

On the process

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## FIXOLITE HALF-LINTEL BOXES

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**Product family/Process:** Roller shutter box integrated into masonry

**Holder(s):** FIXOLITE Company

### FOREWORD

Technical opinions and technical application documents, hereinafter referred to interchangeably as Technical Advice, are intended to provide construction stakeholders **with elements of assessment on the suitability for use of products or processes** whose constitution or employment does not fall within traditional know-how and practices.

This resulting document must be taken as such and is therefore not **a document of compliance with regulations or a "quality mark"** benchmark. Its validity is decided independently of that of the supporting documents in the technical file (in particular any regulatory certificates).

The Technical Assessment is a voluntary approach by the applicant, which in no way changes the distribution of responsibilities of construction stakeholders. Regardless of the existence or not of this Technical Approval, for each work, the actors must provide or request, depending on their roles, the required supporting documents.

As the Technical Notice is aimed at actors reputed to know the rules of the art, it is not intended to contain any information other than that relating to the non-traditional nature of the technique. Thus, for aspects of the process that comply with recognized rules of the art for implementation or sizing, a reference to these rules is sufficient.

**Specialized Group No. 16** - Special products and processes for masonry

## Document Versions

Version	Description	Rapporteur	President
V1	First version examined by GS n°16 on February 9, 2023.	AKKAOUI Abdessamad	ESTEVE Stephane

**Descriptor:**

The "FIXOLITE HALF-LINTEAU BOXES" range is a range of factory-made one-piece half-boxes for closing windows and/or concealments (roller shutters, sunshades, curtains, mosquito nets, etc.).

They are made of polystyrene, in the shape of an inverted L. The cheeks are an integral part of the system.

They are made by molding expanded polyptera and closing a metal frame.

The exterior vertical face is made of EPS possibly with a colored protective primer or fibragglo or terracotta plates.

The box can be installed either during assembly of the supporting wall, or after finishing the structural work by fixing it under the existing lintel or slab. It serves as a housing to accommodate a roller shutter fixed to the joinery.

Their maximum length is 4.19 m (finished product including supports).

The maximum bay width is 4.00 m.

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# 1. Opinion of the Specialized Group

The process described in chapter 2 "Technical File" below was examined by the Specialized Group which concluded favorably on its suitability for use under the conditions defined below:

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## 1.1. Accepted field of employment

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### 1.1.1. Geographical area

Metropolitan France.

### 1.1.2. Works covered

All exposure areas within the meaning of § 3 of NF DTU 20.1 Part 3 for boxes installed during construction of the structural work, situation d not being covered in the case of installation by fixing under the slab.

The use of boxes for facades mentioned in chapter 1.2.1.2 "safety in the event of fire" below is not covered by this Technical Notice. Establishments open to the public requiring a fire reaction classification of facade coverings, 3rd family, 4th family residential buildings and mid-rise buildings (IMH) defined by decree no. 2019-461 of May 16, 2019 are not targeted.

This half-box is intended to be associated with masonry walls insulated from the inside.

The maximum length of the half-box is 4.19 m (finished product including supports).

The maximum bay opening length is 4.00 m.

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## 1.2. Appreciation

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### 1.2.1. Suitability for use of the process

#### 1.2.1.1. Stability

The half-chests have a mechanical resistance enabling them to comply with the specific provisions concerning them. The half-box alone takes on its own weight during the construction phase and does not contribute to the final stability of the structure. Continuous shoring must always be carried out (maximum distance between props: 60 cm) when erecting the lintel. The half-chest cannot be considered load-bearing.

#### 1.2.1.2. Safety in case of fire

The fire reaction of the coated box on the facade is not justified, establishments open to the public requiring a fire reaction classification of the exterior facade coverings are not targeted.

Half-boxes cannot be installed on a facade whose openings must demonstrate a degree of fire resistance.

For use in facades with openings and having to comply with the "C + D" rule relating to the propagation of fire, half-chests cannot be taken into account in the calculation of the C value.

3rd family, 4th family residential buildings and IMH are not covered by this Technical Notice because the part of the EPS safe does not comply with Decree No. 2019-461 of May 16, 2019 relating to work to modify the mid-rise buildings supplemented by the Order of August 7, 2019 relating to modification work on mid-rise buildings and the Order of August 7, 2019 amending the order of January 31, 1986 relating to fire protection of buildings habitation.

#### 1.2.1.3. Acoustic insulation – Air permeability

Air permeability and acoustic insulation from external noise essentially depend on the connections between the bay block and the masonry.

#### 1.2.1.4. Thermal insulation

The process does not intervene in the thermal insulation of the structure, which is mainly ensured by the lining added on the interior side.

#### 1.2.1.5. Installation in seismic zones (appendix 9)

The use of the process is compatible with compliance with the specific provisions provided for in seismic zones.

#### 1.2.1.6. Health aspects

This Notice is formulated with regard to the holder's written commitment to comply with the regulations, and in particular all regulatory obligations relating to products that may contain dangerous substances, for their

manufacturing, their integration into the works of the accepted field of use and the exploitation of these. The control of information and declarations issued in application of the regulations in force does not fall within the scope of this Notice.

The holder of this Notice retains full responsibility for this information and declarations.

### **1.2.2. Sustainability**

The polystyrene material of these boxes has the same intrinsic durability as traditional EPS insulation.

The provisions planned which consist of reinforcing the exterior coatings with a mesh (see § 2.4.5) are suitable for limiting, in current dimensions, the risk of cracking resulting from differential dimensional variations between coating support materials. In this regard, exterior coatings in dark colors should be avoided. Coatings with a solar radiation absorption coefficient greater than 0.7 are not covered.

Access to the roller shutter mechanisms and dismantling of the apron is done from inside the building.

### **1.2.3. Environmental impacts**

The process does not have any Environmental Declaration (DE) and cannot therefore claim any particular environmental performance. Please note that DEs do not fall within the scope of examination of suitability for use of the process.

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## **1.3. Additional remarks from the Specialized Group**

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The specialist group emphasizes that continuous shoring must always be carried out (maximum distance between props: 60 cm) when erecting the box.

Attention is required on the need to quickly protect the box after its installation with a protective layer against moisture absorption while the finishing coating is applied.

## 2. Technical File

From the elements provided by the holder and the requirements of the Specialized Group accepted by the holder

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### 2.1. Marketing method

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#### 2.1.1. Contact details

The process is marketed by the holder.

Holder: FIXOLITE

170 RUE DE VANDERVELDE

6230 THIMEON

Belgium

Tel. : +32 71 25 87 90

E-mail : [info@fixolite.be](mailto:info@fixolite.be)

Internet : [www.fixolite.be](http://www.fixolite.be)

#### 2.1.2. Identification

The roller shutter half-boxes are prefixed with the letter "L" and otherwise keep the same nomenclature as traditional boxes: "L20H30" followed by the rail model as well as the finish. For example, "L20H30 827-8H F-NB" for an exterior rail of type "827", an interior rail of type "8H" and a finish of the exterior face in wood fiber cement.

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### 2.2. Description

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#### 2.2.1. Principle

Half roller shutter box, prefabricated in lengths of 6 meters, in the shape of an inverted L, made by molding expanded polystyrene and enclosing a metal frame.

The half-trunk is provided with two aluminum profiles with a groove: the plastic panel can be "clipped" there. The soffit will be inserted into the groove of the bottom profile.

The exterior vertical face is made of EPS possibly with a colored protective primer or fibragglo or terracotta plates. These plates are integrated into the molding.

The half-trunk will be cut in the reseller's workshop, to the desired length (within the limit of 4.19 m), and fitted with plastic cheeks at each end and an underside.

The lower visible part of the aluminum profile may be fitted with a PVC rail cover.

