



The Catalonia
Institute of Construction
Technology

Wellington 19
ES-08018 Barcelona
Tel. +34 93 309 34 04
qualprod@itec.cat
itec.cat



European Technical Assessment

ETA 20/0122
of 03.07.2023



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	CLIMAVER® HVAC duct system
Product family to which the construction product belongs	Ventilation system made of mineral wool with facings on outside and inside.
Manufacturer	SAINT-GOBAIN ISOVER IBÉRICA SL Príncipe de Vergara 132 28002 Madrid Spain
Manufacturing plant(s)	According to Annex N kept by ITeC.
This European Technical Assessment contains	13 pages including 1 annex which forms 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 360001-02-0803. <i>Ventilation system made of mineral wool with facings on outside and inside.</i> Edition October 2022.
This version replaces	ETA 20/0122 issued on 24.03.2023.

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

Rectangular ventilation, heat and air conditioning ductwork system made from rigid mineral wool panels CLIMAVER® with facings on outside and inside according to table 1. CLIMAVER® panels are CE marked according to EN 14303¹. Duct joints are sealed with aluminium self-adhesive tape and staples.

Table 1: Characteristics of CLIMAVER® panels.

Product variant	Thickness (mm)	Facing	
		External	Internal
CLIMAVER® NETO	25,5 ± 1,0	(1)	(5)
CLIMAVER® A2 NETO	25,5 ± 1,0		
CLIMAVER® APTA	40,0 ± 1,0		
CLIMAVER® A2 APTA	40,0 ± 1,0		
CLIMAVER® A1 APTA	40,0 ± 1,0	(2)	(6)
CLIMAVER® A2 DECO	25,5 ± 1,0	(3)	
CLIMAVER® STAR	40,0 ± 1,0	(4)	
CLIMAVER® PLUS R	25,5 ± 1,0	(1)	
CLIMAVER® A2 PLUS	25,5 ± 1,0	(3)	(3)

Facing description:

- (1) Kraft paper, glass mesh and aluminium foil with a glass veil.
- (2) Glass mesh reinforced aluminium foil with a glass veil.
- (3) Fibreglass fabric and aluminium foil with a glass veil.
- (4) Goffer aluminium foil.
- (5) Black reinforced glass fabric.
- (6) Kraft paper reinforced aluminium foil with a glass veil.

The description of the installation procedure is given in Annex A and shall be in accordance with manufacturer's instructions.

¹ EN 14303 Thermal insulation products for building equipment and industrial installations. Factory made mineral wool (MW) products. Specification.

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

All product variants:

Self-supporting ductwork made from faced mineral wool panels for the distribution of air in ventilation, heating and cooling systems used inside buildings.

CLIMAVER® STAR:

Self-supporting ductwork made from faced mineral wool panels for the distribution of air in ventilation, heating and cooling systems used outside buildings.

The provisions made in this ETA are based on a working life of CLIMAVER® 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 of the product cannot be interpreted as a guarantee but are regarded only as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the works.

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

3.1 Performance of the product

The assessment of CLIMAVER® HVAC duct system has been performed in accordance with EAD 360001-02-0803 for *Ventilation system made of mineral wool with facings on outside and inside*.

Table 2: Performance of the product.

Product: CLIMAVER® HVAC duct system			
Basic requirement	Essential characteristic		Performance
BWR 2 Safety in case of fire	Reaction to fire		See table 3
	Propensity to undergo continuous smouldering		NPA
BWR 3 Hygiene, health and the environment	Erosion		No damage ⁽¹⁾
	Emission		See table 4 ⁽²⁾
	Microbiological growth		None ⁽³⁾
	Bulging and/or caving	During the test	0,0 mm (0 %)
		After load relieving	0,0 mm (0 %)
	Resistance against pressure		No damage ⁽⁴⁾
	Air tightness		See table 5 ⁽⁵⁾
	Water vapour resistance	Z (m ² ·h·Pa/mg)	> 140
	Water tightness ⁽⁶⁾		800 Pa ⁽⁷⁾
BWR 4 Safety and accessibility in use	Static load resistance ⁽⁶⁾		See table 6
	Hail resistance ⁽⁶⁾		60 m/s
BWR 5 Protection against noise	Acoustical absorption (insertion loss)		See table 7
	Acoustical absorption (absorption coefficient)		See table 8
BWR 6 Energy economy and heat retention	Thermal conductivity		See table 9

⁽¹⁾ The material from the inside surface of the ductwork does not flake off, break away and does not show evidence of delamination or erosion.

