
Title:

Classification report assigned to two hinged timber single leaf doors in accordance with the procedure given in the Standard EN 13501-2:2016: **"Fire classification of construction products and building elements. Part 2: Classification using data from fire resistance tests, excluding ventilation services"** (equivalent to the UNE EN 13501-2:2019).



Material classified:

- One hinged timber single leaf door reference C987 (reference of sample provided by the sponsor).
- One hinged timber single leaf door reference C992 (reference of sample provided by the sponsor).

File number: 20/22800-1247-4

Sponsor:

Krona Koblenz S.p.A.
Via Piane, 90
47853 Coriano (RN)
Italia

Report date:

18 January 2021

Test date:

02 September 2020

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This document includes 11 pages.

1.- INTRODUCTION

This fire resistance classification report, in accordance with the procedure given in the Standard EN 13501-2:2016, defines the classification assigned to two hinged timber single leaf doors with reference:

Internal reference Laboratory	Reference provided by the sponsor
20/1247-A (Door A)	C987
20/1247-B (Door B)	C992

2.- DETAILS OF THE CLASSIFIED ELEMENTS

2.1.- Type of function

The elements tested are defined as two hinged timber single leaf door exposed to fire on one side (doors open inwards the furnace). Their function is to resist fire regarding the integrity and thermal insulation characteristics provided in section 5 of the Standard EN 13501-2:2016.

2.2.- Description

A complete description of the elements tested is carried out in the test report, in which is based the classification defined in section 5 of this report.

3.- TEST REPORT

The present classification report is based on the following test report:

File number: 20/22800-1247-3

Report issued on: 18 January 2021

Test carried out on: 02 September 2020

4.- TEST RESULTS

4.1.- Test Standard:

EN 1634-1:2014+A1:2018: "Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows" (equivalent to the UNE EN 1634-1:2016+A1:2018).

This Standard corresponds to the current version on test date. Results obtained in this test are the ones used in this classification report.

4.2.- EXPOSURE CONDITIONS

Temperature/time curve	$T = 345 \log_{10}(8t + 1) + 20$
Direction of the exposure	Door A and door B open inwards the furnace.
Number of exposed sides	1 side of each door.
Supporting conditions	Wall made of perforated ceramic bricks filled, 130 mm thick and density of 1350 kg/m ³ (carried out by the Laboratory).

4.3.- RESULTS TABLE

Door A reference C987, opening inwards the furnace.

		Failure minute	Reason
Integrity		151	Sustained flaming on the lock area is observed.
Thermal insulation	I ₁	120	Thermocouple no 18 records an increase in temperature greater than 180 °C above the initial average temperature.
	I ₂	146	Thermocouple no 27 records an increase in temperature greater than 180 °C above the initial average temperature.

Door B reference C992, opening inwards the furnace.

		Failure minute	Reason
Integrity		148	Sustained flaming on the upper side of the door (between leaf and lintel) is observed.
Thermal insulation	I ₁	126	Thermocouple no 47 records an increase in temperature greater than 180 °C above the initial average temperature.
	I ₂	145	Thermocouple no 55 records an increase in temperature greater than 180 °C above the initial average temperature.

5.- CLASSIFICATION

Pursuant to section 7.5 of the Standard EN 13501-2:2016, the classification of the testes elements is as follows:

Door A:

Hinged timber single leaf door reference C987 opening inwards the furnace.	EI ₁ 120 EI ₂ 120
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Door B:

Hinged timber single leaf door reference C992 opening inwards the furnace.	EI ₁ 120 EI ₂ 120
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At the customer's request, the agreed decision rule to declare conformance to the specification or standard, is by following a simple binary decision rule. In this case, the upper limit of the probability value of false acceptance or false rejection, according to ILAC G8, is 50%.

