UBAtc
Union belge pour l'Agrément technique de la Construction
Member of EOTA, UEAtc and WFTAO

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Technical Assessment Body issuing the European Technical Assessment: UBAtc. UBAtc has been designated according to Article 29 of Regulation (EU) No 305/2011 and is member of EOTA (European Organisation for Technical Assessment)

Trade name of the construction product:	GEOFLAM® N
Product family to which the construction product belongs:	Fire Protective board
Manufacturer:	GEOSTAFF 6 Bis RUE JACQUES KELLNER 95150 TAVERNY (FRANCE)
Manufacturing plant(s):	GEOSTAFF Production plant 02 (known to UBatc)
Website:	www.geostaff.fr
This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) No 2024/3110, on the basis of:	European Assessment Document EAD 350142-00-1106
This version replaces:	–
This European Technical Assessment contains:	27 pages, including 2 annexes which form an integral part of the document.

European Organisation for Technical Assessment

Legal bases and general conditions

1 This European Technical Assessment is issued by UBAtc (Union belge pour l'Agrément technique de la construction, i.e. Belgian Union for technical Approval in construction), in accordance with:

- Article 95(4) of the Regulation (EU) No 2024/3110 of the European Parliament and of the Council of 27 November 2024 laying down harmonised conditions for the marketing of construction products and repealing Regulation (EU) No 305/2011
- Commission Implementing Regulation (EU) No 1062/2013[1] of 30 October 2013 on the format of the European Technical Assessment for construction products
- EAD 350142-00-1106 (2017) : Fire protective products - Fire protective board, slabs and mat products and kits.

2 Under the provisions of Regulation (EU) No 305/2011, UBAtc is not authorized to check whether the provisions of this European Technical Assessment are met once the ETA has been issued.

3 The responsibility for the conformity of the performances of the products with this European Technical Assessment and the suitability of the products for the intended use remains with the holder of the European Technical Assessment.

4 Depending on the applicable Assessment and verification of constancy of performance (AVCP) system, (a) notified body(ies) may carry out third-party tasks in the process of assessment and verification of constancy of performance under this Regulation once the European Technical Assessment has been issued.

5 This European Technical Assessment allows the manufacturer of the construction product covered by this ETA to draw up a declaration of performance for the construction product.

6 CE marking should be affixed to all construction products for which the manufacturer has drawn up a declaration of performance.

7 This European Technical Assessment is not to be transferred to other manufacturers, agents of manufacturers, or manufacturing plants other than those indicated on page 1 of this European Technical Assessment.

8 The European Technical Assessment holder confirms to guarantee that the product(-s) to which this assessment relates, is/are produced and marketed in accordance with and comply with all applicable legal and regulatory provisions, including, without limitation, national and European legislation on the safety of products and services. The ETA-holder shall notify the UBAtc immediately in writing of any circumstance affecting the aforementioned guarantee. This assessment is issued under the condition that the aforementioned guarantee by the ETA-holder will be continuously observed.

9 According to Article 11(6) of Regulation (EU) No 305/2011, when making a construction product available on the market, the manufacturer shall ensure that the product is accompanied by instructions and safety information in a language determined by the Member State concerned which can be easily understood by users. These instructions and safety information should fully correspond with the technical information about the product and its intended use which the manufacturer has submitted to the responsible Technical Assessment Body for the issuing of the European Technical Assessment.

10 Pursuant to Article 11(3) of Regulation (EU) No 305/2011, manufacturers shall adequately take into account changes in the product-type and in the applicable harmonised technical specifications. Therefore, when the contents of the issued European Technical Assessment do not any longer correspond to the product-type, the manufacturer should refrain from using this European Technical Assessment as the basis for their declaration of performance.

11 All rights of exploitation in any form and by any means of this European Technical Assessment is reserved for UBAtc and the ETA-holder, subject to the provisions of the applicable UBAtc regulations.

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13 Subject to the application introduced, this European Technical Assessment is issued in English and may be issued by the UBAtc in its official languages. The translations correspond fully to the English reference version circulated in EOTA.

14 This European Technical Assessment was first issued by UBAtc on October 13th 2026.

[1] OJEU, L series of 2024/12/18

Technical Provisions

1 Technical description of the product

1.1 Introduction

This European Technical Assessment is being issued for the product GEOFLAM® N on the basis of agreed data/information, deposited with the UBAtc, which identifies the product that has been assessed. Changes to the product/production process, which could result in the deposited data/information being incorrect, should be notified to the UBAtc before the changes are introduced. The UBAtc will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment/alterations to the ETA, shall be necessary.

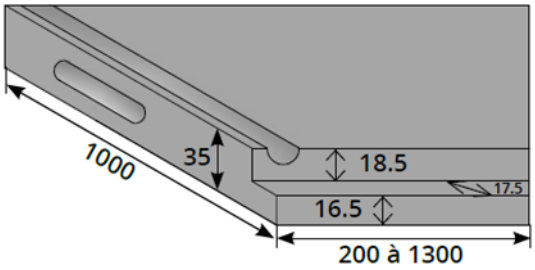
1.2 General

GEOFLAM® N fire-resistant boards are non-combustible products composed mainly of glass fibre-reinforced gypsum (GRG: Glass Reinforced Gypsum).

The boards have a length of 1000 mm and a thickness of 35 mm. The width is between 200 mm and 1300 mm, increasing in steps of 50 mm until 900 mm and in steps of 100 mm until 1300 mm. The tolerances on length and width is ±5 mm. The tolerance on the thickness is ±2 mm.

The sheets are specially designed with rebates and tongues to enable them to fit together and make assembly easier.

The applicant declares that the boards have an apparent density of 900 kg/m³ ± 8%



1.3 Ancillary products

Ancillary products refed to in this ETA, as a part of installation provisions or in the framework of determining performances (e.g. fire resistance test), are not covered by this ETA and may not be CE-marked on the basis of it.

2 Specification of the intended use(s) in accordance with the applicable EAD

2.1 Intended uses (exposure conditions)

The ETA covers fire protective boards intended for exposure conditions as specified in Table 1, when no more than accidental wetting is expected.

Table 1 – Intended use (exposure conditions)

Exposure	EAD 35014200-1106 reference
Internal use (internal dry conditions)	Type Z_2

2.2 Intended use (Assemblies)

GEOFLAM® N is intended to protect elements or to be used in in assemblies as specified in Table 2.

Table 2 – Intended use (assemblies)

	EAD 350142-00-1106 reference
Horizontal membrane protection incl. suspended ceilings acc. to EN 13964	Type 1
Vertical membrane protection	Type 2
Load-bearing concrete elements	Type 3
Load-bearing steel elements	Type 4
Load-bearing flat concrete profiled sheet composite elements	Type 5
Load-bearing concrete filled hollow steel columns	Type 6
Load-bearing timber elements	Type 7
Fire separating assemblies with no load-bearing requirements	Type 8
Technical services assemblies in buildings	Type 9
Fire protective uses not covered by types 1-9	Type 10

Table 2 shows the possible intended uses of the boards. Not all of these have been assessed in the framework of this ETA with regard to fire resistance performance. At present, the ETA covers the use of the boards as shown in table A.2.1.1 (see Annex II of the ETA).

In the future, as more fire resistance tests are performed, the ETA scope will be extended to include all the uses listed in Table 2. For each fire resistance test, a new chapter will be added to the annex II of the ETA.

NOTE: In accordance with EAD 350142-00-1106, until the withdrawal of relevant national test and classification standards, CE marking will cover a limited number of assemblies subjected to fire resistance assessment.

2.3 Working life/Durability

The provisions made in this European Technical Assessment are based on an assumed intended working life of 25 years. This declaration is based on the assessments presented in sections 3.7 of this ETA.

Indications given regarding the working life cannot be interpreted as a guarantee given by the producer or the UBAtc but are to be regarded only as a means for choosing the appropriate product(s) in relation to the expected economically reasonable working life of the construction works.

2.4 Assumptions

2.4.1 Manufacturing directives

GEOFLAM® N is manufactured at the GEOSTAFF Production Plant No.°2 (known to UBAtc). This production plant has been audited. The production process and the internal production control procedures of GEOFLAM® N are organised and documented as required according to the section 3 of the EAD.

2.4.2 Installation

Installation instructions provided in the technical documentation of the manufacturer shall be respected, as well as the assembly descriptions in Annex II of this ETA.

3 Performance of the product and references to the methods used for its assessment

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

GEOFLAM® N boards have a reaction to fire classification **A1** according to EN 13501-1.

3.1.2 Fire resistance

Assemblies incorporating GEOFLAM® N boards have a resistance to fire classified according to EN 1366-1, EN 1366-5 or EN 1366-8 and classified according to EN 13501 2, EN 13501-3 or EN 13501-4, (EAD 350142-00-1106) as presented in Annex 2.

