सीएसआईआर-केंद्रीय भवन अनुसंधान संस्थान, रुड़की (भारत)
CSIR- CENTRAL BUILDING RESEARCH INSTITUTE
ROORKEE – 247 667 (UTTARAKHAND) INDIA

डॉ. हरपाल सिंह / Dr. Harpal Singh
मुख्य वैज्ञानिक & ग्रुप लीडर / Chief Scientist & Coordinator
अग्नि सुरक्षा अभियांत्रिकी / Fire Safety Engineering

पत्राक: फायर/ ए एस ई एस /02
दिनांक: 11.09.2024

स्पीड पोस्ट

M/S ASES Security Pvt. Ltd.,
A-2/69, Site-V. Sahibabad Ind. Area,
Ghaziabad-UP-201 010

महोदय,

दिनांक 28-08-24 मे किये गये मूल्यांकन की सम्पूर्ण रिपोर्ट 1/1 (संदर्भ एफ. एस ई / सी एस आई आर-सी बी आर आई/0194) पत्र के साथ संलग्न है ।

धन्यवाद ।

भवदीय,

11/09/2024

(डॉ. हरपाल सिंह)

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

संलग्न : सम्पूर्ण टेस्ट रिपोर्ट दिनांक 28-08-24

दूरभाष/Phone: 01332-283243 (O), 09411373600 (M)
ई-मेल/E-mail: harpal@cbri.res.in; harpalcbri@yahoo.com
फैक्स / FAX: 01332-272272, 272543
वेबसाइट/website : http://www.cbri.res.in

FIRE RESISTANCE TEST REPORT SCHEDULED-1/1
REFERENCE NO. FSE-CSIR-CBRI/0194

1	**Name of the Testing Laboratory**	:	Fire Safety Engineering CSIR-Central Building Research Institute, Roorkee-247667, Uttarakhand, India
2	**Name of the Sponsorer**	:	M/S ASES Security Pvt. Ltd., A-2/69, Site-IV. Sahibabad Ind. Area, Ghaziabad-UP-201 010
3	**Sample Manufacturer**	:	M/S ASES Security Pvt. Ltd., A-2/69, Site-IV. Sahibabad Ind. Area, Ghaziabad-UP-201 010
4	**Manufacturer Consent for Fire Test of Sample**	:	Yes
5	**Sample Fire Tested for the Project**	:	Not Applicable
6	**Type of Test Sample**	:	Door
7	**Surface of Test Sample**	:	Uncoated
8	**Symmetry of Sample**	:	Symmetrical
9	**Details of Sample**	:	Double leaf glazed door with G.I. frame
10	**Dimension of Sample**	:	**Size** **Door Frame** **Clear Glazed View** Height : 2400 mm : 2130 mm Width : 2200 mm : 900 mm (02 Nos.) Thickness : 60 mm : 14 mm
11	**Sample in-fill materials**	:	Rockwool-96kg/m^3-inside the door frame
12	**Sample Vision Panel**	:	Not applicable

11/09/2024
Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

13	**Sample Hardware**	:	**Active Leaf:** Door Closer on exposed face (Make- Dorma Kaba) - 01 No., S.S. Ball Bearing Hinges (Make- Dorma Kaba) - 04 Nos, Smoke seal at door frame periphery (Make-Falcon), Intumescent seal at door panel periphery (Make-Falcon), Both side operated three point (Top, Centre and Bottom shoot bolt) panic bar with bottom rod on exposed face and external trim on unexposed face (Make- Dorma), Astragal **Inactive Leaf:** Door Closer on exposed face (Make- Dorma Kaba) - 01 No., S.S. Ball Bearing Hinges (Make- Dorma Kaba) - 04 Nos, Smoke seal at door frame periphery (Make-Falcon), Intumescent seal at door panel periphery (Make-Falcon), exposed face operated two point (Top and Bottom shoot bolt) panic bar with bottom rod on exposed face (Make- Dorma), Astragal
14	**Sample Weight, Kg**	:	326 Kg(Excluding hardware)
15	**Description of Sample Construction**	:	As per Figure 1
16	**Sample Orientation**	:	Vertical
17	**Sample Installation During Fire Test**	:	Opening outwards furnace chamber **(latched condition)**- Self closed,
18	**Name of the Fire Test**	:	Fire resistance test
19	**Date of the Fire Test**	:	August 28, 2024
20	**Laboratory Ambient Temperature**	:	33^0C
21	**Lab Relative Humidity**	:	73%
22	**Intended Fire Test Duration**	:	120 minutes
23	**Fire Exposure & Fire Test Standard**	:	AS per IS: 16947-2018 **(Normal Procedure)**
24	**Furnace Temperature During Sample Fire Test**	:	Standard and furnace actual time-temperature profiles with respect to time are shown in Table-1.
25	**Furnace Pressure During Sample Fire Test**	:	Furnace pressure profiles are shown in Table-1.
26	**SampleTested Under Fire Test Category**	:	Partially Insulated

