

DECLARATION OF PERFORMANCE

No: DoP 3/2024

1. Unique identification code of product-type:

INTU FR GRAPHITE

2. Intended uses:

The intended use of INTU FR GRAPHITE mastic is to reinstate the fire resistance performance of flexible wall, rigid wall and rigid floor constructions, where they are penetrated by pipes, cables, conduits and bundles.

3. Manufacturer:

**INTUSEAL Sp. z o.o.
ul. Kineskopowa 1, 05-500 Piaseczno**

4. Authorized representative:

Not applicable

5. System or systems of Assessment and Verification of Constancy of Performance (AVCP):

System 1

6a. Harmonised standard:

Not applicable

Notified body or bodies:

Not applicable

6b. European Assessment Document:

EAD 350454-00-1104

European Technical Assessment:

ETA-24/0152 of 28/03/2024

Technical Assessment Body:

ITB, ul. Filtrowa 1, 00-611 Warszawa

Notified body or bodies:

No. 1488

7. Declared performance:

Basic requirements	Performance characteristics
BWR 2 Safety in case to fire	
Reaction to fire	NPD
Resistance to fire	Tabels B1. ÷ B11.

Table B1. Resistance to fire classification of plastic, MLC and composite pipes (without insulation) penetration seals in flexible or rigid wall, made with use of INTU FR GRAPHITE placed on both sides of the wall on the depth of 25,0 mm, without backfilling material

Pipe material	Pipe diameter [mm]	Pipe wall thickness [mm]	Number x depth x width of INTU FR GRAPHITE [mm]	Fire resistance class
PE-HD / PE / PE-X / ABS / SAN+PVC	D ≤ 32	1,8 ÷ 6,8	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C; EI 120-C/C
	32 < D ≤ 50	2,3 ÷ 6,8	2 x 25,0 x 10,0 ÷ 20,0	
	50 < D ≤ 75	3,0 ÷ 6,8	2 x 25,0 x 10,0 ÷ 20,0	
	D ≤ 75	6,9 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	EI 90-U/C; EI 90-C/C
	75 < D ≤ 110	4,2 ÷ 9,9	2 x 25,0 x 10,0 ÷ 20,0	EI 60-U/C; EI 60-C/C
		10,0	2 x 25,0 x 10,0 ÷ 20,0	EI 90-U/C; EI 90-C/C
pp	D ≤ 50	1,8 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	50 < D ≤ 75	1,9 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	75 < D ≤ 90	2,3 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	90 < D ≤ 110	2,7 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
PVC-U / PVC-C	D ≤ 32	1,5 ÷ 8,1	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	32 < D ≤ 50	1,6 ÷ 8,1	2 x 25,0 x 10,0 ÷ 20,0	
	50 < D ≤ 75	1,8 ÷ 8,1	2 x 25,0 x 10,0 ÷ 20,0	
	75 < D ≤ 110	2,0 ÷ 8,0	2 x 25,0 x 10,0 ÷ 20,0	EI 90-U/C; EI 90-C/C
		8,1	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C; EI 120-C/C
PE-RT/AL/PE-RT (MLC)	D ≤ 20	2,0 ÷ 6,0	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C; EI 120-C/C
		6,1 ÷ 7,5	2 x 25,0 x 10,0 ÷ 20,0	EI 60 / E 120-U/C EI 60 / E 120-C/C
	20 < D ≤ 32	3,1	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	32 < D ≤ 40	3,9	2 x 25,0 x 10,0 ÷ 20,0	
	40 < D ≤ 50	4,8	2 x 25,0 x 10,0 ÷ 20,0	
	50 < D ≤ 63	6,0	2 x 25,0 x 10,0 ÷ 20,0	
	63 < D ≤ 75	7,5	2 x 25,0 x 10,0 ÷ 20,0	EI 60 / E 120-U/C EI 60 / E 120-C/C
	PE-X/AL/PE-X (MLC)	D ≤ 20	2,0 ÷ 6,0	2 x 25,0 x 10,0 ÷ 20,0
20 < D ≤ 32		3,1	2 x 25,0 x 10,0 ÷ 20,0	
32 < D ≤ 40		3,9	2 x 25,0 x 10,0 ÷ 20,0	
40 < D ≤ 50		4,8	2 x 25,0 x 10,0 ÷ 20,0	
50 < D ≤ 63		6,0	2 x 25,0 x 10,0 ÷ 20,0	
PE-Xa	D ≤ 20	2,0 ÷ 5,8	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	3,0	2 x 25,0 x 10,0 ÷ 20,0	
	32 < D ≤ 40	3,8	2 x 25,0 x 10,0 ÷ 20,0	
	40 < D ≤ 50	4,6	2 x 25,0 x 10,0 ÷ 20,0	
	50 < D ≤ 63	5,8	2 x 25,0 x 10,0 ÷ 20,0	
wall thickness ≥ 100 mm				

