

EVALUATION TEST REPORT		
Test Report No. 094/16/2014-2016/02/1791		18.03.2016
1.0	NAME AND ADDRESS OF THE CUSTOMER	Agpal Enterprises Plot No 037, MIDC, Tangar, Dist. Palghar Pin- 410302
2.0	CUSTOMER LETTER REF.	Email Dated 07 Feb 2016.
3.0	DESCRIPTION OF TEST COMPONENTS	1 no. Insulated Fire Door (Refer Drawing No. A21CH02005/13-14 dated 08.03.2015)
4.0	OBJECTIVE	To carry out Fire resistance test on Insulated Fire Door for 180 min duration as per IS 476 part 20 & 22 for insulation and integrity as per customer request.
5.0	OBSERVATIONS	Details mentioned in Clauses 6
6.0	RESULTS	Details mentioned in Clauses 6
<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>ARAI issues Test Report / Customer Report / Development Test Report for the component parts assembled as per the approved product and the purchaser address is complete only if the applicant is being tested.</li> <li>ARAI issues Test Report / Customer Report / Development Test Report for the component parts which are tested under ARAI test facility as per the approved product and the purchaser address is complete only if the applicant is being tested. Other than that, the test facility for the component parts of Test Report / Customer Report / Development Test Report.</li> <li>Failure or product address is complete when tested as per the approved product or other parts which are not approved by the applicant. Details of test facility are given in Annexure A of Test Report / Customer Report / Development Test Report. Test facility address is complete only if the applicant is being tested. Test facility address is complete only if the applicant is being tested.</li> <li>When customer requests for a specific Certificate, the Test Report / Customer Report / Development Test Report shall be as per the approved product and the purchaser address is complete only if the applicant is being tested.</li> <li>ARAI is not responsible for testing and/or re-testing of the component parts as per the approved product and the purchaser address is complete only if the applicant is being tested. Details of test facility are given in Annexure A of Test Report / Customer Report / Development Test Report.</li> <li>ARAI is not responsible for the testing of any component part which is not approved by the applicant. Details of test facility are given in Annexure A of Test Report / Customer Report / Development Test Report.</li> <li>Result of any testing procedure as per the approved product and the purchaser address is complete only if the applicant is being tested. Details of test facility are given in Annexure A of Test Report / Customer Report / Development Test Report.</li> <li>ARAI has the right to carry out changes in testing procedure without the approval of the Test Report / Customer Report / Development Test Report. Details of test facility are given in Annexure A of Test Report / Customer Report / Development Test Report.</li> </ol> <p>The applicant shall be responsible for the production to support of any dispute, which is hereby arising out of this certificate. Hence,</p>		
	PREPARED BY:	REVIEWED BY:
		
<b>S. A. TAMBOLKAR</b> MANAGER Place of Issue: PUNE	<b>S. V. SHAMBUNDARA</b> GENERAL MANAGER	<b>A. V. BANTHAR</b> Sr. D.D., HQD-094 Date of Issue: 15.03.2016



**7.0 TEST DESCRIPTION :**

7.1 The fire resistance test was carried out in a steel test furnace of size 2.0 m (D) x 2.4 m (H) x 3.0 m (L) with a large door. The Door was mounted on a concrete frame and the concrete frame was mounted on to the trapez. The door was mounted such that it opened inside the furnace.

7.2 The door was provided with 2 Nos. Hinges and 2 Nos. Trunnion lock (Refer Manufacturer Drawing attached with the report). During the test these were in the engaged condition.

7.3 The inside steel W type thermocouples were placed at a distance of 100 mm from the exposed side of the Door, one being at the center and the remaining at the corners of each square section. Fig. 1 shows schematic of the thermocouples inside the furnace (Refer Fig 1 & Photograph 1)

7.4 The surface thermocouples of W type on the Un-exposed side of the Door, one being at the center of the door shutter, two at the center of each square section of the door shutter and three on the frame. Fig. 2 shows schematic of the thermocouples mounted on the furnace (Refer Fig 2 & Photograph 2)

7.5 Also make 05 Channel Temperature logger was used for recording the temperature variations of all the thermocouples. The furnace temperature was controlled according to the standard testing conditions specified in Clause 1.2 of IS 476 part 20.

