warringtonfiregent
global safety

Classification report No. 14554C

Fire resistance on a reactive air transfer grille GE90

Owner of the classification report:

RF-TECHNOLOGIES N.V.
Lange Ambachtstraat 40
9860 OOSTERZELE
BELGIUM

This classification report consists of nine pages and two annexes and may only be used or reproduced in its entirety.

WFRGENT NV - Ottergemsesteenweg-Zuid 711 - B-9000 Gent - België
t: +32/(0)9 243 77 50 - f: +32/(0)9 243 77 51 - e: info@warringtonfiregent.net
BTW/VAT/TVA BE0870.418.414 - Ondernemingsnummer : RPR 0870.418.414 GENT

EGOLF FOUNDING MEMBER

BELAC 196-TEST

warringtonfiregent
global safety

1 Introduction

This classification report defines the classification assigned to a fire resistant reactive air transfer grille named GE90 in accordance with the procedures given in 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.

2 Details of classified product

2.1 General

The element GE90, is defined as a reactive air transfer grille. Its function is to resist the spread of fire and hot gases by the intumescent action of its active components, in respect of the fire performance characteristics integrity, thermal insulation and radiation in clause 5 of EN 13501-2: 2007 + A1: 2009.

2.2 Product description

The reactive air transfer grille consists of a frame and horizontal slats.
The outside dimensions of the air transfer grille (measured values) are 795 mm x 395 mm.
(The legend numbers mentioned in this classification report are the ones as mentioned in the test report N° 14554A)

2.2.1 Horizontal intermediate slats

[4] horizontal slat – material: Palusol 100 in PVC envelope – dimensions (Palusol): 41.5 mm x 4 mm – dimensions (slat): 50 mm x 6 mm.
- number: $H_n/18 + 1$ (e.g. for nominal height 400 mm: 23 pieces);
- intermediate distance: 12 mm.

[5] steel rod – material: steel ST 37 – diameter: 4 mm – length: H_n - 8 mm (e.g. 400 mm - 8 mm = 392 mm).
- number: 8;
- fixation: in between the horizontal frame profiles.
- center/center distance: 100 mm.

[6] spacer – material: polystyrene – diameter: 8 mm – length: 12 mm.
- position: in between horizontal slats [4].

2.2.2 Air transfer grille frame

The frame is composed of two vertical profiles and two horizontal profiles.

[7] frame – horizontal – material: Palusol 100 in PVC envelope – dimensions (Palusol): 41.5 mm x 4 mm – dimensions (slat): 50 mm x 6 mm.
- number: 2 per air transfer grille;
- provided with notches – diameter 20 mm/ 4.2 mm – every 100 mm;

[8] frame – vertical – material: Palusol 100 in PVC envelope – dimensions (Palusol): 41.5 mm x 4 mm – dimensions (slat): 50 mm x 6 mm.
- number: 2 per air transfer grille;
- fixation: glued to each other and covered with tape in the corners.

2.2.3 Actuating mechanism

The intumescent elements swell when exposed to heat and seal off the air path through the grille. There is no mechanical actuating mechanism.

2.2.4 Sealing of the gap in the supporting construction

The gap between the air transfer grille GE90 (800 mm x 400 mm NV) and the supporting construction is 2 to 3 mm and is filled with silicone mastic [10] – brand and type: RF-Technojoint – BCM.

2.3 Mounting

The fire resistant reactive air transfer grille can be mounted in an aerated concrete wall of 100 mm thickness.
The opening provided for the air transfer grilles type GE90 is 800 mm x 400 mm. The gap between the grilles and the wall is 2 to 3 mm.

The detailed description of the element, GE90, is fully given in the test report N° 14554A that has been issued in support of this classification and mentioned in clause 3.1.

3 Test reports and test results in support of this classification

There is currently no specific European test standard for testing the resistance to fire of reactive air transfer grilles. Therefore, the procedure shall be based on the principle of testing the product as part of an element. In the case of a wall the test shall be in accordance with EN 1364-1.

