

Title:

Air Leakage Tests in
Accordance with BS EN
1634-3: 2004, on a Two-
Panel, Side-Opening Lift
Landing Doorset Assembly

WF Report No:

172104 A

Prepared for:

Tecnolama SA

Ctra. De Constanti
KM 3
43206 Reus
Spain

Date:

16th September 2008



Summary

Objective To evaluate the performance of a specimen of a lift landing doorset when fitted with a smoke seal, subjected to tests utilising the test method detailed within BS EN 1634-3:2001 Clause 3.1.2.

Test Sponsor **Tecnolama SA**, Ctra. De Constanti, KM 3, 43206 Reus, Spain.


Summary of Tested Specimen The doorset assembly was of overall nominal dimensions 2155 mm high by 1750 mm wide and included two door panels. The doorset was fixed within a plywood faced, timber studded partition, to form the test construction. Full details of the exact manner of installation are included in the Schedule of Components.


Test Results:	Pressure	Leakage Rate (m³/m/h) (Positive)	Leakage Rate (m³/m/h) (Negative)	Leakage Rate (m³/h) (Positive)	Leakage Rate (m³ /h) (Negative)
	10 Pa	0.46 m ³ /m/h	0.48 m ³ /m/h	3.45 m ³ /h	3.63 m ³ /h
	25 Pa	0.77 m ³ /m/h	0.79 m ³ /m/h	5.80 m ³ /h	5.94 m ³ /h
	50 Pa	1.18 m ³ /m/h	1.15 m ³ /m/h	8.84 m ³ /h	8.62 m ³ /h

Date of Test 24th April 2008.

This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of [Bodycote warringtonfire](#).

Signatories


Responsible Officer N. Howard* Testing Officer


Approved D. Hankinson* Senior Certification Engineer


Head of Department S. Hankey* Operations Manager

* For and on behalf of Bodycote **warringtonfire**

Report Issued
Date : 16 th September 2008

This copy has been produced from a .pdf format electronic file that has been provided by Bodycote **warringtonfire** to the sponsor of the report and must only be reproduced in full. Extracts or abridgements of reports must not be published without permission of Bodycote **warringtonfire**. The original signed paper version of this report is the sole authentic version. Only original paper versions of this report bear authentic signatures of the responsible Bodycote **warringtonfire** staff.

CONTENTS

PAGE NO.

SUMMARY.....	2
SIGNATORIES.....	3
TEST PROCEDURE.....	5
TEST SPECIMEN	6
SCHEDULE OF COMPONENTS	9
DOORSET CLEARANCE GAPS	10
INFORMATION	11
PERFORMANCE CRITERION	13
ONGOING IMPLICATIONS.....	13
CONCLUSIONS	14



Test Procedure

Introduction

The doorset was required to provide a smoke leakage separating function and were therefore tested in accordance with BS EN 1634-3: 2004 'Fire resistance tests for doors and shutter assemblies - Part 3: Smoke control doors and shutters'. This test report should be read in conjunction with that Standard and with BS EN 1363-1: 1999, 'Fire resistance tests - Part 1: General requirements' and EN ISO 13943 Fire Safety - Vocabulary.

Certain aspects of some test specifications are open to different interpretations. The Fire Test Study Group has identified a number of such areas and has agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Group. Where such Resolutions are applicable to this test they have been followed.

Instruction to test

The test was conducted on the 24th April 2008 on behalf of **Tecnolama SA**.

Mr. A. Fernandez and Mr. J. Beltran, representatives of the test sponsor witnessed the test.

Test Specimen Construction

A comprehensive description of the test construction is given in the Schedule of Components. The description is based on a detailed survey of the specimen and information supplied by the sponsor of the test.

Installation

The doorset assembly was supplied by the test sponsor on the 23rd April 2008. Bodycote **warringtonfire** was not involved in any selection or sampling procedures of the specimens or any of the components.

The partition was supplied by Bodycote **warringtonfire**.

The doorset was faced fixed to the partition on the 23rd April 2008 by a representative of Bodycote **warringtonfire**.