Table B2 (cont. Table B1). Resistance to fire classification of plastic, MLC and composite pipes (without insulation) penetration seals in flexible or rigid wall, made with use of INTU FR GRAPHITE placed on both sides of the wall on the depth of 25,0 mm, without backfilling material

Pipe material	Pipe diameter [mm]	Pipe wall thickness [mm]	Number x depth x width of INTU FR GRAPHITE [mm]	Fire resistance class
PP-R	D ≤ 20	2,3 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	3,3 ÷ 12,5	2 x 25,0 x 10,0 ÷ 20,0	
	32 < D ≤ 50	4,8 ÷ 12,5	2 x 25,0 x 10,0 ÷ 20,0	
	50 < D ≤ 63	5,8 ÷ 12,5	2 x 25,0 x 10,0 ÷ 20,0	
	63 < D ≤ 75	6,8 ÷ 12,5	2 x 25,0 x 10,0 ÷ 20,0	
	20 < D ≤ 32	12,6 ÷ 16,0	2 x 25,0 x 10,0 ÷ 20,0	EI 90-U/C EI 90-C/C
	32 < D ≤ 75	12,6 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	75 < D ≤ 90	8,2 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	90 < D ≤ 110	10,0	2 x 25,0 x 10,0 ÷ 20,0	
	75 < D ≤ 110	10,1 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	EI 90-U/C EI 90-C/C
PP-R/AL/PP-R (MLC)	D ≤ 20	2,8 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	4,4 ÷ 16,0	2 x 25,0 x 10,0 ÷ 20,0	
	32 < D ≤ 50	6,9 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	50 < D ≤ 63	8,6 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	63 < D ≤ 75	10,3 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	75 < D ≤ 90	12,3 ÷ 14,9	2 x 25,0 x 10,0 ÷ 20,0	EI 90-U/C EI 90-C/C
		15,0 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	90 < D ≤ 110	15,1 ÷ 18,2	2 x 25,0 x 10,0 ÷ 20,0	EI 90-U/C EI 90-C/C
		18,3	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
PP-R/PP-R-GF/PP-R (composite)	D ≤ 20	2,8 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	4,4 ÷ 16,0	2 x 25,0 x 10,0 ÷ 20,0	
	32 < D ≤ 50	6,9 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	50 < D ≤ 63	8,6 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	63 < D ≤ 75	10,3 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	75 < D ≤ 90	12,3 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	90 < D ≤ 110	15,1 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
BlazeMaster CPVC	D ≤ 19,0	2,24 ÷ 3,38	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	19,0 < D ≤ 25,4	2,71 ÷ 3,38	2 x 25,0 x 10,0 ÷ 20,0	
	25,4 < D ≤ 31,8	3,38	2 x 25,0 x 10,0 ÷ 20,0	
	D ≤ 31,8	3,39 ÷ 3,84	2 x 25,0 x 10,0 ÷ 20,0	EI 90-U/C EI 90-C/C
	31,8 < D ≤ 38,1	3,84	2 x 25,0 x 10,0 ÷ 20,0	
wall thickness ≥ 100 mm				

Table B3. Resistance to fire classification of following types of cables penetration seals in flexible or rigid wall:

- type F cable: A-2Y(L)2Y 20x2x0,6,
- single coaxial wireless cable type AVA5-50FX ($\varnothing_{\text{cable}} \leq 22,23$ mm),

made with use of INTU FR GRAPHITE placed on both sides of the wall on the depth of 25,0 mm, without backfilling material

Fire resistance class: EI 120
wall thickness ≥ 100 mm

Table B4. Resistance to fire classification of following types of cables penetration seals in flexible or rigid wall:

- small cable ($\varnothing_{\text{cable}} \leq 21$ mm), including optical fiber cable,
- cable bundle ($\varnothing_{\text{bundle}} \leq 100$ mm, $\varnothing_{\text{cable}} \leq 21$ mm),

made with use of INTU FR GRAPHITE placed on both sides of the wall on the depth of 25,0 mm, with mineral wool Paroc Hvac Lamella Mat backfilling material