11/09/2024
Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

27	**Position of Thermocouples on the Unexposed Face of the Sample**	:	Position of thermocouples on the unexposed face of the sample are given in Table-2 and shown in figure 1.
28	**Temperature Profile on the Unexposed Face of the Sample**	:	Time-temperature profiles on the unexposed face of the sample are given in Table-3.
29	**Position of Radiometer from the unexposed face of the sample**	:	Not Applicable.
30	**Radiation profile from the unexposed face of the sample**	:	Not Applicable.
31	**Position of thermocouples at the Interface of Sample and Protection Applied**	:	Not Applicable.
32	**Temperature Profile at the Interface of Sample and Protection Applied**	:	Not Applicable.
33	**Sample tests prior to fire test**	:	Not Applicable
a)	**Impact Test**	:	Not Applicable
b)	**Water Absorption Test**	:	Not Applicable
c)	**Accelerated Ageing Test**	:	Not Applicable
b)	**Vibration Test**	:	Not Applicable
34	**Applicability of Fire Resistance Test Criteria As Per Fire Test Standard**		
a)	**Radiation (W)**	:	Not Applicable.
b)	**Thermal Insulation (I)**	:	Applicable up to 30 minutes.
c)	**Integrity (E)**	:	Applicable up to 120 minutes.
d)	**Stability (R)**	:	Applicable up to 120 minutes.
e)	**Hose Stream**	:	Not Applicable.
f)	**Under Load**	:	Not Applicable.

11/09/2024
Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

35	**Performance of Applicable Fire Test Criteria Under Fire Resistance Test**		
a)	**Radiation (W)**	:	Not Applicable.
b)	**Thermal Insulation (I)**	:	No failure at 30 minutes.
c)	**Integrity (E)**	:	No failure at 120 minutes.
d)	**Stability (R)**	:	No failure at 120 minutes.
e)	**Hose Stream**	:	Not Applicable.
f)	**Under Load**	:	Not Applicable.
36	**Under load/Without load**	:	Not Applicable.
37	**Fire Test Witnesses**	:	Mr. Neeraj Singh, Mr. Rajiv Kashyap
38	**Observations During Fire Resistance Test**	:	Maximum temperature measured on the unexposed face of sample at door frame was 232^{0}C**(TC-8 and normal procedure)** at initial 30 minutes from start of standard fire exposure. No sustained flaming or any gap, voids were observed on unexposed face of sample during 120 minutes of standard fire exposure.
39	**Observations After Fire Resistance Test**	:	Not Applicable.
40	**Results of Fire Resistance Test**	:	Sample withstands standard fire exposure for initial 30 minutes with respect to partial thermal insulation (I) and 120 minutes with respect to integrity (E) and stability (R) only.
41	**Fire Resistance Rating of the Tested Sample**	:	**Sample meets partially insulated (Normal Procedure) glazed door fire resistance rating criteria of 120 minutes with respect to partial thermal insulation (I), Integrity (E) and Stability (R) only.**
42	**Test Report Issue Date**	:	September 11, 2024

11/09/2024

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

43	**Test Report Issued To**	:	M/S ASES Security Pvt. Ltd., A-2/69, Site-IV. Sahibabad Ind. Area, Ghaziabad-UP-201 010
44	**Validity Period of Fire Test Report**	:	Five years period from the date of fire resistance test of the sample.

This is to certify that representative glazed fire door sample of M/S ASES Security Pvt. Ltd., Ghaziabad-UP-201 010 has been investigated for fire resistance by Fire Safety Engineering, CSIR-Central Building Research Institute, Roorkee, Uttarakhand, India in accordance with the standard and meets fire resistance rating criteria indicated on this fire resistance test report.

Report Prepared by

(Sushil Kumar)

Report Approved Authority

(Harpal Singh) 11/09/2021

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

Note : This original only is valid. Third parties using copies are doing so at their own risk.

YK

Table-1: Standard & furnace actual temperature and pressure profile with respect to time

