FLAMRO products are fit for use in:

- Power plants
- Airports
- Building construction
- Special plants
- Industrial construction
- Underground and tunnel construction
- Off-shore buildings

… throughout Europe and beyond

this is the focus and cornerstone on which FLAMRO has built its reputation for more than thirty years. FLAMRO is a long-time leader in the development, production and distribution of firestopping products and systems. The emphasis of the development work is on high-quality cable penetration seals, cable ducts and cable coatings.
At our modern production facility we manufacture

- Fire protection cable coatings for: penetration sealing systems – DIY assembly cable ducts I 30 – I 90, and E 30 – E 60 – electrical cables
- Refractory glue for DIY assembly cable ducts
- Firestop pillows for penetration sealing systems
- Pre-assembled cable ducts with sheet steel jacket, I 30 – I 120 and E 30 – E 90, available in an extremely lightweight design and with a wide variety of fittings.

Ongoing process control and monitoring procedures ensure consistent quality of all FLAMRO products. State-of-the-art research on innovative firestopping solutions that are practice-oriented, environmentally safe and economical is FLAMRO's core concern, as is continuous development – for the sake of your safety.

With compliments:

This information is brought to you by: FLAMRO Brandschutz-Systeme GmbH
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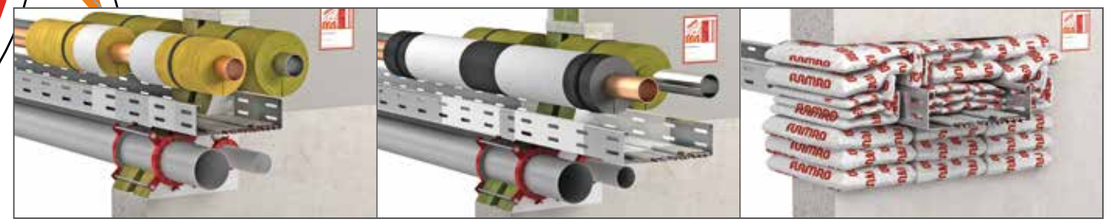
OVERVIEW

Technical Approvals and Test Certificates

FLAMRO – for Your Safety

FLAMRO Firestop Systems

Typ	FLAMRO **One-Panel Seal** **S 30 | 60**	FLAMRO **BS-1 One-Panel Seal** **S 90**	FLAMRO **BS Two-Panel Seal** **S 90**
Approved for the following penetrants	Electrical cables of any thickness and material, as well as cable trays made of steel, aluminium or plastic profiles Single steel and plastic pipes ≤ 15 mm	Electrical cables of any thickness and material, as well as cable trays made of steel, aluminium or plastic profiles Single steel and plastic pipes ≤ 15 mm	Electrical cables of any thickness and material, as well as cable trays made of steel, aluminium or plastic profiles Single steel and plastic pipes ≤ 15 mm
Rating	Tested to DIN 4102-9 60 mm panel, 75 mm gypsum wall, 125 mm floor Wall: 61 min integrity and insulation Floor: 73 min integrity and at least 38 min insulation Tested to BS 476: Part 20 | 22 50 mm panel, 100 mm wall Integrity 90 min Insulation at least 79 min	Tested to DIN 4102-9 80 mm panel, 100 mm gypsum wall, 150 mm floor Wall: 120 min integrity, 100 min insulation Floor: 102 min integrity and insulation Tested to BS 476: Part 20 | 22 60 mm panel, 100 mm wall and floor Integrity 240 min Insulation wall 94 min Insulation floor 120 min Tested to NEN 6069, prEN1366-3 60 mm panel, 150 mm wall Integrity 240 min, insulation 117 min	Tested to DIN 4102-9 | prEN 1366-3 (floor) 60 mm panel, 100 m gypsum wall, 150 mm floor Integrity and insulation floor 110 min Integrity and insulation wall 96 min Tested to BS 476: Part 20 | 22 60 mm panel, 100 mm wall, 150 mm floor Integrity 120 min wall and floor Insulation wall up to 105 min Insulation floor 120 min Tested to NEN 6069 | prEN1366-3 60 mm panel, 150 mm wall Integrity 240 min, insulation 149 min
Approval document(s) | Test certificate(s)	iBMB Braunschweig (Germany): No. 3749 | 0644-CR Exova Warringtonfire (England - BS): No. Warres R10749	iBMB Braunschweig (Germany): No. 3925 | 0703-CR Exova Warringtonfire (England - BS): No. R 12227 and No. C 120229 TNO, Delft NL: 97-CVB-R1327	iBMB Braunschweig (Germany): No. 3480 | 4081- AR and No. 3597 | 5337-AR Exova Warringtonfire (England - BS): No. 117133, No. C 126229 and No. J 90150 | 1 TNO, Delft NL: 97-CVB-R1327
Areas of application	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete | lightweight partitions ≥ 75 mm T) max. seal size: W = 70 cm, H = 50 cm • floors | ceilings (concrete or autoclaved aerated concrete ≥ 125 mm T) max. seal size: W = 60 cm, L = ∞	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete | lightweight partitions ≥ 100 mm T) max. seal size: W = 200 cm, H = 100 cm • floors | ceilings (concrete or autoclaved aerated concrete ≥ 150 mm T) max. seal size: W = 60 cm, L = ∞	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete | lightweight partitions ≥ 100 mm T) max. seal size: W = 200 cm, H = 130 cm • floors | ceilings (concrete or autoclaved aerated concrete ≥ 150 mm T) max. seal size: W = 80 cm, L = ∞