The half-box is intended to be integrated into a wall under construction, below the slab or a concrete lintel, and above the joinery.

It will serve as a housing to accommodate a roller shutter, usually fixed to the joinery (appendix 7).

The box can be installed either during assembly of the supporting wall, or after finishing the structural work by fixing under the lintel and existing ceiling.

#### 2.2.2. Component characteristics

##### 2.2.2.1. General composition

###### 2.2.2.1.1. Trunk shell

###### 2.2.2.1.1.1. Expanded polystyrene (see Appendix 1)

This is an expanded Polystyrene element with a PCS (higher combustible value) of 41 MJ/kg and a density of 30 ÷ 2 kg/m<sup>3</sup>. Reaction to fire classification: E, according to certificate n°765/17/330 C from CREPIM dated 01/29/2021.

###### 2.2.2.1.1.2. Welded Mesh

5 to 10 longitudinal bars in raw or galvanized wire, smooth or ribbed,  $\bar{y}$  3 to 6 mm.

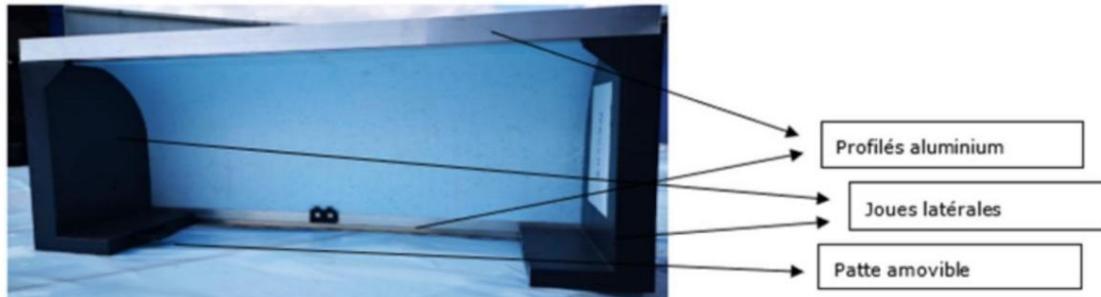
Cross bars spaced 300 mm apart, in raw or galvanized wire  $\bar{y}$  3 to 6 mm.

###### 2.2.2.1.2. Box equipment

###### Aluminum profiles



Delivered raw, with groove, to receive the underside and "clip" the plastic cheeks, at each end of the box cut to length.



### Side cheeks (see Appendix 3)

In plastic material injected under pressure.

Cheeks with integrated base forming a rigid bracket.

The cheeks are marked FIXOLITE.

**Removable legs** Supplied.

To be installed on site.

The underside is fixed to it with a stainless steel screw.



### Inspection hatches or soffits (see Appendix 5)

In PVC: (models SF 4, SF 7 and SF 8)

Aluminum: **Folded**, possibly glued to plywood or marine chipboard.

For widths greater than two meters of bay width, the use of square supports, fixed to the exterior aluminum profile, is recommended. Ref. ESF3

This will prevent sagging of the soffit (see Appendix 6).

## 2.2.2.2. Finishes of the exterior vertical face (see Appendix 2).

### 2.2.2.2.1. Polystyrene

Raw molded polystyrene, colored or not, smooth or structured in appearance

Raw molded polystyrene, colored or not, coated with a thin or thick colored undercoating  
Tear resistance (MPa):  
> 0,2 N/mm<sup>2</sup>

### 2.2.2.2.2. Wood fiber cement boards (Fibragglo)

Thickness 5 to 8 mm, density 600 kg/m<sup>3</sup> compliant with standard NF EN 13168.

### 2.2.2.2.3. Terracotta plates

Thickness of 8 mm. Tolerance in relation to the nominal thickness of  $\pm 1$  mm. Weight: approximately 4 kg/meter.  
Complies with standard NF EN 771-1.

Width: 240 to 290 mm, Length: 495 mm +5-0 mm

Pull-out resistance (MPa): > 0.2 N/mm<sup>2</sup>

#### 2.2.2.2.4. Protective primer

The primer improves adhesion before applying the final coat with resinous and mineral coatings. It is absorption regulator, permeable to water vapor, water repellent.

This product is a component of the basic -AKS exterior insulation system with a European Technical Assessment: ETA-11-0386 of 10/28/2016

Properties :

- Constitution: quartz sand, pigments (gray, terracotta, blue), terpolymer resin dispersion and additives • Density (kg/dm<sup>3</sup>) : 1.70 ± 0.1 • Dry extract at 105°C (t105) ( %): 80.2 ± 2 • Ash rate at 450°C (t450) (%): 71.2 ± 2 • VOC value (Volatile Organic Compounds): < 10 g/l (EU limit value for the content of VOC of this product (cat. A/h) is 30 g/l.
- Product: HAFTGRUND P.

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### 2.3. Design layouts

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Half-lintel chests are manufactured to the following dimensions:

Length: 6 meters. Height: 295mm. Width: 200mm.

The half-roller shutter box does not contribute to the structural capacity of the structure.

The joinery element closing the box must be designed to allow accessibility to the roller shutter mechanisms and dismantling of the apron from inside the building.

Depending on its nature, it must meet the specifications of the DTU "Joineries" concerning it.

The half-box cannot be installed on a facade whose openings must demonstrate a degree of fire resistance.

For use in facades with openings and having to comply with the "C + D" rule relating to the propagation of fire, the half-chest cannot be taken into account in the calculation of the C value.

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### 2.4. Implementation arrangements

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#### 2.4.1. Handling on site

The boxes are delivered on pallets to the roller shutter manufacturer who cuts them and places the cheeks there. The boxes are then delivered to the site in length (bay width + 190 mm) and equipped with side panels. On site, in common cases, mechanized lifting means such as a telescopic forklift or crane allow the box to be positioned in its final location by having previously glued the support brick in the support area.

#### 2.4.2. Installation during construction of the structural work (most common case)

The installation operations for the half-lintel chest are carried out by the mason who, once the jambs of the bay have been raised to the required level, prepares the seat of the chest, using a bed of level mortar, and creates the alignment of the exterior wing in relation to the plane of the facade.

Connection to the structural work is ensured by filling the reservations provided in the upper part of the box, at the time of pouring the lintel or the concrete floor.

The end cheeks must rest on hard, flat and strictly level surfaces.

Shoring: (see Appendix 4.1, 4.2 and 4.3)

When a mechanical fixing is to be made in the upper part of the bay block, it must be in the masonry and not on the box.

##### 2.4.2.1. For chests less than 1.60 m bay width (see Appendix 4.1)

A spar measuring 8 cm wide x 4 cm high is positioned under the upper horizontal part of the half-lintel box and supported by props 60 cm apart.

The lintel formwork is put in place and the props can be removed 28 days after pouring the concrete.

##### 2.4.2.2. For boxes over 1.60 m bay width (see Appendices 4.2 and 4.3)

Two support beams are clamped on each side of the wall and supported by props 60 cm apart.

On the spars, support battens are placed perpendicularly every 60 cm. On these latter a wooden strip with a section of 6 x 6 cm is fixed vertically.

A spar measuring 8 cm wide x 4 cm high is positioned under the upper horizontal part of the half-lintel box and supported by the battens 60 cm apart.

The lintel formwork is put in place and the props can be removed 28 days after pouring the concrete.

#### 2.4.3. Installation under slab (case after implementation of the structural work)

This installation method is mainly found in the case where the structural work is carried out using industrialized techniques.

The necessary reservations for the future location of the safe will have been made by the contractor

The box is fixed to the concrete, the slab or the lintel, using screws  $\dot{y}$  8 (with washers  $\dot{y}$  50 mm), positioned at the top, distributed every 60 to 80 cm and screwed into dowels placed in the concrete.

