



CLASSIFICATION REPORT no. 13 - A - 311 - Revision 2

Fire resistance of construction elements, according EN 13501-2

Concerning

Two sets of intumescent collars, MG2 (inset type) and MG2-A (surface type) as well as flexible BRF type tape protecting PVC-U, PEHD, MEPLA and Geberit Silent db 20 plastic tubes installed through:

- Aerated concrete slabs, 150mm thick;
- Aerated concrete panels, 100 mm thick;
- Lightweight partitions, 100 mm thick;
- Channels lagged with two PROMASTOP CB50 mineral wool panels, pre-coated on one side, 50mm thick.

Sponsor

RF-TECHNOLOGIES
Lange Ambachtstraat 40
B – 9860 OOSTERZELE, BELGIUM

The classification report cancels and replaces the classification report No 13 - A - 311 - Revision 1

This document is a translation of the official French language version.

In the event of any contradiction between the terms of the French language version and the terms of the translation, the French language version shall prevail.

CHANGE HISTORY

Revision level.	Modification	Author
2	Integration of § 3. REFERENCE TESTS	RST

1. PURPOSE

The document of the fire resistance classification pertaining to two intumescent collar systems, MG2 and MG2-A and BRF flexible bands protecting plastic pipes installed to pass through panels (aerated concrete, light partition and mineral wool channels) and aerated concrete slabs, "Fire classification of construction products and building elements - Part 2 : Classification using data from fire resistance tests, excluding ventilation services".

2. REFERENCE AND ORIGIN OF THE ELEMENTS

Reference	Origin
MG2 collars MG2-A collars BRF Flexible tapes	RF- TECHNOLOGIES
PROMASTOP CB50 and PROMASTOP-E	PROMAT

3. REFERENCE TESTS

- FIRES-FR-176-12-AUNE
- FIRES-FR-210-12-AUNE
- FIRES-FR-211-12-AUNE
- EFECTIS France 12-U-812
- EFECTIS France 13-E-352
- EFECTIS France EFR-14-F-003457

4. PRINCIPLE OF ASSEMBLY

4.1. GENERAL

See attached illustrations.

These are PEHD, PVC-U, MEPLA and Geberit Silent db 20 plastic tubes, protected by intumescent collars, MG2-A (surface) and MG2 (insert) or by BRF flexible tape.

These through-elements are installed:

- through aerated concrete slabs (thickness = 150 mm and bd = 600 kg/m³) and are sealed with sealing mortar (MG2 collars) or installed through core bores (MG2-A collars);
- through aerated concrete walls (Thickness = 100 mm and bd = 500 kg/m³);
- through lightweight partitions (Thickness. = 100 mm);
- through channels, with maximum dimensions 600 x 1000 mm (w x h) lagged with two PROMASTOP CB50 mineral wool panels, pre-coated on one side (Thickness = 2 x 50 mm and bd = 150 kg/m³).

4.2. SCHEDULE OF COMPONENTS

List produced according to information from the company requesting the test.

<i>Designation</i>	<i>Reference</i>	<i>Material</i>	<i>Characteristics</i>	<i>Supplier</i>
Upright	NPV 50	Steel sheet	50 x 40 mm	PROFISTEEL
Rail	NPH 50	Steel sheet	50 x 40 mm	PROFISTEEL
Plasterboard sheet	PREGYFLAM AB	Plasterboard sheet	BA 13	LAFARGE
Mineral wool to insulate partition and exposed edges	431 ROCKFIT ADAPT	Rockwool	bd = 40 kg/m ³ thickness = 40 mm	ROCKWOOL
Mineral wool panels	PROMASTOP CB50	Mineral wool pre-coated on one side	bd = 150 kg/m ³ thickness = 50 mm	PROMAT
Coating	PROMASTOP-E	Fire-resistant coating	Solvent-free coating, with fire-retardant, dispersion-based pigment	PROMAT
Collar	MG2	Intumescent collar	Intumescent Rf Expand 147	RF-TECHNOLOGIES
Collar	MG2-A	Intumescent collar	Intumescent Rf Expand 147	RF-TECHNOLOGIES
Sleeve	BRF	Flexible fire-resistant tapes	180 x 2 mm (width x thickness)	RF-TECHNOLOGIES
Sealing compound	CEM II/B-V-32,5N	1 part cement, 2 parts sand, 1/2 part water	bd = 1,900 kg/m ³	CBR-Heidelberg

Th = Thickness--- bd = bulk density --- d = density

4.3. DETAILED DESCRIPTION OF ELEMENTS

See attached illustrations.

4.3.1. Preparation of elements

4.3.1.1. Supporting structures

4.3.1.1.1. Aerated concrete slab, 150mm thick;

The through-elements are installed in core bores made through reinforced aerated concrete slabs, 150 mm thick, bulk density bd = 600 kg/m³.

4.3.1.1.2. Aerated concrete panel, 100 mm thick

The through-elements are installed in core bores made through reinforced aerated concrete slabs, 100 mm thick, bulk density bd = 500 kg/m³.

4.3.1.1.3. Lightweight plasterboard partitions, 100 mm thick

Through-elements are installed either in core bores made through the 100 mm thick lightweight partition, or in mineral wool panels lagging channels with maximum dimensions 600 x 1000 mm made through the partition.

The partition is erected as follows:

- Installation of two vertical free edges using mineral wool strips, 40 mm thick.
- Installation of the framework, using rails measuring 50 x 50 mm in cross-section. The upper and lower stringers are fixed to the frame using Fischer FMA nail anchors SP6, 6x30/30, 30mm long at no more than 660 mm intervals. Below the lower stringer is inserted a thickness of 19mm of white wool.
- Installing uprights: the uprights, section 50 x 40 mm, are fitted into the rails with a 5 mm expansion gap at the top and punched into the lower stringer rail. The first upright is placed 490 mm along the rail, then two others are installed, at a distance of 550 mm. These last two are interrupted at two levels, 1000 mm from the upper stringer and 1000 mm from the lower stringer, for fitting the channel header.
- The header is formed of two crosspieces made of two rails cut at 50 mm, bent and punched into the vertical rail and the first upright. The two cross-pieces are spaced 1000 mm apart, and the lower cross-piece is 1000 mm from the lower stringer. The interrupted uprights are also punched into these two cross-pieces. A first upright is inserted 100 mm from the exposed edge and a second 600 mm from this, forming the framework of the channel. This operation is repeated 100 mm further on to create the framework of a second channel. These four uprights are cut at 50 mm, folded and punched onto the upper and lower crosspieces of the header.
- The internal insulation is added in the form of 431 Rockfit Adapt mineral wool panels 40 mm thick and bulk density 40 kg/m³.
- Installing the facings, each comprises two thicknesses of plasterboard panels BA13, PREGYFLAM AB, with unit thickness of 12.5 mm, fixed to the frame with Ø 3.5 x 25 mm screws, spaced 700 mm apart maximum for the first layer; and with Ø 3.5 x 35 mm screws spaced 200 mm apart maximum for the second layer. The joints are offset vertically between the layers and from one side to the other.
- Panels are cut away around the headers, creating openings of maximum dimensions 600 x 1000 mm.

4.3.1.2. Through-element support systems

See attached illustrations.

4.3.1.2.1. Slabs

The tubes are held on the unexposed surface of the slab with a support system made from U-profile rail brackets, reference MPC 118908 (MÜPRO) section 38 x 40 x 2 mm (h x w x th.) 560 mm long, welded to plates of section 120 x 40 x 6 mm (h x w x th.) fixed to the supporting structure using threaded rods Ø 6 x 70 mm.

The tubes are held by a U-profile rail support, reference MPC 129964 (MÜPRO) section 38 x 40 x 2 mm (h x w x th.). Rails are placed at 400 mm from the unexposed surface of the supporting structure and held at the ends on the rail brackets with Ω-shaped fixed studs, reference Omega MPC 118246 (MÜPRO), dimensions 34.5 x 41 x 41 x 41 x 34.5 mm, fixed with nuts, reference MPC 117968 (MÜPRO), dimensions 33 x 23 x 6 mm and M10 thread.

The tubes are held on the supporting system rail on the unexposed side with collars, reference 127132 (MÜPRO) and reference 127261 (MÜPRO), with DAMMGULAST® isophonic seal. The collar is attached to the rail with an M10 threaded rod, held with two locking plates, one each side of the rail, reference 114450 (MÜPRO).

4.3.1.2.2. Panels

The tubes are held either side of the concrete panel with support systems made of U-profile rail brackets, reference MPC 118908 (MÜPRO) section 38 x 40 x 2 mm (h x w x th.) 560 mm long, welded to plates, with sections 120 x 40 x 6 mm (h x w x th.) fixed to the supporting structure with threaded rods Ø 6 x 70 mm passing from one side to the other of the aerated concrete supporting structure, with nail anchors, Ø 6 x 40 mm, reference Fischer FMA 6x30/30, on the reinforced concrete frame. The uprights are placed at least 100 mm from the partition on the fire-facing side.

The tubes are held with two U-profile rail supports, reference MPC 129964 (MÜPRO) section 38 x 40 x 2 mm (h x w x th.). Rail are placed at 200 mm and 400 mm from the supporting structure, and held at the ends on the rail brackets with Ω-shaped fixed studs, reference Omega MPC 118246 (MÜPRO), dimensions 34.5 x 41 x 41 x 41 x 34.5 mm, fixed with nuts, reference MPC 117968 (MÜPRO), dimensions 33 x 23 x 6 mm and M10 thread.

The tubes are held on the second supporting system rail (400 mm from the supporting construction) either side of the construction with collars, reference 127132 (MÜPRO) and reference 127261 (MÜPRO), and DAMMGULAST® isophonic seal. The collar is attached to the rail with an M10 threaded rod, held with two locking plates, one each side of the rail, reference 114450 (MÜPRO).

Where the tubes are able to rest on the rails, they are held in place on the second rail of the support system (400 mm from the supporting structure), either side of the structure by a straight electro-galvanized tape, punched with Ø 6.5 mm holes spaced 11.5 mm apart, 17 mm wide, attached to the rails with M6 MPC 114804 screws (MÜPRO).

4.3.2. MG2 collars

4.3.2.1. Characteristics

The MG2 collars consist of a folded shell, made of 0.6mm thick steel sheet. The shell has an intumescent filling, reference Rf-Expand 147 (manufacturer RF-TECHNOLOGIES). The thickness and length of the intumescent depend on the diameter of the collar. The shell is enclosed with two tongues.

The collars are embedded around the tube and in the supporting structure, and the annular space, maximum 5 mm between collar and supporting structure, is filled with Promastop-E coating (for mineral wool panels), or the annular space, maximum 25mm gap, is filled with plaster (for aerated concrete panels and lightweight partitions) or alternatively CEM grouting mortar II/B-V-32,5N (for slabs).

4.3.2.2. Through-elements

Section 4.3.1.2. describes how the through-elements are retained on their support system.

Section 5 describes the various through-elements that can be incorporated.

4.3.2.3. Installation for core bores

a. Installation of through-elements through the structures

- Creation of holes in the structures to match dimensions of through-elements and MG2 collars, using a hole saw or suitable tool.
- Fixing tubes onto the support system.

b. Installation of MG2 collars

- MG2 collars are embedded around tubes, and locked in place by folding over the two tongues. They are located centred within the thickness of the structure.

c. Grouting collars into the core bores.

- Cleaning and removing dust from core bores.
- Slabs: Shuttering core bores with 15 mm thick Promatect H plates cut to dimensions of the through-elements. The plates are fixed by universal Fischer M6 x 75 mm screws. The annular space within the thickness of the supporting structure is filled with mortar, flush to the exposed and unexposed surfaces. Dried for 35 hrs, then shuttering removed.
- Panels: The annular space within the thickness of the supporting structure is filled with plaster, flush to the exposed and unexposed surfaces.

NB: the Geberit Silent-db20 tubes are fitted with a PE acoustic protection strip between the tube and the collar within the thickness of the construction.

4.3.2.4. For channels, use of pre-coated mineral wool panels.

a. Installation of through-elements through the structures

- Fixing tubes onto the support system.

b. Sealing implemented in the form of pre-coated mineral wool panels.

- PROMASTOP CB50 mineral wool panels cut out to the dimensions of the channels and the through-elements and MG2 collars.
- Insertion of mineral wool panels, abutted with no airgap, so that the coated surfaces are to the outside, and flush to the exposed and the unexposed surface.
- The mineral wool panels are coated with PROMASTOP-E at the joins between panels, between the mineral wool panels and tubes and embedded MG2 collars, and between the edges of the panels and the edges of the channels. The visible thickness of the MG2 collars is also coated with PROMASTOP-E.

4.3.3. MG2-A collars

4.3.3.1. Characteristics

The MG2 collars comprise a folded shell, made of 0.8 mm thick steel sheet, fitted with fixing studs. The shell has an intumescent filling, reference Rf-Expand 147 (manufacturer RF-TECHNOLOGIES). The thickness and length of the intumescent depend on the diameter of the collar. The shell is closed by engaging the two end studs one together.

The collars are surface-mounted on the structure (either side for panels and on the exposed surface only for slabs) with threaded rods passing through, Ø 6 x 125 mm, retained by nuts or screwed directly into the partition or aerated concrete wall with M6 x 30 mm screws.

4.3.3.2. Through-elements

Section 4.3.1.2. describes how the through-elements are retained on their support system.

Section 5 describes the various through-elements that can be incorporated.

4.3.3.3. Installation for core bores

a. Installation of through-elements through the structures

- Creation of holes in the structure to match dimensions of through-elements, using a hole saw or suitable tool.
- Fixing tubes onto the support system.

b. Installation of MG2-A collars

- The MG2-A reference collars are placed around the tube on the surface either side of the supporting structure, or on the exposed surface only for slabs.
- The collars are closed by engaging the two end studs together. They are fixed in place by threaded rods passing through, $\varnothing 6 \times 125$ mm, and retained by nuts or are screwed directly with M6 x 30 mm screws.

NB: the Geberit Silent-db20 tubes are fitted with a PE acoustic protection strip between the tube and the collar within the thickness of the construction.

4.3.3.4. For channels, use of pre-coated mineral wool panels.

a. Installation of through-elements through the structures

- Fixing tubes onto the support system.

b. Sealing implemented in the form of pre-coated mineral wool panels.

- PROMASTOP CB50 mineral wool panels cut out to the dimensions of the channels and the through-elements.
- Insertion of mineral wool panels, abutted with no airgap, so that the coated surfaces are to the outside, and flush to the exposed and the unexposed surface.
- The mineral wool panels are coated with PROMASTOP-E at the joins between panels, between the mineral wool panels and tubes, as well as between the edges of the panels and the edges of the channels.

c. Installation of MG2-A collars

- The MG2-A reference collars are placed around the tube on the surface either side of the supporting structure, or on the exposed surface only for slabs.
- The collars are closed by engaging the two end studs together. They are fixed in place by threaded rods passing through, $\varnothing 6 \times 125$ mm, and retained by nuts.

d. Adding a through-element after plugging the channel.

- Making an opening the size of the HDPE tube, $\varnothing 75 \times 3$ mm, using a hole saw or suitable tool.
- Fixing the tube onto the support system.
- Applying PROMATSTOP-E coating to the remaining space between the sealing and the tube.
- Inserting MG2-A collars as specified in the section above.

4.3.4. MG2-A collars and MG2 collars placed into the same channel

When a channel with maximum dimensions 600 x 1000 (w x h) holds only embedded MG2 collars, at least three threaded rods, Ø 6 x 125 mm, have to be passed through, held by nuts + washers either side of the mineral wool panels. The protruding sections of the threaded rods are then coated with PROMASTOP-E on the unexposed and the exposed surfaces.

These threaded rods are used to hold the mineral wool panels physically in place.

For a channel lagged with pre-coated PROMASTOP CB50 mineral wool panels, with MG2 and MG2-A collars used around the tubes installed through this channel, use of the above-mentioned threaded rods is optional since the MG2-A surface collars are used to hold them physically in place.

4.3.5. BRF Flexible tapes

4.3.5.1. Characteristics

The BRF flexible tapes, measuring 180 x 2 mm (width x thickness) are wrapped around the tubes on their self-adhesive side. Two superimposed layers are wrapped over a length of 720 mm, i.e. four tapes, including the zone where the tube crosses through the structure. The four tapes are applied end to end.

4.3.5.2. Through-elements

Section 4.3.1.2. describes how the through-elements are retained on their support system.

Section 5 describes the various through-elements that can be incorporated.

4.3.5.3. Installation for core bores

a. Installation of through-elements through the structures

- Creation of holes in the construction, to match the dimensions of through-elements and thickness of BRF tapes, using a hole saw or suitable tool.
- Fixing tubes onto the support system.

b. Applying BRF tapes (see diagram below)

- The BRF tapes, measuring 180 x 2 mm (width x thickness) are stuck on their self-adhesive side around the tube, wound around in two superimposed layers.
- The tapes are applied end to end over a total length of about 720 mm, i.e. 310 mm either side and over 100 mm within the thickness of the supporting structure.

5. FIRE RESISTANCE CLASSIFICATIONS

5.1. CLASSIFICATION REFERENCES

This classification was made in accordance with section 7.5.8. of standard NF EN 13501-2.

5.2. CLASSIFICATIONS

The elements are classified according to the following combinations of performance and class parameters. No other classification system is authorised.

5.2.1. MG2 collars (embedded)

- Aerated concrete slabs, 150mm thick:

AERATED CONCRETE SLABS 150 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
core borings: annular spaces filled with sealing compound CEM II/B-V-32.5N Ø core boring = Ø collar + 50 mm	MG2	PVC-U	standard	75	1,8	75	U/C	EI 180
			standard	75	8,4	75	U/C	EI 180
			standard	110	2,2	110	U/C	EI 180
			standard	110	8,2	110	U/C	EI 180
			standard	160	3,2	160	U/C	EI 180
			standard	160	11,9	160	U/C	EI 180
		HDPE	standard	75	3	75	U/C	EI 180
			standard	75	6,8	75	U/C	EI 180
			standard	110	3,4	110	U/C	EI 180
			standard	110	10	110	U/C	EI 180
			standard	160	6,2	160	U/C	EI 180
			standard	160	14,6	160	U/C	EI 180

U/C: open on side facing fire, closed on side away from fire.

Special configurations:

AERATED CONCRETE SLABS 150 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
core borings: annular spaces filled with compound Ø core boring = Ø collar +50 mm	MG2	PVC-U	cluster	75	1.8 - 8.4	75	U/C	EI 120
			cluster	110	2.2 - 8.2	110	U/C	EI 120
		HDPE	cluster	75	3 - 6.8	75	U/C	EI 120
			cluster	110	3.4 - 10	110	U/C	EI 120

U/C: open on side facing fire, closed on side away from fire.

Cluster configuration: triangular arrangement of three tubes. The distance between collars is 0 mm.

- Lightweight partitions, 100 mm thick:

LIGHTWEIGHT PARTITION 100 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
core borings: annular spaces filled with plaster Ø core boring = Ø collar + 50 mm	MG2	PVC-U	standard	75	1,8	75	U/C	EI 120
			standard	75	8,4	75	U/C	EI 120
			standard	110	2,2	110	U/C	EI 120
			standard	110	8,2	110	U/C	EI 120
			standard	160	3,2	160	U/C	EI 120
			standard	160	13	160	U/C	EI 90
		HDPE	standard	75	3	75	U/C	EI 120
			standard	75	6,8	75	U/C	EI 120
			standard	110	3,4	110	U/C	EI 120
			standard	110	10	110	U/C	EI 120
			standard	160	6,2	160	U/C	E 120 EI 90
			standard	160	14,6	160	U/C	EI 120

U/C: open on side facing fire, closed on side away from fire.

