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European Technical Assessment

ETA 22/0150
of 22.04.2022

General part

Technical Assessment Body issuing the ETA: ITeC ITeC 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	**CONLIT DUCT 120**
Product family to which the construction product belongs	Fire protective products.
Manufacturer	**ROCKWOOL PENINSULAR SAU** Polígono Industrial de Caparroso Ctra. Nacional 121, km 53,5 ES-31380 Caparroso (Navarra) Spain
Manufacturing plant(s)	According to Annex N kept by ITeC.
This European Technical Assessment contains	16 pages including 2 annexes which form an integral part of this assessment and Annex N, which contains confidential information and is not included in the European Technical Assessment when that assessment is publicly available.
This European Technical Assessment is issued in accordance with Regulation (EU) 305/2011, on the basis of	European Assessment Document EAD 350142-00-1106.

General comments

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es)).

Specific parts of the European Technical Assessment

1 Technical description of the product

CONLIT DUCT 120 is a fire protective slab made of rock wool[1] impregnated with a synthetic binder, faced on one side with a reinforced aluminium foil. CONLIT DUCT 120 is CE marked according to EN 14303[2].

Table 1: Dimensions and density CONLIT DUCT 120.

Characteristic	Nominal value	Tolerance
Density (kg/m^3) at 23ºC, 50% RH	180	± 10 %
Length (mm)	1200	± 5
Width (mm)	1000	± 5
Thickness (mm)	90	-1/+3

Assembled systems require additional products for their installation, as described in the annexes of this ETA. These products cannot be CE marked on its basis, nor the installed system as a whole.

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

CONLIT DUCT 120 is intended for the fire protection of ventilation rectangular steel ducts and multi-compartment smoke extraction rectangular steel ducts, i.e. category according to section 1.2.2 of EAD 350142-00-1106:

- Type 9: Fire protective products that contribute to the fire resistance of technical services assemblies in buildings.

The environmental use conditions assessed correspond to the following use category according to section 1.2.3 of EAD 350142-00-1106:

- Type Z_2: Internal conditions excluding temperatures below 0°C, with humidity below 85% RH.

The provisions made in this ETA are based on a working life of the product of at least 25 years, provided that the conditions laid down in the manufacturer's instructions for the installation, use and maintenance are met. These provisions are based upon the current state of the art and the available knowledge and experience.

The indications given as to the working life cannot be interpreted as a guarantee given by the manufacturer or Assessment Body 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 works.

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[1] Manufactured fibres of CONLIT DUCT 120 are certified by EUCEB in conformity with the Note Q of Regulation (EC) No 1272/2008.

[2] EN 14303 Thermal insulation products for building equipment and industrial installations. Factory made mineral wool (MW) products. Specification.

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

3.1 Performance of the product

The assessment of CONLIT DUCT 120 has been performed in accordance with EAD 350142-00-1106 *Fire protective board, slab and mat products and kits (September 2017)*.

Table 2: Performance of the product.

Product: CONLIT DUCT 120			**Intended use:** Fire protective product
Basic requirement	**Essential characteristic**		**Performance**
BWR 2 Safety in case of fire	Reaction to fire		A1
	Resistance to fire	Ventilation	EI 120 (ve-ho i ↔ o) S
		Smoke extraction	EI 120 (ve-ho) S 500 multi
	Durability		Type Z_2
BWR 6 Energy economy and heat retention	Thermal conductivity, $\lambda_{10,dry}$		0,038 W/(m·K)

The rest of characteristics included in EAD 350142-00-1106 have not been assessed in this ETA.

3.2 Methods used for the assessment

3.2.1 Reaction to fire

The performance of CONLIT DUCT 120 has been tested according to EN ISO 1182[3], EN ISO 1716[4] and EN 13823[5].

Classification is given in accordance with EN 13501-1[6] and Regulation (EU) 2016/364.

3.2.2 Resistance to fire

The fire resistance performance has been determined following the test and assessment methods given in Annex A for ventilation ducts and Annex B for multi-compartment smoke extraction ducts.

Classification is given in accordance with EN 13501-3[7] for ventilation ducts and EN 13501-4[8] for multi-compartment smoke extraction ducts.

3.2.3 Durability

The durability of CONLIT DUCT 120 has been assessed for Type Z_2 conditions in accordance with section 2.2.2.3 of EAD 350142-00-1106 and EN 14303.

3.2.4 Thermal conductivity

The thermal conductivity of CONLIT DUCT 120 has been tested in accordance with EN 12667[9].

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[3] EN ISO 1182 Reaction to fire tests for products. Non-combustibility test.

[4] EN ISO 1716 Reaction to fire tests for products. Determination of the gross heat of combustion (calorific value).