A bonding product, previously deposited on the upper part of the box, completes the fixing and ensures sealing with the structural work. This product (adhesive mortar) is chosen from those used in exterior insulation systems (polystyrene/concrete) benefiting from a valid Technical Approval.

The trunk must be perfectly level.

After fixing the boxes, the lower and outer part of the end cheeks are sealed to the structural work with cement mortar.

See Appendix 10

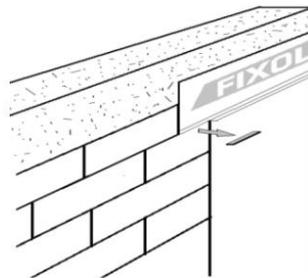
#### 2.4.4. Installation in seismic zone (appendix 9)

According to current regulations, it will be possible to arm openings equipped with half-lintel boxes.

The diameters, number or locations of the concrete bars will be defined by a concrete study.

#### 2.4.5. Exterior coverings

The coatings are applied to a dry surface. It is important to ensure beforehand that the faces of the aluminum profile have been roughened in line with the jambs.



**Figure 1 Notching aluminum profiles**

For boxes with a fibragglo finish, a first bonding layer or gobetis is applied, with a minimum thickness of 5 mm and a dosage of 500 to 600 kg of cement (CEM I or II) per m<sup>3</sup> of dry sand.

This first layer is applied to a dry surface, as quickly as possible to avoid moisture absorption in the surface.

The surface must remain rough to allow good adhesion of the facade coating.

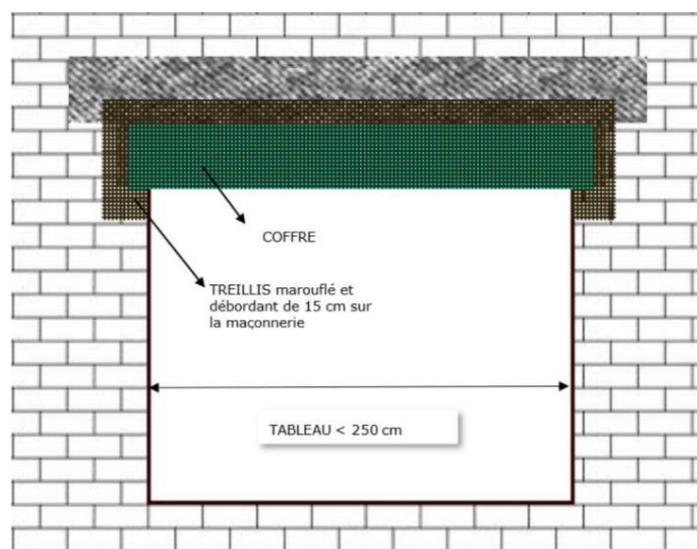
After drying (approximately 3 to 4 weeks), the facade waterproofing coating is applied.

Whatever the finish of the box, in accordance with NF DTU 26.1, a mesh is incorporated (or mounted) in the facade coating. This fiberglass mesh sustainably treated against alkalis must have a mesh size of 10 mm and a resistance greater than or equal to 35 daN/cm.

The mesh must extend at least 15 cm onto the adjacent masonry. For widths greater than 2500 board, an additional trellis must be positioned at the end of the box.

The application of the coating will comply with the Technical Specifications for Use and Implementation (CSTB notebook no. 2669-2, July - August 1993).

The trunk linings are suitable for receiving the usual finishes. The coating to use is the one that matches the rest of the facade.



**Figure 2 Table < 250 cm: installation of the facade coating with mesh**

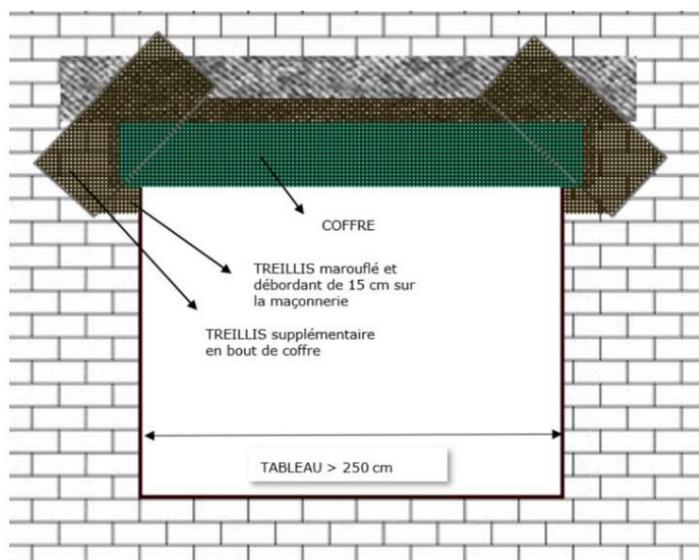


Figure 3 Table > 250 cm: installation of the facade coating with reinforced mesh

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## 2.5. Maintaining the product or process in service

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The half-chest process does not require any special maintenance. If the roller shutter mechanism integrated into it requires servicing for maintenance or repair, the visit is done from inside the building; simply remove the interior access hatch to the rolling steering wheel to access the mechanism.

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## 2.6. End of life treatment

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No information was provided for end-of-life treatment.

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## 2.7. Assistance technique

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The implementation is not new, and does not present any particular difficulty. However, the FIXOLITE company provides technical assistance to companies discovering the process.

### 2.7.1. For sale

The sales representative validates the choice of safe with the customer. Whether on the trunk models or the exterior finishes.

### 2.7.2. A la transformation

The customer can contact FIXOLITE for transformation questions. Such as the flow widths, the tools, the storage of the boxes before and after machining and the assembly of the cheeks.

### 2.7.3. On site

After implementation on the site, FIXOLITE offers technical assistance to validate the conformity of the installation.  
artwork.

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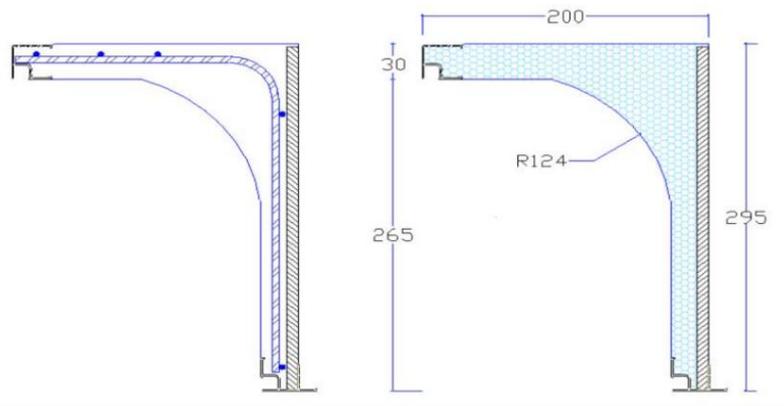
## 2.8. Principles of manufacturing and control of this manufacturing

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### 2.8.1. Fabrication

#### 2.8.1.1. Sizing

Half-lintel chests are manufactured to the following dimensions: Length: 6 meters. Height: 295mm. Width: 200mm.



#### 2.8.1.2. Manufacturing of fibragglo plates:

Fibragglo panels are made of wood fibers mixed with cement. This mixture is put into molds, then compressed (standard EN 13168).

The panels are 5 to 8 mm thick.

The density is 600  $\pm$  30 kg/m<sup>3</sup>.

Manufacturing is subcontracted.

#### 2.8.1.3. Manufacturing of terracotta plaques

Terracotta slabs are made by extruding a clay paste, like most hollow terracotta elements.

At the end of the die, the elements 24 to 29 cm wide and 16 mm thick are cut to a length of 500 mm, then dried and then baked in the oven. Manufacturing is subcontracted.

The final finishing plates are obtained by separating the 2 faces of the elements obtained previously. They are then put on pallets.

