

DECLARATION OF PERFORMANCE

Nr: DoP 3/2019

1. Unique identification code of product-type:

INTU FR COLLAR L

2. Intended uses:

Fireproof sealing of installation penetrations of non-flammable pipes with synthetic rubber insulation.

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-19/0844 z dn. 05/08/2020

Technical Assessment Body:

ITB, ul. Filtrowa 1, 00-611 Warszawa

Notified body or bodies:

Nr 1488

7. Declared performance:

Table 1.

Intended use: Sealing of installation passages	
Basic requirements	Performance characteristics
BWR 1 Mechanical resistance and stability	
-	Not applicable
BWR 2 Safety in case to fire	
Reaction to fire	Class E
Resistance to fire	According to the Annex A – DoP 3/2019
BWR 3 Hygiene, health and the environment	
Air permeability	NPD
Water permeability	NPD
Content, emission, release of dangerous substances	No release of dangerous substances
BWR 4 Safety and accessibility in use	
Mechanical resistance and stability	NPD
Resistance to impact/movement	NPD
Adhesion	NPD
BWR 5 Protection against noise	
Aireborne sound insulation	NPD
BWR 6 Energy economy and heat retention	
Thermal properties	NPD
Water vapour permeability	NPD
Use category	
Use category	Z ₂

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: Vice-President of the Management Board

