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European Technical Assessment

ETA 23/0269 of 21/04/2023

General Part

Technical Assessment Body issuing the European Technical Assessment:	Technical and Test Institute for Construction Prague
Trade name of the construction products:	**HTC 18/18-40 (24K), HTC 25/25-80 (24K), HTC 21/21-40 (48K), HTC 21/21-80 (48K), HTC 34/34-40 (48K)** - inorganic fibre grid for reinforcement of cement-, anhydrite- or resin-based screed
Product family to which the construction product belongs:	Product area code: 26 Products related to concrete, mortar and grout
Manufacturer:	Alligard s.r.o. Libavské Údolí 44 357 51 Libavské Údolí Czech Republic
Manufacturing plant(s):	Alligard s.r.o. Libavské Údolí 44 357 51 Libavské Údolí Czech Republic
This European Technical Assessment contains:	13 pages
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 260057-00-0303 Inorganic fibre grid for reinforcement of cement-, anhydrite- or resin-based screed

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

Specific part

1. Technical description of the product

1.1 General

HTC 18/18-40 (24K), HTC 25/25-80 (24K), HTC 21/21-40 (48K), HTC 21/21-80 (48K), HTC 34/34-40 (48K) are rectangular carbon fibre grids for reinforcement of cement-, anhydrite- or resin-based screed. These types are made by warp-knitting technology of carbon fibre strands. To provide resistance to alkali or acid conditions, they are coated by an organic layer. According to the EAD 260057-00-0303 the distance of strands is at least 3 mm so that fresh screed can penetrate during application through grid sufficiently, up to 150 mm included to work as screed reinforcement correctly. The products in this ETA has grid opening from 16 mm to 35 mm.

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 fibre grid is used as reinforcement of cement-, anhydrite- or resin-based screeds, situated in aggressive and/or corrosive environment (e.g. sewage plants, silage troughs, chemical, food processing, agricultural conditions etc.) to prevent a formation of shrinkage cracks. The maximum particle size grading of aggregate used in applied screed in relation to the fibre grid opening has to be taken into account to prevent the damage of the fibre grid during application and its action as a separation layer in a screed. The fibre grid size and tensile strength have to be taken into account in relation to screed thickness to work as correct reinforcement.

The reinforcement prevents the surface of hardened screed from cracking, caused by shrinkage.

The assessment methods included or referred to in EAD 260057-00-0303 have been written based on the manufacturer's request to take into account a working life of the carbon fibre grid for reinforcement of cement-, anhydrite- or resin-based screed for the intended use of 25 years when installed in the works (provided that the carbon fibre grid for reinforcement of cement-, anhydrite- or resin-based screeds 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.

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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 carbon fibre grids for reinforcement of cement-, anhydrite- or resin-based screed **HTC 18/18-40 (24K), HTC 25/25-80 (24K), HTC 21/21-40 (48K), HTC 21/21-80 (48K), HTC 34/34-40 (48K)** and methods of verification were carried out in compliance with the EAD 260057-00-0303: Inorganic fibre grid for reinforcement of cement-, anhydrite- or resin-based screed. Expression of product performance is stated in Table No. 1 – Table No. 5.

Table No. 1: carbon fibre grid **HTC 18/18-40 (24K)**

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 18/18-40 (24K)	
Safety in case of fire (BWR 2)			
1	**Reaction to fire** (EAD 260057-00-0303, Cl. 2.2.1, Commission Delegated Regulation (EU) 2016/364)	**No performance assessed**	
2	**Organic content and ash content *** (EAD 260057-00-0303, Cl. 2.2.2)	**Ash content** (average value)	**Organic content** (average value)
		75.2 % (at 400 °C)	**24.8 %** (at 400 °C)
3	**Gross heat of combustion** (EAD 260057-00-0303, Cl. 2.2.3)	**No performance assessed**	
Hygiene, health and the environment (BWR 3)			
4	**Content, emission and/or release of dangerous substances** (EAD 260057-00-0303, Cl. 2.2.4)	Leachable substances	**No performance assessed**
		Content of cadmium	
Safety and accessibility in use (BWR 4)			
5	**Grid size, grid opening, coverage ratio** (EAD 260057-00-0303, Cl. 2.2.5)	**Average grid size** *(warp direction x weft direction)*	**19.35 x 21.00 mm**
		Average grid opening *(warp direction x weft direction)*	**16.19 x 19.05 mm**
		Coverage ratio [%]	**24 %**
	Fabric accuracy	An untrimmed edge in any length	**No performance assessed**