⁽²⁾ All CLIMAVER® variants fulfil requirements of clause 7.2 of EN 13403.

⁽³⁾ No sign of deterioration in the wall structure, no mould spread beyond the inoculated area and no significant growth of mould.

⁽⁴⁾ No rupture (breaks, tears, rips or any other opening), no displacement of joint adhesive tapes, no evidence of any other type of damage.

⁽⁵⁾ All CLIMAVER® variants are class D according to EN 1507.

⁽⁶⁾ Characteristics relevant for external uses. Performances apply to CLIMAVER® STAR.

⁽⁷⁾ Watertight until an internal air pressure of 800 Pa.

Table 3: Reaction to fire.

Product variant	Exposure side	Class
CLIMAVER® NETO	Duct internal and external faces	B-s1,d0
CLIMAVER® A2 NETO		A2-s1,d0
CLIMAVER® APTA		B-s1,d0
CLIMAVER® A2 APTA		A2-s1,d0
CLIMAVER® A1 APTA		A1
CLIMAVER® A2 DECO		A2-s1,d0
CLIMAVER® STAR		B-s1,d0
CLIMAVER® PLUS R		B-s1,d0
CLIMAVER® A2 PLUS		A2-s1,d0

Table 4: Emission.

Product variant	Particles bigger than 0,5 µm (µg/m³)	Particles bigger than 5,0 µm (µg/m³)
CLIMAVER® NETO	0,006	0,003
CLIMAVER® A2 NETO		
CLIMAVER® APTA		
CLIMAVER® A2 APTA		
CLIMAVER® A1 APTA		
CLIMAVER® A2 DECO	0,003	0,002
CLIMAVER® STAR		
CLIMAVER® PLUS R		
CLIMAVER® A2 PLUS		
	0,022	0,014
	0,011	0,007

Note: All CLIMAVER® variants fulfil the requirements of clause 7.2 of EN 13403.

Table 5: Air tightness.

Product variant	Leakage factor (l/s)/m²		
	- 750 Pa	1000 Pa	2000 Pa
CLIMAVER® NETO	0,02	0,01	0,05
CLIMAVER® A2 NETO	0,02	0,01	0,05
CLIMAVER® APTA	0,02	0,02	0,04
CLIMAVER® A2 APTA	0,02	0,02	0,04
CLIMAVER® A1 APTA	0,02	0,02	0,04
CLIMAVER® A2 DECO	0,02	0,01	0,05
CLIMAVER® STAR	0,01	0,02	0,05
CLIMAVER® PLUS R	0,02	0,01	0,02
CLIMAVER® A2 PLUS	0,02	0,01	0,02

Note: All CLIMAVER® variants are class D according to EN 1507.

Note: All CLIMAVER® variants are class ATC 1 according to the Spanish national regulation.

Table 6: Static load resistance of CLIMAVER® STAR.

Weight (kg/m ²)	Deformation top surface in the centre (mm)	Deformation top surface in the side (mm)	Deformation bottom surface in the centre (mm)
133	-7,43	-5,05	-4,75
267	-21,33	-12,59	-10,84
333	-32,43	-18,53	-15,19

Note: Values valid for ducts of 300x300 mm section and with a maximum distance between supports of 1,2 m.

Table 7: Insertion losses.