#### 2.8.1.4. Manufacturing of chests

After pre-expansion, the polystyrene granules are stored in waiting silos for a minimum of 2 days. It is then sucked into the machine feed silos and injected into the mold.

Beforehand, the aluminum profiles, the welded mesh and any exterior finishes, in fibragglo or terracotta sheets, were positioned.

After closing the mold, pressurized steam is injected for the programmed time. It causes the polystyrene beads to weld together and adhere to the different constituents.

The mold is then cooled by water to ensure the stabilization of the expanded polystyrene.

If the finish chosen is a protective primer, the latter will be sprayed at the factory on the exterior face of the trunk.

### 2.8.2. Controls

The self-checks provided below, to the extent that they are properly carried out, appear likely to ensure the consistency of the quality of the products.

#### 2.8.2.1. Terracotta facing

Density (kg/m<sup>3</sup>): 2000 $\pm$  200

Nominal thickness: 8 mm - tolerance compared to the nominal thickness of  $\pm$  1 mm

Width: 240 to 290 mm +0 -3 mm

Length: 495 mm +5 - 0 mm

Parts with defects or cracks are discarded

#### 2.8.2.2. Fibragglo plates

Density (kg/m<sup>3</sup>): 600  $\pm$  30 Nominal thickness: 5

to 8 mm Length: 2 m +5 - 0 mm The 2

meter long panels are cut to the desired widths.

Parts that do not have sufficient strength break during handling and are scrapped.

#### 2.8.2.3. Protective primer

The operator visually checks the regularity of the appearance of the projected protective primer. If necessary, it will go back to the area not covered sufficiently. The quantity applied at the factory is a minimum of 0.2 l/m<sup>2</sup>.

#### 2.8.2.4. Expanded polystyrene

Reaction to fire classification: E

Density (kg/m<sup>3</sup>): 30 ± 2

Fibragglo-polystyrene complex

Tear resistance (MPa): > 0.2 daN/cm<sup>2</sup>

Terracotta-polystyrene complex

Tear resistance (MPa): > 0.2 daN/cm<sup>2</sup>

#### 2.8.2.5. Steel frames or aluminum profiles

Dimensional check on delivery.

#### 2.8.2.6. Quality of chests

The operators check during production and during palletizing: the stability of the profiles and the adhesion of the fibragglo or terracotta panels.

#### 2.8.2.7. Plastic cheeks

Each part is checked after injection.

Once a week, cheeks are mounted for inspection.

#### 2.8.2.8. Pre-expansion of polystyrene

Control of the density at each cycle during pre-expansion.

The weighing of the material and the volume of the pre-expansion are done automatically.

#### 2.8.2.9. Storage – Delivery of bundles of chests 6 meters long.

Upon exiting the mold, the chests are visually inspected, then stacked on two polystyrene blocks, which act as pallets.

The bundles are strapped and protected from bad weather by complete packaging in plastic film.



#### 2.8.2.10. Commercialisation

The chests and accessories are sold to closure manufacturers, traders or carpentry or masonry companies.

The boxes are delivered in a length of 6 m, not equipped with side panels. They can also be supplied cut to the requested lengths and equipped or not with side panels.

#### 2.8.2.11. Assembly at the distributor.

Before machining at the distributor, the boxes must be stored indoors (48 hours minimum) to limit the risks linked to thermal shock or to evacuate humidity which could alter the mechanical properties of the materials at the time of flow and processing. assembly.

#### 2.8.2.12. Cash flow from coffers

The 6 meter boxes will be cut into different sections in order to obtain the desired table widths.

The flow rate will correspond to the table width plus twice 95 mm.

Example: For a table width of 1000, the box will be cut to 1190 mm.

Several models of saws can be used (band saw, diamond blade, cutting disc, etc.) to cut the different materials constituting the boxes (PSE, aluminum, steel, wood-cement fiber, brick, etc.). The choice of tooling will mainly depend on the performance objectives.

The undersides and rail covers will be cut to the panel width plus 10 mm.

The installer will have to adapt their length on site.

### 2.8.2.13. Chest-cheek assembly

Once the box has been cut out, the operator must mount the cheeks, at each end of the box, by clipping into the aluminum profiles which are provided with a locking pin.

The exterior horizontal part of the aluminum profile must be notched, in line with the cheeks, to allow the installation of the coating reinforcement, and prevent it from cracking.

The box can then be delivered to the site.

### 2.8.2.14. On-site storage

The chests must be stored flat and protected from bad weather.

The operator must ensure the conformity of the goods before implementation.

The operator installing a non-compliant safe will be held responsible for the repair costs.

Before implementation, the operator must read the recommendations described in the Technical File.

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## 2.9. Mention of supporting documents

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### 2.9.1. Experimental results

- ECAM RICERT test report n°21RP3378 of December 9, 2021

Adhesion test of fibragglo panel to polystyrene support.

- ECAM RICERT test report n°21RP3379 of December 9, 2021

Results of adhesion tests of the terracotta panel to the polystyrene support.

- ECAM RICERT test report n°21RP3381 of December 9, 2021

Results of adhesion tests of the thin protective primer on the polystyrene support.

- ECAM RICERT test report n°21RP3382 of December 9, 2021 Results of adhesion tests of the protective primer on the polystyrene support.

- ECAM RICERT test report n° 16-1006-002/F/B of 10/01/2017

Results of adhesion tests of hardened coating mortars applied (according to EN 1015-12:2002) on polystyrene support: 0.2 N/mm<sup>2</sup>.

- Fire reaction classification of PSE: E, according to certificate no. 765/17/330 C from CREPIM dated 01/29/2021.

### 2.9.2. Construction site references

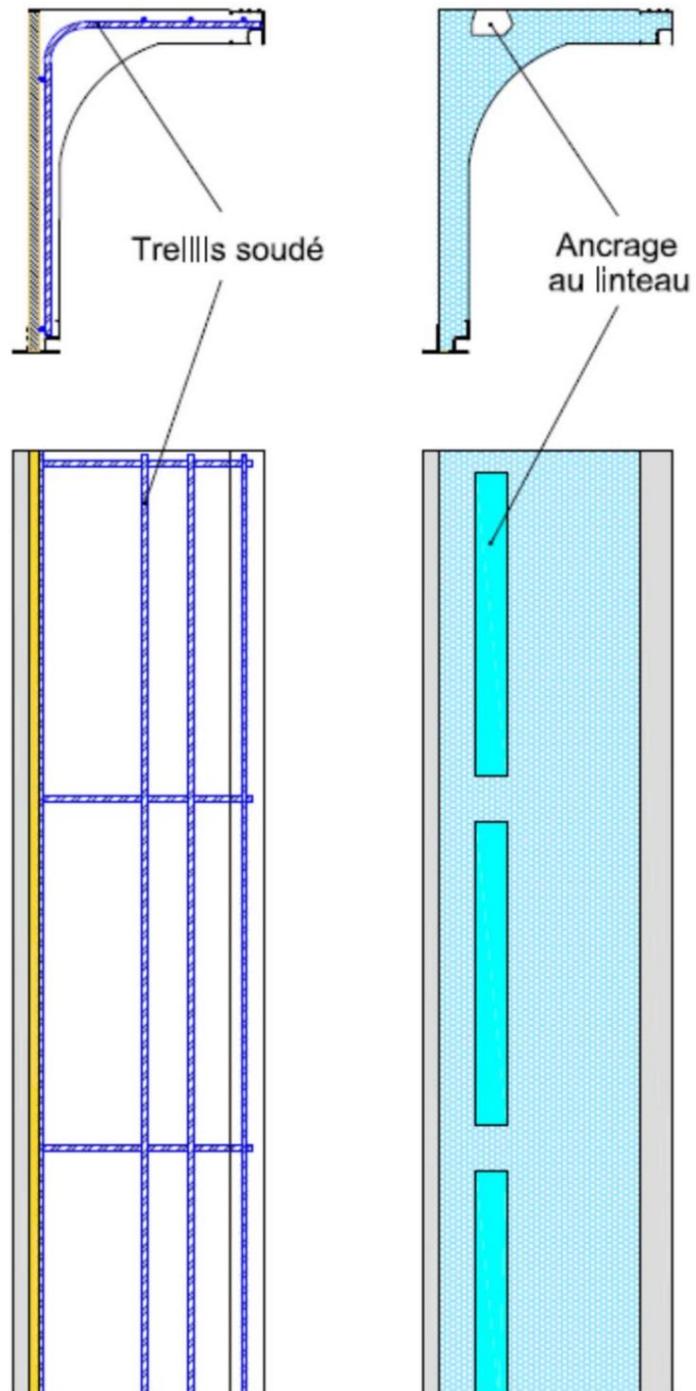
FIXOLITE has been marketing chests since 1981 and began its own production in 2000.