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 18/18-40 (24K)		
6	(260057-00-0303, Cl. 2.2.6)	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 thread		
7	**Tensile strength and elongation in warp / weft direction** (260057-00-0303, Cl. 2.2.7)	Number of threads within the width of 50 mm of the sample used for tensile strength testing	**warp direction**	weft direction
			2 (52 per 1 m)	**2** (49 per 1 m)
		In the initial state - tensile strength $T_{max,m}$ - elongation ε	**warp direction**	weft direction
			126.6 kN/m **1.1 %**	**110.7 kN/m** **1.2 %**
		After alkali conditioning - tensile strength $T_{max,m}$ - elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	**warp direction**	weft direction
			140.7 kN/m **1.4 %** **111.1 %**	**123.5 kN/m** **1.3 %** **111.6 %**
		After acid conditioning - tensile strength $T_{max,m}$ - elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	**warp direction**	weft direction
			139.4 kN/m **1.2 %** **110.1 %**	**123.2 kN/m** **1.5 %** **111.3 %**
8	**Mass per unit area** (260057-00-0303, Cl. 2.2.8)	**212 g/m²**		
9	**Thickness** (260057-00-0303, Cl. 2.2.9)	**No performance assessed**		

* tests have shown that it is not possible to use temperatures higher than 500 °C to determine ash content

Table No. 2: carbon fibre grid **HTC 25/25-80 (24K)**

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 25/25-80 (24K)	
Safety in case of fire (BWR 2)			
1	**Reaction to fire** (EAD 260057-00-0303, Cl. 2.2.1, Commission Delegated Regulation (EU) 2016/364)	**No performance assessed**	
2	**Organic content and ash content *** (EAD 260057-00-0303, Cl. 2.2.2)	**Ash content** (average value)	**Organic content** (average value)
		70.8 % (at 400 °C)	**29.2 %** (at 400 °C)
3	**Gross heat of combustion** (EAD 260057-00-0303, Cl. 2.2.3)	**No performance assessed**	
Hygiene, health and the environment (BWR 3)			
4	**Content, emission and/or release of dangerous substances** (EAD 260057-00-0303, Cl. 2.2.4)	Leachable substances	**No performance assessed**
		Content of cadmium	
Safety and accessibility in use (BWR 4)			
5	**Grid size, grid opening, coverage ratio** (EAD 260057-00-0303, Cl. 2.2.5)	**Average grid size** *(warp direction x weft direction)*	**27.2 x 29.8 mm**
		Average grid opening *(warp direction x weft direction)*	**24.0 x 27.6 mm**
		Coverage ratio [%]	**18 %**
6	**Fabric accuracy** (260057-00-0303, Cl. 2.2.6)	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 thread	

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 25/25-80 (24K)		
7	**Tensile strength and elongation in warp / weft direction** (260057-00-0303, Cl. 2.2.7)	Number of threads within the width of 50 mm of the sample used for tensile strength testing	warp direction	weft direction
			2 (37 per 1 m)	**2** (34 per 1 m)
		In the initial state - tensile strength $T_{max,m}$ - elongation ε	warp direction	weft direction
			90.3 kN/m **1.1 %**	**73.7 kN/m** **1.3 %**
		After alkali conditioning - tensile strength $T_{max,m}$ - elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	warp direction	weft direction
			86.7 kN/m **1.0 %** **96.0 %**	**71.8 kN/m** **1.3 %** **97.4 %**
		After acid conditioning - tensile strength $T_{max,m}$ - elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	warp direction	weft direction
			89.2 kN/m **1.1 %** **98.8 %**	**73.6 kN/m** **1.3 %** **99.9 %**
8	**Mass per unit area** (260057-00-0303, Cl. 2.2.8)	**148 g/m²**		
9	**Thickness** (260057-00-0303, Cl. 2.2.9)	**No performance assessed**		