7.6 The fire resistance test was conducted on 17<sup>th</sup> March 2016.

**7.7 Deviation from the test procedure:**

7.7.1 The Furnace is Steel Test Furnace (Refer Clause 6.1.3 of IS 476 part 20) 1987.

7.7.2 The depth of steel furnace is 2.4 m. (Refer Clause 6.1.3 of IS 476 part 20) 1987. 0

7.7.3 The pressure inside the furnace was not recorded during the test (Refer Clause 1.2 of IS 476 part 20) 1987.

7.7.4 The deviation was informed and accepted by Apol Enterprises.

**7.8 Test was witnessed by the following representatives:**

Sl. No.	Designation	Company / Institute
1	Mr. Manoj Kumar	Apol Enterprises
2	Mr. V. S. Raju	APCA, 1479 1 & 4

**8.0 TEST OBSERVATIONS:**

Fig. 3 compares the requirement of the standard vs. achieved fire temperature plot for furnace.



- 6.1 Fig 4 shows the time temperature plot of the thermocouples recorded on the door.
- 6.2 The maximum temperature of the door recorded was 472 °C at LOC 2 and the maximum mean temperature recorded was 328 °C at the end of 180 minutes.
- 6.3 The ceiling gas did not ignite for the entire test duration of 180 minutes Refer Paragraph 4.
- 6.4 8 mm gas gauge did not penetrate throughout the test duration of 180 minutes.
- 6.5 25 mm gas gauge did not penetrate throughout the test duration of 180 minutes.
- 6.6 There was no sustained burning observed during the entire test duration of 180 min.
- 6.7 The door did not collapse during the entire test duration of 180 min.
- 6.8 The condition of the door on the compressed side and the expansion side after the test are shown in Paragraph 4 & 5 respectively.
- 6.9 **REMARKS:**

Sl. No.	Criteria	Requirement	Observation
6.1		The mean of exposed face temperature that not exceed by more than 150 °C above or more than 100 °C above at 180 min.	The maximum average temperature recorded was 328 °C at the end of 180 minutes. (Refer Paragraph 6.2)
6.2	Height	The exposed face temperature of any heat thermocouple at LOC 1 that not exceed by more than 475 °C above or more than 325 °C above at 180 min.	The maximum temperature recorded was 472 °C at LOC 2 at the end of 180 minutes. (Refer Paragraph 6.2)
		8 mm gas gauge that not penetrate in the exposed face with the fire on the exposed side. The gas gauge should not be broken.	8 mm gauge did not penetrate / penetrated inside the furnace for the entire test duration of 180 minutes.
6.2	Height	25 mm gas gauge that not penetrate in the exposed face with the fire on the exposed side. The gas gauge should not be broken.	25 mm gauge did not penetrate / penetrated inside the furnace for the entire test duration of 180 minutes.
		Sustained burning that not occur during the 180 min with the subject fire and the means which fire is extinguished period is not more than 120 seconds. The gas gauge that not ignite the ceiling gas.	No burning was observed for the entire test duration of 180 minutes.  The ceiling gas did not ignite for the entire test duration of 180 minutes.



