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European Technical Assessment

ETA 18/0032 of 09/02/2023

I General Part

Technical Assessment Body issuing the ETA:	**Technical and Test Institute for Construction Prague**
Trade name of the construction products:	**Tytan Professional 330** **Tytan Professional 165** **Tytan Professional 160** **Tytan Euro-Line 145** **Praxa 140** **Tytan Euro-Line 150** **Praxa 150** **Tytan Professional 145 Interior** - glass fibre meshes for reinforcement of cementitious or cement based renderings
Product family to which the construction product belongs:	Product area code: 4 Thermal insulation products. Composite insulating kits/systems
Manufacturer:	Selena S.A. Ul. Legnicka 48A 54-202 Wroclaw Poland
Manufacturing plant(s):	Plant No. 2
This European Technical Assessment contains:	16 pages including 1 Annex (**variation of the trade names**) 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:	**EAD 040016-01-0404** Glass fibre mesh for reinforcement of cementitious or cement based renderings
This European Technical Assessment replaces:	ETA 18/0032 issued on 05/01/2018

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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II Specific part

1. Technical description of the product

1.1 General

Tytan Professional 330, Tytan Professional 165, Tytan Professional 160, Tytan Euro-Line 145, Praxa 140, Tytan Euro-Line 150, Praxa 150, Tytan Professional 145 Interior - glass fibre meshes for reinforcement of cement based renderings are leno woven fabrics made of glass fibre strands. According manufacturer declaration, the type of a glass of glass fibre meshes Praxa 140, Tytan Euro-Line 145, and Praxa 150 is **C-glass**, the type of a glass of glass fibre meshes Tytan Professional 330, Tytan Professional 165, Tytan Professional 160, Tytan Euro-Line 150, Tytan Professional 145 Interior is **E-glass**. To provide resistance to alkali conditions, they are coated by an organic layer. The distance of strands is at least 3 mm so that the reinforced rendering or mortar sufficiently penetrates the meshes.

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.

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

The products are used as reinforcement of cement based renderings (mortars) with the thickness of 2 - 10 mm. The reinforcement shall be embedded in a fresh mortar and sufficiently covered. The reinforcement prevents the hardened mortar from cracking, caused especially by dilatation.

The glass fibre meshes are also used in base coats of external thermal insulation systems with rendering (eg. ETICS).

The assessment methods included or referred to in EAD 040016-01-0404 have been written based on the manufacturer's request to take into account a working life of the glass fibre mesh for reinforcement of cement based renderings for the intended use of 25 years when installed in the works (provided that the glass fibre mesh for reinforcement of cement based renderings is subject to appropriate installation). These provisions are based upon the current state of the art and the available knowledge and experience.

The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works[1].

The indications given as to the working life of the construction product cannot be interpreted as a guarantee but are regarded only as a means for expressing the expected economically reasonable working life of the product.

1 The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than the working life referred to above.

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

The essential characteristics of glass fibre meshes for reinforcement of cementitious or cement based renderings Tytan Professional 330, Tytan Professional 165, Tytan Professional 160, Tytan Euro-Line 145, Praxa 140, Tytan Euro-Line 150, Praxa 150, Tytan Professional 145 Interior and methods of verification were carried out in compliance with the EAD 040016-01-0404: Glass fibre meshes for reinforcement of cementitious or cement based renderings. Expression of product performance is stated in Table No. 1 - Table No. 12. Historical data according EAD 040016-00-0404 and ETAG 004, Cl. 5.6.7.1 were taken into account, see notes in Table No. 5 - Table No. 12.

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

Table No.1 – reaction to fire:

Trade name of the mesh	**Reaction to fire class** according to Commission Delegated Regulation (EU) 2016/364
Tytan Professional 330	**No performance assessed**
Tytan Professional 165	
Tytan Professional 160	
Tytan Euro-Line 145	
Praxa 140	
Tytan Euro-Line 150	
Praxa 150	
Tytan Professional 145 Interior	

3.1.2 Organic content

The determination of the ash content and organic content was based on Cl. 2.2.2 of EAD 040016-01-0404.

The results of the test are stated in Table No. 2 and Table No. 3.

