Apex PLUS

TECHNICAL DATA SHEET

VERSION A3.1 | 25/10/2023

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Contents

Document guide **3**
Material composition **4**
Physical properties **5**
Mechanical properties **6**
Thermal properties **8**
Fire reaction properties **8**
Weathering **10**
Surface properties **11**
Appendix A - Decking profiles **13**
Appendix B - Material compositions **19**

Apex Plus reinforce foamed mineral - PVC decking.

Apex Plus sets the standard for natural looking composite. Its mineral foamed-PVC and glass fiber-reinforced core allows for increased span capability. Low-maintenance Apex Plus is more stable with less expansion and contraction and requires only basic cleaning for optimal longevity. Its protective cap is made from a resilient acrylic polymer coating, offering long-term fade, scratch, and stain resistance. Apex Plus also provides decay resistance against insects, moisture, and the elements.

Product name: Apex Plus reinforced foamed mineral – PVC decking

Product use: Primarily used in decking, fascia, and similar applications

Material: Glass fibre reinforced mineral and PVC composite

Material description: Co-extruded profiles with an acrylic cap around a foamed mineral-polymer composite core

Document guide

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 Apex Plus material technology. For more information regarding the composition, safety, and handling of the material, please see the Apex Plus MSDS. Please also refer to the safety section and the Safe Working Procedure (SWP) in the Installation Guide (IG) 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	Poly chloroethylene (PVC)	50%
	Calcium carbonate	31%
	Acrylonitrile-butyl acrylate-styrene copolymer	9%
	Glass fibre	1%
Additional additives	Other	9%
Cap	PMMA	

Physical properties

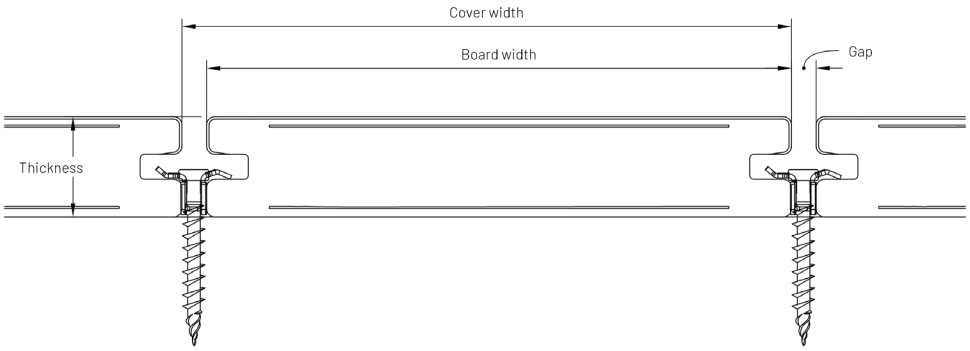
General material properties

Typical properties of the Apex Plus material technology are captured below:

Properties	Results	Test method	Information
Density	650 to 760 kg/m^3 (40.58 to 47.45 lb/ft^3)	ASTM D2395	Results are based on internal testing.

Profile properties

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



Code	Description	Board width (mm) (inch)	Thickness (mm) (inch)	Mass per meter (kg/m) (lb/ft)	Cover width (1) (mm) (inch)	Coverage (2) (m/m^2) (ft/ft^2)
STTHMZQ128	Grooved deck board	144.9 (5.71)	21 (0.83)	2.2 (1.48)	6.6 (2.02)	14.6 (3)
STTHMZQ102	Square edged deck board	140 (5.52)	24.4 (0.97)	2.6 (1.75)	6.8 (2.08)	17.53 (3.6)
STTHMZQ103	Grooved deck board	140 (5.52)	24 (0.95)	2.5 (1.68)	6.8 (2.08)	16.61 (3.41)
STTHMZQ116	Grooved deck board	190 (7.49)	24 (0.95)	3.5 (2.36)	5.1 (1.56)	17.86 (3.66)
STTHMZQ123	Square edged deck board	190 (7.49)	24 (0.95)	3.6 (2.42)	5.1 (1.56)	18.27 (3.75)
STTHMZQ134	Grooved deck board	140 (5.52)	22.5 (0.89)	2.4 (1.62)	6.8 (2.08)	16.6 (3.4)
STTHMZQ135	Grooved deck board	190 (7.49)	22.5 (0.89)	3.3 (2.22)	5.1 (1.56)	17 (3.49)
STTHMZQ136	Starter deck board	140 (5.52)	22.8 (0.9)	2.5 (1.68)	6.8 (2.08)	17.1 (3.51)
STTHMZQ137	Starter board	190 (7.49)	22.8 (0.9)	3.4 (2.29)	5.1 (1.56)	17.4 (3.57)

(1) Coverage width = Board width + an assumed typical gap of 6 mm.
(2) Coverage = 1000/Coverage width
(3) Coverage = Coverage x mass per meter.

Mechanical properties

Material specific mechanical properties

All information within this table is currently based on internal laboratory results of Apex. Apex Plus and Apex share the same cap material.

Properties	Result	Test method	Information
Abrasion resistance	116 mg/c (0.004092 oz/c)	ASTM D4060	An abrasive wheel carrying a 1 kg (2.2 lb) 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	82	Shore D	The listed hardness is in relation to the ASA cap of the Apex material. The depth of penetration of a specific indenter is measured. Results greater than 60 fall under the category "Extra hard"
Modulus of Elasticity (MOE)	2344 to 2 903.3 MPa (339 880 to 420 978.5 lbf/in^2)	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.

