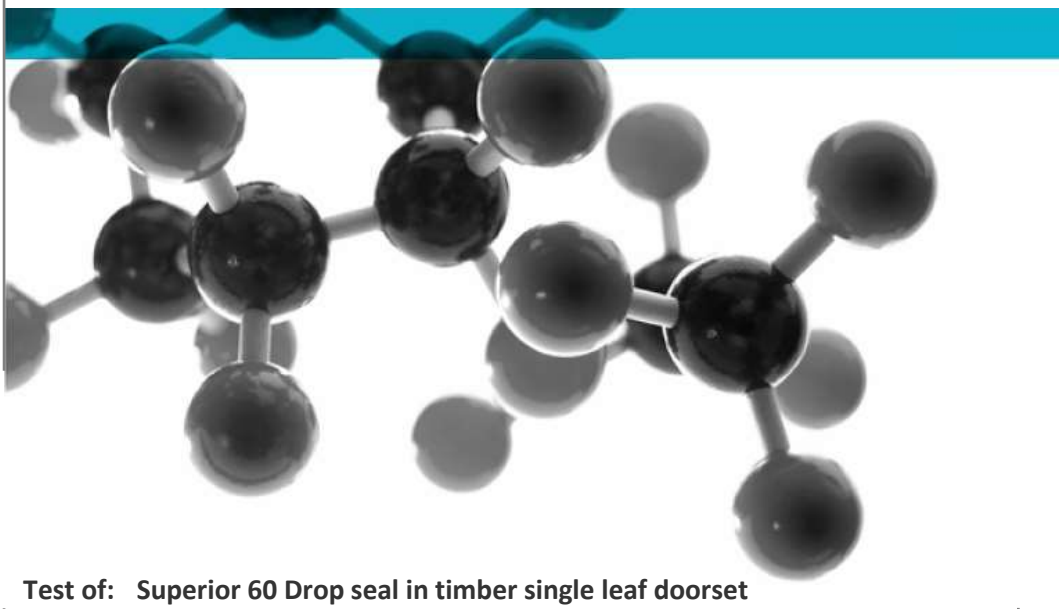
EN 1634-3: 2004

Smoke control test for door and shutter assemblies



Test of: Superior 60 Drop seal in timber single leaf doorset

Sponsor: C.C.E. Costruzioni Ermetiche srl

Via Dell'artigianta 16
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Italy

Document Reference: WYC 501934/01Rev1

Issue Date: 16/11/2021

Copy: 1

Issue No.: 2

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This document confirms that performance testing was conducted on 28th June 2021. Testing was conducted to BS EN 1634-3: 2004 Incorporating corrigendum no. 1 Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 3: Smoke control test for door and shutter assemblies.

The following results were achieved:

Product tested	**Threshold seal: Superior 60 Drop seal**
Test Detail	**Pre 100,000 cycles (TS 21)**

Summary of testing procedure			**Result**
BS EN 1634-3: 2004	**Pressure (Pa)**	**Leakage (m³/h)**	**Leakage (m³/m/h)**
Results under positive chamber (door leaf opening away from chamber)	**50**	**2.63**	**2.84**
	25	**0.94**	**1.02**
	10	**0.38**	**0.41**
Results under negative chamber (door leaf opening away from chamber)	**50**	**4.79**	**5.17**
	25	**1.86**	**2.01**
	10	**0.85**	**0.92**

Testing was carried out at ambient temperature only: temperature of the test chamber was measured using a calibrated digital thermometer before and after testing.

The perimeter length of gap was 0.926m

Rev1 – Sampling report removed as requested by client

Issued by:
Jamie Nelson
Technical Officer

Authorised by:
Lee Grant-Riach
Lead Technical Officer
Issue date: 18th November 2021

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Results of Test: WYC501934/01/Rev1/B

C.C.E. Costruzioni Ermetiche srl

Via Dell'artigianta 16
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Italy

This document confirms that performance testing was conducted on 8th July 2021. Testing was conducted to BS EN 1634-3: 2004 Incorporating corrigendum no. 1 Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 3: Smoke control test for door and shutter assemblies.

The following results were achieved:

Product tested	**Threshold seal: Superior 60 Drop seal**
Test Detail	**Pre 100,000 cycles (TS 21)**

Summary of testing procedure			**Result**
BS EN 1634-3: 2004	**Pressure (Pa)**	**Leakage (m³/h)**	**Leakage (m³/m/h)**
Results under positive chamber (door leaf opening away from chamber)	**50**	**3.45**	**3.73**
	25	**1.82**	**1.97**
	10	**0.89**	**0.96**
Results under negative chamber (door leaf opening away from chamber)	**50**	**2.87**	**3.10**
	25	**2.11**	**2.28**
	10	**0.90**	**0.97**

Testing was carried out at ambient temperature only: temperature of the test chamber was measured using a calibrated digital thermometer before and after testing.