3.1 Test reports

Name of the laboratory that performed the tests	Identification number of test report	Tested dimension(s) W_n x H_n (mm) (*)	Supporting construction	Direction of exposure (i – o)	Orientation (h_o , v_e)	Working pressure
WFRGENT NV	14554A	800 x 400 (type GE90)	Aerated concrete wall - thickness: 100 mm	i↔o	v_e	-3 Pa
WFRGENT NV	14554A	800 x 400 (type GE90)	Aerated concrete wall - thickness: 100 mm	i↔o	v_e	+6 Pa

($W_{n\ opening}$ = Nominal width)
($H_{n\ opening}$ = Nominal height)
(i – o): the air transfer grilles are symmetrical and can be used in both directions.

Exposure conditions of the fire resistance test:

Temperature/time curve: standard as in EN 1363-1: 1999.
ETAG 026-4: 2008 §2.4.2.1. 'Where the grille is part of a wall, the test shall be undertaken in accordance with EN 1364-1.'

Orientation: mounted in a wall construction (v_e = vertical orientation)

Direction of exposure: Test report 14554A
This concerns a symmetrical construction of the air transfer grilles built in the middle of the vertical plane of the wall. The symmetrical air transfer grilles have been tested once at an overpressure and once at an underpressure.

ETAG 026-4: 2008 §2.4.2.1. 'The grilles shall be tested with exposure to fire to each face, unless the grille is symmetrical in construction.'
One side exposed to the fire.

Level of pressure:

Test report 14554A
The air transfer grilles are tested at 3 Pa underpressure and 6 Pa overpressure.
ETAG 026-4: 2008 §2.4.2.1. 'If the product is to be used in both high and low pressure applications, tests must be carried at high and low level in the furnace.'

3.2 Test results

Parameter	Results in minutes	
	WFRG 14554A	
	i↔o	
Test duration	90 min	
Dimensions grille (mm)	GE90 800 x 400 (W_n x H_n)	GE90 800 x 400 (W_n x H_n)
Integrity (E criterion):		
Ignition of the cotton pad during the test after five minutes	≥ 90 minutes (1)	≥ 90 minutes (1)
Spontaneous, continuous flames	≥ 90 minutes (1)	≥ 90 minutes (1)
Gap gauge (Ø 6 mm or Ø 25 mm) around the perimeter of the grille	≥ 90 minutes (1)	≥ 90 minutes (1)
Thermal insulation (I criterion):		
A maximum temperature rise of 180°C at the unexposed side	≥ 90 minutes (1)	≥ 90 minutes (1)
An average temperature rise of 140°C at the unexposed side	≥ 90 minutes (1)	≥ 90 minutes (1)
Radiation (R criterion):		
Reaches 15 kW/m²	Not applicable	≥ 90 minutes (1)

(1) No failures at test termination (90 minutes).

warringtonfiregent
global safety

4 Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with clause 7.5.2.3 of EN 13501-2: 2007 + A1: 2009 and with clause 2.4.2.2 of ETAG 026-4: 2008.

4.2 Classification

The element, the air transfer grille, GE90 is classified according to the clause 7.5.2.3 of EN 13501-2: 2007 + A1: 2009 and clause 2.4.2.2. of ETAG 026-4:2008.

Since the performance of the grille can be affected by its position in the vertical plane (due to the pressure gradient within the furnace) any classification is restricted to the position tested i.e. in the underpressure/ overpressure zone of the fire side.

The test report mentioned in table 3.1 allows a large series of combinations of performance parameters and time categories. At the request of the sponsor, only the classes below are given.

For air transfer grilles placed in an aerated concrete wall with a thickness of 100 mm:

EI 90 (v_e i↔o)
EW 90 (v_e i↔o)
E 90 (v_e i↔o)

The above classifications are valid for air transfer grilles placed between a pressure of -3 Pa and +6 Pa at midheight of the grilles.

4.3 Field of direct application

This classification is valid for the following end use applications according to EN 13501-2: 2007 + A1: 2009, ETAG 026-4: 2008 and EN 1364-1: 1999: reactive air transfer grille in walls.