Profile flexural properties

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

Profile	Span (mm) (in)	Ultimate Load (kN) (lbf)	Modulus of rupture MOR (MPa) (lbf/in^2)	Modulus of elasticity MOE (MPa) (lbf/in^2)	Test method	Information
STTHMZQ103 3 Point test	300 (11.81)	10.7 (2 405.36)	60.4 (8 758.0)	2 903.3 (420 978.5)	BS EN 15534-1	Internal reports have provided the flexural performance of STTHMZQ103 profiles at varying spans. Further testing is underway for Apex Plus materials.
	400 (15.75)	8.5 (1 910.80)	63.6 (9 222.0)	2 629.5 (381 277.5)		
	500 (19.69)	7.4 (1 663.52)	64.6 (9 367.0)	2 702.6 (391 877.0)		
STTHMZQ103 4 Point test	300 (11.81)	17.2 (3 866.56)	64.6 (9 367.0)	2 670.1 (387 164.5)		
	400 (15.75)	12.8 (2 877.44)	63.9 (9 265.5)	2 569.0 (372 505.0)		
	500 (19.69)	8.6 (1 933.28)	53.7 (7 786.5)	2 342.3 (339 633.5)		

Material weathering factor

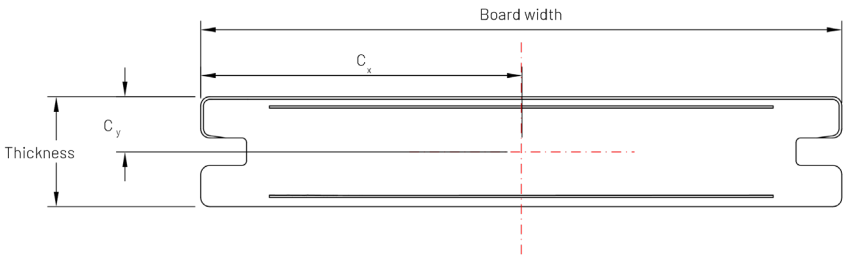
Material properties can vary because of long-term weathering. To estimate this impact on the material's flexural properties, the product is subjected to various weathering effects and the performance with and without weathering is compared. The overall end-use adjustment factor is selected based on the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

Typical properties of the Apex material technology are captured below as an indication of the expected behaviour of the Apex Plus material. It is anticipated that the glass fibre reinforcing sheets of the Apex Plus material technology would improve the performance of the high temperature effect results below.

Weathering effect	MOR (%)	MOE (%)	Adjustment factor	Test method	Information
High temperature effect	18%	24%	0.76	ASTM D7032 – 17, ASTM D2565, and ASTM D790.	To confirm compliance with ICC-ES, AC 174, Apex materials were evaluated for a decking application to determine what affect temperature, moisture and UV exposure had on the flexural performance of the material in accordance with the test methods listed. The end use adjustment factor is based on the effect with the most impact. The results of which can be located within the issued CCR report, **here**.
Low temperature effect	-26%	-14%	1.00		
Moisture effect	-3%	4%	0.96		
UV effect	-6%	1%	1.00		
Freeze-thaw effect	1%	13%	0.97		
Overall end-use adjustment factor			0.76		

Sectional properties

The following table provides a sectional property summary of the currently available Apex Plus profiles in their typical board orientation.
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)
STTHMZQ128	Decking	144.9 (5.71)	21.0 (0.83)	2 932 (4.55)	110 992 (0.27)	4 790 388 (11.51)	72.5 (2.86)	10.5 (0.41)	10 566 (0.65)	66 120 (4.04)
STTHMZQ102	Decking	140.0 (5.51)	24.4 (0.96)	3 412 (5.29)	168 994 (0.41)	5 562 469 (13.36)	70.0 (2.76)	12.2 (0.48)	13 852 (0.85)	79 464 (4.85)
STTHMZQ103	Decking	140.0 (5.51)	24.0 (0.95)	3 234 (5.01)	160 415 (0.39)	4 949 191 (11.89)	70.0 (2.76)	12.0 (0.47)	13 368 (0.82)	70 703 (4.31)
STTHMZQ116	Decking	190.0 (7.48)	24.0 (0.95)	4 434 (6.87)	218 015 (0.52)	12 688 553 (30.49)	95.0 (3.74)	12.0 (0.47)	18 168 (1.11)	133 564 (8.15)
STTHMZQ116	Decking	190.0 (7.48)	24.0 (0.95)	4 556 (7.06)	218 411 (0.53)	13 686 586 (32.88)	95.0 (3.74)	12.0 (0.47)	18 201 (1.11)	144 069 (8.79)
STTHMZQ134	Grooved deck board	140.0 (5.51)	22.5 (0.89)	3 029 (4.70)	131 999 (0.32)	4 615 658 (11.09)	70.0 (2.76)	11.3 (0.45)	11 733 (0.72)	65 938 (4.02)
STTHMZQ135	Grooved wide	190.0 (7.48)	22.5 (0.89)	4 154 (6.44)	179 460 (0.43)	11 854 665 (28.48)	95.0 (3.74)	11.3 (0.45)	15 952 (0.97)	124 786 (7.61)
STTHMZQ136	Starter standard	140.0 (5.51)	22.8 (0.90)	3 127 (4.85)	137 579 (0.33)	4 923 877 (11.83)	71.3 (2.81)	11.4 (0.45)	12 068 (0.74)	69 063 (4.21)
STTHMZQ137	Starter board	190.0 (7.48)	22.8 (0.90)	4 267 (6.61)	186 964 (0.45)	12 484 570 (30.00)	96.3 (3.79)	11.4 (0.45)	16 400 (1.00)	129 629 (7.91)

Thermal properties

Typical properties of the Apex Plus material technology are captured below

Properties	Results	Test method	Information
Coefficient of thermal expansion (CTE)	35.0 x 10^{-6} mm/mm.°C	ASTM D696-16	Results are based on Apex Plus materials.