T*	TS*	TA*	P1	P2	Observations taken during the test
0	20	35	-4.5	-6.6	Test Started.
5	576	569	5.4	10.5	Glazed panels covered with the bubbles like materials. No visibility through glazed panels.
10	678	676	4.9	10.1	Sample started to deflect towards the furnace.
20	781	782	3.5	8.8	No change on the unexposed face of the sample. No visibility through the glazed panel.
30	842	842	4.0	9.4	Maximum temperature on the unexposed face of the sample was recorded 232°C **(TC-8 and normal procedure)** at door frame. It implies success of partial thermal insulation.
40	885	884	4.0	9.4	No change on the unexposed face of the sample. No visibility through the glazed panel.
50	918	919	5.0	10.5	No change on the unexposed face of the sample. No visibility through the glazed panel.
60	945	946	4.3	10.0	No change on the unexposed face of the sample. No visibility through the glazed panel.
70	968	970	5.4	11.2	No change on the unexposed face of the sample. No visibility through the glazed panel.
80	988	988	5.2	11.2	No change on the unexposed face of the sample. No visibility through the glazed panel.
90	1006	1007	5.4	11.6	No change on the unexposed face of the sample. No visibility through the glazed panel.
100	1021	1025	5.2	11.6	No change on the unexposed face of the sample. No visibility through the glazed panel.
110	1036	1036	4.7	11.1	No change on the unexposed face of the sample. No visibility through the glazed panel.
120	1049	1052	5.5	11.9	No change on the unexposed face of the sample. No visibility through the glazed panel. **Test was stopped due to completion of the intended time duration.**

T- Time, Minutes

TS- Furnace Standard Temperature, °C

TA- Furnace Actual Temperature, °C

P1- Furnace Pressure (Pa) at 1000 mm height from the furnace floor level.

P2- Furnace Pressure (Pa) at 2000 mm height from the furnace floor level.

11/09/2021

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
For CBRI, Roorkee-247667

Table-2: Position of thermocouples on the unexposed face of the sample

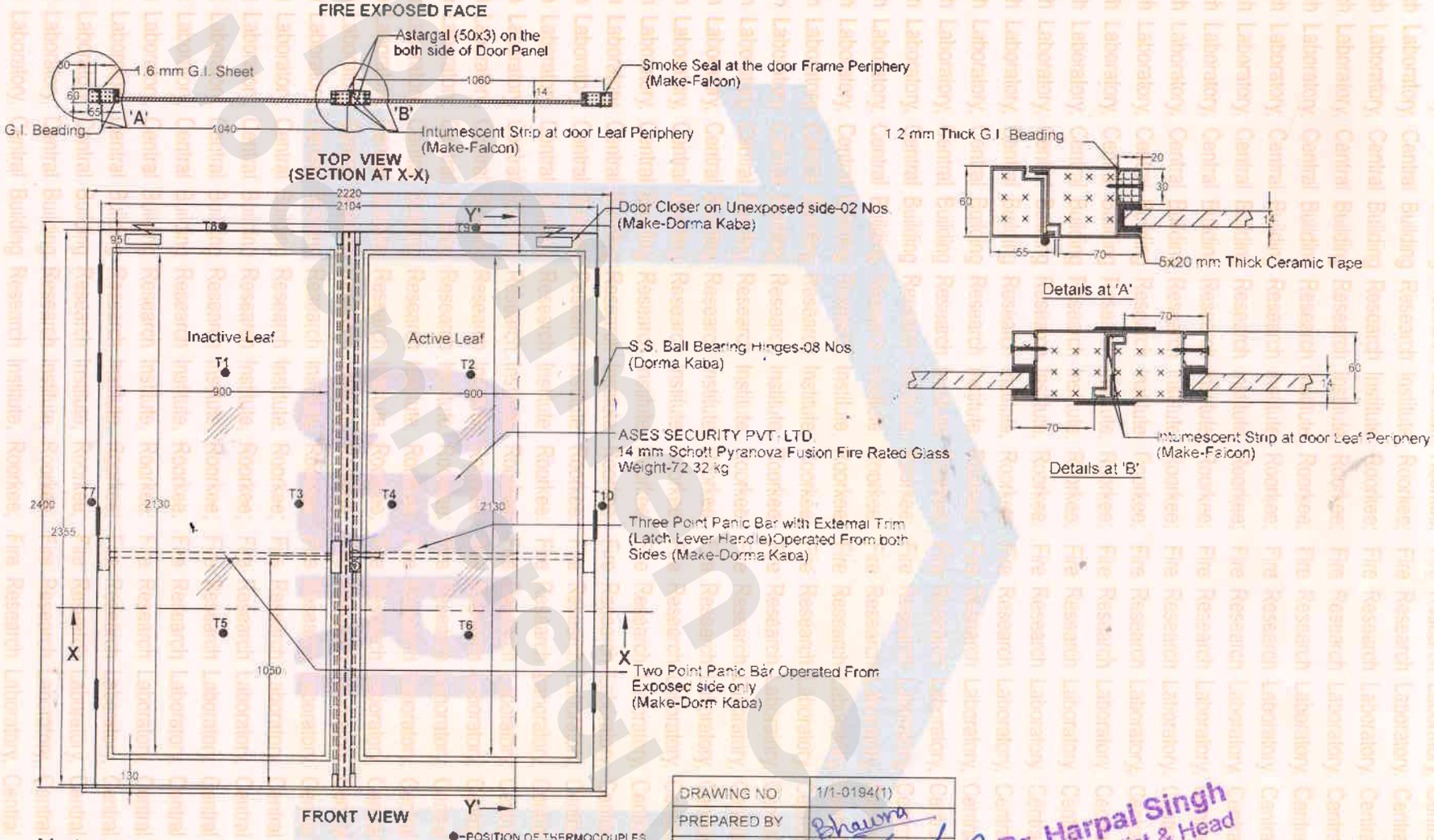
No. of Thermocouples	Position of Thermocouples
TC1	At the LHS top quadrant of the glazed panel.
TC2	At the RHS top quadrant of the glazed panel.
TC3	100 mm away the centre of the LHS glazed panel.
TC4	100 mm away the centre of the RHS glazed panel.
TC5	At the LHS bottom quadrant of the glazed panel.
TC6	At the RHS bottom quadrant of the glazed panel.
TC7	At the mid height of the LHS door frame member.
TC8	At the of the top horizontal door frame member.
TC9	At the of the top horizontal door frame member.
TC10	At the mid height of the RHS door frame member.