- Aerated concrete panels, 100 mm thick:

AERATED CONCRETE 100 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
core borings: annular spaces filled with plaster Ø core boring = Ø collar + 50 mm	MG2	PVC-U	standard	75	1,8	75	U/C	EI 120
			standard	75	8,4	75	U/C	EI 120
			standard	110	2,2	110	U/C	EI 120
			standard	110	8,2	110	U/C	EI 120
			standard	160	3,2	160	U/C	EI 120
		HDPE	standard	160	13	160	U/C	EI 90
			standard	75	3	75	U/C	EI 120
			standard	75	6,8	75	U/C	EI 120
			standard	110	3,4	110	U/C	EI 120
			standard	110	10	110	U/C	EI 120
			standard	160	6,2	160	U/C	E 120 EI 90
standard	160	14,6	160	U/C	EI 120			

AERATED CONCRETE 100 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
core borings: annular spaces filled with plaster Ø core boring = Ø collar + 50 mm	MG2	Geberit Silent-db20	standard	75	3,6	75	U/C	EI 120
			standard	110	6	110	U/C	EI 120
			standard	160	7	160	U/C	EI 90

U/C: open on side facing fire, closed on side away from fire.

Special configurations:

AERATED CONCRETE 100 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
core borings: annular spaces filled with plaster Ø core boring = Ø collar + 50 mm	MG2	PVC-U	cluster	75	1.8 - 8.4	75	U/C	EI 120
			cluster	110	2.2 - 8.2	110	U/C	EI 120
		HDPE	cluster	75	3 - 6.8	75	U/C	EI 120
			cluster	110	3.4 - 10	110	U/C	EI 120

U/C: open on side facing fire, closed on side away from fire.

Cluster configuration: triangular arrangement of three tubes. The distance between collars is 0 mm.

- Channels lagged with two PROMASTOP CB 50 mineral wool panels, overall thickness 100 mm:

CHANNEL LAGGED WITH MINERAL WOOL PANELS + COATING OVERALL THICKNESS 100 MM								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
annular space filled with Promastop-E coating Ø core boring ≤ Ø collar + 10 mm	MG2	PVC-U	standard	75	3	75	U/C	EI 120
			standard	110	3,2	110	U/C	EI 120
			standard	160	3,2	160	U/C	EI 90
		HDPE	standard	75	3	75	U/C	EI 120
			standard	110	4,2	110	U/C	EI 120
			standard	160	6,2	160	U/C	EI 120

U/C: open on side facing fire, closed on side away from fire.

5.2.2. MG2-A collars (surface)

- Aerated concrete slabs, 150 mm thick:

AERATED CONCRETE SLABS 150 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
Surface-mounted facing fire	MG2-A	PVC-U	standard	75	1,8	75	U/C	EI 180
			standard	75	8,4	75	U/C	EI 180
			standard	110	2,2	110	U/C	EI 180
			standard	110	8,2	110	U/C	EI 180
			standard	160	3,2	160	U/C	EI 180
			standard	160	7,7	160	U/C	EI 180
			standard	160	11,9	160	U/C	EI 90
		HDPE	standard	75	3	75	U/C	EI 180
			standard	75	6,8	75	U/C	EI 180
			standard	110	3,4	110	U/C	EI 180
			standard	110	10	110	U/C	EI 120
			standard	160	5	160	U/C	EI 180
			standard	160	14,6	160	U/C	EI 120
		Geberit Silent-db20	standard	75	3,6	75	U/C	EI 180
			standard	110	6	110	U/C	EI 120
			standard	160	7	160	U/C	EI 90

U/C: open on side facing fire, closed on side away from fire.

Special configurations:

AERATED CONCRETE SLABS 150 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
Surface-mounted facing fire	MG2-A	PVC-U	30° oblique	75	1.8 - 8.4	90 - 80	U/C	EI 120
			30° oblique	110	2.2 - 8.2	125	U/C	EI 120
		HDPE	30° oblique	75	3 - 6.8	90 - 80	U/C	EI 120
			30° oblique	110	3.4 - 10	125	U/C	EI 120
		PVC-U	cluster	75	1.8 - 8.4	75	U/C	EI 180
			cluster	110	2.2 - 8.2	110	U/C	EI 180

U/C: open on side facing fire, closed on side away from fire.

Cluster configuration: three tubes in a triangular arrangement spaced at around 70 mm from each other.

- Lightweight partitions, 100 mm thick:

LIGHTWEIGHT PARTITION 100 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
Surface-mounted on side facing fire and on unexposed side	MG2-A	PVC-U	standard	75	1,8	75	U/C	EI 120
			standard	75	8,4	75	U/C	EI 120
			standard	110	2,2	110	U/C	EI 120
			standard	110	8,2	110	U/C	EI 120
			standard	160	3,2	160	U/C	EI 120
			standard	160	11,9	160	U/C	EI 120
		HDPE	standard	75	3	75	U/C	EI 120
			standard	75	6,8	75	U/C	EI 120
			standard	110	3,4	110	U/C	EI 120
			standard	110	10	110	U/C	EI 120
			standard	160	5	160	U/C	EI 120
			standard	160	14,6	160	U/C	EI 120

U/C: open on side facing fire, closed on side away from fire.

- Aerated concrete panels, 100 mm thick:

AERATED CONCRETE 100 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
Surface-mounted on side facing	MG2-A	Geberit Silent-db20	standard	75	3,6	75	U/C	EI 120
			standard	110	6	110	U/C	EI 120
			standard	160	7	160	U/C	EI 120

AERATED CONCRETE 100 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
Surface-mounted on side facing fire and on unexposed side	MG2-A	PVC-U	standard	75	1,8	75	U/C	EI 120
			standard	75	8,4	75	U/C	EI 120
			standard	110	2,2	110	U/C	EI 120
			standard	110	8,2	110	U/C	EI 120
			standard	160	3,2	160	U/C	EI 120
			standard	160	11,9	160	U/C	EI 120
		HDPE	standard	75	3	75	U/C	EI 120
			standard	75	6,8	75	U/C	EI 120
			standard	110	3,4	110	U/C	EI 120
			standard	110	10	110	U/C	EI 120
			standard	160	5	160	U/C	EI 120
			standard	160	14,6	160	U/C	EI 120

U/C: open on side facing fire, closed on side away from fire.

Special configurations:

AERATED CONCRETE 100 MM THICK								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
Surface-mounted on side facing fire and on unexposed side	MG2-A	PVC-U	cluster	≤ 75	1,8 - 8,4	≤ 75	U/C	EI 120
				≤ 110	2,2 - 8,2	≤ 110	U/C	EI 120
				≤ 160	3,2 - 11,9	≤ 160	U/C	EI 120
		HDPE	cluster	≤ 75	3 - 6,8	≤ 75	U/C	EI 120
				≤ 110	3,4 - 10	≤ 110	U/C	EI 120
				≤ 160	5 - 14,6	≤ 160	U/C	EI 120
		PVC-U	30° oblique	63	1,9	75	U/C	EI 120
			30° oblique	63	4,7	75	U/C	EI 120
			30° oblique	75	8,4	90 - 80	U/C	EI 120
			30° oblique	110	2,2	125	U/C	EI 120
			30° oblique	110	8,2	125	U/C	EI 120
			30° oblique	110	10	125	U/C	EI 120
		HDPE	30° oblique	63	3	75	U/C	EI 120
			30° oblique	63	5,8	75	U/C	EI 120
			30° oblique	90	3	110	U/C	EI 120
			30° oblique	90	8,2	110	U/C	EI 120
			30° oblique	110	3,4	125	U/C	EI 120
			30° oblique	110	10	125	U/C	EI 120

U/C: open on side facing fire, closed on side away from fire.

Cluster configuration: three tubes in a triangular arrangement spaced at around 70 mm from each other.

- Channels lagged with two PROMASTOP CB 50 mineral wool panels, overall thickness 100 mm:

CHANNEL LAGGED WITH MINERAL WOOL PANELS + COATING OVERALL THICKNESS 100 MM								
	Collar	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
Surface-mounted on side facing fire and on unexposed side	MG2-A	PVC-U	standard	75	3	75	U/C	EI 120
			standard	110	3,2	110	U/C	EI 120
			standard	160	3,2	160	U/C	EI 120
		HDPE	standard	75	3	75	U/C	EI 120
			standard	110	4,2	110	U/C	EI 120
			standard	160	6,2	160	U/C	EI 120

U/C: open on side facing fire, closed on side away from fire.

5.2.3. BRF Flexible tapes

AERATED CONCRETE 100 MM THICK								
	Covering device	Material	Configuration	ext Ø of tube	Thickness	int Ø of collar	Covering conditions	Classification
Glued to tube. Overall length 720 mm x 4 mm thick	BRF	MEPLA	standard	75	4,7	75	U/C	EI 120

U/C: open on side facing fire, closed on side away from fire.

6. FIRE RESISTANCE CLASSIFICATION VALIDITY CONDITIONS

6.1. IN MANUFACTURE

The elements and their assembly must comply with the detailed description given in the reference laboratory assessment.

If there is a dispute about an element which is the subject of this document, the reference laboratory assessment may be requested from its owner, with no obligation to transfer the document.

6.2. DIRECTION OF FIRE

For panel sealings the direction of the fire is immaterial.

For slab sealants, as specified in section 6.3 of standard EN 1366-3, tests on horizontal wall cross-pieces were performed with the fire on the underside of the slab.

7. DIRECT APPLICATION FIELD FOR THE RESULTS

The direct field of application is taken from standard EN 1366-3: 2009.

7.1. DIRECTION

In accordance with section 13.1 of standard EN 1366-3: 2009, the results shown in section 5.2 of this document may apply to horizontal concrete support elements (slabs) and vertical elements (walls).

7.2. SUPPORTING STRUCTURE

7.2.1. Rigid constructions

The fire test results obtained with rigid support constructions may apply to concrete or blockwork separation elements, whose thickness and density are the same as or greater than those of the support element used for the test, ie **th = 100 mm minimum** and **bd = 500 kg/m³ minimum** for the aerated concrete wall and **th = 150 mm minimum** and **bd = 600 kg/m³ minimum** for the aerated concrete slab.

This rule does not apply to tube closure devices (such as intumescent collars, etc.) placed within the supporting structure where this is a thicker supporting structure, unless the thickness of the sealant product is increased by the same value, and the distance between the closure device and surface of the supporting structure is preserved on both the exposed surface and on the unexposed surface.

7.2.2. Flexible partitions

The results of the fire test obtained with a standard flexible construction produced according to section 7.2.2.1.2 of standard EN 1366-3: 2009 may apply to all flexible partitions of the same class, as long as:

- the wall is classified EI120, according to standard EN 13501-2;
- the wall is thicker than that used for the test, i.e. 100 mm. This rule does not apply to tube closure devices (such as intumescent collars, etc.) placed inside the supporting construction where this is a thicker supporting construction, unless the thickness of the sealant product is increased by the same value, and the distance between the closure device and surface of the supporting construction is preserved on both the exposed surface and on the unexposed surface;
- if the sealant is placed inside a partition including internal insulation, a header must be used in practice. The header and its coating must consist of uprights and plates identical to those used to construct the partition. The header coating must be at least 12.5 mm thick.
- the flexible walls made with wooden uprights are constructed with at least two skins each side, no part of the sealing must be less than 100 mm from an upright, the plenum is closed between the upright and the lagging, and at least 100 mm of A1 or A2 classified insulation according to EN 13501-1 is installed within the cavity between the upright and the sealing;

A header is considered to form part of the penetration sealing.

The standard flexible partition does not cover sandwich panel partitions and false walls. Channels installed within these walls must be tested individually.

The fire test results obtained with flexible supporting structures may apply to concrete or blockwork separation elements of thickness greater than that of the support element used for the test, This rule does not apply to tube closure devices (such as intumescent collars, etc.) placed inside the supporting structure where this is a thicker supporting structure, unless the thickness of the sealing product is increased by the same value, and the distance between the closure device and surface of the supporting structure is preserved on both the exposed surface and on the unexposed surface.

7.3. THROUGH-ELEMENTS

The direct field of application applies to the outer dimensions of the through-elements.

7.3.1. Plastic pipes

All through-element diameters stated in this document are external diameters, since this is the factor that dictates the space to be filled by the sealing.

Results obtained with several plastic tubes installed through one aperture are valid for installation of a single tube through a single aperture of the same type.. The reverse does not apply.

7.3.1.1. Tube closure device

7.3.1.1.1. Sizes

The range of tube closure devices, using MG2 and MG2-A reference collars have the following properties:

7.3.1.1.1.1. For MG2 collars

Ext Ø of collar (mm)	Ø of tube (mm)	Thickness of active part (mm)	Length of active part (mm)	Design group	Length group
67	40	6	80	1	1
77	50	6	80	1	1
83	56	6	80	1	1
90	63	6	80	1	1
102	75	6	80	1	1
123	80	12	80	2	1
133	90	12	80	2	1
143	100	12	80	2	1
153	110	12	80	2	1
182	125	20	100	3	2
215	160	20	100	3	2

7.3.1.1.1.2. For MG2-A collars

Ext Ø of collar (mm)	Ø of tube (mm)	Thickness of active part (mm)	Length of active part (mm)	Number of fittings	Design group	Length group
48	32	6	40	2	1	1
56	40	6	40	2	1	1
68	50	6	40	2	1	1
75	56	6	40	2	1	1
80	63	6	40	2	1	1
92,5	75	6	40	2	1	1
110	80	12	40	3	2	1
125	90	12	40	3	2	1
132	100	12	40	3	2	1
139,5	110	12	40	3	2	1
173	125	18	40	4	3	1
205,5	160	18	40	4	3	1

NOTE: greyed-out lines correspond to the inner collar sizes tested.

A "design group" consists of all sizes of tube closure devices with the same material, thickness and length of active component (for instance, the intumescent material of a collar or tape).

A "length group" consists of one or more "design groups" all with the same length of active component.

7.3.1.1.2. Thickness of tube wall

For a size of collar tested (normally with minimum and maximum wall thicknesses available), the intermediate wall thicknesses are covered.

The results of the tube test with maximum thickness, and the largest collar in a family (also called design group), as defined by the standard (that is, the same thickness and length of the active part of the device, for instance the intumescent tapes of a collar) apply to the smaller sizes within this family.

For a non-tested group of collars, either a linear interpolation between the large sizes of collars tested, or else a staged approach as shown in diagram E.9, may be used. If the minimum wall thickness is the same for several groups of collars, the maximum and minimum sized groups of tubes cover the intermediate sizes.

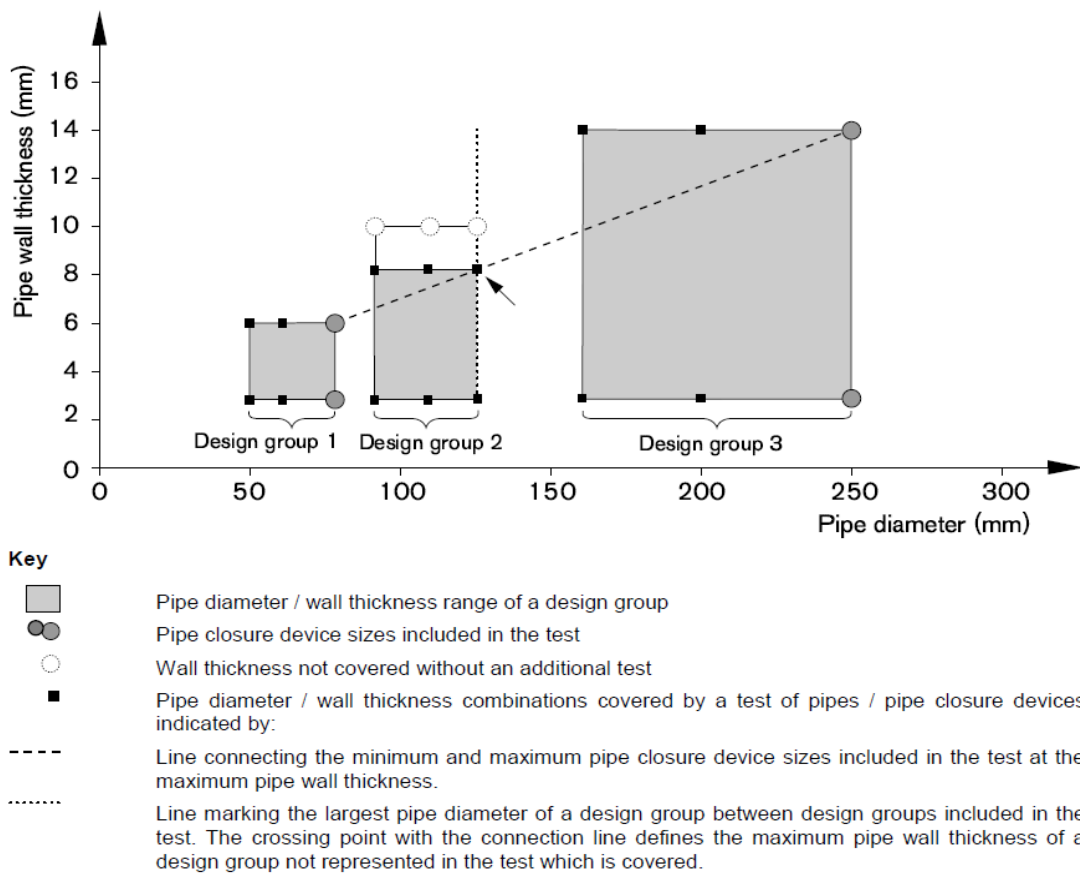


Figure E.9 — Diagram illustrating the field of application rules for the pipe wall thickness for pipe closure devices of a particular length group for plastic pipes

In accordance with the performances of elements tested as shown in section 5 of this document, the direct fields of application for the two collars, MG2 (embedded) and MG2-A (surface) are as follows:

MG2 COLLAR:

- Class **EI 180** for tubes in **PVC-U** inserted through **aerated concrete slab, 150 mm thick** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Mortar	67	40	1,8	8,4	1
	77	50	1,8	8,4	1
	83	56	1,8	8,4	1
	90	63	1,8	8,4	1
	102	75	1,8	8,4	1
	123	80	2,2	8,2	2
	133	90	2,2	8,2	2
	143	100	2,2	8,2	2
	153	110	2,2	8,2	2
	182	125	3,2	11,9	3
215	160	3,2	11,9	3	

Sizes tested.

- Class **EI 180** for **PEHD tubes** inserted through **aerated concrete slab of thickness 150 mm** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Mortar	67	40	3	6,8	1
	77	50	3	6,8	1
	83	56	3	6,8	1
	90	63	3	6,8	1
	102	75	3	6,8	1
	123	80	3,4	10	2
	133	90	3,4	10	2
	143	100	3,4	10	2
	153	110	3,4	10	2
	182	125	6,2	14,6	3
	215	160	6,2	14,6	3

Sizes tested.

- Class **EI 120** for tubes in **PVC-U** inserted in a special "cluster" configuration through **aerated concrete slab**, 150 mm thick (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Mortar	67	40	1,8	8,4	1
	77	50	1,8	8,4	1
	83	56	1,8	8,4	1
	90	63	1,8	8,4	1
	102	75	1,8	8,4	1
	123	80	2,2	8,2	2
	133	90	2,2	8,2	2
	143	100	2,2	8,2	2
	153	110	2,2	8,2	2

- Class **EI 120** for tubes in **HDPE** inserted in a special "cluster" configuration through **aerated concrete slab**, 150 mm thick (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Mortar	67	40	3	6,8	1
	77	50	3	6,8	1
	83	56	3	6,8	1
	90	63	3	6,8	1
	102	75	3	6,8	1
	123	80	3,4	10	2
	133	90	3,4	10	2
	143	100	3,4	10	2
	153	110	3,4	10	2

- Class **EI 120** for tubes in **PVC-U** installed through a **lightweight partition, 100 mm thick, and aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Plaster	67	40	1,8	8,4	1
	77	50	1,8	8,4	1
	83	56	1,8	8,4	1
	90	63	1,8	8,4	1
	102	75	1,8	8,4	1
	123	80	2,2	8,2	2
	133	90	2,2	8,2	2
	143	100	2,2	8,2	2
	153	110	2,2	8,2	2
	182	125	3,2	3,2	3
	215	160	3,2	3,2	3

Sizes tested.