Note: as indicated in section 13.3.2 of the Standard EN 1634-1:2014+A1:2018 and considering the results reflected in section 4.3 of this classifications report, the category which corresponds to:

Sample	Classification	Category
C987 (Door A)	EI ₁ 120	A
	EI ₂ 120	B
C992 (Door B)	EI ₁ 120	A
	EI ₂ 120	B

6.- FIELD OF DIRECT APPLICATION

6.1 General (acc./section 13 of the EN 1634-1:2014+A1:2018).

The results of the fire test and the obtained classification are directly applicable to constructions equal to the models tested when one or more of the following modifications are made:

Door A:

Characteristics	Reference of sample tested*	Modification permitted
Materials/construction	<p><u>Timber:</u></p> <ul style="list-style-type: none"> - Leaf: total thickness of 86 mm (see section 3 of test report no. 20/22800-1247-3). - Frame: section 62 x 88 mm (width x depth). - Weight of door (frame not included): 113.5 kg. <p>See section 3 of test report no. 20/22800-1247-3 for further details.</p>	<ul style="list-style-type: none"> - The thickness of the door panel(s) shall not be reduced but may be increased. - The door panel thickness and/or density may be increased provided the total increase in weight is not greater than 25 %. - For timber based board products the composition shall not change from that tested. The density shall not be reduced but may be increased. - The cross-sectional dimensions and/or density of the timber frames (including rebates) shall not be reduced but may be increased.

Decorative finishes	- Door tested without paint finish.	- Permitted to apply paints which do not contribute to the fire resistance on door leaves or frames.
	- Door tested without decorative laminates.	- Decorative laminates and timber veneers up to 1.5 mm thickness may be added to the faces (but not the edges) of doors that satisfy the insulation criteria (normal or supplementary procedure).
Fixings	<p>The frame is fixed to the supporting construction by means of screws Ø 6 x 130 mm, placed on the rebated side:</p> <ul style="list-style-type: none"> - hinged vertical side: at 85, 395, 795, 1245, 1545 and 2045 mm from the bottom edge of the door; - lock vertical-rebated side: at 60, 705, 1015, 1515 and 2065 mm from the bottom edge of the door; - lintel: at 110 mm in from the inner corners of the frame. 	<ul style="list-style-type: none"> - Not permitted the reduction in the number of fixings. - No increase in the distance between fixings is permitted. - The increase in the number of fixings and the reduction in distance between them is permitted.
Building hardware	- Interchange of building hardware.	- Not covered by the field of direct application.
	- A three-point lock with strikes, ref. 1.43115.65.0 by CISA, upper edge of each latch bolt placed at 185, 855 and 1760 mm from the bottom edge of the leaf, respectively.	- Not covered by direct application.
	<ul style="list-style-type: none"> - 4 hinges, model ATOMIKA Karakter K8080, ref. K8080 CS by Krona Koblenz, S.p.a., centre of each placed at 190, 1063.5, 1677 and 1937 mm from the bottom edge of the door. - 9 adjustable bolts, ref. Spike – Rostro regolabile lato cerniera; code 101 by PM Firestop. - 5 circular and 4 rectangular active bolts, ref. Firenail – Rostro termofusibile attivo by PM Firestop. <p>(see location of bolts and further details in section 3 of test report no. 20/22800-1247-3).</p>	- Permitted the increase but not the reduction in number.

Building hardware	<ul style="list-style-type: none"> - Overhead door closer ref. TS 71 EN 3/4 by dormakaba, placed on the upper left corner of the exposed side to fire of the door. The door closer is disengaged during the test. 	<ul style="list-style-type: none"> - The doorset may be provided either with or without the closing device.
Size variations ¹	<ul style="list-style-type: none"> - Door A: Hinged timber single leaf door ref. C987. Classification: 120 minutes (criterion I₁). Category A. - Total dim. (architraves included): 984 x 2192 mm (width x height). 	<ul style="list-style-type: none"> - Unlimited size reduction is permitted². - Size increase is not permitted.
	<ul style="list-style-type: none"> - Door A: Hinged timber single leaf door ref. C987. Classification: 120 minutes (criterion I₂). Category B. - Total dim. (architraves included): 984 x 2192 mm (width x height). 	<ul style="list-style-type: none"> - Unlimited size reduction is permitted². - Size increase is permitted only up to 15% height, 15% width and 20% area³.

¹ The number, size, location and orientation of any joints in the timber framing shall not be changed. Where decorative veneers of 1.5 mm or greater thickness, or other claddings which themselves provide constructive benefits, are part of the test specimen, they shall not be substituted with alternatives of lesser thickness or strength.