Table-3: Unexposed face Time –Temperature of the sample

T, Min	Unexposed Face Temperature, ^{0}C										
	TC1	TC2	TC3	TC4	TC5	TC-6	TC-avg. (TC1-TC6	TC7	TC8	TC9	TC10
00	34	34	34	34	34	34	34	31	34	31	32
05	55	57	56	63	64	65	60	50	42	39	39
10	82	83	84	90	91	88	86	93	75	75	63
20	92	96	95	97	104	99	87	129	155	128	105
30	101	100	97	102	193	119	119	226	232	211	152

11/09/2024

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667



DRAWING NO.	1/1-0194(1)
PREPARED BY	Bhawna
CHECKED BY	
APPROVED BY	

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CBRI, Roorkee-247667
11/9/2024

Note:

Colour of Door Frame-Unpainted (Raw)
Infill Material Frame-(Rockwool-96 kg/m3)
Frame Weight-182 kg (Without Hardware, Without Glass)
Glass-ASES SECURITY PVT. LTD. 14 mm Schott Pyranova Fusion Fire Rated Glass Weight-72.32 kg

Fig. 1: Constructional Details of Double Leaf Single Swing Glazed Fire Door with Fixed Side Glazed Panel specimen evaluated for Fire Resistance onAugust 28, 2024.

सीएसआईआर-केंद्रीय भवन अनुसंधान संस्थान, रुड़की (भारत)
CSIR- CENTRAL BUILDING RESEARCH INSTITUTE
ROORKEE – 247 667 (UTTARAKHAND) INDIA

डॉ. हरपाल सिंह / Dr. Harpal Singh
मुख्य वैज्ञानिक & ग्रुप लीडर / Chief Scientist & Coordinator
अग्नि सुरक्षा अभियांत्रिकी / Fire Safety Engineering

पंत्राक: फायर/ ए एस ई एस /01
दिनांक: 26.06.2024

स्पीड पोस्ट

M/S ASES Security Pvt. Ltd.,
A-2/69, Site-IV. Sahibabad Ind. Area,
Ghaziabad-UP-201 010

महोदय,

दिनांक 10-06-24 मे किये गये मूल्यांकन की सम्पूर्ण रिपोर्ट 1/1 (संदर्भ एफ. एस ई / सी एस आई आर-सी बी आर आई/1393) पत्र के साथ संलग्न है ।

धन्यवाद ।

भवदीय,

26/06/2024
Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

(डॉ. हरपाल सिंह)

संलग्न : सम्पूर्ण टेस्ट रिपोर्ट दिनांक 10-06-24

दूरभाष/Phone: 01332-283243 (O), 09411373600 (M)
ई-मेल/E-mail: harpal@cbri.res.in; harpalcbri@yahoo.com
फैक्स / FAX: 01332-272272, 272543
वेबसाइट/website : http://www.cbri.res.in

FIRE RESISTANCE TEST REPORT SCHEDULED-1/1
REFERENCE NO. FSE-CSIR-CBRI/1393

Disclaimer: *The contents of this report are the privileged and confidential material of CSIR-Central Building Research Institute, Roorkee. Information contained herein is solely intended for use by the client. Technical data provided in the report pertains to the representative sample of client submitted to the Institute and tested. CSIR-CBRI's name or logo cannot be used for commercial purposes. All procedural, legal, and/or operational matters will be the responsibility of the client using this report. Accepting/rejecting the results partly or fully rests with the concerned agencies.*

