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European Technical Assessment ETA-17/0904 of 2018/12/17

General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the
construction product:

FLAMRO BK-N Fire Protection Pillows

Product family to which the
above construction product
belongs:

Pillows for fire sealing and fire stopping purposes.

Manufacturer:

FLAMRO Brandschutz- Systeme GmbH
Am Sportplatz 2
DE-56291 Leiningen
Tel. + 49 6746 9410 - 0
Fax +49 6746 9410 - 10
Internet www.flamro.de

Manufacturing plant:

FLAMRO Brandschutz- Systeme GmbH
Am Sportplatz 2
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This European Technical
Assessment contains:

13 pages including 4 annex which form an integral part
of the document

This European Technical
Assessment is issued in
accordance with Regulation
(EU) No 305/2011, on the
basis of:

EAD no 350454-00-1104 for Fire stopping and fire
sealing products - Penetration seals.

This version replaces:

The previous ETA with the same number, and issued
on 2018-02-01

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product

For FLAMRO BK-N the detailed specification and data for identification and performance criteria relevant for fire safety with regard to the construction products are given in Annex 1-4.:

- 1) FLAMRO BK-N is a compressible material that consist of a reactive material encased in a bag.
- 2) FLAMRO BK-N is supplied in three different sizes referenced FLAMRO BK-N Type S (250x60x30 mm, weight approximately 120 g) FLAMRO BK-N Type M (250x130x35 mm weight approximately 650 g) and FLAMRO BK-N Type L (250x180x35 mm weight approximately 940 g).
- 3) Installation of the FLAMRO BK-N see annex 2.

Additional components used is the intumescent material KERAFIX Flexpan 200 NG-A a black strip and has a weight pr. unit area of 1.34 kg/m² for a nominal thickness of 1.0 mm and furthermore a weight pr. unit area of 3.32 kg/m² for a nominal thickness of 3.0 mm. The construction product KERAFIX Flexpan NG 200- NG-A is intended for use as components with a fire protection effect in products made from Steel, Copper, Aluminium, PVC, PE.

Specification of the intended use in accordance with the applicable European Assessment Document

The definition of the intended use of the construction product FLAMRO BK-N is to temporarily or permanently reinstate the fire resistance performance of fire rated flexible wall constructions, rigid wall constructions and rigid floor constructions of masonry, aerated concrete or concrete, where they are penetrated by various services.

The specific elements of construction in which the FLAMRO BK-N can be used to provide a penetration seal in, are as follows:

- Flexible walls (drywalls). The wall shall have a minimum thickness of ≥ 100 mm and comprise timber or steel studs according to EN14195. The wall shall be lined on both faces with minimum 2 layer of gypsum boards (minimum thickness 12,5 mm) according to EN 520. All individual compartments between the studs shall be filled with a minimum of 40 mm of stone wool insulation with minimum density of 100 kg/m³. For the stud walls there must be a minimum distance of ≥ 350 mm of the penetration seal to any stud and the cavity between the penetration seal and the stud shall be closed with a minimum 350 mm of insulation with classification Euro class A1 or A2 according to EN 13501 – 1 in the cavity between stud and seal. The wall construction shall be classification according to EN13501 – 2.

- Rigid walls. Since the test has been carried out in light weight flexible partitioning walls the classification also covers rigid walls with the same minimum thickness of ≥ 100 mm and density of the originally tested wall. The rigid wall shall be classified in accordance with EN 13501 – 2 for the required fire resistance period.
- Rigid floors. The floor must have a minimum thickness of ≥ 150 mm and comprise of aerated concrete with a minimum density of 700 kg/m³. Since the test has been carried out in aerated concrete, the classification also covers concrete and masonry with the same minimum thickness and density of the originally tested wall. The rigid floor shall be classified in accordance with EN 13501 – 2 for the required fire resistance period.

The supporting construction must be classified in accordance with EN 13501-2 for required fire resistance period.