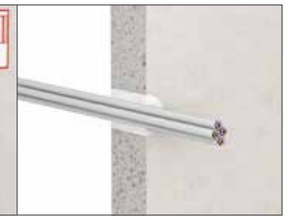


Typ	FLAMRO **Multi-Combi Seal** **S 90**	FLAMRO **FLAMRO Multi-Combi Seal EN** **EI 90 | EI 120**	FLAMRO **BK Pillow Seal** **S 90**
Approved for the following penetrants	Electrical cables of any thickness and material, as well as cable trays made of steel, aluminium or plastic profiles Single steel and plastic pipes ≤ 15 mm	Electrical cables of any thickness and material as well as cable trays made of stell. • Non combustible pipes (e.g. steel) ≤ 168,3 mm • CU-pipes ≤ 88,9mm • Combustible plastic pipes ≤ 160 mm • Installation pipes ≤ 25 mm • Synthetic rubber isolated pipes Armaflex Protect	Electrical cables of any thickness and material, as well as cable trays made of steel, aluminium or plastic profiles Single steel and plastic pipes ≤ 15 mm No filling of cable interstices required
Rating	Tested to DIN 4102-9 60 mm panel, 75 mm gypsum wall, 125 mm floor Wall: 61 min integrity and insulation Floor: 73 min integrity and at least 38 min insulation Tested to BS 476: Part 20 | 22 50 mm panel, 100 mm wall Integrity 90 min Insulation at least 79 min	E 120 all installations I 90 | I 120 depending on seal occupancy	Tested to DIN 4102-9 seal thickness 240 mm, 200 mm floor seal thickness 250 mm, 150 mm wall Floor: integrity and insulation 91 min Wall: integrity and insulation 93 min Tested to BS 476: Part 20 | 22 seal thickness 250 mm Wall: integrity and insulation 135 min Tested to NEN 6069 | prEN1366-3 seal thickness 250 mm, 150 mm wall Integrity 240 min, insulation 109 min
Approval document(s) | Test certificate(s)	iBMB Braunschweig (Germany): No. 3749 | 0644-CR Exova Warringtonfire (England - BS): No. Warres R10749 UL No. R25820	ETA-13 | 0756 FM Global No. 3044513	iBMB Braunschweig (Germany): No. 3218 |1982-AR and No. 3152 | 1522-AR Exova Warringtonfire: (England - BS): No. J 90150| 1 TNO, Delft NL: 97-CVB-R1327
Areas of application	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete | lightweight partitions ≥ 75 mm T) max. seal size: W = 70 cm, H = 50 cm • floors | ceilings (concrete or autoclaved aerated concrete ≥ 125 mm T) max. seal size: W = 60 cm, L = ∞	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete | lightweight partitions with wood stud or steel substructure with a thickness of ≥ 122mm according to EN 1366 max. seal size: H = 97cm, W = 120 cm or H = 120cm, W = 97cm • floors | ceilings (masonry|concrete or autoclaved aerated concrete) ≥150 mm	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete ≥ 150 mm T) max. seal size: H = 40 cm, W = 70 cm • floors | ceilings (concrete or autoclaved aerated concrete ≥ 200 mm T) max. seal size: W = 40 cm, L = ∞