NOTE: *In accordance with EAD 350142-00-1106 (foreword), until 10 years after the initial issuing of this ETA, or until the withdrawal of relevant national test and classification standards, CE-marking will cover a limited number of assemblies subjected to fire resistance assessment. As time progresses, the performance declaration for fire resistance covered by CE-marking should gradually be enlarged by the ETA-holder and incorporated in this ETA by amendment or revision. In the meantime, and taking into account the transitional arrangements for test and classification standards and the corresponding national legislation (see EC Guidance paper J), the ETA-holder shall be permitted to maintain and be able to use - on a national basis - his portfolio of test data for this characteristic, based on relevant national standards, next to the performance declaration covered by the CE-marking based on this ETA.*

3.1.3 Durability and Serviceability

Product performances confirm a working life of minimum 10 years for the intended use Z2 (internal use).

3.1.3.1 Resistance to deterioration caused by water

This characteristic is not relevant for the intended use Z2 (internal use). No performance assessed.

3.1.3.2 Resistance to soak/dry

This characteristic is not relevant for the intended use Z2 (internal use). No performance assessed.

3.1.3.3 Resistance to freeze/thaw

This characteristic is not relevant for the intended use Z2 (internal use). No performance assessed.

3.1.3.4 Resistance to heat/rain

This characteristic is not relevant for the intended use Z_2 (internal use). No performance assessed.

3.1.3.5 Basic durability assessement

Flexural strength: see clause 3.3.1

Dimensional stability: See clause 3.3.2

Tensile strength perpendicular: In accordance with EN 319 the GEOFLAM® N boards have a tensile strength perpendicular of 1.00 N/mm².

Tensile strength parallel: In accordance with EN 789 the GEOFLAM® N boards have a tensile strength parallel of 0,23 N/mm².

Compressive strength: In accordance with EN 1926 the GEOFLAM® N boards have a have a compressive strength of 1.30 MPa.

3.2 Hygiene, Health and the environment (BWR3)

3.2.1 Release of dangerous substances

No performance is assessed.

3.2.2 Air and/or water permeability

No performance is assessed

3.3 Safety in Use (BWR4)

3.3.1 Flexural strength

In accordance with EN 12467+A2, the GEOFLAM® N boards have an average flexural strength of 1.9 MPa and a minimum bending strength of 1.5 MPa.

3.3.2 Dimensional stability

The 35 mm GEOFLAM® N boards, tested in accordance with EN 318, are dimensionally stable.

3.4 Protection against noise (BWR5)

3.4.1 Airborne sound insulation

In accordance with EN ISO 10140-2 the GEOFLAM® N boards have a weighted sound reduction index, expressed according to EN ISO 717-1 of **Rw (C ; Ctr) = 30 (-1 ; -3) dB**

3.4.2 Sound absorption

No performance assessed.

3.4.3 Impact sound insulation

No performance assessed.

3.5 Energy economy and heat retention (BWR6)

3.5.1 Thermal conductivity

In accordance with EN 12664 the GEOFLAM® N boards have a thermal conductivity of **0,141 W/m.K**.

3.5.2 Water vapour permeability

In accordance with EN ISO 12572 the GEOFLAM® N boards have a water vapour diffusion resistance factor (μ) of 1,6

3.6 Identification

3.6.1 Length, Width (see 1.2)

The length of the GEOFLAM®N boards is 1000 mm.

The width of the GEOFLAM®N boards is 200 mm, 250 mm, 300 mm, 350 mm, 400 mm, 450 mm, 500 mm, 550 mm, 600 mm, 650 mm, 700 mm, 750 mm, 800 mm, 850 mm, 900 mm, 1000 mm, 1100 mm, 1200 mm and 1300 mm.

3.6.2 Thickness (see 1.2)

The GEOFLAM® N boards are available in thickness of 35 mm.

3.6.3 Dimensional tolerances

The tolerances of the GEOFLAM® N boards on length and on width are ± 5 mm. The tolerance on the thickness of the boards is ± 2 mm

3.6.4 Apparent density

The apparent density (23°C, 50%RH) of the GEOFLAM® N boards is 900 kg/m³ ± 8 %.

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with Regulation (EU) N° 3110/2024, Article 94, Regulation (EU) N° 305/2011 is repealed, but references to the repealed Regulation shall be construed as references to the Regulation.

The system of assessment and verification of constancy of performance, specified in the Decision of the Commission 1999/454/EC of 1999/07/14[2], as amended, is specified in the following Table.

Table 3 – System of assessment and verification of constancy of performance applicable to GEOFLAM® N

Product(s)	Intended use(s)	Level(s) or class(es)	Assessment and verification of constancy of performance system(s)*
Fire Protective Products	For fire compartmentation and/or fire protection or fire performance	Any	1

* See Annex V to Regulation (EU) N° 305/2011

In addition, according to the decision 1999/454/EC of 1999/07/14[3] of the European Commission, as amended, the systems of assessment and verification of constancy of performance specified in table 4 apply to fire protective products with regard to reaction to fire.

Table 4 – Systems of assessment and verification of constancy of performance with respect to the reaction to fire

Product(s)	Intended use(s)	Level(s) or class(es) (reaction to fire)	Assessment and verification of constancy of performance system(s)[a]
Fire Protective Products	For uses subject to regulations on reaction to fire	(A1, A2, B, C)*	1
		(A1, A2, B, C)**, D, E	3
		(A1 to E)*** , F	4

[a]	Systems 1, 3 and 4 : See Regulation (EU) N° 305/2011, Annex V
*	Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)
**	Products/materials not covered by footnote (*)
***	Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of class A1 according to Commission Decision 96/603/EC[3], as amended)

5 Technical details necessary for the implementation of the AVCP system, as foreseen in EAD 350142-00-1106

5.1 Tasks for the ETA-holder

5.1.1 Factory production control (FPC)

The ETA-holder shall exercise permanent internal control of the production. All the elements, requirements and provisions adopted by the ETA-holder shall be documented in a systematic manner in the form of written policies and procedures. This factory production control system shall ensure that production is in conformity with this ETA.

The personnel involved in the production process shall be identified, sufficiently qualified and trained to operate and maintain the production equipment. Machinery equipment shall be regularly maintained and this shall be documented. All processes and procedures of production shall be recorded at regular intervals.

The ETA-holder shall maintain a traceable documentation of the production process from purchasing or delivery of raw or basic raw materials up to the storage and delivery of finished products.

The factory production control system for the product includes relevant design specifications, including adequate drawings and written instructions for:

- type and quality of all materials
- overall dimensions
- packaging and transport protection

The production control system shall specify how the control measures are carried out, and at which frequencies.

[2] see OJEU L178/52 of 1999/07/14

[3] see OJEU L267 of 1996/10/19

ETA-holders which have an FPC system that complies with EN ISO 9001 and that addresses the requirements of this ETA are recognised as satisfying the FPC requirements.

Products that do not comply with requirements as specified in the ETA shall be separated from the conforming products and marked as such. The ETA-holder shall register non-compliant production and action(-s) taken to prevent further non-conformities. External complaints shall also be documented, as well as actions taken.

When materials/products are delivered for incorporation into the production process, verification of conformity with specifications in the quality manual shall take place and be recorded.

If supplied materials/components are not manufactured and tested by the supplier in accordance with agreed methods, or where the ETA-holder purchases materials/components on the open market, then where appropriate, they shall be subject to suitable documented checks/tests by the ETA-holder before acceptance.

The characteristics of incoming material and components, for which the supplier demonstrates documented compliance with a product specification, for an intended use that is appropriate for its use as a raw material or component of the product, shall be considered satisfactory and need, except in justified doubt, no further checking, unless the control plan specifies differently.

5.1.2 Testing of samples taken at the factory

5.1.2.1 General

At least the following minimum information shall be recorded:

- date and time of manufacture
- type of product produced (boards)
- material specification (dimensions and thickness)
- all results of the verifications performed within the agreed upon control plan

5.1.2.2 Maintenance, checking and calibration of equipment

All testing equipment shall be maintained, calibrated and/or checked against equipment or test specimens traceable to relevant international or nationally recognised reference test specimens (standards). In case no such reference test specimens exist, the basis used for internal checks and calibration shall be documented.

The ETA-holder shall ensure that handling, preservation and storage of test equipment is such that the performances are maintained

When production is intermittent, the ETA-holder shall ensure that any test equipment which may be affected by the interruption is suitably checked and/or calibrated before use. The calibration of all test equipment shall be repeated if any repair or failure occurs which could upset the calibration of the test equipment.

5.1.2.3 Testing as part of Factory Production Control

Table 5 specifies minimum requirements for testing as part of FPC.

If constituent materials or components are supplied by other manufacturers to the ETA-holder, the supplier shall perform FPC on those constituent materials or components. If that is the case, those suppliers should submit the relevant records to the ETA-holder.

Table 5 – FPC test plan for GEOFLAM® N

Property	Minimum frequency
Determination of organic content (reaction to fire)	1 per week[4]
Determination of dimensional stability at high temperatures (fire resistance)	1 per week
Indirect test method (small oven test)[5]	1 per year
Dimensional stability	1 per year
Identification	
length, width	1 per day[6], per dimension
thickness	1 per day, per thickness
apparent density	1 sample per n-boards
Flexural strength	1 sample per n-boards

5.2 Initial Type Testing

The assessment tests will have been conducted by the UBAtc or under its responsibility (which may include a proportion conducted by an independent laboratory or by the ETA-applicant, witnessed by the UBAtc). The UBAtc will have assessed the results of these tests in accordance with chapter 3 of this ETA, as part of the ETA issuing procedure.