Table No. 2 – ash content:

Trade name of the mesh	**Ash content**		
Tytan Professional 330	**78,7 %**	**78,8 %**	**78,6 %**
Tytan Professional 165	**84,1 %**	**84,3 %**	**84,4 %**
Tytan Professional 160	**79,7 %**	**79,7 %**	**80,0 %**

Trade name of the mesh	Ash content		
Tytan Euro-Line 145	**86,5 %**	**86,6 %**	**86,3 %**
Praxa 140	**88,2 %**	**88,3 %**	**88,0 %**
Tytan Euro-Line 150	**79,6 %**	**79,7 %**	**79,7 %**
Praxa 150	**85,8 %**	**85,3 %**	**85,3 %**
Tytan Professional 145 Interior	**80,0 %**	**79,9 %**	**80,3 %**

Table No. 3 – organic content:

Trade name of the mesh	Organic content		
Tytan Professional 330	**21,3 %**	**21,2 %**	**21,4 %**
Tytan Professional 165	**15,9 %**	**15,7 %**	**15,6 %**
Tytan Professional 160	**20,3 %**	**20,3 %**	**20,0 %**
Tytan Euro-Line 145	**13,5 %**	**13,4 %**	**13,7 %**
Praxa 140	**11,8 %**	**11,7 %**	**12,0 %**
Tytan Euro-Line 150	**20,4 %**	**20,3 %**	**20,3 %**
Praxa 150	**14,2 %**	**14,7 %**	**14,7 %**
Tytan Professional 145 Interior	**20,0 %**	**20,1 %**	**19,7 %**

3.1.3 Gross heat combustion

The determination of the gross heat combustion was based on Cl. 2.2.3 of EAD 040016-01-0404.

The results of the test are stated in Table No. 4.

Table No. 4

Trade name of the mesh	Heat combustion Q_{PCS} [MJ/kg]
Tytan Professional 330	**No performance assessed**
Tytan Professional 165	
Tytan Professional 160	
Tytan Euro-Line 145	
Praxa 140	
Tytan Euro-Line 150	

Praxa 150	
Tytan Professional 145 Interior	

3.2 Safety and accessibility in use (BWR 4)

The determination of mesh size, weaving accuracy, tensile strength and elongation,mass per unit area and thickness was based on Cl. 2.2.5 - Cl. 2.2.9 of EAD 040016-01-0404.

Weaving accuracy and thickness – no performance assessed

The results of the tests are stated in Table No. 5 - Table No. 12

Table No. 5 – Tytan Professional 330

Tytan Professional 330			
Mesh size *	Average mesh size (warp direction x weft direction)		**8,5 x 15,0 mm**
	Mesh opening (warp direction x weft direction)		**5,9 x 8,3 mm**
Weaving accuracy	An untrimmed edge in any length		**No performance assessed**
	Deflected (uneven) fronts of rolls over ± 5 mm (measured from the edge of the inner tube)		
	A gap over treble distance of wefts or warps in any length		
	Weft skewing or weft waving over 4 % of width of the fabric (measured by a rectangular rule)		
	A cracked yarn		
Tensile strength and elongation (warp and weft direction) **	In the as-delivered state	warp direction	weft direction
	- tensile strength - elongation ε	**84 N/mm** **4,3 %**	**97 N/mm** **4,4 %**
	After alkalis conditioning	warp direction	weft direction
	- tensile strength - elongation ε	**44 N/mm** **2,3 %**	**49 N/mm** **2,0 %**
	The average value of the tensile strength after alkalis conditioning shall be at least 20 N/mm and at least 50 % of the strength in the as-delivered state (residual strength): **passed:** ≥ 20 N/mm after alkalis conditioning and residual strength ≥ 50 % of the strength in the as-delivered		
Mass per unit area	**319 g/m^2**		
Thickness	**No performance assessed**		

Notes:

***** *Historical data according to EAD 040016-00-0404, Cl. 2.2.4*

****** *Historical data according to ETAG 004, Cl. 5.6.7.1*

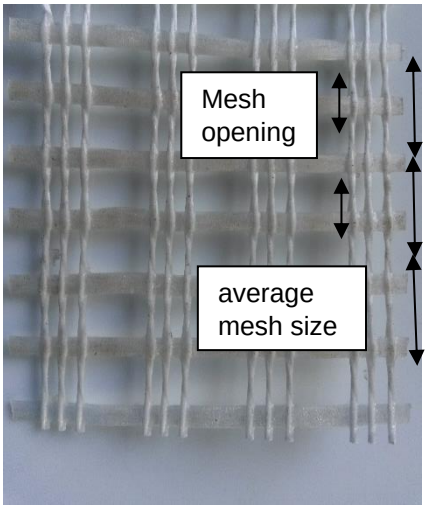

*Fig. No 1: Lenght in the warp direction, width 50 mm - there are 12 warp fibres within the width of 50 mm laid out of as group of 3 fibres