Fire reaction properties

Typical properties of Apex Plus material. Additional properties of Apex technologies are captured below as an indication of the expected behaviour of the Apex Plus material.

Apex plus

Standard	Properties	Result	Requirement	Test Method	Information
EN 13501	Class	E_{fl}	Less than 150 mm in 20 seconds.	EN 9239 and ISO 11925	Test was conducted on Apex plus STTHMZQ128 material in a decking application. See link **here.**

Apex single cap

Standard	Properties	Result	Requirement	Test Method	Information
EN 13501	Critical heat flux	11 kW/m^2	Greater than 8.0 kW/m^2	EN 9239 and ISO 11925	Test was conducted on Apex material in a decking application. Profile STPVB103 was tested with a single cap layer. The report can be found **here.**
	Smoke production	254.0%.min	Less than 750%.min		
	Flame spread (Fs)	Yes	Less than 150 mm in 20 seconds.		
	Class	Bfl – s1			

Apex dual tone

Standard	Properties	Result	Requirement	Test Method	Information
ICC-ES AC 174	Flame spread index (FSI)	35	Less than 200	ASTM E84	Test was conducted on Apex deck boards with a dual cap technology. The results of which can be located within the issued CCR report, **here.**
	Smoke development index	1 300	Less than 450		

Standard	Properties	Result		Requirement	Test Method	Information
EN 13501	Smoke production	728%.min		Less than 750%.min	EN 9239 and ISO 11925	Test was conducted on Apex material in a decking application. Dual tone technology was tested. Report can be found, **here.**
	Flame spread (Fs)	10 min	500 mm	Less than 150 mm in 20 seconds.		
		20 min	660 mm			
		30 min	760 mm			
	Critical heat flux	1.8 kW/m^2		Greater than 3.0 kW/m^2		
	Heat flux (HF)	10 min	3.8 kW/m^2			
		20 min	2.4 kW/m^2			
		30 min	1.8 kW/m^2			
	Maximum light attenuation	92%				
	Class	E_{fl} - s1				

Standard	Properties	Result	Requirement	Test Method	Information
WUI	Effective net peak release rate	147.8 kW/m^2	269 kW/m^2	SFM 12-7A-4A Decking	Effective net peak heat release rate of less than or equal to 269 kW/m^2.
	Sustained flaming	Pass	40 min		Sustained flaming or glowing combustion of any kind of at the conclusion of the 400-minute observation period was not present.
	Absence of falling particles	Pass	No falling particles		Absence of falling particles that are still burning when reaching the burner or floor.
	Classification	Pass			STTHM103 Grooved, Half capped profile. Link can be found, **here.**

Weathering

The environment to which materials are exposed influences how quickly the material will weather (or deteriorate). This includes degradation factors like UV exposure, oxidation or contact with organisms within the environment such as termites or mold.

Colour fade

Materials are susceptible to colour change over time due to weathering. **ΔE** denotes the colour difference between an original sample and a tested sample after exposure to UV light. **ΔE** is measured on a scale of 1 to 100 and provides a metric to understand how the human eye perceives colour change. Apex and Apex Plus have identical caps.

Standard	Colour Reference	ΔE	Grey scale	Test method	Information
ICC-ES AC 174	Arctic birch (CG005)	1.3	4	ASTM G155-13 4 000 Hours	Change perceptible through close observation. To confirm compliance with ICC-ES, AC 174, durability requirements. Apex samples were tested in accordance with the test method listed. The results of which can be located within the issued CCRR **here.**
	Brazilian teak (CB010)	1.1	Not determined	ASTM G154-7 3 000 Hours	Change perceptible through close observation
	Himalayan Cedar (CL014)	1.72	Not determined		Change perceptible through close observation
	Hawaiian Walnut (CB013)	2.26	Not determined		Change perceptible at a glance

Biodegradation

Materials exposed to organisms such as termites or mold can degrade as a result.

Decay resistance

Mold resistance does not apply to products without significant cellulose materials within the composition.

Termite resistance

Termite resistance does not apply to products without significant cellulose materials within the composition.

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.

Apex Plus slip resistance results

The following table provides slip resistance results for Apex Plus materials by external laboratory for Apex Plus materials. Apex Plus and Apex share finishes and are interchangeable.

Finish	SRV	Class	Test method	Information
L– Lateral orientation	28.1	C	DIN 51097	Apex Plus profile test results **here**.
	40.1	R13	DIN 51130	Apex Plus profile test results **here**.
L – Longitudinal orientation	28.4	C	DIN 51097	Apex Plus profile test results **here**.
	27.5	R12	DIN 51130	Apex Plus profile test results **here**.
L – Longitudinal orientation	62.0	P5	AS 4586 - A	Apex Plus profile test results **here**. Wet pendulum test with slider 55.
	0.95	D1	AS 4586 – B	Apex test results. Dry friction floor test.
	34.0	C	AS 4586 – C	Apex test results.
	26.4	R11	AS 4586 – D	Apex Plus profile test results **here**.
L – Longitudinal orientation	47.0	P5	AS 4586 - A	Apex Plus profile test results **here**. Wet pendulum test with slider 55.

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Appendix A

Apex Plus decking profiles

Profile properties

Product code	**STTHMZQ0128**
Sectional area (mm^2)	2 932
Approximate mass (kg/m)	2.2

Sectional properties in typical orientation

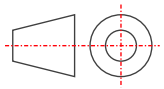
I_x(mm^4)	110 992
I_y(mm^4)	4 790 388
C_x(mm)	72.5
C_y(mm)	10.5
S_x(mm^3)	10 566
S_y(mm^3)	66 120

See the Mechanical properties section of the TDS for imperial conversions.

