



TECHNICAL DATA SHEET

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Eva-tech Bamboo-Polymer composite decking

Eva-tech, the time-tested, original Eva-Last range, is the most cost-effective bamboo composite available.

Product name:	Eva-tech and Eva-tech Dualtone
Product use:	Primarily used in decking, fascia, and similar applications
Material:	HDPE and Bamboo cellulose fibres.
Material description:	Profiles made from cellulose polymer composite

Document layout

Eva-Last strives to evaluate their products in depth and present the technical and safety information available in a manner that assists with the application thereof. If additional data or information is required, please do not hesitate to contact us at rad@eva-last.com.

In an attempt to simplify the information, similar data is loosely grouped into the categories summarised below. This document is ordered according to these categories and the applicable page number for the start of each section captured in the Table of contents above.

- Material composition
- Physical properties
- Mechanical properties
- Thermal properties
- Fire reaction properties
- Weathering properties
- Surface properties

The material compositions section captures a summary of the product make-up from the Material Safety Data Sheet (MSDS). A link to the MSDS is provided for additional detail. Summaries of chemical compliance data available are also collected in this section.

The physical properties section provides a summary of available profiles and general material properties such as density, water absorption, etc. Additional profile information can be obtained from drawings in the appropriate Appendix. Where possible, material properties that can be assigned to more specific categories are moved to the relevant section.

The mechanical properties section captures data related to the products reaction to various load conditions. The section is broadly assembled into the below categories. Additional profile and sectional information are captured by the drawings in the appropriate appendix.

- Material specific mechanical properties
- Profile specific mechanical properties
- Sectional properties

Product properties such as the expansion coefficient, thermal resistance, etc. are captured, where applicable, in the thermal properties section.

Information regarding the products reaction to fire is captured in the fire reaction properties section.

Test data relating to the acoustic performance of the product is summarised in the acoustic properties section.

Information on the products resistance to mould, termites, etc. is collected in the biodegradation properties section.

The surface properties section summarises information regarding the finish or texture of the product. Test data on aspects such as slip resistance (where applicable) is captured in this section.

Where the products form part of a system and, as a result, utilise other components, an additional section to capture useful data regarding these components has been added to this document.

Where information is not yet available, has been omitted. In the cases where information can be substituted or supplemented with alternative data (based on similar compositions, etc.) an attempt to do so is made. Where this is the case, it is highlighted. Please make use of the data accordingly. For any additional information regarding this, please feel free to contact rad@eva-last.com.

Ensure the product and application thereof is suitable, rational, and compliant with any applicable regulations or standards. Wherever necessary, consult a suitably qualified professional. For information about the installation and use of the product, please see the applicable Installation Guide (IG). For additional material safety and handling information, please refer to the applicable MSDS. For any further information, please contact rad@eva-last.com.

Material composition

The following table is a simplified material composition for the Eva-tech material technology. For more information regarding the composition, safety, and handling of the material, please see the Eva-tech MSDS. for additional information related to the safe use of these products. To confirm which substances are compatible, or incompatible, with the product, please refer to **Appendix B**.

Component	Substance	Mass (%)
Core	Polyethylene (PE)	25%
	Cellulose fibre (Bamboo fibre)	56%
	Calcium carbonate	15%
Additional additives	Other	4%

Material compliance

Eva-tech has been assessed to determine whether it contains Substances of Very High Concern (SVHC) that may be classified as carcinogenic, mutagenic, or toxic to reproduction of humans or animals, or have a persistent, cumulative, or negative impact on the environment in accordance with European REACH (Registration, evaluation, and authorization of chemicals) regulations.

Compliance report	Results	Issue date	Compliance body	Information
SVHC compliance	Pass	2018-05	EU REACH	Of the 197 substances evaluated, non-have been detected. SVHC concentration require detection levels of less than 0.05% of the whole product. See this link for the full list of substances.

Physical properties

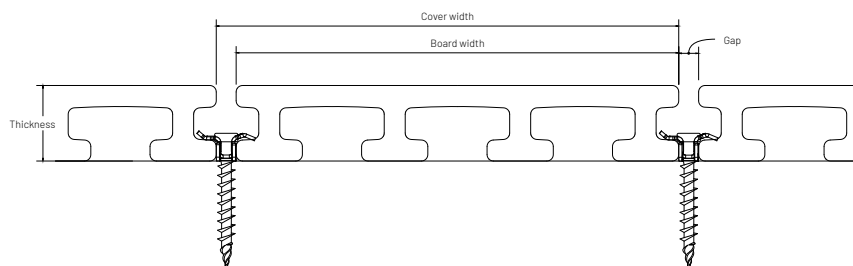
General material properties

Typical properties of the Eva-tech material technology are captured below as an indication of the expected behaviour of the Eva-tech material.

Properties	Results	Requirement	Test method	Information
Density	1 100 to 1 300 kg/m ² (68.67 to 81.16 lb/ft ³)	N/A	EN 15534-1	Results are based on internal testing.
Water absorption (Mass)	0.8%	Less than 7%	EN 15534-1 for 28 days	Eva-tech materials were evaluated by a third-party laboratory for water absorption properties in accordance with the test method listed to determine dimensional stability. See the report here for further details.
Thickness swell (Dimensional)	1.4%	Less than 5%		
Length swell (Dimensional)	0.1%	Less than 0.6%		
Width swell (Dimensional)	0.2%	Less than 1.2%		

Profile properties

The following table is a summary of the currently available profiles, please see **Appendix A** for profile drawings.