- Class **EI 90** for tubes in **PVC-U** installed through a **lightweight partition, 100 mm thick, and aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Plaster	67	40	1,8	8,4	1
	77	50	1,8	8,4	1
	83	56	1,8	8,4	1
	90	63	1,8	8,4	1
	102	75	1,8	8,4	1
	123	80	2,2	8,2	2
	133	90	2,2	8,2	2
	143	100	2,2	8,2	2
	153	110	2,2	8,2	2
	182	125	3,2	13	3
215	160	3,2	13	3	

Sizes tested.

- Class **EI 120** for tubes in **PEHD** installed through a **lightweight partition, 100 mm thick, and aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Plaster	67	40	3	6,8	1
	77	50	3	6,8	1
	83	56	3	6,8	1
	90	63	3	6,8	1
	102	75	3	6,8	1
	123	80	3,4	10	2
	133	90	3,4	10	2
	143	100	3,4	10	2
	153	110	3,4	10	2
	182	125	14,6	14,6	3
	215	160	14,6	14,6	3

Sizes tested.

- Class **E 120, EI 90** for tubes in **HDPE** installed through a **lightweight partition, 100 mm thick, and aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Plaster	67	40	3	6,8	1
	77	50	3	6,8	1
	83	56	3	6,8	1
	90	63	3	6,8	1
	102	75	3	6,8	1
	123	80	3,4	10	2
	133	90	3,4	10	2
	143	100	3,4	10	2
	153	110	3,4	10	2
	182	125	6,2	14,6	3
215	160	6,2	14,6	3	

Sizes tested.

- Class **EI 120** for tubes in **Geberit Silent db20** installed through **aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Plaster	67	40	3,6	3,6	1
	77	50	3,6	3,6	1
	83	56	3,6	3,6	1
	90	63	3,6	3,6	1
	102	75	3,6	3,6	1
	123	80	6	6	2
	133	90	6	6	2
	143	100	6	6	2
	153	110	6	6	2

Sizes tested.

- Class **EI 90** for tubes in **Geberit Silent db20** installed through **aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Plaster	182	125	7	7	3
	215	160	7	7	3

Sizes tested.

- Class **EI 120** for tubes in **PVC-U** installed in a special "cluster" configuration through **aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Plaster	67	40	1,8	8,4	1
	77	50	1,8	8,4	1
	83	56	1,8	8,4	1
	90	63	1,8	8,4	1
	102	75	1,8	8,4	1
	123	80	2,2	8,2	2
	133	90	2,2	8,2	2
	143	100	2,2	8,2	2
	153	110	2,2	8,2	2

- Class **EI 120** for tubes in **HDPE** installed in a special "cluster" configuration through **aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Plaster	67	40	3	6,8	1
	77	50	3	6,8	1
	83	56	3	6,8	1
	90	63	3	6,8	1
	102	75	3	6,8	1
	123	80	3,4	10	2
	133	90	3,4	10	2
	143	100	3,4	10	2
	153	110	3,4	10	2

- Class **EI 120** for tubes in **PVC-U** installed through a **PROMASTOP CB50 mineral wool panel channel (lightweight panel, 100 mm thick)** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Promastop coating	67	40	3	3	1
	77	50	3	3	1
	83	56	3	3	1
	90	63	3	3	1
	102	75	3	3	1
	123	80	3,2	3,2	2
	133	90	3,2	3,2	2
	143	100	3,2	3,2	2
	153	110	3,2	3,2	2

Sizes tested.

- Class **EI 90** for tubes in **PVC-U** installed through a **PROMASTOP CB50 mineral wool panel channel (lightweight panel, 100 mm thick)** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Promastop coating	67	40	3	3	1
	77	50	3	3	1
	83	56	3	3	1
	90	63	3	3	1
	102	75	3	3	1
	123	80	3,2	3,2	2
	133	90	3,2	3,2	2
	143	100	3,2	3,2	2
	153	110	3,2	3,2	2
	182	125	3,2	3,2	3
215	160	3,2	3,2	3	

Sizes tested.

- Class **EI 120** for tubes in **HDPE** installed through a **PROMASTOP CB50 mineral wool panel channel (lightweight panel, 100 mm thick)** (configuration of ends U/C and C/C) protected by **MG2** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Promastop coating	67	40	3	3	1
	77	50	3	3	1
	83	56	3	3	1
	90	63	3	3	1
	102	75	3	3	1
	123	80	4,2	4,2	2
	133	90	4,2	4,2	2
	143	100	4,2	4,2	2
	153	110	4,2	4,2	2
	182	125	6,2	6,2	3
215	160	6,2	6,2	3	

Sizes tested.

MG2-A COLLAR:

- Class **EI 180** for tubes in **PVC-U** installed through **aerated concrete slab, 150 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
59	32	1,8	8,4	1
67	40	1,8	8,4	1
77	50	1,8	8,4	1
83	56	1,8	8,4	1
90	63	1,8	8,4	1
102	75	1,8	8,4	1
123	80	2,2	8,2	2
133	90	2,2	8,2	2
143	100	2,2	8,2	2
153	110	2,2	8,2	2
182	125	3,2	7,7	3
215	160	3,2	7,7	3

Sizes tested.

- Class **EI 90** for tubes in **PVC-U** installed through **aerated concrete slab, 150 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
182	125	3,2	11,9	3
215	160	3,2	11,9	3

Sizes tested.

- Class **EI 120** for tubes in **PEHD** installed through **aerated concrete slab, 150 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
59	32	3	6,8	1
67	40	3	6,8	1
77	50	3	6,8	1
83	56	3	6,8	1
90	63	3	6,8	1
102	75	3	6,8	1
123	80	3,4	10	2
133	90	3,4	10	2
143	100	3,4	10	2
153	110	3,4	10	2
182	125	5	14,6	3
215	160	5	14,6	3

Sizes tested.

- Class **EI 180** for tubes in **PEHD** installed through **aerated concrete slab, 150 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
59	32	3	6,8	1
67	40	3	6,8	1
77	50	3	6,8	1
83	56	3	6,8	1
90	63	3	6,8	1
102	75	3	6,8	1
123	80	3,4	3,4	2
133	90	3,4	3,4	2
143	100	3,4	3,4	2
153	110	3,4	3,4	2
182	125	5	5	3
215	160	5	5	3

Sizes tested.

- For tubes in **Geberit Silent db20** installed through **aerated concrete slab, 150 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Classification	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
EI 180	59	32	3,6	3,6	1
	67	40	3,6	3,6	1
	77	50	3,6	3,6	1
	83	56	3,6	3,6	1
	90	63	3,6	3,6	1
	102	75	3,6	3,6	1
EI 120	123	80	6	6	2
	133	90	6	6	2
	143	100	6	6	2
	153	110	6	6	2
EI 90	182	125	7	7	3
	215	160	7	7	3

Sizes tested.

- Class **EI 180** for tubes in **PVC-U** installed in a special "cluster" configuration through **aerated concrete slab, 150 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
59	32	1,8	8,4	1
67	40	1,8	8,4	1
77	50	1,8	8,4	1
83	56	1,8	8,4	1
90	63	1,8	8,4	1
102	75	1,8	8,4	1
123	80	2,2	8,2	2
133	90	2,2	8,2	2
143	100	2,2	8,2	2
153	110	2,2	8,2	2

- Class **EI 120** for tubes in **PVC-U** installed through a **lightweight partition, 100 mm thick, and aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
59	32	1,8	8,4	1
67	40	1,8	8,4	1
77	50	1,8	8,4	1
83	56	1,8	8,4	1
90	63	1,8	8,4	1
102	75	1,8	8,4	1
123	80	2,2	8,2	2
133	90	2,2	8,2	2
143	100	2,2	8,2	2
153	110	2,2	8,2	2
182	125	3,2	11,9	3
215	160	3,2	11,9	3

Sizes tested.

- Class **EI 120** for tubes in **HDPE** installed through a **lightweight partition, 100 mm thick, and aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
59	32	3	6,8	1
67	40	3	6,8	1
77	50	3	6,8	1
83	56	3	6,8	1
90	63	3	6,8	1
102	75	3	6,8	1
123	80	3,4	10	2
133	90	3,4	10	2
143	100	3,4	10	2
153	110	3,4	10	2
182	125	5	14,6	3
215	160	5	14,6	3

Sizes tested.

- Class **EI 120** for tubes in **Geberit Silent db20** installed through **aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
59	32	3,6	3,6	1
67	40	3,6	3,6	1
77	50	3,6	3,6	1
83	56	3,6	3,6	1
90	63	3,6	3,6	1
102	75	3,6	3,6	1
123	80	6	6	2
133	90	6	6	2
143	100	6	6	2
153	110	6	6	2
182	125	7	7	3
215	160	7	7	3

Sizes tested.

- Class **EI 120** for tubes in **PVC-U** installed in a special "cluster" configuration through **aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
59	32	1,8	8,4	1
67	40	1,8	8,4	1
77	50	1,8	8,4	1
83	56	1,8	8,4	1
90	63	1,8	8,4	1
102	75	1,8	8,4	1
123	80	2,2	8,2	2
133	90	2,2	8,2	2
143	100	2,2	8,2	2
153	110	2,2	8,2	2
182	125	3,2	11,9	3
215	160	3,2	11,9	3

- Class **EI 120** for tubes in **HDPE** installed in a special "cluster" configuration through **aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
59	32	3	6,8	1
67	40	3	6,8	1
77	50	3	6,8	1
83	56	3	6,8	1
90	63	3	6,8	1
102	75	3	6,8	1
123	80	3,4	10	2
133	90	3,4	10	2
143	100	3,4	10	2
153	110	3,4	10	2
182	125	5	14,6	3
215	160	5	14,6	3

- Class **EI 120** for tubes in **PVC-U** installed through a **PROMASTOP CB50 mineral wool panel channel (lightweight panel, 100 mm thick)** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Promastop coating	59	32	3	3	1
	67	40	3	3	1
	77	50	3	3	1
	83	56	3	3	1
	90	63	3	3	1
	102	75	3	3	1
	123	80	3,2	3,2	2
	133	90	3,2	3,2	2
	143	100	3,2	3,2	2
	153	110	3,2	3,2	2
	182	125	3,2	3,2	3
215	160	3,2	3,2	3	

Sizes tested.

- Class **EI 120** for tubes in **HDPE** installed through a **PROMASTOP CB50 mineral wool panel channel (lightweight panel, 100 mm thick)** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Sealing	Ext Ø of collar (mm)	Ext Ø of tube / int Ø of collar (mm)	Minimum wall thickness (mm)	Maximum wall thickness (mm)	Design group
Promastop coating	59	32	3	3	1
	67	40	3	3	1
	77	50	3	3	1
	83	56	3	3	1
	90	63	3	3	1
	102	75	3	3	1
	123	80	4,2	4,2	2
	133	90	4,2	4,2	2
	143	100	4,2	4,2	2
	153	110	4,2	4,2	2
	182	125	6,2	6,2	3
215	160	6,2	6,2	3	

Sizes tested.

7.3.1.1.3. Configuration of end of tubes

During the tests, the configuration of tube ends tested was U/C, covering all configurations except U/U and C/U.

Test conditions	Configuration of tube ends	
	Inside the furnace	Outside the furnace
U/C	Not closed	Closed
C/C	Closed	Closed

The various applications of tubes may involve differing requirements for pipe end configurations within one test.

During a fire, the conditions of exposure of the tube and sealing systems vary according to the sealing of one or both ends of the tube under actual conditions. The pressure and flow rate conditions of hot gases will be different for a tube open to the air, compared to a closed tube.

It is important to ensure that sealing systems have been tested with the tube ends appropriately configured.

The following table shows some examples of use of plastic tubes, where the condition of the end of the tube may be defined. Should national regulations conflict with the provisions of Table H.1 however, the prevailing regulations must be respected. As not all applications are defined, the tube's environment, whether or not it is pressurised or ventilated, determines the conditions for the ends of the tubes. It is important to know how the tube will be used, in order to define the conditions for closing the tube.

Table H.1 - Configuration of the ends of plastic tubes and the intended use

Use of tube		Condition of end of tube	
		Inside the furnace	Outside the furnace
Rainwater downpipe		uncapped	uncapped
Waste water pipe	Ventilated	uncapped	uncapped
	Not ventilated	uncapped	capped
Gas, drinking water, hot water pipe		uncapped	capped

7.3.1.2. Sealing with other obturating devices: BRF tapes.

7.3.1.2.1. Thickness of tube wall

Class **EI 120** for tubes in **MEPLA** installed through **aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **BRF** tapes under the following conditions:

Ø of tube	Material	Thickness of wall	Insulation thickness	Insulation length	Closure
75	MEPLA	4.7 mm	2 x 2 mm	720 mm (passing through the sealing)	U/C

7.3.1.2.2. Condition of end of tube

During the test, the configuration of tube ends tested was U/C, covering all configurations except U/U and C/U.

Test conditions	Configuration of tube ends	
	Inside the furnace	Outside the furnace
U/U	Not closed	Not closed
C/U	Closed	Not closed
U/C	Not closed	Closed
C/C	Closed	Closed

7.3.1.3. Tube and insulation materials

Only the tested tube materials and/or tested insulation materials are covered.

Results of tests obtained on tubes in PVC-U according to EN 1329-1, EN 1453-1 or EN 1452-1 apply to tubes in PVC-U according to EN 1329-1, EN 1453-1 and EN 1452-1 and to tubes in PVC-C according to EN 1566-1.

Results of tests obtained on tubes in HDPE according to EN 1519-1 or EN 12666-1 apply to tubes in PE according to EN 12201-2, EN 1519-1 and EN 12666-1, to tubes in ABS according to EN 1455-1 and to tubes in SAN+PVC according to EN 1565-1.

7.3.1.4. Orientation of tubes

The results obtained with tubes tested both perpendicular and oblique to the sealing are valid for an installation at an angle between 90° and the angle tested with respect to the sealing system.

- Class **EI 120** for tubes installed through **aerated concrete slab, 150 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars under the following conditions:

Material	Angle	Diameter of tube	Thickness	Diameter of collar	Closure condition
PVC-U	90°± 30°	75	1,8 - 8,4	90 - 80	U/C
	90°± 30°	110	2,2 - 8,2	125	U/C
HDPE	90°± 30°	75	3 - 6,8	90 - 80	U/C
	90°± 30°	110	3,4 - 10	125	U/C

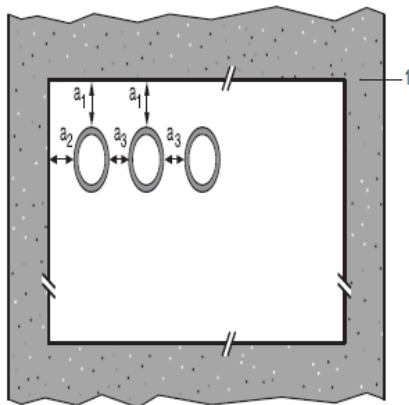
- For tubes installed through **aerated concrete panel, 100 mm thick** (configuration of ends U/C and C/C) protected by **MG2-A** collars:

Material	Angle	Diameter of tube	Thickness	Diameter of collar	Closure condition	Classification
PVC-U	90°± 30°	32 - 40	1,9 - 4,7	50	U/C	EI 120
	90°± 30°	50	1,9 - 4,7	56	U/C	EI 120
	90°± 30°	56	1,9 - 4,7	63	U/C	EI 120
	90°± 30°	63	1,9 - 4,7	75	U/C	EI 120
	90°± 30°	75	1,8 – 8,4	90 - 80	U/C	EI 120
	90°± 30°	110	2,2	125	U/C	EI 120
	90°± 30°	110	2,2 - 8,2	125	U/C	EI 120
HDPE	90°± 30°	40	3 - 5,8	50	U/C	EI 120
	90°± 30°	50	3 - 5,8	56	U/C	EI 120
	90°± 30°	56	3 - 5,8	63	U/C	EI 120
	90°± 30°	63	3 - 5,8	75	U/C	EI 120
	90°± 30°	75	3 – 6,8	90 - 80	U/C	EI 120
	90°± 30°	90	3 – 8,2	110	U/C	EI 120
	90°± 30°	110	3,4 - 10	125	U/C	EI 120

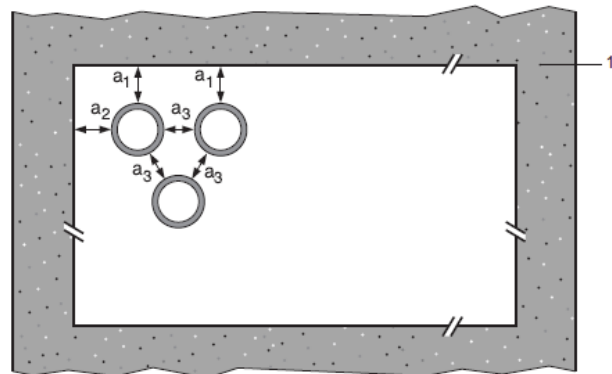
7.3.1.5. Working distances

For channels containing several tubes, distances a1 to a3 may be increased (see Figure E.1).

Option 1:



Option 2:



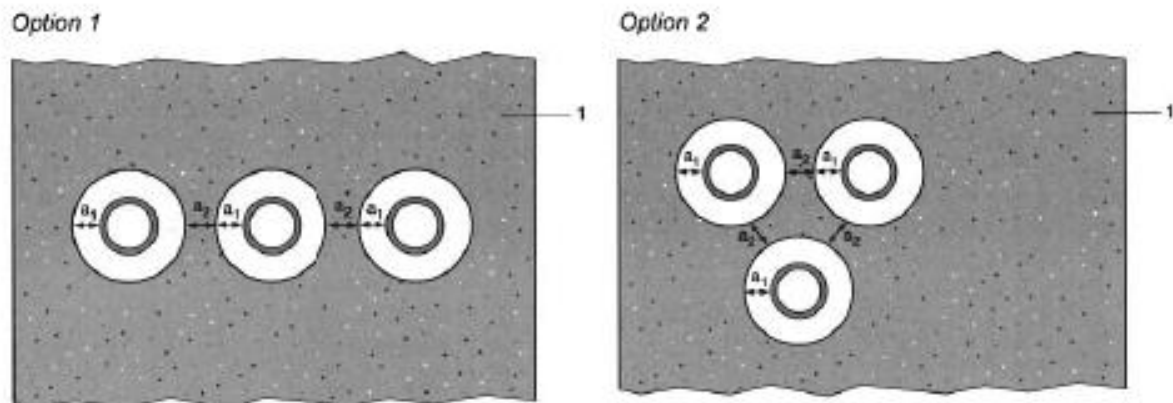
Key

1 Supporting structure

- a₁ Distance between tube/ upper edge of channel
- a₂ Distance between tube/ side edge of channel
- a₃ Distance between tubes

Figure E.1 - Standard configuration for channel with several tubes

When a tube passes directly through the supporting wall (wall, partition or floor, etc.) the annular distance between tube and wall (see a1 on diagram below) must remain within the range of distances tested. Distance a2 may be increased.