Drawing title

File name

File details



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Scale	NTS

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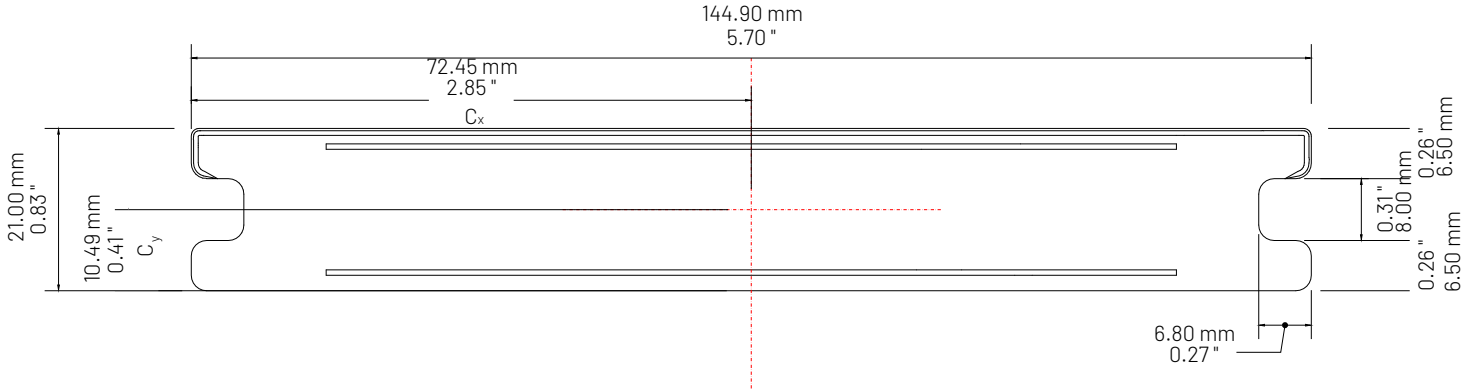


Profile properties

Product code	**STTHMZQ0102**
Sectional area (mm²)	3 412
Approximate mass (kg/m)	2.6

Sectional properties in typical orientation

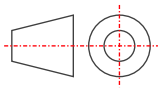
I_x (mm⁴)	168 994
I_y (mm⁴)	5 562 469
C_x (mm)	70.0
C_y (mm)	12.2
S_x (mm³)	13 852
S_y (mm³)	79 464

See the Mechanical properties section of the TDS for imperial conversions.

Drawing title

File name

File details



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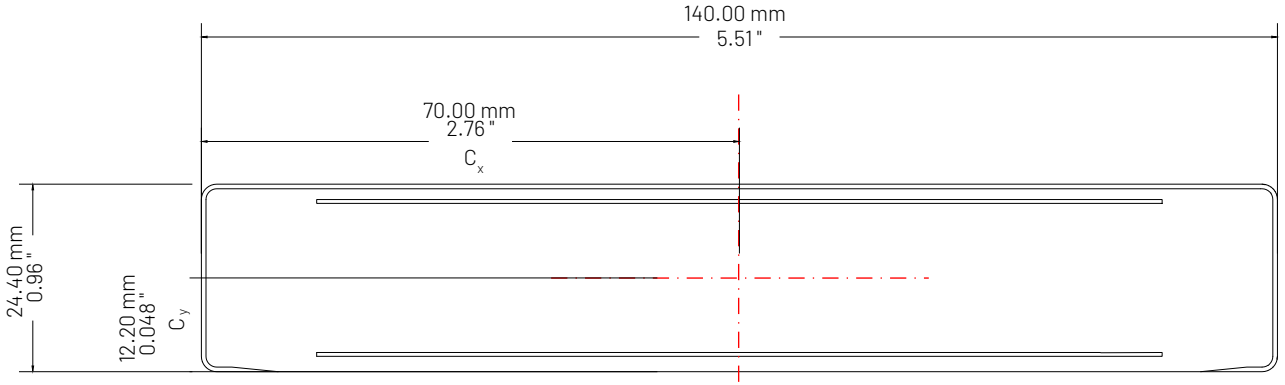


Profile properties

Product code	**STTHMZQ103**
Sectional area (mm^2)	3 234
Approximate mass (kg/m)	2.4

Sectional properties in typical orientation

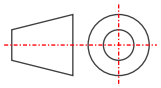
I_x (mm^4)	160 415
I_y (mm^4)	4 949 191
C_x (mm)	70.0
C_y (mm)	12.0
S_x (mm^3)	13 368
S_y (mm^3)	70 703

See the Mechanical properties section of the TDS for imperial conversions.