Profile ID	Application type	Board width mm (inches)	Thickness mm (inches)	Mass per meter kg/m (lbs/ft)	Cover width ⁽¹⁾ mm (inches)	Coverage ⁽²⁾ m/m ² (ft/ft ²)	Coverage mass ⁽³⁾ kg/m ² (lbs/ft ²)
ST01AEF	Decking I-Series board	137.0 (5.40)	23.4 (0.93)	2.3 (1.55)	143.0 (5.63)	7.0 (25.61)	16.2 (3.31)
ST01AEN	Decking I-Series board	137.0 (5.4)	23.4 (0.93)	2.3 (1.55)	143.0 (5.63)	7.0 (25.61)	15.9 (3.25)
ST02AEN	Decking I-Series single sided	137.0 (5.4)	23.4 (0.93)	2.7 (1.82)	143.0 (5.63)	7.0 (25.61)	18.9 (3.86)
ST02AD	Decking board	146.0 (5.75)	24.0 (0.95)	4.2 (2.83)	152.0 (5.99)	12.0 (43.9)	50.9 (10.39)
STR07B	Decking fascia board	148.0 (5.83)	11.0 (0.44)	2.3 (1.55)	154.0 (6.07)	6.5 (23.78)	15.1 (3.09)
ST02AF	Decking fascia board	246.0 (9.69)	16.0 (0.63)	5.4 (3.63)	252.0 (9.93)	4.0 (14.64)	21.3 (4.35)
ST08L	Batten	40.0 (1.58)	30.0 (1.19)	1.3 (0.88)	40.0 (1.58)	N/a	N/a
STR03Q	Batten	35.0 (1.38)	35.0 (1.38)	1.4 (0.95)	35.0 (1.38)	N/a	N/a

(1) Coverage width = board width + an assumed typical gap of 6 mm (0.2").

(2) Coverage = 1000/coverage width (1' / coverage width).

(3) Coverage = coverage x mass per length.

Mechanical properties

Material specific mechanical properties

All information within this table is based on internal laboratory results of Eva-tech.

Properties	Result	Test method	Information
Abrasion resistance	16 mg (0.0005 oz)	ASTM D4060	An abrasive wheel carrying a 1 kg load and rotating at 60 rotations a minute was applied to the surface of the profile. The product of the abrasion was then weighed after 1 000 rotations.
Hardness	71	Shore D	The depth of penetration of a specific indenter. Results greater than sixty fall under the category "Extra hard".
Modulus of Elasticity (MOE)	25.09 MPa	GB/T 17657	As the modulus of elasticity is a material property as well as a flexural property, the following information has been provided as a summary of the flexural performance tests below. MOE can be dependent on profile.
Value of residual indentation	0.1 (0.003)	EN 15534-1:2014	A striking pin with a mass of 1000 g and a spherical surface of the striking pin had a radius of 25 mm. The falling height was 700 mm. The report can be found here .
Maximum crack length	No Cracking	EN 15534-1: 2014	
Scratch resistance	0.5	FORD FLTM B0 162-01	Several weighted sharp ended shafts are run against the surface of the board and the depth of the marks measured to determine scratch resistance.
Brinell hardness	39.8	EN 15534-1	

Profile flexural properties

Flexural properties of polymer composites can be influenced by the profile geometry and span. Typical properties of the Eva-tech material technology are captured below based on internal test results. See **Appendix A** for profile details.

Profile	Application	Span	Flexural strength (MOR)	Flexural stiffness (MOE)	Maximum breaking load	Test method	Notes
		(mm) (in)	(MPa) (lbf/in ²)	(MPa) (lbf/in ²)	(kN) (lbf)		
ST01AEF	I-Series deck	400 (16)	20.3 (2 943)	2 970.2 (430 679)	2.30 (0.51)	BS EN 15534-1- 2014+A1- 2017	The following results are provided from internal test reports Further testing is underway.
		550 (22)	21.0 (3 045)	2 651.9 (384 525)	1.73 (0.38)		
ST01AEN	I-Series deck	400 (16)	21.1 (3 056)	3 315.1 (480 689)	2.34 (0.52)		
		550 (22)	20.3 (2 940)	3 332.6 (483 227)	1.64 (0.36)		
STR07B	Fascia	400 (16)	24.9 (3 616)	2 300 (333 500)	0.98 (0.21)		
		550 (22)	28.7 (4 162)	5 207.9 (755 145)	0.81 (0.18)		
ST02AF	Fascia	400 (16)	23.0 (3 336)	2 884.9 (418 310)	3.59 (0.8)		
		550 (22)	23.6 (3 414)	3 574.6 (518 317)	2.67 (0.6)		
ST08L	Batten	400 (16)	32.2 (4 667)	3 997.7 (579 666)	2.86 (0.64)		
		550 (22)	34.5 (5 001)	3 642.1 (528 104)	2.23 (0.5)		
STR03Q	Batten	400 (16)	28.0 (4 061)	3 488.2 (505 789)	3.37 (0.75)		

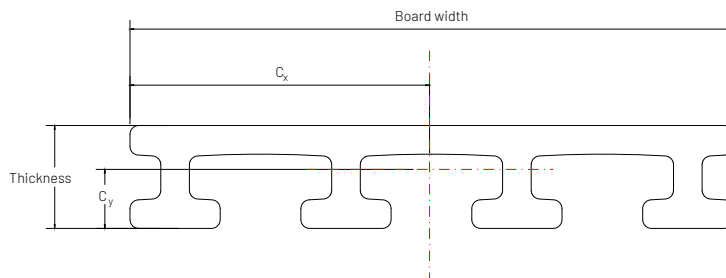
Impact of weathering (material factor estimate)

Material properties can vary because of long-term weathering. To estimate this impact on the material's flexural properties, the product is subjected to various weathering effects and the performance with and without weathering is compared. The overall end-use adjustment factor is selected based on the weathering effect that has the most impact on the material.