[5] EN 13823 Reaction to fire tests for building products. Building products excluding floorings exposed to the thermal attack by a single burning item.

[6] EN 13501-1 Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests.

[7] EN 13501-3 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.

[8] EN 13501-4 Fire classification of construction products and building elements. Part 4: Classification using data from fire resistance tests on components of smoke control Systems.

[9] EN 12667 Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance.

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

According to the Decision 1999/454/EC of the European Commission, the system of AVCP (see EC delegated Regulation (EU) No 568/2014 amending Annex V to Regulation (EU) 305/2011) given in the following table applies.

Table 3: AVCP System.

Product(s)	Intended use(s)	Level(s) or class(es)	System(s)
Fire protective products	For fire compartmentation and/or fire protection or fire performance	Any	1

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

All the necessary technical details for the implementation of the AVCP system are laid down in the Control Plan deposited with the ITeC and agreed in accordance with EAD 350142-00-1106, section 3.

The Control Plan is a confidential part of the ETA and only handed over to the notified product certification body involved in the assessment and verification of constancy of performance.

The factory production control operated by the manufacturer shall be in accordance with the above-mentioned Control Plan.

Issued in Barcelona on 22 April 2022

by the Catalonia Institute of Construction Technology.

Ferran Bermejo Nualart
Technical Director, ITeC

ANNEX A. Specification and assessment of ventilation rectangular ducts fire protected with CONLIT DUCT 120

A.1 Horizontal ventilation duct

A.1.1 Resistance to fire performance

The ventilation duct assembly as shown in Figure 1 has been tested and assessed according to EN 1366-1[10] and has a resistance to fire performance of EI 120 (ho i ↔ o) S classified in accordance with EN 13501-3.

A.1.2 Installation requirements

The provisions given in this ETA, which are based on the tests performed, should be followed. However, the range of installed systems will vary depending on the design of the ventilation ductwork and, therefore, the system installation should be carried out in accordance with the manufacturer's instructions.

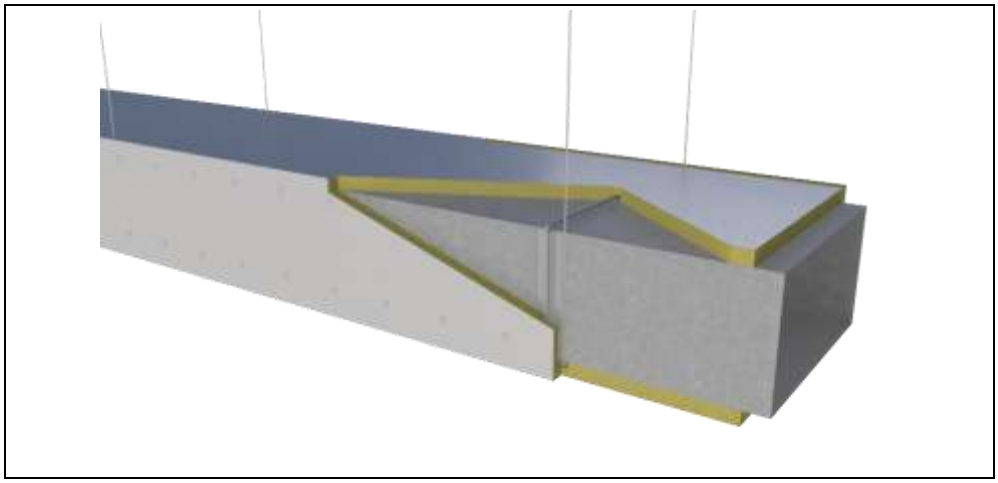


Figure A.1.1: General view of the fire protected horizontal ventilation duct.

A.1.2.1 Duct

Rectangular steel duct of tightness class B or better, according to EN 1507[11], made from folded 0,9 mm thickness sheets. The maximum dimensions of internal duct section are 1250 mm x 1000 mm (width x height) and the segment length 1500 mm.

Each duct segment has 1 internal stiffener positioned at midpoint of the segment. The stiffeners consist of galvanised steel threaded rods M8 within a galvanised steel tube of Ø15 mm and thickness 1,5 mm, fixed to the duct using dowels.

[10] EN 1366-1 Fire resistance tests for service installation. Part 1: Ducts.

[11] EN 1507 Ventilation for buildings. Sheet metal air ducts with rectangular section. Requirements for strength and leakage.

The joints between duct segments consist of steel flanges Lindab type Metu 20, or equivalent, held together with a joining profile Lindab type RJFP 20. EPDM sealing tape of 5 mm x 15 mm and sealing grease are installed between the flanges. In the corners, the flanges are fitted with corner profiles held together using M8 bolts, while the longitudinal duct joint is sealed between the plates.