² For smaller doorset sizes the relative positioning of movement restrictors shall remain as tested or any change to the distances between them will be limited to the same percentage reduction as the decrease of test specimen size.

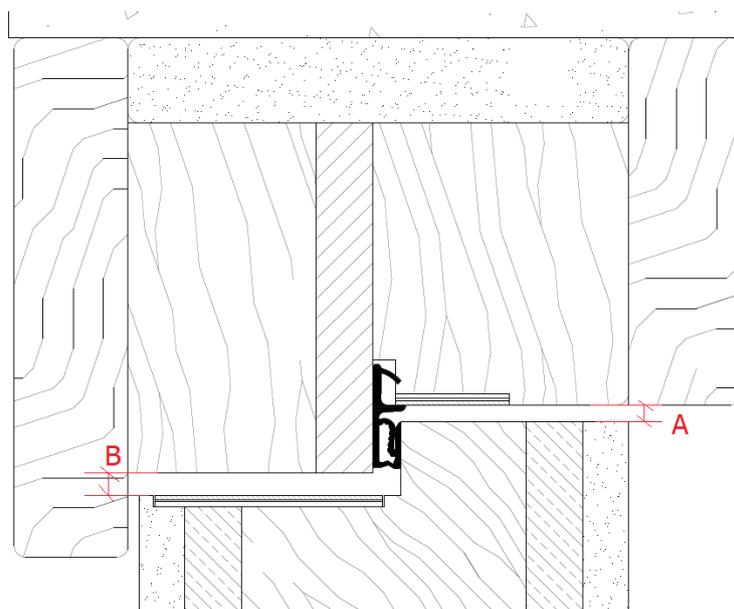
³ For larger doorset sizes the following shall also apply:

- the height of the upper edge of the latch bolts of the lock shall be equal to or greater than 185, 855 and 1760 mm from the bottom edge of the leaf of the door, respectively, and such increase in height shall be at least proportional to the increase in door height;
- the distance between the centre of the top hinge and the bottom edge of the door shall be equal to or greater than 1937 mm.
- the distance between the centre of the bottom hinge and the bottom edge of the door shall be equal to or less than 190 mm.

Supporting construction	<ul style="list-style-type: none"> - Wall made of perforated ceramic bricks, 130 mm thick and density 1350 kg/m³ (carried out by the Laboratory). 	<ul style="list-style-type: none"> - Valid for other rigid supporting constructions with a density and thickness equal to or greater than the one tested. - Applicable to that door assembly mounted in a flexible construction⁴.
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⁴ Only applicable if the fixing methods used in each type of supporting construction are appropriate to that construction.

<p>Gaps</p>	<p>- Door A: Hinged timber single leaf door reference C987. (See gaps tested in test report 20/22800-1247-3).*</p>	<p>Maximum size allowed for primary gaps:</p> <ul style="list-style-type: none"> - Between leaf and lintel (see DETAIL 1): A: 7.3 mm. B: 5.2 mm. - Between leaf and hinged side (see DETAIL 1): A: 6.3 mm. B: 7.0 mm. - Between leaf and lock side (see DETAIL 1): A: 4.6 mm. B: 4.8 mm. - Between leaf and floor: 8.0 mm. <p>The minimum size of the primary gaps may be reduced.</p>
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DETAIL 1

* The reference values of the sample tested not indicated in the present section are described in section 3 Samples tested of file 20/22800-1247-3.

The modifications permitted in the field of direct application are based on data included in test report n° 20/22800-1247-3.

