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European Technical Assessment

ETA-12/0346
of 09.03.2018

General part

Technical Assessment Body issuing the European Technical Assessment

Österreichisches Institut für Bautechnik (OIB)
Austrian Institute of Construction Engineering

Trade name of the construction product

FuranFlex®

Product family to which the construction product belongs

Chimneys, flues and specific products - Kit consisting of chimney flue liner, made of flexible compound of glass fibres and mineral and synthetic organic substances, and ancillaries for classification T200 P1 W2 Oxx

Manufacturer

Kompozitor Müanyagipari Fejlesztő Kft.
Széchenyi utca 60
H-2220 Vecsés
Hungary

Manufacturing plant

Kompozitor Müanyagipari Fejlesztő Kft.
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Hungary

This European Technical Assessment contains

10 pages including Annexes A 1 to A 3 which form an integral part of this assessment.

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of

European Assessment Document (EAD)
EAD 060012-00-0802, Kit consisting of chimney flue liner, made of glass fibres, mineral and organic substances, and ancillaries

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Specific parts

1 Technical description of the product

FuranFlex® is a kit for renovation and adaptation of existing chimneys. It is a flue liner made of glass fibres, mineral and organic substances, whereas the delivered kit comprises additional elements (fittings, cleaning and inspection doors, spacers, condensate collector). The basic material of the liner **FuranFlex®** is glass fibre reinforced thermosetting resin, a so-called composite material. The flexible flue liner is put in an existing outer wall of a chimney on site.

The kit consists of the following components:

- flue liner **FuranFlex®** (consisting of outer textile and basic composite) with an internal nominal size of 0,08 m up to 1,25 m (in terms of diameter) and related perimeter when cross section differs from circle
- metallic fittings
- cleaning and inspection doors made of metal (except the condensate is lead to the outside by means of connecting flue pipe and instead of a cleaning door direct access is provided from the outside)
- condensate collector made of metal
- spacers (optional), made of spiral rings of stainless steel

FuranFlex® is a kit, working under wet/dry conditions, with corrosion resistance class 2 according to EN 1443, Clause 4.5, operating under positive/negative pressure and a working temperature class T 200 according to EN 1443, Clause 4.2. The distance to burnable materials, to be indicated by "Oxx", is depending on the design situation, depicted in Annex 1 of this ETA, and is detailed in Clause 3.1.1 in this ETA.

The flue liner **FuranFlex®** according to this ETA is protected against UV radiation by means of an appropriate covering according to the manufacturers instruction where relevant.

The composition of the flue liner **FuranFlex®** is confidential¹ and is deposited with the Technical Assessment Body Österreichisches Institut für Bautechnik.

The metallic fittings and condensate collector used according to the designation given in this ETA are covered by EN 1856-1 and EN 1856-2. The relevant information is laid down in the technical documentation, deposited with the Technical Assessment Body Österreichisches Institut für Bautechnik.

Note: The use of siphon is not subject of the assessment according to this ETA.

The spacers are made of stainless steel ring springs. The mechanical property of the element is defined by its free length, the diameter of the wires and of the spring and the tensile force of the required shape and is laid down in the technical documentation, deposited with the Technical Assessment Body Österreichisches Institut für Bautechnik.

Drawings of **FuranFlex®** and its components are given in Annex 2.

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

¹ The technical documentation of this European Technical Assessment has been deposited with the Österreichisches Institut für Bautechnik and, as far as relevant for the tasks of the notified body involved in the assessment and verification of constancy of performance procedure, is handed over to the notified body.

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.

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

FuranFlex® is used for renovation or adaptation of existing chimneys, whereas for classification of resistance to fire from outside to outside the conditions for the existing outer wall apply. The design situations for which the product is to be used are depicted in Annex 1 of this ETA.

FuranFlex® according to this ETA can be used for vertical and non-vertical installation, whereas a value of 45° is considered as maximum allowable inclination.