Variant	Frequency (Hz)							
	63	125	250	500	1.000	2.000	4.000	8.000
CLIMAVER® NETO	1,1	1,3	17,1	31,8	39,7	55,6	21,5	10,6
CLIMAVER® A2 NETO	1,1	1,3	17,1	31,8	39,7	55,6	21,5	10,6
CLIMAVER® APTA	1,6	3,7	26,2	32,6	57,5	52,2	21,8	10,5
CLIMAVER® A2 APTA	1,6	3,7	26,2	32,6	57,5	52,2	21,8	10,5
CLIMAVER® A1 APTA	1,6	3,7	26,2	32,6	57,5	52,2	21,8	10,5
CLIMAVER® A2 DECO	1,1	1,3	17,1	31,8	39,7	55,6	21,5	10,6
CLIMAVER® STAR	1,1	1,3	17,1	31,8	39,7	55,6	21,5	10,6
CLIMAVER® PLUS R	0,6	1,5	9,9	10,4	24,2	15,1	8,6	5,0
CLIMAVER® A2 PLUS	0,6	1,5	9,9	10,4	24,2	15,1	8,6	5,0

Note: Results of testing according to EN ISO 11691 with ducts of length 2.340 mm and internal section 300 mm x 200 mm.

Table 8: Absorption coefficient.

Product variant	α_v
CLIMAVER® NETO	0,85
CLIMAVER® A2 NETO	0,85
CLIMAVER® APTA	0,90
CLIMAVER® A2 APTA	0,90
CLIMAVER® A1 APTA	0,90
CLIMAVER® A2 DECO	0,85
CLIMAVER® STAR	0,90
CLIMAVER® PLUS R	0,35
CLIMAVER® A2 PLUS	0,35

Table 9: Thermal conductivity.

Product variant	Thermal conductivity (W/m·K)			
	at 10 °C	at 20 °C	at 40 °C	at 60 °C
CLIMAVER® NETO	0,032	0,033	0,036	0,038
CLIMAVER® A2 NETO	0,032	0,033	0,036	0,038
CLIMAVER® APTA	0,032	0,033	0,036	0,039
CLIMAVER® A2 APTA	0,032	0,033	0,036	0,039
CLIMAVER® A1 APTA	0,032	0,033	0,036	0,039
CLIMAVER® A2 DECO	0,032	0,033	0,036	0,038
CLIMAVER® STAR	0,032	0,033	0,036	0,039
CLIMAVER® PLUS R	0,032	0,033	0,036	0,038
CLIMAVER® A2 PLUS	0,032	0,033	0,036	0,038

3.2 Methods used for the assessment

3.2.1 Reaction to fire

CLIMAVER® HVAC duct system has been tested according to EN 13823² and EN ISO 11925-2³ (NETO, APTA, STAR and PLUS R), EN 13823 and EN ISO 1716⁴ (A2 NETO, A2 DECO, A2 APTA and A2 PLUS) and EN ISO 1716 and EN ISO 1182⁵ (A1 APTA), in accordance with EN 13501-1⁶ for the products classification in accordance with Regulation (EU) 2016/364. The products have been mounted and fixed following the provisions of EN 15715⁷, tables A.1 and A.2.

3.2.2 Erosion

CLIMAVER® HVAC duct system has been tested according to clause 7.2 of EN 13403⁸.

3.2.3 Emission

CLIMAVER® HVAC duct system has been tested according to clause 7.2 of EN 13403.

3.2.4 Microbiological growth

CLIMAVER® HVAC duct system has been tested according to clause 7.4 of EN 13403.

² EN 13823 Reaction to fire tests for building products. Building products excluding floorings exposed to the thermal attack by a single burning item.

³ EN ISO 11925-2 Reaction to fire tests. Ignitability of products subjected to direct impingement of flame. Part 2: Single-flame source test.

⁴ EN ISO 1716 Reaction to fire tests for products. Determination of the gross heat of combustion.

⁵ EN ISO 1182 Reaction to fire tests for products - Non-combustibility test.

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

⁷ EN 15715 Thermal insulation products. Instructions for mounting and fixing for reaction to fire testing. Factory made products.

⁸ EN 13403 Ventilation for buildings. Non-metallic ducts. Ductwork made from insulation ductboards.

3.2.5 Bulging and/or caving

CLIMAVER® HVAC duct system has been tested according to clause 4.4 of EN 13403.