The FLAMRO BK-N may be used to provide a penetration seal with the following specific services.:

- Sheathed as well as not sheathed cables according to EN 1366-3
- Blank seal according to EN 1366-3
- Conduits, made of plastic and steel pipe according to EN 1366-3

All electrical services, sheathed as well as not sheathed cables and bundles, Conduits, made of plastic and steel pipe according to EN 1366-3 shall be supported on both sides of the surface of the wall in a distance of ≤ 225 mm. For the floor construction it shall be supported in a distance of ≤ 500 mm from the upper surface of the floor.

The performances given in Section 3 exclusively relate to this penetration seals (e.g. with respect to the design and arrangement of the components of the penetration seals and the type and position of the services, see annexes 1-4).

The verification and assessment methods on which this European Technical Assessment is based, lead to the assumption of a working life for FLAMRO BK-N of 10 years.

The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right product in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

Characteristic	Assessment of characteristic
3.2 Safety in case of fire (BWR 2)	
Reaction to fire	The FLAMRO BK-N is classified as Euroclass E in accordance with EN 13501-1 The KERAFIX Flexpan 200 NG-A intumescent is classified as Euroclass E in accordance with EN 13501-1.
Resistance to fire	The FLAMRO BK-N used as described in annex 1-4 is classified as EI 90 – EI 120 – EI 180 in accordance with EN 13501-2
3.3 Hygiene, health and the environment (BWR 3)	
Air permeability	No Performance Assessed
Water permeability	No Performance Assessed
Release of dangerous substances	No Performance Assessed
3.7 Sustainable use of natural resources (BWR 7)	
	No Performance Assessed

3.9 General aspects relating to fitness for use Durability and serviceability:

The verification of durability and serviceability is part of testing the essential characteristics. The construction product called FLAMRO BK-N fulfils the requirements according to EAD no 350454-00-1104 for Fire stopping and fire sealing products - Penetration seals for use Category: Z₂ without expecting significant changes of the characteristics relevant for fire sealing and fire stopping properties and the result performance.

The construction product called FLAMRO BK-N is intended for use at internal conditions with humidity classes other than Z₂ excluding temperatures below 0 [°C] Although a penetration seal is intended for indoor applications only, the construction process may result in it being subjected to more exposed conditions for a period before the building envelope is closed. For this case provisions shall be made to protect temporarily exposed penetration seals.

The proof and its assessment concerning applicability under climate conditions were carried out in accordance with EOTA TR 024 clause 4.2. thermal conditions (23±3 [°C] and RH (50±5) [%])

Property	Parameter	Method
Appearance	Visually examined OK	EOTA TR 024 - B.12
Tear strength of fabric	891,9 [N/50mm] max ±15 [%] OK	EOTA TR 024 - B.5.4.1 in accordance with EN 13934-1
Tear strength of seams	178,1 [N/50mm] max ±15 [%] OK 97,7 [N/50mm] max ±15 [%] OK (Under Heat)	EOTA TR 024 - B.5.4.2 in accordance with EN 13935-1
Filling material Expansion ratio	1,3 [mm/g] max ±15 [%] OK	EOTA TR 024 - 3.1.11

4 Assessment and verification of constancy of performance (AVCP)

4.1 AVCP system

According to the decision 1999/454/EC of the European Commission, as amended by 2001/596/EC, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is 1.

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking

Issued in Copenhagen on 2018-12-17 by



Thomas Bruun
Managing Director, ETA-Danmark

Annex 1
Product details, definitions and specification of intended use
The FLAMRO BK-N

The product specification details of the FLAMRO BK-N:







Manufacturer	Description
FLAMRO Brandschutz- Systeme GmbH Am Sportplatz 2 DE-56291 Leiningen	FLAMRO BK-N for fire stopping purpose
The FLAMRO BK-N Fire Protection is designed for the sealing of cables and electric lines in solid walls or ceilings and drywall partitions. The FLAMRO BK-N is suitable for permanent and temporary sealing.	

Additional components

Manufacturer	Description
Rolf Kuhn GmbH Jägersgrund 10 DE-57339 Erndtebrück	KERAFIX Flexpan 200 NG-A, for a detailed product information please see ETA-15/0719 dated 2015-12-02 from ETA-Denmark.
The intumescent material KERAFIX Flexpan 200 NG-A is a black strip and has a weight pr. unit area of 1.34 kg/m ² for a nominal thickness of 1.0 mm and furthermore a weight pr. unit area of 3.32 kg/m ² for a nominal thickness of 3.0 mm.	
The construction product KERAFIX Flexpan 200 NG-A are intended for use as components with a fire protection effect in products made from Steel, Copper, Aluminium, PVC, PE.	