Door B:

Characteristics	Reference of sample tested*	Modification permitted
Materials/construction	<p><u>Timber:</u></p> <ul style="list-style-type: none"> - Leaf: total thickness of 86 mm (see section 3 of test report no. 20/22800-1247-3). - Frame: section 62 x 88 mm (width x depth). - Weight of door (frame not included): 140.3 kg. <p>See section 3 of test report no. 20/22800-1247-3 for further details.</p>	<ul style="list-style-type: none"> - The thickness of the door panel(s) shall not be reduced but may be increased. - The door panel thickness and/or density may be increased provided the total increase in weight is not greater than 25 %. - For timber based board products the composition shall not change from that tested. The density shall not be reduced but may be increased. - The cross-sectional dimensions and/or density of the timber frames (including rebates) shall not be reduced but may be increased.
Decorative finishes	<ul style="list-style-type: none"> - Door tested without paint finish. 	<ul style="list-style-type: none"> - Permitted to apply paints which do not contribute to the fire resistance on door leaves or frames.
	<ul style="list-style-type: none"> - Door tested without decorative laminates. 	<ul style="list-style-type: none"> - Decorative laminates and timber veneers up to 1.5 mm thickness may be added to the faces (but not the edges) of doors that satisfy the insulation criteria (normal or supplementary procedure).
Fixings	<p>The frame is fixed to the supporting construction by means of screws Ø 6 x 130 mm, placed on the rebated side:</p> <ul style="list-style-type: none"> - hinged vertical side: at 35, 305, 705, 995, 1345, 1595, 1845 and 2345 mm from the bottom edge of the door; - lock vertical-rebated side: at 90, 390, 690, 1040, 1325, 1675, 1940 and 2345 mm from the bottom edge of the door; - lintel: at 95 mm in from the inner corner of the frame on the hinged side and at 75 mm in from the inner corner of the frame on the lock side. 	<ul style="list-style-type: none"> - Not permitted the reduction in the number of fixings. - No increase in the distance between fixings is permitted. - The increase in the number of fixings and the reduction in distance between them is permitted.

Building hardware	<ul style="list-style-type: none"> - Interchange of building hardware. 	<ul style="list-style-type: none"> - Not covered by the field of direct application.
	<ul style="list-style-type: none"> - A three-point lock with strikes, ref. 1.43115.65.0 by CISA, upper edge of each latch bolt placed at 185, 855 and 2120 mm from the bottom edge of the leaf, respectively. 	<ul style="list-style-type: none"> - Not covered by direct application.
	<ul style="list-style-type: none"> - 4 hinges, model KuBi KINOX K7316, ref. K7316 SA by Krona Koblenz, S.p.a., centre of each placed at 190, 1215, 1977 and 2237 mm from the bottom edge of the door. - 10 adjustable bolts, ref. Spike – Rostro regolabile lato cerniera; code 101 by PM Firestop. - 6 circular and 5 rectangular active bolts, ref. Firenail – Rostro termofusibile attivo by PM Firestop. <p>(see location of bolts and further details in section 3 of test report no. 20/22800-1247-3).</p>	<ul style="list-style-type: none"> - Permitted the increase but not the reduction in number.
	<ul style="list-style-type: none"> - Overhead door closer ref. TS 71 EN 3/4 by dormakaba, placed on the upper left corner of the exposed side to fire of the door. The door closer is disengaged during the test. 	<ul style="list-style-type: none"> - The doorset may be provided either with or without the closing device.
Size variations ⁵	<ul style="list-style-type: none"> - Door B: Hinged timber single leaf door ref. C992. Classification: 120 minutes (criterion I₁). Category A. - Total dim. (architraves included): 1084 x 2492 mm (width x height). 	<ul style="list-style-type: none"> - Unlimited size reduction is permitted⁵. - Size increase is not permitted.
	<ul style="list-style-type: none"> - Door B: Hinged timber single leaf door ref. C992. Classification: 120 minutes (criterion I₂). Category B. - Total dim. (architraves included): 1084 x 2492 mm (width x height). 	<ul style="list-style-type: none"> - Unlimited size reduction is permitted⁶. - Size increase is permitted only up to 15% height, 15% width and 20% area⁷.

⁵ The number, size, location and orientation of any joints in the timber framing shall not be changed. Where decorative veneers of 1.5 mm or greater thickness, or other claddings which themselves provide constructive benefits, are part of the test specimen, they shall not be substituted with alternatives of lesser thickness or strength.

⁶ For smaller doorset sizes the relative positioning of movement restrictors shall remain as tested or any change to the distances between them will be limited to the same percentage reduction as the decrease of test specimen size.

