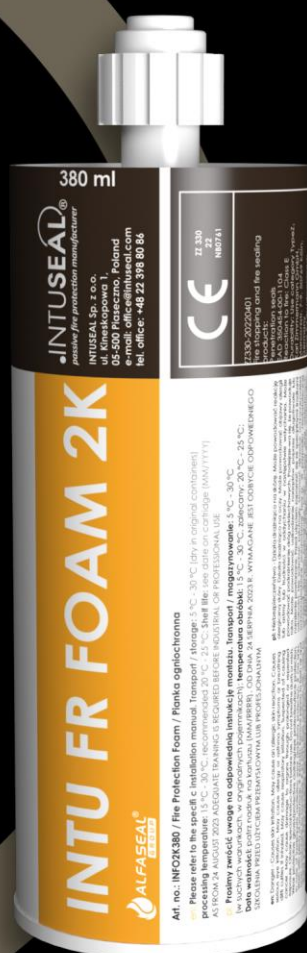


INTU FR FOAM 2K

Fire protection foam

TDS Technical Data Sheet



INTUSEAL®
passive fire protection manufacturer



www.intuseal.com

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→ PRODUCT DESCRIPTION

The **INTU FR FOAM 2K** intumescent fire protection foam is on the basis of polyurethane with fire-retardant additives for the fire-resistant sealing of openings around cable trays, cable bundles, flammable and non-flammable pipes. After application it reacts and increases its volume. During a fire, the two-component foam prevents fire and smoke from spreading through fire-resistant partitions.

- fire resistance class up to **EI 120**
- quick installation and sealing hard-to-reach penetrations
- installation from one side possible
- very efficient processing
- excellent adhesion to surface
- mixed penetration seal, cable ladders, cable bundles
- plastic, aluminium composite and metal pipes
- for use in walls and floors



→ APPLICATION

The **INTU FR FOAM 2K** intumescent fire protection foam is cartridges on the basis of polyurethane. Is intended to be easy used as mixed penetration seal to the fire resistance performance of flexible wall, rigid wall and rigid floor construction where they have been provided, with apertures which are penetrated by various cables, waveguides, conduits / tubes, metal pipes, plastic pipes and cable support constructions (perforated or non-perforated steel cable trays and steel ladders).

Rigid walls:

The wall must be 100 mm minimum thickness. Must have concrete, aerated concrete, cellular concrete, reinforced concrete or masonry structure, with min. density $\rho \geq 450 \text{ kg/m}^3$.

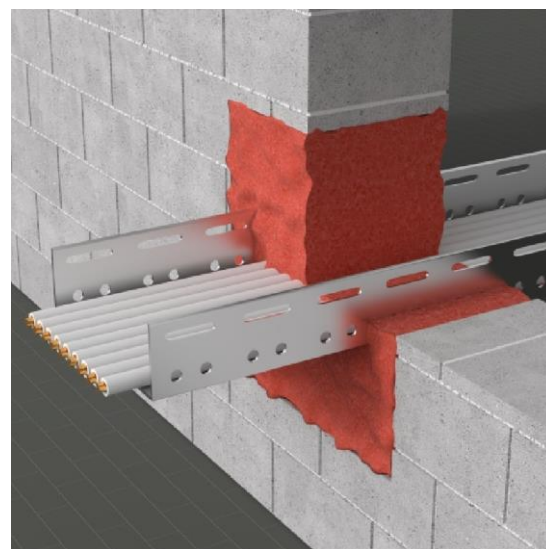
Rigid floors:

The floor must be 150 mm minimum thickness. Must have concrete, aerated concrete, cellular concrete, reinforced concrete or masonry structure, with min. density $\rho \geq 450 \text{ kg/m}^3$.

Flexible walls:

The wall must be minimum thickness 94 mm. Must have steel or timbers profile structure covered on both sides with minimum 2 layers of boards with minimum thickness 12,5 mm or minimum one layer of boards (minimum thickness 25 mm) with classification.

- For timber stud walls there shall be a minimum distance of 100 mm of the penetration seal to any timber stud. This cavity between the penetration seal and the timber stud has to be closed with insulation.