Duct side branches, T-pieces or direction changing pieces can be installed according to the manufacturer's instructions.

The duct is assessed to work at a pressure difference between – 500 Pa to + 500 Pa.

A.1.2.2 Duct suspension elements

The steel duct suspension elements will be designed and positioned in accordance with section 13.6.1 of EN 1366-1 and section 9.2.2 of EN 15882-1[12] to limit the maximum stresses in the rods and fixings to the values given in Table 7 of EN 1366-1.

As a tested reference, shown in Figure A.1.2, the duct is suspended with hangers consisting of steel rods at maximum stress of 5 MPa. The distance from the rods to the vertical side of the duct is 10 mm approximately. The largest distance between suspension elements is 1500 mm, with at least one suspension element per duct segment. The hangers and support profile are positioned at approximately 50 mm from the duct joints. The suspension elements are protected by the duct fire protective insulation as described in section A.1.2.3 and Figure A.1.4.

Figure A.1.2: General view of the steel duct and suspension elements.

A.1.2.3 Fire protective insulation

The duct is cladded with CONLIT DUCT 120 according to section 1 of this ETA. The horizontal slabs are fitted between the vertical slabs. The slabs are fixed to the duct using steel welding pins of diameter 3 mm and length 90 mm, and 30 mm washers, as shown in Figure A.1.3. The maximum distance between pins is 350 mm in the duct longitudinal direction and, in the transversal direction, 300 mm at the bottom side and 400 mm at the lateral sides. The distance of the pins to the duct edges or slab joints is 50 mm. The slabs on the upper side of the duct are installed without pins.

All slab-to-slab joints are glued with CONLIT Glue and covered with aluminium self-adhesive tape.

[12] Extended application of results from fire resistance tests for service installations. Part 1: Ducts.

The slabs are hollowed out to place the suspension elements and the duct joints as shown in Figure A.1.4.

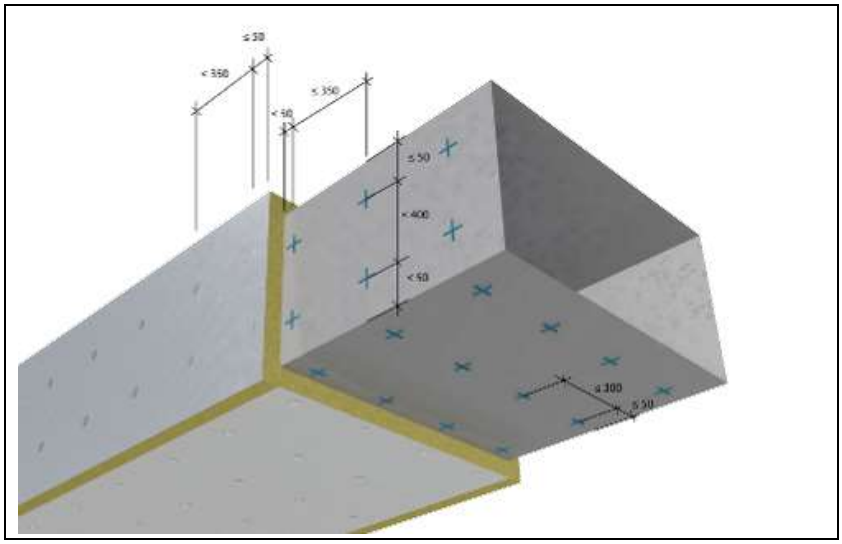


Figure A.1.3: Detail of the welding pins position.