The perimeter length of gap was 0.926m

Rev1 – Sampling report removed as requested by client

Issued by:
Jamie Nelson
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1. Introduction

In Accordance with the CERTIFIRE Technical Schedule TS21 the specimen was initially tested to BS EN 1634-3:2004 incorporating corrigendum no. 1 on 28th June 2021.

The specimen was subjected to 100,000 cycles according to the CERTIFIRE Technical Schedule TS21 test method from 28th June 2021 to 5th July 2021.

On completion of the cycles, the specimen was again tested to BS EN 1634-3:2004 incorporating corrigendum no. 1 on 8th July 2021.

The specimen was configured as a single leaf, single acting doorset. The specimen was installed opening out of the test chamber. In accordance with BS EN 1634-3: 2004 section 10.1.1, the leaf was pre-cycled before the smoke leakage test (See section 5.1 for further details).

2. Specimen verification

The doorset was constructed at Warringtonfire according to the CERTIFIRE Technical Schedule TS21 specification, and was delivered to the smoke leakage laboratory on 21st June 2021. The component parts of the specimen were identified based on nominal information provided by the sponsor. These details are outlined in the specimen construction section of this report (section 4).

2.1. Conditioning

The specimen was made from hygroscopic materials and was conditioned for at least 72 hours at an average temperature between 17°C and 21°C. Relative humidity was between 48% and 51%.

2.2 Sampling

Sampling details held on file by Warringtonfire

3 Description of supporting construction

The partition was constructed of nominal 90mm x 45mm timber studs at 600mm centres with one layer of 12.5mm plasterboard on each face. The stud wall is taken to be of a standard wall construction.

The specimen was fixed with 4No. 5 x 80 screws per jamb.

The gap between the specimen and supporting construction was nominal 10mm, this gap was tightly packed with mineral wool and capped with intumescent mastic on both sides to create an impermeable barrier.

4. Description of Specimen Construction

The overall frame dimensions were 1000mm wide x 2095mm high x 78mm deep. The leaf dimensions were 926mm wide by 2040mm high x 44mm thick. The specimen was latched for the tests.

Door Leaf

		Material/type	Dimensions (mm)	Density (kg/m³)
Stiles		Softwood	38 x 34	**
Rails		Softwood	38 x 34	**
		Softwood	38 x 34	**
Core		Falcon Strebord particleboard core*	38 thick	530*
Facings		MDF	3 thick	**
		Oak Veneer*	-	-
Lippings		Oak On vertical edges only	6 thick	640*
Adhesive	**Facings**	Rakol 450R PU*	-	-
	Lippings	Rakol 450R PU*	-	-

* As stated by sponsor, not checked by laboratory **no further details provided by sponsor

Door Frame

	Material/type	Dimensions (mm)	Density (kg/m³)
Head & jambs (with integral stop)	Sapele*	78 x 45	620*
Rebate	Single type	48 x 13	-
Threshold	Oak*	79 x 15	640*
Joints	Butt joint, fixed with 2No. 5mm x 80mm screws	-	-
Adhesive	Everbuild 502 PVA*	-	-

*as stated by sponsor, not checked by laboratory

Hardware

	Make/type	Size (mm)	Fixing details (dimensions in mm)
Hinges	3No. Nico Load-Pro lift off hinges (Ref. 4718LHFS5 CF 769)*	98 x 32 blade size	6No. 4.5 x 50 screws into leaf 6No. 4.5 x 30 screws into frame
Locking mechanism	Winkhaus (Ref. AV2 M105301)	20 wide x 1770 high	12No. 4 x 50 screws
Keeps – upper and lower	Winkhaus	152 x 40	4No. 3.3 x 25 screws
Centre keep	Winkhaus	250 x 40	3No. 3.3 x 25 screws
Handles	Fab & Fix Windsor*	120 lever length	2No. M5 x 55 machine srews
Cylinder	UAP (Ref. KIN 35T/35NAS)*	70 length	No. M5 x 55 machine srew
Eye viewer	UAP (Ref. CVPLSSS)* 12mm wide angle*	26ø	Self thread
Closer	Arrone (Ref. AR3500)* *Disconnected for cycles*	250 x 44	As per manufacturers instructions

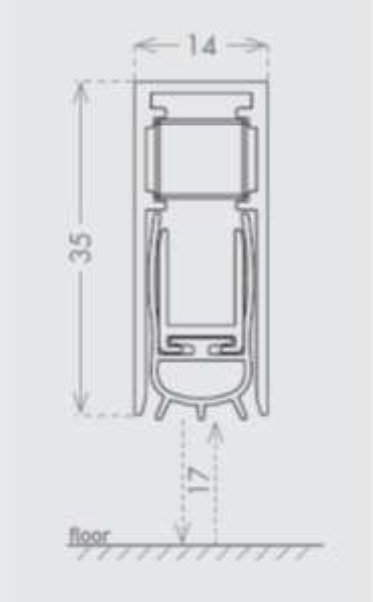
* As stated by sponsor, not checked by laboratory