→ AVAILABILITY

Product	Unit	Pallet (pcs)	Article number
INTU FR FOAM 2K 380 ml	BOX (6 pcs)	360 (60xBOX)	INFO2K380
Additional equipment	Unit	Pallet (pcs)	Article number
INTU FR FOAM 2K HandyMax	pcs	N/A	INFO2KHM
INTU FR FOAM 2K PowerMax	pcs	N/A	INFO2KHMPM

→ TRANSPORT AND STORAGE

Store in dry and cool conditions at temperatures between + 5°C and + 25°C.

→ COMPLIANCE

- ETA-10/0431, OIB
- ETA-11/0206, OIB
- EC Certificate of Conformity 0761-CPD-0187
- EC Certificate of Conformity 0761-CPD-0208
- DoPZZ330-20180701
- TDS
- SDS

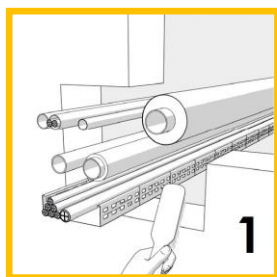
INTU FR FOAM 2K

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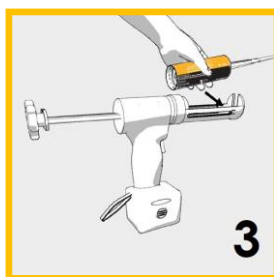
→ INSTALLATION METHOD



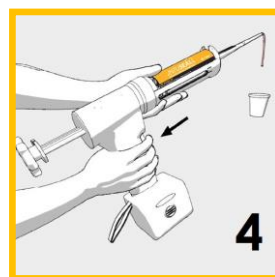
1. Clean the installations from dust, dirt and grease.



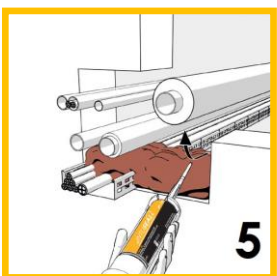
2. Hold the cartridge vertically with the tip pointing upward, unscrew the cap and firmly screw on the provided mixing nozzle.



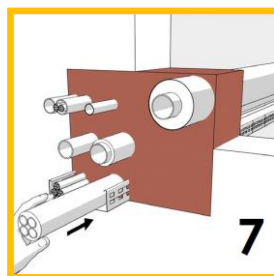
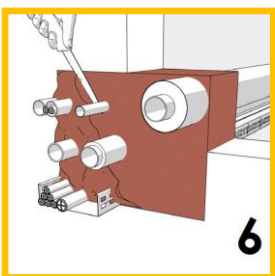
3. Insert the cartridge into the intended dispensing gun.



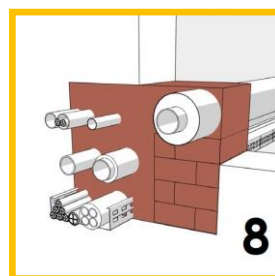
4. Start pressing out and discard non-uniform initial material.



5. Fill the opening from back to front. In this process build up the foam from bottom to top, always guide the tip of the mixing nozzle above the foam so that the material does not stick or clog. After a work interruption longer than approximately 50 seconds the foam hardens in the mixing nozzle, which then must be replaced. Prior to changing the mixing nozzle, offload the dispensing gun, and carefully replace the mixing nozzle.





6. After approx. 2 minutes projecting foam residues can be cut off with a suitable knife in compliance with the necessary protective measures and safety regulations.



7. Cables that will be installed retroactively can be routed through the existing foam.
8. The fire protection penetration seal is finished. Complete any important information on the penetration seal label.

Note: If the mixing nozzle is clogged, never use force to press out the material: force can destroy the cartridge or the dispensing gun!
Wear suitable protective gloves and protective clothing for the work.

Additional equipment	
INTU FR FOAM 2K HandyMax	INTU FR FOAM 2K PowerMax
	
Manual injection dispenser. The dispenser is made of high-quality materials that guarantee long and trouble-free operation. The special design of the dispensers ensures perfect matching of compatible containers.	Electrical injection dispenser. The dispenser has included: trigger drive module with regulator, 7.2 V lithium-ion battery, speed control, LED light. Max speed: 4 mm/sec. Max power: 600 kgf / 6000 N / 1,320 lbs.