Profile	Application	Span (mm)(in)	Deflection At 500N (mm)(in)	Maximum breaking load (kN)(lbf)	Maximum breaking load (kN)(lbf) After cyclic weathering	Reduction factors	Test method	Notes
ST02AD	Wyde(fluted) finish	300 (12")	0.5 (0.1)	8 303 (1 866 589)	7 657 (1 721 362)	0.92	EN 321	Eva-tech weathering properties were evaluated by a third-party laboratory. The report may be found here .
	Tread finish		0.4 (0.1)	8 640 (1 942 349)	N/A			

Sectional properties

The following table provides a sectional property summary of the currently available Eva-tech profiles. Please see **Appendix A** for profile drawings and further information.



Profile details		Moments of inertia			Centroid		Elastic sectional modulus			
Profile ID	Application	Width (mm)(in)	Thickness (mm)(in)	Area (mm ²)(in ²)	I _x (mm ⁴)(in ⁴)	I _y (mm ⁴)(in ⁴)	C _x (mm)(in)	C _y (mm)(in)	S _x (mm ³)(in ³)	S _y (mm ³)(in ³)
ST01AEF	I-Series grooved decking	137.0 (5.4)	23.4 (0.9)	1 717 (2.7)	102 474 (0.3)	2 956 835 (7.1)	68.5 (2.7)	13.5 (0.5)	7 563 (0.5)	43 163 (2.6)
ST01AEN	I-Series grooved decking	137.0 (5.4)	23.4 (0.9)	1 687 (2.6)	97 969 (0.2)	2 822 510 (6.8)	67.5 (2.7)	13.3 (0.5)	7 363 (0.5)	41 813 (2.6)
ST02AEN	I-Series square edge deck board	137.0 (5.4)	23.4 (0.9)	1 994 (3.1)	101 491 (0.3)	3 476 034 (8.4)	69.4 (2.7)	13.4 (0.5)	7 565 (0.5)	50 123 (3.1)
ST02AD	Grooved decking	146.0 (5.75)	24.0 (1.0)	3 388 (5.3)	164 446 (0.4)	5 741 658 (13.8)	73.0 (2.88)	12.1 (0.5)	13 617 (0.8)	78 649 (4.8)
ST02AF	Fascia	246.0 (9.7)	16.0 (0.6)	3 983 (6.2)	84 940 (0.2)	20 571 042 (49.4)	124.4 (4.9)	8.0 (0.3)	10 617 (0.7)	165 323 (10.1)
STR07B	Fascia	148.0 (5.8)	11.0 (0.4)	1 723 (2.7)	19 954 (0.1)	3 104 582 (7.5)	73.3 (2.9)	6.1 (0.3)	3 257 (0.2)	42 344 (2.6)
ST08L	Batten	40.0 (1.6)	30.0 (1.2)	1 194 (1.9)	157 532 (0.4)	88 819 (0.2)	15.0 (0.6)	20.0 (0.8)	7 885 (0.5)	5 923 (0.4)
STR03Q	Batten	35.0 (1.4)	35.0 (1.4)	1 008 (1.6)	120 387 (0.3)	120 387 (0.3)	17.5 (0.7)	17.5 (0.7)	6 879 (0.4)	6 879 (0.4)

Thermal properties

Typical properties of the Eva-tech material technology are captured below as an indication of the expected behaviour of the Eva-tech products.

Properties	Results	Test method	Information
Coefficient of thermal expansion (CTE)	45 x 10 ⁻⁶ mm/mm.°C 25 x 10 ⁻⁶ in/in.°F	ASTM D696-16	Eva-tech thermal properties were evaluated by a third-party laboratory. The report may be found here .

Fire reaction properties

Typical properties of Eva-tech materials are captured below as an indication of the expected behaviour of various Eva-tech profile.

Standard	Properties	Result	Requirement	Class	Test Method	Information
EN 13501	Smoke production	212	Less than 750%.min	D _{fl} -s1	EN 13 501	Eva-tech profile 71 x 11 mm was tested in a flooring application by a third-party laboratory. The report may be found here .
	Flame spread (Fs)	Yes	Less than 150 mm in 20 seconds.			
	Critical heat flux	3.5 (0.3)	Greater than 3.0 kW/m ² (kW/ft ²)			

Standard	Properties	Result	Requirement	Class	Test Method	Information
SANS	Flame spread index (FSI)	2.08	Less than 3.9	4	SANS 10177-4:2005	Eva-tech ST02AD 146 x 24 mm was tested to determine its burning characteristics by a third-party laboratory. The report may be found here .
	Heat contribution index	0.14	Less than 3.9			
	Smoke emission index	2.55	Less than 3.9			
	Surface fire index (SFI)	1.59	Less than 3.3			

Eva-tech dual tone (FR)

Standard	Properties	Result	Requirement	Class	Test Method	Information
EN 13501	Smoke production	31.5	Less than 750%.min	C _{fl} -s1	EN 13 501	Eva-tech Dual tone FR version Xavia I-Series profile ST01AEF 137 x 23.38 mm was tested in a flooring application by a third-party laboratory. The report may be found here .
	Flame spread (Fs)	No	Less than 150 mm in 20 seconds.			
	Critical heat flux	5.8 (0.53)	Greater than 3.0 kW/m ² (kW/ft ²)			

Weathering

Most materials are susceptible to weathering. The environment, and factors such as Ultraviolet (UV) light exposure, oxidation and contact with organisms (termites, mold, etc.), to which the materials are exposed will influence the rate of deterioration. The impact of weathering on the flexural performance (material factor estimate) of the products is captured in the Mechanical properties section above.