The results of assessment testing shall be used by notified bodies (cf. Regulation (EU), Annex V, clause 1.6).

6 Other marking and/or information

Each board shall at least be marked with product name and a traceability code. Each package is marked with the product name, traceability code, thickness of the boards, and dimensions of the boards.

[4] A week represents 5 production days.
[5] Production shall be subjected to a small oven test (test performed on one thickness).
[6] A day represents a 24h time period in which production is considered to be as usual for the production facility concerned.

UBAtc asbl is a non-profit organization according to Belgian law. It is a Technical Assessment Body notified by the Belgian notifying authority, the Federal Public Services Economy, SMEs, Self-Employed and Energy, on 17 July 2013 in the framework of Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC. As a transitional provision this notification shall be deemed to apply to the Regulation (EU) No 2024/3110 of the European Parliament and of the Council of 27 November 2024 laying down harmonised conditions for the marketing of construction products and repealing Regulation (EU) No 305/2011.

UBAtc asbl is member of the European Organisation for Technical Assessment, EOTA (www.eota.eu).

This European Technical Assessment has been issued by UBAtc asbl, in Sint-Stevens-Woluwe, on the basis of the technical work carried out by the Assessment Operators, Buildwise and SECO Belgium.

On behalf of UBAtc asbl,

Bart De Pauw,
General manager

On behalf of the Assessment Operator, Buildwise and SECO Belgium, responsible for the technical content of the ETA,

Olivier Vandooren,
CEO Buildwise

Bernard Heiderscheidt,
CEO SECO Belgium

The most recent version of this European Technical Assessment may be consulted on the UBAtc website (www.butgb-ubatc.be).

Annexes

Annex I: References

Reference number EAD 350142-00-1106
Document title Fire protective products - Fire protective board, slab and mat products and kits.

Reference number EN 13964:2004
Document title Suspended ceilings - Requirements and test methods.

Reference number EN 13501-1:2002
Document title Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests

Reference number EN 13501-2:2003
Document title Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services

Reference number EN 13501-3:2006
Document title Fire classification of construction products and building elements - Part 3: Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers

Reference number EN 13501-4:2007
Document title Fire classification of construction products and building elements - Part 4: Classification using data from fire resistance tests on components of smoke control systems

Reference number EN 1366-1:1999
Document title Fire resistance tests for service installations - Part 1: Ducts

Reference number EN 1366-5:2010
Document title Fire resistance tests for service installations - Part 5: Service ducts and shafts

Reference number EN 1366-8:2004
Document title Fire resistance tests for service installations - Part 8: Smoke extraction ducts

Reference number EN 12467:2004
Document title Fibre-cement flat sheets - Product specification and test methods

Reference number EN 318:2002
Document title Wood based panels - Determination of dimensional changes associated with changes in relative humidity

Reference number EN ISO 354:2003
Document title *Acoustics - Measurement of sound absorption in a reverberation room (ISO 354:2003)*

Reference number EN ISO 11654:1997
Document title *Acoustics - Sound absorbers for use in buildings - Rating of sound absorption (ISO 11654:1997)*

Reference number EN ISO 140-3:1995
Document title *Acoustics - Measurement of sound insulation in buildings and of building elements - Part 3: Laboratory measurements of airborne sound insulation of building elements (ISO 140-3:1995)*

Reference number EN ISO 717-1:1996
Document title *Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation*

NOTE: The editions of reference documents given above are those which have been adopted by the UBAtc for its specific use when establishing this ETA. When new editions become available, these supersede the editions mentioned only when confirmed by the UBAtc.

Annex II : Fire resistance performances and assembly methods for uses of boards covered by this ETA

A 2.1 Overview of fire resistance performances for GEOFLAM® N assemblies

The fire protective assemblies in Table A.2.1 have been assessed within the framework of this ETA. Assemblies installed according to the provisions given in this annex are covered by this ETA.

Table A 2.1

Assemblies assessed within the framework of this ETA	Classification according to	Test Standard	Intended use category *	Installation details	Date of addition to this ETA
Horizontal and vertical protection of service ducts and shaft composed of GEOFLAM® N fire protective boards	EN 13501-2 EI 120 (v_e – h_o) (i ↔ o)	EN 1366-5:2021	Type 9	Annex 2.2	13/10/2026
Horizontal and vertical ventilation ducts composed of GEOFLAM® N fire protective boards	EN 13501-3 EI 120 ve ho (i ↔ o) S	EN 1366-1:2014 + A1 :2020	Type 9	Annex 2.3	13/10/2026
Horizontal and vertical smoke extraction ducts composed of GEOFLAM® N fire protective boards	EN 13501-4 EI 120 (v_e – h_o) S1500multi	EN 1366-8 :2005	Type 9	Annex 2.4	13/10/2026

* according to EAD 350142-00-1106

Annex 2.2: Horizontal and vertical protection of service ducts and shaft composed of GEOFLAM® N fire protective boards

A2.2.1 Date of addition to this ETA

This annex was added ETA 26/0426 on 13/10/2026. This assembly was not covered by this ETA prior to the addition of this annex.

A2.2.2 Classification

The assembly described in this annex has been tested according to EN 1366-5 and classified in accordance with EN 13501-2.

EI 120 (v_e – h_o) (i ↔ o)

A2.2.3 Installation requirements

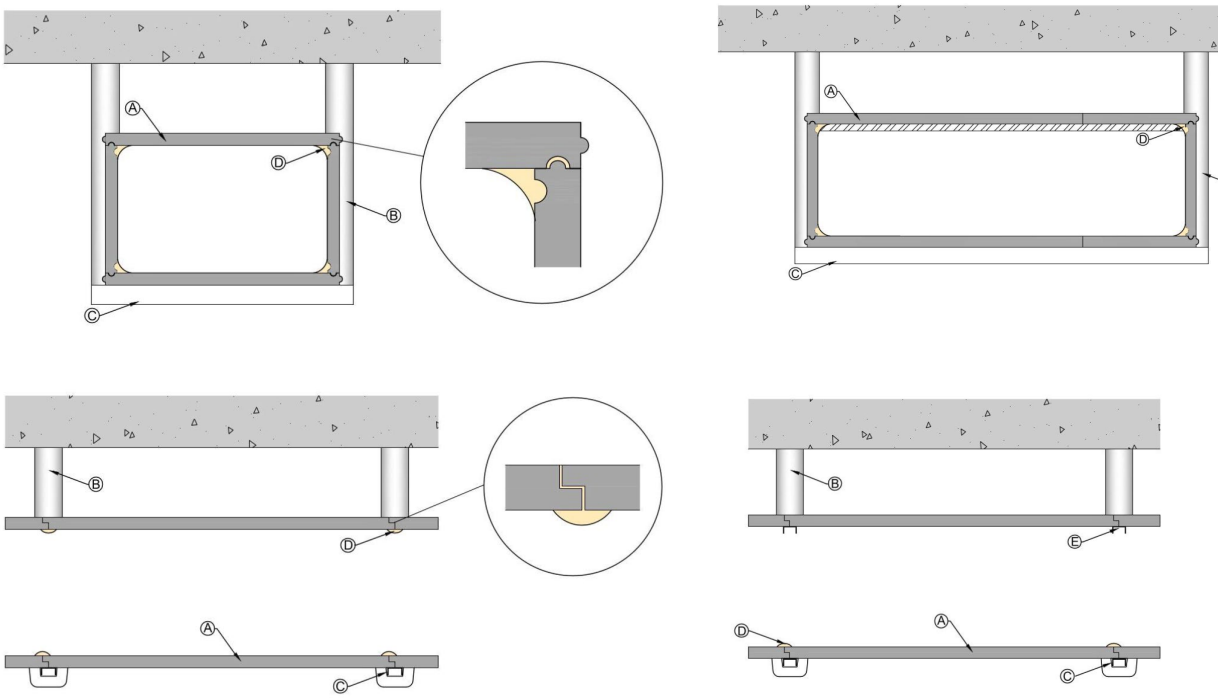
The installation provisions given in paragraph 2.4.2 of this ETA shall be taken into account.

A2.2.4 Horizontal ducts

A2.2.4.1 Supporting structure

The continuous self-supporting horizontal duct is composed of GEOFLAM® N fire protective boards (see paragraph A.2.2.4.3 for details of the duct composition). The duct penetrates walls with a minimum thickness of 110 mm (or a partition with an equivalent resistance to fire performance characteristics – see paragraph A.2.2.4.4 for details of penetration). The duct is supported by steel suspension system at maximum intervals of 1000 mm, as illustrated by figures 2.2.4.1.