Drawing title

File name

File details



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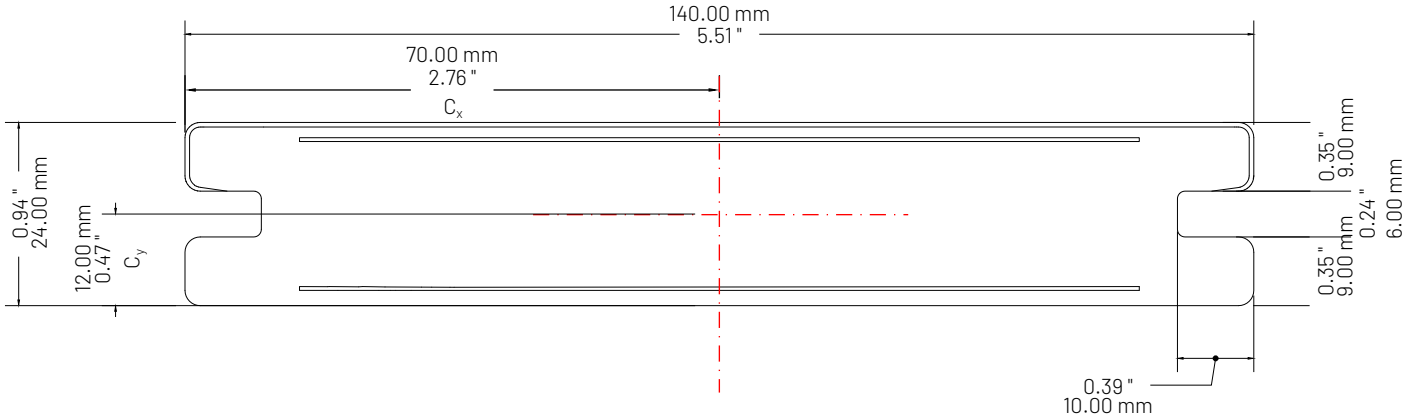


Profile properties

Product code	STTHMZQ116
Sectional area (mm^2)	4 434
Approximate mass (kg/m)	3.5

Sectional properties in typical orientation

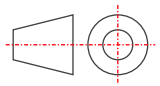
I_x (mm^4)	218 015
I_y (mm^4)	12 688 553
C_x (mm)	95.0
C_y (mm)	12.0
S_x (mm^3)	18 168
S_y (mm^3)	133 564

See the Mechanical properties section of the TDS for imperial conversions.

Drawing title

File name

File details



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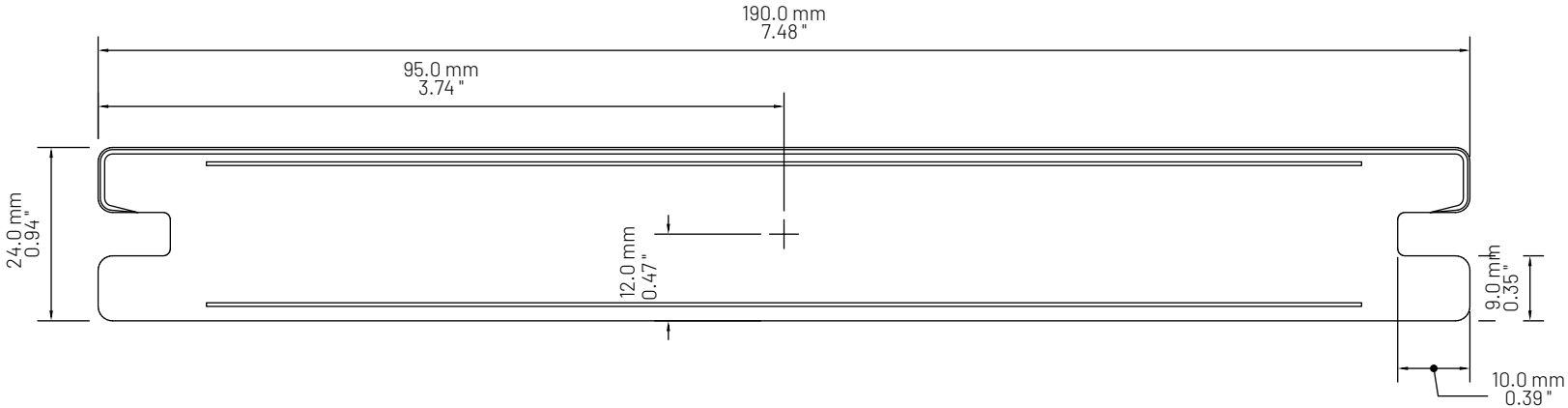
Scale	NTS

Unless otherwise specified all dimensions are in millimeters.

Issued for information. See supporting documentation for disclaimers and details.



Apex PLUS

Profile properties

Product code	STTHM123
Sectional area (mm^2)	4 556
Approximate mass (kg/m)	3.6

Sectional properties in typical orientation

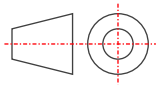
I_x(mm^4)	218 411
I_y(mm^4)	13 686 586
C_x(mm)	95.0
C_y(mm)	12.0
S_x(mm^3)	18 201
S_y(mm^3)	144 069

See the Mechanical properties section of the TDS for imperial conversions.

Drawing title

File name

File details



Drawing number	01
Date	October 25, 2023
Page	N/a
Scale	NTS

Unless otherwise specified all dimensions are in millimeters.