Colour fade

Weathering over time can result in a colour change of the material. ΔE is a common form of measurement for colour fade. The ΔE denotes the colour difference between an original sample and a tested sample after different levels of exposure to UV light (and potentially other weathering effects). ΔE is measured on a scale of 1 to 100 and attempts to provide a simple metric of how the human eye perceives colour change. Both 'light' and 'dark' colours are tested to provide an indication of the range of performance of the product. The report may be found [here](#).

Standard	Colour Reference	Hours	ΔE	Grey scale	Test method	Information
EN	C11 – Xavia – Dark grey	1 300	8.2	2.5	ASTM G155	Changes perceptible at a glance
	C04 – Rusteak – Brown	1 300	4.3	4.0		Changes perceptible through close observation

Biodegradation

Materials susceptible to organism-induced degradation, like termites or mold, can deteriorate over time. In the absence of specific data for Eva-tech, the bellow tables are based on Infinity materials, which share a core composition with Eva-tech. Consequently, it is assumed their performance will be similar. Nonetheless, it is important to note that Eva-tech's sanded surface could expose cellulose materials, an aspect that may influence its durability in a distinct manner.

Fungal and Termite resistance

As a certain percentage of cellulose-polymer composition contains cellulose fibres which may provide nutrition to fungi and mold, promote growth, samples were exposed to spores and their growth rates monitored.

Standard	Fungal strand	Result	Test Method	Information
ICC-ES AC 174 (Fungal resistance)	G. trabeum (change in mass)	0.77%	ASTM D 2017	To confirm compliance with ICC-ES, AC 174, biodegradation resistance requirements. The results of which can be located within the issued CCR report, here .
	P. Placenta (change in mass)	0.91%		
	T. Versicolor (change in mass)	0.90%		
	I.Lacteus (change in mass)	0.91%		
ICC-ES AC 174 (Termite resistance)	G. trabeum (change in mass)	0.77%		

Eva-tech materials were submitted for testing to confirm the effectiveness of fungistatic compounds within the composition's formulation, then visually assessed in accordance with the following scale.

0 – No growth, the material is resistant to fungal attack.

1 – Initial growth, the material is partially protected against fungal attack or generally not susceptible to such attack

2 – Obvious growth and sporulation, the material is susceptible to fungal attack

Standard	Fungal strand	Measured value	Test Method	Information
Eurocode	A. Niger, ATCC 6275	0	ISO 16869	To confirm compliance with ISO 16869 for fungal, Eva-tech samples exposed to spores for a period of 21 days and their growth rates monitored. The report may be found here .
	C. Globosum, ATCC 6205	0		
	P. Variotii, CICC 40379	0		
	P. Funiculosum, CICC 40279	0		
	T. Longibrachiatum CICC 13053	0		

Surface properties

Slip resistance

Slip resistance refers to a surfaces ability to prevent people from slipping or losing their footing. There are various methods used to measure slip resistance. These tests provide a measurement of slip resistance that can be used to compare different flooring materials. Slip resistance is influenced by factors such as the material and its surface, the angle of incline, the type of shoe being worn, and the presence of moisture or multiple contaminants.

Eva-tech slip resistance results

The following table provides the Slip resistance values (SRV) results, and equivalent slip resistance classes results for Eva-tech material using slider 55 in a barefoot application as provided by a third-party laboratory.

Finish	Lowest rest result		ABC rating	HSE equivalent rating	
	Dry conditions	Wet conditions		Risk of slip	Probability of slip
Light brushed	63	42	B	Low	1 in 1 000 000
W	60	39	B	Low	1 in 1 000 000
S	66	39	B	Low	1 in 1 000 000
Brushed	78	56	C	Low	1 in 1 000 000
Sanded	76	43	B	Low	1 in 1 000 000

The following table provides the Slip resistance values (SRV) results, and equivalent slip resistance classes results for Eva-tech material using slider 96 in a shod application as provided by a third-party laboratory.

Finish	Lowest rest result		R rating	HSE equivalent rating	
	Dry conditions	Wet conditions		Risk of slip	Probability of slip
Light brushed	55	39	R11	Low	1 in 1 000 000
W	43	34	R10/R11	Low Moderate	1 in 1 000 000
S	44	31	R10	Moderate	1 in 1 000 000
Brushed	43	36	R11	Low Moderate	1 in 1 000 000
Sanded	46	34	R10/R11	Low Moderate	1 in 1 000 000

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While most data have been compiled from research, case histories, experience and testing, small changes in the environment can produce marked differences in performance. The decision to use a material, and in what manner, is made at your own risk. The use of a material and method may therefore need to be modified to its intended end use and environment.

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Contact information

Eva-Last

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Appendix A - Profiles

Profile properties

Product code	ST01AEN
Sectional area (mm ²)	1 687
Approximate mass (kg/m)	2.3



Sectional properties in typical orientation

I_x (mm ⁴)	97 969
I_y (mm ⁴)	2 822 510
C_x (mm)	67.5
C_y (mm)	13.3
S_x (mm ³)	7 363
S_y (mm ³)	41 813

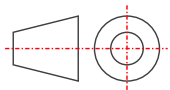
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Eva-tech I-Series ST01AEN - Grooved - 137 x 23.4