1	**Name of the Testing Laboratory**	:	Fire Safety Engineering CSIR-Central Building Research Institute, Roorkee-247667, Uttarakhand, India
2	**Name of the Sponsorer**	:	M/S ASES Security Pvt. Ltd., A-2/69, Site-IV. Sahibabad Ind. Area, Ghaziabad-UP-201 010
3	**Sample Manufacturer**	:	M/S ASES Security Pvt. Ltd., A-2/69, Site-IV. Sahibabad Ind. Area, Ghaziabad-UP-201 010
4	**Manufacturer Consent for Fire Test of Sample**	:	Yes
5	**Sample Fire Tested for the Project**	:	Not Applicable
6	**Type of Test Sample**	:	Door
7	**Surface of Test Sample**	:	Uncoated
8	**Symmetry of Sample**	:	Symmetrical
9	**Details of Sample**	:	Double leaf single swing metal fire door with vision panels
10	**Dimension of Sample**	:	Size: Door Frame — Height : 2400 mm, Width : 2355 mm, Thickness : 100 mm; Door Panel — Height : 2200 mm, Width : 2120 mm, Thickness : 48 mm
11	**Sample infill materials**	:	Rockwool of density 96 kg/m^3 in door panel and 3 mm thick ceramic gasket and cement mortar in door frame.
12	**Sample Vision Panel**	:	Two Nos.: 300 mm (H) x 200 mm (W) x 6 mm (Make- Schott Pyran S)

26/06/2024
Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

13	**Sample Hardware**	:	**Active Leaf:** Door Closer on unexposed face (Make- Dorma Kaba TS-73V) - 01 No., S.S. Ball Bearing Hinges (Make- Dorma Kaba) - 04 Nos, Smoke seal at door frame periphery (Make- Lorient), Intumescent seal at door panel periphery (Make-Wedge), Both side operated three point (Top, Centre and Bottom shoot bolt) panic bar with bottom rod on exposed face and external trim on unexposed face (Make- Dorma) **Inactive Leaf:** Door Closer on unexposed face (Make- Dorma Kaba TS-73V) - 01 No., S.S. Ball Bearing Hinges (Make- Dorma Kaba) - [illegible] Nos, Smoke seal at door frame periph[illegible] Make- Lorient), Intumescent seal at door [illegible]nel p[illegible]hery (Make-Wedge), Two point (Top [illegible]nd [illegible]ottom shoot bolt) panic bar with botto[illegible] ro[illegible] operated from exposed face only (Make [illegible]Dorm[illegible] ka[illegible]a)
14	**Sample Weight, Kg**	:	343 Kg
15	**Description of Sample Construction**	:	As per Figure 1 a[illegible] figu[illegible] 2
16	**Sample Orientation**	:	Verti[illegible]
17	**Sample Installation During Fire Test**	:	Opening outwards fu[illegible]ace chamber **(latched condition)**- Self clos[illegible]d
18	**Name of the Fire Test**	:	F[illegible]resistance te[illegible]t
19	**Date of the Fire Test**	:	June 10 20[illegible]4
20	**Laboratory Ambient Temperature**	:	35^{0}C
21	**Lab Relative Humidity**	:	1[illegible]%
22	**Intended Fire Test Duration**	:	120 minutes
23	**Fire Exposure & Fire Test Standard**	:	As per IS: 3614-2021
24	**Furnace Temperature During Sample Fire Test**	:	Standard and actual furnace temperature profiles with respect to time are shown in Table-1.
25	**Furnace Pressure During Sample Fire Test**	:	Furnace pressure profile with respect to time is shown in Table-1.

26/06/2024

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

26	**SampleTested Under Fire Test Category**	:	Partially insulated
27	**Position of Thermocouples on the Unexposed Face of the Sample**	:	Position of thermocouples on the unexposed face of the sample are given in Table-2 and shown in figure 1.
28	**Temperature Profile on the Unexposed Face of the Sample**	:	Time-temperature profiles on the unexposed face of the sample are given in Table-3.
29	**Position of Radiometer from the unexposed face of the sample**	:	Not Applicable
30	**Radiation profile from the unexposed face of the sample**	:	Not Applicable
31	**Position of thermocouples at the Interface of Sample and Protection Applied**	:	Not Applicable.
32	**Temperature Profile at the Interface of Sample and Protection Applied**	:	Not Applicable.
33	**Sample tests prior to fire test**	:	Not Applicable
a)	**Impact Test**	:	Not Applicable
b)	**Water Absorption Test**	:	Not Applicable
c)	**Accelerated Ageing Test**	:	Not Applicable
b)	**Vibration Test**	:	Not Applicable
34	**Applicability of Fire Resistance Test Criteria As Per Fire Test Standard**		
a)	**Radiation (W)**	:	Not Applicable
b)	**Thermal Insulation (I)**	:	Applicable up to initial 30 minutes.
c)	**Integrity (E)**	:	Applicable up to 120 minutes.
d)	**Stability (R)**	:	Applicable up to 120 minutes.
e)	**Hose Stream**	:	Not Applicable.
f)	**Under Load**	:	Not Applicable.