* tests have shown that it is not possible to use temperatures higher than 500 °C to determine ash content

Table No. 3: carbon fibre grid **HTC 21/21-40 (48K)**

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 21/21-40 (48K)	
Safety in case of fire (BWR 2)			
1	**Reaction to fire** (EAD 260057-00-0303, Cl. 2.2.1, Commission Delegated Regulation (EU) 2016/364)	**No performance** assessed	
2	**Organic content and ash content *** (EAD 260057-00-0303, Cl. 2.2.2)	**Ash content** (average value)	**Organic content** (average value)
		78.2 % (at 400 °C)	**21.8 %** (at 400 °C)
3	**Gross heat of combustion** (EAD 260057-00-0303, Cl. 2.2.3)	**No performance assessed**	
Hygiene, health and the environment (BWR 3)			
4	**Content, emission and/or release of dangerous substances** (EAD 260057-00-0303, Cl. 2.2.4)	Leachable substances	**No performance assessed**
		Content of cadmium	
Safety and accessibility in use (BWR 4)			
5	**Grid size, grid opening, coverage ratio** (EAD 260057-00-0303, Cl. 2.2.5)	**Average grid size** *(warp direction x weft direction)*	**24.65 x 25.30 mm**
		Average grid opening *(warp direction x weft direction)*	**20.70 x 22.63 mm**
		Coverage ratio [%]	**25 %**
6	**Fabric accuracy** (260057-00-0303, Cl. 2.2.6)	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 thread	

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 21/21-40 (48K)		
7	**Tensile strength and elongation in warp / weft direction** (260057-00-0303, Cl. 2.2.7)	Number of threads within the width of 50 mm of the sample used for tensile strength testing	warp direction	weft direction
			2 (40 per 1 m)	**2** (39 per 1 m)
		In the initial state - tensile strength $T_{max,m}$ - elongation ε	warp direction	weft direction
			175.6 kN/m **1.0 %**	**171.5 kN/m** **1.0 %**
		After alkali conditioning - tensile strength $T_{max,m}$	warp direction	weft direction
		- elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	**180.1 kN/m** **1.2 %** **102.6 %**	**176.8 kN/m** **1.1 %** **103.1 %**
		After acid conditioning - tensile strength $T_{max,m}$	warp direction	weft direction
		- elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	**177.2 kN/m** **1.1 %** **100.9 %**	**165.8 kN/m** **2.0 %** **96.7 %**
8	**Mass per unit area** (260057-00-0303, Cl. 2.2.8)	**334 g/m²**		
9	**Thickness** (260057-00-0303, Cl. 2.2.9)	**No performance assessed**		

* tests have shown that it is not possible to use temperatures higher than 500 °C to determine ash content

Table No. 4: carbon fibre grid **HTC 21/21-80 (48K)**

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 21/21-80 (48K)	
Safety in case of fire (BWR 2)			
1	**Reaction to fire** (EAD 260057-00-0303, Cl. 2.2.1, Commission Delegated Regulation (EU) 2016/364)	**No performance assessed**	
2	**Organic content and ash content *** (EAD 260057-00-0303, Cl. 2.2.2)	**Ash content** (average value)	**Organic content** (average value)
		77.8 % (at 400 °C)	**22.2 %** (at 400 °C)
3	**Gross heat of combustion** (EAD 260057-00-0303, Cl. 2.2.3)	**No performance assessed**	
Hygiene, health and the environment (BWR 3)			
4	**Content, emission and/or release of dangerous substances** (EAD 260057-00-0303, Cl. 2.2.4)	Leachable substances	**No performance assessed**
		Content of cadmium	
Safety and accessibility in use (BWR 4)			
5	**Grid size, grid opening, coverage ratio** (EAD 260057-00-0303, Cl. 2.2.5)	**Average grid size** *(warp direction x weft direction)*	**25.35 x 25.30 mm**
		Average grid opening *(warp direction x weft direction)*	**20.86 x 22.56 mm**
		Coverage ratio [%]	**27 %**
6	**Fabric accuracy** (260057-00-0303, Cl. 2.2.6)	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 thread	