Perimeter Sealing detail

		Make/type	Size (mm)	Location
Door Edges		None present	-	-
Frame reveal	**Head and jambs**	Fire and Acoustic Seals (Ref. FAS35)* *Taped for test*	11 x 5	Rebate platform / upstand
		Pyroplex (Ref. 8700)* *Taped for test*	15 x 4	In cut out on rebate platform
Threshold		C.C.E Superior 60 dropseal	14 x 35	Fixed into cut out at bottom of leaf
Seal continuity		Uninterupted by hardware	-	-

* As stated by sponsor, not checked by laboratory

Superior 60 drop seal



5. Pre-test measurements

5.1 Operational check

Operability test of 10 manual cycles was completed on the leaf in accordance with BS EN 1634-3: 2004 section 10.1.1.

Minimum angle of opening	30°
Number of operation cycle completed	10

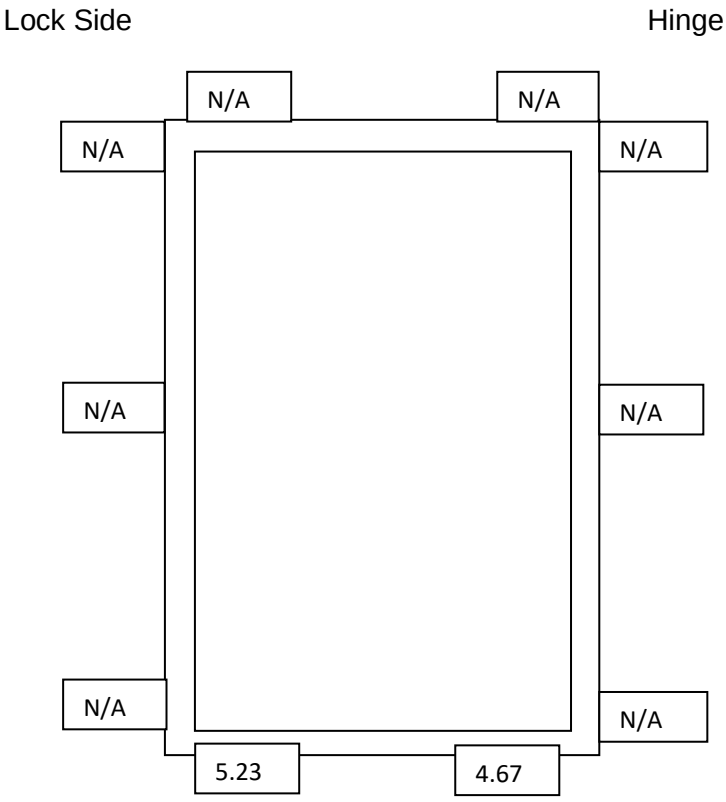
5.2 Retention forces

Measured in accordance with BS EN 1634-3: 2004 section 10.1.2.

Opening Forces
18.7N @ handle position

5.3 Leaf/frame gaps

The gaps were measured before testing commenced – See diagram below (Gaps were measured within 20mm from corners and at the centre of stiles) – All measurements given in mm.



6 Limitations

- The results only relate to the behaviour of the specimen submitted for test, as described in the Technical Specification (Section 5), and under the particular conditions of test.
- The results are not intended to be the sole criteria for assessing the smoke leakage performance of the element in use nor do they necessarily reflect the actual behaviour once installed on site.
- The specification and interpretation of 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 5 years old should be considered by the user. WARRINGTONFIRE will be able to offer a review of the procedures adopted for a particular test to ensure that they are consistent with current practices.
- The results are solely for use by the sponsor and the stated purpose.
- The sponsor cannot rely on information provided without consent from WARRINGTONFIRE.
- Any recommendations are specific to the assignment and the sponsor.
- Extracts from the report are not permitted.

7 Conclusions

A specimen of a single-acting, single leaf timber doorset fitted with Superior 60 drop seal was subjected to tests in accordance with BS EN 1634-3: 2004.

Test Results

Seal Name	Seal type	Seal length	All results at 25 pascals			
			Positive Leakage rate (m^3/hr/m) Pre cycle	Positive Leakage rate (m^3/hr/m) Post cycle	Negative Leakage rate (m^3/hr/m) Pre cycle	Negative Leakage rate (m^3/hr/m) Post cycle
Superior 60	Threshold	0.926m	1.02	1.97	2.01	2.28