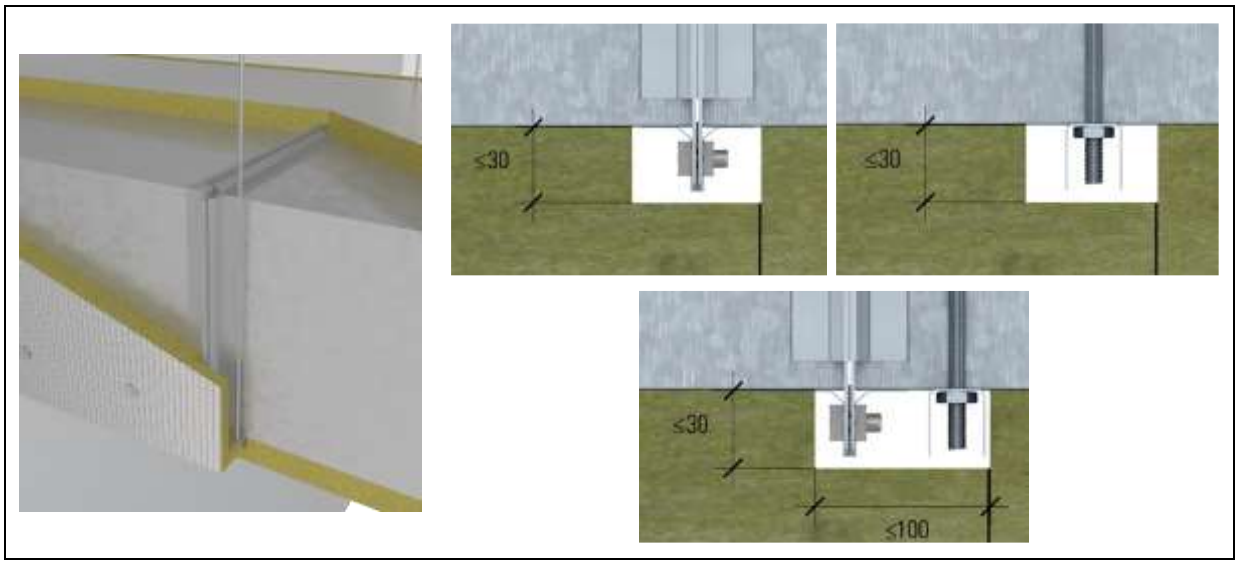


Figure A.1.4: Fire protective insulation covering suspension elements and the duct joints.

A.1.2.4 Supporting construction

The duct can pass a flexible or rigid wall with a minimum thickness of 130 mm and a minimum resistance to fire EI 120.

A.1.2.5 Wall penetration seal

The penetration seal is shown in Figure A.1.6.

The gap between the duct fire protective insulation and the supporting construction is 20 mm maximum. In the case of a flexible wall, the opening frame is made of the transoms and mullions of the wall framework, as shown in Figure A.1.5.

The insulated duct is reinforced at the four sides with steel U-profiles (60,0 mm x 25,0 mm x 1,6 mm) installed on the fire protective insulation at approximately 20 mm from the wall surface, at both sides of the wall. The U-profile flanges are inserted into slits cut in the insulation and fixed to the steel duct with Ø4,8 mm x 100 mm self-tapping steel screws, every 200 mm at the duct horizontal sides and every 150 mm at the duct vertical sides (at least 2 screws per U-profile).

The gap between the duct fire protective insulation and the supporting construction is fitted with strips of rock wool slab of minimum density 30 kg/m^3 and sealed with CONLIT Glue.

A collar made of CONLIT DUCT 120 strips (minimum width 100 mm and thickness 90 mm) is installed around the insulated duct at both sides of the wall. The strips are glued to the wall using CONLIT Glue and temporary fixed with nails to the duct insulation during the installation. The collar will completely cover the reinforcement U-profiles above described.

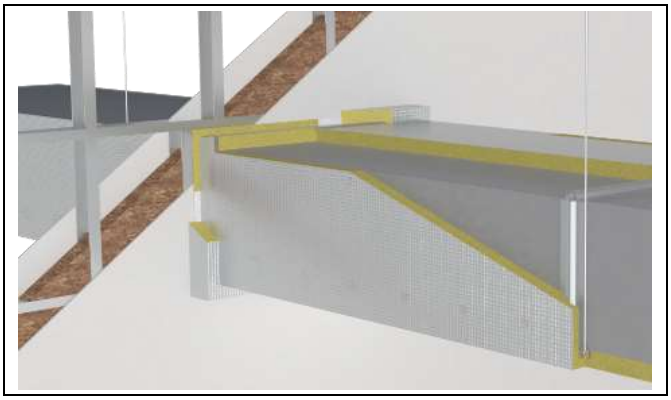
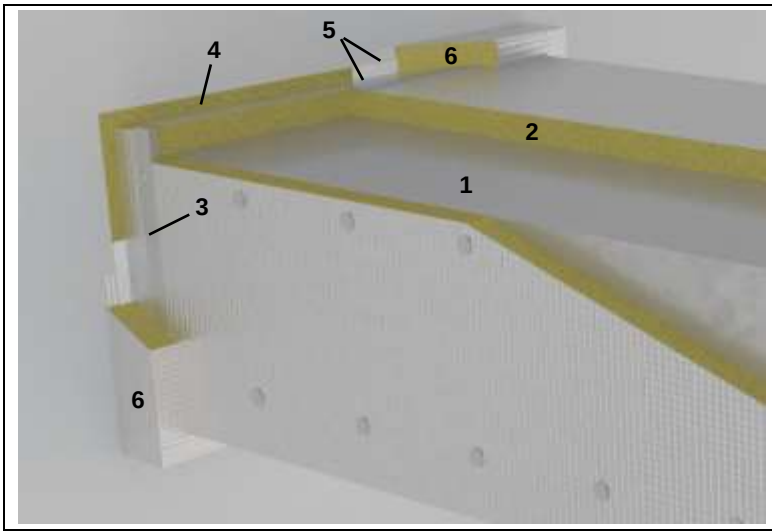


Figure A.1.5: Duct pass through a flexible wall.