Table No. 6 – Tytan Professional 165

Tytan Professional 165			
Mesh size *	Average mesh size (warp direction x weft direction)		**5,2 x 4,1 mm**
	Mesh opening (warp direction x weft direction)		**4,1 x 3,6 mm**
Weaving accuracy	An untrimmed edge in any length		**No performance assessed**
	Deflected (uneven) fronts of rolls over ± 5 mm (measured from the edge of the inner tube)		
	A gap over treble distance of wefts or warps in any length		
	Weft skewing or weft waving over 4 % of width of the fabric (measured by a rectangular rule)		
	A cracked yarn		
Tensile strength and elongation (warp and weft direction) **	In the as-delivered state	warp direction	weft direction
	- tensile strength - elongation ε	**46 N/mm** **3,6 %**	**41 N/mm** **3,5 %**
	After alkalis conditioning	warp direction	weft direction
	- tensile strength - elongation ε	**36 N/mm** **2,7 %**	**41 N/mm** **3,4 %**
	The average value of the tensile strength after alkalis conditioning shall be at least 20 N/mm and at least 50 % of the strength in the as-delivered state (residual strength): **passed:** ≥ 20 N/mm after alkalis conditioning and residual strength ≥ 50 % of the strength in the as-delivered		
Mass per unit area	**158 g/m^2**		
Thickness	**No performance assessed**		

Notes:

***** *Historical data according to EAD 040016-00-0404, Cl. 2.2.4*

****** *Historical data according to ETAG 004, Cl. 5.6.7.1*

Table No. 7 – Tytan Professional 160

Tytan Professional 160			
Mesh size *	Average mesh size (warp direction x weft direction)		**5,4 x 5,2 mm**
	Mesh opening (warp direction x weft direction)		**4,2 x 4,9 mm**
Weaving accuracy	An untrimmed edge in any length		**No performance assessed**
	Deflected (uneven) fronts of rolls over ± 5 mm (measured from the edge of the inner tube)		
	A gap over treble distance of wefts or warps in any length		
	Weft skewing or weft waving over 4 % of width of the fabric (measured by a rectangular rule)		
	A cracked yarn		
Tensile strength and elongation (warp and weft direction) **	In the as-delivered state	warp direction	weft direction
	- tensile strength - elongation ε	**39 N/mm** **3,7 %**	**55 N/mm** **3,7 %**
	After alkalis conditioning	warp direction	weft direction
	- tensile strength - elongation ε	**28 N/mm** **2,6 %**	**49 N/mm** **3,4 %**
	The average value of the tensile strength after alkalis conditioning shall be at least 20 N/mm and at least 50 % of the strength in the as-delivered state (residual strength): **passed:** ≥ 20 N/mm after alkalis conditioning and residual strength ≥ 50 % of the strength in the as-delivered		
Mass per unit area	**163 g/m^2**		
Thickness	**No performance assessed**		

Notes:

***** *Historical data according to EAD 040016-00-0404, Cl. 2.2.4*

****** *Historical data according to ETAG 004, Cl. 5.6.7.1*

Table No. 8 – Tytan Euro-Line 145

Tytan Euro-Line 145			
Mesh size *	Average mesh size (warp direction x weft direction)		**6,0 x 5,1 mm**
	Mesh opening (warp direction x weft direction)		**4,5 x 4,8 mm**
Weaving accuracy	An untrimmed edge in any length		**No performance assessed**
	Deflected (uneven) fronts of rolls over ± 5 mm (measured from the edge of the inner tube)		
	A gap over treble distance of wefts or warps in any length		
	Weft skewing or weft waving over 4 % of width of the fabric (measured by a rectangular rule)		
	A cracked yarn		
Tensile strength and elongation (warp and weft direction) **	In the as-delivered state	warp direction	weft direction
	- tensile strength - elongation ε	**37 N/mm** **3,4 %**	**44 N/mm** **3,4%**
	After alkalis conditioning	warp direction	weft direction
	- tensile strength - elongation ε	**25 N/mm** **2,5 %**	**32 N/mm** **2,6 %**
	The average value of the tensile strength after alkalis conditioning shall be at least 20 N/mm and at least 50 % of the strength in the as-delivered state (residual strength): **passed:** ≥ 20 N/mm after alkalis conditioning and residual strength ≥ 50 % of the strength in the as-delivered		
Mass per unit area	**141 g/m^2**		
Thickness	**No performance assessed**		