➔ TECHNICAL DATA

Table 1 Properties of the **INTU FR FOAM 2K** intumescent fire protection foam

Colour	Red / brown*
Shelf life	12 months in unopened packaging at a temperature between 5°C and 30°C
Transportation storage temp.	+5 °C to +30 °C (store dry and dustfree in the original packaging)
Application temperature	+15 °C to +30 °C (optimally +20 °C tot +25 °C)
Temp. resistance	-20 °C to +80 °C
Foam yield*	Up to 2.1 litres (at 22 °C material and ambient temperature)
Work interruption*	Approx. 50 sec
Cuttability	After approx. 90 seconds (at 22 °C material and ambient temperature)
VOC	< 2 µg/m³
Density	ρ = 215 kg/m³
Thermal cond. (λ)	0,088 W/(m*K)
Exp. pressure	No expansion pressure measurable
Expansion factor ¹⁾	from 1.6 x to 4.5 x
Category of use ²⁾	Type Z ₁ in accordance with EAD 350454-00-1104
Recoatable ³⁾	Yes
Air permeability	Q600 ≤ 0.08 m³/(h*m²) Test standard EN 1026
Resistance to static pressure differences	No visible changes up to the maximum test pressure of the test device (Pmax=10000 Pa).
Acoustic properties	RW 66 dB (test dimension 360 x 360 x 200 mm)
Fire class	E in accordance with EN 13501-1
Approvals	ETA-10/0431 and ETA-11/0206
Function retention	10 years

* Foam output and max. possible work interruptions depend on the material and ambient temperature.

¹⁾ Expansion factor. Tested on samples at 450 °C for 25 minutes without overload. The expansion factor is a laboratory characteristic value. The expansion factor in an installed state depends on the existing preconditions.

²⁾ Permissible environmental conditions. Conduit seal for use in conditions with ≥ 85% RH, protected from temp. below 0 °C, and without exposure to rain and/or UV.

³⁾ Influence of finishing materials and chemicals the following paints and occasional brief influences from chemicals will not change the fire protection properties: Coating materials : Dispersion paint, alkyd paint, polyurethane acrylic paint, epoxy resin paint, silicone Solvent/oil : Butyl acetate, butanol, trichloroethylene, xylene, acetone, turpentine Gaseous chemicals : Brief storage with concentrated ammonium hydroxide solution

Environmental conditions with high humidity levels and/or some coating materials and chemicals may change the color or limit color changes.

Table 2 The maximum gap dimensions based on EN 13501-2 for multiple and single penetrations

Partition construction	Multiple penetrations (cable trays, cables, tubes and pipes)	Single penetrations (cable and cable ducts)
	Maximum gap WxH [mm]	Maximum gap WxH [mm]
Solid walls: aerated concrete, concrete, reinforced concrete or masonry	450 x 500	270 x 270 or Ø300
Lightweight partitions: wooden or steel construction with cladding on both sides	450 x 500	270 x 270 or Ø300
Solid floors: aerated concrete, concrete or reinforced concrete	450 x 450	270 x 270 or Ø300

→ FIRE RESISTANCE CLASSIFICATION

Type of penetrating element			Fire resistance classification	
CABLES			Foam injection depth $b \geq 144$	Foam injection depth $b \geq 200$ mm
Sheathed electrical/ telecommunication/ optical fiber cables up to a max. outer diameter:	$\varnothing \leq 21$ mm		EI 60 / E 60	EI 90 / EI 120 ⁽¹⁾ / E 120
	$\varnothing \leq 50$ mm		EI 60 / E 60	wall: EI 90 / EI 120 ⁽¹⁾ floor: EI 90 / EI 120 ⁽¹⁾ E 120
	$\varnothing \leq 80$ mm		EI 60 / E 60	EI 120 ⁽¹⁾ / E 120
Tied bundles containing sheathed electrical / telecommunication / optical fibre cables up to a max. outer diameter:	$\varnothing_{\text{BUNDLE}} \leq 100$ mm $\varnothing_{\text{CABLE}} \leq 21$ mm		EI 60 / E 60	EI 90 / EI 120 ⁽¹⁾ / E 120
Non-sheathed cables up to a max. outer diameter:	$\varnothing_{\text{CABLE}} \leq 24$ mm		wall: EI 45 / E60 floor: EI 60 / E60	EI 60 / E 120
Waveguides:	CELLFLEX®:	$\varnothing \leq 59,9$ mm	-	EI 120 – U/C E 120 – U/C
	CELLFLEX® Lite:	$\varnothing \leq 50,2$ mm		
	RADIAFLEX®:	$\varnothing \leq 48,2$ mm		
	HELIAX®:	$\varnothing \leq 51,1$ mm		
	RADIAX®:	$\varnothing \leq 49,8$ mm		