File name

2023-11-20 - Eva-tech Profiles - Version 2.1

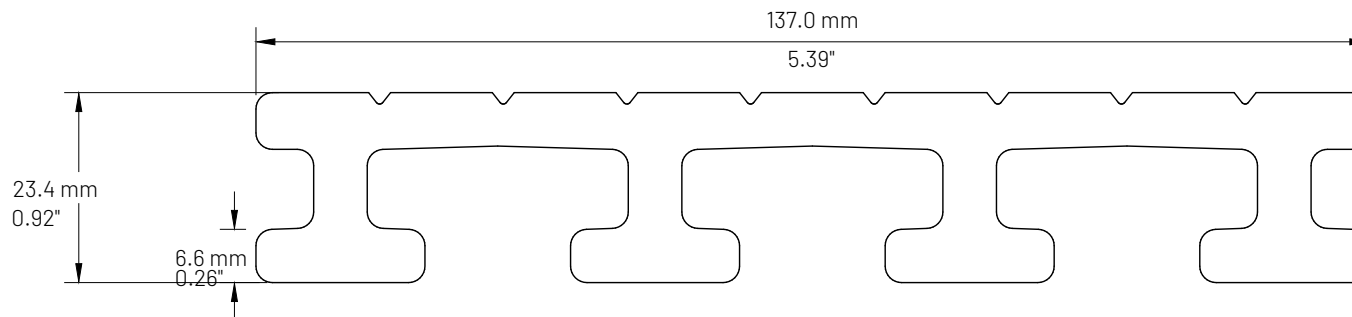
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Drawing number	01
Date	January 23, 2024
Page	N/a
Scale	NTS

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Profile properties

Product code	ST01AEF
Sectional area (mm ²)	1 717
Approximate mass (kg/m)	2.3

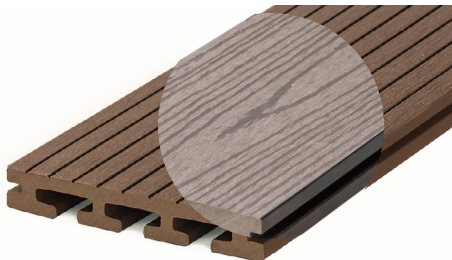


Image is a representation of the product as no photo's are available

Sectional properties in typical orientation

I_x (mm ⁴)	102 474
I_y (mm ⁴)	2 822 510
C_x (mm)	68.5
C_y (mm)	13.5
S_x (mm ³)	7 563
S_y (mm ³)	43 163

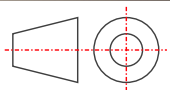
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Eva-tech I-series ST01AEF - Embossed - 137 x 23.4

File name

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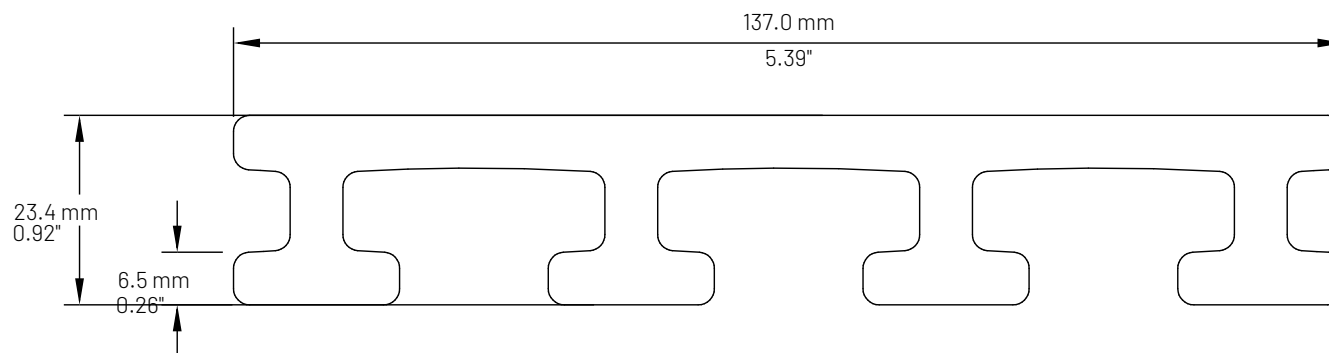
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Profile properties

Product code	ST02AEN
Sectional area (mm ²)	1 994
Approximate mass (kg/m)	2.7



Sectional properties in typical orientation

I_x (mm ⁴)	101 491
I_y (mm ⁴)	3 476 034
C_x (mm)	69.4
C_y (mm)	13.4
S_x (mm ³)	7 565
S_y (mm ³)	50 123

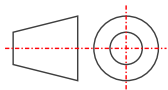
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Eva-tech I-Series ST02AEN - Grooved - 137 x 23.4

File name

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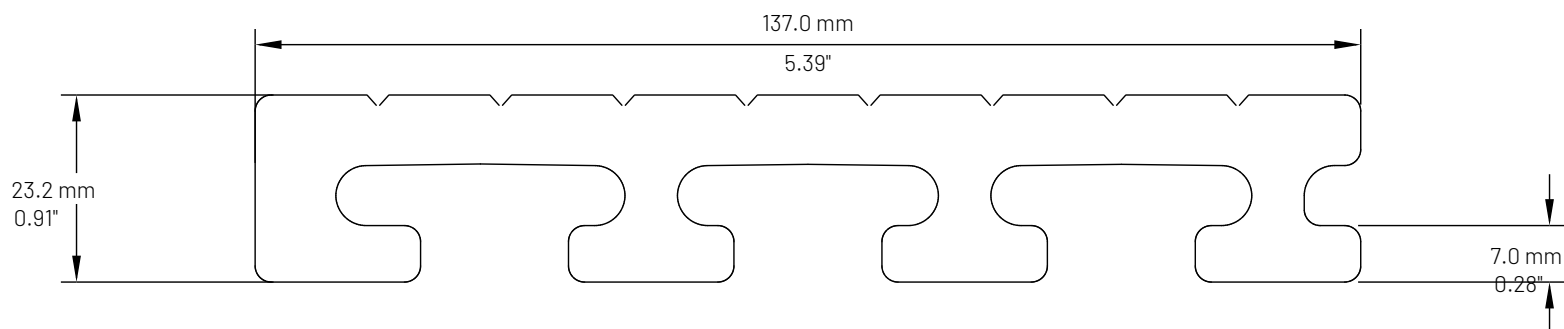
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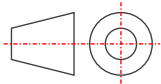
Profile properties	
Product code	ST02AD
Sectional area (mm ²)	3 338
Approximate mass (kg/m)	4.2