Preparation

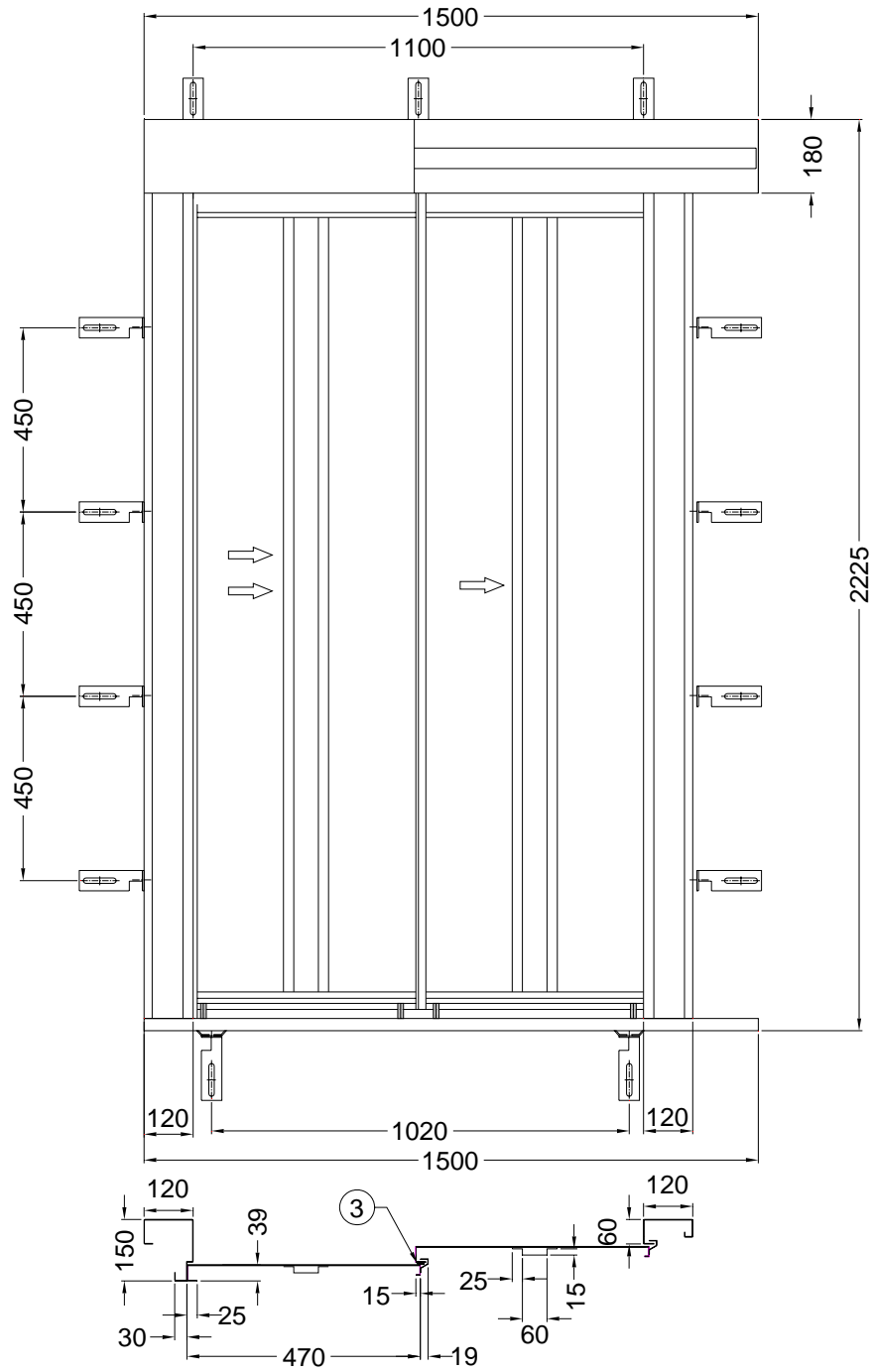
The test was conducted in accordance with the procedures specified in BS EN 1634-3: 2004 Clause 3.1.2.

Prior to the evaluation the gaps between the leaf and the frame were measured and the values recorded. The door gaps were then sealed and the differential pressures were applied. The leakage rates measured were recorded as the base rig leakage. The door gaps were then unsealed and the leakage measured at the same differential pressures. The above procedure was then repeated with the airflow in the opposite direction.

The doorset was subjected to two leakage tests, the first test was performed with the threshold fully sealed, and a second test was then performed with the threshold sealed.