The use is related to:

- Chimneys with one heating appliance for corrosion resistance classes 1 and 2 according to EN1443, whereas for corrosion resistance class 2 natural wood is excluded.

The designation of the system chimney **FuranFlex®** for its intended use is done on basis of the following information:

Designation according to EN 1443:

- Temperature class
- Pressure class, whereas the assessment of class P1 allows the declaration of N1 as well
- Condensate resistance class
- Corrosion resistance class
- Sootfire resistance class, "O", followed by a distance to combustible materials, depending on the design situation (including related assessment method)

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 chimney flue liner, made of glass fibres, mineral and organic substances, and ancillaries is subject to appropriate installation provided that the kit 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 kit including general guidance on the basis of the European Technical Assessment. For components subject to wear (cleaning and inspection doors) the need of replacement is to be considered during use of the kit.

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.

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

3.1 Performance of the product

Table 3.1

Basic requirements for construction works	Essential characteristics	Method of assessment	Performance
BWR 2	Reaction to fire of the flue liner	EAD, Clause 2.1.2	B-s2, d0
BWR 3	Thermal performance	EAD, Clause 2.2.1.2	Clause 3.1.1 in this ETA
	Gas tightness/leakage	EAD, Clause 2.2.1.3	Class "P1"
	Flow resistance	Flue liner vertical installation: EN 13216-1	mean roughness $r = 0,0005 \text{ m}$
			Flue liner non-vertical installation: EN 13216-1
		Metallic fittings: EN 13384-1, Table B.8, Figure 5	ζ -value = 1,20
	Thermal resistance	EAD, Clause 2.2.1.5	Clause 3.1.2 in this ETA
	Durability/Condensate resistance	EAD, Clause 2.2.1.6	Class "W" Design situations according to Cl. 3.1.1 in this ETA
	Durability against chemicals and corrosion	EAD, Clause 2.2.1.7	Class "2"
Dangerous substances	EAD, Clause 2.2.1.8	Emission of total volatile organic compound (TVOC) according to EN ISO 16000-6 in conjunction with EN ISO 16000-9: 0,010 mg/(m ² h) Emission of formaldehyde EN 717-1: 0,005 mg/(m ² h)	
BWR 4	Maximum height (including non-vertical installation)	EAD, Clause 2.2.1.9	Clause 3.1.3 in this ETA
	Durability of the flue liner:	EAD, Clause 2.2.1.10	Durable
	Long-term resistance to thermal load		
	Resistance to wet/dry cycling		
	Long-term compatibility with ancillaries (made of metal)		
	Compound of the layer		
Durability against Freeze-thaw	Resistant		

3.1.1 Thermal performance

Design situation No 1 according to Annex 1 of this ETA:

T200 P1 W2 O40 (Assessment according to EN 13216-1) based on boundary conditions stated in Table 1 of this ETA.

Design situation No 2 according to Annex 1 of this ETA with ventilation:

T200 P1 W2 O00 (Assessment according to EN 13216-1) based on boundary condition for the outer wall of a thermal resistance of the system-chimney of $\geq 0,08 \text{ m}^2\text{K/W}$ and related internal nominal diameter = 0,2 m.

Design situation No 2 according to Annex 1 of this ETA without ventilation:

T200 P1 W2 O40 (Assessment according to EN 13216-1) considering boundary conditions stated in Table 1 of this ETA.

Design situation No 3 according to Annex 1 of this ETA:

T200 P1 W2 O00 (Assessment according to EN 13216-1) for double wall chimneys with thermal resistance of $R \geq 0,35 \text{ m}^2 \text{ K/W}$.

T200 P1 W2 O100 (Assessment according to EN 13216-1) for single wall chimneys.