1. Steel duct.
2. Fire protective insulation CONLIT DUCT 120.
3. Reinforcement U-profiles.
4. Rock wool strips.
5. CONLIT Glue.
6. Collar of CONLIT DUCT 120 strips.

Figure A.1.6: Detail of the duct penetration seal.

A.2 Vertical ventilation duct

A.2.1 Resistance to fire performance

The ventilation duct assembly has been tested and assessed according to EN 1366-1 and has a resistance to fire performance of EI 120 (ve i ↔ o) S classified in accordance with EN 13501-3.

A.2.2 Installation requirements

The provisions given in this ETA, which are based on the tests performed, should be followed. However, the range of installed systems will vary depending on the design of the ventilation ductwork and, therefore, the system installation should be carried out in accordance with the manufacturer's instructions.

A.2.2.1 Duct

Rectangular steel duct of tightness class B or better, according to EN 1507, made from folded 0,9 mm thickness sheets. The maximum dimensions of internal duct section are 1250 mm x 1000 mm and the segment length 1500 mm.

Each duct segment has 1 internal stiffener positioned at midpoint of the segment. The stiffeners consist of galvanised steel threaded rods M8 within a galvanised steel tube of Ø15 mm and thickness 1,5 mm, fixed to the duct using dowels.

The joints between duct segments consist of steel flanges Lindab type Metu 20, or equivalent, held together with a joining profile Lindab type RJFP 20. EPDM sealing tape of 5 mm x 15 mm and sealing grease are installed between the flanges. In the corners, the flanges are fitted with corner profiles held together using M8 bolts, while the longitudinal duct joint is sealed between the plates.

Duct side branches, T-pieces or direction changing pieces can be installed according to the manufacturer's instructions.

The duct can pass through any number of storeys provided that the distance between floors, where the duct is supported (see section A.2.2.4), does not exceed 5 m and the limitation on buckling is satisfied. To prevent damage to the construction from buckling of vertical ducts, the ratio between the length (height) of the duct fire exposed in the compartment to the smallest lateral dimension across the outside face of the duct does not exceed 8:1, unless additional lateral supports are provided. If additional supports are provided, the ratio of the distance between the additional supports, or the distance between the supports and the supporting construction, to the smallest lateral dimension across the outside face of the duct shall not exceed 8:1.

The duct is assessed to work at a pressure difference between – 500 Pa to + 500 Pa.

A.2.2.2 Fire protective insulation

The duct is cladded with CONLIT DUCT 120 according to section 1 of this ETA. The long side slabs are fitted between the short side slabs. The slabs are fixed to the duct using steel welding pins of diameter 3 mm and length 90 mm, and 30 mm washers, as shown in Figure A.2.1. The maximum distance between pins is 350 mm in the duct longitudinal direction and 400 mm in the transversal direction. The distance of the pins to the duct edges or slab joints is 50 mm.

All slab-to-slab joints are glued with CONLIT Glue and covered with aluminium self-adhesive tape.

The slabs are hollowed out to place the duct joints as shown in Figure A.2.2.

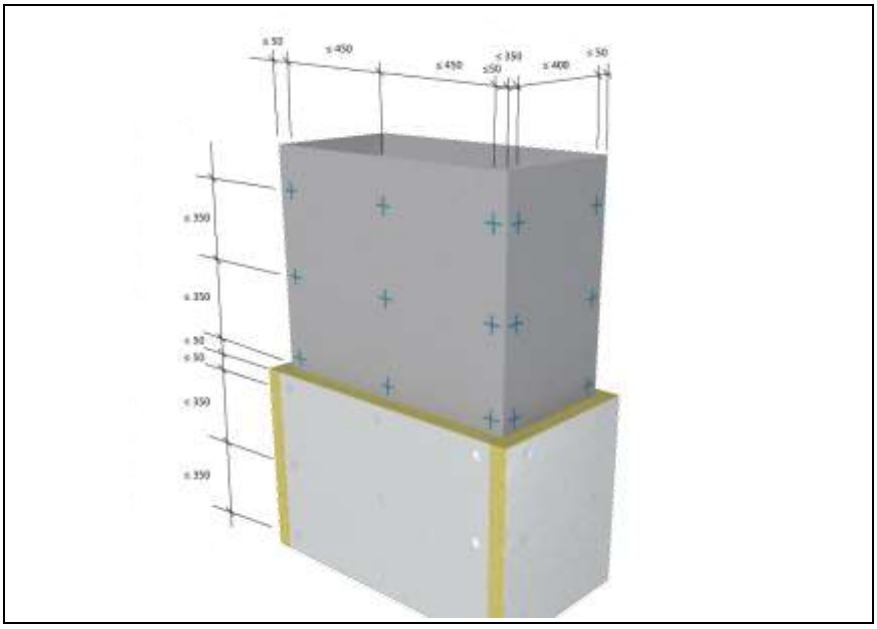


Figure A.2.1: Detail of the welding pins position.