Figure 2.2.4.1 – Horizontal duct composed of GEOFLAM® N fire protective boards



Sections composed of 4 boards

Sections composed of more than 4 boards

Legend:

A : GEOFLAM®N boards (with or without staggered joints)

B : Galvanized steel rods in a GEOFLAM®A fire protective half shell 80mm

C : U-shaped iron profile (41 x 21 x 2 mm) in a GEOFLAM®A fire protective U-profile 110 x 55 mm

D : internal or external "Polochon" (or joint cover)

E : U-shaped iron profile (41 x 21 x 2 mm) (to be protected when fire is expected at the inside of the duct

Table A2.2.4.1 – Components

Element	Identification	Characteristics	Mounting and fixing
Rods	Galvanized steel rods	M8	1000 mm centre distance
Steel U-profiles	Galvanized steel U-profiles	Dimensions : 41 x 21x 2 mm (W x H x T) Length : depending of the duct section (width + 50 mm)	1000 mm centre distance

When the duct is composed of more than 4 boards, an additional iron U-profile is to be positioned under the upper boards of the duct.

A.2.2.4.2 Insulation

The galvanized steel rods are protected with fire protective shells (Ø 80 mm). The shells are composed of two half-pieces applied on the rods and fixed with glue.

The galvanized steel U-profiles are protected with fire protective U-profiles (110 x 55 mm).

Specifications for the components are given in Table A.2.2.4.2.

Table A.2.2.4.2 – Insulation

Element	Identification	Characteristics	Mounting and fixing
Half-shells	GEOFLAM® A	Length: 1000 mm Diameter: Ø 80	Placed on steel rods and maintained with glue
U-profile protections	GEOFLAM® A	Length: 1000 mm Width: 110 mm Thickness: 50 mm	Placed on steel U-profiles and maintained with glue
glue	Geocol (GEOSTAFF) PF3 (Siniat) PLACOL 1H (PLACO BPB)		

A.2.2.4.3 Fire protective boards

The GEOFLAM® N boards are placed to form a continuous horizontal duct (see figures 2.2.4.1).

The boards are fixed together with GEOCOL® glue (or equivalent, see table A2.2.4.3) or equivalent at all edges and in the rabbets.

Specifications for the components are given in Table A.2.2.4.3.

Table A.2.2.4.3 – Boards and glue

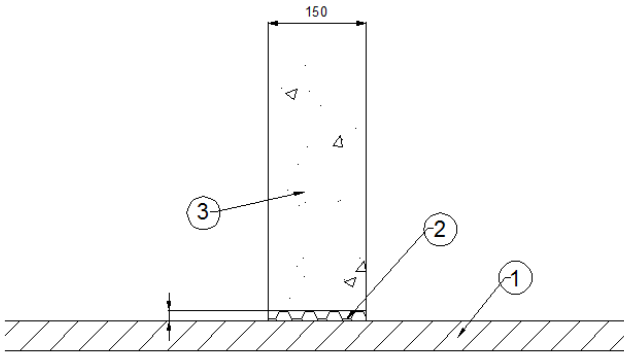
Element	Identification	Characteristics	Mounting and fixing
Board	GEOFLAM® N	Thickness: 35 mm Length: 1000 mm Width: See table 2	Installed to form a rectangular horizontal duct
Glue	Geocol (GEOSTAFF) PF3 (Siniat) PLACOL 1H (PLACO BPB)	Gypsum based adhesive, in powder form	Used for fixing of the board
Polochon (joint cover)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)	50 x 10 mm (W x T) (internal or external vertical or horizontal joints) 20 x 20 mm (internal corners)	Mix of plaster and vegetal fibres

A.2.2.4.4 Wall penetration

A.2.2.4.4.1 Penetration seal

The penetration will be less than the external dimensions of the duct + 50 mm. The gap between the penetration wall with a minimum of 110 mm and the duct is filled up with mineral wool (A1 classified according to EN 13501-1, density ≥ 26 kg/m^3) or with polyurethane foam. The gap can also be covered with a joint cover composed of a mixture of vegetable fibres and bonding plaster (see figure 2.2.4.4.1).

Figure 2.2.4.4.1 – Wall penetration details



Legend:

① : GEOFLAM® N boards

② : gap (max 15 mm) to be filled with mineral wool, density ≥ 26 kg/m³ (see table A.2.2.4.4.1)

Or gap (max 25 mm) to be filled with mixture of vegetable fibres and bonding plaster or polyurethane foam (see table A.2.2.4.4.1)

③ : Penetration wall

Specifications for the components are given in Table A.2.2.4.4.2.

Table A.2.2.4.4.1 – Penetration materials

Element	Identification	Characteristics	Mounting and fixing
Plugging/sealing material	Mineral wool	ROCKMUR (ROCKWOOL) Density ≥ 26 kg/m³	Apply between the penetration wall and the duct (max 15 mm)
Plugging/sealing material	Polyurethane foam	SIKA BOOM (SIKA) SOADAFOAM FR (Soudal)	Apply between the penetration wall and the duct (max 25 mm)
Joint cover (Polochon)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)		Apply between the penetration wall and the duct (max 25 mm)

A.2.2.4.5 Details

All installation details shall be executed as presented in figures 2.2.4.1. and 2.2.4.3.

A.2.2.4.6 Field of direct application

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

- The internal dimensions of the ducts are between 0 mm and 1250 mm in width by between 0 mm and 1000 mm in height.
- The maximum length of the sections is 1000 mm
- The duct is installed horizontally
- The duct may penetrate walls made of bricks or concrete, with a thickness superior to 110 mm and a fire resistance of at least 120 minutes
- The tensions in the supporting structure are limited as follows

Table A.2.2.4.6 – Stresses

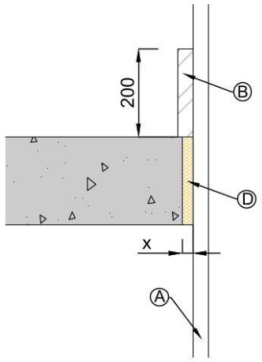
	Maximum allowed stresses
	(N/mm²)
Tensile stresses in all vertically oriented elements	6
Shear stress on the screws of property class 4.6 according to EN ISO 898-1	10
Note: the stresses are calculated for the supported load only (and neglecting the assembly loads)	

A.2.2.5 Vertical ducts

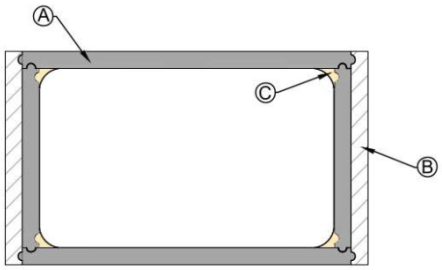
A.2.2.5.1 Supporting structure

The continuous self-supporting vertical duct is composed of GEOFLAM® N fire protective boards (see paragraph A.2.2.5.3 for details of the duct composition). Each duct section is composed of at least 4 boards. The duct penetrates concrete floors with a minimum thickness of 150 mm (see paragraph A.2.2.5.4.2 for details of penetration). The duct starts at ground level and penetrates a steel reinforced concrete floor (or a floor slab with an equivalent resistance to fire performance characteristics) with a minimum thickness of 150 mm. At the opening in the floor, the duct is supported by board fillets on two parallels sides (see figure 2.2.5.1). For sections composed of 4 boards, these fillets are glued to the smaller sides of the duct. When the duct section is composed of more than 4 boards, the fillets are glued to the sides composed of 2 boards. The fillets are glued using the glue Geocol.

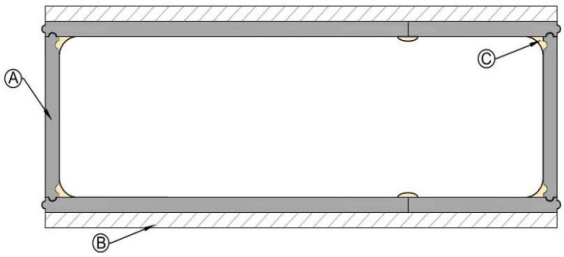
Figure 2.2.5.1 – Vertical duct composed of GEOFLAM® N fire protective boards



Detail of a floor penetration



Sections composed of 4 boards



Sections composed of more than 4 boards

Legend :

A : GEOFLAM® N boards

B : GEOFLAM® A board fillets 35 x 200 mm flued on the smaller sides of the ducts composed of 4 boards and on at least the langer sides of the ducts composed of more than 4 boards. The fillets are resting on the penetrated floor.

C : internal or external "Polochon" (or joint cover)

D : gap (max 15 mm) to be filled with mineral wool, density ≥ 26 kg/m³ (see table A.2.2.5.3)

Or gap (max 25 mm) to be filled with mixture of vegetable fibres and bonding plaster or with polyurethane foam (see table A.2.2.5.4.2)

Specifications for the components are given in Table A.2.2.5.1.

Table A.2.2.5.1 – Supporting structure

Element	Identification	Characteristics	Mounting and fixing
Board fillet	GEOFLAM® A	Thickness : 35 mm Height : 200 mm	Glued on the duct and only supported on the concrete floor
Glue	GEOCOL®	Gypsum based adhesive, in powder form	Used for fixing of the board fillets on the duct

NB: maximum height without supporting structure: 7 m (with board fillets on two parallels sides)

A.2.2.5.2 Insulation

None.