Key

1 Supporting structure

- a_1 Distance between tube / edge of channel
- a_2 Distance between tubes

Figure E.2 - Standard configuration for several channels including one tube

For lagging other than closure devices, test results on aligned tubes (Option 1) does not cover un-aligned tubes (bunch, triangle, etc.) unless the distance a_3 (Figure E.1) between two tubes (or between two core borings, as applicable) is more than 100 mm. The results of tests using Option 2 of the standard configuration cover tubes with linear separation.

Distances a_1 and a_3 measured before the test are shown in the Appendix.

7.3.2. Supporting through-elements

The results shown in this document are only valid if, in practice, through-element support systems are:

- installed at a distance no greater than the support distance noted in this document, namely:
 - 400 mm maximum, and from the non-exposed surface for the slabs;
 - 200 to 400 mm maximum, either side of the supporting structures for panels.
- fire resistant, for supporting tubes.

7.3.3. Size of sealing and working distances

7.3.3.1. Rectangular feedthrough with several tubes

Classifications are valid for all sizes of sealing (in terms of linear dimensions) the same as or smaller than those tested, namely 600 x 1000 mm, provided:

- the total value of sections of through-elements (including insulation) does not exceed 60% of the surface area of the sealed feedthrough;
- working distances are not less than those tested (see figures in Appendix).

The feedthroughs may be sealed without the through-element present.

7.3.3.2. Core bores

Classifications are valid as long as:

- each core bore is penetrated by a single tube;
- working distances are not less than those tested (see figures in Appendix).

Core bores may not be sealed without the through-element present.

The annular distance between a single tube and the edge of the core bore (see distance a2 on diagram E2) must remain within the range of distances tested.

7.3.3.3. Configuration of tubes arranged as cluster

MG2 collars:

Tubes arranged as a cluster may be installed so that the MG2 collars are at a distance of 0 mm.

MG2-A collars:

Tubes arranged in a cluster may not be installed less than 70 mm from each other.

Maizières-lès-Metz, the 28 November 2019

X 
Romain
STOUVENOT

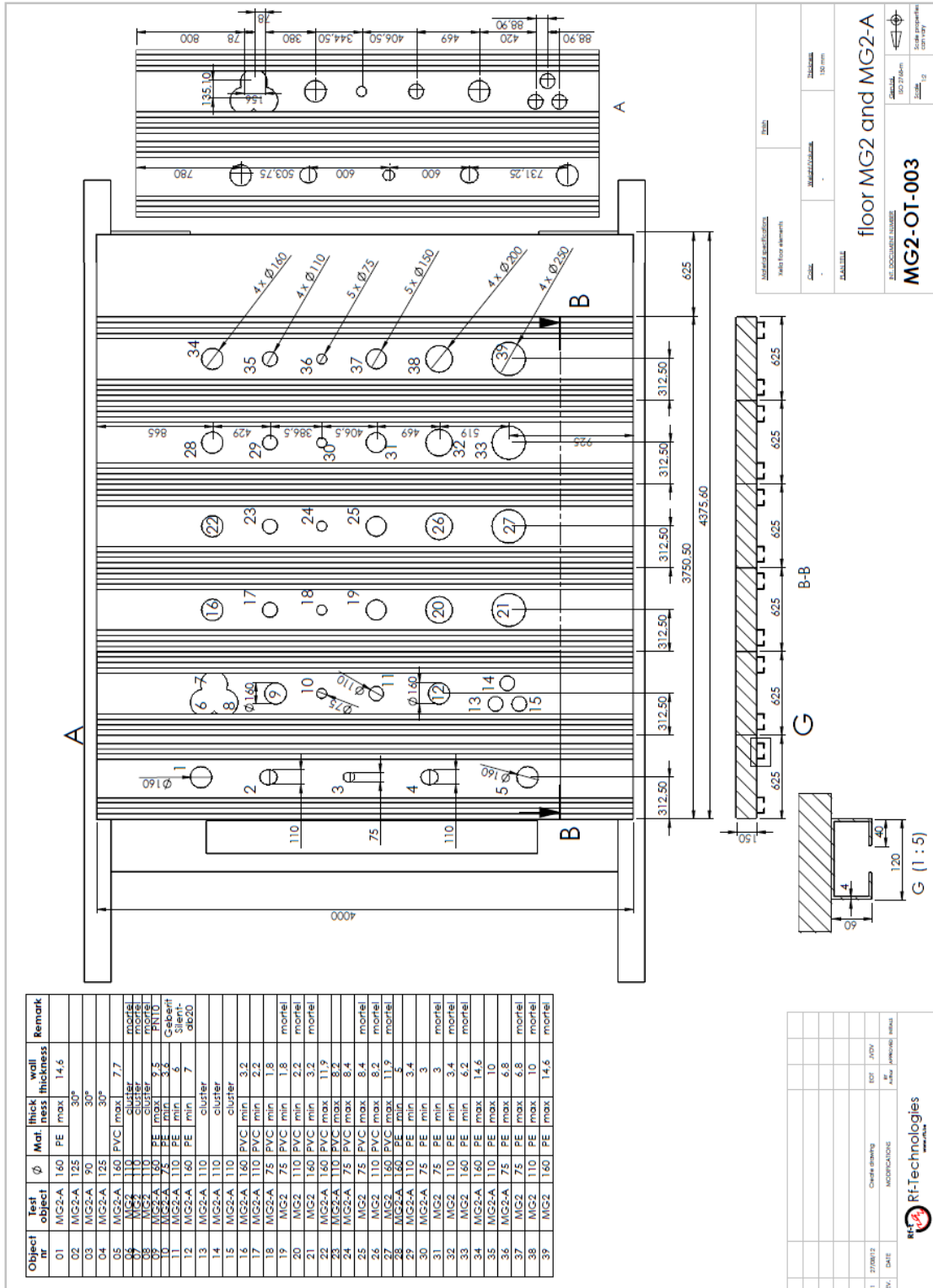
Project Leader
Signé par : Romain STOUVENOT

X 
Léo KREMER


Supervisor
Signé par : Léo KREMER

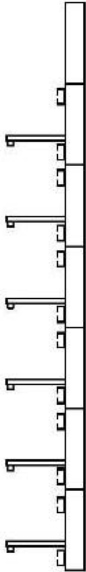
ILLUSTRATIONS APPENDIX

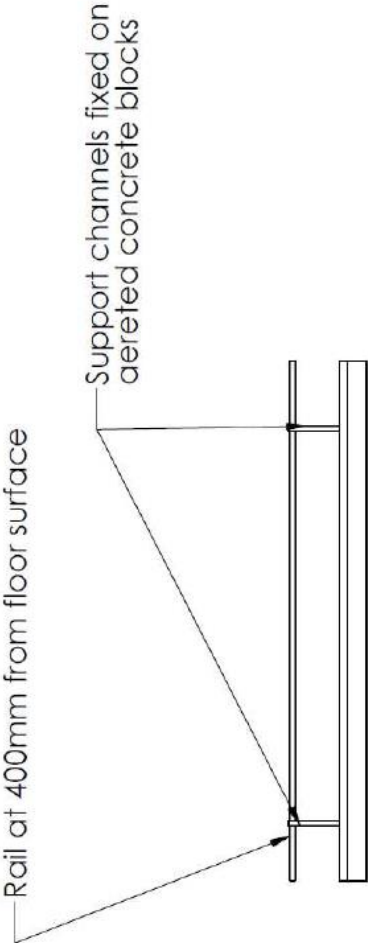
Through aerated concrete slab, 150 mm thick



Remarks:








Rail at 400mm from floor surface

Support channels fixed on aerated concrete blocks

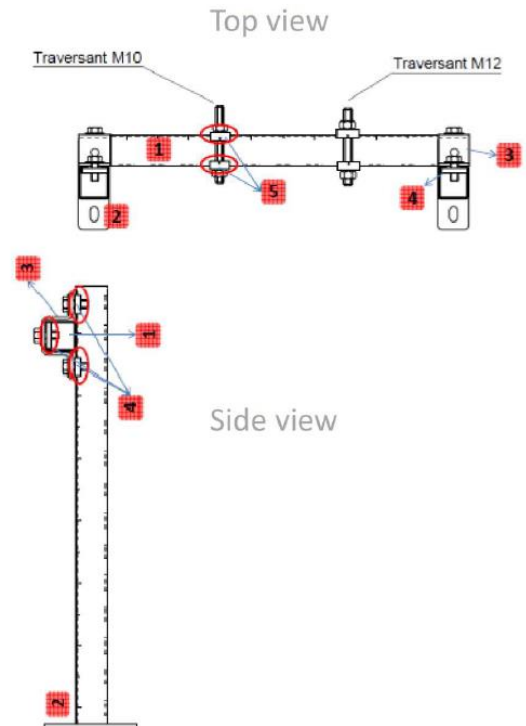
The supporting construction is fixed on the floor elements.
All pipes are held by 1 Dämmgülast pipe clamp per side, fixed on the support channel with a steel rod M10.

REV	DATE	MODIFICATIONS	Drawn By	APPROVED BY
REVISIONS				
 Rf-Technologies <small>www.rf.be</small>				

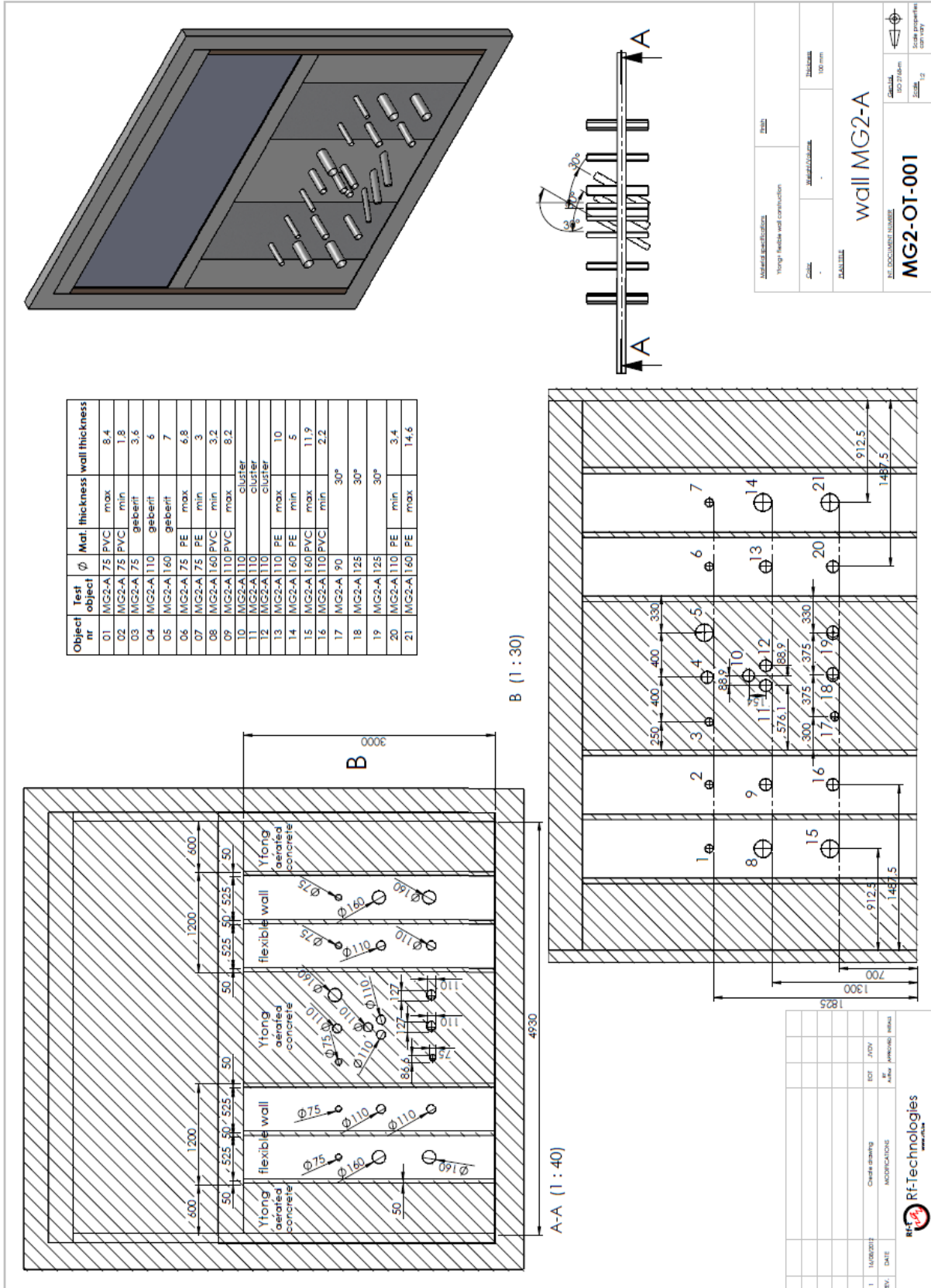
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Ylong+ flexible wall construction		
<u>Scale</u>	<u>Weight</u> g	<u>Genlod</u>
	<u>Volume</u> mm ³	
DESCRIPTION / PLAN TITLE		
Profiles MG2-OT-003		
IN DOCUMENT NUMBER:		MG2-OT-003(1)
<u>Units</u> mm / gr / s	<u>Scale</u> 1,50	<u>Sheet scale</u> A4

Supporting Construction

1. MPC-Support channels 38/40, length 4000mm, galvanised [Brand: Müpro, article number 129964]. The support channel is fixed at
2. Support channels: MPC-Wall hanger bracket 38/40, length 560mm, galvanised [Brand: Müpro, article number 118908]
3. Support channels: MPC-Cross channel connector for profile 38/40, galvanised [Brand: Müpro, article number 118246]
4. Support channels: MPC-Rail nut M10, 33x23x6mm for MPC-Support channels 38/40, galvanised [Brand: Müpro, article number 117968]
5. Support channels: MPC-Clamp bracket M10 for MPC-Support channels 38/40, galvanised [Brand: Müpro, article number 114450].
6. Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 72-80mm, galvanised. Every DN75 pipe is fixed by one clamp. [Brand: Müpro, article number 127261]
7. Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 110mm, galvanised. Every DN110 pipe is fixed by one clamp. [Brand: Müpro, article number 127132]
8. Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 159-164mm, galvanised. Every DN160 pipe is fixed by one clamp. [Brand: Müpro, article number 127201]

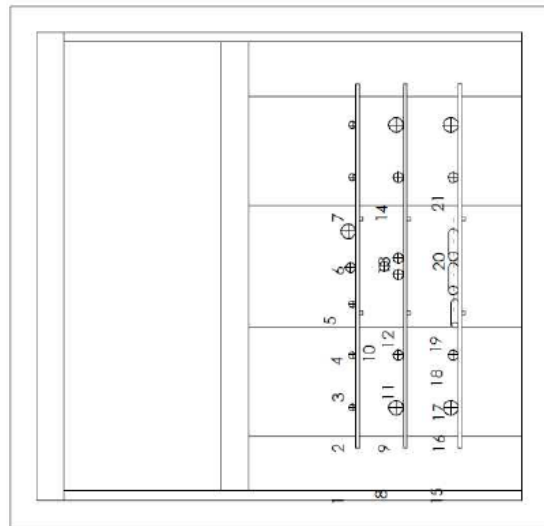
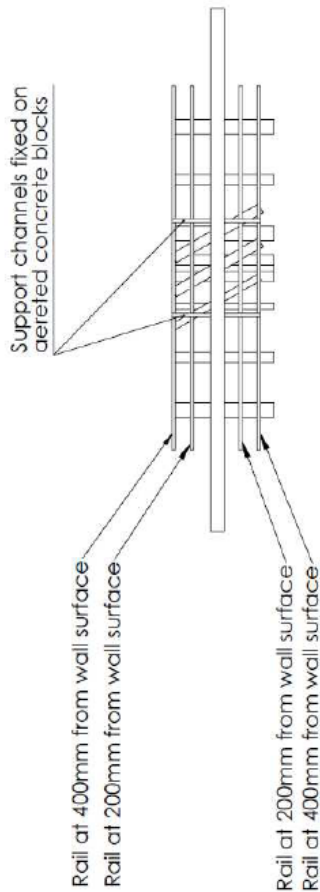
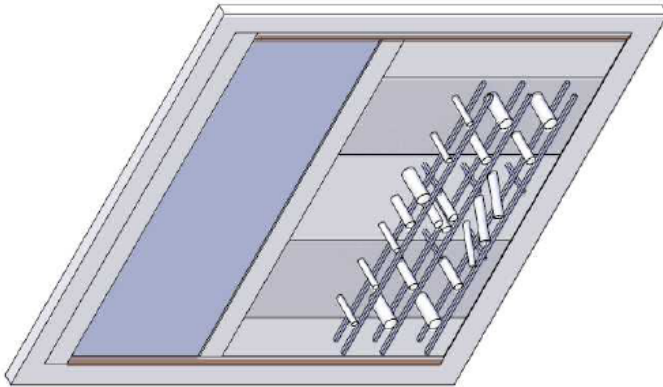


Through aerated concrete block panel, 100 mm thick and lightweight partition, 100 mm



Material specification	Ytong flexible wall construction	Scale	100 mm
Code		Product name	wall MG2-A
Material		Product number	MG2-OT-001
All documents issued		Scale	1:2
ISO 27464		Scale properties	conform

Supporting construction



The supporting construction is fixed on the aerated concrete blocks.
 All pipes are fixed by punched tape/steel band, except for pipe 10.
 Pipe 10 is held by 2 Dämmglast pipe clamps per side, fixed on the above support channel with a steel rod M10 (yellow).