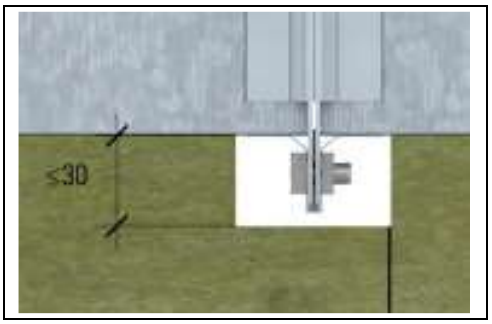


Figure A.2.2: Fire protective insulation covering the duct joints.

A.2.2.3 Supporting construction

The duct can pass a rigid floor of aerated concrete (or other type of rigid floor) with a minimum thickness of 150 mm and a minimum density of 650 kg/m^3, and a minimum resistance to fire EI 120.

A.2.2.4 Floor penetration seal

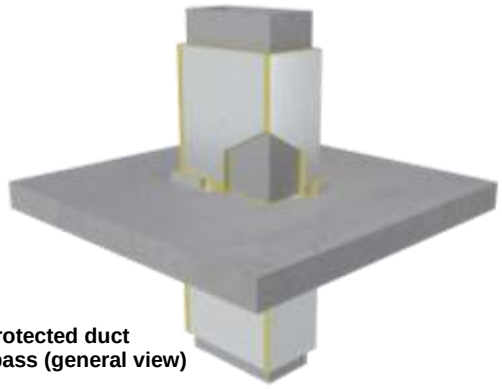
The penetration seal is shown in Figure A.2.3.

The gap between the steel duct and the supporting construction is 25 mm maximum.

The duct is fixed at the both sides of the floor with steel L-profiles (50 mm x 50 mm x 3 mm and length according to the duct dimensions) along the duct long sides. The L-profiles are fixed to the duct with steel self-tapping screws Ø3,2mm x 15 mm, every 150 mm maximum, and to the floor with steel screws Ø7,5mm x 62 mm, one at each end of the profile.

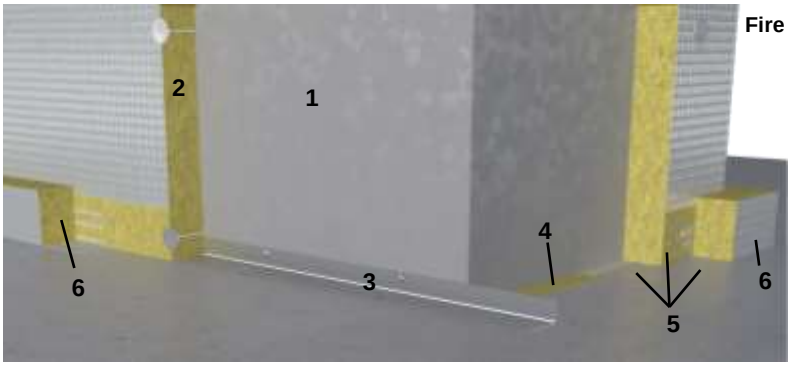
The gap between the duct and the supporting construction is fitted with strips of rock wool slab of minimum density 30 kg/m^3 and sealed with CONLIT Glue. The layer of fire protective insulation CONLIT DUCT 120 around the duct, according to A.2.2.2, ends at and starts from the floor (glued with CONLIT Glue).

A collar made of CONLIT DUCT 120 strips (minimum width 100 mm and thickness 90 mm) is installed around the insulated duct at both sides of the floor. The strips are glued to the floor and to the layer of duct fire protective insulation CONLIT DUCT 120 using CONLIT Glue and temporary fixed with nails to the duct insulation during the installation.

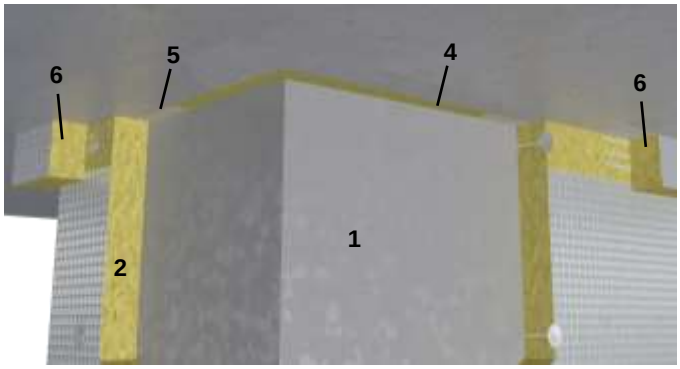


Fire protected duct floor pass (general view)

1. Steel duct.
2. Fire protective insulation CONLIT DUCT 120.
3. Duct fixing L-profiles (upper and down side of the floor).
4. Rock wool strips.
5. CONLIT Glue.
6. Collar of CONLIT DUCT 120 strips.



