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# European Technical Assessment

# ETA-21/0300 of 06.05.2025

General part

**Technical Assessment Body issuing the** Österreichisches Institut für Bautechnik (OIB) **European Technical Assessment** Austrian Institute of Construction Engineering Trade name of the construction product VentilFlex, VentilFlex-RKV Product family to which the construction Liner, made of glass fibres, mineral and organic product belongs substances used for relining of ducts for ventilation purposes KOMPOZITOR, Plastics Developing Ltd. Manufacturer Széchenyi utca 60 H-2220 Vecsés HUNGARY KOMPOZITOR, Plastics Developing Ltd. Manufacturing plant Széchenyi utca 60 H-2220 Vecsés HUNGARY **This European Technical Assessment** 13 pages including Annexes A 1 to A 4 which form an integral part of this assessment. contains **This European Technical Assessment** European Assessment Document (EAD) EAD 360032-00-0803 "Liner, made of glass is issued in accordance with Regulation (EU) No 305/2011, on the basis of fibres, mineral and organic substances used for relining of ducts for ventilation purposes". European Technical Assessment ETA-21/0300 This European Technical Assessment replaces of 10.05.2021.



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#### Specific parts

# Technical description of the product

**VentilFlex, VentilFlex-RKV** consist of hardened liners, made of glass fibres, mineral and organic substances (basic composite). The liners are produced by layers, which form the final compound, whereas, the final compound is resulting in a homogeneous structure. Dimensions, thickness and colour of the hardened liner of **VentilFlex, VentilFlex-RKV** are defined in Table 1.

The basic material of the liners **VentilFlex, VentilFlex-RKV** is glass fibre reinforced thermosetting resin, a so-called composite material. Key difference between **VentilFlex** and **VentilFlex-RKV** is the portion of the organic part of the two materials according to the composition/ recipe of the resin mixture. The composition of the liner **VentilFlex, VentilFlex-RKV** is confidential and is deposited with the Technical Assessment Body Österreichisches Institut für Bautechnik.

Table 1: Dimensions, thickness and colour of VentilFlex and VentilFlex-R
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Type of product	VentilFlex	VentilFlex-RKV
Colour	Black	Red
Wall thickness	3 mm	5 mm
Diameter in case of circular cross section	80 mm, 100 mm, 150 mm, 200 mm, 325 mm, 400 mm, 800 mm	80 mm, 100 mm, 150 mm, 200 mm, 325 mm, 400 mm, 800 mm
Diameter in case of circular cross section including inclined sections	80 mm, 100 mm, 150 mm, 200 mm, 325 mm	80 mm, 100 mm, 150 mm, 200 mm, 325 mm
Dimensions in case of rectangular cross section	See Annex A 2	See Annex A 2

The design situations are depicted in Annex A 1 of this ETA. For the design situations according to Annex A 1 in this ETA the liners are either taking the form of the duct to be renovated without gluing to the duct or the liner is self-supporting. Connections between the liner and other parts of the ventilation system as well as spacers, if any, are not part of this ETA.

**VentilFlex, VentilFlex-RKV** according to this ETA can be applied for vertical and non-vertical installation, whereas a value of 45° is considered as maximum allowable inclination. For inclination from 45° to 90° the liner includes prefabricated units. In case of inclined installation, the reduction of the inner diameter of the liner is related to not more than 15% of its nominal diameter. For inclination from 45° to 90° the liner includes prefabricated units.

The hardening process of the flexible liners is taking place on site during installation by means of special heat treatment and using specific devices for this process according to the manufacturer's instructions, including provisions for proper installation.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product, as he considers necessary.

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

**VentilFlex, VentilFlex-RKV** are used for relining of material-independent ducts for ventilation purposes to be used inside buildings. Whereas, the liner is used from end to end air transportation.

This ETA does not address the use of the product in specific atmospheres that may affect the durability of the product due to chemical reaction and/or changes of physical properties. Manufacturer may address in his technical documentation specific provisions.

The provisions made in this European Technical Assessment are based on an intended working life for the intended use of 10 years, when installed in the works provided that the liner, made of glass fibres, mineral and organic substances, is subject to appropriate installation provided that the product is subject to appropriate use and maintenance.