Piaseczno, 15.06.2022

Place, date

INTUSEAL Sp. z o.o.
V-ce Prezes Zarządu

Michał Szykowski

Signature

Annex A - Classification in terms of fire resistance

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
D ≤ 15,0	≥ 1,0	9	60 x 2,0	EI 240 – C/U EI 240 – C/C
		10 – 19	60 x 4,0	EI 180 – C/U EI 180 – C/C
		20 – 22	60 x 4,0	EI 180 – C/U EI 180 – C/C
		23 – 36	60 x 6,0	EI 180 – C/U EI 180 – C/C
		37 – 49	60 x 8,0	EI 180 – C/U EI 180 – C/C
		50	60 x 8,0	EI 180 – C/U EI 180 – C/C
15,0 < D ≤ 42,4	1,4 – 14,2	9	60 x 2,0	EI 60 / E 240 – C/U EI 60 / E 240 – C/C
		10 – 19	60 x 4,0	EI 45 – C/U EI 45 – C/C
		20 – 22	60 x 4,0	EI 45 – C/U EI 45 – C/C
		23 – 36	60 x 6,0	EI 45 – C/U EI 45 – C/C
		37 – 50	60 x 8,0	EI 45 – C/U EI 45 – C/C
		50	60 x 8,0	EI 45 – C/U EI 45 – C/C
42,4 < D ≤ 44,5	1,4 – 14,2	9	60 x 2,0	EI 60 / E 240 – C/U EI 60 / E 240 – C/C
		10 – 19	60 x 4,0	EI 45 – C/U EI 45 – C/C
		20 – 22	60 x 4,0	EI 45 – C/U EI 45 – C/C
		23 – 36	60 x 6,0	EI 45 – C/U EI 45 – C/C
		37 – 50	60 x 8,0	EI 45 – C/U EI 45 – C/C
		50	60 x 8,0	EI 45 – C/U EI 45 – C/C
4,5 < D ≤ 54,0	1,5 – 14,2	9	60 x 2,0	EI 60 / E 240 – C/U EI 60 / E 240 – C/C
		10 – 19	60 x 4,0	EI 45 – C/U EI 45 – C/C
		20 – 22	60 x 4,0	EI 45 – C/U EI 45 – C/C
		23 – 36	60 x 6,0	EI 45 – C/U EI 45 – C/C
		37 – 50	60 x 8,0	EI 45 – C/U EI 45 – C/C
		50	60 x 8,0	EI 45 – C/U EI 45 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
$D \leq 42,4$	2,0 – 14,2	9	60 x 2,0	EI 240 – C/U EI 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C
$42,4 < D \leq 44,5$	2,1 – 3,9	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		29 – 34	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		35 – 39	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		40 – 45	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		46 – 49	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		50	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
42,4 < D ≤ 44,5	4,0 – 14,2	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		29 – 34	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		35 – 39	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		40 – 45	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		46 – 49	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		50	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
44,5 < D ≤ 54,0	2,2 – 3,9	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		29 – 34	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		35 – 39	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		40 – 45	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		46 – 49	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		50	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
44,5 < D ≤ 54,0	4,0 – 14,2	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		29 – 34	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		35 – 39	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		40 – 45	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		46 – 49	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		50	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
54,0 < D ≤ 57,0	2,2 – 3,9	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
54,0 < D ≤ 57,0	2,2 – 3,9	23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		29 – 34	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		35 – 39	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		40 – 45	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		46 – 49	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		50	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
	4,0 - 14,2	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		29 – 34	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		35 – 39	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		40 – 45	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		46 – 49	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		50	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
57,0 < D ≤ 63,5	2,3 – 3,9	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		29 – 34	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		35 – 39	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		40 – 45	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		46 – 49	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
	50	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C	
	4,0 – 14,2	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		29 – 34	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		35 – 39	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		40 – 45	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		46 – 49	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		50	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
63,5 < D ≤ 70,0	2,3 – 3,9	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		29 – 34	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		35 – 39	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		40 – 45	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		46 – 49	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		50	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
	4,0 – 14,2	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		29 – 34	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		35 – 39	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		40 – 45	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		46 – 49	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		50	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
70,0 < D ≤ 76,1	2,5 – 3,9	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		29 – 34	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		35 – 39	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		40 – 45	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		46 – 49	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
	50	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C	
	4,0 – 14,2	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		29 – 34	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		35 – 39	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		40 – 45	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		46 – 49	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		50	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
76,1 < D ≤ 82,5	2,6 – 3,9	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		29 – 34	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		35 – 39	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		40 – 45	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		46 – 49	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
	50	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C	
	4,0 – 14,2	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		29 – 34	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		35 – 39	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		40 – 45	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		46 – 49	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		50	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
82,5 < D ≤ 88,9	2,6 – 3,9	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		29 – 34	60 x 6,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		35 – 39	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		40 – 45	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
		46 – 49	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C
	50	60 x 8,0	EI 90 / E 120 – C/U EI 90 / E 120 – C/C	
	4,0 – 14,2	9	60 x 2,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		10 – 11	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		12 – 20	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		21 – 22	60 x 4,0	EI 90 / E 240 – C/U EI 90 / E 240 – C/C
		23	60 x 4,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		24 – 28	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		29 – 34	60 x 6,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		35 – 39	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		40 – 45	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		46 – 49	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		50	60 x 8,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
88,9 < D ≤ 101,6	2,9 – 14,2	9	60 x 2,0	EI 45 / E 120 – C/U EI 45 / E 120 – C/C
		10 – 11	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		12 – 20	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		21 – 22	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		23 – 28	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		29 – 34	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		35 – 39	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		40 – 45	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		46 – 49	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		50	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
101,6 < D ≤ 108	3,0 – 14,2	9	60 x 2,0	EI 45 / E 120 – C/U EI 45 / E 120 – C/C
		10 – 11	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		12 – 20	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		21 – 22	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		23 – 28	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		29 – 34	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		35 – 39	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		40 – 45	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		46 – 49	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		50	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
108 < D ≤ 114,3	3,2 – 14,2	9	60 x 2,0	EI 45 / E 120 – C/U EI 45 / E 120 – C/C
		10 – 11	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		12 – 20	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		21 – 22	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		23 – 28	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		29 – 34	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		35 – 39	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		40 – 45	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		46 – 49	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		50	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
114,3 < D ≤ 127	3,4 – 14,2	9	60 x 2,0	EI 45 / E 120 – C/U EI 45 / E 120 – C/C
		10 – 11	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		12 – 20	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		21 – 22	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		23 – 28	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		29 – 34	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		35 – 39	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		40 – 45	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		46 – 49	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		50	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
127 < D ≤ 133	3,5 – 14,2	9	60 x 2,0	EI 45 /E 120 – C/U EI 45 /E 120 – C/C
		10 – 11	60 x 4,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		12 – 20	60 x 4,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		21 – 22	60 x 4,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		23 – 28	60 x 6,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		29 – 34	60 x 6,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		35 – 39	60 x 8,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		40 – 45	60 x 8,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		46 – 49	60 x 8,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		50	60 x 8,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
133 < D ≤ 139,7	3,7 – 14,2	9	60 x 2,0	EI 45 /E 120 – C/U EI 45 /E 120 – C/C
		10 – 11	60 x 4,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		12 – 20	60 x 4,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		21 – 22	60 x 4,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		23 – 28	60 x 6,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		29 – 34	60 x 6,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		35 – 39	60 x 8,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		40 – 45	60 x 8,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		46 – 49	60 x 8,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C
		50	60 x 8,0	EI 45 /E 60 – C/U EI 45 /E 60 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid wall thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
139,7 < D ≤ 152,4	3,9 – 14,2	9	60 x 2,0	EI 45 / E 120 – C/U EI 45 / E 120 – C/C
		10 – 11	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		12 – 20	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		21 – 22	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		23 – 28	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		29 – 34	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		35 – 39	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		40 – 45	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		46 – 49	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		50	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
152,4 < D ≤ 159	4,0 – 14,2	9	60 x 2,0	EI 45 / E 120 – C/U EI 45 / E 120 – C/C
		10 – 11	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		12 – 20	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		21 – 22	60 x 4,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		23 – 28	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		29 – 34	60 x 6,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		35 – 39	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		40 – 45	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		46 – 49	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C
		50	60 x 8,0	EI 45 / E 60 – C/U EI 45 / E 60 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
$D \leq 15,0$	$\geq 1,0$	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 19	60 x 4,0	EI 90 – C/U EI 90 – C/C
		20 – 22	60 x 4,0	EI 90 – C/U EI 90 – C/C
		23 – 36	60 x 6,0	EI 90 – C/U EI 90 – C/C
		37 – 49	60 x 8,0	EI 90 – C/U EI 90 – C/C
		50	60 x 8,0	EI 90 – C/U EI 90 – C/C
$15,0 < D \leq 42,4$	1,4 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 19	60 x 4,0	EI 90 – C/U EI 90 – C/C
		20 – 22	60 x 4,0	EI 90 – C/U EI 90 – C/C
		23 – 36	60 x 6,0	EI 90 – C/U EI 90 – C/C
		37 – 50	60 x 8,0	EI 90 – C/U EI 90 – C/C
		50	60 x 8,0	EI 90 – C/U EI 90 – C/C
$42,4 < D \leq 44,5$	1,4 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 19	60 x 4,0	EI 90 – C/U EI 90 – C/C
		20 – 22	60 x 4,0	EI 90 – C/U EI 90 – C/C
		23 – 36	60 x 6,0	EI 90 – C/U EI 90 – C/C
		37 – 50	60 x 8,0	EI 90 – C/U EI 90 – C/C
		50	60 x 8,0	EI 90 – C/U EI 90 – C/C
$44,5 < D \leq 54,0$	1,5 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 19	60 x 4,0	EI 90 – C/U EI 90 – C/C
		20 – 22	60 x 4,0	EI 90 – C/U EI 90 – C/C
		23 – 36	60 x 6,0	EI 90 – C/U EI 90 – C/C
		37 – 50	60 x 8,0	EI 90 – C/U EI 90 – C/C
		50	60 x 8,0	EI 90 – C/U EI 90 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of steel pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
$D \leq 42,4$	2,0 – 14,2	9	60 x 2,0	EI 240 – C/U EI 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C
$42,4 < D \leq 44,5$	2,1 – 14,2	9	60 x 2,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C