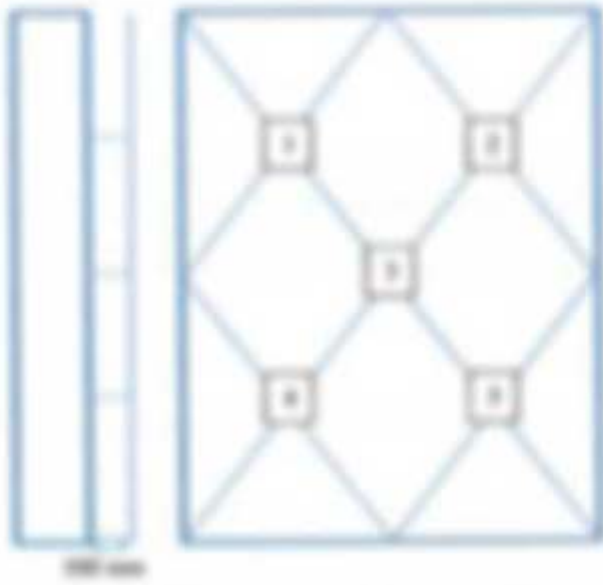


Fig. 1. Schematic of the Thermocouples mounted in the Furnace



Photograph 1. Photograph of the Thermocouples mounted in the Furnace

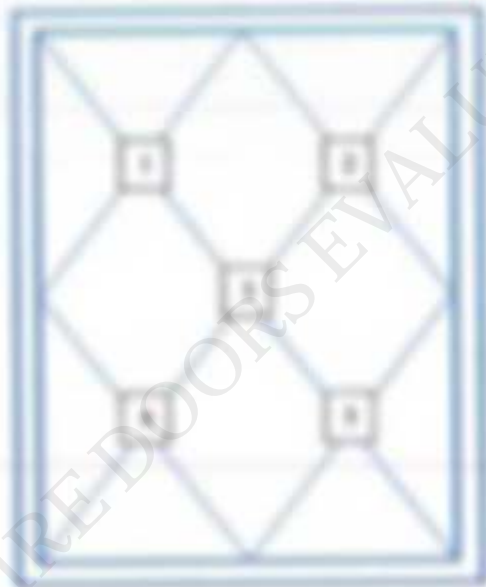


Fig. 2. Schematic of the Thermocouples mounted on the Door



Photograph 2. Photograph of the Thermocouples mounted on the Door



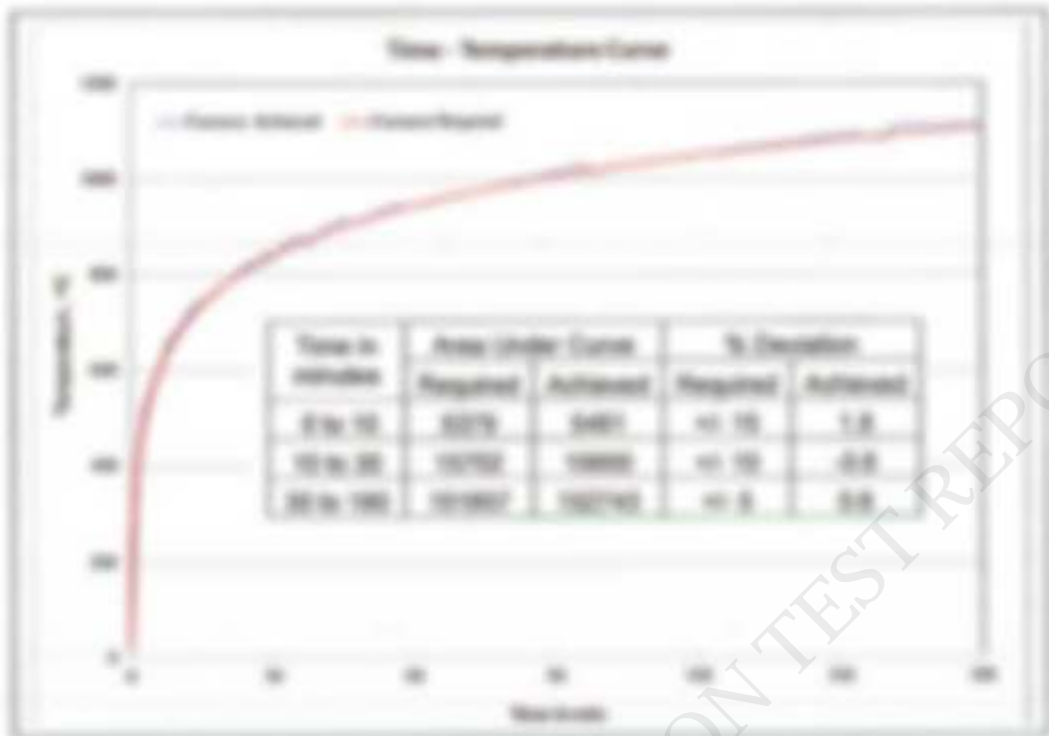


Fig 5. Time Temperature Curve of Furnace



Fig 6. Time Temperature Curve for an exposed Side of Steel



Photograph 3. Photo of the exterior post test



Photograph 4. Photograph of exposed side of door after the test



Photograph 5. Photograph of unexposed side of door after the test

Temperature Data at 9 min interval for entire duration of 180 minutes

Time (min)	Unexposed temperature, °C					Average	Std. Dev.
	Loc. 1	Loc. 2	Loc. 3	Loc. 4	Loc. 5		
0	26.0	26.0	26.0	26.0	26.0	26.0	0.0
9	26.0	26.0	26.0	26.0	26.0	26.0	0.0
18	26.0	26.0	26.0	26.0	26.0	26.0	0.0
27	26.0	26.0	26.0	26.0	26.0	26.0	0.0
36	26.0	26.0	26.0	26.0	26.0	26.0	0.0
45	26.0	26.0	26.0	26.0	26.0	26.0	0.0
54	26.0	26.0	26.0	26.0	26.0	26.0	0.0
63	26.0	26.0	26.0	26.0	26.0	26.0	0.0
72	26.0	26.0	26.0	26.0	26.0	26.0	0.0
81	26.0	26.0	26.0	26.0	26.0	26.0	0.0
90	26.0	26.0	26.0	26.0	26.0	26.0	0.0
99	26.0	26.0	26.0	26.0	26.0	26.0	0.0