It is the responsibility of the manufacturer to ensure that each delivery contains proper information for the use of the product including general guidance on the basis of the European Technical Assessment and including information on appropriate instructions on cleaning.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or the Technical Assessment Body, but are to be regarded only as a means for choosing the appropriate product in relation to the expected, economically reasonable working life of the works.



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

# 3.1 Performance of the product

#### Table 2: Performance of the "liner" VentilFlex

Basic requirements for construction works	Essential characteristics	Method of assessment	Performance
BWR 2	Reaction to fire	EAD, Clause 2.2.1	B-s1, d0
	Tightness	EAD, Clause 2.2.2	Circular cross section: Annex A 3 of this ETA Rectangular cross section: Annex A 3 of this ETA
BWR 3	Flow resistance	EAD, Clause 2.2.3	Vertical installation of liner with circular cross section: Mean roughness r = 0,0002 m, $\zeta$ -value = 0,43 Vertical installation of liner with rectangular cross section: Mean roughness r = 0,0004 m, $\zeta$ -value = 0,59 Non-vertical installation circular/ rectangular cross section:
	Microbiological	EAD, Clause 2.2.4	No performance assessed Bend section of liner: No performance assessed No performance assessed
	Ring stiffness (Circular cross section liner)	EAD, Clause 2.2.5	Annex A 4 of this ETA
BWR 4	Compound of the layered hardened liner	EAD, Clause 2.2.6	Resulting tensile strength: 6,67 MPa* *Related tolerances are laid down in the control plan deposited with the Technical Assessment Body Österreichisches Institut für Bautechnik
	Maximum height (including non- vertical installation)	EAD, Clause 2.2.7	Total height of circular/ rectangular liner in case of straight installation: 100 m Height above the inclined section in case of including non- vertical installation of circular/ rectangular liner: No performance assessed

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Table 3: Performance	of the	"liner"	VentilFlex-RKV

Basic requirements for construction works	Essential characteristics	Method of assessment	Performance
BWR 2	Reaction to fire	EAD, Clause 2.2.1	A2-s1, d0
	Tightness	EAD, Clause 2.2.2	Circular cross section: Annex A 3 of this ETA Rectangular cross section: Annex A 3 of this ETA
BWR 3	Flow resistance	EAD, Clause 2.2.3	Vertical installation of liner with circular cross section: Mean roughness r = 0,0003 m, $\zeta$ -value = 0,87 Vertical installation of liner with rectangular cross section: Mean roughness r = 0,0016 m, $\zeta$ -value = 0,86 Non-vertical installation circular/ rectan-gular cross section: No performance assessed Bend section of liner:
	Microbiological growth	EAD, Clause 2.2.4	No performance assessed No performance assessed
	Ring stiffness (Circular cross section liner)	EAD, Clause 2.2.5	Annex A 4 of this ETA
BWR 4	Compound of the layered hardened liner	EAD, Clause 2.2.6	Resulting tensile strength: 4,61 MPa <sup>*</sup> *Related tolerances are laid down in the control plan deposited with the Technical Assessment Body Österreichisches Institut für Bautechnik
	Maximum height (including non- vertical installation)	EAD, Clause 2.2.7	Total height of circular/ rectangular liner in case of straight installation: 100 m Height above the inclined section in case of including non- vertical installation of circular/ rectangular liner: No performance assessed



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

According to the decision 2015/1936/EC of the European Commission, the system(s) of assessment and verification of constancy of performance (see Annex V of Regulation (EU) No 305/2011) is 1-3-4 (Reaction to fire), 3. For products according to this ETA for reaction to fire AVCP system 3 applies.

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited by the Technical Assessment Body Österreichisches Institut für Bautechnik.

Issued in Vienna on 06.05.2025 by Österreichisches Institut für Bautechnik

The original document is signed by:

Thomas Rockenschaub Deputy Managing Director

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#### Annex A 1: Examples of design situations, drawings



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VentilFlex, VentilFlex-RKV	Annex A 1 of European Technical Assessment ETA-21/0300	
	Drawings	



Annex A 2: Dimensions in case of rectangular cross section

# VentilFlex and VentilFlex-RKV in a "rectangular" shape

**VentilFlex** and **VentilFlex-RKV** can fill up a duct fully so that there is a certain radius at the corners. The radius is depending on the diameter of **VentilFlex** and **VentilFlex-RKV**:

Diameter [mm]	Radius [mm]
80 – 250	30
250 – 500	60
500 – 750	90
750 <	120



The maximum perimeter of VentilFlex and VentilFlex-RKV in a duct (A x B):

$$C = 2 \cdot R \cdot \pi + 2 \cdot (A - 2R) + 2 \cdot (B - 2R)$$

Maximum diameter of VentilFlex and VentilFlex-RKV to build into a duct:  $D_{\text{Max}}\text{=}$  C /  $\Pi$ 



## Annex A 3: Tightness

In the following Tables 3.1 to 3.8 the measured and calculated values for static positive/ negative pressure and for measured leakage factor are listed.