Fire resistance class: EI 120
wall thickness ≥ 100 mm

Table B5. Resistance to fire classification of penetration seals in flexible or rigid wall, of following mixed bundle:

- max. 2 x copper / steel pipe (C/U, C/C pipe end configuration) diameter of $D \leq 12,7$ mm and pipe wall thickness $\geq 0,8$ mm, with flexible elastomeric foam (FEF) continuous insulation (case CS) type Kaiflex ST, thickness of 13 mm,
- max. 1 x copper / steel pipe (C/U, C/C pipe end configuration) diameter of $D \leq 28,6$ mm and pipe wall thickness $\geq 1,0$ mm, with flexible elastomeric foam (FEF) continuous insulation (case CS) type Kaiflex ST, thickness of 13 mm,
- max. 1 x PVC-U pipe (U/U, U/C, C/U, C/C pipe end configuration) without insulation, diameter of: $D \leq 25$ mm and pipe wall thickness 1,0 mm,
- max. 1 x single cable 4 x 1,5 mm²,

made with use of INTU FR GRAPHITE placed on both sides of the wall on the depth of 25,0 mm, without backfilling material

Fire resistance class: EI 120
wall thickness ≥ 100 mm

Table B6. Resistance to fire classification of penetration seals in flexible or rigid wall, of following mixed bundle:

- max. 4 x copper / steel pipe (C/U, C/C pipe end configuration) diameter of $D \leq 12,7$ mm and pipe wall thickness $\geq 0,8$ mm, with polyethylene foam (PE) continuous insulation (case CS) type Tubolit DG PLUS, thickness of 9 mm
- max. 2 x copper / steel pipe (C/U, C/C pipe end configuration) diameter of $D \leq 22,3$ mm and pipe wall thickness $\geq 1,0$ mm, with polyethylene foam (PE) continuous insulation (case CS) type Tubolit DG PLUS, thickness of 9 mm,
- max. 2 x copper / steel pipe (C/U, C/C pipe end configuration) diameter of $D \leq 28,6$ mm and pipe wall thickness $\geq 1,0$ mm, with polyethylene foam (PE) continuous insulation (case CS) type Tubolit DG PLUS, thickness of 13 mm,
- max. 2 x PVC-U pipe (U/U, U/C, C/U, C/C pipe end configuration) without insulation, diameter of: $D \leq 25$ mm and pipe wall thickness 1,0 mm,
- max. 2 x single cable 4 x 1,5 mm²,

made with use of INTU FR GRAPHITE placed on both sides of the wall on the depth of 25,0 mm, without backfilling material

Fire resistance class: EI 60 / E 120
wall thickness ≥ 100 mm

Table B7. Resistance to fire classification of steel conduits ($\phi_{\text{conduit}} \leq 16,0$ mm) penetration seals in flexible or rigid wall, made with use of INTU FR GRAPHITE (outside the conduit) placed on both sides of the wall on the depth of 25,0 mm, with mineral wool Paroc Hvac Lamella Mat backfilling material

Fire resistance class: EI 120-C/U EI 120-C/C
wall thickness ≥ 100 mm

Table B9. Resistance to fire classification of AROT DVK conduits with or without cables ($\phi_{\text{cable}} \leq 21$ mm) or cable bundle ($\phi_{\text{bundle}} \leq$ conduit inner diameter, $\phi_{\text{cable}} \leq 21$ mm) penetration seals in flexible or rigid wall, made with use of INTU FR GRAPHITE (inside the conduit) placed on one side of the wall on the depth of 25,0 mm, with mineral wool Paroc Hvac Lamella Mat backfilling material on the depth of 25,0 mm

Conduit diameter [mm]	Conduit wave height [mm]	Service inside	Depth of INTU FR GRAPHITE [mm]	Fire resistance class
D ≤ 100	3,0	empty	2 x 25,0	EI 90 / E 120-U/C EI 90 / E 120-C/C
		small cable: $\varnothing_{\text{cable}} \leq 21$ mm	2 x 25,0	EI 90 / E 120-U/C EI 90 / E 120-C/C
		cable bundle: $\varnothing_{\text{bundle}} \leq D_{\text{in}}^{1)}$ $\varnothing_{\text{cable}} \leq 21$ mm	2 x 25,0	EI 90 / E 120-U/C EI 90 / E 120-C/C
¹⁾ D _{in} – conduit inner diameter, wall thickness ≥ 100 mm				