* The INTU FR BANDAGE must be applied on both surfaces of wall or floor

Type of penetrating element						Fire resistance	
PRE-INSULATED METAL PIPES			Insulat ion type	Insulation thickness (mm)	Additional precaution: INTU FR BANDAGE	Foam injection depth b ≥ 200 mm	
Type of pipe	Outer diameter of pipe (mm)	Pipe wall					
WICU®Eco	12,0	1,0	PUR	11,0	Wall: one layer on both sides of the penetration seal (length* ≥ 150 mm, nominal thickness 3 mm)	EI 90 – C/U E 90 – C/U	
	15,0			11,5			
	18,0			12,0			
	22,0			12,5			
	28,0	1,5		17,5			Floor: one layer on the top side of the
	35,0			18,0			
	42,0			24,0			
	54,0			2,0			27,5
	WICU®Flex	12,0; 15,0; 18,0; 22,0		1,0	PE		6,0
WICU®Frio	6,0	1,0	PE	8,0	wall: EI 120 – C/U; E 120 – C/U floor: EI 120 – C/U; E 120 – C/U		
	10,0; 12,0; 15,0; 18,0; 22,0			10,0			
WICU®Clim	6,35	0,762	PE	6,0			
	9,52	0,813		8,0			
	12,70	0,813		10,0			
	15,87	0,889					
	19,05	0,889					
	22,22	0,889					
Tubolit® Split /Tubolit® DuoSplit	6,35; 9,52; 12,70	0,8	PE	9,0	No additional precaution	EI 120– C/U E 120 – C/U	
	15,88; 19,05;	1,0					

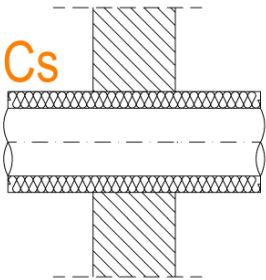
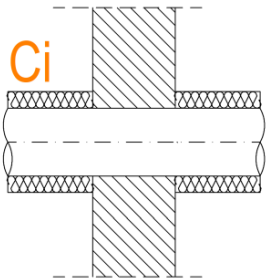
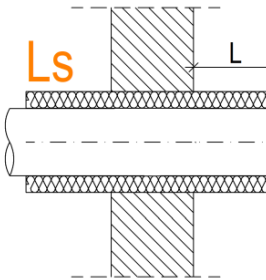
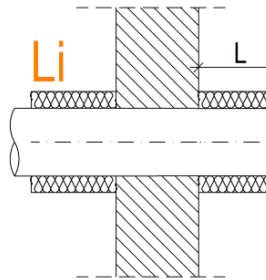
*Measured from the surface of the penetration seal