Fire protected duct floor pass (upper side)



Fire protected duct floor pass (down side)

Figure A.2.3: Detail of the duct penetration seal.

ANNEX B. Specification and assessment of multi-compartment smoke extraction rectangular ducts fire protected with CONLIT DUCT 120

B.1 Resistance to fire performance

The multi-compartment smoke extraction duct assembly has been tested and assessed according to EN 1366-8[13] and has a resistance to fire performance of EI 120 (ve-ho) S 500 multi classified in accordance with EN 13501-4.

B.2 Installation requirements

The provisions given in this ETA, which are based on the tests performed, should be followed. However, the range of installed systems will vary depending on the design of the smoke extraction ductwork and, therefore, the system installation should be carried out in accordance with the manufacturer's instructions.

B.2.1 Duct

Rectangular steel duct of tightness class B or better, according to EN 1507, made from folded 0,9 mm thickness sheets. The maximum dimensions of internal duct section are 1250 mm x 1000 mm (width x height) and the segment length 1500 mm.

Each duct segment has 2 internal stiffeners positioned at 1/3 and 2/3 of the segment length. The stiffeners consist of galvanised steel threaded rods M8 within a galvanised steel tube of Ø15 mm and thickness 1,5 mm, fixed to the duct using dowels.

The joints between duct segments consist of steel flanges Lindab type RJFP 30, or equivalent, held together with a joining profile Lindab type RJFP 20. Kerafix 2000 sealing tape of 3 mm x 15 mm and sealing grease are installed between the flanges. In the corners, the flanges are fitted with corner profiles held together using M10 bolts, while the longitudinal duct joint is sealed between the plates.

Duct side branches, T-pieces or direction changing pieces can be installed according to the manufacturer's instructions.

In the case of vertical ducts, the duct can pass through any number of storeys provided that the distance between floors, where the duct is supported (see section B.2.5), does not exceed 5 m and the limitation on buckling is satisfied. To prevent damage to the construction from buckling of vertical ducts, the ratio between the length (height) of the duct fire exposed in the compartment to the smallest lateral dimension across the outside face of the duct does not exceed 8:1, unless additional lateral supports are provided. If additional supports are provided, the ratio of the distance between the additional supports, or the distance between the supports and the supporting construction, to the smallest lateral dimension across the outside face of the duct shall not exceed 8:1.

The duct is assessed to work at a pressure difference between – 500 Pa to + 500 Pa.

[13] EN 1366-8 Fire resistance tests for service installation. Part 8: Smoke extraction ducts.

B.2.2 Duct suspension elements for horizontal ducts

The steel duct suspension elements will be designed and positioned in accordance with section 13.6.1 of EN 1366-1 and section 9.2.2 of EN 15882-1 to limit the maximum stresses in the rods and fixings to the values given in Table 7 of EN 1366-1.

As a tested reference, shown in Figure B.1, the duct is suspended with hangers consisting of steel rods at maximum stress of 5,5 MPa. The distance from the rods to the vertical side of the duct is 10 mm approximately. The largest distance between suspension elements is 1500 mm, with at least one suspension element per duct segment. The hangers and support profile are positioned at approximately 150 mm from the duct joints. The suspension elements are protected by the duct fire protective insulation as described in section B.2.3 and Figure B.2.