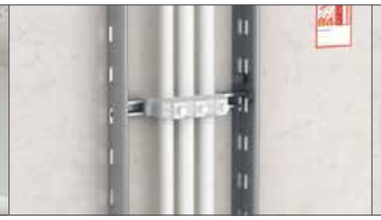


Typ	FLAMRO **BSS Foam Seal** **S 90**	FLAMRO **BSS Foam Seal** **S 30**	FLAMRO **BSB Firestop Bricks** **S 90 – S 120**
Approved for the following penetrants	Electrical cables of up to 30 mm thickness and of any material, as well as cable trays made of steel, aluminium or plastic profiles Single steel and plastic pipes ≤ 15 mm	Electrical cables of up to 30 mm thickness and of any material, as well as cable trays made of steel, aluminium or plastic profiles Single steel and plastic pipes ≤ 15 mm	Electrical cables of any thickness and material, as well as cable trays made of steel, aluminium or plastic profiles Single steel and plastic pipes ≤ 15 mm
Rating	Tested to DIN 4102-9 | prEN 1366-3 min. seal thickness 200 mm 100 mm gypsum wall, 150 mm floor Wall: 100 min integrity and up to 100 min insulation Floor: 92 min integrity and up to 92 min insulation	Tested to DIN 4102-9 min. seal thickness 75 mm 75 mm gypsum wall, Wall: 61 min integrity and up to 61 min insulation	Tested to DIN 4102-9 min. seal thickness 230 mm 100 mm gypsum wall, 150 mm floor Wall: 120 min integrity and insulation Floor:105 min integrity and up to 105 min insulationinsulation 149 min
Approval document(s) | Test certificate(s)	iBMB Braunschweig (Germany): No. 3543 | 7962-CR and No. 3620 | 3861-CR Exova Warringtonfire (England - BS): No. 189516	iBMB Braunschweig (Germany): No. 3686 | 9924-CR	iBMB Braunschweig (Germany): No. 3745 | 8803-CR
Areas of application	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete | lightweight partitions ≥ 100 mm T) max. seal size: H = 220 mm, W = 220 mm or ø 220 mm • floors | ceilings (concrete or autoclaved aerated concrete ≥ 150 mm T) max. seal size: W = 220 mm, L = 220 mm or ø 220 mm • Seal thickness 200 mm	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete | lightweight partitions ≥ 75 mm T) max. seal size: H = 250 cm, W = 250 cm or ø 250 mm • Seal thickness 75 mm	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete | lightweight partitions ≥ 100 mm T) max. seal size: H = 40 mm, W = 70 mm • floors | ceilings (concrete or autoclaved aerated concrete ≥ 150 mm T) max. seal size: W = 40 cm, L = ∞