A.2.2.5.3 Fire protective boards

The GEOFLAM® N boards are placed to form a continuous vertical duct (see figures 2.2.5.1).

The boards are fixed together with GEOCOL® glue at all edges and in the rabbets.

Maximum dimensions of the vertical duct are 1250 mm by 1000 mm (internal dimensions)

Specifications for the components are given in Table A.2.2.5.3.

Table A.2.2.5.3 – Boards and glue

Element	Identification	Characteristics	Mounting and fixing
Board	GEOFLAM® N	Thickness: 35 mm Length: 1000 mm Width: See table 2	Installed to form a rectangular vertical form
Glue	GEOCOL®	Gypsum based adhesive, in powder form	Used for fixing of the board
Polochon (joint cover)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)	50 x 10 mm (W x T) (internal or external vertical or horizontal joints) 20 x 20 mm (internal corners)	Mix of plaster and vegetal fibres

A.2.2.5.4 Joints

A.2.2.5.4.1 Board joints

All internal and external joints are filled with GEOCOL® glue and finished with a joint cover made of a mixture of vegetable fibres and bonding plaster.

Specifications for the components are given in Table A.2.2.5.4.1.

Table A.2.2.5.4.1 – Joints

Element	Identification	Characteristics	Mounting and fixing
Glue	GEOCOL®	Gypsum based adhesive, in powder form	Applied with a spatula. The joints are completely filled up.
Polochon (joint cover)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)	50 x 10 mm (W x T) (internal or external vertical or horizontal joints) 20 x 20 mm (internal corners)	Mix of plaster and vegetal fibres

A.2.2.5.4.2 Penetration seal

The penetration dimensions will be less than the external dimensions of the duct + 50 mm. The gap between the penetration slab with a minimum of 150 mm and the duct is filled up with mineral wool (A1 classified according to EN 13501-1, density ≥ 26 kg/m³) or with a polyurethane foam. The gap can also be covered with a joint cover composed of a mixture of vegetable fibres and bonding plaster (see figure 2.1.5.5).

Specifications for the components are given in Table A.2.2.5.4.2.

Table A.2.2.5.4.2 – Penetration materials

Element	Identification	Characteristics	Mounting and fixing
Plugging/sealing material	Mineral wool	Density ≥ 26 kg/m³	Apply between the penetration wall and the duct (max 15 mm)
Plugging/sealing material	Polyurethane foam	SIKA BOOM (SIKA) SOADAFOAM FR (Soudal)	Apply between the penetration wall and the duct (max 25 mm)
Joint cover (Polochon)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)		Apply between the penetration slab and the duct (max 25 mm)

A.2.2.5.5 Details

All installation details shall be executed as presented in figure 2.2.5.1.

A.2.2.5.6 Field of direct application

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

- The internal dimensions of the ducts are between 0 mm and 1000 mm by between 0 mm and 1250 mm.
- The maximum height of the sections is 1200 mm
- The maximum distance between he penetrated floors supporting the GEOFLAM A fillets is 7000 mm
- The duct is installed vertically
- The ratio of the distance between the supports to the smallest lateral dimension of the duct's outer surface must not exceed 8:1
- The duct may penetrate concrete slabs, with a thickness superior to 150 mm and a fire resistance of at least 120 minutes

Annex 2.3: Horizontal and vertical ventilation ducts composed of GEOFLAM® N fire protective boards

A2.3.1 Date of addition to this ETA

This annex was added ETA 26/0426 on 13/10/2026. This assembly was not covered by this ETA prior to the addition of this annex.

A2.3.2 Classification

The assembly described in this annex has been tested according to EN 1366-1 and classified in accordance with EN 13501-3.

EI 120 ve ho (i ↔ o) S

A2.3.3 Installation requirements

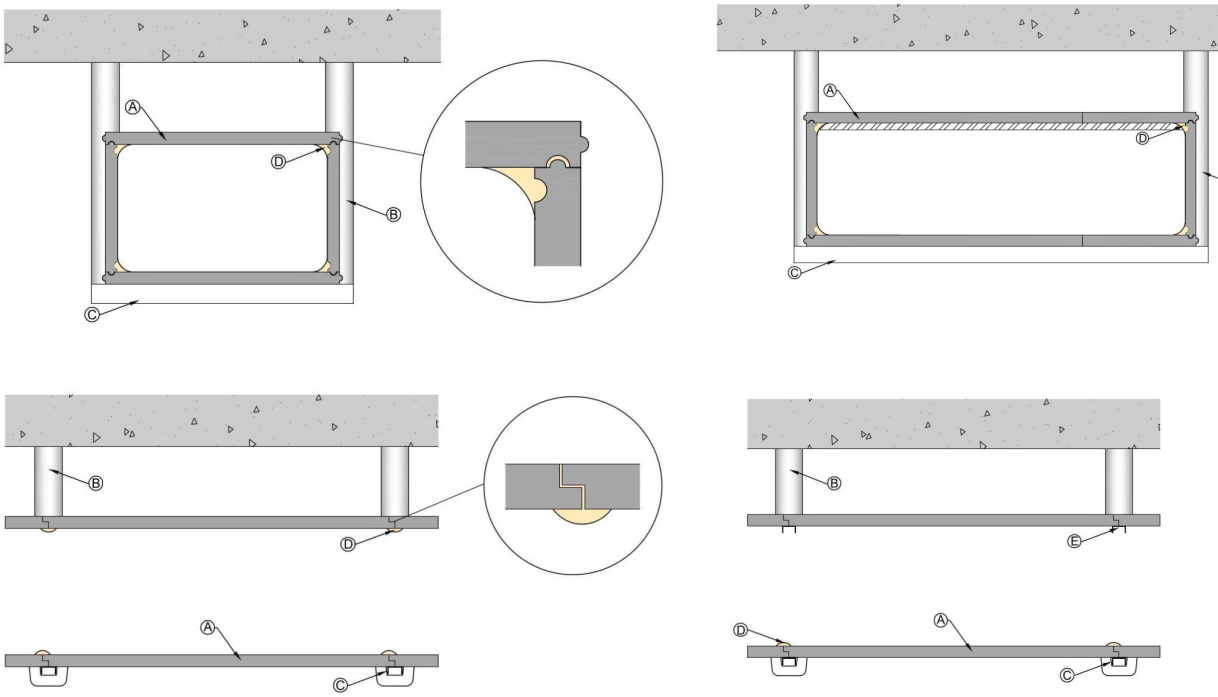
The installation provisions given in paragraph 2.4.2 of this ETA shall be taken into account.

A2.3.4 Horizontal ducts

A2.3.4.1 Supporting structure

The continuous self-supporting horizontal duct is composed of GEOFLAM® N fire protective boards (see paragraph A.2.3.4.3 for details of the duct composition). The duct penetrates walls with a minimum thickness of 110 mm (or a partition with an equivalent resistance to fire performance characteristics – see paragraph A.2.3.4.4 for details of penetration). The duct is supported by steel suspension system at maximum intervals of 1000 mm, as illustrated by figures 2.3.4.1.

Figure 2.3.4.1 – Horizontal duct composed of GEOFLAM® N fire protective boards



Sections composed of 4 boards

Sections composed of more than 4 boards

Legend:

A : GEOFLAM®N boards (with or without staggered joints)

B : Galvanized steel rods in a GEOFLAM®A fire protective half shell 80mm

C : U-shaped iron profile (41 x 21 x 2 mm) in a GEOFLAM®A fire protective U-profile 110 x 55 mm

D : internal or external "Polochon" (or joint cover)

E : U-shaped iron profile (41 x 21 x 2 mm) (to be protected when fire is expected at the inside of the duct

Table A2.3.4.1 – Components

Element	Identification	Characteristics	Mounting and fixing
Rods	Galvanized steel rods	M8	1000 mm centre distance
Steel U-profiles	Galvanized steel U-profiles	Dimensions : 41 x 21x 2 mm (W x H x T) Length : depending of the duct section (width + 50 mm)	1000 mm centre distance

When the duct is composed of more than 4 boards, an additional iron U-profile is to be positioned under the upper boards of the duct

A.2.3.4.2 Insulation

The galvanized steel rods are protected with fire protective shells (Ø 80 mm). The shells are composed of two half-pieces applied on the rods and fixed with glue.

The galvanized steel U-profiles are protected with fire protective U-profiles (110 x 55 mm).

Specifications for the components are given in Table A.2.3.4.2

Table A.2.3.4.2 – Insulation

Element	Identification	Characteristics	Mounting and fixing
Half-shells	GEOFLAM® A	Length: 1000 mm Diameter: Ø 80	Placed on steel rods and maintained with glue
U-profile protections	GEOFLAM® A	Length: 1000 mm Width: 110 mm Thickness: 55 mm	Placed on steel U-profiles and maintained with glue
glue	Geocol (GEOSTAFF) PF3 (Siniat) PLACOL 1H (PLACO BPB)		

A.2.3.4.3 Fire protective boards

The GEOFLAM® N boards are placed to form a continuous horizontal duct (see figures 2.3.4.1).