Table 1: Reference scenario used for outer wall for classification of **FuranFlex®** for renovation/adaptation of existing chimneys

Thermal resistance of the system-chimney [$\text{m}^2\text{K/W}$]	Thickness of outer wall [m]	Internal nominal diameter [m]
$\geq 0,09$	$\geq 0,115$	$\leq 0,35$
$\geq 0,12$	$\geq 0,115$	$\leq 0,65$
$\geq 0,15$	$\geq 0,115$	$\leq 1,40$

3.1.2 Thermal resistance

Table 2: Thermal resistance values for different design situations for **FuranFlex®**

Internal nominal size in terms of diameter	Design situations according to Annex 1 of this ETA	Result	Thermal Resistance R_{yy}
0,20 m	No 1a	0,11 $\text{m}^2\text{K/W}$	R11
	No 1b	No performance assessed	
	No 2 (with ventilation)	0,13 $\text{m}^2\text{K/W}$	R13
	No 2 (without ventilation)	0,14 $\text{m}^2\text{K/W}$	R14
	No 3 (with thermal insulation of thickness = 25 mm)	0,40 $\text{m}^2\text{K/W}$	R40

The thermal resistance R_{yy} is evaluated for the internal diameter of 0,20 m for flue liner **FuranFlex®** with a thermal conductivity $\lambda = 0,27 \text{ W/mK}$ and a thickness of 0,00216 m, as a representative installation situation. Depending on the individual installation situation, the concerned thermal resistance R_{yy} values are to be calculated for the concerned internal diameter, depending on the concerned design situation.

3.1.3 Maximum height

Maximum allowable height for vertical installation (design situation No 2 according to Annex 1 of this ETA): 138 m.

Note: Less severe design situations may result in another maximum height of the kit

Maximum allowable height in case of non-vertical installation, including the section, above the non-vertical section: 35 m.

Maximum allowable inclination for non-vertical installation: 45 °.

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

According to the decision 95/467/EC of the European Commission², amended by the Commission Decision 2001/596/EC³ and 2002/592/EC⁴ and 2010/679/EC⁵ (EU) as amended, 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), 2+.

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 in the control plan deposited by the Technical Assessment Body Österreichisches Institut für Bautechnik.

The notified production control certification body shall visit the factory once a year for surveillance of the AVCP.

Issued in Vienna on 09.03.2018
by Österreichisches Institut für Bautechnik

The original document is signed by:

Rainer Mikulits
Managing Director

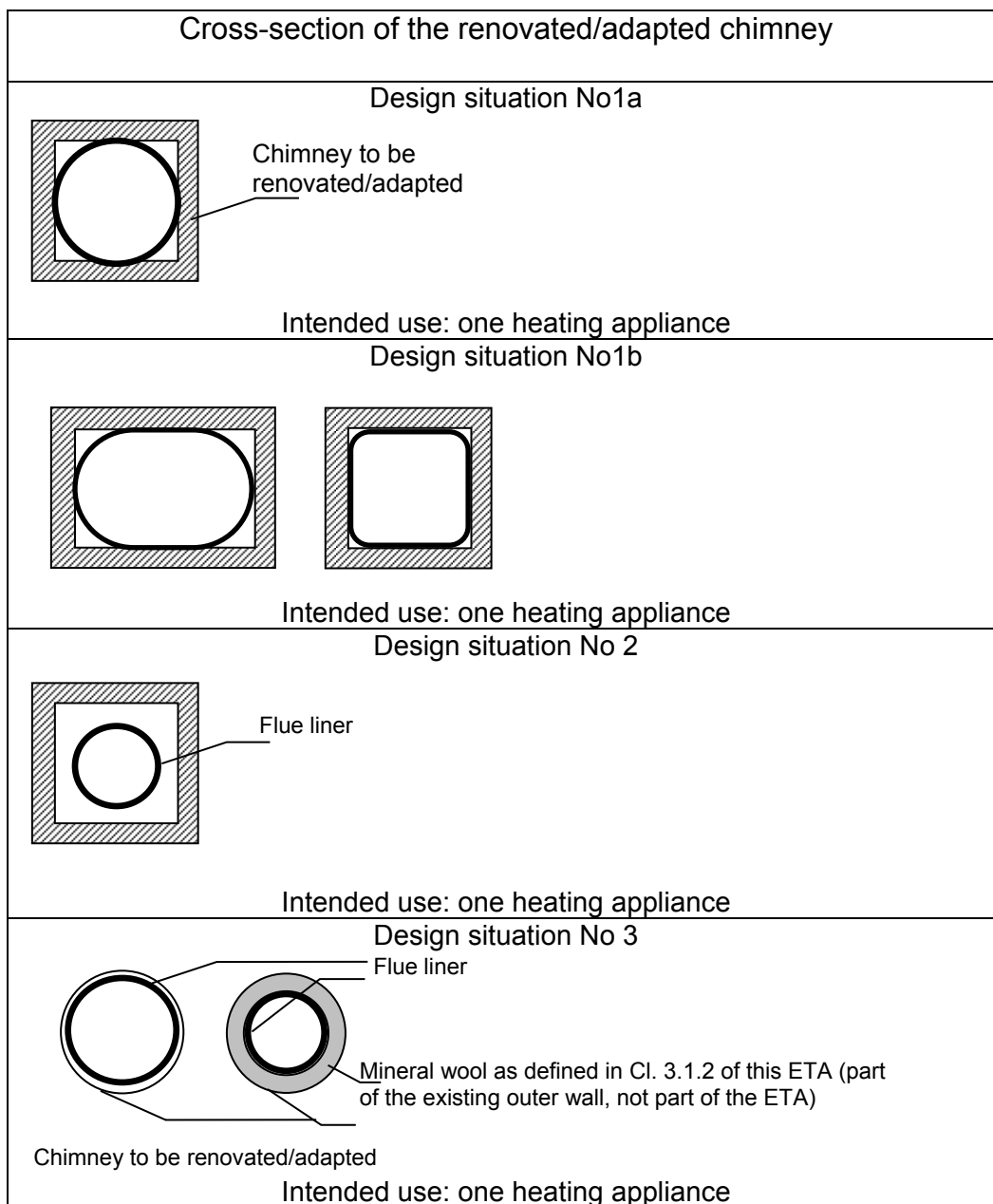
² Official Journal of the European Communities L 268/29 of 10.11.1995

³ Official Journal of the European Communities L 209/33 of 2.8.2001

⁴ Official Journal of the European Communities L 192/57 of 20.7.2002

⁵ Official Journal of the European Communities L 292/1 of 10.11.2010

Drawings



Note: Design situations given in 1a and 1b are representing similar situations for different cross sections of the chimney.