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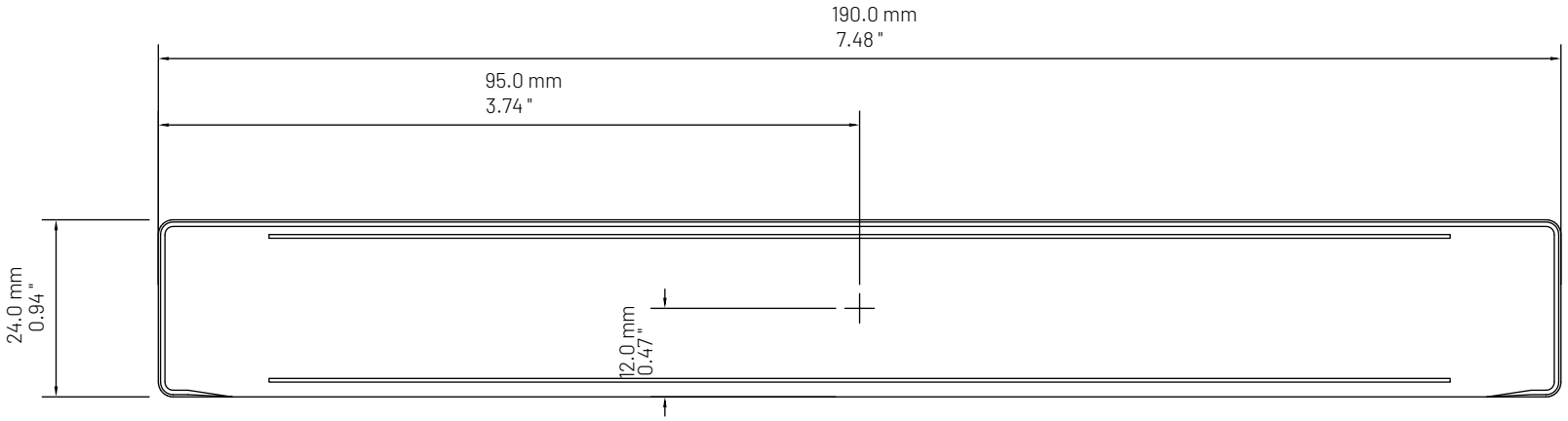

Appendix B

Material compositions

The following information provides a list of substances that may negatively impact that Infinity cap material. Below is an extensive (not complete) list of common substances and solutions known to influence the surface of cap on Infinity. It is important to check material compatibility when choosing chemicals that the product may encounter, as they may prematurely degrade the product, these may include ingredients in cleaning products, pool additives and even oils and saps from local vegetation.

Symbol legend

The symbols and abbreviations used have the following meanings:

+ = Resistant over a period of months to years.

0 = Limited resistance: some swelling, solvation or environmental stress cracking is possible.

- = Not resistant: severe swelling, decomposition, solvation or environmental stress cracking.

soln. = Saturated aqueous solution.

Resistance definition

Good resistance: Water, aqueous salt solutions, detergent solutions, dilute acids, and alkalis.

Limited resistance: Alcohols, aliphatic hydrocarbons, oils, and fats.

Not resistant: Concentrated mineral acids, aromatic and/or halogenated hydrocarbons, esters, ethers, ketones.

Solvents: Examples are methyl ethyl ketone, tetrahydrofuran, toluene, dimethyl-formamide.

Source data:

BASF – Chemical resistance of styrene co-polymers - www.basf.de/plastics

Test substance	20 °C	50 °C
Acetamide	+	+
Acetic acid (100%)	-	-
Acetic acid (25%)	+	+
Acetic acid (50%)	+	0
Acetone	-	-
Acetophenone	-	-
Acetylsalicylic acid (soln.)	+	+
Allyl alcohol	-	-
Allyl mustard oil	-	-
Almond, bitter, oil of	+	0
Almond, oil of	+	+
Alum (soln.)	+	+
Aluminium chloride (soln.)	+	+
Aluminium sulphate (soln.)	+	+
Ammonia, aqueous (25%)	+	+
Ammonium carbonate (soln.)	+	+
Ammonium chloride (soln.)	+	+
Ammonium molybdate (soln.)	+	+
Ammonium nitrate (soln.)	+	+
Ammonium rhodanide (soln.)	+	+
Ammonium sulphate (soln.)	+	+
Amyl acetate	-	-

Test substance	20 °C	50 °C
Amyl acetate	-	-
Amyl alcohol	+	0
Amyl cinnamaldehyde	-	-
Amyl mercaptan	-	-
Aniline	-	-
Anise, oil of	-	-
Aniseed	+	+
Apple juice	+	+
Aqua regia	0	-
Atropine sulphate	+	+
Barium bromide (soln.)	+	+
Barium carbonate (soln.)	+	+
Barium chloride (soln.)	+	+
Beef tallow	+	+
Benzaldehyde	-	-
Benzene	-	-
Benzoic acid	+	+
Benzyl acetate	-	-
Benzyl acetate	-	-
Benzyl alcohol	-	-
Bismuth chloride (soln.)	+	+
Bismuth subnitrate (soln.)	+	+
Bone oil	+	+

Test substance	20 °C	50 °C
Borax (soln.)	+	+
Boric acid (soln.)	+	+
Brake fluid (ATE)	-	-
Brandy	+	+
Bromine (liquid)	-	-
Butane	+	+
Butter	+	+
Butyl acetate	-	-
Butyl acetate	-	-
Butyric acid	-	-
Cadmium bromide (soln.)	+	+
Caffeine (soln.)	+	+
Calcium bromide (soln.)	+	+
Calcium chloride (soln.)	+	+
Calcium hypochlorite (solid)	+	+
Calcium hypochlorite (soln.)	+	+
Calcium oxide	+	+
Camphor	+	+
Caraway seed (ground)	+	+
Carbazole	+	+
Carbon dioxide	+	+
Carbon sulphide	-	-
Cardamom	+	+
Carnauba wax	+	+
Carrot juice	+	+
Castor oil	+	+
Cellosolve (methyl-, ethyl-, propyl-, butyl-)	-	-
Cesium bromide (soln.)	+	+
Cetyl alcohol	+	+
Chamomile extract	+	+
Chlorinated lime	+	+
Chlorine (liquid or gaseous)	-	-
Chlorine water	0	0
Chloroacetic acid	0	-
Chlorobenzene	-	-
Chloroform	-	-
Chlorosulfonic acid	-	-
Chromic acid (soln.)	0	0
Chromosulfuric acid	0	0
Cinnamic aldehyde	-	-
Cinnamon (ground)	+	+
Cinammon (sticks)	+	+