3.2.6 Resistance against pressure

CLIMAVER® HVAC duct system has been tested at 2000 Pa according to clause 7.3 of EN 13403.

3.2.7 Air tightness

CLIMAVER® HVAC duct system has been tested at -750 Pa, 1000 Pa and 2000 Pa according to EN 1507⁹.

3.2.8 Water vapour resistance

CLIMAVER® panels have been tested according to EN 12086¹⁰ at 23 °C and at 50 % R.H.

3.2.9 Water tightness

CLIMAVER® STAR has been tested according to clause 2.2.10 of EAD 360001-02-0803.

3.2.10 Static load resistance

CLIMAVER® STAR has been tested according to clause 2.2.11 of EAD 360001-02-0803.

3.2.11 Hail resistance

CLIMAVER® STAR has been tested according to clause 2.2.12 of EAD 360001-02-0803.

3.2.12 Acoustical absorption (insertion loss)

CLIMAVER® HVAC duct system has been tested according to EN ISO 11691¹¹.

3.2.13 Acoustical absorption (absorption coefficient)

CLIMAVER® panels have been tested according to EN ISO 354¹².

3.2.14 Thermal conductivity

CLIMAVER® panels have been tested according to EN 12667¹³.

⁹ EN 1507 Ventilation for buildings. Sheet metal air ducts with rectangular section. Requirements for strength and leakage.

¹⁰ EN 12086 Thermal insulating products for building applications. Determination of water vapour transmission properties.

¹¹ EN ISO 11691 Acoustics – Measurement of insertion loss of ducted silencers without flow – Laboratory survey method.

¹² EN ISO 354 Acoustics – Measurement of sound absorption in a reverberation room.

¹³ 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 2015/1936/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 10: AVCP system.

Product(s)	Intended use(s)	System
Thermal insulating products	Any	3

Regarding reaction to fire, according to the Decision 2015/1936/EC, the system of AVCP given in the following table applies.

Table 11: Reaction to fire AVCP system.

Product(s)	Intended use(s)	System
Thermal insulating products	For uses subject to regulations on reaction to fire	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 360001-02-0803, 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 3rd July 2023

by the Catalonia Institute of Construction Technology.



Ferran Bermejo Nualart

Technical Director, ITeC

ANNEX A. Description of the installation procedure (informative)

A.1 General

This informative annex provides a general description of the product installation for a better understanding of CLIMAVER® HVAC duct system. The design and installation of the ventilation system shall be carried out in accordance with the instructions detailed in the manufacturer's installation guide.

A.2 Installation description

CLIMAVER® HVAC duct system is made from glass wool panels faced on both sides as shown in table 1, which are cut, folded, assembled and fixed with staples and adhesive tape to build duct segments.

Connection between duct segments is made with the male-female leaning shiplaps of the panels, fixing the panels' flap to the adjacent segment with staples and covering the overlapped joint with self-adhesive aluminium tape.

