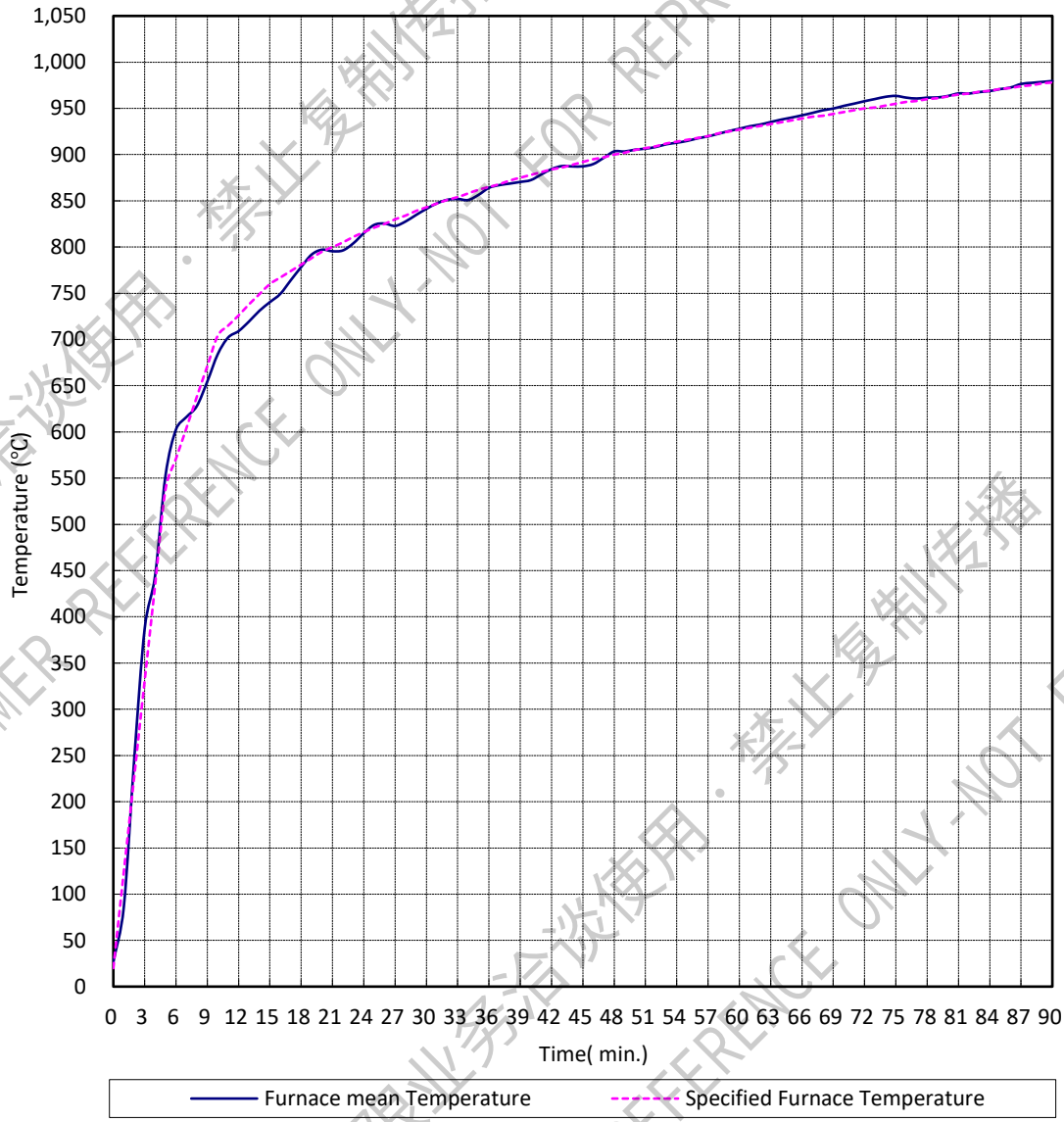
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Graph for mean furnace temperature and temperature-time curve specified in the standard



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Unexposed surface temperatures:

Time Mins	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	T5 (°C)	T6 (°C)
0	10	10	10	10	10	10
2	10	10	10	10	10	10
4	11	10	10	10	10	10
6	12	10	10	11	11	10
8	14	12	12	12	11	11
10	17	14	15	15	14	13
12	21	18	21	19	17	16
14	25	24	28	25	22	20
16	32	30	36	31	28	25
18	38	38	44	38	34	30
20	44	46	51	44	41	36
22	51	53	57	51	48	43
24	56	60	62	56	55	49
26	61	66	67	61	61	54
28	65	70	71	65	66	60
30	69	75	74	68	70	64
32	72	78	77	71	74	68
34	76	81	80	73	77	72
36	79	84	82	76	80	75
38	81	86	84	78	83	78
40	82	87	86	80	85	80
41	83	88	87	80	86	81

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 41 minutes, the thermocouples on unexposed side were removed and the temperature 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	-3	7	0	-4	1	-1
20	< 12.7	NA	0	-2	5	1	-3	0	1
30	< 12.7	NA	1	0	3	1	-2	1	2
40	< 12.7	NA	1	2	3	2	0	2	3
50	< 12.7	NA	1	3	6	2	2	3	4
60	< 12.7	NA	1	3	10	2	1	4	3
70	< 12.7	NA	1	1	17	3	2	7	1
80	< 12.7	NA	1	-2	23	3	0	9	1
85	< 12.7	NA	1	-1	24	3	1	12	1
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	< 67.5						
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.						