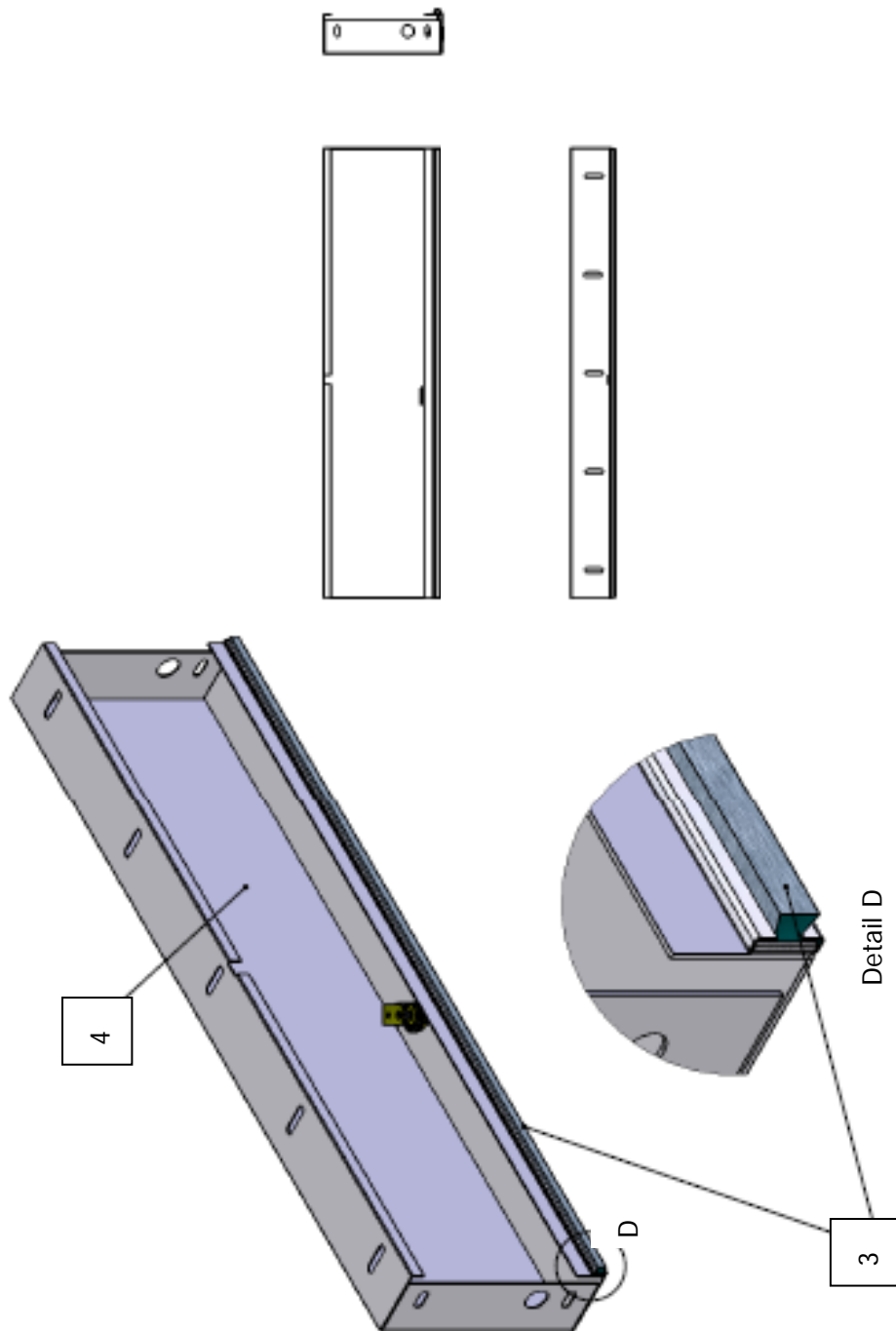
Test Specimen

Figure 1- Elevation of outer face of doorset showing overall dimensions



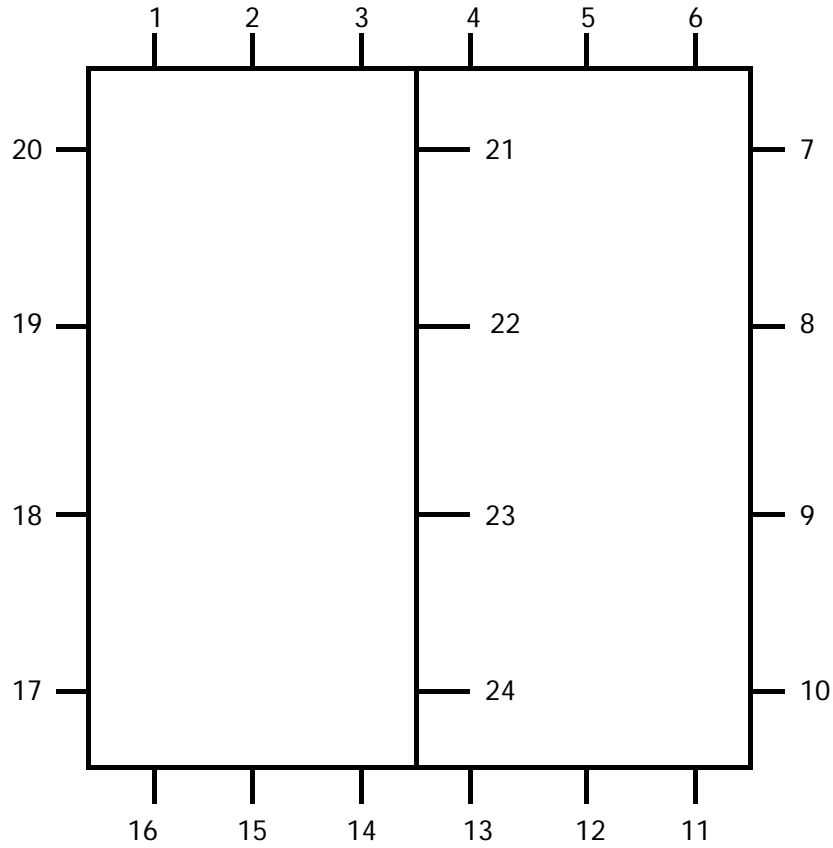
Do not scale. All dimensions are in mm

Figure 3 – Assembly of header showing seal positions



Do not scale. All dimensions are in mm

Doorset Clearance Gaps



Viewed from unexposed face

Gap Dimension in mm at Position											
1	2	3	4	5	6	7	8	9	10	11*	12*
3.8	4.0	3.5	4.7	4.9	4.5	3.0	3.2	4.1	3.2	5.4	5.9
13*	14*	15*	16*	17	18	19	20	21	22	23	24
8.0	9.3	8.9	6.6	2.9	3.2	4.4	4.2	5.1	5.5	5.9	5.8
Mean		4.21		Maximum		5.9		Minimum		2.9	

* Dimension not included in calculations

Information

Leakage Calculation

The readings were corrected for each leakage measurement to a reference temperature of 20°C and standard atmospheric pressure (1 atmosphere equals 101325 Pa) utilising the following formula:

$$Q = Q_a \times \frac{(P_a + p)}{101325} \times \frac{293.15}{(T_a + 273.15)} \times (1 - 0.3795) \times \frac{M_w}{100} \times \frac{E_s}{P_a + p}$$