Type of penetrating element			Fire resistance classification	
CONDUITS / TUBES		Pipe wall thickness	Foam injection depth b ≥ 144 mm	Foam injection depth b ≥ 200 mm
Steel conduits tubes up to a max. outer diameter (with / without cables):	Ø ≤ 16 mm	≥ 1,5 mm	EI 60 – U/C E60 – U/C	wall: EI 90 – U/C; E120 – U/C floor: EI 90 – U/C; 90 – U/C
Plastic conduits up to:	Ø ≤ 63 mm	1,0 – 3,0 mm		EI 120 – U/C; E 120 – U/C
Bundles consisting of plastic conduits with / without cables ØPIPE ≤ 63 mm:	ØBUNDLE ≤ 80 mm			EI 120 – U/C E 120 – U/C
	ØBUNDLE ≤ 100 mm	0,75 - 2,0 mm		wall: EI 90 – U/C; E 120 – U/C floor: EI 90 – U/C; 90 – U/C
Speed•pipe® up to:	Ø ≤ 12 mm			
Bundles consisting of speed•pipe® with / without optical fibre cables:	ØBUNDLE ≤ 80 mm ØPIPE ≤ 12 mm			
NON-INSULATED METAL PIPES		Pipe wall thickness	Foam injection depth b ≥ 144 mm	Foam injection depth b ≥ 200 mm
Copper pipes up to a max. outer diameter:	Ø ≤ 18 mm	1,0 – 14,2 mm	EI 60 – C/U E60 – C/U	EI 60 – C/U E 120 – C/U
Steel pipes up to a max. outer diameter:	Ø ≤ 35 mm	1,0 – 14,2 mm		wall: EI 90 – C/U; E 120 – C/U floor: EI 90 – C/U; E 90 – C/U
PLASTIC PIPES / TUBES		Pipe wall thickness	Foam injection depth b ≥ 144 mm	Foam injection depth b ≥ 200 mm
Plastic pipes up to a max. outer diameter:	Ø ≤ 50 mm	1,8 – 5,6 mm	EI 60 – U/C E 60 – U/C	EI 120 – U/C E120 – U/C

Table 3 Minimum working clearance depending on penetrating element

Minimum working clearance				
Penetrating element	a ₁	a ₂	a ₃	
Cables/Waveguides/Cable trays/Conduits (incl. speed•pipe®)	50 mm	0 mm	<ul style="list-style-type: none"> Cables/Waveguides/Cable trays/Conduits Cable trays (vertical) Non-insulated metal pipes Other penetrating elements 	0 mm 50 mm 60 mm 50 mm
Mineral wool	0 mm	0 mm	<ul style="list-style-type: none"> Mineral wool insulated metal pipes Plastic pipes with pipe collar Non-insulated metal pipes Other penetrating elements 	0 mm 0 mm 60 mm 50 mm
Foamglas®-PSH insulated metal pipes	0 mm	0 mm	<ul style="list-style-type: none"> Foamglas®-PSH insulated metal pipes Non-insulated metal pipes Other penetrating elements 	0 mm 60 mm 50 mm
AF/Armaflex insulated metal pipes	35 mm	35 mm	<ul style="list-style-type: none"> AF/Armaflex (thickness > 9 mm) insulated metal pipes AF/Armaflex (thickness = 9 mm) insulated metal pipes Non-insulated metal pipes Other penetrating elements 	35 mm 50 mm 60 mm 50 mm
Non-insulated metal pipes	35 mm	35 mm	<ul style="list-style-type: none"> Non-insulated metal pipes Other penetrating elements 	60 mm 60 mm
Pre-insulated metal pipes	0 mm	0 mm	<ul style="list-style-type: none"> Pre-insulated metal pipes Non-insulated metal pipes Other penetrating elements 	0 mm 60 mm 50 mm
Plastic pipes (without pipe collar)	50 mm	50 mm	<ul style="list-style-type: none"> Plastic pipes (without pipe collar) Non-insulated metal pipes Other penetrating elements 	50 mm 60 mm 50 mm
Plastic pipes (with pipe collar)	50 mm*	50 mm*	<ul style="list-style-type: none"> Plastic pipes (with pipe collar) Mineral wool insulated metal pipes Non-insulated metal pipes Other penetrating elements 	0 mm 0 mm 60 mm 50 mm