The marketing of half-lintel boxes began in 2010, and since then more than 500,000 meters have been delivered.

Name of the site	Project owner	Type of building 23
The ramparts of the Doutre Place Bichon – Rue du Calvaire 49100 Angers	Rosseau Comine 10 Bd Henri Arnault 49000 Angers	housing units 79 safes
Mirabeau Residence 46 rue Mirabeau 49100 Angers	Provicis West 14 Place Mendès France 49103 Angers	35 accommodations 74 chests
Residence des Arènes Rue des Arènes 49000 Angers	Bouyges 1 rue de Buffon 49055 Angers	46 accommodations 228 chests 1368 linear meters
The Breteche Gardens The Tenoterie 49720 Orée d'Anjou	European Homes 10 Place Vendôme 75000 Paris	22 houses 120 chests 720 linear meters
Les Troenes 38 of des Camelias 44360 St Etienne de Montluc	European Homes 10 Place Vendôme 75000 Paris	24 apartments 108 chests 648 linear meters

## 2.10. Annex to the Technical File – Implementation plans

ANNEX 1: Section of the trunk, its frame and top view



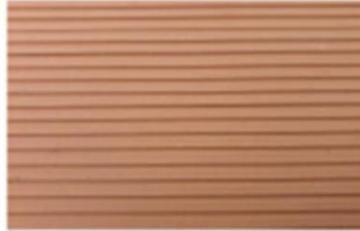
**APPENDIX 2: Finishes on the exterior side of the trunk**

**FIBRE**



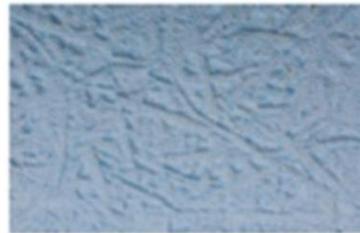
**T - C**

Terre cuite



**PSE**

Lisse ou Structuré



**PSE**

+ primaire de protection  
mince coloré

Gris ou brique



**PSE**

+ primaire de protection  
épais coloré

Gris ou brique



**APPENDIX 3: Cheeks: interior and exterior view of the trunk**

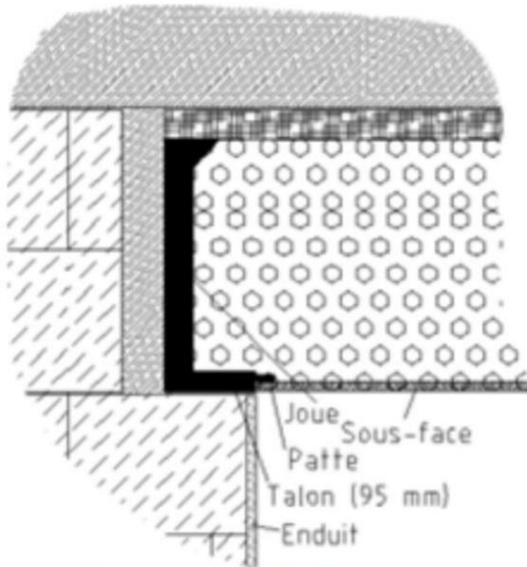


VUE INTÉRIEURE + patte mobile fixation sous-face



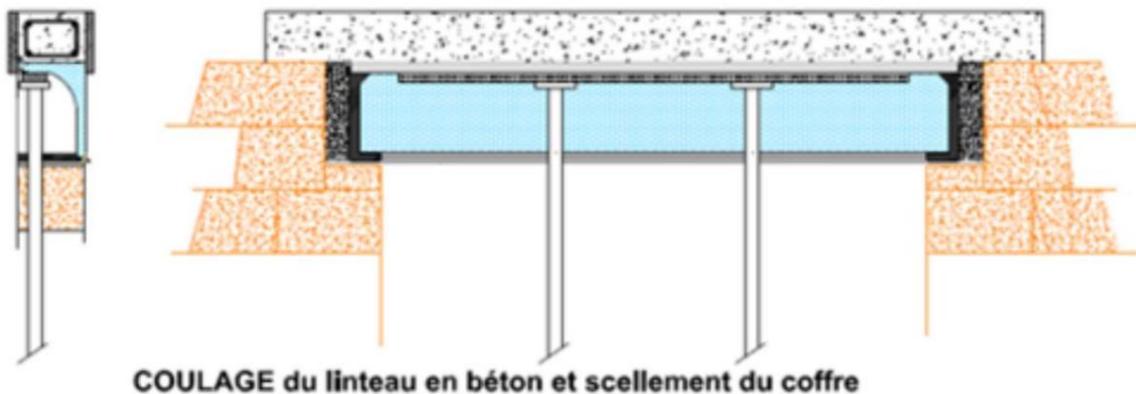
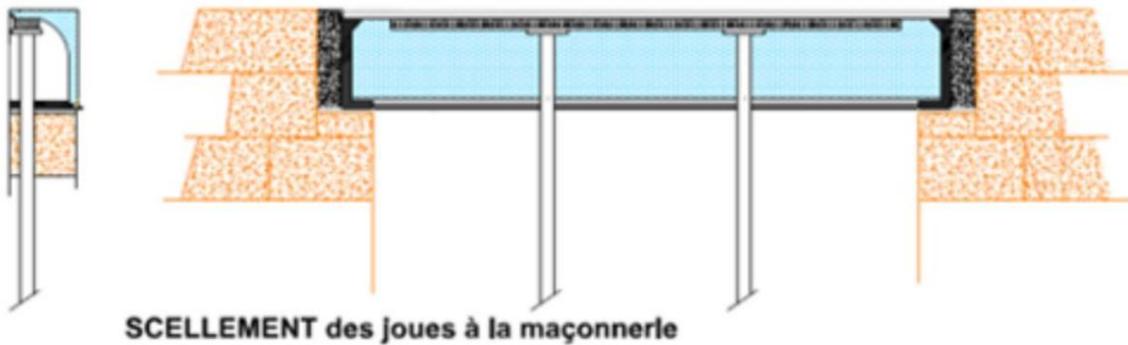
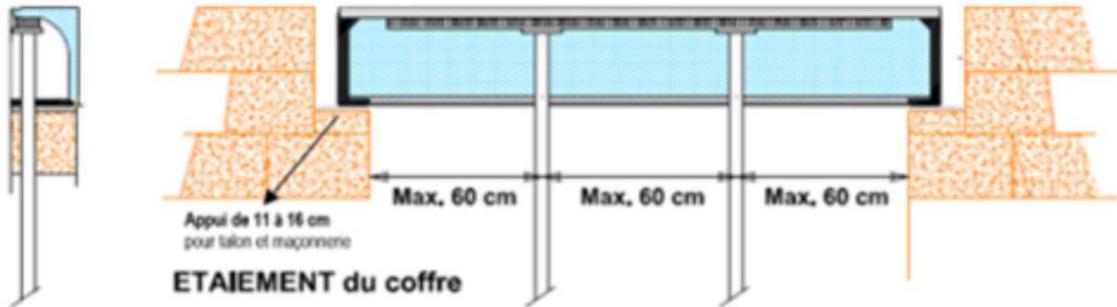
VUE EXTÉRIEURE. Le béton scellera le coffre dans la maçonnerie