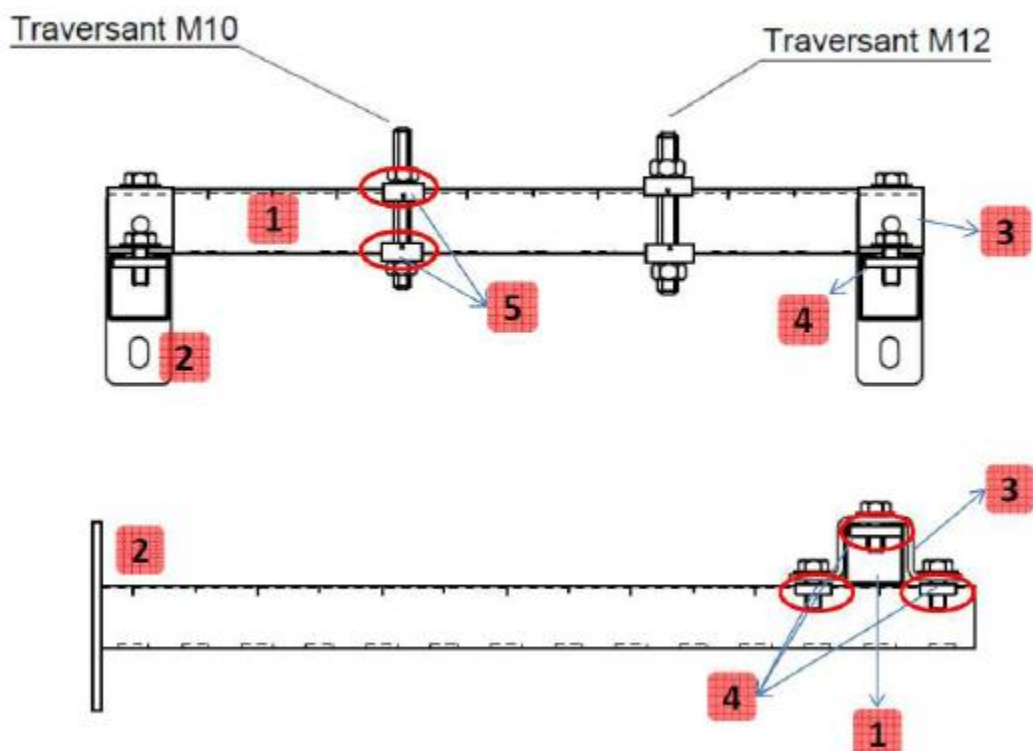
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Code:	Manufacturer:	Material: 00 0 00
Title: Profiles MG2-OT-001		
ID DOCUMENT: MG2-OT-001(1)		Scale: 1:1 Date: 12 Status: Final

REV.	DATE	MODIFICATION	BY	REASON

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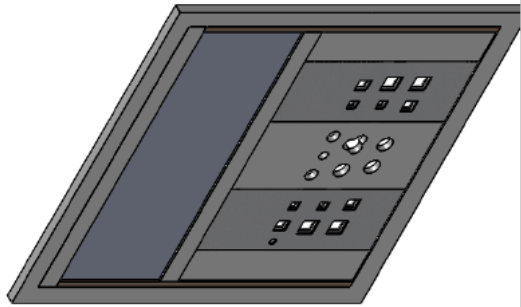
Supporting Construction

1. MPC-Support channels 38/40, length 4000mm, galvanised
[Brand: Müpro, article number 129964]
2. Support channels: MPC-Wall hanger bracket 38/40, length 560mm, galvanised
[Brand: Müpro, article number 118908]
3. Support channels: MPC-Cross channel connector for profile 38/40, galvanised
[Brand: Müpro, article number 118246]
4. Support channels: MPC-Rail nut M10, 33x23x6mm for MPC-Support channels 38/40, galvanised
[Brand: Müpro, article number 117968]
5. Support channels: MPC-Clamp bracket M10 for MPC-Support channels 38/40, galvanised
[Brand: Müpro, article number 114450]
6. Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 72-80mm, galvanised
[Brand: Müpro, article number 127261]
7. Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 110mm, galvanised
[Brand: Müpro, article number 127132]
8. Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 159-164mm, galvanised
[Brand: Müpro, article number 127201]
9. Punched tapes 17mm with straight edges, 50-meter roll, galvanised
Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 110mm, galvanised
[Brand: Müpro, article number 114804]

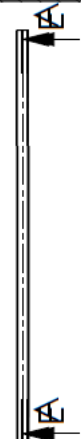
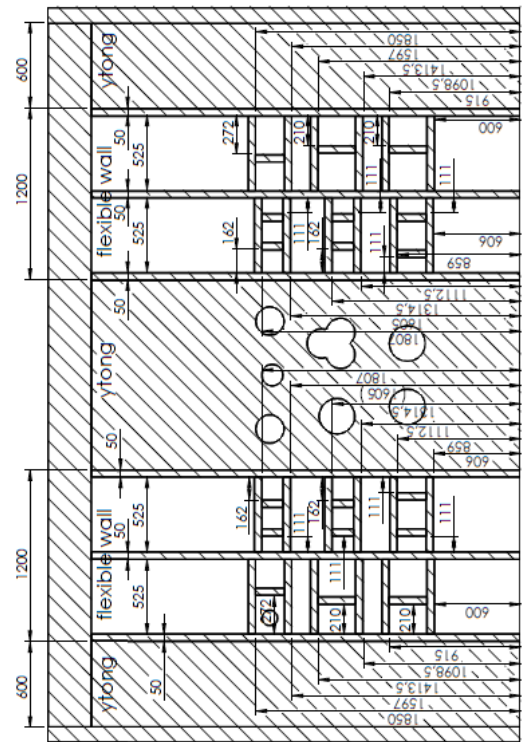
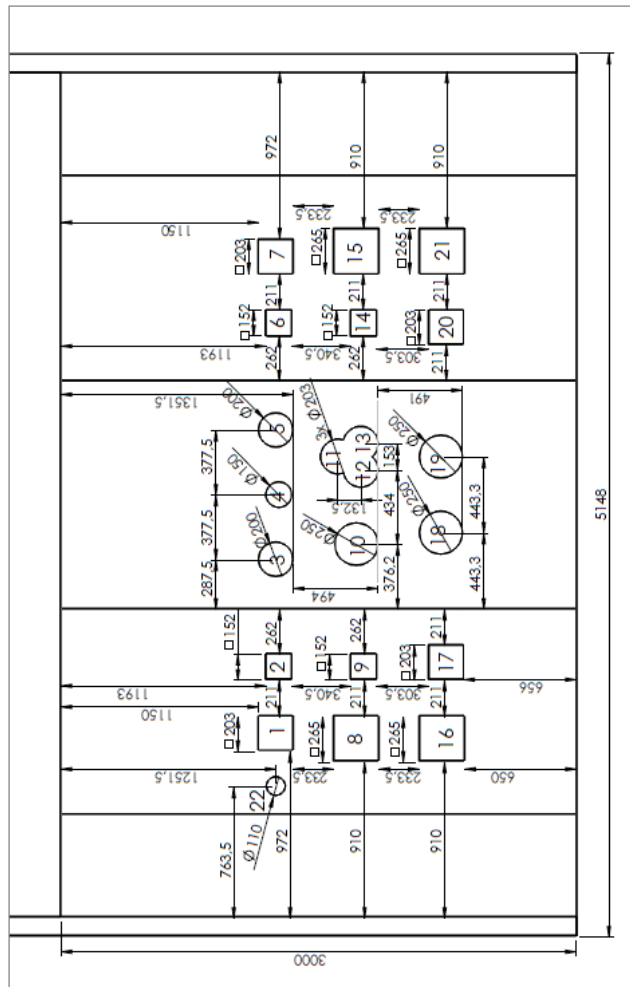


Through aerated concrete block panel, 100 mm thick and lightweight partition, 100 mm

Object nr	Test object	Mat.	thickness	wall thickness	Sealing
01	MG2 110	PVC	max	8,2	plaster
02	MG2 75	PVC	max	8,4	plaster
03	MG2 110	PVC	min	2,2	plaster
04	MG2 110		gebriet		plaster
05	MG2 75		gebriet		plaster
06	MG2 75	PE	min	3	plaster
07	MG2 110	PE	max	10	plaster
08	MG2 160	PVC	max	11,9	plaster
09	MG2 75	PVC	min	1,8	plaster
10	MG2 160		gebriet		plaster
11	MG2 110		cluter		plaster
12	MG2 110		cluter		plaster
13	MG2 110		cluter		plaster
14	MG2 75	PE	max	6,8	plaster
15	MG2 160	PE	max	14,6	plaster
16	MG2 160	PVC	min	3,2	plaster
17	MG2 110	PVC	min	2,2	plaster
18	MG2 160	PVC	min	3,2	plaster
19	MG2 160	PE	min	6,2	plaster
20	MG2 110	PE	min	3,4	plaster
21	MG2 160	PE	min	6,2	plaster
22	MG2-A 110	PE	max	10	plaster



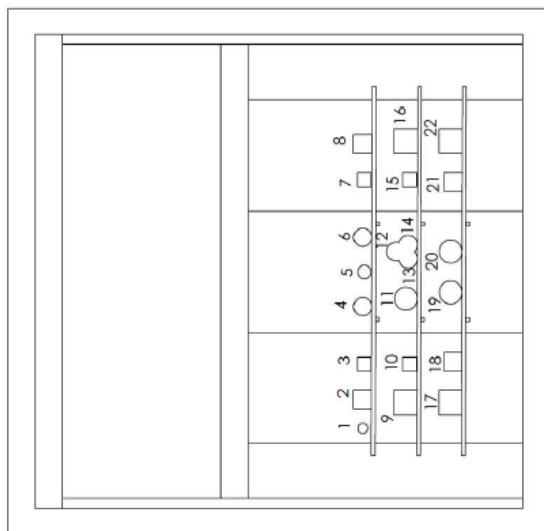
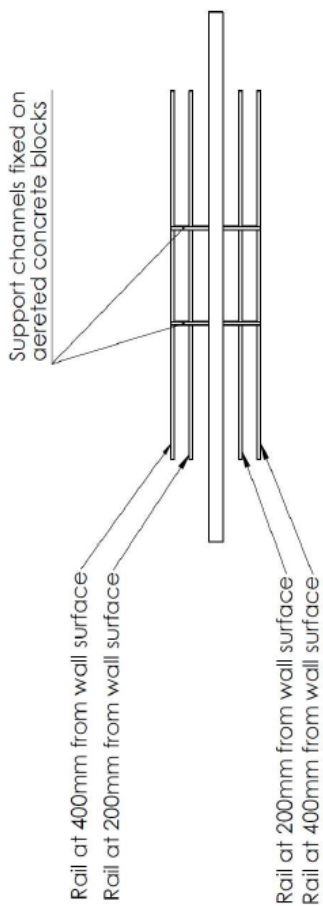
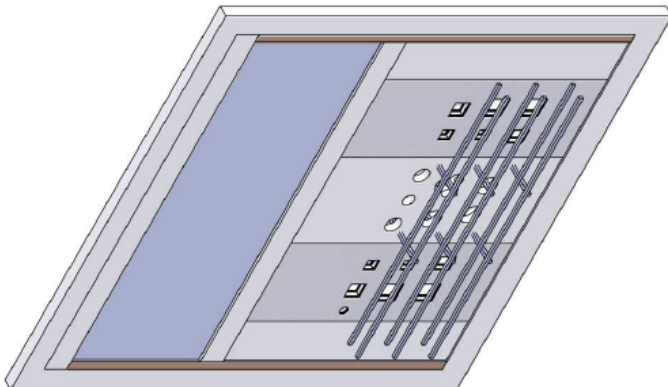
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PLAN TITLE wall MG2			
REF. DOCUMENT NUMBER MG2-OT-002			
SCALE 1:1			SCALE PROPERTIES ISO 2768-mS 1:1 1:2



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Supporting construction



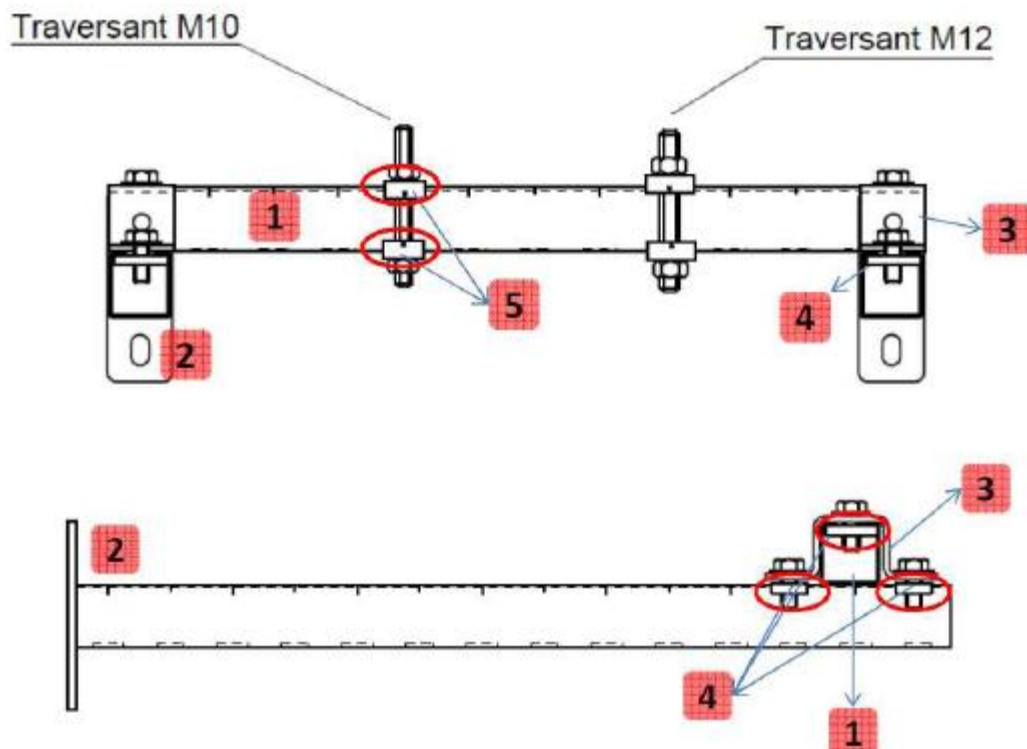
The supporting construction is fixed on the aerated concrete blocks.
 All pipes are fixed by punched tape/steel band.
 Pipe n°12 is held by a Dämmgulasst pipe clamps, fixed on above the support channel with a steel rod M10 (yellow).

Material specifications	Finish
Young's Modulus and construction	
CODE	Material/Finish
	Thickness
	100 mm
MAIN TITLE Profiles MG2-OT-002	
INT. DOCUMENT NUMBER MG2-OT-002(1)	
Scale	Scale
1:2	1:2
Scale properties cavity	

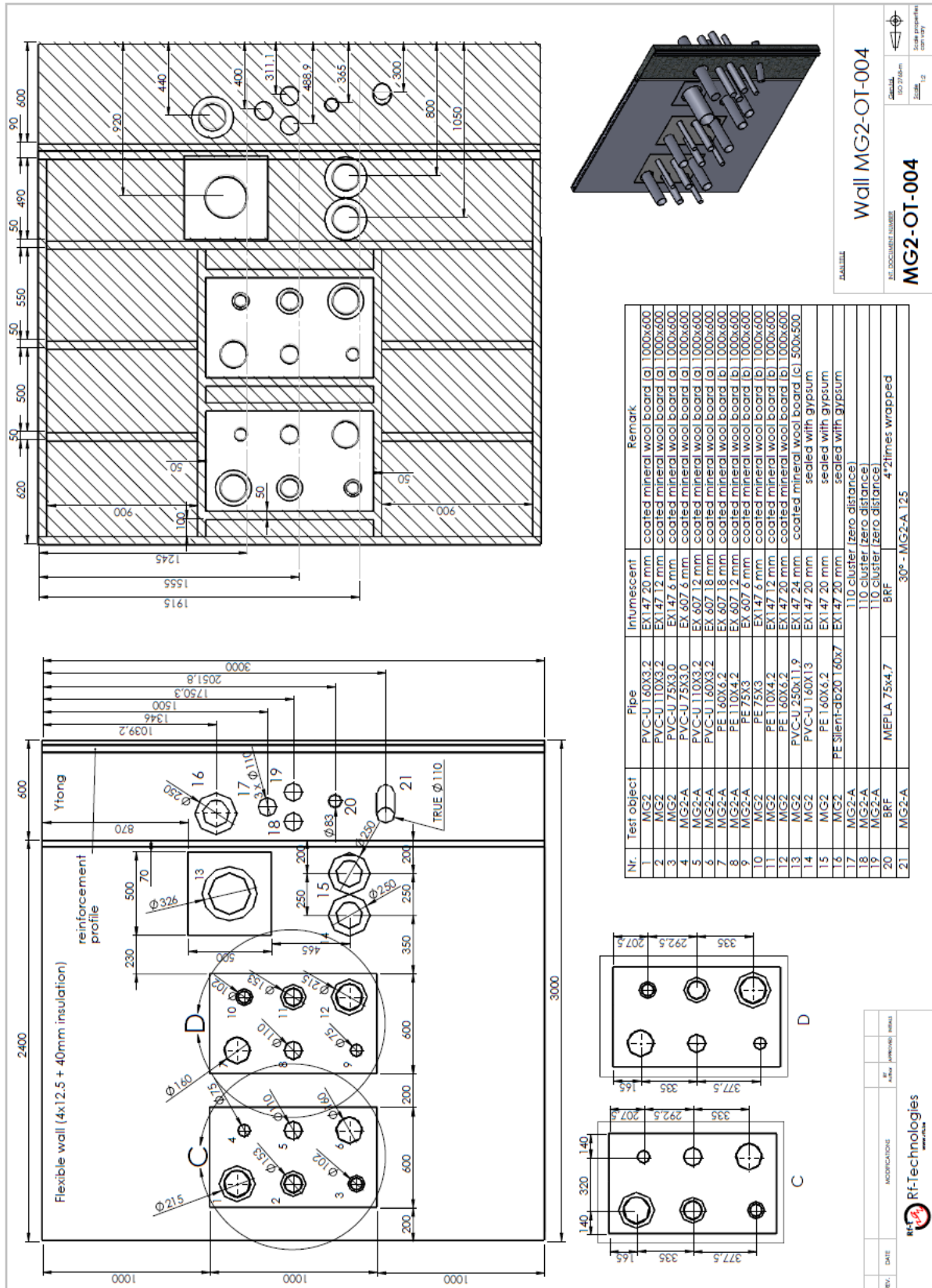
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RF-Technologies www.rf-tech.com				

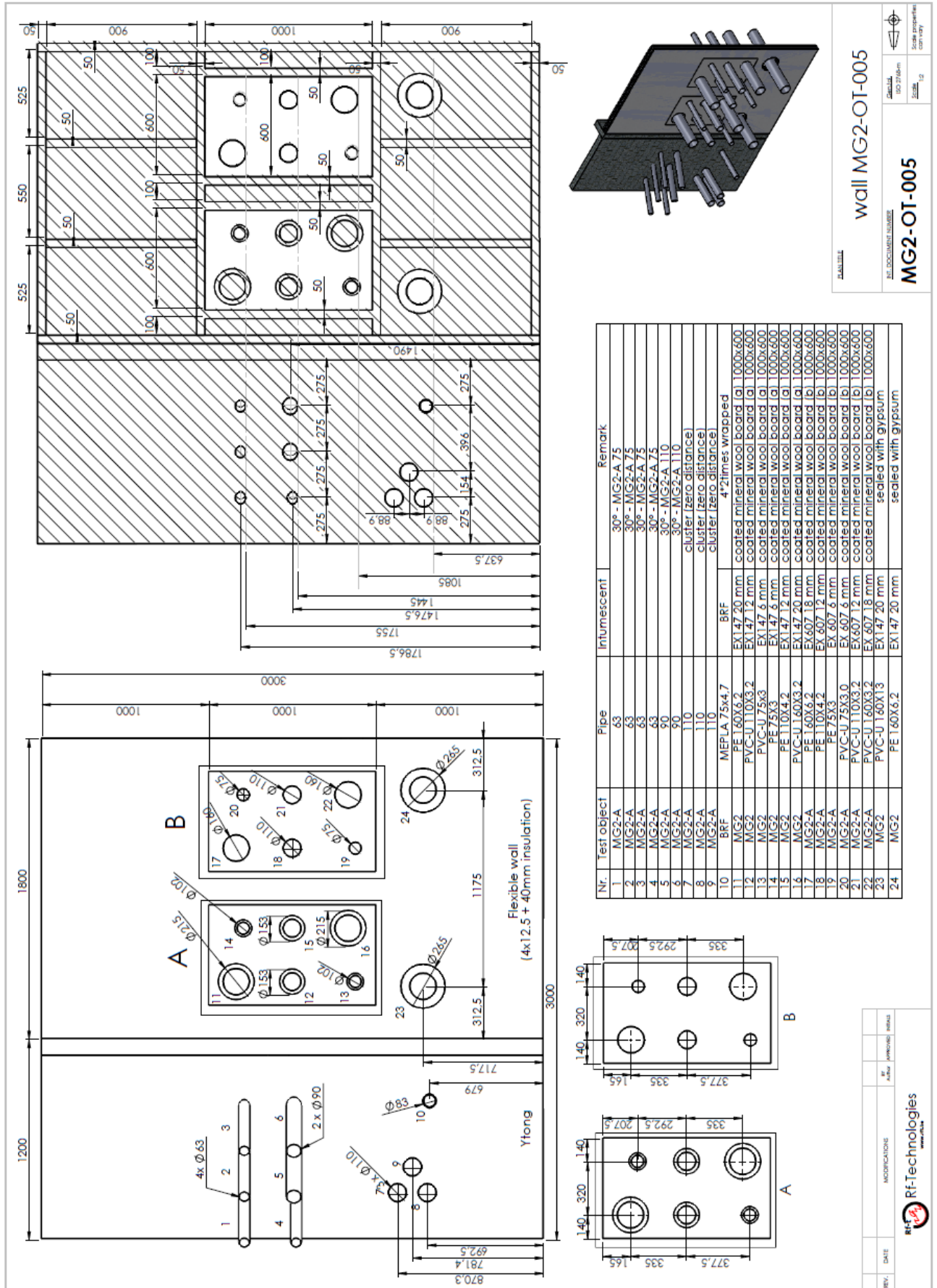
Supporting Construction

1. MPC-Support channels 38/40, length 4000mm, galvanised
[Brand: Müpro, article number 129964]
2. Support channels: MPC-Wall hanger bracket 38/40, length 560mm, galvanised
[Brand: Müpro, article number 118908]
3. Support channels: MPC-Cross channel connector for profile 38/40, galvanised
[Brand: Müpro, article number 118246]
4. Support channels: MPC-Rail nut M10, 33x23x6mm for MPC-Support channels 38/40, galvanised
[Brand: Müpro, article number 117968]
5. Support channels: MPC-Clamp bracket M10 for MPC-Support channels 38/40, galvanised
[Brand: Müpro, article number 114450]
6. Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 72-80mm, galvanised
[Brand: Müpro, article number 127261]
7. Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 110mm, galvanised
[Brand: Müpro, article number 127132]
8. Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 159-164mm, galvanised
[Brand: Müpro, article number 127201]
9. Punched tapes 17mm with straight edges, 50-meter roll, galvanised
Pipe Clamps: Single bossed clamp Dämmgulast® yellow, M10, 110mm, galvanised
[Brand: Müpro, article number 114804]