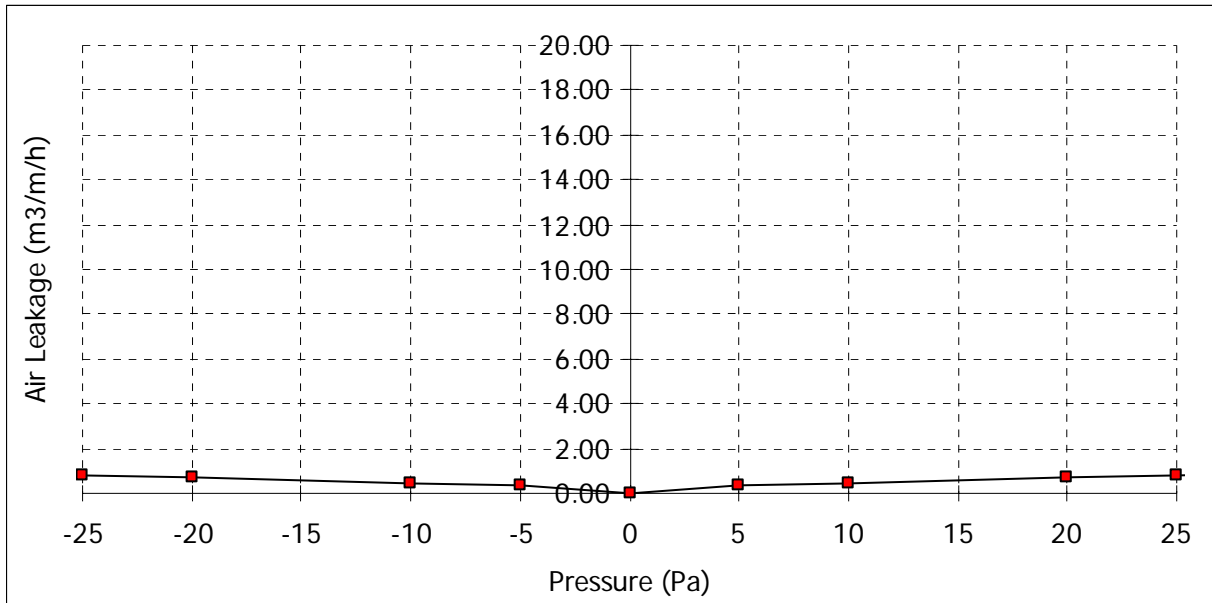
- Where Q = Adjusted rate of air flow (m³/h)
- Q_a = Measured rate of airflow (m³/h)
- p = Pressure increase (Pa)
- P_a = Barometric Pressure (Pa)
- T_a = Air temperature (°C)
- M_w = Relative Humidity (%)
- E_s = Saturated water vapour pressure (Pa)

Leakage Data

Net Leakages of Seal Configuration in Test 1 at Specified Pressure Differentials

Pa	m3/m/h
-100	*
-70	*
-50	1.15
-30	0.86
-25	0.79
-20	0.69
-10	0.48
-5	0.40
0	0.00
5	0.38
10	0.46
20	0.69
25	0.77
30	0.85
50	1.18
70	*
100	*

* Reading off scale



Performance Criterion

Guidance with respect to the performance of fire doors required to resist the passage of smoke at ambient temperature conditions is given in Amendment 6160, October 1993 to BS 5588: Parts 2, 3, 6 and 10: 1983.

'A fire door required to resist the passage of smoke at ambient temperature conditions should, when tested in accordance with BS EN 1634-3:2004 with the threshold taped and subjected to a pressure of 25 Pa, have a leakage not exceeding 3 m³/m/h. The threshold gap should be sealed by a seal either with a leakage rate not exceeding 3 m³/m/h at 25 Pa or just contacting the floor.'

In the absence of other criteria, this guidance has been adopted in reporting the results of this test which are detailed overleaf. The leakage rates at other pressures are also included in this report.

Ongoing Implications

Limitations

The results relate only to the behaviour of the specimen under the particular conditions of test.

The test results relate only to the specimen tested. Application of the results to specimens of different dimensions or incorporating different components should be the subject of a design appraisal.

The dimensions of the gaps between the leaf and frame were measured and are detailed earlier in this report. The results of these tests are, therefore, limited to doorsets where the gap dimensions are similar to, but do not exceed those detailed in this report.

Review

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

Conclusions

Evaluation against objective

A specimen of a lift landing doorset when fitted with smoke seals has been subjected to tests in accordance with BS EN 1634-3:2004.

The performance of the specimen was assessed against the criteria detailed within the Standard and the following results obtained:

Test Results:

Pressure	Leakage Rate (m ³ /m/h) (Positive)	Leakage Rate (m ³ /m/h) (Negative)	Leakage Rate (m ³ /h) (Positive)	Leakage Rate (m ³ /h) (Negative)
10 Pa	0.46 m ³ /m/h	0.48 m ³ /m/h	3.45 m ³ /h	3.63 m ³ /h
25 Pa	0.77 m ³ /m/h	0.79 m ³ /m/h	5.80 m ³ /h	5.94 m ³ /h
50 Pa	1.18 m ³ /m/h	1.15 m ³ /m/h	8.84 m ³ /h	8.62 m ³ /h



Bodycote warringtonfire • Head Office • Holmesfield Road • Warrington • Cheshire • WA1 2DS • United Kingdom
Tel: +44 (0) 1925 655 116 • Fax: +44 (0) 1925 655 419 • Email: Info@warringtonfire.net • Website: www.warringtonfire.net