**APPENDIX 4.1: Shoring for boxes of max. 1.60 m bay width.**

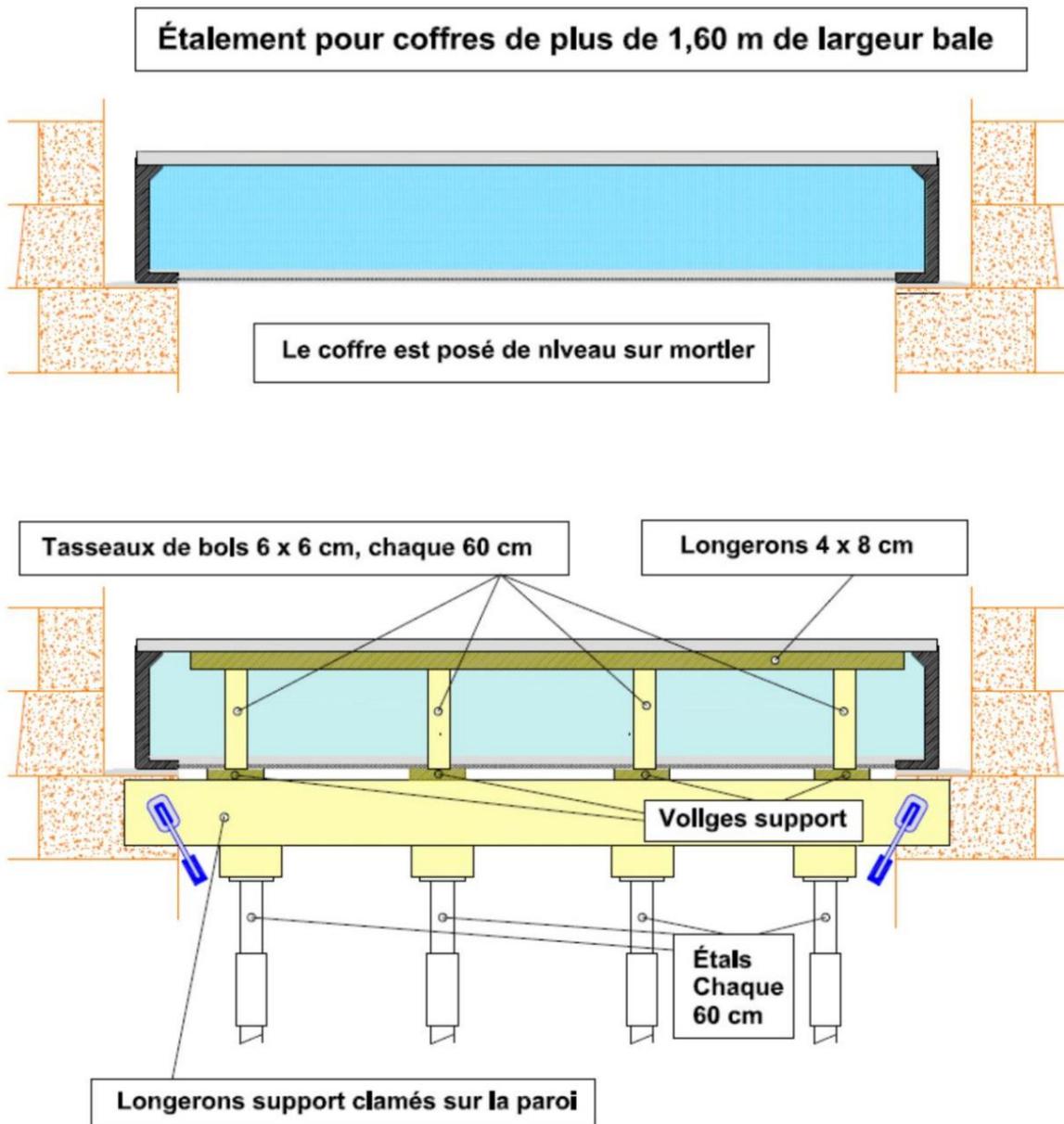


Le coffre est 190 mm plus large (2 x 95 mm) que la largeur de la baie avec enduit de finition.

Le talon de 95 mm est aligné avec l'enduit de finition.