Table B8. Resistance to fire classification of PVC conduits with or without small cables ($\phi_{\text{cable}} \leq 21 \text{ mm}$) or cable bundle ($\phi_{\text{bundle}} \leq$ conduit inner diameter, $\phi_{\text{cable}} \leq 21 \text{ mm}$) penetration seals in flexible or rigid wall, made with use of INTU FR GRAPHITE (outside the conduit) placed on both sides of the wall on the depth of 25,0 mm, with mineral wool Paroc Hvac Lamella Mat backfilling material

Conduit diameter [mm]	Conduit wall thickness [mm]	Service inside	Depth of INTU FR GRAPHITE [mm]	Fire resistance class
D ≤ 16	0,85 ÷ 1,50	empty	2 x 25,0	EI 120-U/U EI 120-U/C EI 120-C/U EI 120-C/C
		small cable: $\varnothing_{\text{cable}} \leq D_{\text{in}}^{1)}$	2 x 25,0	
		cable bundle: $\varnothing_{\text{bundle}} \leq D_{\text{in}}^{1)}$ $\varnothing_{\text{cable}} \leq D_{\text{in}}^{1)}$	2 x 25,0	
16 < D ≤ 25	1,05 ÷ 1,50	empty	2 x 25,0	EI 120-U/U EI 120-U/C EI 120-C/U EI 120-C/C
		small cable: $\varnothing_{\text{cable}} \leq 21 \text{ mm}$	2 x 25,0	
		cable bundle: $\varnothing_{\text{bundle}} \leq D_{\text{in}}^{1)}$ $\varnothing_{\text{cable}} \leq 21 \text{ mm}$	2 x 25,0	
25 < D ≤ 37	1,50	empty	2 x 25,0	EI 120-U/U EI 120-U/C EI 120-C/U EI 120-C/C
		small cable: $\varnothing_{\text{cable}} \leq 21 \text{ mm}$	2 x 25,0	
		cable bundle: $\varnothing_{\text{bundle}} \leq D_{\text{in}}^{1)}$ $\varnothing_{\text{cable}} \leq 21 \text{ mm}$	2 x 25,0	

¹⁾ D_{in} – conduit inner diameter, wall thickness ≥ 100 mm

Table B10. Resistance to fire classification of plastic pipes (without insulation) penetration seals in rigid floor

Pipe material	Pipe diameter [mm]	Pipe wall thickness [mm]	Number x depth x width of INTU FR GRAPHITE [mm]	Fire resistance class
PE-HD / PE / PE-X / ABS / SAN+PVC	D ≤ 32	1,8 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	32 < D ≤ 50	2,3 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	
	50 < D ≤ 75	3,0 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	
	75 < D ≤ 90	3,5 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	
	90 < D ≤ 110	4,2 ÷ 10,0	2 x 25,0 x 10,0 ÷ 20,0	
PP	D ≤ 50	1,8 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	50 < D ≤ 75	1,9 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
	75 < D ≤ 110	2,7 ÷ 18,3	2 x 25,0 x 10,0 ÷ 20,0	
PVC-U / PVC-C	D ≤ 32	1,5 ÷ 8,1	2 x 25,0 x 10,0 ÷ 20,0	EI 120-U/C EI 120-C/C
	32 < D ≤ 50	1,6 ÷ 8,1	2 x 25,0 x 10,0 ÷ 20,0	
	50 < D ≤ 75	1,8 ÷ 8,1	2 x 25,0 x 10,0 ÷ 20,0	
	75 < D ≤ 110	2,0 ÷ 8,1	2 x 25,0 x 10,0 ÷ 20,0	
floor thickness ≥ 150 mm, density ≥ 1700 kg/m³				

Table B11. Resistance to fire classification of plastic, MLC and composite pipes (without insulation) penetration seals in rigid floor