Test substance	20 °C	50 °C
Citric acid (soln.)	+	+
Citronella, oil of	-	-
Cloves	-	-
Cloves, oil of	-	-
Cocoa butter	+	+
Coconut oil	+	+
Cod-liver oil	+	+
Coffee (ground)	+	+
Coffee extract	+	+
Copper sulphate (soln.)	+	+
Corn oil	+	+
Cottonseed oil	+	+
Cresol (para)	0	-
Curry	+	+
Cyclohexane	+	0
Cyclohexanol	+	0
Cyclohexanone	-	-
Dairy products	+	+
Dehydroacetic acid	+	+
Dekalin (R)	0	0
Diacetone alcohol	-	-
Dibutyl phthalate	-	-
Dichlorobenzene	-	-
Diesel oil	+	+
Diethanolamine	+	+
Diethyl ether	-	-
Diethyl hexyl phthalate	+	0
Diethyl ketone	+	+
Diethyl phthalate	-	-
Diethylene glycol	+	+
Diisodecyl phthalate	0	0
Dimethyl diglycol phthalate	0	0
Dimethyl phthalate	-	-
Dimethylformamide	-	-
Dinonyl phthalate	0	0
Dioxane (1,4 dioxane)	-	-
Diphenyl ether	-	-
Diphenylamine	-	-
Ethanol (40%)	+	+
Ethanol (95%)	+	0
Ether (Diethyl ether)	-	-
Ethyl acetate	-	-

Test substance	20 °C	50 °C
Ethyl benzene	-	-
Ethyl benzoate	-	-
Ethyl chloride	-	-
Ethylene chloride	-	-
Ethylene glycol	+	+
Eucalyptus, oil of	0	0
Fertilizer salts	+	+
Formaldehyde (30%)	+	0
Formic acid (40%)	+	0
Formic acid (85%)	0	0
Frigen/Freon 11 (Monofluoro- trichloromethane)	0	0
Frigen/Freon 113 (Trifluoro-trichloroethane)	0	0
Frigen/Freon 114 (Tetrafluoro-dichloroethane)	0	0
Frigen/Freon 12 (Difluoro-dichloromethane)	0	0
Frigen/Freon 21 (Monofluoro-dichloromethane)	-	-
Frigen/Freon 22 (Difluoro-monochloro- methane)	-	-
Furfural	-	-
Furfuryl alcohol	0	-
Gallic acid	+	+
Garlic (powder)	+	+
Gasoline (Premium unleaded)	0	-
Gasoline (Standard unleaded)	0	0
Ginger (ground)	0	0
Glucose (30%)	+	+
Glycerine	+	+
Grapefruit juice	+	+
Gravy	+	+
Heating oil	+	+
Heptane	0	0
Heptyl alcohol	+	0
Hexachlorobenzene	+	+
Hexane	0	0
Hexanediol	+	+
Hexanol	+	0
Honey	+	+
Horse radish	+	+
Household detergent (soln.)	+	+
Hydrochloric acid (15%)	+	0

Test substance	20 °C	50 °C
Hydrochloric acid (conc.)	+	0
Hydrofluoric acid (40%)	0	0
Hydrogen peroxide (3%)	+	+
Hydrogen peroxide (30%)	+	+
Hydrogen sulphide	+	+
Hydroquinone (soln.)	+	0
Hydroxyacetone	0	0
Ink, writing	+	+
Iodine, tincture of	0	-
Iron (II) chloride (solid)	+	+
Iron (II) chloride (soln.)	+	+
Iron (II) sulphate (solid)	+	+
Iron (III) chloride (soln.)	+	+
Iron ammonium sulphate	+	+
Iron nitrate (soln.)	+	+
Isoamyl alcohol	+	0
Isobutanol	0	-
Isooctane	+	+
Isooctane	+	+
Isopropanol	+	-
Isopropyl acetate	-	-
Lactic acid (10%)	+	+
Lactic acid (80%)	+	+
Lactose (soln.)	+	+
Lanolin +	+	+
Laurel (ground)	+	+
Lauryl alcohol	+	+
Lead acetate (soln.)	+	+
Lead nitrate (soln.)	+	+
Lead stearate	+	+
Lead sulphate (soln.)	+	+
Lemon grass, oil of	-	-
Lemon juice	+	+
Lemon, oil of	0	0
Ligroin	+	+
Lime water	+	+
Linseed oil	+	+
Mace (ground)	+	0
Magnesium bromide	+	+
Magnesium carbonate	+	+
Magnesium chloride (soln.)	+	+
Magnesium sulphate (soln.)	+	+
Maize oil	+	+

Test substance	20 °C	50 °C
Malic acid (10%)	+	+
Mandarin orange, oil of	0	0
Margarine	+	+
Marjoram (ground)	+	+
Marmalade	+	+
Mayonnaise	+	+
Menthol (10% in ethanol)	0	0
Mercury	+	+
Mercury chloride (soln.)	+	+
Mesityl oxide	-	-
Methanol	0	-
Methyl acetate	-	-
Methyl butanol	+	0
Methyl chloride	-	-
Methyl cyclohexane	+	+
Methyl ethyl ketone	-	-
Methyl isobutyl ketone	-	-
Methyl isopropyl ketone	-	-
Methyl propyl ketone	-	-
Methyl salicylate	-	-
Methylene chloride	-	-
Methylene chlorobromide	-	-
Milk	+	+
Milk powder	+	+
Milk powder (moist)	+	+
Monoamyl phthalate	-	-
Motor oil (automotive)	+	+
Mustard	+	+
n-Butanol	+	0
n-Nonanol	+	+
n-Octanol	+	+
n-Propanol	+	0
Naphthalene (solid)	+	-
Naphthalene (soln. in ethanol)	0	-
Naphthol (beta) (soln. in ethanol)	0	-
Nickel sulphate (soln.)	+	+
Nitric acid (30%)	+	0
Nitric acid (conc.)	-	-
Nitrobenzene	-	-
Nutmeg, dark (ground)	0	0
Nutmeg, light (ground)	+	0
Nutmeg, oil of	0	-
Oleic acid	+	0