26/06/2

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

35	**Performance of Applicable Fire Resistance Test Criteria Under Fire Resistance Test**		
a)	**Radiation (W)**	:	Not Applicable
b)	**Thermal Insulation (I)**	:	No failure at initial 30 minutes.
c)	**Integrity (E)**	:	No failure at 120 minutes.
d)	**Stability (R)**	:	No failure at 120 minutes
e)	**Hose Stream**	:	Not Applicable.
f)	**Under Load**	:	Not Applicable.
36	**Under load/Without load**	:	Not Applicable.
37	**Fire Test Witnesses**	:	Mr. Neeraj Singh, Mr. Rajiv Kashyap
38	**Observations During Fire Resistance Test**	:	Maximum temperature measured on the unexposed face of sample was 162°C at initial 30 minutes from start of standard fire exposure.
		:	No sustained flaming or any gap, voids were observed on unexposed face of sample during 120 minutes of standard fire exposure.
		:	Vision panels remain clear during entire duration of standard fire exposure.
39	**Observations After Fire Resistance Test**	:	Not Applicable.
40	**Results of Fire Resistance Test**	:	Sample withstands standard fire exposure for initial 30 minutes with respect to partial thermal insulation(I) and 120 minutes with respect to integrity (E) and stability (R) only.
41	**Fire Resistance Rating of the Tested Sample**	:	**Sample meets partially insulated metal door fire resistance rating criteria of 120 minutes with respect to partial thermal insulation (I), Integrity (E) and Stability (R) only.**
42	**Test Report Issue Date**	:	June 26, 2024

26/06/2024
Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

43	**Test Report Issued To**	:	M/S ASES Security Pvt. Ltd., A-2/69, Site-IV. Sahibabad Ind. Area, Ghaziabad-UP-201 010
44	**Validity Period of Fire Test Report**	:	Five years period from the date of fire resistance test of the sample.

This is to certify that representative metal fire door sample of M/S ASES Security Pvt. Ltd., Ghaziabad-UP-201 010 has been investigated for fire resistance by Fire Safety Engineering, CSIR-Central Building Research Institute, Roorkee, Uttarakhand, India in accordance with the standard and meets fire resistance rating criteria indicated on this fire resistance test report.

Report Prepared by

Sushil 26/6

(Sushil Kumar)

Report Approved Authority

(Harpal Singh) 26/6/2024

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667

Table-1: Standard & actual furnace temperature and pressure profiles with respect to time

T*	TS*	TA*	P1	P2	Observations taken during the test
0	25	29	-5.7	-5.5	Test Started.
5	559	565	4.4	12.0	No change on unexposed face.
10	659	673	3.5	11.6	Smoke started to come out through the meeting edge of the door panels.
20	755	773	4.0	12.9	Smoke continues to come out on the unexposed face. Door panels started to deflect towards the furnace.
30	821	845	3.8	13.5	Maximum temperature on the unexposed face of the sample was recorded 163^{0}C. It implies success of partial thermal insulation.
40	865	886	2.9	13.3	Intumescent seal was swelled at the door panel periphery.
50	900	920	4.0	15.1	No gap visible between door panel and door frame.
60	925	949	4.6	16.7	No gap visible between door panel and door frame. Vision panel remains clear.
70	950	968	4.0	17.1	No gap visible between door panel and door frame.
80	970	991	2.0	16.2	No gap visible between door panel and door frame.
90	985	1008	4.5	19.8	No gap visible between door panel and door frame.
100	987	1023	4.8	21.0	No gap visible between door panel and door frame.
110	1018	1037	5.4	20.7	No gap visible between door panel and door frame.
120	1029	1052	5.6	20.1	No gap visible between door panel and door frame. Vision panels remain clear. **Test was stopped due to completion of the intended time duration.**

*

T- Time, Minutes

TS- Furnace Standard Temperature, ^{0}C

TA- Furnace Actual Temperature, ^{0}C

P1- Furnace Pressure (Pa) at 1000 mm height from the furnace floor level.

P2- Furnace Pressure (Pa) at 2000 mm height from the furnace floor level.