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 21/21-80 (48K)		
7	**Tensile strength and elongation in warp / weft direction** (260057-00-0303, Cl. 2.2.7)	Number of threads within the width of 50 mm of the sample used for tensile strength testing	warp direction	weft direction
			2 (40 per 1 m)	**2** (40 per 1 m)
		In the initial state - tensile strength $T_{max,m}$ - elongation ε	warp direction	weft direction
			211.3 kN/m **1.2 %**	**187.6 kN/m** **1.1 %**
		After alkali conditioning - tensile strength $T_{max,m}$	warp direction	weft direction
		- elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	**211.7 kN/m** **1.2 %** **100.2 %**	**210.2 kN/m** **1.3 %** **112.0 %**
		After acid conditioning - tensile strength $T_{max,m}$	warp direction	weft direction
		- elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	**164.8 kN/m** **1.1 %** **78.0 %**	**182.1 kN/m** **1.0 %** **97.1 %**
8	**Mass per unit area** (260057-00-0303, Cl. 2.2.8)	**326 g/m²**		
9	**Thickness** (260057-00-0303, Cl. 2.2.9)	**No performance assessed**		

* tests have shown that it is not possible to use temperatures higher than 500 °C to determine ash content

Table No. 5: carbon fibre grid **HTC 34/34-40 (48K)**

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 34/34-40 (48K)	
Safety in case of fire (BWR 2)			
1	**Reaction to fire** (EAD 260057-00-0303, Cl. 2.2.1, Commission Delegated Regulation (EU) 2016/364)	**No performance assessed**	
2	**Organic content and ash content *** (EAD 260057-00-0303, Cl. 2.2.2)	**Ash content** (average value)	**Organic content** (average value)
		85.1 % (at 400 °C)	**14.9 %** (at 400 °C)
3	**Gross heat of combustion** (EAD 260057-00-0303, Cl. 2.2.3)	**No performance assessed**	
Hygiene, health and the environment (BWR 3)			
4	**Content, emission and/or release of dangerous substances** (EAD 260057-00-0303, Cl. 2.2.4)	Leachable substances	**No performance assessed**
		Content of cadmium	
Safety and accessibility in use (BWR 4)			
5	**Grid size, grid opening, coverage ratio** (EAD 260057-00-0303, Cl. 2.2.5)	**Average grid size** *(warp direction x weft direction)*	**38.55 x 37.90 mm**
		Average grid opening *(warp direction x weft direction)*	**33.78 x 35.18 mm**
		Coverage ratio [%]	**19 %**
6	**Fabric accuracy** (260057-00-0303, Cl. 2.2.6)	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 thread	

No.	Essential characteristic and method of verification and assessment	Expression of product performance HTC 34/34-40 (48K)		
7	**Tensile strength and elongation in warp / weft direction** (260057-00-0303, Cl. 2.2.7)	Number of threads within the width of 50 mm of the sample used for tensile strength testing	warp direction	weft direction
			2 (26 per 1 m)	**2** (27 per 1 m)
		In the initial state - tensile strength $T_{max,m}$ - elongation ε	warp direction	weft direction
			125.2 kN/m **1.2 %**	**118.4 kN/m** **1.1 %**
		After alkali conditioning - tensile strength $T_{max,m}$ - elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	warp direction	weft direction
			129.9 kN/m **1.3 %** **103.8 %**	**124.4 kN/m** **1.2 %** **105.1 %**
		After acid conditioning - tensile strength $T_{max,m}$ - elongation ε - residual value of tensile strength $\Delta T_{max,ag}$	warp direction	weft direction
			114.9 kN/m **1.1 %** **91.8 %**	**120.8 kN/m** **1.3 %** **102.0 %**
8	**Mass per unit area** (260057-00-0303, Cl. 2.2.8)	**202 g/m²**		
9	**Thickness** (260057-00-0303, Cl. 2.2.9)	**No performance assessed**		

* tests have shown that it is not possible to use temperatures higher than 500 °C to determine ash content

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

According to the European Commission decision 2003/655/EC, the **AVCP system 2+** (further described in Annex V to Regulation (EU) No 305/2011 as amended) applies.

4. 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 260057-00-0303 Inorganic fibre grid for reinforcement of cement-, anhydrite- or resin-based screed. 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 21.04.2023

By
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