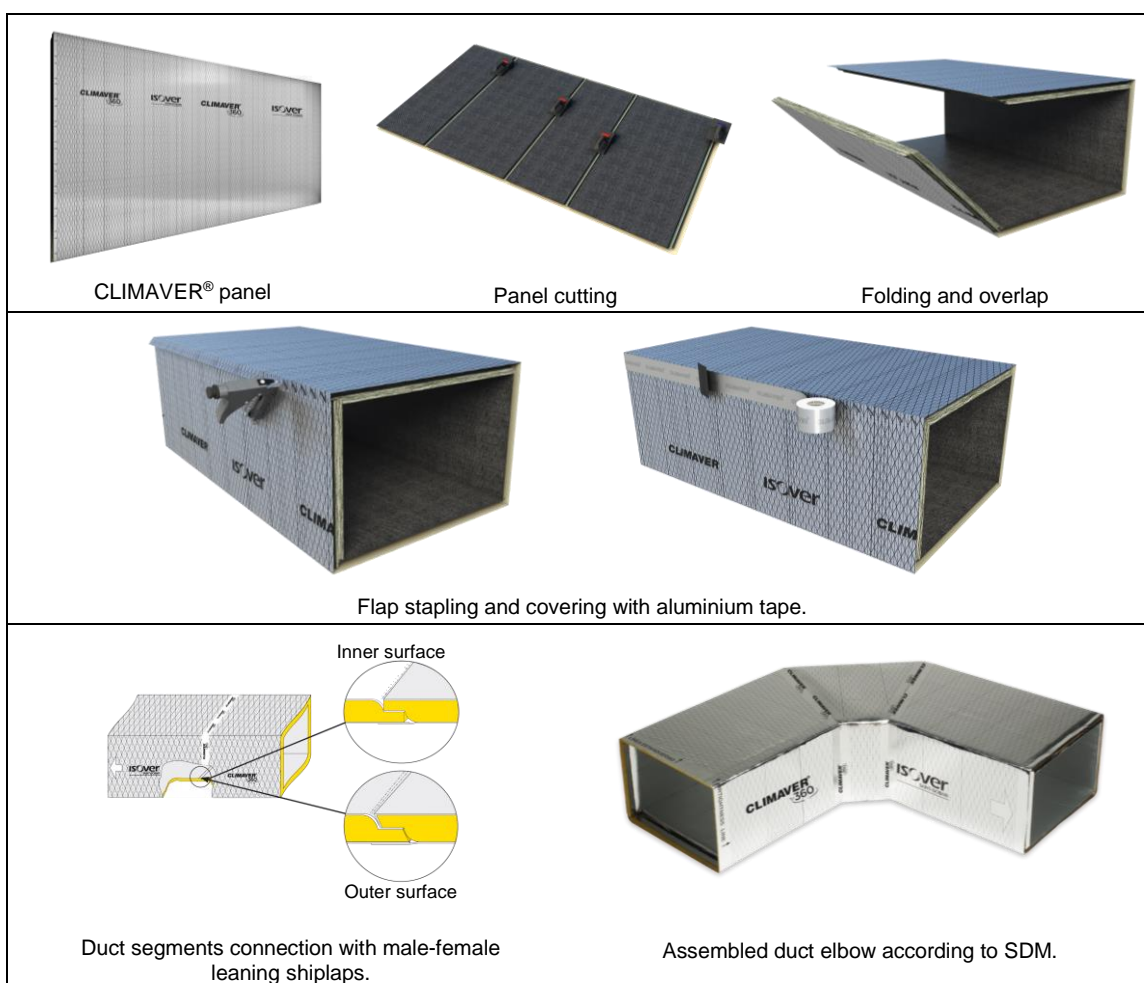


Figure A.1: General description of duct sections assembly.

The assembly of the elbows, offsets, etc. is carried out by means of the *Straight Duct Method* (SDM), which starts from a straight duct and, by means of the 22.5° guidelines marked on the panel, the different pieces of the duct are cut and then joined with glue and the self-adhesive aluminium tape. Alternatively, the figures can be prepared by drawing each of the different pieces that constitute them on the panel, to later cut and assemble them.