Sectional properties in typical orientation	
I _x (mm ⁴)	164 446
I _y (mm ⁴)	5 741 658
C _x (mm)	73.0
C _y (mm)	12.1
S _x (mm ³)	13 617
S _y (mm ³)	78 649
Drawing title	
Eva-tech - ST02AD - Grooved - 146 x 24	

File name	
2023-11-20 - Eva-tech Profiles - Version 2.1	

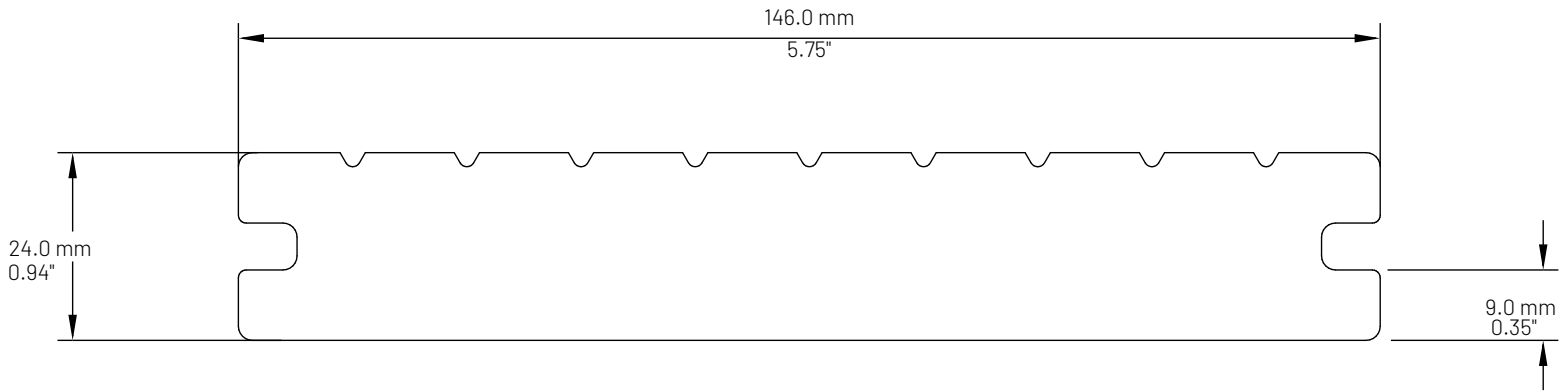
File details	
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Drawing number	01
Date	January 23, 2024
Page	N/a
Scale	NTS

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Profile properties

Product code	STR07B
Sectional area (mm ²)	1 723
Approximate mass (kg/m)	2.3



Sectional properties in typical orientation

$I_x(\text{mm}^4)$	19 954
$I_y(\text{mm}^4)$	3 104 582
$C_x(\text{mm})$	73.3
$C_y(\text{mm})$	6.1
$S_x(\text{mm}^3)$	3 257
$S_y(\text{mm}^3)$	42 344

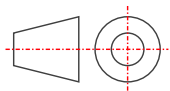
Drawing title

Eva-tech - STR07B - Fascia - 148 x 11.0

File name

2023-11-20 - Eva-tech Profiles - Version 2.1

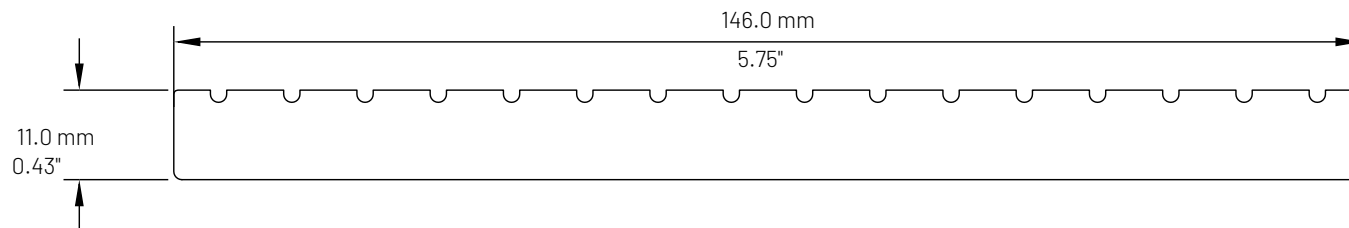
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Date	January 23, 2024
Page	N/a
Scale	NTS

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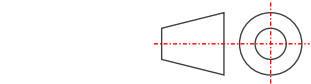
Profile properties	
Product code	ST02AF
Sectional area (mm ²)	1717
Approximate mass (kg/m)	2.3



Sectional properties in typical orientation	
I _x (mm ⁴)	101 491
I _y (mm ⁴)	3 476 034
C _x (mm)	69.4
C _y (mm)	13.4
S _x (mm ³)	7 565
S _y (mm ³)	50 123
Drawing title	