108	26.0	26.0	26.0	26.0	26.0	26.0	0.0
117	26.0	26.0	26.0	26.0	26.0	26.0	0.0
126	26.0	26.0	26.0	26.0	26.0	26.0	0.0
135	26.0	26.0	26.0	26.0	26.0	26.0	0.0
144	26.0	26.0	26.0	26.0	26.0	26.0	0.0
153	26.0	26.0	26.0	26.0	26.0	26.0	0.0
162	26.0	26.0	26.0	26.0	26.0	26.0	0.0
171	26.0	26.0	26.0	26.0	26.0	26.0	0.0
180	26.0	26.0	26.0	26.0	26.0	26.0	0.0

ANJALI FIRE DOORS EVALUATION TEST REPORT



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Date: 18/02/2016

**TEST PLAN FOR ANJALI FIRE DOORS FOR 30 MIN**

**1. GENERAL INFORMATION**

TEST NO.	BML-1802014-20180217180
TEST DATE	18.02.2018
TEST TIME	10:30 AM
TEST PLACE	ANJALI FIRE DOORS
TESTER	ANJALI FIRE DOORS
TEST RESULT	PASSED

**2. TEST PROCEDURE**

The test was conducted in accordance with the following procedure:

- The fire door assembly was installed in the test chamber.
- The test chamber was filled with fire.
- The fire door assembly was exposed to fire for 30 minutes.
- The fire door assembly was inspected for damage.
- The fire door assembly was found to be intact and functional.

**3. TEST RESULTS**

TEST NO.	BML-1802014-20180217180
TEST DATE	18.02.2018
TEST TIME	10:30 AM
TEST PLACE	ANJALI FIRE DOORS
TESTER	ANJALI FIRE DOORS
TEST RESULT	PASSED

**4. TEST CONCLUSION**

The fire door assembly passed the test and is suitable for use in fire-rated areas.