26/06/202

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering

Table-2: Position of thermocouples on the unexposed face of the sample

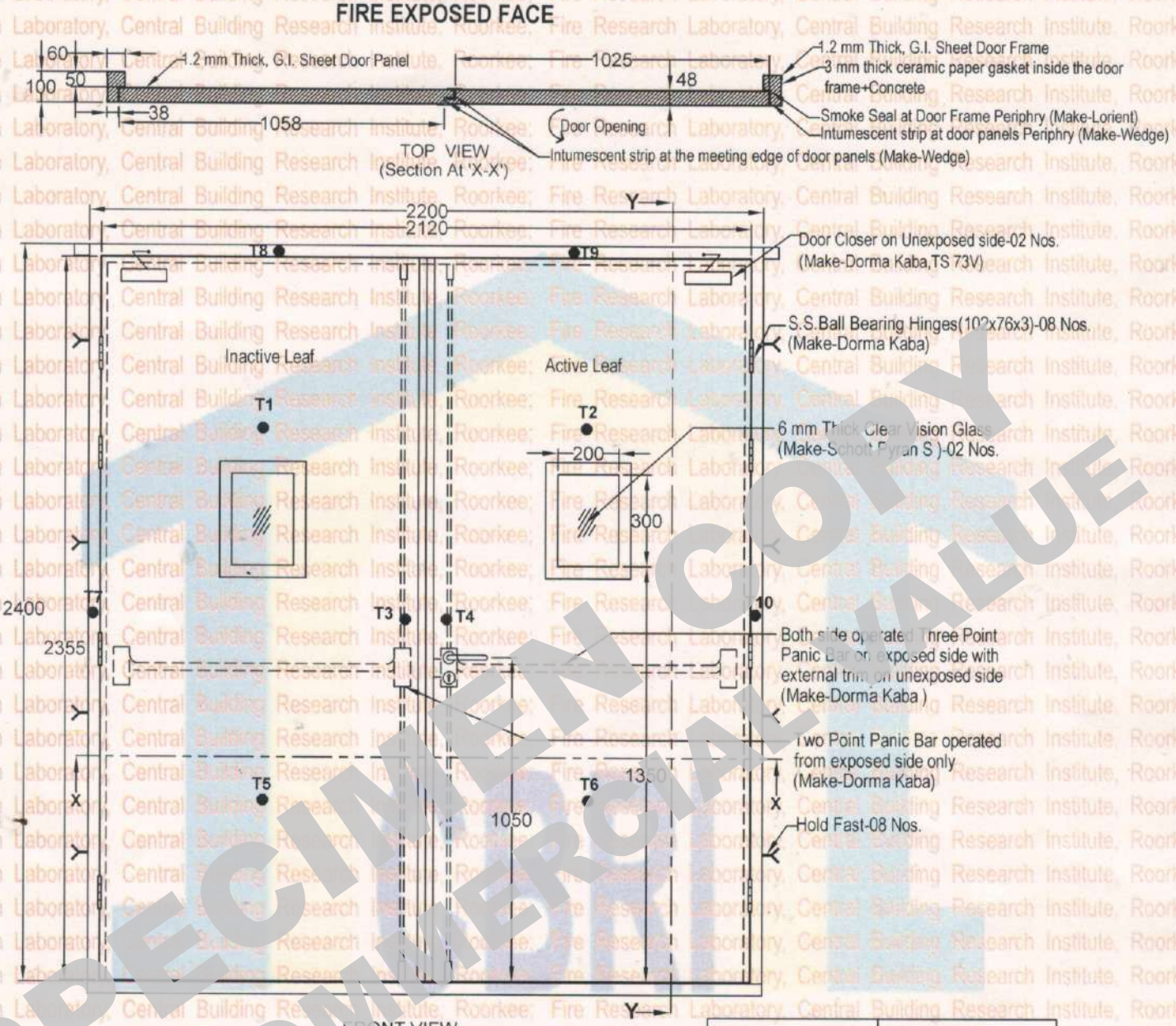
No. of Thermocouples	Position of Thermocouples
T1	At 150 mm above from the vision panel on the LHS top quadrant of the door panel.
T2	At 150 mm above from the vision panel on the RHS top quadrant of the door panel.
T3	50 mm away from the meeting edge at the centre of the LHS door panel.
T4	50 mm away from the meeting edge at the centre of the RHS door panel.
T5	At the LHS bottom quadrant of the door panel.
T6	At the RHS bottom quadrant of the door panel.
T7	At the mid height of the LHS door frame member.
T8	At the of the top horizontal door frame member.
T9	At the of the top horizontal door frame member.
T10	At the mid height of the RHS door frame member.

Table-3: Unexposed face Time – Temperature of the sample

T, Min	Unexposed Face Temperature, ^{0}C										
	T1	T2	T3	T4	T5	T6	T-avg. (T1-T6)	T7	T8	T9	T10
00	36	34	28	35	27	27	31	33	36	31	30
05	38	35	29	36	27	27	32	37	43	39	34
10	45	45	34	41	28	27	37	50	67	60	46
20	68	77	64	69	50	38	61	93	123	110	88
30	92	102	94	98	82	57	88	119	162	136	118