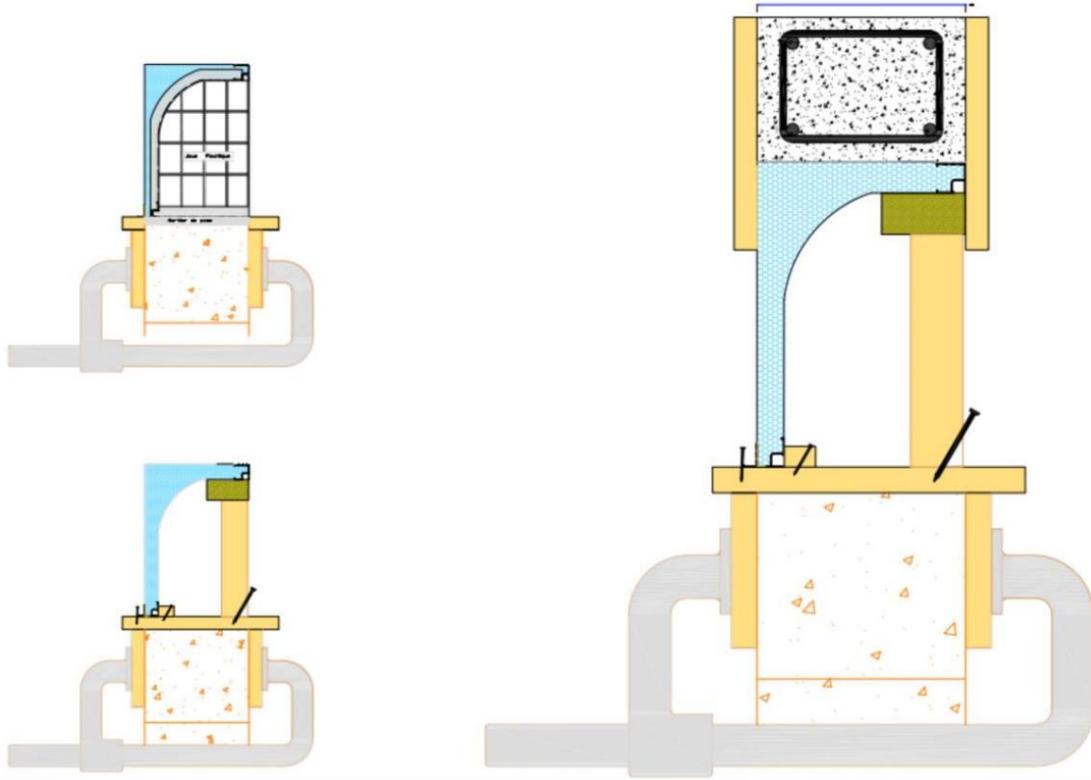


**APPENDIX 4.2: Shoring for boxes with a bay width of more than 1.60 m**

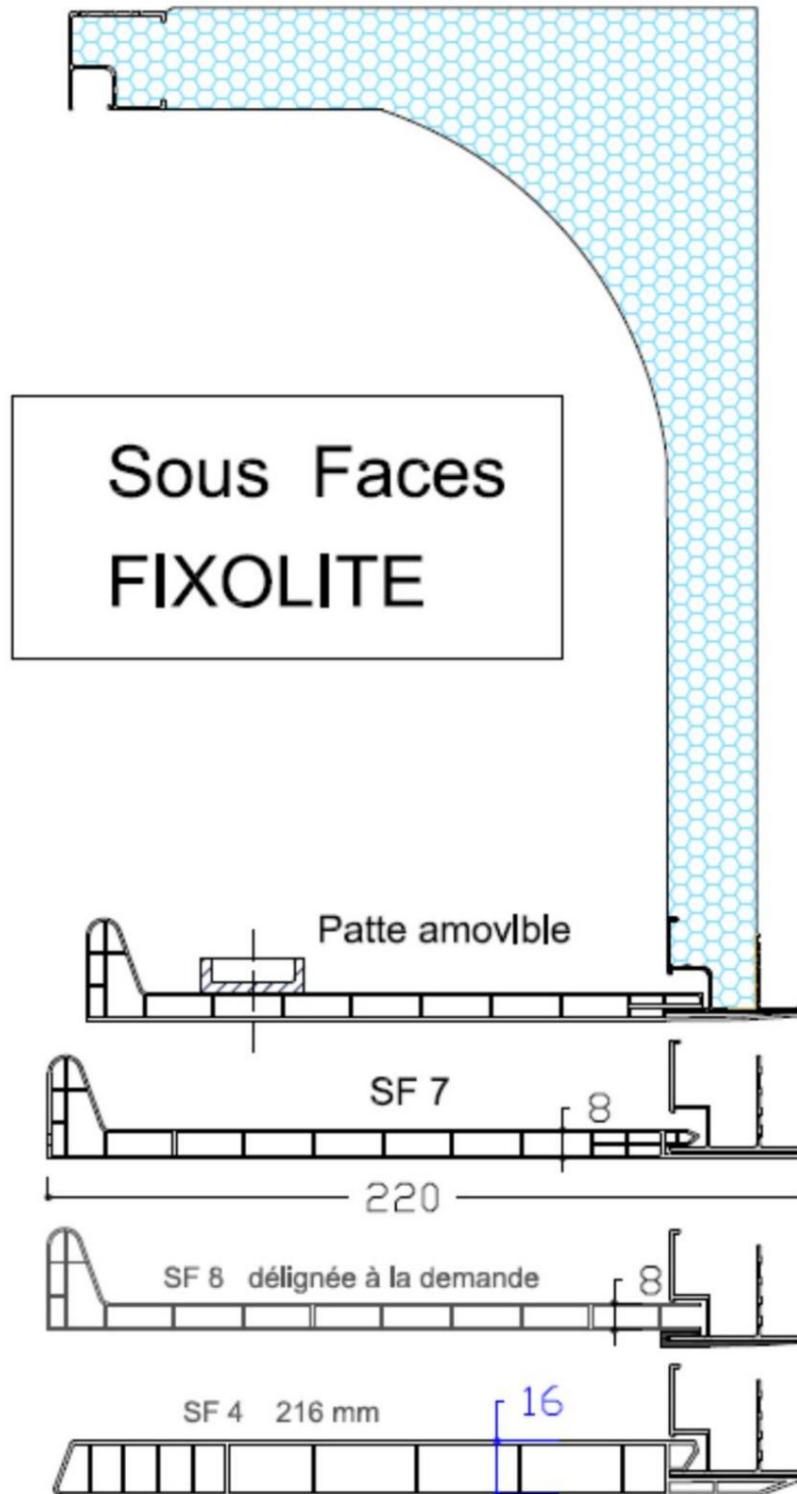


**APPENDIX 4.3: Shoring sections**

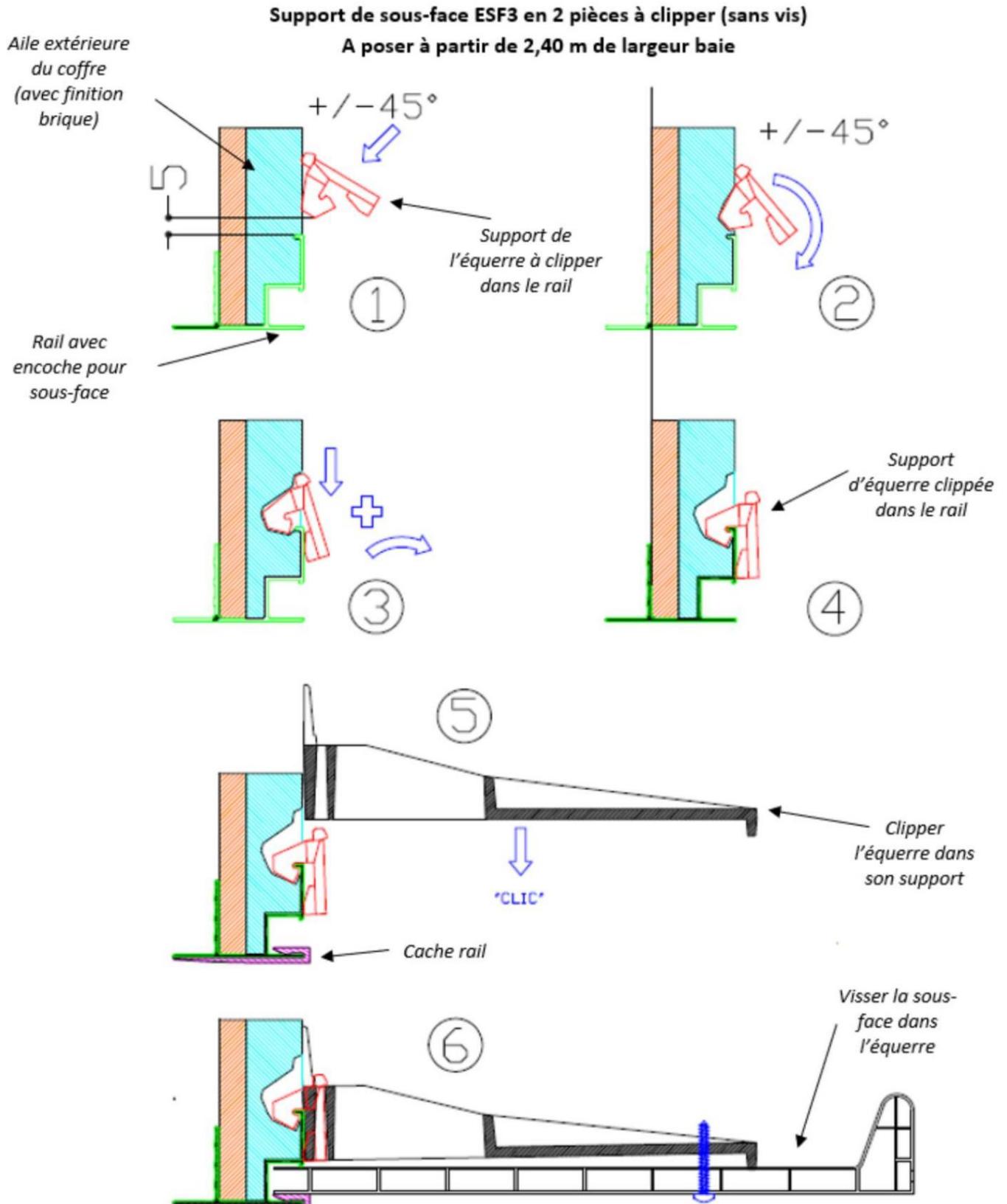
**Coupes / Étalement coffres de plus de 1,60 m de largeur baie**