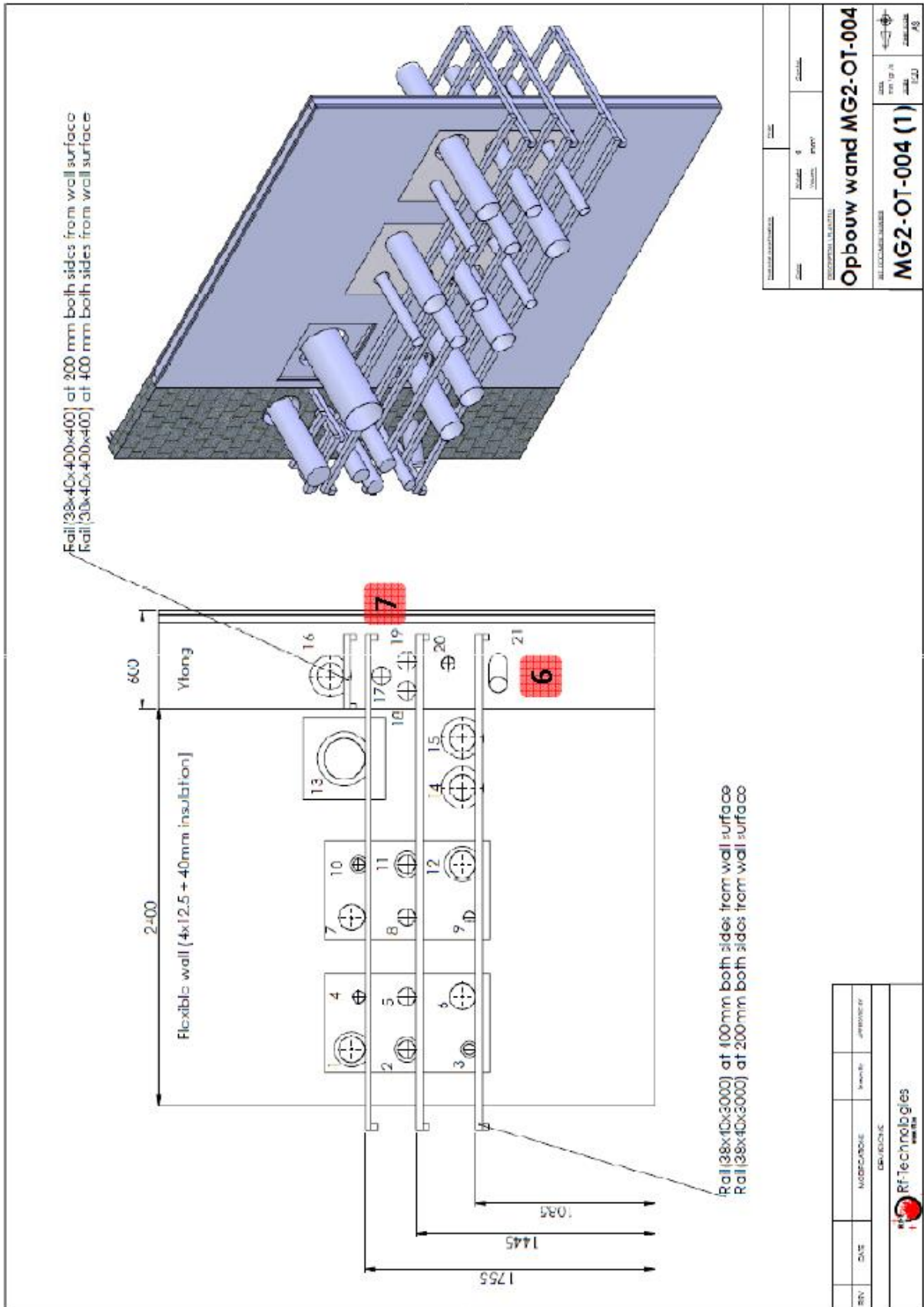


Through aerated concrete block panel, 100 mm thick and lightweight partition, 100 mm including mineral wool panel channels






wall MG2-OT-005
MG2-OT-005
 ALL DOCUMENTS BELONG TO Efectis



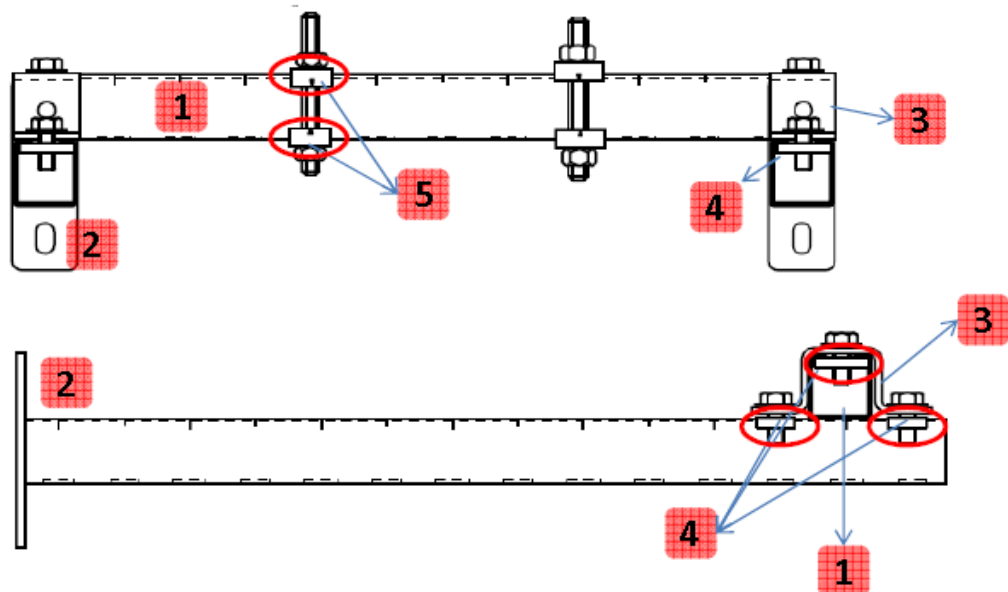
PROJECT NAME	DATE	STATUS	REVISION
PROJECT NO.	DATE	STATUS	REVISION
PROJECT NO.	DATE	STATUS	REVISION
Opbouw wand MG2-OT-004			
REVISION NUMBER			
MG2-OT-004 (1)			
DESIGNER	DATE	STATUS	REVISION
APPROVER	DATE	STATUS	REVISION

REV	DATE	MODIFICACIJE	REVISIE	APPROVEERD
 RfTechnologies www.rf-tech.com				

MG2-OT-004

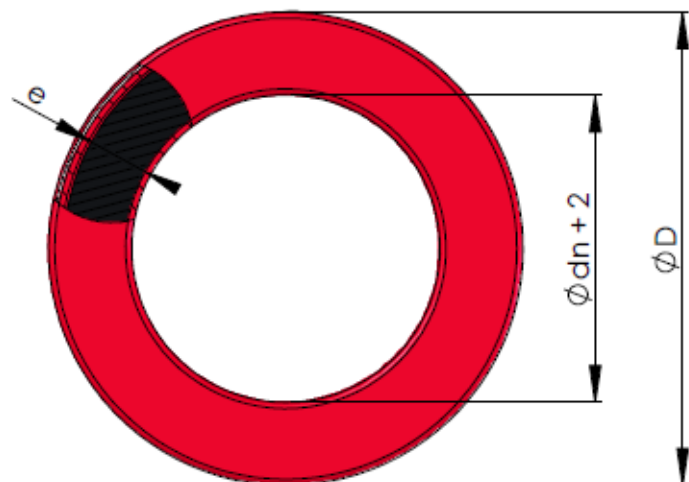
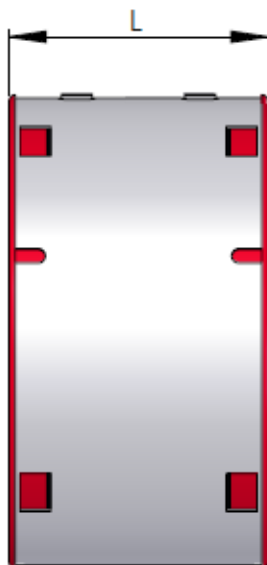
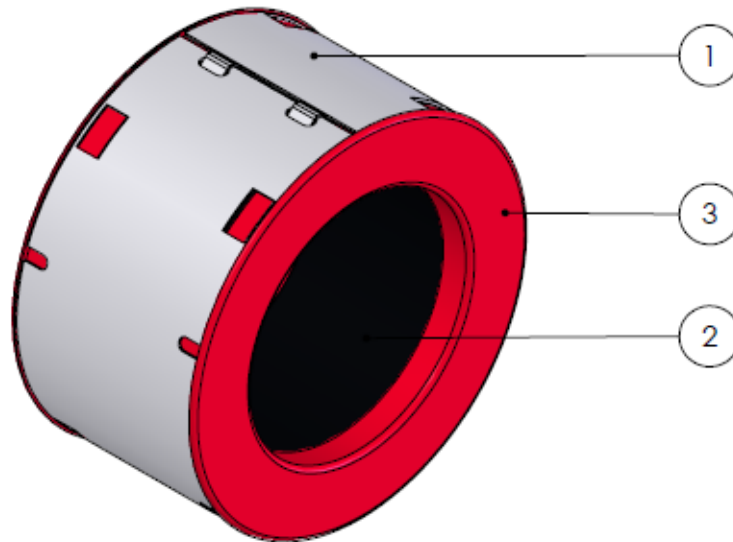
Supporting Construction

1. MPC-Support channels 38/40, length 3000mm, galvanised
[Brand: Müpro, article number 129964]
2. Support channels: MPC-Wall hanger bracket 38/40, length 560mm, galvanised
[Brand: Müpro, article number 118908]
3. Support channels: MPC-Cross channel connector for profile 38/40, galvanised
[Brand: Müpro, article number 118246]
4. Support channels: MPC-Rail nut M10, 33x23x6mm for MPC-Support channels 38/40, galvanised
[Brand: Müpro, article number 117968]
5. Support channels: MPC-Clamp bracket M10 for MPC-Support channels 38/40, galvanised
[Brand: Müpro, article number 114450]
6. Pipe Clamps: Single bossed clamp Dämmgulast@ yellow, M10, 72-80mm, galvanised
[Brand: Müpro, article number 127261]
Penetration 21 (Mepla 75x4,7mm) is fixed by one pipe clamp on each side of the supporting construction at a distance of 400mm.
7. Pipe Clamps: Single bossed clamp Dämmgulast@ yellow, M10, 110mm, galvanised
[Brand: Müpro, article number 127132]
Penetration 17 (HDPE 110x10mm) is fixed by one pipe clamp on each side of the supporting construction at a distance of 400mm.
8. Punched tapes 17mm with straight edges, 50-meter roll, galvanised
Pipe Clamps: Single bossed clamp Dämmgulast@ yellow, M10, 110mm, galvanised
[Brand: Müpro, article number 114804]
All penetrations (pipe 17 and 21 excluded) are fixed by punched tape on each side of the supporting construction at a distance of 400m.



MG2 collar


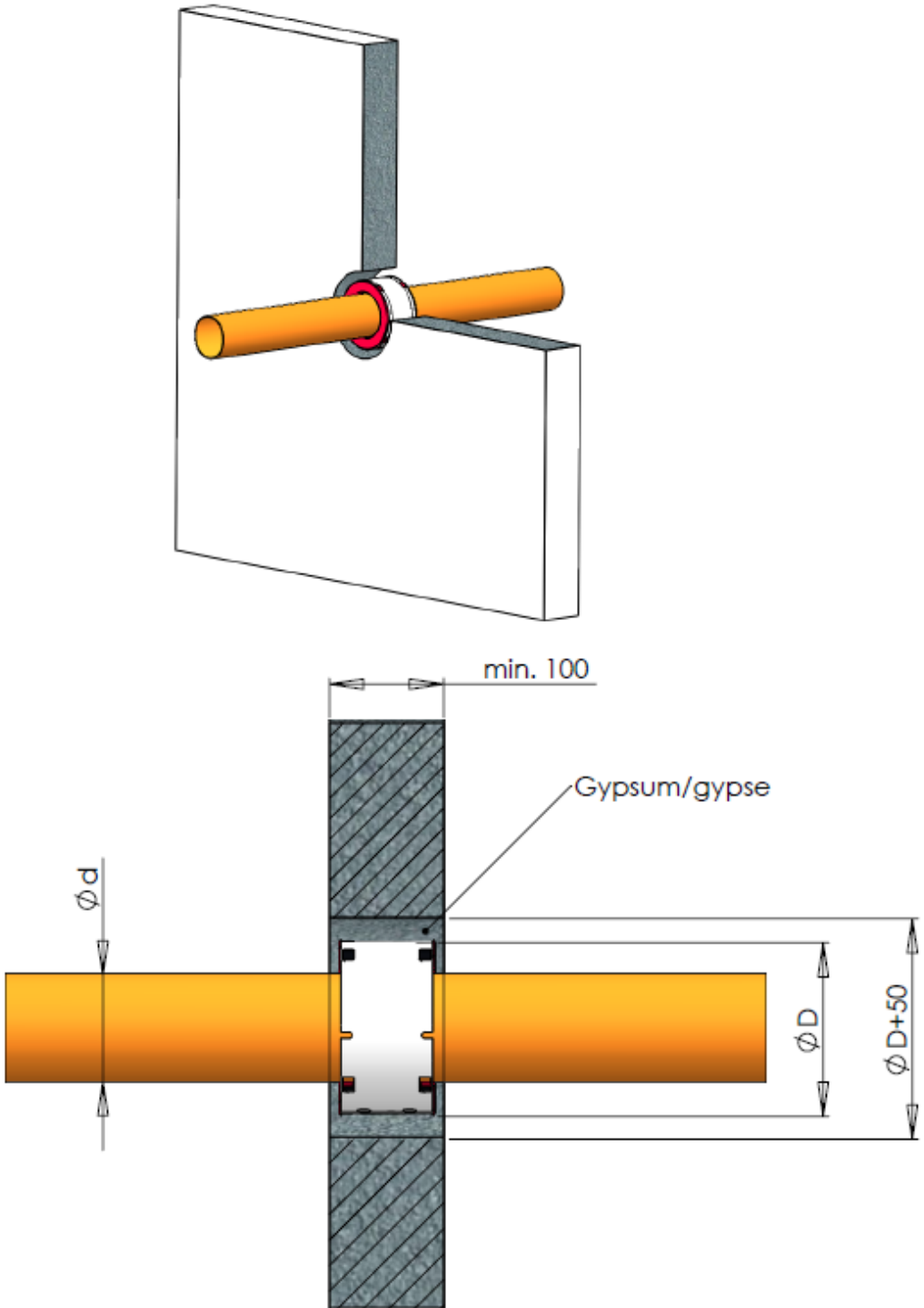
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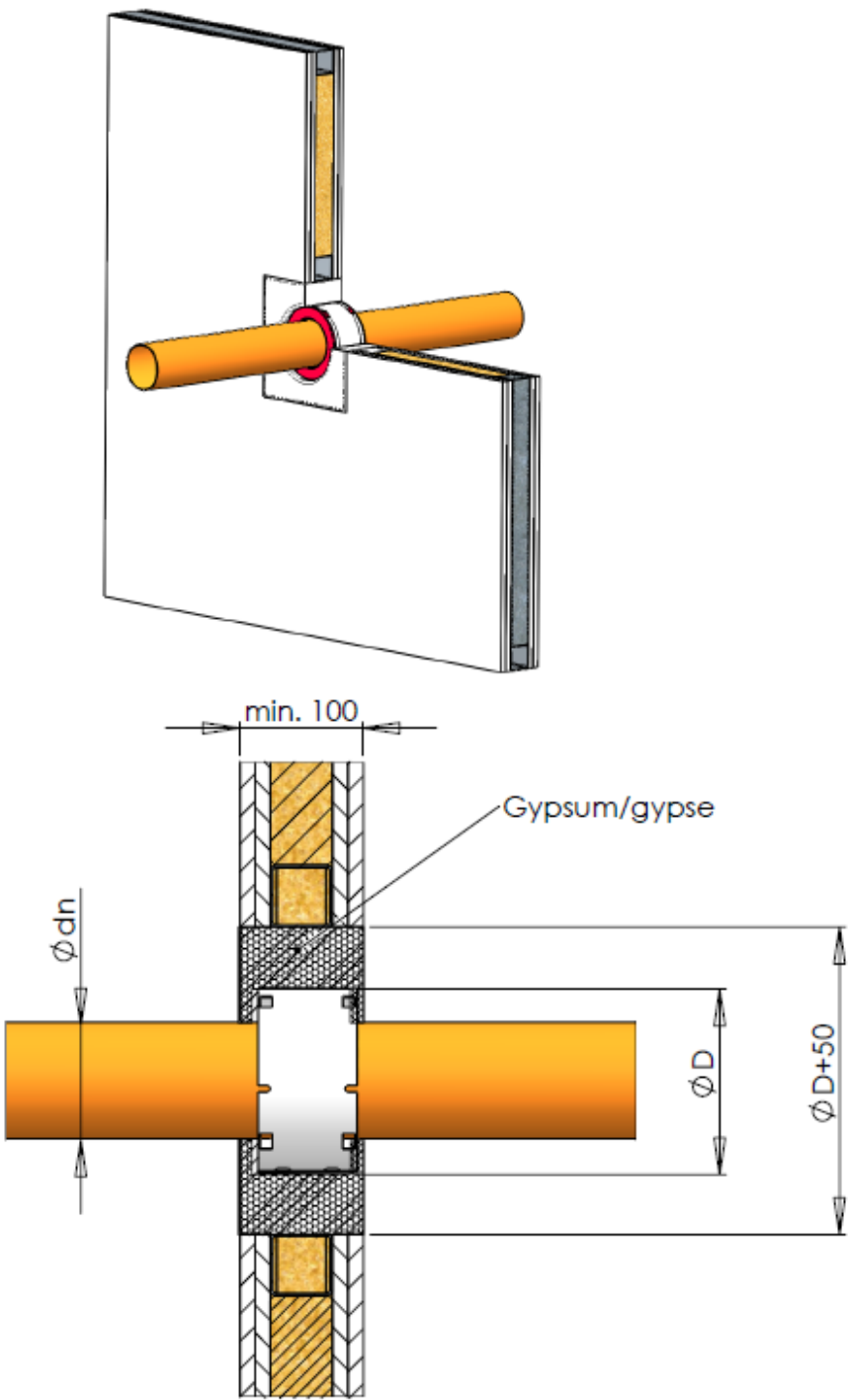



