
Title:

Test report for determine the fire resistance of sealing devices for the waterproofing of holes in concrete walls, exposed to fire on one side, according to the European Standard EN 1363-1:2020: "Fire resistance test. Part 1: General Requirements" (equivalent to DIN 1363-1:2020).

Tested material:

- Four sealing devices type RiveStop with references RS21033SZ21 and RS21033PZ21.

References provided by the sponsor.

The test specimens have been provided by RiveStop Systems, S.L.

File number: 21/32305398-1 (EN)

This report, issued on 17 January 2022, is the English of the original Spanish report 21/32305398-1.

In the event of litigation, the original version will be valid.

Sponsor:

RiveStop Systems, S.L.

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Report date:

17 January 2022

Test date:

29 September 2021



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This document contains 25 pages of which 18 are annexes.

RECEIVED MATERIAL

Four sealing devices for the waterproofing of holes in concrete walls type RiveStop with references RS21033SZ21 and RS21033PZ21 and other four devices with informative purposes have been received, provided by RiveStop Systems, S.L. (references of samples are provided by the sponsor). Details of the samples are shown in clause 3 Tested samples of the current report.

Note: this test report examined the behaviour of the two devices type RiveStop with reference RS21033PZ21. The results of the two devices type RiveStop with reference RS21033SZ21 are included in the report with file number 21/32305398 (EN).

The assembly has been carried out by the sponsor in LGAI Technological Center S.A. facilities.

The Laboratory had not made any type of supervision of the sample-taking for the test.

REQUESTED TEST

Determination of the fire resistance of sealing devices for the waterproofing of holes in concrete walls, exposed to fire on one side, according to the European Standard EN 1363-1:2020: "Fire resistance test. Part 1: General Requirements" (equivalent to DIN 1363-1:2020).

1. AIM OF TEST

- 1.1 The samples have been exposed to the conditions indicated in the Standard EN 1363-1:2020: "Fire resistance test. Part 1: General Requirements", in order to verify compliance with the integrity and thermal insulation criteria.
- 1.2 An integrity failure happens when one of the following criteria is fulfilled (paragraph 11.2 of the Standard EN 1363-1:2020):
- Ignition of the cotton pad applied as indicated in paragraph 10.4.5.2 of the Standard EN 1363-1:2020.
 - Gauges penetration as indicated in paragraph 10.4.5.3 of the Standard EN 1363-1:2020.
 - Appearance of sustained flames.
- 1.3 A thermal insulation failure happens when the following criteria is fulfilled:
- The temperature of any point of the unexposed side (including the points where the roving thermocouple is used) increases more than 180 °C over the initial temperature (paragraph 11.3 of the Standard EN 1363-1:2020).

NOTE: Due to the small sizes of the samples and according to point 9.1.2.2 of the Standard EN 1363-1:2020, the mean temperature increase criterion is not taken into account.

2. GENERAL CHARACTERISTICS OF THE FURNACE

The characteristics of the furnace meet the requirements indicated in the Standard EN 1363-1:2020.

- Dimensions are 1.5 x 1.5 m (width x height) in vertical plane.
- The average temperature of the furnace, measured by 4 thermocouples, is automatically controlled in order to meet the standard temperature/time curve described in the Standard, set by the following equation:

$$T = 345 \log_{10} (8t + 1) + 20$$

- Pressure is automatically controlled, so that for a position located at 0.34 mm from the row of samples placed on the lowest position there is an overpressure of 17 ± 3 Pa, equivalent to 20 Pa at the height of the samples located in the lowest position, following the progression stated in the Standard EN 1363-1:2020 of 8.5 Pa per meter height of furnace.

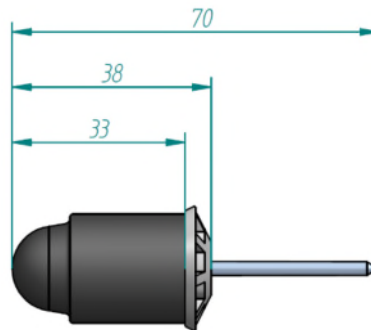
3. **TESTED SAMPLES**

The laboratory has carried out different checks on the samples to be tested in order to collate the correspondence between the documentation provided by the sponsor and the received samples. The data included in this report are those provided by the sponsor and can be consulted in annex D of this report.

These are the characteristics of the received samples:

3.1 General characteristics:

- Reference of the Laboratory: 2454-2.
- Reference provided by the sponsor: RiveStop code RS21033PZ21.
- Total dimensions (see details 1, 2, 3 and Annex D): Ø21 x 33 x 70 mm (rubber body diameter x rubber body length x total length).
- Number of samples: 2, one on each side of the wall.



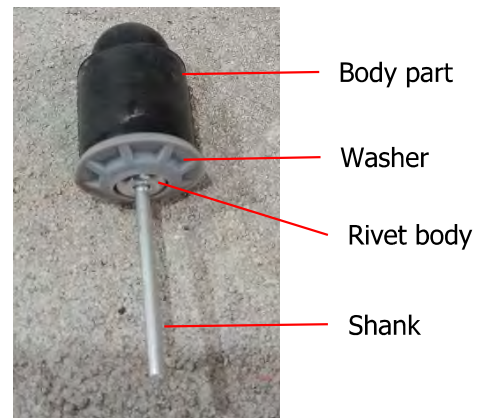
Detail 1. RiveStop RS21033PZ21
(sketch extracted from sponsor's specifications)

3.2 Composition of samples:

- Components and materials (see detail 2 and 3 and Annex D):
 - Body part:
 - Material: rubber.
 - Rivet body:
 - Material: aluminium.
 - Washer:
 - Material: thermoplastic.
 - Shank:
 - Material: zinc plated steel.



Detail 2



Detail 3

5.5 **Table of results:**

	Results (min)	Reason
Integrity	240	It is maintained throughout the entire test.
Thermal insulation	240	It is maintained throughout the entire test.

The samples with code RS21033PZ21 maintained integrity and thermal insulation criteria during 240 minutes of test carried out under EN 1363-1 criteria.

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in EN 1363-1, and where appropriate EN 1363-2. Any significant deviation with respect to size, constructional details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

This document does not represent type approval or certification of the product.



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

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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