Instytut Techniki Budowlanej
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CLASSIFICATION OF FIRE RESISTANCE

IN ACCORDANCE WITH EN 1366-3:2021

Sponsor:	**Flamro Brandschutz-Systeme GmbH** *Glüsinger Straße 86* *21217 Seevetal* *Deutschland*
Prepared by:	**Building Research Institute (ITB)** 1, Filtrowa St. PL 00-611 Warsaw **Fire Research Department** 21, Ksawerów St. PL 02-656 Warsaw
Product name:	***Pipe penetration seals of "FLAMMOTECT-A" system in wall***
Classification report No.:	**02424/24/Z00NZP**
Date of issue:	**15.11.2024**
Appendix:	**Pages: 1**

This classification report consists of 5 pages and only to be used or reproduced in its entirety.

1 INTRODUCTION

The classification report defines the resistance to fire classification assigned to the element – pipe penetration seals of “FLAMMOTECT-A” system in wall, in accordance with the procedures given in EN 13501-2:2023.

2 DETAILS OF CLASSIFIED PRODUCT

2.1 General

The element – pipe penetration seals of “FLAMMOTECT-A” system in wall and floor.

2.2 Description

2.2.1 General information

The penetration seal type “FLAMMOTECT-A” system in wall and floor is made to seal the following services:

- metal (steel and stainless steel) pipes, fig. 1 in Appendix.

2.2.2 Description of the penetration seals

2.2.2.1 Metal pipes penetration seal in wall

Steel and stainless steel pipes are sealed in the pipe penetration seal of “FLAMMOTECT-A” system without any additional protective measures, in accordance with fig. 1 in Appendix.

2.2.3 Properties of the penetration seal components

Specification of the penetration seals components is shown in table 1.

Table 1

Name	Manufacturer	Description
FLAMMOTECT-A	Flamro Brandschutz-Systeme Gmb, D-21217 Seevetal, Germany	Ablative material density: 1.34 ÷ 1.48 kg/m³ content of non-volatile components: 66.0. ÷ 86.0 % mass loss through heating: 38.0 ÷ 48.0 % LOI (tested approx.1,5 mm thick samples): 55% ±3% flexibility (tested 1,5 mm thick samples): ≤ 5 mm reaction to fire class according to EN 13501-1:2007+A1:2009: “E”

2.2.4 Services in the penetration seals

2.2.4.1 Specification of the services

The following services are sealed in the pipe penetration seals of “FLAMMOTECT-A” system:

- steel pipes in accordance with EN 10220:2002 – pipe diameter, pipe wall thickness and type are presented in p. 4,

2.2.4.2 Distances between the services

The distance between the aperture edge of a penetration seal and any other penetration (e.g. door) in a building element shall be minimum 200 mm.

All distances between the classified pipe penetration seal of “FLAMMOTECT-A” system in flexible wall are 100 mm.

3 TEST REPORTS/EXTENDED APPLICATION REPORTS AND TEST RESULTS IN SUPPORT OF THE CLASSIFICATION

3.1 Test report/extended application reports

Name of laboratory	Name of sponsor	Test and date of test report	Test method
Materialprüfanstalt für das Bauwesen (MPA BS) Beethovenstraße 52 D-38106 Braunschweig	Rolf Kuhn GmbH Jägersgrund 10 57339 Erndtebrück - Schameder	2401/374/21	DIN-EN 1366-3:2009

3.2 Test results

Table 2 Non-combustible pipes, wall supporting construction

Test results						
Pipe number in accordance with the appropriate test report	**Pipe material / diameter x wall thickness (type / thickness x length[1)] of insulation) [mm x mm]**	**thickness of intumescent or sealing material x length / (number of layers) [mm x mm]**	**E - integrity**			**I – thermal insulation**
			cracks or openings in excess of given dimensions	**ignition of a cotton pad**	**sustained flaming on the unexposed side**	**maximum temperature rise at any point, limited to 180 K above the initial mean temperature**
			Criterion not achieved to the time, [min]			
Test report No. 2401/374/21						
Steel, stainless steel						
10	**steel,** Ø 114,3 x 3,2-C/U **(- / -)**	3 x 400 (1)	126 minutes no failure	126 minutes no failure	126 minutes no failure	62 minutes
11	**stainless steel,** Ø 110,0 x 1,0-C/U **(- / -)**	3 x 400 (1)	126 minutes no failure	126 minutes no failure	126 minutes no failure	41 minutes
Supporting construction was flexible wall construction thickness of 100 mm, made of steel profiles, gypsum plasterboard and mineral wool as a filling in accordance with EN 1366-3:2009 and EN 1363-1:2012,						

4 CLASSIFICATION AND FIELD OF APPLICATION

4.1 Reference of classification

This classification has been carried out in accordance with Clause 7 of EN 13501-2:2023.