*Measured from the surface of the pipe

Pipe insulation configuration			
Continuous		Local	
			
Continued sustained	Continued interrupted	Local sustained	Local interrupted

Type of penetrating element					Fire resistance classification	
MINERAL WOOL INSULATED METAL PIPES Density of mineral wool $\rho \geq 90 \text{ kg / m}^3$		Pipe wall thickness (mm)	Insulation* length (mm)	Insulation thickness [mm]	Foam inj. depth $b \geq 144 \text{ mm}$	Foam injection depth $b \geq 200 \text{ mm}$
Mineral wool insulated metal pipes up to a max. outer diameter:	$\varnothing \leq 35,0 \text{ mm}$	1,0 – 14,2	(insulation configuration: Ls, Cs, Li, Ci): $L \geq 428$	≥ 30	EI 60 – C/U E 60 – C/U	wall: EI 90 – C/U; E 120 – C/U floor: EI 120 – C/U; E 120 – C/U
	$\varnothing \leq 54,0 \text{ mm}$					
	$\varnothing \leq 88,9 \text{ mm}$		(Ls, Cs, Li, Ci) ≥ 528	≥ 30		
Mineral wool insulated metal pipes up to a max. outer diameter:	$\varnothing \leq 168,3 \text{ mm}$		(Ls, Cs, Li, Ci) ≥ 596	≥ 50		wall: EI 120 – C/U; E 120 – C/U floor: EI 90 – C/U; E 90 – C/U
AF/Armaflex INSULATED METAL PIPES		Pipe wall thickness (mm)	Insulation length (mm)	Insulation thickness [mm]	Foam inj. depth $b \geq 144 \text{ mm}$	Foam injection depth $b \geq 200 \text{ mm}$
AF/Armaflex insulated metal pipes up to a max. outer diameter:	$\varnothing \leq 35,0 \text{ mm}$	1,0 – 14,2	(insulation config. Ls, Cs): ≥ 500	9,0 – 35,0	EI 60 – C/U E 60 – C/U	EI 90 – C/U E 120 – C/U
	$\varnothing \leq 42,0 \text{ mm}$	1,5 – 14,2		9,0 – 36,5		
	$\varnothing \leq 54,0 \text{ mm}$	2,0 – 14,2		9,0 – 38,0		
	$\varnothing \leq 88,9 \text{ mm}$			41,5		
Foamglas® - PSH		Pipe wall thickness (mm)	Insulation length (mm)	Insulation thickness [mm]	Foam inj. depth $b \geq 144 \text{ mm}$	Foam injection depth $b \geq 200 \text{ mm}$
Foamglas® - PSH insulated metal pipes up to a max. outer diameter:	$\varnothing \leq 28,0 \text{ mm}$	1,0 – 14,2	(insulation config. Ls, Cs) ≥ 500	25,0 – 50,0	-	EI 120 – C/U; E 120 – C/U
	$\varnothing \leq 54,0 \text{ mm}$			25,0 – 50,0		wall: EI 90 – C/U; E 120 – C/U floor: EI 120 – C/U; E 120 – C/U
				50,0		wall: EI 120 – C/U; E 120 – C/U floor: EI 120 – C/U; E 120 – C/U
	$\varnothing \leq 88,9 \text{ mm}$	1,0 – 14,2	(insulation config. Cs) continious	40,0		wall: EI 120 – C/U; E 120 – C/U floor: EI 90 – C/U; E 120 – C/U
	$\varnothing \leq 108,0 \text{ mm}$			40,0		wall: EI 90 – C/U; E 120 – C/U floor: EI 120 – C/U; E 120 – C/U

→ SOLUTION DETAILS

Example of use INTU FR FOAM 2K in mixed penetration seal	
<p>Diagram illustrating the use of INTU FR FOAM 2K in a mixed penetration seal. The seal is applied to a wall made of INTU FR BRICK. The diagram shows various penetrating elements (pipes, cables) and the corresponding foam application. Dimensions are labeled: H (height), W (width), a₁ (top edge clearance), a₂ (side or lower edge clearance), and a₃ (penetrating element clearance).</p>	<p>Minimum working clearances:</p> <p>a₁-penetrating element / top edge of penetration seal</p> <p>a₂-penetrating element /side or lower edge of penetration seal</p> <p>a₃-penetrating element / penetrating element</p>

Example of use INTU FR FOAM 2K in single pipe with / without insulation penetration seal or single cable	
Penetration seal in wall	Penetration seal in floor
<p>Diagram illustrating the use of INTU FR FOAM 2K in a single pipe with / without insulation penetration seal in a wall. The diagram shows two cross-sections of a wall. The left cross-section shows a pipe with insulation, and the right cross-section shows a pipe without insulation. Both are sealed with INTU FR FOAM 2K. Dimensions are labeled: H (height), W (width).</p>	<p>Diagram illustrating the use of INTU FR FOAM 2K in a single cable penetration seal in a floor. The diagram shows a cable passing through a floor, with the foam applied around the base of the cable.</p>