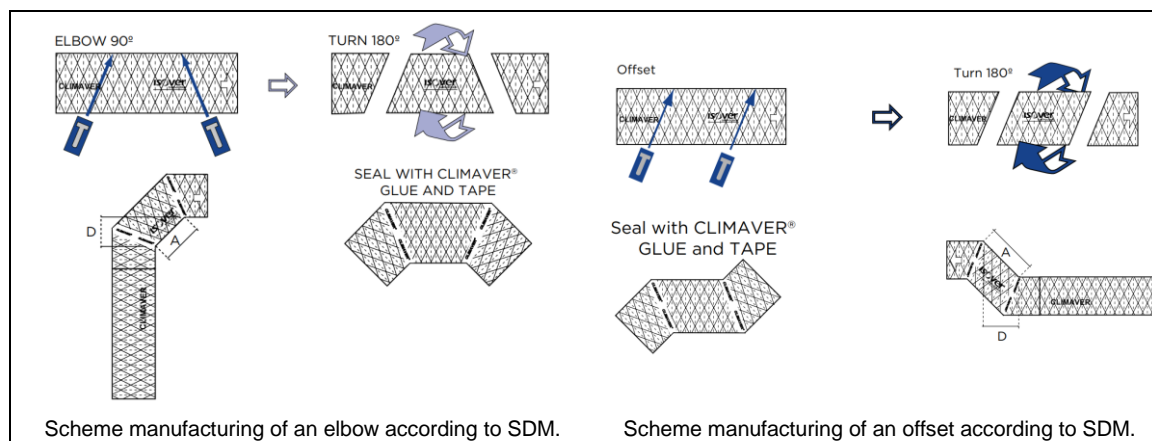


Figure A.2: Mounting examples using the SDM.

All ancillary products, accessories and tools used for the installation of CLIMAVER® HVAC duct system shall be in accordance with the manufacturer's instructions.

Mechanical reinforcement of the duct section may be necessary depending on the duct dimensions and operating pressure, as shown in tables A.1 and A.2 (information provided by the manufacturer based on test reports CETIAT 1415023 and 1832338, not assessed in this ETA).

Table A.1: Duct dimensions and mechanical reinforcement for all CLIMAVER® variants except STAR.

Side dimension (mm)	Operating pressure (Pa)			
	≤ 200	201 – 400	401 – 600	601 – 800
≤ 400			No reinforcement required	No reinforcement required
401 – 500	No reinforcement required	No reinforcement required	No reinforcement required	Mechanical reinforcement every 1,2 m
501 – 600			Mechanical reinforcement every 1,2 m	
601 – 750				Mechanical reinforcement every 0,6 m
751 – 900	Mechanical reinforcement every 1,2 m	Mechanical reinforcement every 1,2 m	Mechanical reinforcement every 0,6 m	
901 – 1050				
1051 – 1200				
1201 – 1500	Mechanical reinforcement every 0,6 m	Mechanical reinforcement every 0,6 m	Mechanical reinforcement every 0,4 m	Mechanical reinforcement every 0,4 m
> 1500				

Table A.2: Duct dimensions and mechanical reinforcement for CLIMAVER® STAR.

Side dimension (mm)	Operating pressure (Pa)			
	≤ 200	201 – 400	401 – 600	601 – 800
< 500	No reinforcement required	No reinforcement required	No reinforcement required	No reinforcement required
500 – 599			Mechanical reinforcement every 1,2 m	Mechanical reinforcement every 0,6 m
600 – 699		Mechanical reinforcement every 1,2 m	Mechanical reinforcement every 0,6 m	
700 – 799	Mechanical reinforcement every 1,2 m	Mechanical reinforcement every 0,6 m		Mechanical reinforcement every 0,6 m
800 – 999			Mechanical reinforcement every 0,6 m	
1000 – 1099	Mechanical reinforcement every 0,6 m	Mechanical reinforcement every 0,4 m		Mechanical reinforcement every 0,4 m
1100 – 1399			Mechanical reinforcement every 0,6 m	
1400 – 2000	Mechanical reinforcement every 0,6 m	Mechanical reinforcement every 0,4 m		Mechanical reinforcement every 0,4 m

Ducts are suspended with hangers at a maximum distance depending on the dimension of the duct section largest side, as shown in the next table. Ducts can also be supported, e.g., to the rooftop floor in outdoor uses. Other ancillary products (such as fire dampers, diffusers, etc.) will be independently supported.

Table A.3: Ducts suspension elements for indoor and outdoor uses.

Largest side dimension (mm)	Maximum distance between hangers/supports (m)
< 900	2,4
900 ≤ L ≤ 1500	1,8
> 1500	1,2

Hangers and supports are fixed to the mechanical reinforcement of the ducts.

For outdoor uses, the snow load (static load) requirements in the place of use shall be considered, which could decrease the maximum distance between supports allowed.

The duct can be provided with inspection hatches for access and cleaning, which will be made from the same CLIMAVER® panel and other ancillary products as described above, together with aluminium profiles Perfiver H.

The duct is connected to the air handling units with aluminium profiles Perfiver H and the joint covered with self-adhesive aluminium tape. The connection will allow the system disassembly for maintenance.