4.2 Classification

4.2.1 Pipe penetration seal of "FLAMMOTECT-A" system in wall

The pipe penetration seal of "FLAMMOTECT-A" system in wall is classified according to the following combinations of performance parameters and classes as appropriate:

R	**E**	**I**	**W**		**t**	**t**	**-**	**M**	**S**	**C**	**IncSlow**	**sn**	**ef**	**r**

4.2.1.1. Fire resistance class of **steel pipes** in wall penetration seals **of " FLAMMOTECT-A"** system in case of **steel pipe** sealed with use of **"FLAMMOTECT-A**" protection in **flexible** or **rigid wall** construction thickness of: **t ≥ 100 mm**, made in accordance with technical description presented in p. 2.2 and fig. 1 in Appendix:

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness x length [mm]	FLAMMOTECT-A protection thickness x length [mm x mm] (number of layers)	Fire resistance class
D ≤ 114,3	t ≥ 2,95	lack	3 x 400 (1)	**EI 60 / E 120 C/U**

4.2.1.2. Fire resistance class of **stainless steel pipes** in wall penetration seals **of "FLAMMOTECT-A"** system in case of **stainless steel pipe** sealed with use of **"FLAMMOTECT-A**" protection in **flexible** or **rigid wall** construction thickness of: **t ≥ 100 mm**, made in accordance with technical description presented in p. 2.2 and fig. 1 in Appendix:

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness x length [mm]	FLAMMOTECT-A protection thickness x length [mm x mm] (number of layers)	Fire resistance class
D ≤ 110,0	t ≥ 1,0	lack	3 x 400 (1)	**EI 30 / E 120 C/U**

4.3. Field of application

This classification is valid for the following end use applications in accordance with EN 1366-3:2023:

4.3.1. Supporting construction

4.3.1.1. Classification given in p. 4.2 for **rigid wall** supporting construction is valid for penetration seals in wall made of concrete, reinforced concrete, aerated concrete, ceramic brick, cavity brick, checker brick, with density greater than or equal to 350 kg/m^3 and thickness equal to or greater than 100 mm, with fire resistance class (classified according to EN 13501-2) equal to or greater than given in appropriate point.

4.3.1.2. Classification given in p. 4.2 for **flexible wall** supporting construction is valid for penetration seals in double-sided flexible wall constructions made of gypsum plasterboards type F or DF with steel or timber studs substructure, overall thickness equal to or greater than 100 mm (min. two layers of gypsum plasterboards type F or DF with overall board layer thickness equal to or greater

than 25 mm) and the mineral wool insulation (min. thick. 50 mm, min. density 30 kg/m^3), with fire resistance class (classified according to EN 13501-2) equal to or greater than EI 60.

In case of supporting constructions with timber studs no part of the penetration seal is closer than 100 mm to a stud, the cavity is closed between the penetration seal and the stud and minimum 100 mm of insulation of class A1 or A2 according to EN 13501-1 is provided within the cavity between the penetration seal and the stud.

4.3.2. Service support construction

The distance from the surface of the separating element to the nearest supporting position for services shall be max 550 mm.

4.3.3. Metal pipes

4.3.3.1. Type of pipe material

Classification given in p. 4.2.1.1 and 4.2.1.2 for steel pipes covers pipe materials with a thermal conductivity lower than that tested, subject to the material having melting point at least equal to the nominal furnace temperature at the required classification period.

- 842 °C for the fire resistance class 30 min,
- 902 °C for the fire resistance class 45 min,
- 945 °C for the fire resistance class 60 min,
- 1006 °C for the fire resistance class 90 min,
- 1049 °C for the fire resistance class 120 min.