Notes:

***** *Historical data according to EAD 040016-00-0404, Cl. 2.2.4*

****** *Historical data according to ETAG 004, Cl. 5.6.7.1*

Table No. 9 – Praxa 140

Praxa 140			
Mesh size *	Average mesh size (warp direction x weft direction)		**6,1 x 5,1 mm**
	Mesh opening (warp direction x weft direction)		**4,6 x 4,8 mm**
Weaving accuracy	An untrimmed edge in any length		**No performance assessed**
	Deflected (uneven) fronts of rolls over ± 5 mm (measured from the edge of the inner tube)		
	A gap over treble distance of wefts or warps in any length		
	Weft skewing or weft waving over 4 % of width of the fabric (measured by a rectangular rule)		
	A cracked yarn		
Tensile strength and elongation (warp and weft direction) **	In the as-delivered state	warp direction	weft direction
	- tensile strength - elongation ε	**39 N/mm** **3,9 %**	**40 N/mm** **3,4 %**
	After alkalis conditioning	warp direction	weft direction
	- tensile strength - elongation ε	**20 N/mm** **1,9 %**	**25 N/mm** **2,0 %**
	The average value of the tensile strength after alkalis conditioning shall be at least 20 N/mm and at least 50 % of the strength in the as-delivered state (residual strength): **passed:** ≥ 20 N/mm after alkalis conditioning and residual strength ≥ 50 % of the strength in the as-delivered		
Mass per unit area	**134 g/m^2**		
Thickness	**No performance assessed**		

Notes:

***** *Historical data according to EAD 040016-00-0404, Cl. 2.2.4*

****** *Historical data according to ETAG 004, Cl. 5.6.7.1*

Table No. 10 – Tytan Euro-line 150

Tytan Euro-Line 150			
Mesh size *	Average mesh size (warp direction x weft direction)		**5,0 x 5,1 mm**
	Mesh opening (warp direction x weft direction)		**3,8 x 4,8 mm**
Weaving accuracy	An untrimmed edge in any length		**No performance assessed**
	Deflected (uneven) fronts of rolls over ± 5 mm (measured from the edge of the inner tube)		
	A gap over treble distance of wefts or warps in any length		
	Weft skewing or weft waving over 4 % of width of the fabric (measured by a rectangular rule)		
	A cracked yarn		
Tensile strength and elongation (warp and weft direction) **	In the as-delivered state	warp direction	weft direction
	- tensile strength - elongation ε	**33 N/mm** **3,4 %**	**48 N/mm** **3,9 %**
	After alkalis conditioning	warp direction	weft direction
	- tensile strength - elongation ε	**20 N/mm** **2,1 %**	**29 N/mm** **2,5 %**
	The average value of the tensile strength after alkalis conditioning shall be at least 20 N/mm and at least 50 % of the strength in the as-delivered state (residual strength): **passed:** ≥ 20 N/mm after alkalis conditioning and residual strength ≥ 50 % of the strength in the as-delivered		
Mass per unit area	**151 g/m^2**		
Thickness	**No performance assessed**		

Notes:

***** *Historical data according to EAD 040016-00-0404, Cl. 2.2.4*

****** *Historical data according to ETAG 004, Cl. 5.6.7.1*

Table No. 11 – Praxa 150

Praxa 150			
Mesh size *	Average mesh size (warp direction x weft direction)		**6,3 x 5,2 mm**
	Mesh opening (warp direction x weft direction)		**4,7 x 4,8 mm**
Weaving accuracy	An untrimmed edge in any length		**No performance assessed**
	Deflected (uneven) fronts of rolls over ± 5 mm (measured from the edge of the inner tube)		
	A gap over treble distance of wefts or warps in any length		
	Weft skewing or weft waving over 4 % of width of the fabric (measured by a rectangular rule)		
	A cracked yarn		
Tensile strength and elongation (warp and weft direction) **	In the as-delivered state	warp direction	weft direction
	- tensile strength - elongation ε	**38 N/mm** **3,8 %**	**48 N/mm** **3,6 %**
	After alkalis conditioning	warp direction	weft direction
	- tensile strength - elongation ε	**21 N/mm** **2,1 %**	**33 N/mm** **2,5 %**
	The average value of the tensile strength after alkalis conditioning shall be at least 20 N/mm and at least 50 % of the strength in the as-delivered state (residual strength): **passed:** ≥ 20 N/mm after alkalis conditioning and residual strength ≥ 50 % of the strength in the as-delivered		
Mass per unit area	**148 g/m^2**		
Thickness	**No performance assessed**		