Classification given above for specific intumescent material dimensions is also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
44,5 < D ≤ 54,0	2,2 – 14,2	9	60 x 2,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C
54,0 < D ≤ 57,0	2,2 – 14,2	9	60 x 2,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
57,0 < D ≤ 63,5	2,3 – 14,2	9	60 x 2,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C
63,5 < D ≤ 70,0	2,3 – 14,2	9	60 x 2,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C
70,0 < D ≤ 76,1	2,5 – 14,2	9	60 x 2,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
70,0 < D ≤ 76,1	2,5 – 14,2	23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C
76,1 < D ≤ 82,5	2,6 – 14,2	9	60 x 2,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
82,5 < D ≤ 88,9	2,6 – 14,2	9	60 x 2,0	EI 120 / E 240 – C/U EI 120 / E 240 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 120 – C/U EI 120 – C/C
88,9 < D ≤ 101,6	2,9 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 180 / E 240 – C/U EI 180 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
101,6 < D ≤ 108	3,0 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
101,6 < D ≤ 108	3,0 – 14,2	46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 180 / E 240 – C/U EI 180 / E 240 – C/C
108 < D ≤ 114,3	3,2 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 180 / E 240 – C/U EI 180 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
114,3 < D ≤ 127	3,4 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 180 / E 240 – C/U EI 180 / E 240 – C/C
127 < D ≤ 133	3,5 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 180 / E 240 – C/U EI 180 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
133 < D ≤ 139,7	3,7 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 180 / E 240 – C/U EI 180 / E 240 – C/C
139,7 < D ≤ 152,4	3,9 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 180 / E 240 – C/U EI 180 / E 240 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.

Fire resistance class of copper pipes with continuous flexible elastomeric foam (FEF) insulation penetration seal in rigid floor thickness of: $t \geq 150$ mm, made with use of INTU FR COLLAR L

Pipe diameter [mm]	Pipe wall thickness [mm]	Insulation thickness [mm]	Intumescent material width x thickness [mm]	Fire resistance class
$152,4 < D \leq 159$	4,0 – 14,2	9	60 x 2,0	EI 120 – C/U EI 120 – C/C
		10 – 11	60 x 4,0	EI 120 – C/U EI 120 – C/C
		12 – 20	60 x 4,0	EI 120 – C/U EI 120 – C/C
		21 – 22	60 x 4,0	EI 120 – C/U EI 120 – C/C
		23 – 28	60 x 6,0	EI 120 – C/U EI 120 – C/C
		29 – 34	60 x 6,0	EI 120 – C/U EI 120 – C/C
		35 – 39	60 x 8,0	EI 120 – C/U EI 120 – C/C
		40 – 45	60 x 8,0	EI 120 – C/U EI 120 – C/C
		46 – 49	60 x 8,0	EI 120 – C/U EI 120 – C/C
		50	60 x 8,0	EI 180 / E 240 – C/U EI 180 / E 240 – C/C
$159 < D \leq 219$	4,5 – 14,2	50	60 x 8,0	EI 45 – C/U EI 45 – C/C

Classifications given above for specific intumescent material dimensions are also valid for pipes with smaller pipe diameter and the same pipe wall thickness range.