26/06/20

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee



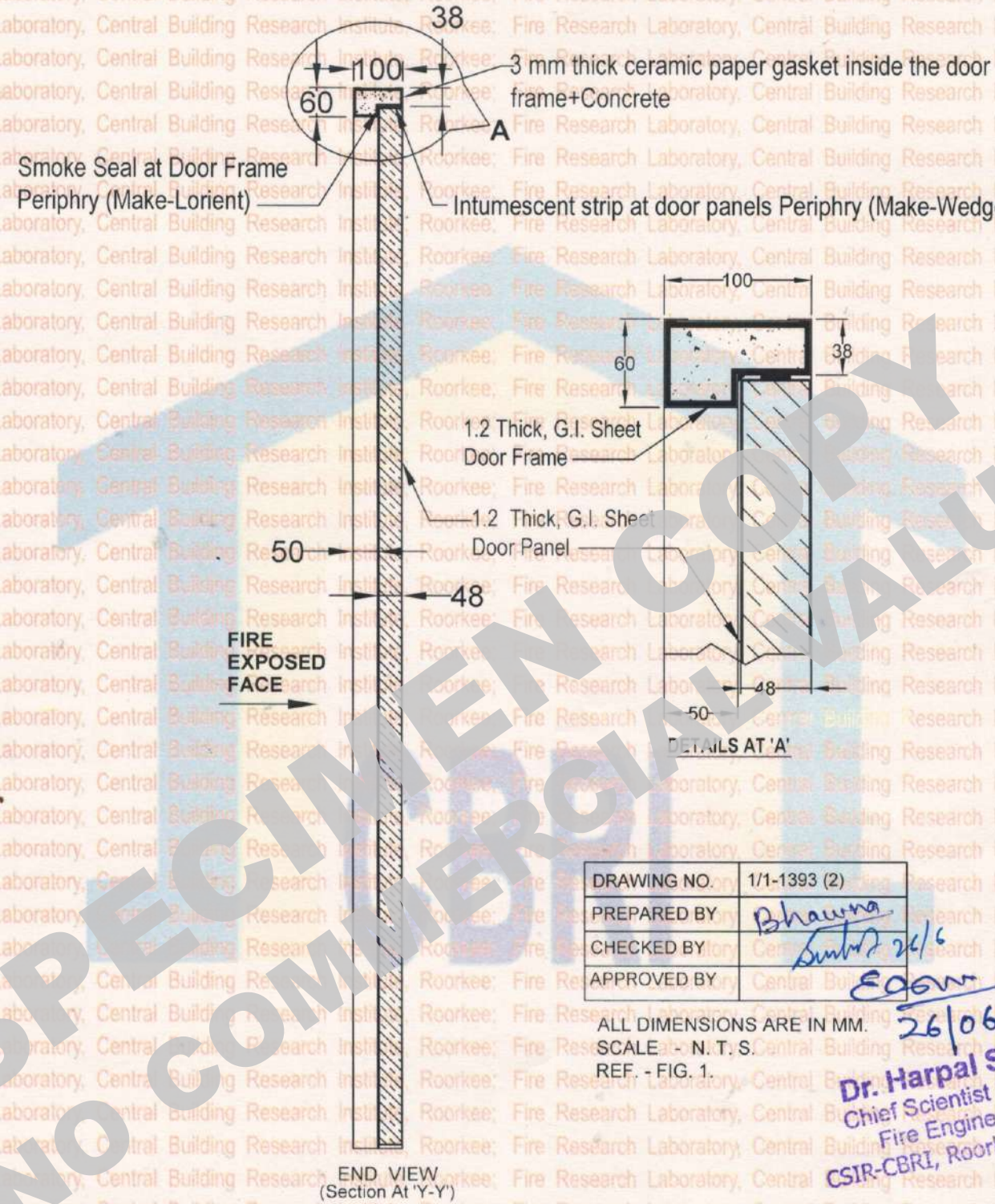
Note:
Colour of Door Frame and Door Shutter:- Uncoated
Infill Material-(3 mm thick Ceramic Gasket Paper+Cocrete) Frame, Rockwool-96kg/m3(Panel)
Weight of Door-343 kg (Including Hardware)

●–POSITION OF THERMOCOUPLES
ALL DIMENSIONS ARE IN MM
SCALE - N.T.S.

DRAWING NO.	1/1-1393(1)
PREPARED BY	Bhawna
CHECKED BY	
APPROVED BY	

Fig. 1: Construction details of Double Leaf Single Swing G.I. Composite Fire Door with Vision Panels (Partially Insulated specimen) evaluated for Fire Resistance on June 10, 2024.

26/6/2024
Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee-247667



DRAWING NO.	1/1-1393 (2)
PREPARED BY	Bhawna
CHECKED BY	24/6
APPROVED BY	26/06/2024

ALL DIMENSIONS ARE IN MM.
SCALE - N. T. S.
REF. - FIG. 1.

Dr. Harpal Singh
Chief Scientist & Head
Fire Engineering
CSIR-CBRI, Roorkee

Fig. 2: Sectional details of Double Leaf Single Swing G. I. Composite Fire Door with Vision Panel (Partially Insulated specimen) evaluated for Fire Resistance on June 10, 2024.