Eva-tech - ST02AF-Fascia - 249 x 16

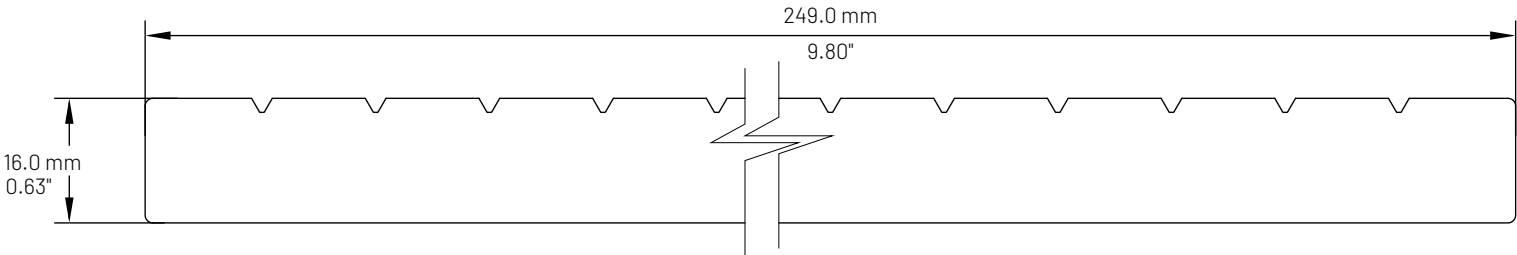
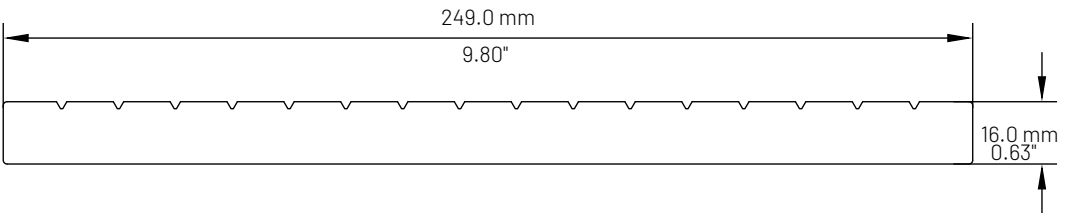
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2023-11-20 - Eva-tech Profiles - Version 2.1	
File details	



Drawing number	01
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Scale	NTS

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Profile properties	
Product code	ST08L
Sectional area (mm ²)	157 532
Approximate mass (kg/m)	1.6

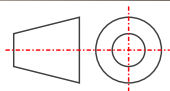


Sectional properties in typical orientation	
I _x (mm ⁴)	157 532
I _y (mm ⁴)	88 819
C _x (mm)	15.0
C _y (mm)	20.0
S _x (mm ³)	7 885
S _y (mm ³)	5 923

Drawing title	
Eva-tech - ST08L - Joist - 40 x 30	

File name	
2023-11-20 - Eva-tech Profiles - Version 2.1	

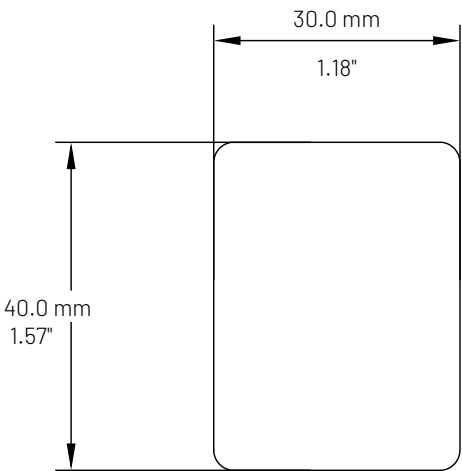
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Drawing number	01
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Scale	NTS

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Profile properties

Product code	STR03Q
Sectional area (mm ²)	1 008
Approximate mass (kg/m)	1.4



Sectional properties in typical orientation

$I_x(\text{mm}^4)$	120 387
$I_y(\text{mm}^4)$	120 387
$C_x(\text{mm})$	17.5
$C_y(\text{mm})$	17.5
$S_x(\text{mm}^3)$	6 879
$S_y(\text{mm}^3)$	6 879

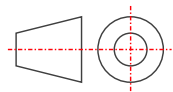
Drawing title

Eva-tech - STR03Q - Joist - 30 x 30

File name

2023-11-20 - Eva-tech Profiles - Version 2.1

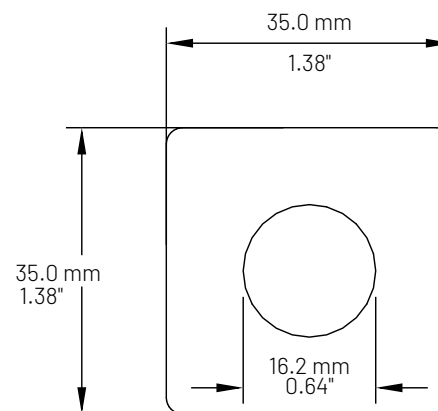
File details



Drawing number	01
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Scale	NTS

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Appendix B - Material Compatibility

Eva-tech profiles blend cellulose fibers within an HDPE polymer matrix, often featuring sanded surfaces that reveal the fibers. This unique combination, similar to other materials, has specific sensitivities to various substances that could potentially lead to surface damage. Sources of such substances often include cleaning agents, pool chemicals, plant oils, and saps. It is important, as with any material, to understand and ensure compatibility with Eva-tech products, particularly when they are likely to come into contact with different chemicals.

The insights provided are derived from extensive reports and publications. For detailed information on the reaction of bamboo fibers, you can refer to [[this report](#)]. Additionally, a comparative analysis of three HDPE chemical compatibility charts, including the **A. Shulman list**, **GVF list**, and the **Astisensor list**, offers an in-depth overview of the various chemicals that impact HDPE, particularly at different solution temperatures.