The boards are fixed together with GEOCOL® glue (or equivalent, see table A2.3.4.3)) or equivalent at all edges and in the rabbets.

Specifications for the components are given in Table A.2.3.4.3.

Table A.2.3.4.3 – Boards and glue

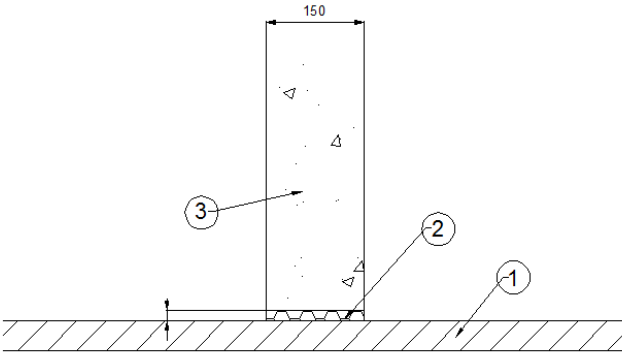
Element	Identification	Characteristics	Mounting and fixing
Board	GEOFLAM® N	Thickness: 35 mm Length: 1000 mm Width: See table 2	Installed to form a rectangular horizontal duct
Glue	Geocol (GEOSTAFF) PF3 (Siniat) PLACOL 1H (PLACO BPB)	Gypsum based adhesive, in powder form	Used for fixing of the board
Polochon (joint cover)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)	50 x 10 mm (W x T) (internal or external vertical or horizontal joints) 20 x 20 mm (internal corners)	Mix of plaster and vegetal fibres

A.2.3.4.4 Wall penetration

A.2.3.4.4.1 Penetration seal

The penetration will be less than the external dimensions of the duct + 50 mm. The gap between the penetration wall with a minimum of 110 mm and the duct is filled up with mineral wool (A1 classified according to EN 13501-1, density ≥ 26 kg/m³) or with a polyurethane foam. The gap can also be covered with a joint cover composed of a mixture of vegetable fibres and bonding plaster (see figure 2.3.4.4.1).

Figure 2.3.4.4.1 – Wall penetration details



Legend:

① : GEOFLAM® N boards

② : gap (max 15 mm) to be filled with mineral wool, density ≥ 26 kg/m³ (see table A.2.3.4.4.1)

Or gap (max 25 mm) to be filled with mixture of vegetable fibres and bonding plaster or polyurethane foam (see table A.2.3.4.4.1)

③ : Penetration wall

Specifications for the components are given in Table A.2.3.4.4.1.

Table A.2.3.4.4.1 – Penetration materials

Element	Identification	Characteristics	Mounting and fixing
Plugging/sealing material	Mineral wool	Density ≥ 26 kg/m³	Apply between the penetration wall and the duct (max 15 mm)
Plugging/sealing material	Polyurethane foam	SIKA BOOM (SIKA) SOADAFOAM FR (Soudal)	Apply between the penetration wall and the duct (max 25 mm)
Joint cover (Polochon)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)		Apply between the penetration wall and the duct (max 25 mm)

A.2.3.4.5 Details

All installation details shall be executed as presented in figures 2.3.4.1. and 2.3.4.3.

A.2.3.4.6 Field of direct application

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

- The internal dimensions of the ducts are between 0 mm and 1250 mm in width by between 0 mm and 1000 mm in height.
- The maximum length of the sections is 1000 mm
- The negative or positive pressure of 500Pa shall not be exceeded in case of fire.
- The duct is installed horizontally
- The duct may penetrate walls made of concrete, with a thickness superior to 110 mm and a density superior to 550 kg/m³
- The tensions in the supporting structure are limited as follows

Table A.2.3.4.6 – Stresses

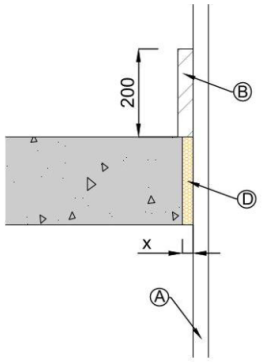
	Maximum allowed stresses
	(N/mm²)
Tensile stresses in all vertically oriented elements	6
Shear stress on the screws of property class 4.6 according to EN ISO 898-1	10
Note: the stresses are calculated for the supported load only (and neglecting the assembly loads)	

A.2.3.5 Vertical ducts

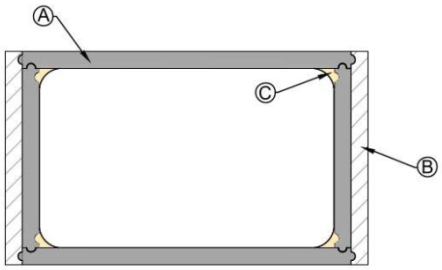
A.2.3.5.1 Supporting structure

The continuous self-supporting vertical duct is composed of GEOFLAM® N fire protective boards (see paragraph A.2.3.5.3 for details of the duct composition). Each duct section is composed of at least 4 boards. The duct penetrates concrete slabs with a minimum thickness of 150 mm (see paragraph A.2.3.5.4.2 for details of penetration). The duct starts at ground level and penetrates a steel reinforced concrete slab (or a floor slab with an equivalent resistance to fire performance characteristics) with a minimum thickness of 150 mm. At the opening in the floor, the duct is supported by board fillets on two parallels sides (see figure 2.3.5.1). For sections composed of 4 boards, these fillets are glued to the smaller sides of the duct. When the duct section is composed of more than 4 boards, the fillets are glued to the sides composed of 2 boards. The fillets are glued using the glue Geocol.

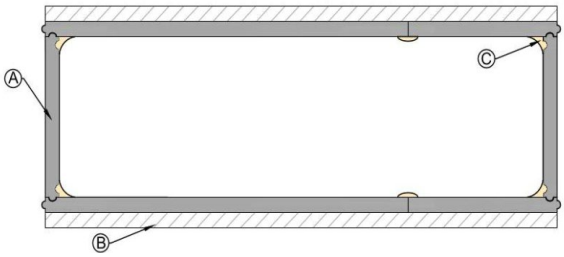
Figure 2.3.5.1 – Vertical duct composed of GEOFLAM® N fire protective boards



Detail of a floor penetration



Sections composed of 4 boards



Sections composed of more than 4 boards

Legend :

A : GEOFLAM® N boards

B : GEOFLAM® A board fillets 35 x 200 mm flued on the smaller sides of the ducts composed of 4 boards and on at least the langer sides of the ducts composed of more than 4 boards. The fillets are resting on the penetrated floor.

C : internal or external "Polochon" (or joint cover)

D : gap (max 15 mm) to be filled with mineral wool, density ≥ 26 kg/m³ (see table A.2.3.5.3)

Or gap (max 25 mm) to be filled with mixture of vegetable fibres and bonding plaster or with polyurethane foam (see table A.2.3.5.4.2)

Specifications for the components are given in Table A.2.3.5.1.

Table A.2.3.5.1 – Supporting structure

Element	Identification	Characteristics	Mounting and fixing
Board fillet	GEOFLAM® A	Thickness : 35 mm Height : 200 mm	Glued on the duct and only supported on the concrete floor
Glue	GEOCOL®	Gypsum based adhesive, in powder form	Used for fixing of the board fillets on the duct

NB: maximum height without supporting structure: 7 m (with board fillets on two parallels sides)

A.2.3.5.2 Insulation

None.

A.2.3.5.3 Fire protective boards

The GEOFLAM® N boards are placed to form a continuous vertical duct (see figures 2.3.5.1).

The boards are fixed together with GEOCOL® glue at all edges and in the rabbets.

Maximum dimensions of duct are 1250 mm by 1000 mm (internal dimensions)

Specifications for the components are given in Table A.2.3.5.3.

Table A.2.3.5.3 – Boards and glue

Element	Identification	Characteristics	Mounting and fixing
Board	GEOFLAM® N	Thickness: 35 mm Length: 1000 mm Width: See table 2	Installed to form a rectangular vertical form
Glue	GEOCOL®	Gypsum based adhesive, in powder form	Used for fixing of the board
Polochon (joint cover)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)	50 x 10 mm (W x T) (internal or external vertical or horizontal joints) 20 x 20 mm (internal corners)	Mix of plaster and vegetal fibres

A.2.3.5.4 Joints

A.2.3.5.4.1 Board joints

All internal and external joints are filled with GEOCOL® glue and finished with a joint cover made of a mixture of vegetable fibres and bonding plaster.

Specifications for the components are given in Table A.2.3.5.4.1.

Table A.2.3.5.4.1 – Joints

Element	Identification	Characteristics	Mounting and fixing
Glue	GEOCOL®	Gypsum based adhesive, in powder form	Applied with a spatula. The joints are completely filled up.
Polochon (joint cover)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)	50 x 10 mm (W x T) (internal or external vertical or horizontal joints) 20 x 20 mm (internal corners)	Mix of plaster and vegetal fibres

A.2.3.5.4.2 Penetration seal

The penetration will be less than the external dimensions of the duct + 50 mm. The gap between the penetration slab with a minimum of 150 mm and the duct is filled up with mineral wool (A1 classified according to EN 13501-1, density ≥ 26 kg/m³) or with a polyurethane foam. The gap can also be covered with a joint cover composed of a mixture of vegetable fibres and bonding plaster (see figure 2.3.5.1).