Pipe material	Pipe diameter [mm]	Pipe wall thickness [mm]	Number x depth x width of INTU FR GRAPHITE [mm]	Fire resistance class
PE-RT/AL/PE-RT (MLC)	D ≤ 20	2,0 – 7,5	2 x 25,0 x 10,0 – 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	3,1	2 x 25,0 x 10,0 – 20,0	
	32 < D ≤ 40	3,9	2 x 25,0 x 10,0 – 20,0	
	40 < D ≤ 50	4,8	2 x 25,0 x 10,0 – 20,0	
	50 < D ≤ 63	6,0	2 x 25,0 x 10,0 – 20,0	
	63 < D ≤ 75	7,5	2 x 25,0 x 10,0 – 20,0	
PE-X/AL/PE-X (MLC)	D ≤ 20	2,0 – 6,0	2 x 25,0 x 10,0 – 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	3,1	2 x 25,0 x 10,0 – 20,0	
	32 < D ≤ 40	3,9	2 x 25,0 x 10,0 – 20,0	
	40 < D ≤ 50	4,8	2 x 25,0 x 10,0 – 20,0	
	50 < D ≤ 63	6,0	2 x 25,0 x 10,0 – 20,0	
PE-Xa	D ≤ 20	2,0 – 5,8	2 x 25,0 x 10,0 – 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	3,1	2 x 25,0 x 10,0 – 20,0	
	32 < D ≤ 40	3,9	2 x 25,0 x 10,0 – 20,0	
	40 < D ≤ 50	4,8	2 x 25,0 x 10,0 – 20,0	
	50 < D ≤ 63	5,8	2 x 25,0 x 10,0 – 20,0	
PP-R	D ≤ 20	2,3 – 10,0	2 x 25,0 x 10,0 – 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	3,3 – 16,0	2 x 25,0 x 10,0 – 20,0	
	32 < D ≤ 50	4,8 – 18,3	2 x 25,0 x 10,0 – 20,0	
	50 < D ≤ 63	5,8 – 18,3	2 x 25,0 x 10,0 – 20,0	
	63 < D ≤ 75	6,8 – 18,3	2 x 25,0 x 10,0 – 20,0	
	75 < D ≤ 90	8,3 – 18,3	2 x 25,0 x 10,0 – 20,0	
	90 < D ≤ 110	10,0 – 18,3	2 x 25,0 x 10,0 – 20,0	
PP-R/AL/PP-R (MLC)	D ≤ 20	2,3 – 10,0	2 x 25,0 x 10,0 – 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	4,0 – 16,0	2 x 25,0 x 10,0 – 20,0	
	32 < D ≤ 50	6,7 – 18,3	2 x 25,0 x 10,0 – 20,0	
	50 < D ≤ 63	8,6 – 18,3	2 x 25,0 x 10,0 – 20,0	
	63 < D ≤ 75	10,3 – 18,3	2 x 25,0 x 10,0 – 20,0	
	75 < D ≤ 90	12,3 – 18,3	2 x 25,0 x 10,0 – 20,0	
	90 < D ≤ 110	15,1 – 18,3	2 x 25,0 x 10,0 – 20,0	
PP-R/PP-R-GF/PP-R (composite)	D ≤ 20	2,8 – 10,0	2 x 25,0 x 10,0 – 20,0	EI 120-U/C EI 120-C/C
	20 < D ≤ 32	4,4 – 16,0	2 x 25,0 x 10,0 – 20,0	
	32 < D ≤ 50	6,9 – 18,3	2 x 25,0 x 10,0 – 20,0	
	50 < D ≤ 63	8,6 – 18,3	2 x 25,0 x 10,0 – 20,0	
	63 < D ≤ 75	10,3 – 18,3	2 x 25,0 x 10,0 – 20,0	
	75 < D ≤ 90	12,3 – 18,3	2 x 25,0 x 10,0 – 20,0	
	90 < D ≤ 110	15,1 – 18,3	2 x 25,0 x 10,0 – 20,0	
floor thickness ≥ 150 mm, density ≥ 550 kg/m³				

BWR 3 Hygiene, health and the environment	
Air permeability	NPD
Water permeability	NPD
Content, emission, release of dangerous substances	NPD
BWR 4 Safety and accessibility in use	
Mechanical resistance and stability	NPD
Resistance to impact/movement	NPD
Adhesion	NPD
Durability	Z ₂
BWR 5 Protection against noise	
Aireborne sound insulation	NPD
BWR 6 Energy economy and heat retention	
Thermal properties	NPD
Water vapour permeability	NPD

8. Appropriate technical documentation or special technical documentation:

Not applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Name: Michał Szykowski

Position: President of the Management Board

Piaseczno, 03.04.2024

Place, date



Signature