Annex 2

Description of the installation of the FLAMRO BK-N, under which the test for the fire resistance performance was assessed.

		
<p>Clean the aperture and remove all loose parts. Check the correct installation of the cable rack on wall, which should be fixed by at least 250 mm; at the floor installation by at least 550 mm after leaving the surface.</p>	<p>If possible, provide one layer of pillows underneath the cable bundle or cable rack.</p>	<p>Stuff all other layers of fire protection pillows very tightly around the cables. For that purpose, the use of pillows in different sizes is recommended.</p>
		
<p>At a component, thickness < 250 mm the building component must be doubled with non-combustible building panels to the minimum thickness of 250 mm. The steel grid at the bottom side of the opening is for installation of the fire protection pillows.</p>	<p>The application in drywall partitions ≥ 100 mm is possible.</p>	<p>Make sure that the fire protection pillows are installed in a staggered pattern. Finally apply the label.</p>

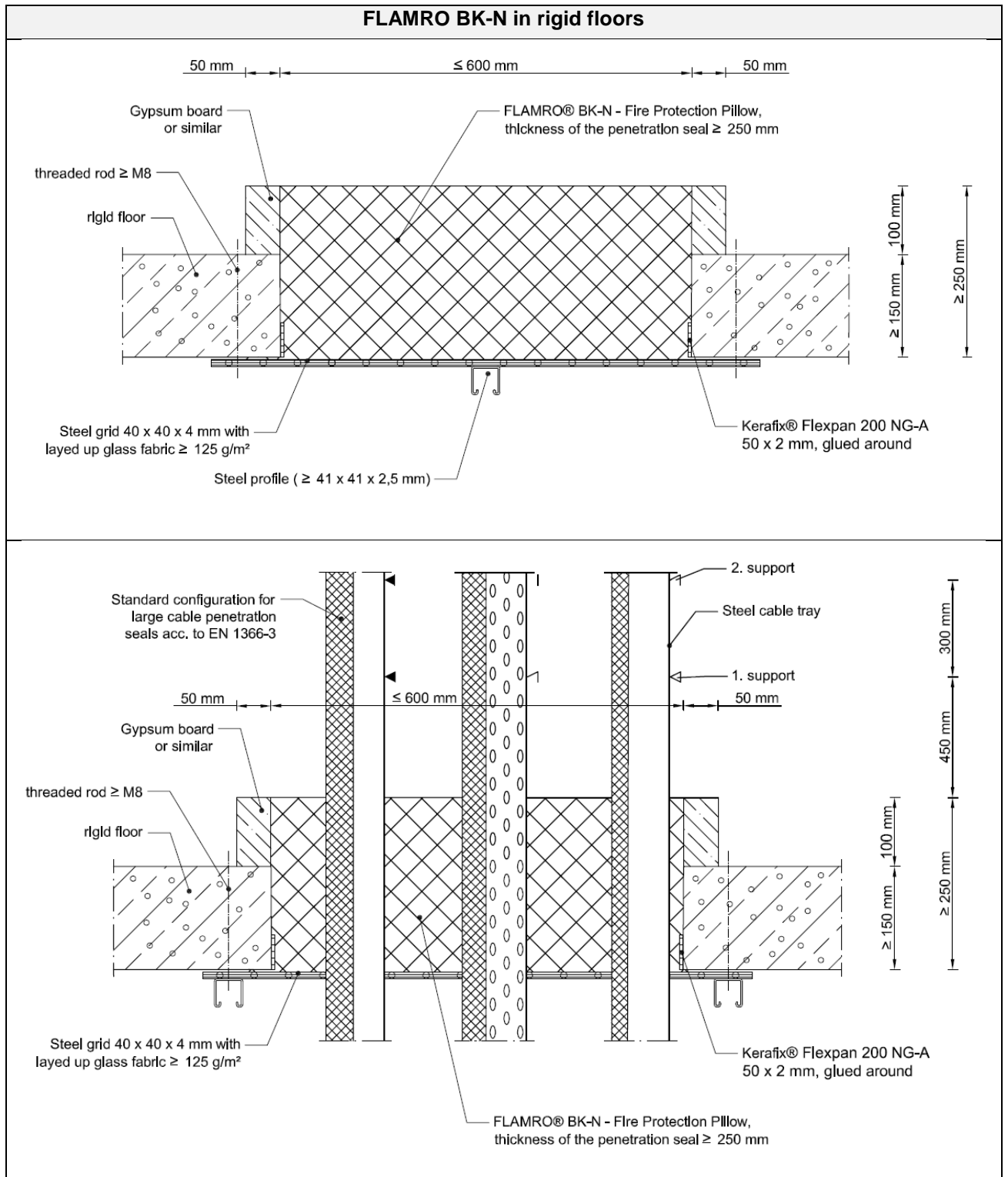
Annex 3

Description of the test conditions concerning the resistance to fire for the FLAMRO BK-N