Typ	FLAMRO **Variant N II A** **firestop pipe collar**	FLAMRO **Variant N II KS** **firestop pipe collar**	FLAMRO **DSB-W**	FLAMRO **DSB W** **EI 120 | E 120**
Approved for the following penetrants	Combustible piping for: • Plastic pipes (not insulated & insulated) • Plastic Composite Pipes • Gas pipes • Pneumatic Tube Systems Double-pipe systems Tube (outer diameter ETA according to max. 400 mm)	Penetration of: • Conduits, either unoccupied or occupied with cables with a max. diameter of 21 mm • Single pipe max. 63 mm in diameter Max. outer diameter of conduit bundles 125 mm	Single lines: • electrical lines • pipes ≤ 160 mm OD made of non-combustiblebuilding materials – except aluminium and glass • piping for non-combustible liquids, vapours, gases, or dusts, as well as installation conduits ≤ 32 mm OD designed for electrical cables and made of combustible building materials, aluminium or glass	**Basis:** classification report KB-210006348-2 MPA NRW **Classification:** EI 120 | E 120 **Application:** sealing of small bunched cables in walls (EN 13501-2 classification) **Installation in:** solid walls of concrete, aerated concrete, masonry lightweight partitions with wood stud or steel substructure* *lightweight partitions with insulation - annular spaces filled with DSB-W *lightweight partitions without insulation - non-combustible cladding tube required, must be filled with DSB-W **Wall thickness:** at least 100 mm **Routing of:** non-metallic sheated cable telecommunications cables **Max. cable diameter:** single cable <= 17 mm ø bunched cables <= 45 mm **annular space closure:** Joint width 0-10 mm **filling depth of annular space:** on component thickness **Distances:** between bunched cables at least 50 mm to other installations at least 100 mm **1st support:** distance to component surface max. 250 mm
Rating	R 90 with noise absorption possible (PE max. 4 mm thick) DIN 4102-B2, ETA: EI 120 - U | U and EI 240-U | C	EI 120	Design compliant with the requirements specified by LAR (Leitungsanlagen-Richtlinie) (German guidelines on fire-protection requirements for pipes and electrical lines | cables, including their fittings, installed in buildings)	
Approval document(s) Test certificate(s)	Z-19.17-1194 DIBt, Berlin ETA-13|0922 DIBt Berlin	ETA-13|0792 OIB, Wien	Z-19.11-445 DiBt, Berlin Building Material Approval	
Areas of application	In all fire-rated • walls (masonry | concrete |autoclaved aerated concrete | lightweight partition ≥ 100 mm) • ceiling (concrete or Aerated concrete ≥ 150 mm) • According to ETA Walls ≥ 100 to ≥ 300 mm Ceilings ≥ 150 to ≥ 300 mm	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete | lightweight partitions ≥ 100 mm T) • floors | ceilings (concrete or autoclaved aerated concrete ≥ 150 mm T)	In all fire-rated • walls (masonry | concrete | autoclaved aerated concrete| lightweight partitions • floors | ceilings (concrete or autoclaved aerated concrete) for firestop sealing of residual gaps around non-insulated single lines (cables or pipes) routed through their own individual breakthroughs or bore openings For annular spaces with a maximum width of 15 mm	


Typ	FLAMRO **SPN DIY Assembly Cable Duct**	FLAMRO **ABA Fire Protection Coating**	FLAMRO **BMA Cable Coating**
Approved for the following penetrants	Electrical cables of any thickness and material, as well as cable trays made of steel profiles	Electrical cables of any thickness and material, as well as cable trays made of steel or aluminium profiles	Electrical cables of any thickness and material, as well as cable trays made of steel or aluminium profiles
Rating	I 30 – I 90 E 30 – E 60 Depending on wall thickness of the cable ducts up to 90 minutes integrity and insulation (tested to DIN 4102-11) Depending on the wall thickness of the cable ducts up to 60 minutes circuit integrity (tested to DIN	• prevents fire propagation • encapsulates fire loads Cable coating FLAMRO ABA Dry layer thickness ≥ 1.0 mm	prevents fire propagation Cable coating with FLAMRO BMA Indoor and Outdoor (BMA A+F) Dry film thicknesses: 1.5 - 2 mm in Interior, approximately 2-3 mm in outside
Approval document(s) | Test certificate(s)	Test certificates P-3890 | 8908-MPA BS P-3888 | 8888-MPA BS	U 99 059 iBMB, TU Braunschweig IEC 60332-3-22 Currenta fire technology, Leverkusen	DIN EN 60332-2-22 (> 180 min.) DIN EN 60332-1-2 IEC 60331-21
Areas of application	For all fire-rated building components and fire compartments: I = Installation ducts: Fire exposure from the inside (for escape and rescue routes) E = Circuit integrity ducts: Fire exposure from the outside	In all enclosed spaces with increased protection requirements (cellars, indoor car parks, safety areas, etc.) Formulation variant FLAMRO BMA is also suitable for use in outdoor areas (refineries, industrial plants, etc.)	In all enclosed spaces with increased protection requirements (cellars, indoor car parks, safety areas, etc.) Ideal for accessible areas. Suitable for use iOutdoor, e.g. Refineries, industrial plants etc.

NOTS