Table 3.1: Results for VentilFlex for circular cross-section in positive pressure mode

Static positive	Measured
pressure	leakage factor
Pa	m³/m²s (*10 <sup>-6</sup> )
100	10
200	17
300	23
400	30
500	36
750	50
1000	64
1250	76
1500	91
1750	102
2000	114
2250	126

Table 3.2: Results for VentilFlex for circular cross-section in negative pressure mode

Measured
leakage factor
m³/m²s (*10-6)
10
17
22
28
36
44
49
61

entilFlex. VentilFlex-RKV	Annex A 3 of European Technical Assessment ETA-21/0300
	Tightness



#### Table 3.3: Results for VentilFlex for rectangular cross-section in positive pressure mode

Static positive	Measured
pressure	leakage factor
Pa	m³/m²s (*10-6)
100	9
200	17
300	25
400	31
500	37
750	51
1000	64
1250	75
1500	86
1750	95
2000	108
2250	117

#### Table 3.4: Results for VentilFlex for rectangular cross-section in negative pressure mode

Static negative	Measured		
pressure	leakage factor		
Pa	m³/m²s (*10 <sup>-6</sup> )		
100	10		
200	17		
300	25		
400	33		
500	41		
650	50		
750	58		
1000	76		

## Table 3.5: Results for VentilFlex-RKV for circular cross-section in positive pressure mode

Static positive	Measured		
pressure	leakage factor		
Pa	m³/m²s (*10-6)		
100	19		
200	31		
300	43		
400	54		
500	67		
700	89		
900	111		
1100	130		
1300	150		
1500	167		
1700	184		
1900	201		
2000	205		
2100	215		



#### Table 3.6: Results for VentilFlex-RKV for circular cross-section in negative pressure mode

Measured		
leakage factor		
m <sup>3</sup> /m <sup>2</sup> s (*10 <sup>-6</sup> )		
17		
30		
42		
53		
65		
79		
96		
111		
114		
125		

#### Table 3.7: Results for **VentilFlex-RKV** for rectangular cross-section in positive pressure mode

Static positive	Measured
	Measureu
pressure	leakage factor
Ра	m³/m²s (*10 <sup>-6</sup> )
100	10
200	18
300	25
400	33
500	39
750	55
1000	70
1250	86
1500	103
1750	117
2000	132
2250	145

## Table 3.8: Results for VentilFlex-RKV for rectangular cross-section in negative pressure mode

Static negative	Measured		
pressure	leakage factor		
Pa	m³/m²s (*10-6)		
100	10		
200	17		
300	25		
400	31		
500	39		
650	48		
750	53		
1000	70		



# Annex A 4: Ring stiffness

#### Table 4.1: Ring stiffness values of **VentilFlex** liner

Diameter	Average ring stiffness of liner sections		Resulting ring stiffness of a whole liner	
fuuul		[N/m <sup>-</sup> ]	Г	[N/m <sup>-</sup> ]
d	bottom	middle	top	VentilFlex S₀
80	23512	26651	19640	23268
100	10458	9878	12800	11045
150	3330	7263	3676	4756
200	1105	978	1014	1032
325	342	333	365	346
400	No performance assessed			
800	No performance assessed			

#### Table 4.2: Ring stiffness values of VentilFlex-RKV liner

Diameter [mm]	Average ring stiffness of liner sections [N/m <sup>2</sup> ]		Resulting ring stiffness of a whole liner [N/m <sup>2</sup> ]	
d	bottom	middle	top	VentilFlex- RKV S <sub>0</sub>
80	49855	45019	44547	46473
100	28130	26526	26795	27150
150	9615	9791	9033	9480
200	3936	3862	3815	3871
325	2404	2397	2294	2365
400	No performance assessed			
800	No performance assessed			