To guide chemical selection and prevent damage to HDPE, LDPE, and bamboo pulp fibers, certain substances are best avoided:

- **Strong Acids:** Sulfuric acid, hydrochloric acid, nitric acid, chromic acid, phosphoric acid, and aqua regia are known to affect polyethylene and bamboo pulp fibers, especially at higher temperatures.
- **Halogen Gases and Liquids:** Bromine and fluorine can be harmful to both polyethylene and bamboo pulp fibers.
- **Organic Solvents and Compounds:** Aromatic hydrocarbons, benzene, butyric acid, tetrachloroethylene, tetrahydrofuran, and trichloroethylene may impact these materials.
- **Other Specific Chemicals:** Use caution with boron trifluoride, chlorosulphonic acid, cyclohexane, hydrogen peroxide, oleum, calcium benzoate, calcium bromates, and titanium tetrachloride.

The following list outlines chemicals and their concentrations where information is available; that have been identified to negatively impact HDPE or bamboo, as indicated in various studies. While this list is extensive, it is not definitive. For situations where the chemical impact on Eva-tech decking is uncertain, conducting tests is recommended. Additional details, including specific materials and temperatures that may influence these reactions, are available in the referenced reports and lists.

A

Acetic acid, glacial > 96 %
After shave
Allyl alcohol 100%
Amyl acetate (100%)
Amyl chloride 100%
Aniline (100%)
Anise seed oil
Aqua Regia (80% HCl, 20% HNO₃)
Aromatic hydrocarbon

B

Benzaldehyde 100%
Benzene 100%
Brake fluid
Bromine, dry gas 100%
bromine, liquid 100%
Bromochloromethane
Bromoform 100%
Butadiene
Butyl acetate (100%)

C

Camphor oil
Carbon disulphide 100%
Carbon tetrachloride 100%
Caustic soda
Cedar leaf oil
Cedar wood oil
Chlorine liquid
Chlorine, aqueduct. Sol.
Chlorine, dry gas 100%
chlorobenzene 100%
Chlorobenzene
Chloroform 100%
Chlorosulphocyclonic acid 100%
Chlorotoluene
Chrome alum saturated
Chromic acid (10-20%)
Cinnamon oil
Citronella oil
Cresols
Cuprous chloride saturated
Cuprouxide
Cyclohexane
Cyclohexanone

D

Decane
Dibutyl amine
Dibutyl ether
Dichlorobenzene
Dichloroethylene
Dichloropropylene
Diesel Fuel
Diethyl Ether
Diethylamine
Dipentene

E

Ether
Ethyl acetate 100%
Ethyl acrylate 100%
Ethyl benzene
Ethyl chloride 100%
Ethyl ether
Ethyl mercaptan
Ethylbenzene
Ethylene chloride 100%
Ethylene Dichloride

F

Ferric Chloride
Fluorine
Fluorine gas 100%
Fluorine gas, dry 100%
Fluorine gas, wet 100%
Fluorine
Formaldehyde (30–40%)
Fuel oil
Furfural (100%)
Furfural 100%
Furfuryl alcohol

G

Gasoline
Glucose
Glycerine

H

Heptane
Hexachlorobenzene
Hexane
Hydrazine
Hydrobromic Acid 100%
Hydrobromic Acid 20%
Hydrochloric Acid > 37% *
Hydrochloric Acid, Dry Gas
Hydrofluoric Acid 100%
hydrogen peroxide >30%

I

Iodine crystal
Iodine, in alcohol
Iodine, in potassium Sol.
Iso pentane
Iso propyl amine
Isopropyl ether 100%

J

Jet Fuel (JP3, JP4, JP5, JP8)

K

Kerosene
Kerosene
Ketones

L

Lacquer Thinners
Lacquers
Lemon oil
Lithium Chloride
Lithium Hydroxide
Lysol.

M

Methoxy butanol 100%
Methyl benzoic acid Sat. Sol.
Methyl bromide 100%
Methyl chloride 100%
Methyl ethyl ketone (100%)
Methyl Isobutyl Ketone
Methylene chloride
Mineral oils
Mineral Spirits
Monochloroacetic Acid

N

Naphtha
Naphtha
Naphthalene
N-heptane 100%
Nitric acid >68% *
Nitric acid 95%
Nitrobenzene 100%
Nitroethane 100%
Nitroglycerine
Nitromethane
Nitrotoluene
N-pentane

O

Octyl alcohol
Oils: Cinnamon
Oils: Crude Oil
Oleum (H₂SO₄ + 10% SO₃)
Oleum (H₂SO₄ + 50% SO₃)
Oleum concentrated.
Olive oil
Ozone 100%
Ozone
O-zylene

P

Paraffin oil
Pentane 2
Peppermint oil
Perchloric acid 70%
Perchloric Acid
Perchloroethylene
Petroleum
Petroleum ether
Phenol (10%)
Phenol (Carbolic Acid)
Phosphoric Acid (molten)
Picric Acid
Pine oil
Propane (liquefied)
Propylene dichloride 100%
Pyridine
P-zylene

S

Sodium Iodide

Styrene

Sulphur Dioxide

Sulphur dioxide, dry 100%

Sulphur trioxide 100%

Sulphuric acid > 20 % *

Sulphuric acid, fuming

T

Tetrachloroethylene 100%

Tetrachloromethane 100%

Tetradecane

Tetrahydrofuran

Tetrahydronaphthalene 100%

Thionyl chloride 100%

Tin II chloride Sat. Sol.

Tin IV chloride Sat. Sol.

Tin IV chloride Sol.

Titanium tetrachloride Sat. Sol.

Toluene (Toluol)

Toluene 100%

Toluene

Transformer oil

Tribromomethane

Trichloroethylene 100%

Turpentine

V

Vinyl Acetate

X

Xylene 100%

*Known to dissolve bamboo.