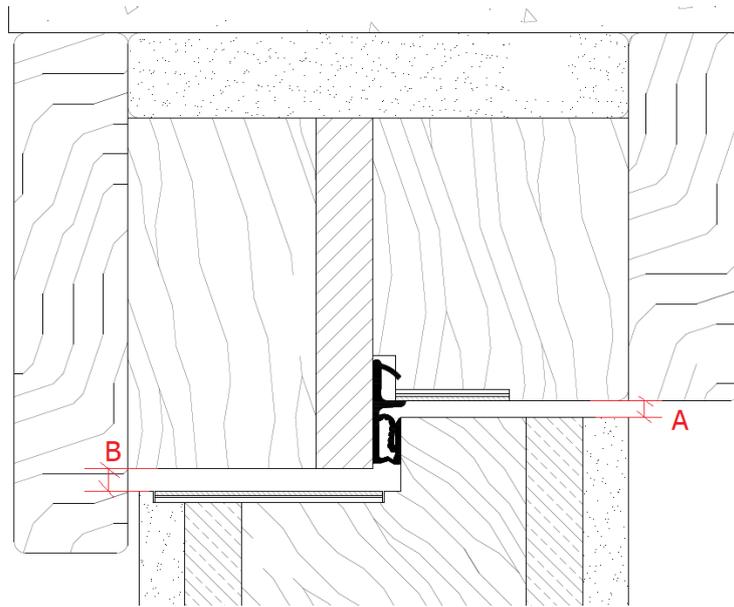
⁷ For larger doorset sizes the following shall also apply:

- the height of the upper edge of the latch bolts of the lock shall be equal to or greater than 185, 855 and 2120 mm from the bottom edge of the leaf of the door, respectively, and such increase in height shall be at least proportional to the increase in door height;
- the distance between the centre of the top hinge and the bottom edge of the door shall be equal to or greater than 2237 mm.
- the distance between the centre of the bottom hinge and the bottom edge of the door shall be equal to or less than 190 mm.

Supporting construction	<ul style="list-style-type: none"> - Wall made of perforated ceramic bricks, 130 mm thick and density 1350 kg/m³ (carried out by the Laboratory). 	<ul style="list-style-type: none"> - Valid for other rigid supporting constructions with a density and thickness equal to or greater than the one tested. - Applicable to that door assembly mounted in a flexible construction⁸.
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⁸ Only applicable if the fixing methods used in each type of supporting construction are appropriate to that construction.

Gaps	<ul style="list-style-type: none"> - Door B: Hinged timber single leaf door reference C992. (See gaps tested in test report 20/22800-1247-3).* 	<p>Maximum size allowed for primary gaps:</p> <ul style="list-style-type: none"> - Between leaf and lintel (see DETAIL 2): A: 7.0 mm. B: 5.9 mm. - Between leaf and hinged side (see DETAIL 2): A: 6.3 mm. B: 6.6 mm. - Between leaf and lock side (see DETAIL 2): A: 4.0 mm. B: 4.7 mm. - Between leaf and floor: 8.0 mm. <p>The minimum size of the primary gaps may be reduced.</p>
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DETAIL 2

* The reference values of the sample tested not indicated in the present section are described in section 3 Samples tested of file 20/22800-1247-3.

The modifications permitted in the field of direct application are based on data included in test report n° 20/22800-1247-3.

The period of validity is the one stated in the product certification system.

This document cannot be considered either a type approval or a certification of the product.

Fire Resistance Testing Technician
LGAI Technological Center, S.A.

Fire Laboratory Responsible
LGAI Technological Center, S.A.

The results of the tests carried out refer only and exclusively to the sample tested, and in the moment and under the conditions indicated herein.

LGAI Technological Center, S.A. is not responsible for the information supplied by the sponsor.

Service Quality Guarantee

Applus+, guarantees that this task has been carried out following the exigencies of our Quality and Sustainability System, complying with the contractual conditions and legal regulation.

Within the framework of our improvement programme, we appreciate any comment you may deem appropriate, addressing them to the responsible who signs this document or to the Quality Director of Applus+, to the e-mail address: satisfaccion.cliente@applus.com