4.3.3.2. Pipe end configuration

Classification given in p. 4.2.1.1 and 4.2.1.2 is valid for pipe end configuration C/U and C/C.

4.3.3.3. Pipe orientation

All angles between 90°and 45° are covered in all directions.

4.3.4. Seal size and dimensions

4.3.4.1. The distance between the services and single service and the seal edge shall remain within the range presented in p. 2.2.4.2.

5 LIMITATIONS

This classification document does not represent Technical Approval, European Technical Assessment, National Technical Assessment or Certification of the product.
This classification report has been issued in electronic form, with qualified electronic signatures of persons responsible. A printout of this report is not an original document.

The responsible person:	**The authorizing person:**	**The approving person:**
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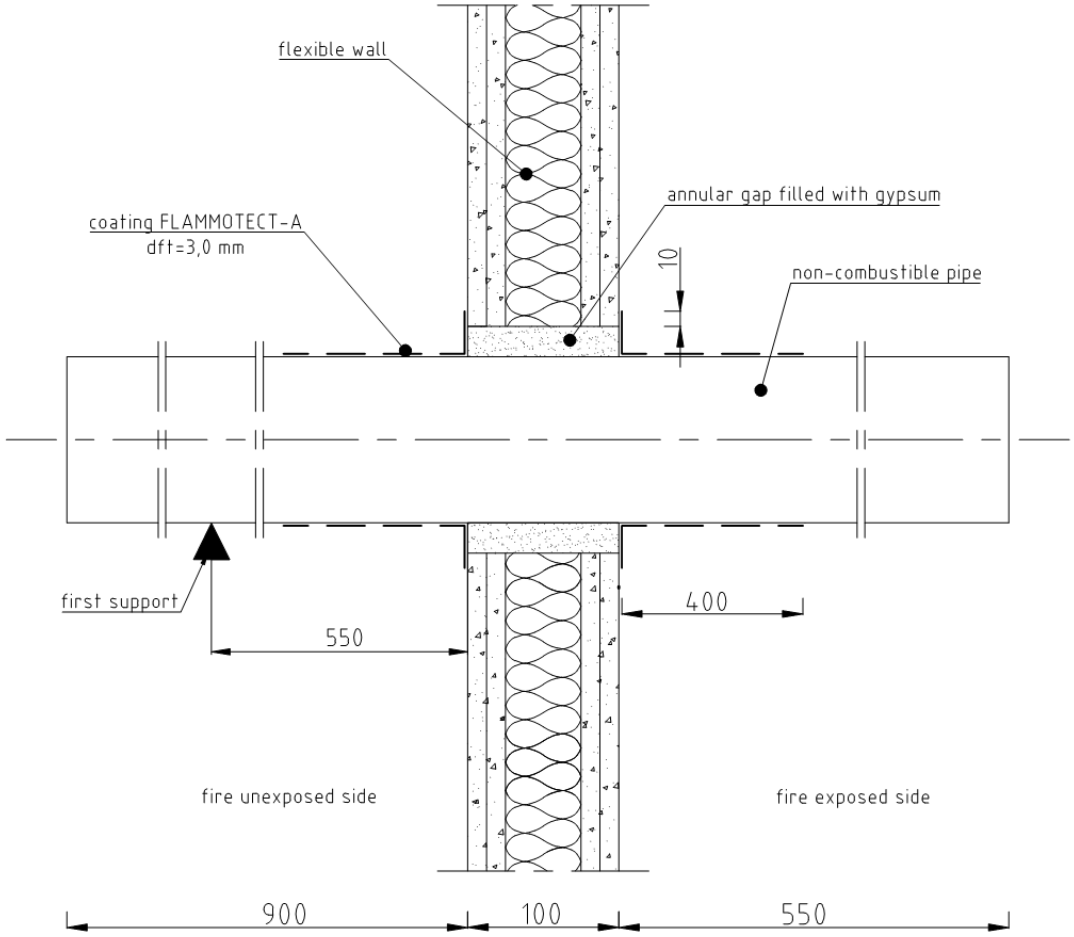
Appendix

Technical Documentation



dimensions in mm

Fig. 1