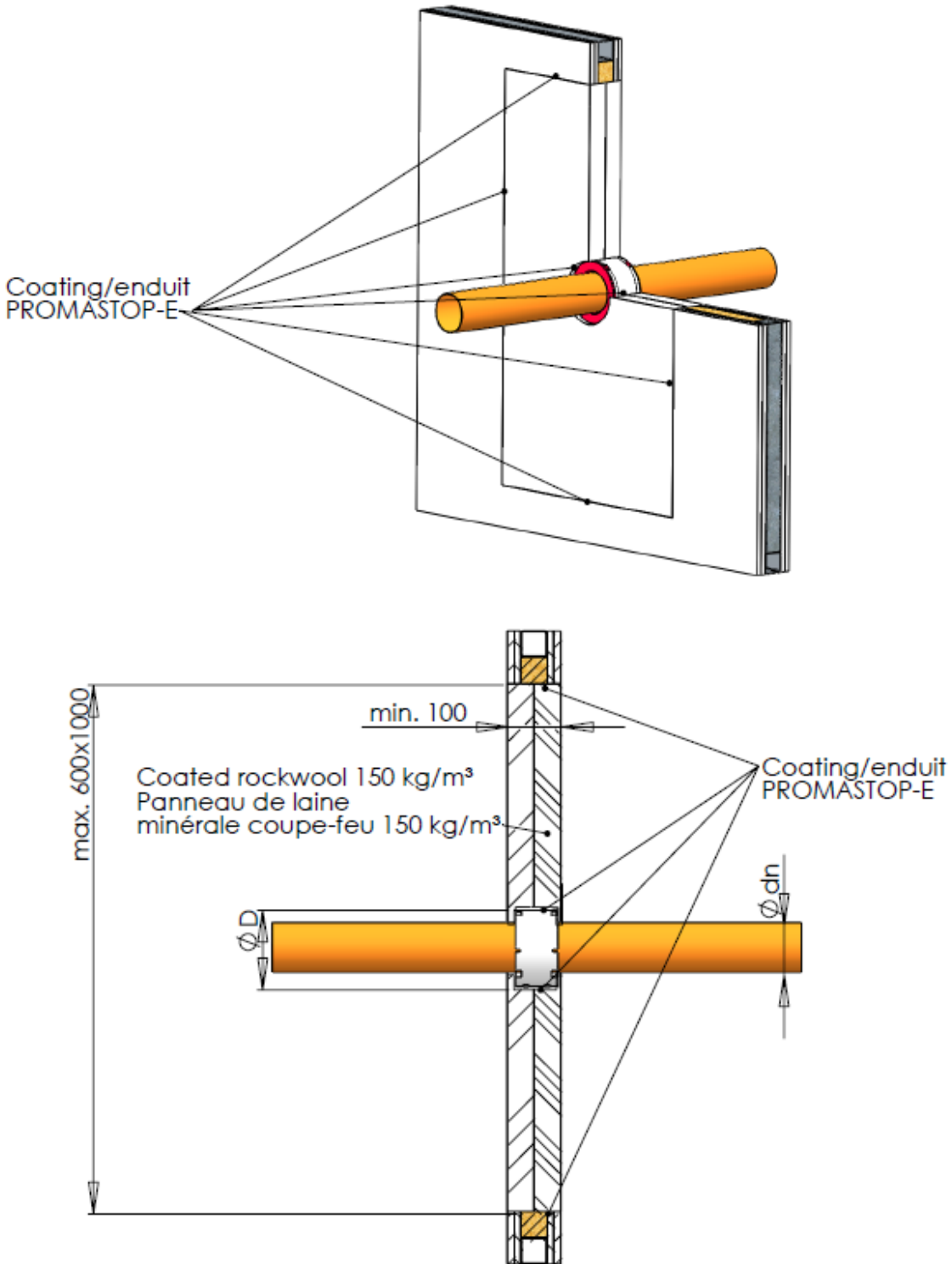
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D	67	77	83	90	102	123	133	143	153	182	215
L	85	85	85	85	85	85	85	85	85	105	105
e	6	6	6	6	6	12	12	12	12	20	20


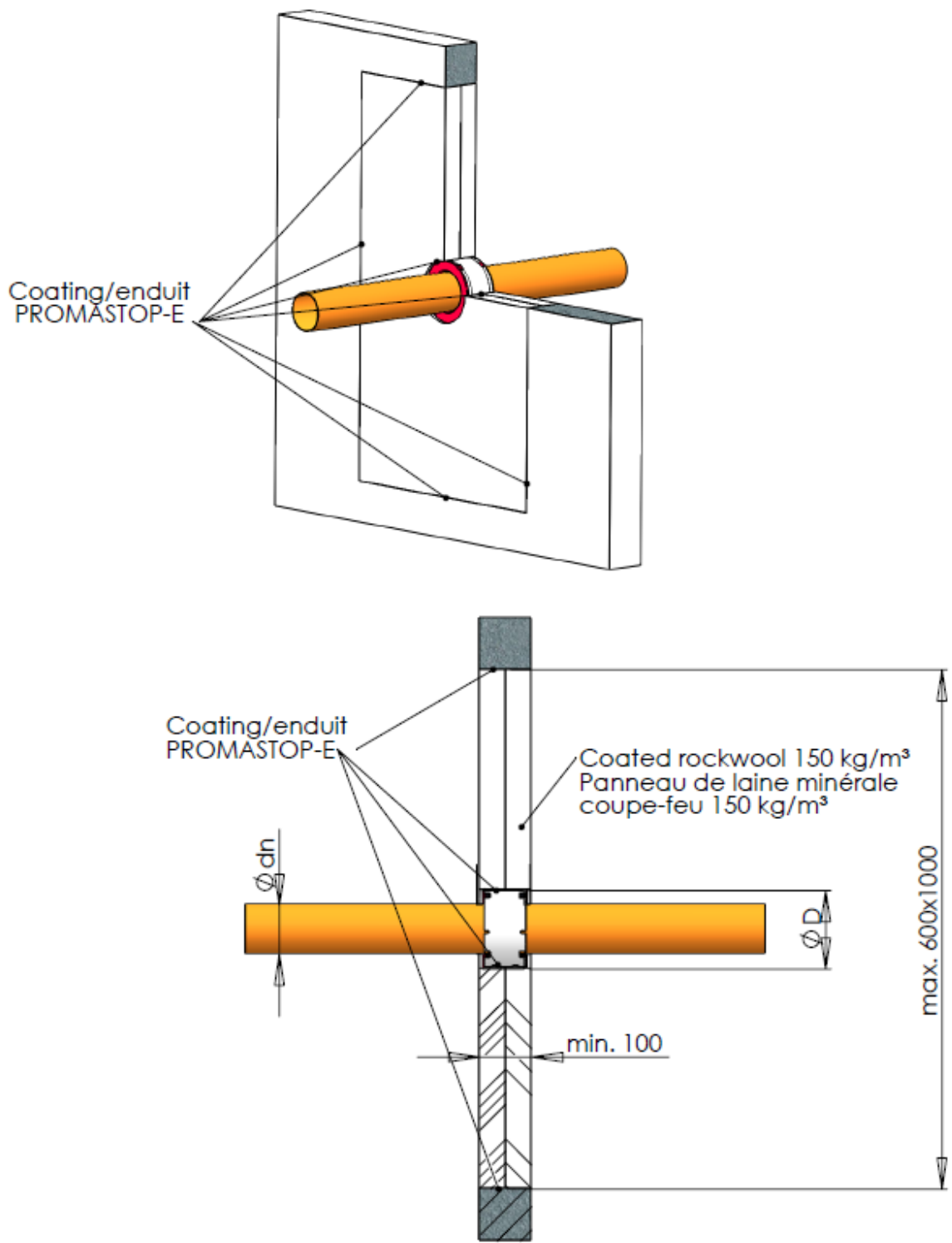
Plan Title / Titre du plan
 Fire resistant collar


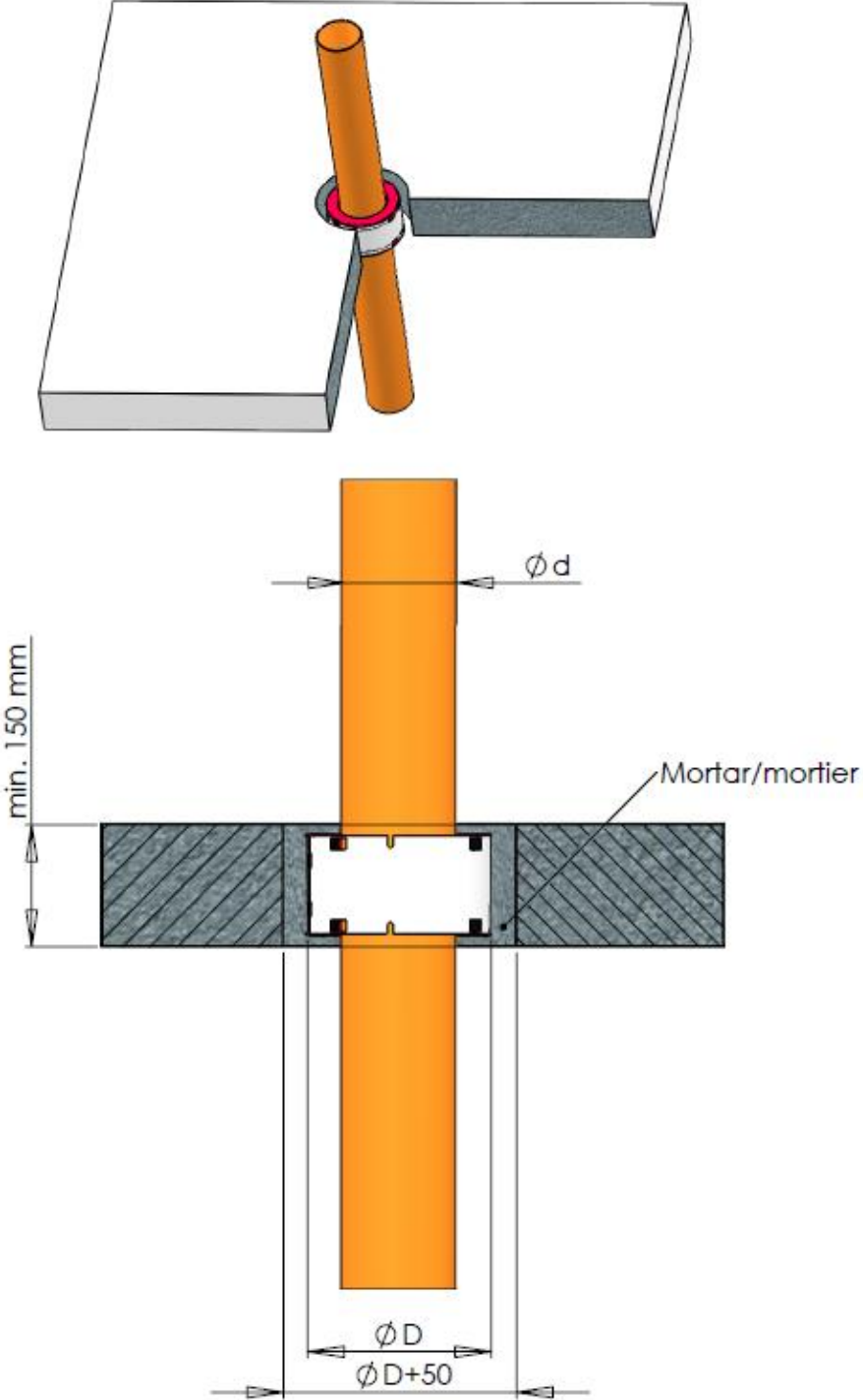
Date / Date:
 16/10/2012

	<p><u>Reference / Référence</u> MG2</p>	<p><u>Subject / Sujet</u> Mounting/montage</p>	<p><u>Plate / Planche</u> 2</p>
			
<p><u>Plan Title / Titre du plan</u> Mounting in concrete wall / Montage en paroi béton</p>		<p><u>Date / Date:</u> 07/06/2013</p>	


	<p><u>Reference / Référence</u> MG2</p>	<p><u>Subject / Sujet</u> Mounting/montage</p>	<p><u>Plate / Planche</u> 3</p>
			
<p><u>Plan Title / Titre du plan</u> Mounted in light partition wall / montage en paroi légère</p>			<p><u>Date / Date:</u> 07/06/13</p>

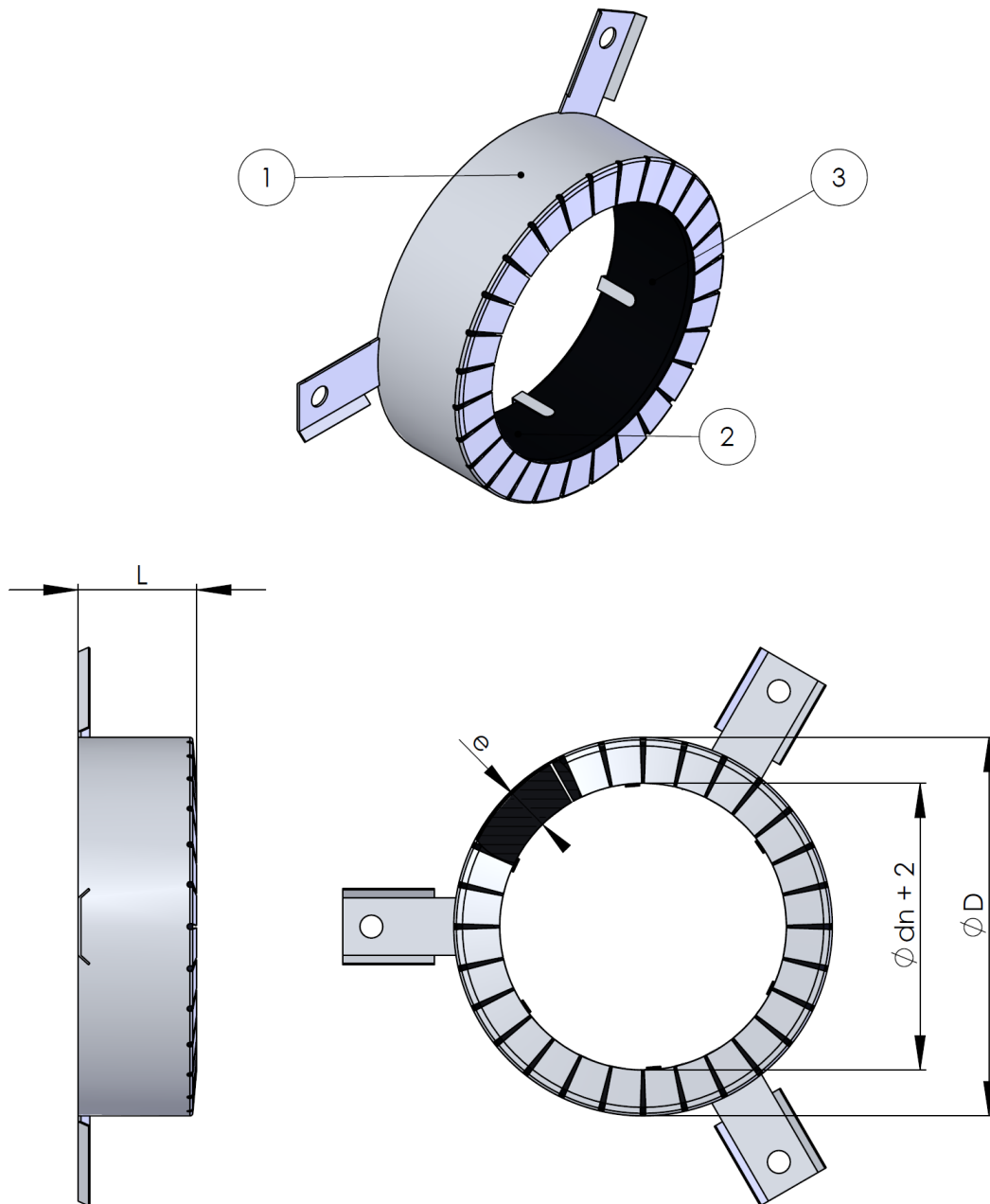
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<u>Plan Title / Titre du plan</u> Mounted in light partition wall / montage en paroi légère			<u>Date / Date:</u> 27/06/13

	<p><u>Reference / Référence</u> MG2</p>	<p><u>Subject / Sujet</u> Mounting/montage</p>	<p><u>Plate / Planche</u> 5</p>
			
<p><u>Plan Title / Titre du plan</u> Mounted in concrete wall / montage en paroi béton</p>			<p><u>Date / Date:</u> 27/06/13</p>

	<u>Reference / Référence</u> MG2	<u>Subject / Sujet</u> Mounting/montage	<u>Plate / Planche</u> 6
			
<u>Plan Title / Titre du plan</u> Mounted in concrete floor / montage en dalle béton		<u>Date / Date:</u> 07/06/2013	

MG2-A collar


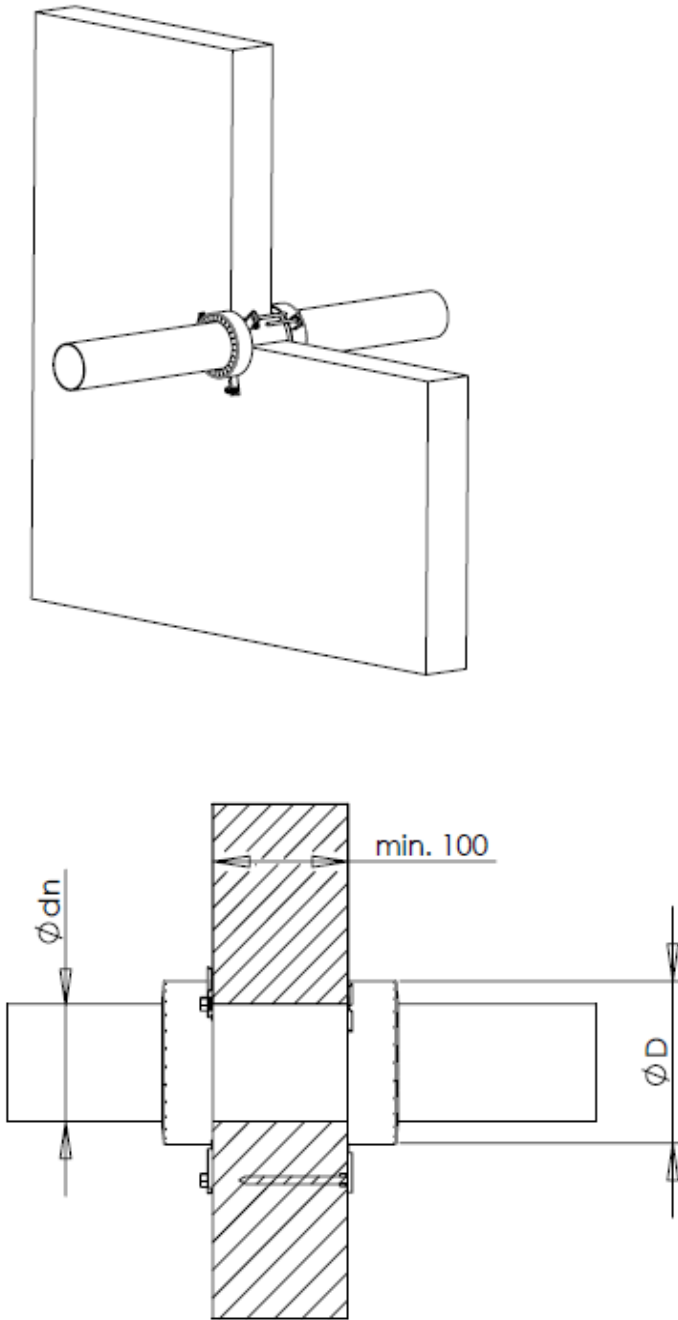
	Reference / Référence	Subject / Sujet	Plate / Planche
	MG2A	Parts	1


