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Nº 9/LE 895

Title:
Classification report for the determination of the fire resistance of a set of penetration seals according to EN 13501-2:2007+A1:2009 Fire classification of construction products and building elements. Part 2: Classification using data from fire resistance tests, excluding ventilation services. (equivalent to UNE EN 13501-2:2009+A1:2010).

Tested material:
Seven penetration seals based on collars reference "MG2-A XL" for plastic pipes, everything supplied by RF Technologies.
Test done in horizontal configuration.

File number: 15/10328-1175 Part 2

Solicitor:
RF Technologies, S.A
Lange Ambachstraat 40
B-9860 Oosterzete
Belgium

Report Date:
2 July 2015

Tested on:
25 June 2015

1.- INTRODUCTION

This Fire Resistance classification report defines the classification for a set of penetration seals for plastic pipes supplied by RF Technologies.

2.- DETAILS OF CLASSIFIED ELEMENT

2.1.- Type of function

Tested elements are defined as penetration seals for plastic pipes. Its function is to withstand the integrity and thermal insulation criteria given in clause 5 of EN 13501-2:2007+A1:2009 standard.

2.2.- Description

The complete description of the tested elements can be consulted in the test report (see clause 3 of this classification report).

Supporting construction made of an aerated concrete floor of dimensions 3000 x 1800 mm made out of cellular concrete slabs of 150 mm thick and 600 mm width and (650 ± 200) kg/m^3.

3.- TEST REPORT

This classification report is based on the following test report:
File nº: 15/10328-1175 Part 1
Issued with date: 2 of July of 2015
Test carried out on: 25 of June of 2015

4.- TEST RESULTS

4.1.- Test standard:

EN 1366-3: 2009 "Fire resistance tests for service installations. Part 3: Penetration seals" (equivalent to UNE EN 1366-3: 2011)

4.2.- Exposure conditions

Time/temperature curve	$T = 345 \log_{10}(8t + 1) + 20$ (acc. EN 1363-1:2012)
Number of exposed sides	1 (U/C)
Applied load	No load applied
Support conditions	Standard supporting construction in accordance with EN 1366-3:2009. See more details in the test report indicated in clause 3 of this classification report.

4.3.- Result table.

All pipe dimensions are outside diameter x thickness

System	Integrity	Thermal insulation
System 1 (MG2-A XL Ø400 collar + PVC-U pipe 400 x 7.9 mm)	It was maintained the entire test, 135 minutes	It was maintained the entire test, 135 minutes
System 2 (MG2-A XL Ø250 collar + PEHD pipe 250 x 7.7 mm)	It was maintained the entire test, 135 minutes	It was maintained the entire test, 135 minutes
System 3 (MG2-A XL Ø250 collar + PVC-U pipe 250 x 4.9 mm)	It was maintained the entire test, 135 minutes	It was maintained the entire test, 135 minutes
System 4 (MG2-A XL Ø250 collar + PVC-U pipe 250 x 11.9 mm)	It was maintained the entire test, 135 minutes	It was maintained the entire test, 135 minutes
System 6 (MG2-A XL Ø400 collar + PVC-U pipe 400 x 11.7 mm)	It was maintained the entire test, 135 minutes	It was maintained the entire test, 135 minutes
System 7 (MG2-A XL Ø250 collar + PEHD pipe 250 x 22.7 mm)	Failed at minute 121. (Flame appearance)	Failed at minute 121 (Integrity failure)

System 5 tested only for research purposes.

5.- CLASSIFICATION

According to clause 7.5 of EN 13501-2:2007+A1:2009 standard, classification of the tested elements is:

System	Classification
System 1 **(MG2-A XL Ø400 collar + PVC-U pipe 400 x 7.9 mm)**	**EI 120 U/C**
System 2 **(MG2-A XL Ø250 collar + PEHD pipe 250 x 7.7 mm)**	**EI 120 U/C**
System 3 **(MG2-A XL Ø250 collar + PVC-U pipe 250 x 4.9 mm)**	**EI 120 U/C**
System 4 **(MG2-A XL Ø250 collar + PVC-U pipe 250 x 11.9 mm)**	**EI 120 U/C**
System 6 **(MG2-A XL Ø400 collar + PVC-U pipe 400 x 11.7 mm)**	**EI 120 U/C**
System 7 **(MG2-A XL Ø250 collar + PEHD pipe 250 x 22.7 mm)**	**EI 120 U/C**

6.- FIELD OF DIRECT APPLICATION (according to EN 1366-3:2009)

6.1. General (clause 13 of EN 1366-3:2009)

6.1.1 Orientation.

Test results are only applicable to penetration seals assembled in a horizontal division (floor).

6.1.2 Supporting construction.

Results are applicable on seals with a support frame made of aerated concrete with density and thickness equal or higher than the ones used in test (tested supporting construction: density 650 ± 200 kg/m^3 and 150 mm in thickness).

6.1.3 Service support construction.

Metal trays with melting point higher than the furnace temperature at the classification time (e.g: stainless steel, galvanised steel) are covered.

6.1.4 Seal size and distances:

- The test result obtained are valid for any seal (in terms of linear dimensions) equal to or smaller than the tested taking provided that:
    - total amount of cross sections of the services (including insulation) does not exceed 60% of the penetration area.
    - Working clearances are not smaller than the minimum working clearances (defined in the annexes A, B, E and F of EN 1366-3:2009 and according to figure 1 of the test report).
    - Distance between a single service and the seal edge shall remain within the tested range.

6.2. Plastic pipes (clause E.2.7 of EN 1366-3:2009)

6.2.1 General

Obtained results from a multiple penetration seal can be extended to a single penetration seal of the same type, but not vice versa.