Specifications for the components are given in Table A.2.2.5.4.2.

Table A.2.3.5.4.2 – Penetration materials

Element	Identification	Characteristics	Mounting and fixing
Plugging/sealing material	Mineral wool	Density ≥ 26 kg/m³	Apply between the penetration wall and the duct (max 15 mm)
Plugging/sealing material	Polyurethane foam	SIKA BOOM (SIKA) SOADAFOAM FR (Soudal)	Apply between the penetration wall and the duct (max 25 mm)
Joint cover (Polochon)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)		Apply between the penetration slab and the duct (max 25 mm)

A.2.3.5.5 Details

All installation details shall be executed as presented in figure 2.3.5.1.

A.2.3.5.6 Field of direct application

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

- The internal dimensions of the ducts are between 0 mm and 1000 mm by between 0 mm and 1250 mm.
- The maximum height of the sections is 1200 mm
- The maximum distance between he penetrated floors supporting the GEOFLAM A fillets is 7000 mm
- The duct is installed vertically
- The ratio of the distance between the supports to the smallest lateral dimension of the duct's outer surface must not exceed 8:1
- The negative or positive pressure of 500Pa shall not be exceeded in case of fire.
- The duct may penetrate concrete slabs, with a thickness superior to 150 mm and a density superior to 650 kg/m³

Annex 2.4: Horizontal and vertical smoke extraction ducts composed of GEOFLAM® N fire protective boards

A.2.4.1 Date of addition to this ETA

This annex was added ETA 26/0426 on 13/10/2026. This assembly was not covered by this ETA prior to the addition of this annex.

A.2.4.2 Classification

The assembly described in this annex has been tested according to EN 1366-8 and classified in accordance with EN 13501-4.

EI 120 (v_e – h_o) S1500multi

A.2.4.3 Installation requirements

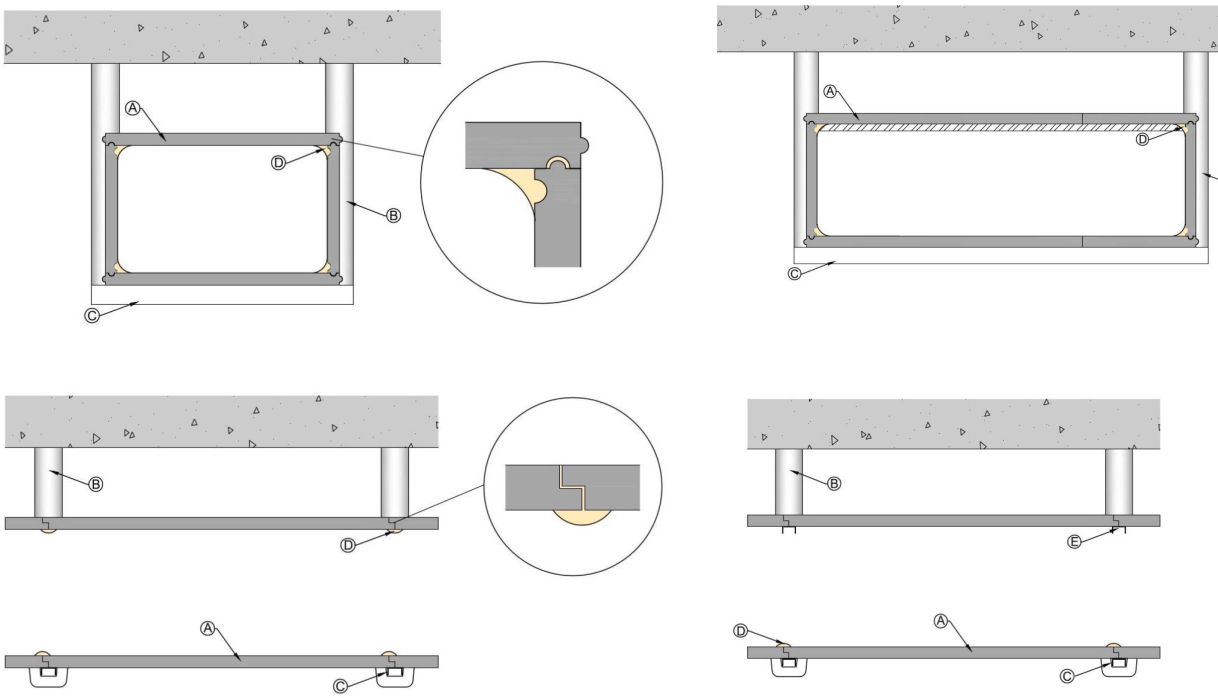
The installation provisions given in paragraph 2.4.2 of this ETA shall be taken into account.

A.2.4.4 Horizontal ducts

A.2.4.4.1 Supporting structure

The continuous self-supporting horizontal duct is composed of GEOFLAM® N fire protective boards (see paragraph A.2.4.4.3 for details of the duct composition). The duct penetrates walls with a minimum thickness of 110 mm (or a partition with an equivalent resistance to fire performance characteristics – see paragraph A.2.4.4.4 for details of penetration). The duct is supported by steel suspension system at maximum intervals of 1000 mm, as illustrated by figures 2.4.4.1.

Figure 2.4.4.1 – Horizontal duct composed of GEOFLAM® N fire protective boards



Sections composed of 4 boards

Sections composed of more than 4 boards

Legend:

A : GEOFLAM®N boards (with or without staggered joints)

B : Galvanized steel rods in a GEOFLAM®A fire protective half shell 80mm

C : U-shaped iron profile (41 x 21 x 2 mm) in a GEOFLAM®A fire protective U-profile 110 x 55 mm

D : internal or external "Polochon" (or joint cover)

E : U-shaped iron profile (41 x 21 x 2 mm) (to be protected when fire is expected at the inside of the duct

Table A2.4.4.1 – Components

Element	Identification	Characteristics	Mounting and fixing
Rods	Galvanized steel rods	M8	1000 mm centre distance
Steel U-profiles	Galvanized steel U-profiles	Dimensions : 41 x 21x 2 mm (W x H x T) Length : depending of the duct section (width + 50 mm)	1000 mm centre distance

When the duct is composed of more than 4 boards, an additional iron U-profile is to be positioned under the upper boards of the duct

A.2.4.4.2 Insulation

The galvanized steel rods are protected with fire protective shells (Ø 80 mm). The shells are composed of two half-pieces applied on the rods and fixed with glue.

The galvanized steel U-profiles are protected with fire protective U-profiles (110 x 55 mm).

Specifications for the components are given in Table A.2.4.4.2

Table A.2.4.4.2 – Insulation

Element	Identification	Characteristics	Mounting and fixing
Half-shells	GEOFLAM® A	Length: 1000 mm Diameter: Ø 80	Placed on steel rods and maintained with glue
U-profile protections	GEOFLAM® A	Length: 1000 mm Width: 110 mm Thickness: 55 mm	Placed on steel U-profiles and maintained with glue
glue	Geocol (GEOSTAFF) PF3 (Siniat) PLACOL 1H (PLACO BPB)		

A.2.4.4.3 Fire protective boards

The GEOFLAM® N boards are placed to form a continuous horizontal duct (see figures 2.4.4.1).

The boards are fixed together with GEOCOL® glue (or equivalent, see table A2.4.4.3)) or equivalent at all edges and in the rabbets.

Specifications for the components are given in Table A.2.4.4.3.

Table A.2.4.4.3 – Boards and glue

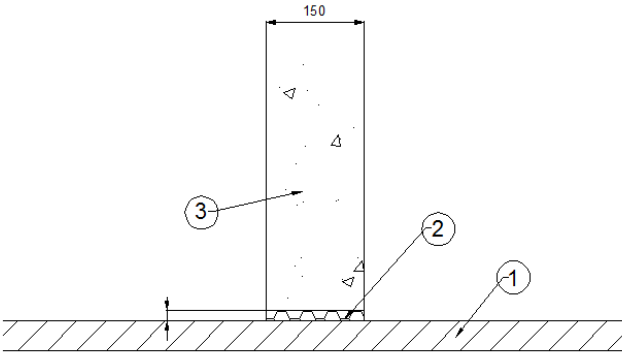
Element	Identification	Characteristics	Mounting and fixing
Board	GEOFLAM® N	Thickness: 35 mm Length: 1000 mm Width: See table 2	Installed to form a rectangular horizontal duct
Glue	Geocol (GEOSTAFF) PF3 (Siniat) PLACOL 1H (PLACO BPB)	Gypsum based adhesive, in powder form	Used for fixing of the board
Polochon (joint cover)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)	50 x 10 mm (W x T) (internal or external vertical or horizontal joints) 20 x 20 mm (internal corners)	Mix of plaster and vegetal fibres

A.2.4.4.4 Wall penetration

A.2.4.4.4.1 Penetration seal

The penetration will be less than the external dimensions of the duct + 50 mm. The gap between the penetration wall with a minimum of 110 mm and the duct is filled up with mineral wool (A1 classified according to EN 13501-1, density ≥ 26 kg/m³) or with a polyurethane foam. The gap can also be covered with a joint cover composed of a mixture of vegetable fibres and bonding plaster (see figure 2.4.4.4.1).