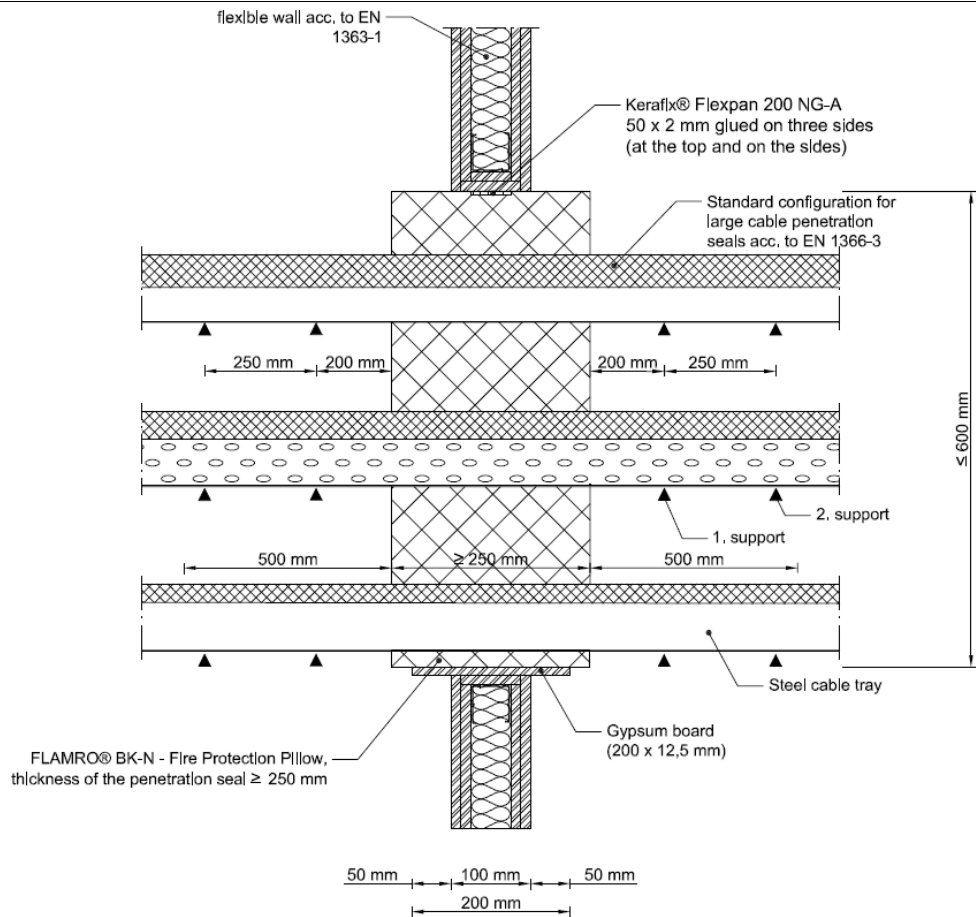
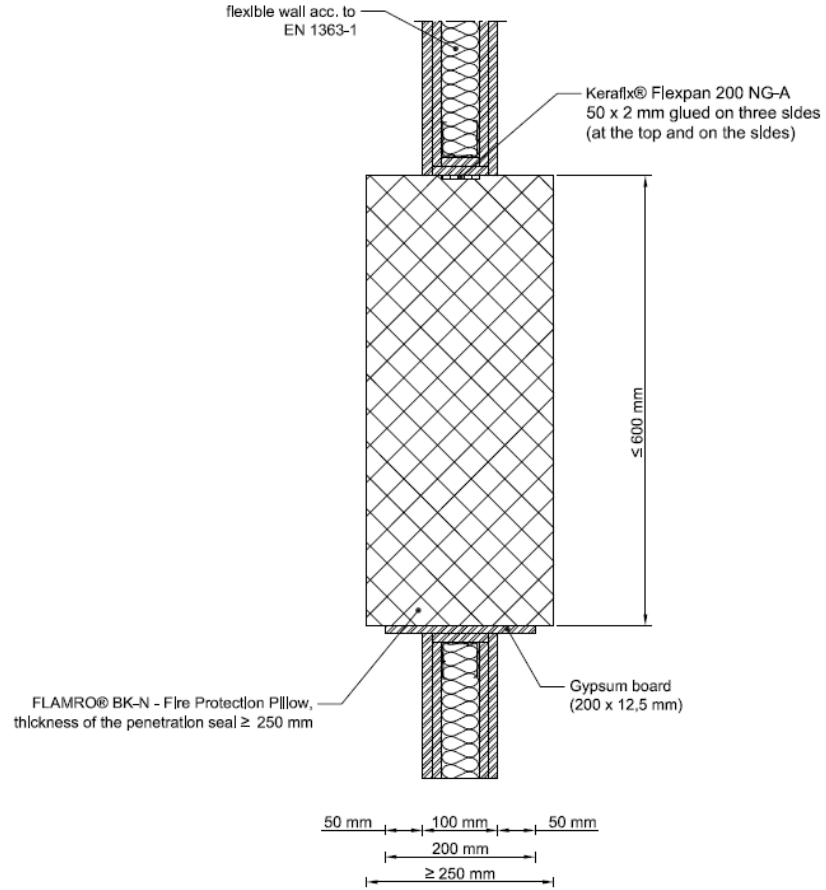
FLAMRO BK-N have been tested in accordance with EN 1363-1 and EN1366-3, installed in apertures in flexible walls (drywalls) with a minimum thickness of ≥ 100 mm lined on both faces with minimum 2 layer of gypsum boards (minimum thickness 12,5 mm) according to EN 520. All individual compartments between the studs shall be filled with a minimum of 40 mm of stone wool insulation with minimum density of 100 kg/m^3 and Rigid floors with a minimum thickness of ≥ 150 mm and comprise aerated concrete with a minimum density of 700 kg/m^3 .