This classification is also valid for the following production varieties:

- **Size of the air transfer grille:**

The type of grille and the fixings, including type and number of fixings, shall not be changed from those tested.
The dimensions of the grilles may be decreased but shall not be increased from the tested configuration:

- 100 mm x 100 mm until 800 mm x 400 mm: type GE90

- **Direction of exposure of the air transfer grille:**

Fire resistant reactive air transfer grilles for vertical mounting are permitted as mentioned in clause 4.2. of this document.

- **Distance between the reactive air transfer grilles and construction elements:**

For grilles in partitions, the grille shall be positioned in the element no closer than 200 mm from the edge of the specimen and between 760 mm and 2250 mm from the threshold.
The filling between the reactive air transfer grille and the wall needs to be done as mentioned in clause 2.2.4 of this document.

- **Supporting constructions:**

A supporting construction of the same type with a fire resistance equal or greater than the tested standard supporting construction (thicker and/or denser). The results of the fire test are directly applicable to mounting in a similar supporting construction with one or more of the following changes:

Aerated concrete wall

The height of an identical construction may be increased to 4 m.

warringtonfiregent
global safety

5 Duration of the validity of the classification report

At the time the standard EN 13501-2: 2007 + A1: 2009 was published, no decision was made concerning the duration of validity of the classification document.

6 Warning

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

Report	Name	Signature*	Date
Prepared by	Ing. N. DE KLERCK		24 MAY 2011
Reviewed by	Dr. Ir. B. SETTE		24 MAY 2011
* For and on behalf of WFRGENT N.V.			

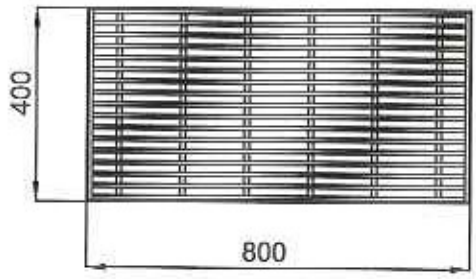
This document is the original version of this classification report and is written in English.

Unexposed side

GE90

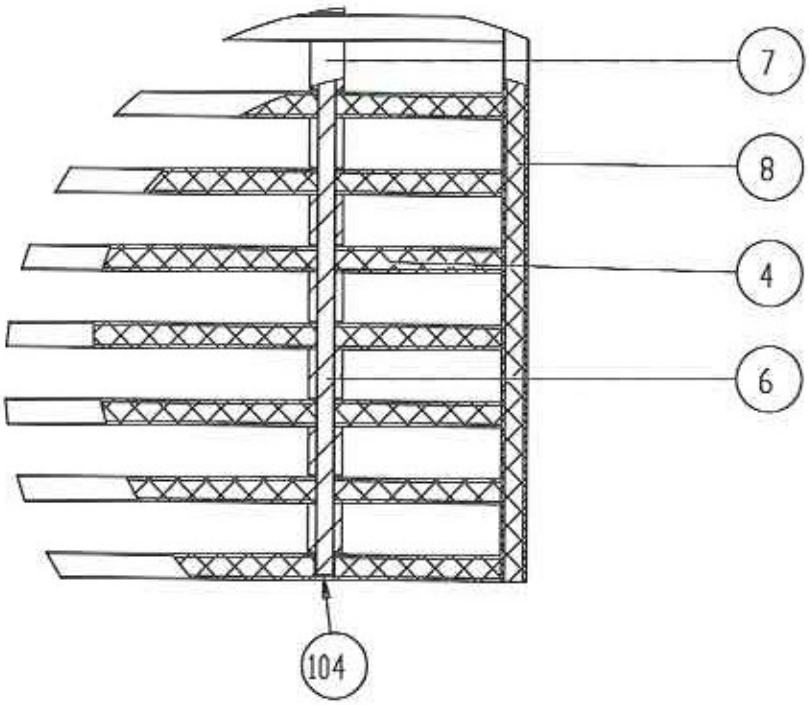
Installation opening: Wn X Hn

Dimensions grill: (Wn-5)x(Hn-5)



DETAILS

GE90 - air transfer grilles 1 and 2



Vertical section

GE90 - air transfer grilles 1 and 2