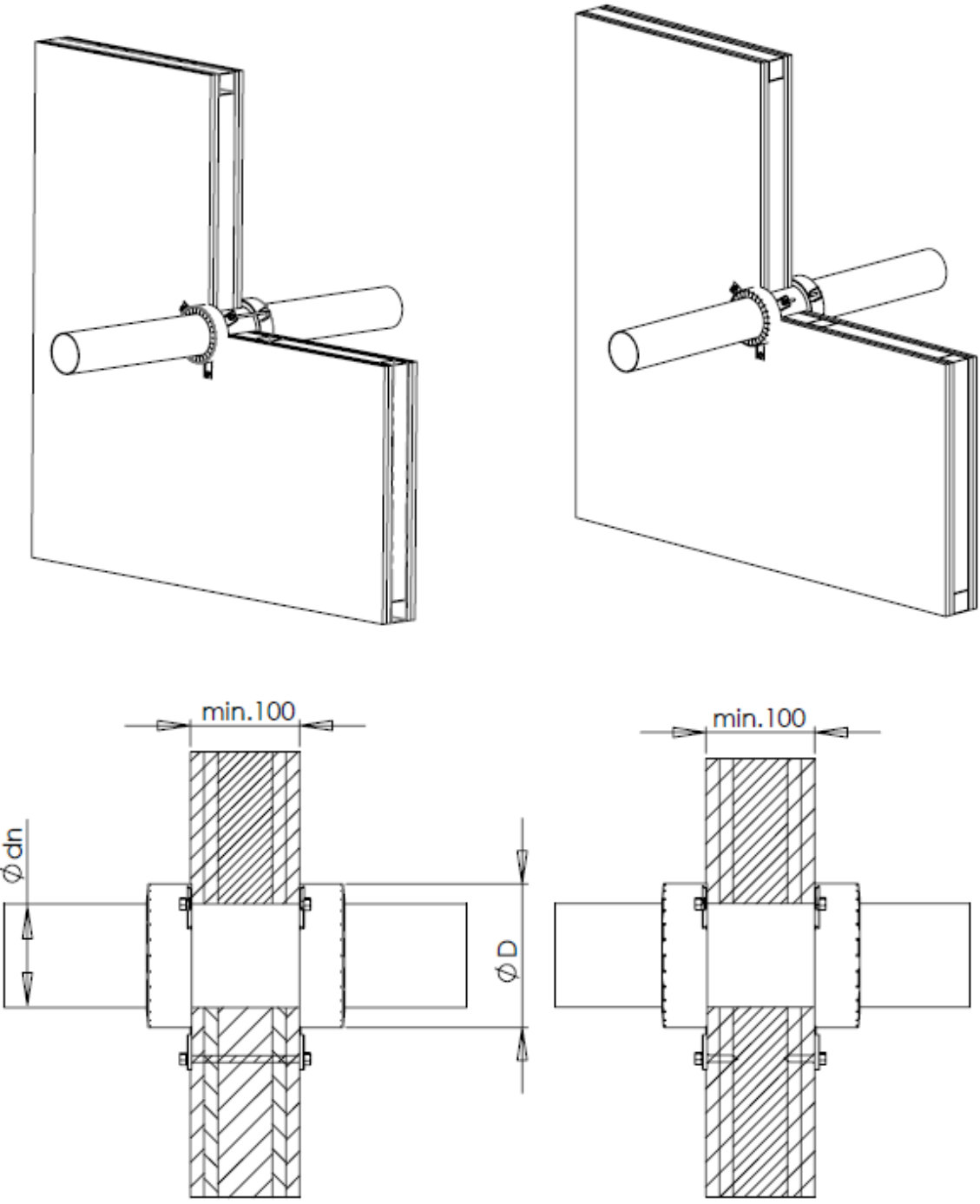



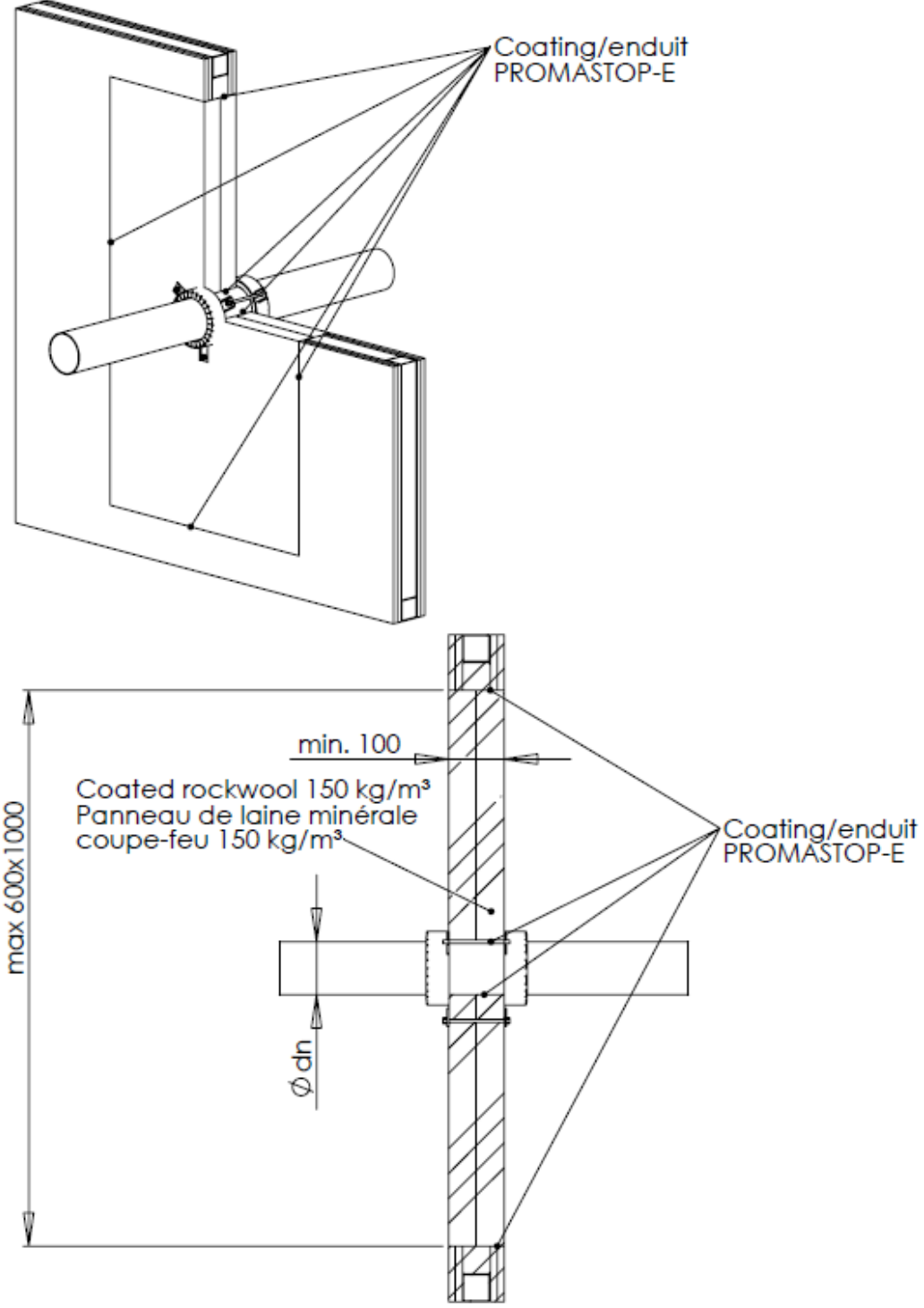
dn	32	40	50	56	63	75	80	90	100	110	125	140	160
D	48	56	68	75	80	92.5	110	125	132	139.5	173	185	205.5
L	40	40	40	40	40	40	40	40	40	40	40	40	40
e	6	6	6	6	6	6	12	12	12	12	18	18	18


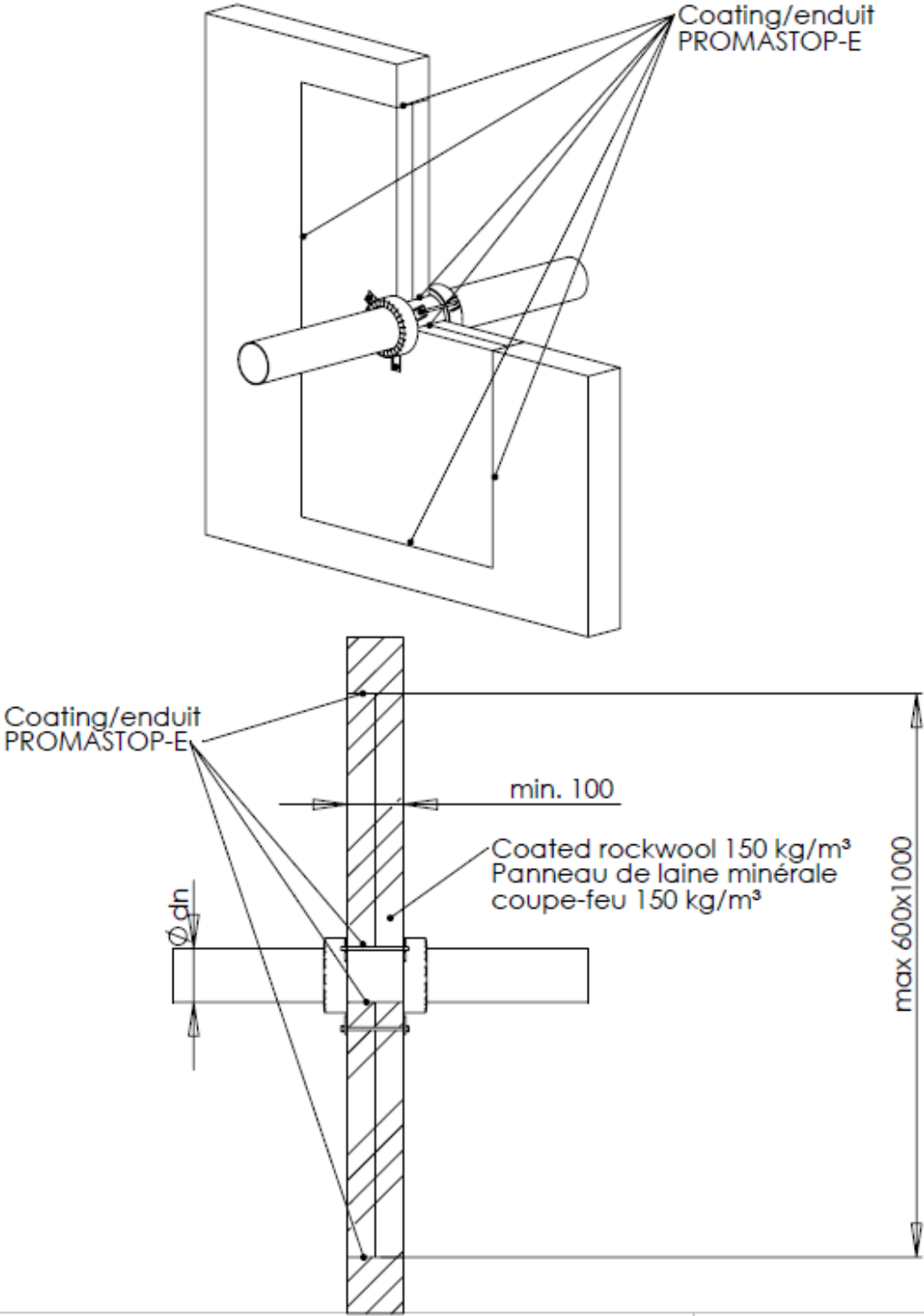
Plan Title / Titre du plan
Fire resistant collar


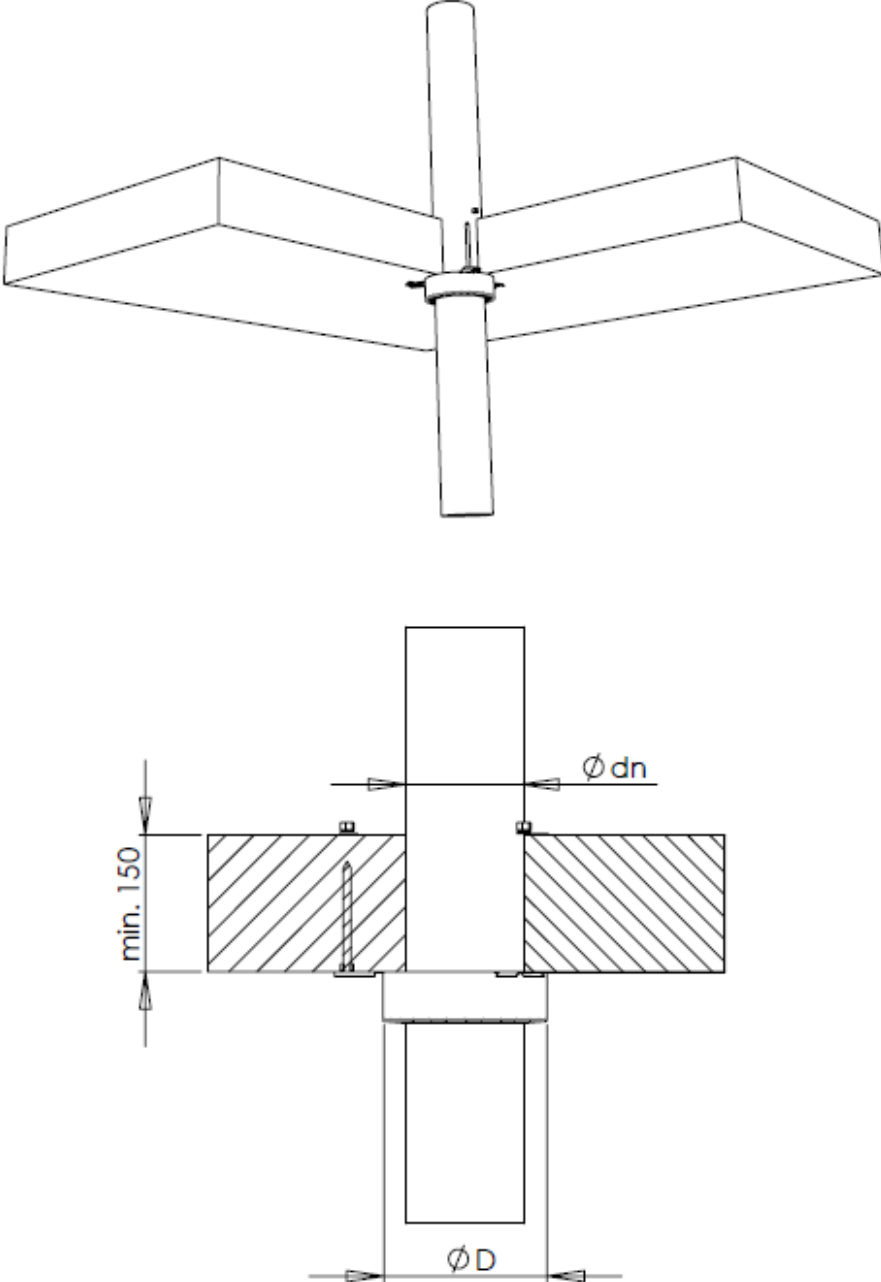
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	<u>Reference / Référence</u> MG2A	<u>Subject / Sujet</u> Mounting/montage	<u>Plate / Planche</u> 2
			
<u>Plan Title / Titre du plan</u> Mounting in concrete wall / montage en paroi béton			<u>Date / Date:</u> 07/06/13

	<p>Reference / Référence MG2A</p>	<p>Subject / Sujet Mounting/montage</p>	<p>Plate / Planche 3</p>
			
<p>Plan Title / Titre du plan Mounted in light partition wall / montage en paroi légère</p>			<p>Date / Date: 07/06/13</p>

	<p><u>Reference / Référence</u> MG2A</p>	<p><u>Subject / Sujet</u> Mounting/montage</p>	<p><u>Plate / Planche</u> 4</p>
			
<p><u>Plan Title / Titre du plan</u> Mounted in light partition wall / montage en paroi légère</p>			<p><u>Date / Date:</u> 27/06/13</p>

	<p>Reference / Référence MG2A</p>	<p>Subject / Sujet Mounting/montage</p>	<p>Plate / Planche 5</p>
			
<p>Plan Title / Titre du plan Mounted in concrete wall / montage en paroi béton</p>			<p>Date / Date: 27/06/13</p>

	<p><u>Reference / Référence</u> MG2A</p>	<p><u>Subject / Sujet</u> Mounting/montage</p>	<p><u>Plate / Planche</u> 6</p>
			
<p><u>Plan Title / Titre du plan</u> Mounted in concrete floor / montage en dalle béton</p>			<p><u>Date / Date:</u> 07/06/13</p>

BRF tapes

PRÉSENTATION DU PRODUIT

Les bandes souples coupe-feu BRF sont placées autour des tuyaux plastiques aux passages de paroi, pour arrêter la propagation du feu. Les bandes souples coupe-feu sont composées de lamelles intumescentes, qui sont protégé par un joint en PVC autocollant (le BRFA). Les bandes ont une épaisseur de 2mm, une largeur de 180mm et une hauteur de 1m.

Dès que la température dépasse 100°C une réaction chimique aura lieu par lequel le matériel s'étendra de 2mm à 10-12mm et une grande quantité de la chaleur sera enlevé de l'entourage. Le gonflement des bandes rendent les espaces d'air résistant au feu.

- Testé conformément à EN 1366-3: 2004
- Approuvé pour montage dans une paroi massive
- Exempt d'amiante
- Facile à installer
- Possibilité d'ajouter des câbles
- Montage horizontal ou vertical
- Sans entretien
- Résistant à l'eau
- Pour applications à l'intérieur



1. Joint protecteur PVC
2. Lamelle intumescent (100°C)

fig. BRF

Description of the product
The BRF fire-resistant flexible tapes are placed around plastic tubes in wall feedthroughs, to stop fire propagation. The flexible fire-resistant tapes consist of intumescent lamella, protected by a self-adhesive PVC seal (BRFA). The strips are 2mm thick, 180mm wide and 1m high.
As soon as the temperature exceeds 100 C, a chemical reaction takes place, causing the material to extend from 2 mm to 10 - 12 mm and a large quantity of heat will be removed from the surroundings. As the tapes inflate, the air-spaces become fire-resistant.
Test compliant with EN 1366-3: 2004
Approved for fitting in a block wall
Asbestos free
Easy to install
Possibility of adding cables
Horizontal or vertical fitting
Maintenance-free
Water-resistant
For indoor use
1. PVC protective seal
2. Intumescent lamella (100 C)