The classification of the resistance to fire performance has been carried out in accordance with EN13501 – 2+A1. Penetration seals made from FLAMRO BK-N with additional materials and services are classified according to Annex 4. The classification is valid for services running through openings of maximum dimensions of $600 * 600$ mm (Width * Height) running through:

- Flexible (drywalls) or rigid walls (masonry, aerated concrete or concrete) with a minimum thickness of ≥ 100 mm and with a density the as the originally tested wall.
- Rigid floors of aerated concrete, concrete and masonry of a minimum thickness of ≥ 150 mm with a minimum density of 700 kg/m^3 .



FLAMRO BK-N in flexible walls or rigid walls



Annex 4
Resistance to Fire, classification of FLAMRO BK-N

The classification of FLAMRO BK-N in flexible and rigid wall constructions thickness of ≥ 100 mm is declared under the following conditions in accordance with EN13501 – 2+A1:

Penetration seal / Services	The classification of FLAMRO BK-N in accordance with the mounting orientation in flexible and rigid wall constructions thickness of ≥ 100 mm. E = Integrity I = Insulation
All sheathed cable types $\varnothing \leq 21$ mm (cable group 1 according to EN 1366-3)	E 120 EI 120
All sheathed cable types $\varnothing \leq 50$ mm (cable group 2 according to EN 1366-3)	E 120 EI 120
All sheathed cable types $\varnothing \leq 80$ mm (cable group 3 according to EN 1366-3)	E 120 EI 90
Cable bundles $\varnothing \leq 100$ mm (cable group 4 according to EN 1366-3)	E 120 EI 120
Not sheathed cable types $\varnothing \leq 24$ mm (cable group 5 according to EN 1366-3)	E 120 EI 120
Conduits, made of plastic and steel pipe end configuration C/C $\varnothing \leq 16$ mm (cable group 6 according to EN 1366-3)	E 120 EI 120
Blank seal	E 120 EI 120

The classification of FLAMRO BK-N in rigid floor constructions thickness of ≥ 150 mm is declared under the following conditions in accordance with EN13501 – 2+A1:

Penetration seal / Services	The classification of FLAMRO BK-N in accordance with the mounting orientation in rigid floor constructions thickness of ≥ 150 mm. E = Integrity I = Insulation
All sheathed cable types $\varnothing \leq 21$ mm (cable group 1 according to EN 1366-3)	E 180 EI 180
All sheathed cable types $\varnothing \leq 50$ mm (cable group 2 according to EN 1366-3)	E 180 EI 120
All sheathed cable types $\varnothing \leq 80$ mm (cable group 3 according to EN 1366-3)	E 180 EI 180
Cable bundles $\varnothing \leq 100$ mm (cable group 4 according to EN 1366-3)	E 180 EI 120
Not sheathed cable types $\varnothing \leq 24$ mm (cable group 5 according to EN 1366-3)	E 180 EI 120
Conduits, made of plastic and steel pipe end configuration C/C $\varnothing \leq 16$ mm (cable group 6 according to EN 1366-3)	E 180 EI 180
Blank seal	E 120 EI 120

The direct field of application for FLAMRO BK-N is derived from tests according to standard EN 1366-3. The classification is declared according to EN13501 – 2+A1 under the following conditions:

<p>Field of application (Chapter 4.3 of the classification report)</p>	<ul style="list-style-type: none"> • Test results and classifications are applicable only for the orientation in which the penetration was tested, therefore in floors (horizontal) and walls (vertical). • Flexible walls (drywalls). The wall shall have a minimum thickness of ≥ 100 mm and comprise timber or steel studs according to EN14195. The wall shall be lined on both faces with minimum 2 layer of gypsum boards (minimum thickness 12,5 mm) according to EN 520. All individual compartments between the studs shall be filled with a minimum of 40 mm of stone wool insulation with minimum density of 100 kg/m^3. For the stud walls there must be a minimum distance of ≥ 350 mm of the penetration seal to any stud and the cavity between the penetration seal and the stud shall be closed with a minimum 350 mm of insulation with classification Euro class A1 or A2 according to EN 13501 – 1 in the cavity between stud and seal. The wall construction shall be classification according to EN13501 – 2. <p>Since the test and classification has been carried out in light weight flexible walls (drywalls) the classification also cover and may be applied to rigid walls of a thickness and density equal to or greater than that of the supporting construction used in the test. The rigid wall shall be classified in accordance with EN 13501 – 2 for the required fire resistance period.</p> <ul style="list-style-type: none"> • Rigid floors. The floor must have a minimum thickness of ≥ 150 mm and comprise of aerated concrete with a minimum density of 700 kg/m^3. <p>Since the test and classification has been carried out in aerated concrete, the classification also cover and may be applied to concrete or masonry separating elements of a thickness and density equal to or greater than that of the supporting construction used in the test. The rigid floor shall be classified in accordance with EN 13501 – 2 for the required fire resistance period.</p> <ul style="list-style-type: none"> • All electrical services, sheathed as well as not sheated cables and bundles, conduits, made of plastic and steel pipe according to EN 1366-3. Shall be supported on both sides of the wall schott in a distance of ≤ 225 mm. For the floor construction it shall be supporter in a distance of ≤ 500 mm from the top of the schott. • Sheathed as well as not sheated cables and bundles can be sealed off in zero clearance for cable ladder in bundles to 3 pieces. • A minimum distance of 100 mm applies to other wall schotts.
<p>Maximum size of the void</p>	<ul style="list-style-type: none"> • 600 x 600 mm