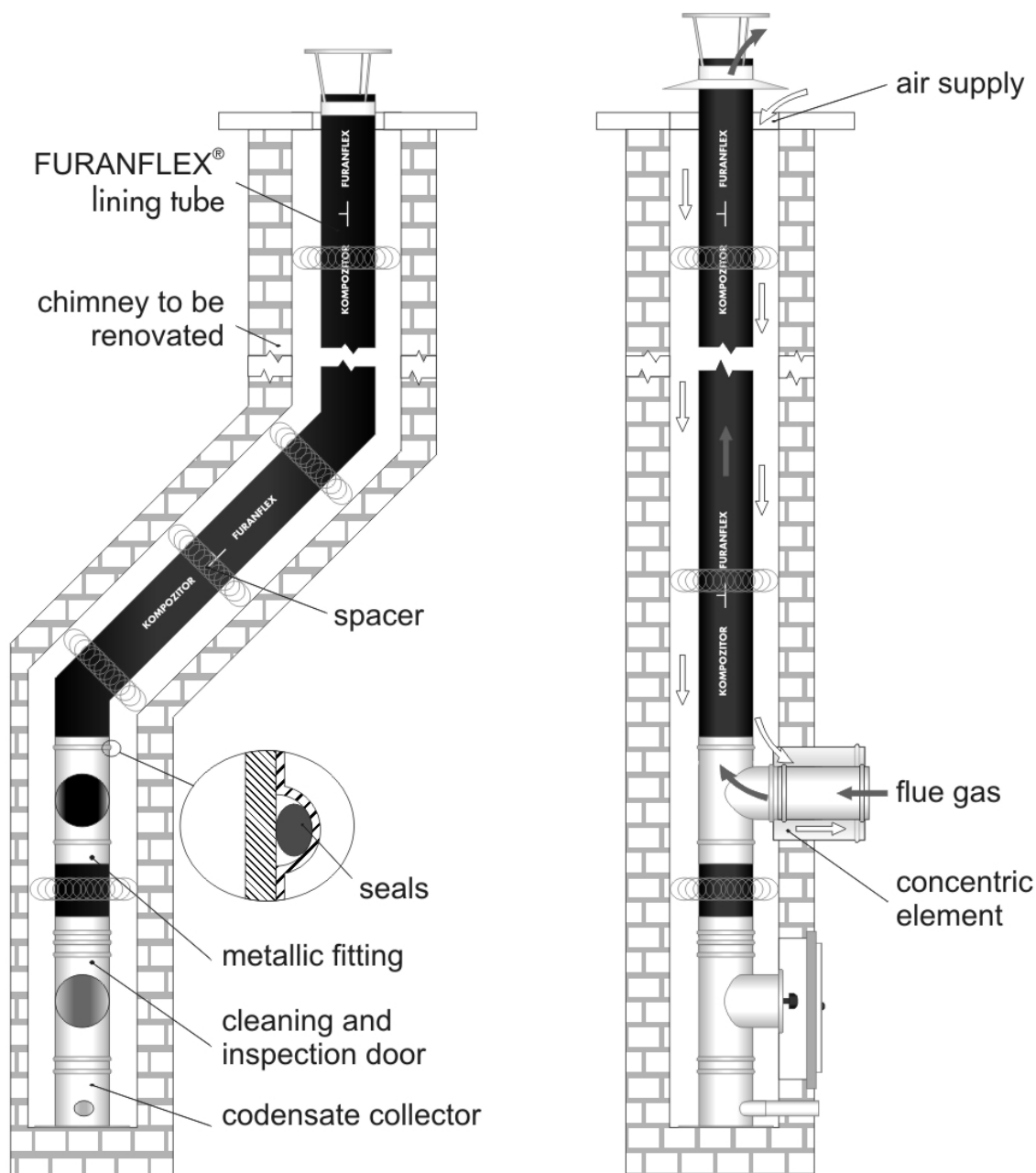


Figure left: Example for non-vertical installation (design situation No 2)
Figure right: Example for concentric P1 configuration (design situation No 2)

Reference documents

- EAD European Assessment Document (EAD), EAD 060012-00-0802 Kit consisting of chimney flue liner, made of glass fibres, mineral and organic substances, and ancillaries
- EN 717-1 "Wood based panels – Determination of formaldehyde release – Part 1: Formaldehyde emission by the chamber method"
- EN 1443 "Chimneys - General requirements"
- EN 1856-1 "Chimneys - Requirements for metal chimneys - Part 1: System chimney products"
- EN 1856-2 "Chimneys - Requirements for metal chimneys - Part 2: Metal flue liners and connecting flue pipes"
- EN 13216-1 "Chimneys – Test methods for system chimneys – Part 1: General test methods"
- EN 13384-1 "Chimneys – Thermal and fluid dynamic calculation methods – Part 1: chimneys serving one heating appliance"
- EN 14297 "Chimneys - Freeze-thaw resistance test method for chimney products"
- EN 14471 "Chimneys - System chimneys with plastic flue liners - Requirements and test methods"
- EN ISO 16000-6 "Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS or MS-FID"
- EN ISO 16000-9 "Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method"