6.2.2 Seal size

- Two design groups were tested:
    - Design group 1:
        - Material of the active component: Intumescent strip reference "EX 147"
        - Length of the active component: 100 mm
        - Thickness of the active component: 24 mm

- Design group 2:
  - Material of the active component: Intumescent strip reference "EX 147"
  - Length of the active component: 150 mm
  - Thickness of the active component: 30 mm

- The maximum pipe closure device size within a design group covers smaller sizes of this design group (see figure 1).
- Reduction of the thickness of the active component of each design group is not allowed.

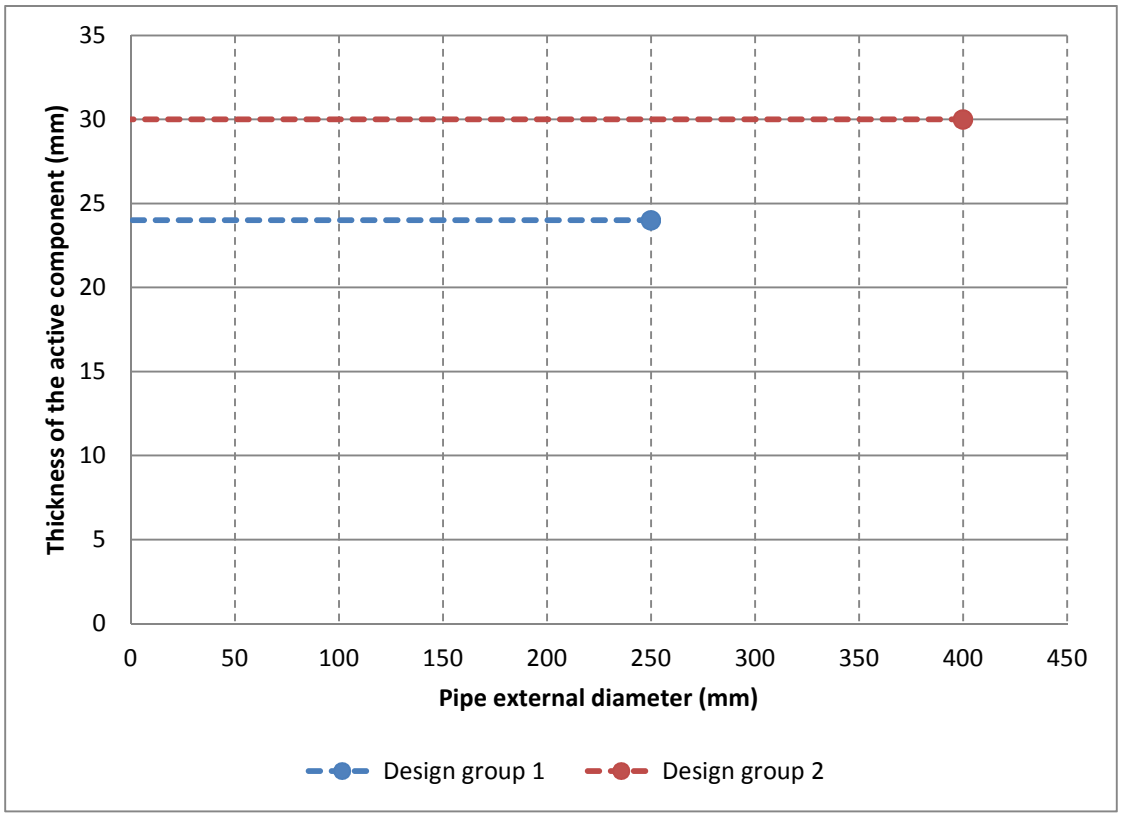

Figure 1. Covered sizes according each design group.

6.2.3 Pipe end configuration.

- Tested configuration: U/C
- Covered configurations: U/C and C/C
- U/U and C/U are not covered.

6.2.4 Pipe material.

- Design group 1:
  Test results are valid for pipes made by PVC-U according to EN 1329-1, EN 1453-1 and EN 1452-1 and PVC-C according to EN 1566-1.
  Test results are also valid for pipes made from PE-HD according to EN 13244 and EN 12201 standards.

- Design group 2:
  Test results are valid for pipes made by PVC-U according to EN 1329-1, EN 1453-1 and EN 1452-1 and PVC-C according to EN 1566-1.

6.2.5 Pipe wall thickness

- Design group 1:
  - PVC-U: covered pipe thicknesses from 4,9 mm to 11,9 mm
  - PE-HD: covered pipe thicknesses from 7,7 mm to 22.7 mm
- Design group 2:
  - PVC-U: covered pipe thicknesses from 7,9 mm to 11,7 mm

6.2.6. Pipe orientation

Test results are valid for all pipes assembled perpendicular to the seal (90º)

6.2.7 Separations.

The annular space (a1 acc. to EN 1366-3:2009 and values indicated in figure 2 of test report) between the pipe and the supporting construction shall remain within tested range. Separation a2 (acc. to EN 1366-3:2009 and values indicated in figure 2 of test report) may be increased.
The annular space between pipe and construction element (floor) is external diameter of the pipe + 3 mm.
The distance between pipes is not less than 200 mm.

6.3 SUMMARY OF COVERED SAMPLES (according to available dimensions supplied by the test solicitor).

Supporting construction: aerated concrete floor of 150 mm thick and (650 ± 200) kg/m^3.

Pipe material	Pipe external diameter (mm)	Pipe wall thickness range (mm)	Thickness of active component (mm)	Classification
PVC-U	315/355/400	7.9 - 11.7	30	EI 120 U/C
PVC-U	200/250	4.9 – 11.9	24	EI 120 U/C
PE-HD	200/250	7.7 – 22.7	24	EI 120 U/C

The validity period is the one indicated in the product certification system.
This document is not neither a type approval nor a product certification.

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