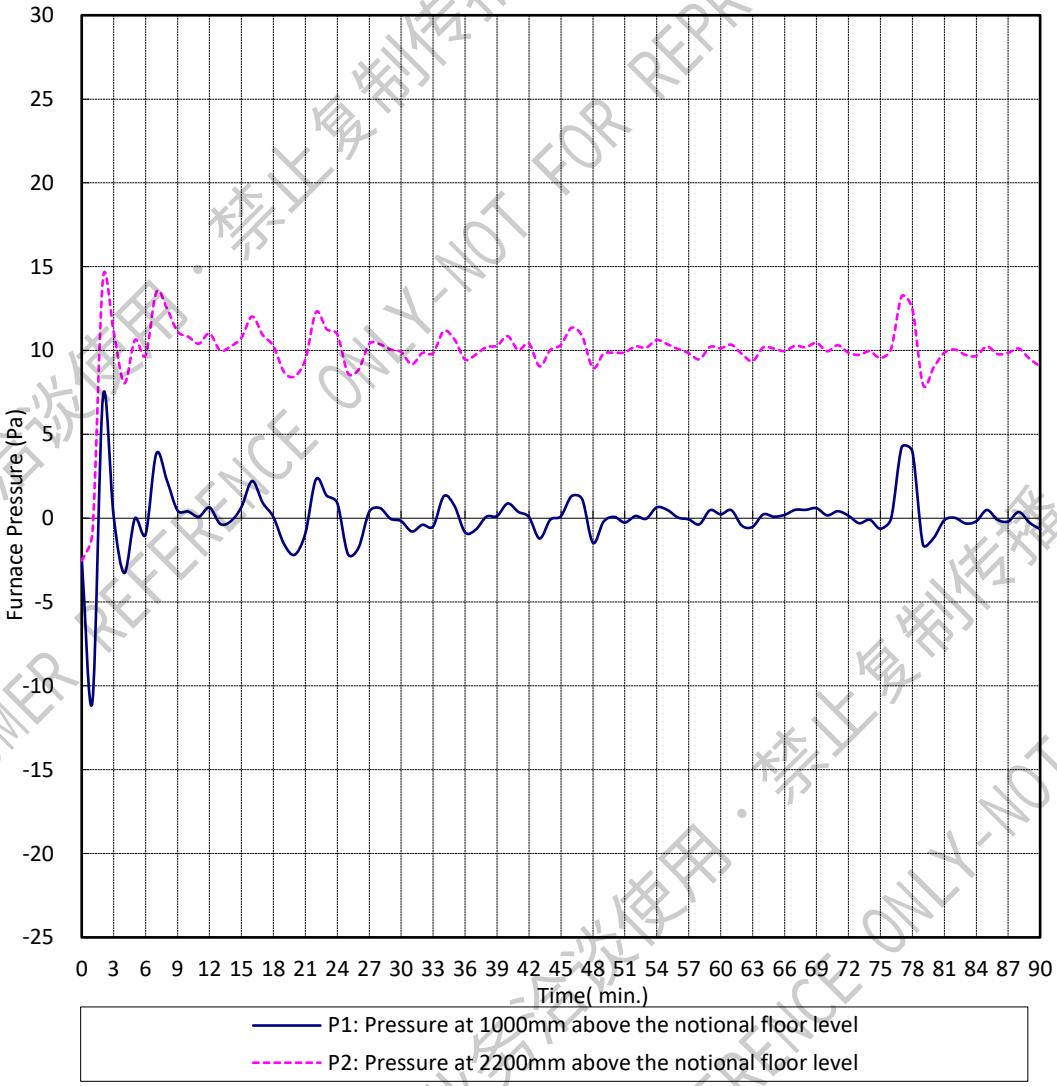
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Graph for Furnace Pressure



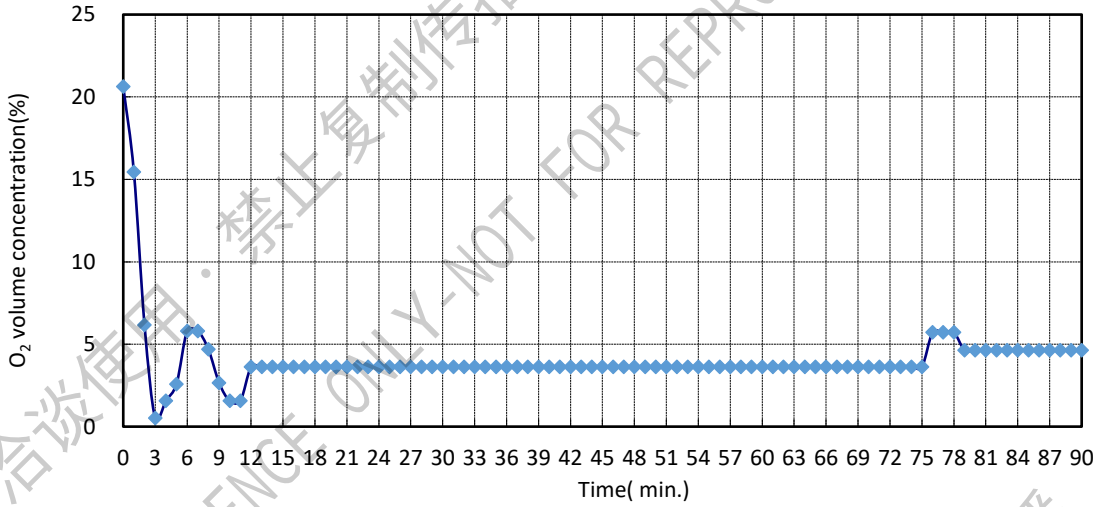
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Graph for oxygen concentration inside furnace



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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 70 Minutes

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Fig. 5 Unexposed Side after 86 Minutes



Fig. 6 Unexposed Side after 90 Minutes

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Fig. 7 Exposed Side after 90 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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0	2026-03-13	N/A	Original Report Issue

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