APPENDIX 5: Undersides

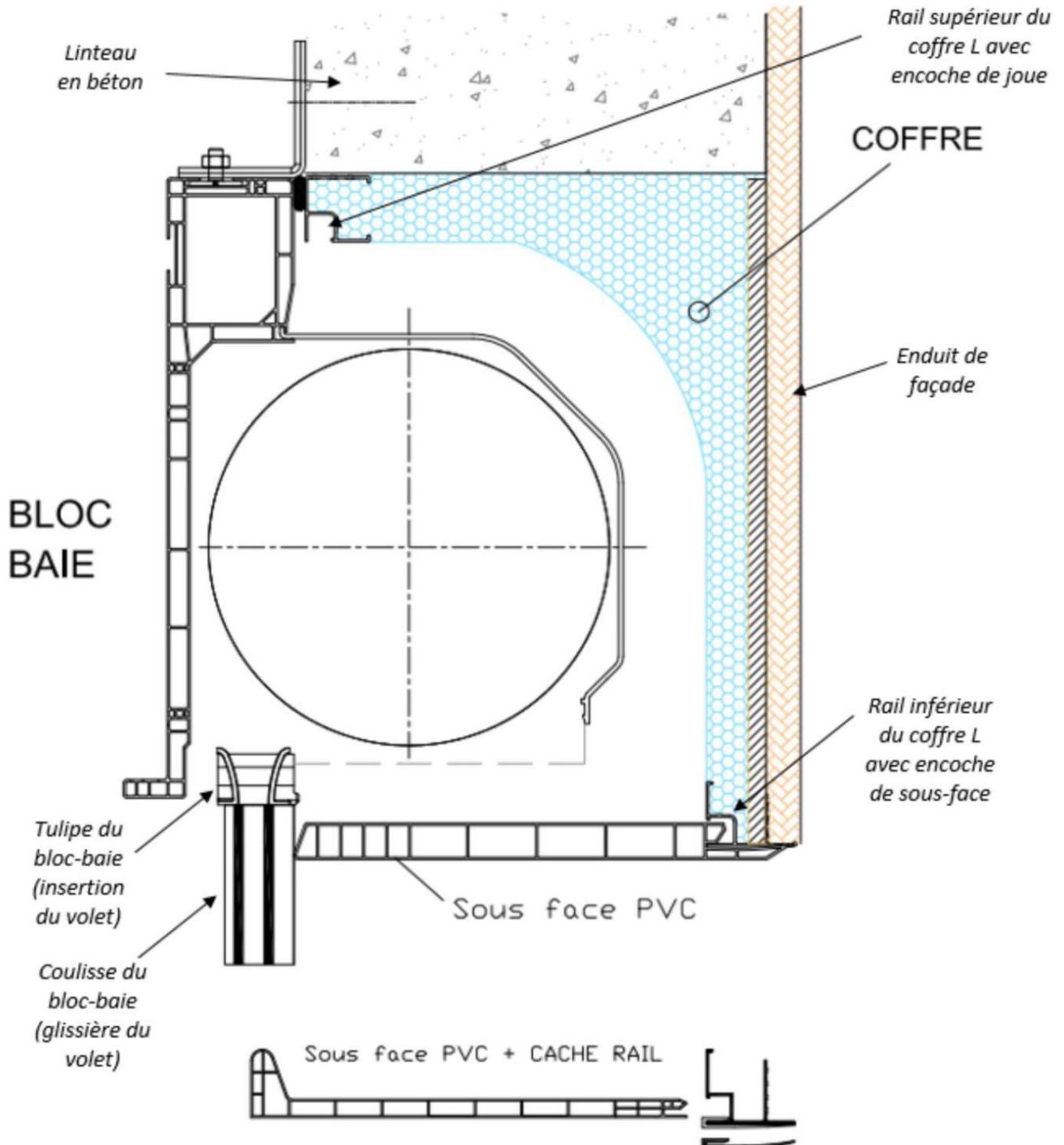


## ANNEX 6: ESF3 underside support, from 2.40 m



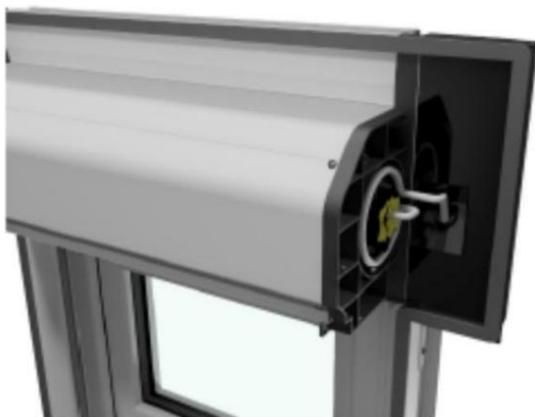
## APPENDIX 7: Configuration with bay block and undersides

Le bloc-baie (ou bloc-fenêtre) est un système qui désigne l'ensemble d'une fenêtre avec son coffre et son volet roulant intégré.



**APPENDIX 8: Example of implementing a bay block**

Mise en place de la mousse d'étanchéité



Mise en place du bloc baie

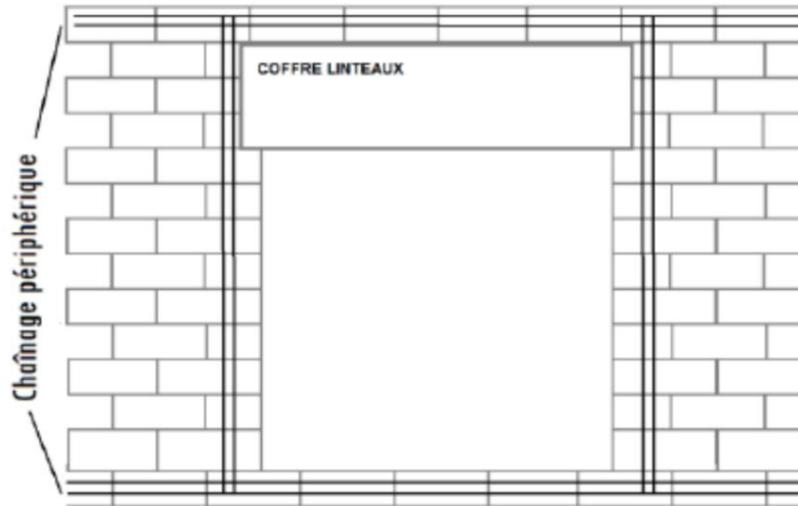


Fixation du bloc baie

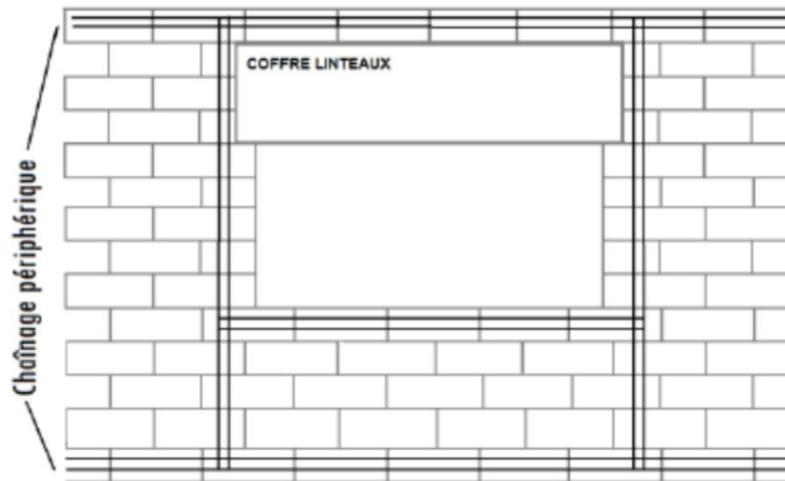


**APPENDIX 9: Installation in seismic zone**

**Porte fenêtre :**



**Fenêtre**



**APPENDIX 10: Installation under concrete slab (interior view)**