Figure 2.4.4.4.1 – Wall penetration details



Legend:

① : GEOFLAM® N boards

② : gap (max 15 mm) to be filled with mineral wool, density ≥ 26 kg/m³ (see table A.2.4.4.4.1)

Or gap (max 25 mm) to be filled with mixture of vegetable fibres and bonding plaster or polyurethane foam (see table A.2.4.4.4.1)

③ : Penetration wall

Specifications for the components are given in Table A.2.4.4.4.1.

Table A.2.4.4.4.1 – Penetration materials

Element	Identification	Characteristics	Mounting and fixing
Plugging/sealing material	Mineral wool	Density ≥ 26 kg/m³	Apply between the penetration wall and the duct (max 15 mm)
Plugging/sealing material	Polyurethane foam	SIKA BOOM (SIKA) SOADAFOAM FR (Soudal)	Apply between the penetration wall and the duct (max 25 mm)
Joint cover (Polochon)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)		Apply between the penetration wall and the duct (max 25 mm)

A.2.4.4.5 Details

All installation details shall be executed as presented in figures 2.4.4.1. and 2.4.4.3.

A.2.4.4.6 Field of direct application

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

- The internal dimensions of the ducts are between 0 mm and 1250 mm in width by between 0 mm and 1000 mm in height.
- The maximum length of the sections is 1000 mm
- The duct is installed horizontally
- The duct may penetrate walls made of bricks or concrete, with a thickness superior to 110 mm and a density superior to 550 kg/m³
- The tensions in the supporting structure are limited as follows

Table A.2.4.4.6 – Stresses

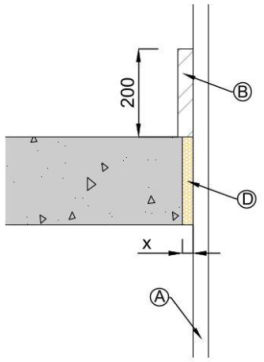
	Maximum allowed stresses
	(N/mm²)
Tensile stresses in all vertically oriented elements	6
Shear stress on the screws of property class 4.6 according to EN ISO 898-1	10
Note: the stresses are calculated for the supported load only (and neglecting the assembly loads)	

A.2.4.5 Vertical ducts

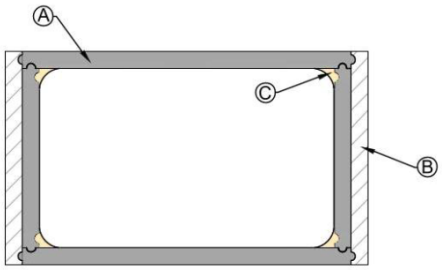
A.2.4.5.1 Supporting structure

The continuous self-supporting vertical duct is composed of GEOFLAM® N fire protective boards (see paragraph A.2.4.5.3 for details of the duct composition). Each duct section is composed of at least 4 boards. The duct penetrates concrete slabs with a minimum thickness of 150 mm (see paragraph A.2.4.5.4.2 for details of penetration). The duct starts at ground level and penetrates a steel reinforced concrete slab (or a floor slab with an equivalent resistance to fire performance characteristics) with a minimum thickness of 150 mm. At the opening in the floor, the duct is supported by board fillets on two parallels sides (see figure 2.4.5.1). For sections composed of 4 boards, these fillets are glued to the smaller sides of the duct. When the duct section is composed of more than 4 boards, the fillets are glued to the sides composed of 2 boards. The fillets are glued using the glue Geocol.

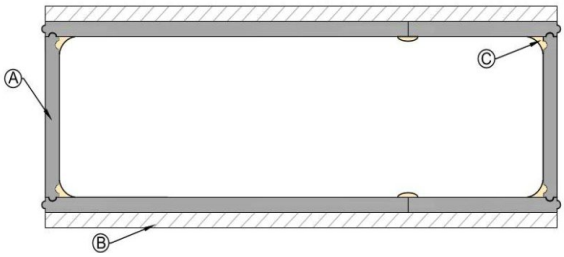
Figure 2.4.5.1 – Vertical duct composed of GEOFLAM® N fire protective boards



Detail of a floor penetration



Sections composed of 4 boards



Sections composed of more than 4 boards

Legend :

A : GEOFLAM® N boards

B : GEOFLAM® A board fillets 35 x 200 mm flued on the smaller sides of the ducts composed of 4 boards and on at least the langer sides of the ducts composed of more than 4 boards. The fillets are resting on the penetrated floor.

C : internal or external "Polochon" (or joint cover)

D : gap (max 15 mm) to be filled with mineral wool, density ≥ 26 kg/m³ (see table A.2.4.5.3)

Or gap (max 25 mm) to be filled with mixture of vegetable fibres and bonding plaster or with polyurethane foam (see table A.2.4.5.4.2)

Specifications for the components are given in Table A.2.4.5.1.

Table A.2.4.5.1 – Supporting structure

Element	Identification	Characteristics	Mounting and fixing
Board fillet	GEOFLAM® A	Thickness : 35 mm Height : 200 mm	Glued on the duct and only supported on the concrete floor
Glue	GEOCOL®	Gypsum based adhesive, in powder form	Used for fixing of the board fillets on the duct

NB: maximum height without supporting structure: 7 m (with board fillets on two parallels sides)

A.2.4.5.2 Insulation

None.

A.2.4.5.3 Fire protective boards

The GEOFLAM® N boards are placed to form a continuous vertical duct (see figures 2.4.5.1).

The boards are fixed together with GEOCOL® glue at all edges and in the rabbets.

Maximum dimensions of duct are 1250 mm by 1000 mm (internal dimensions)

Specifications for the components are given in Table A.2.4.5.3.

Table A.2.4.5.3 – Boards and glue

Element	Identification	Characteristics	Mounting and fixing
Board	GEOFLAM® N	Thickness: 35 mm Length: 1000 mm Width: See table 2	Installed to form a rectangular vertical form
Glue	GEOCOL®	Gypsum based adhesive, in powder form	Used for fixing of the board
Polochon (joint cover)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)	50 x 10 mm (W x T) (internal or external vertical or horizontal joints) 20 x 20 mm (internal corners)	Mix of plaster and vegetal fibres

A.2.4.5.4 Joints

A.2.4.5.4.1 Board joints

All internal and external joints are filled with GEOCOL® glue and finished with a joint cover made of a mixture of vegetable fibres and bonding plaster.

Specifications for the components are given in Table A.2.4.5.4.1.

Table A.2.4.5.4.1 – Joints

Element	Identification	Characteristics	Mounting and fixing
Glue	GEOCOL®	Gypsum based adhesive, in powder form	Applied with a spatula. The joints are completely filled up.
Polochon (joint cover)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)	50 x 10 mm (W x T) (internal or external vertical or horizontal joints) 20 x 20 mm (internal corners)	Mix of plaster and vegetal fibres

A.2.4.5.4.2 Penetration seal

The penetration will be less than the external dimensions of the duct + 50 mm. The gap between the penetration slab with a minimum of 150 mm and the duct is filled up with mineral wool (A1 classified according to EN 13501-1, density ≥ 26 kg/m3) or with a polyurethane foam. The gap can also be covered with a joint cover composed of a mixture of vegetable fibres and bonding plaster (see figure 2.4.5.5).

Specifications for the components are given in Table A.2.4.5.4.2.

Table A.2.4.5.4.2 – Penetration materials

Element	Identification	Characteristics	Mounting and fixing
Plugging/sealing material	Mineral wool	Density ≥ 26 kg/m^3	Apply between the penetration wall and the duct (max 15 mm)
Plugging/sealing material	Polyurethane foam	SIKA BOOM (SIKA) SOADAFOAM FR (Soudal)	Apply between the penetration wall and the duct (max 25 mm)
Joint cover (Polochon)	GEOPLATRE N (GEOSTAFF) TRADITION (SINIAT) MOLDA DUO (PLACO BPB) MOLDA N°3 (PLACO BPB)		Apply between the penetration slab and the duct (max 25 mm)

A.2.4.5.5 Details

All installation details shall be executed as presented in figure 2.4.5.1.

A.2.4.5.6 Field of direct application

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

- The internal dimensions of the ducts are between 0 mm and 1000 mm by between 0 mm and 1250 mm.
- The maximum height of the sections is 1200 mm
- The maximum distance between he penetrated floors supporting the GEOFLAM A fillets is 7000 mm
- The duct is installed vertically
- The ratio of the distance between the supports to the smallest lateral dimension of the duct's outer surface must not exceed 8:1
- The duct may penetrate concrete slabs, with a thickness superior to 150 mm and a density superior to 650 kg/m³