Notes:

***** *Historical data according to EAD 040016-00-0404, Cl. 2.2.4*

****** *Historical data according to ETAG 004, Cl. 5.6.7.1*

Table No. 12 – Tytan Professional 145 Interior

<table>
<tr><th colspan="4">Tytan Professional 145 Interior</th></tr>
<tr><td rowspan="2">Mesh size *</td><td colspan="2">Average mesh size
(warp direction x weft direction)</td><td>9,0 x 10,2 mm</td></tr>
<tr><td colspan="2">Mesh opening
(warp direction x weft direction)</td><td>7,1 x 9,4 mm</td></tr>
<tr><td rowspan="5">Weaving accuracy</td><td colspan="2">An untrimmed edge in any length</td><td rowspan="5">No performance assessed</td></tr>
<tr><td colspan="2">Deflected (uneven) fronts of rolls over ± 5 mm (measured from the edge of the inner tube)</td></tr>
<tr><td colspan="2">A gap over treble distance of wefts or warps in any length</td></tr>
<tr><td colspan="2">Weft skewing or weft waving over 4 % of width of the fabric (measured by a rectangular rule)</td></tr>
<tr><td colspan="2">A cracked yarn</td></tr>
<tr><td rowspan="6">Tensile strength and elongation (warp and weft direction) **</td><td>In the as-delivered state</td><td>warp direction</td><td>weft direction</td></tr>
<tr><td>- tensile strength
- elongation ε</td><td>39 N/mm
4,1 %</td><td>62 N/mm
4,2 %</td></tr>
<tr><td>After alkalis conditioning</td><td>warp direction</td><td>weft direction</td></tr>
<tr><td>- tensile strength
- elongation ε</td><td>25 N/mm
2,6 %</td><td>52 N/mm
3,6 %</td></tr>
<tr><td colspan="3">The average value of the tensile strength after alkalis conditioning shall be at least 20 N/mm and at least 50 % of the strength in the as-delivered state (residual strength):
passed: ≥ 20 N/mm after alkalis conditioning and residual strength ≥ 50 % of the strength in the as-delivered</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>Mass per unit area</td><td colspan="3">148 g/m^2</td></tr>
<tr><td>Thickness</td><td colspan="3">No performance assessed</td></tr>
</table>

Notes:

***** *Historical data according to EAD 040016-00-0404, Cl. 2.2.4*

****** *Historical data according to ETAG 004, Cl. 5.6.7.1*

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

According to the European Commission decision 97/556/EC, the **AVCP system 2+** (further described in Annex V to Regulation (EU) No 305/2011 as amended) applies.

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

The manufacturer shall perform a permanent internal factory production control based on the control plan. The Control Plan specifies the type, test method, criteria and frequency of tests conducted on the final product.
The control plan for the manufacturer/corner stones (factory production control) is specified in Cl. 3.2 of EAD 040016-01-0404 *Glass fibre mesh for reinforcement of cementitious or cement based renderings*. Manufacturer and Technical and Test Institute for Construction Prague have agreed a control plan which is deposited with the Technical and Test Institute for Construction Prague in documentation which accompanies the ETA.

Issued in Prague on 09/02/2023

By
Ing. Jiří Studnička, Ph.D.
Head of the Technical Assessment Body

Annex No. 1

Variations of trade names of glass fibre meshes for reinforcement of cement based renderings:

Trade name in this ETA	Variation of the trade name
Tytan Professional 330	IS 330; SEP-330
Tytan Professional 165	IS165; SEP-165
Tytan Professional 160	IS 160; SEP-160
Tytan Euro-Line 145	IS 145; SEP-145
Praxa 140	IS 140
Tytan Euro-Line 150	IS 150; SEP-150
Praxa 150	G-150
Tytan Professional 145 Interior	ING-145