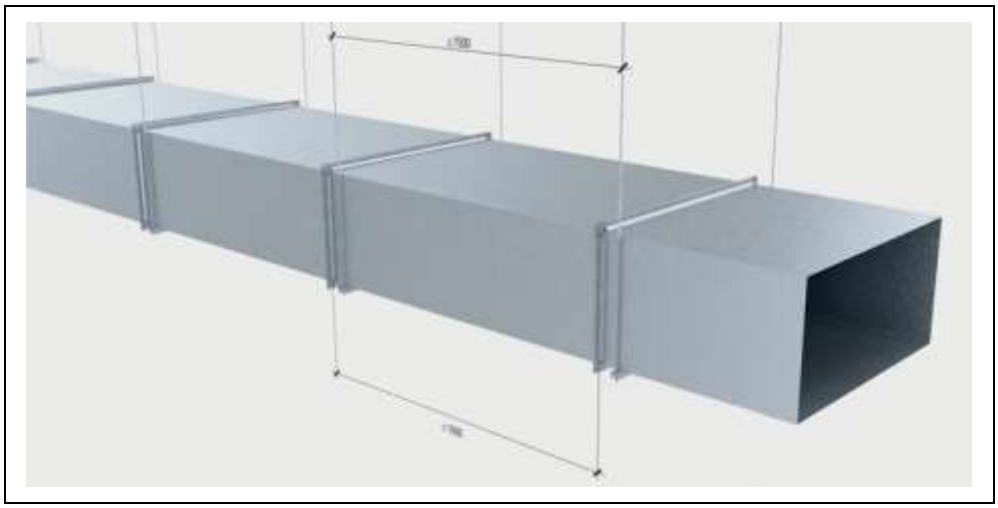


Figure B.1: General view of the steel duct and suspension elements.

B.2.3 Fire protective insulation

The duct is cladded with CONLIT DUCT 120 according to section 1 of this ETA. The long side slabs are fitted between the short side slabs. The slabs are fixed to the duct using steel welding pins of diameter 3 mm and length 90 mm, and 30 mm washers. The maximum distance between pins will be as described in section A.1.2.3 for horizontal ducts and A.2.2.2 for vertical ducts. In the case of horizontal ducts, the slabs on the upper side of the duct are installed without pins.

All slab-to-slab joints are glued with CONLIT Glue and covered with aluminium self-adhesive tape.

The slabs are hollowed out to place the suspension elements (horizontal ducts only) and the duct joints as shown in Figure B.2.

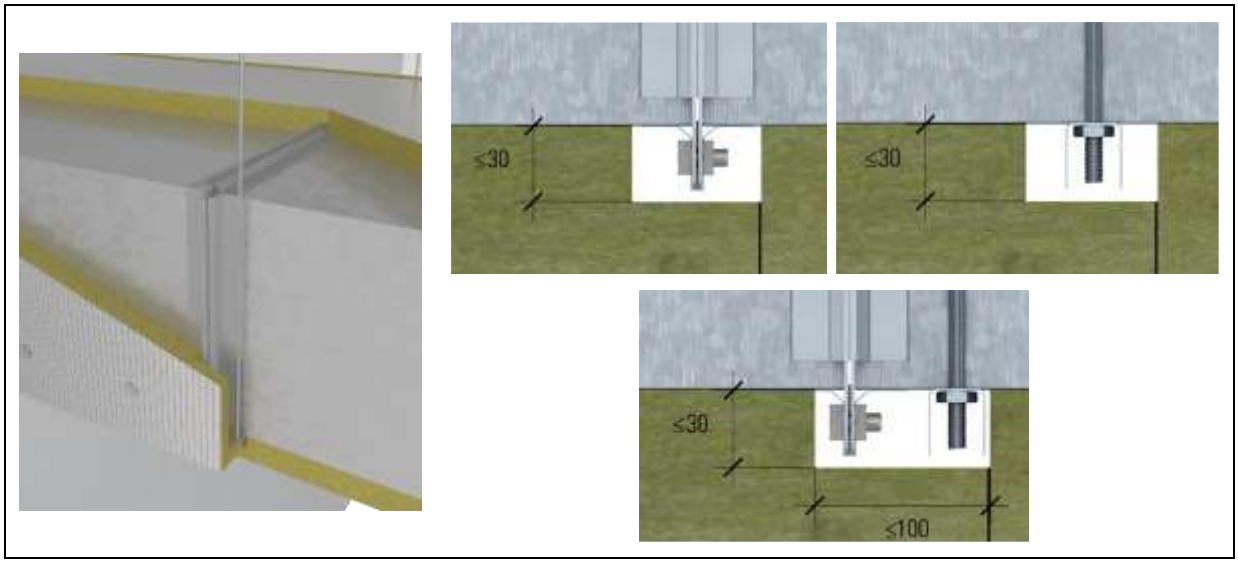


Figure B.2: Fire protective insulation covering suspension elements and the duct joints.

B.2.4 Supporting construction

B.2.4.1 Walls passed by horizontal ducts

The duct can pass a flexible or rigid wall with a minimum thickness of 130 mm and a minimum resistance to fire EI 120.

B.2.4.2 Floors passed by vertical ducts

The duct can pass a rigid floor of aerated concrete (or other type of rigid floor) with a minimum thickness of 150 mm and a minimum density of 650 kg/m^3, and a minimum resistance to fire EI 120.

B.2.5 Penetration seal

The duct penetration seal will be installed in accordance with section A.1.2.5 for horizontal ducts passing a wall and A.2.2.4 for vertical ducts passing a floor. The gap between the steel duct and the supporting construction is 20 mm maximum.