Test substance	20 °C	50 °C
Olive oil	+	+
Onion (powder)	+	+
Orange juice	+	+
Orange, oil of	0	0
Oxalic acid (soln.)	+	+
Oxymethylfurfurol	-	-
Ozone (<0,5 ppm)	+	+
Palamoll 644 und 646 (polyesters based on adipic acid, BASF)	-	-
Palm oil	+	+
Palmitic acid	+	+
Paprika (ground)	+	+
Paraffin oil	+	+
Peanut oil	+	+
Peanut oil	+	+
Pectin (soln.)	+	+
Penicillin	+	+
Pentane	0	0
Pepper (black or white, ground)	+	0
Peppermint, oil of	-	-
Perchloroethylene	0	0
Petroleum ether	0	0
Petroleum jelly	0	-
Petroleum jelly	+	+
Phenacetin	+	+
Phenol	-	-
Phenylethanol	-	-
Phosphoric acid (1%)	+	+
Phosphoric acid (30%)	+	+
Phosphoric acid (85%)	+	+
Phthalic acid (soln.) Pimento (ground)	+	+
Pine needles, oil of	0	-
Pineapple juice	+	+
Plastomoll DOA (di-(2-ethyl-hexyl) adipate, BASF)	0	0
Pork lard	+	+
Potassium aluminium sulphate (soln.)	+	+
Potassium bisulfate	+	+
Potassium bromates (soln.)	+	+
Potassium bromide (soln.)	+	+
Potassium chloride (soln.)	+	+
Potassium chromate (soln.)	+	+
Potassium dichromate (soln.)	+	0

Test substance	20 °C	50 °C
Potassium ferricyanide	+	+
Potassium fluoride (soln.)	+	+
Potassium hydroxide (10%)	+	+
Potassium hydroxide (50%)	+	+
Potassium hydroxide (concentrated soln.)	+	0
Potassium iodate (soln.)	+	+
Potassium iodide (soln.)	+	+
Potassium nitrate (soln.)	+	+
Potassium permanganate (soln.)	+	0
Potassium persulfate (soln.)	+	+
Potassium sulphate (soln.)	+	+
Potassium sulphide (soln.)	+	+
Prontosil	+	+
Propane (liquid)	+	+
Propane (liquid) chloride	-	-
Propane glycol	+	+
Propylene glycol methyl ether	-	-
Propylene oxide	-	-
Pyridine	-	-
Pyrogallol (soln.)	+	0
Resorcin (soln.)	0	0
Rongalite (soln.)	+	+
Roses, oil of	0	0
Rum	+	+
Rum essence	+	+
Salicylic acid (soln.)	+	+
Salt, common (dry)	+	+
Sandalwood, oil of	-	-
Sassafras oil	-	-
Sea water	+	+
Sebacic acid dibutyl ester	-	-
Silicone fluid	+	+
Silver nitrate (soln.)	+	+
Sodium acetate (soln.)	+	+
Sodium benzoate (soln.)	+	+
Sodium bicarbonate (soln.)	+	+
Sodium bisulfite (soln.)	+	+
Sodium borate (soln.)	+	+
Sodium bromate (soln.)	+	+
Sodium bromide (soln.)	+	+
Sodium carbonate (soln.)	+	+
Sodium chloride (dry)	+	+
Sodium chloride (soln.)	+	+

Test substance	20 °C	50 °C
Sodium chromate (soln.)	+	+
Sodium fluoride (soln.)	+	+
Sodium hydrogen sulfite	+	+
Sodium hydroxide (50%)	+	+
Sodium hypochlorite (soln. with 12% Cl)	+	+
Sodium hypochlorite (soln., 12% chlorine)	+	+
Sodium nitrate	+	+
Sodium nitrite	+	+
Sodium perborate (soln.)	+	+
Sodium phosphate (sec.) (soln.)	+	+
Sodium phosphate (tert.) (soln.)	+	+
Sodium sulphate (soln.)	+	+
Sodium sulphide (soln.)	+	+
Sodium sulfite (soln.)	+	+
Sodium thiosulfate (soln.)	+	+
Soy oil	+	+
Sperm oil	+	+
Stearic acid	+	+
Strontium bromide	+	+
Strychnine	+	+
Sugar (soln, 30%)	+	+
Sulphur	+	+
Sulphur hexafluoride	+	+
Sulfuric acid (10%)	+	+
Sulfuric acid (38%, battery acid)	+	+
Sulfuric acid (50%)	+	+
Sulfuric acid (conc.)	-	-
Tannic acid	+	+
Tartaric acid (soln.)	+	+
Tea leaves (moist)	+	+
Tea, instant	+	+
Tetrachlorethane	-	-
Tetrachloromethane	-	-
Tetrahydrofuran	-	-
Tetrahydrofurfurol	-	-
Tetralin (R)	-	-
Thionyl chloride	-	-
Thiophene	-	-
Thymol	-	-
Tin (II) chloride (soln.)	+	+
Tin (IV) chloride (soln.)	-	-
Titanium tetrachloride	-	-
Toluene	-	-

Test substance	20 °C	50 °C
Tomato juice	+	+
Tragacanth (gum tragacanth)	+	+
Transformer oil	+	0
Trichlorobenzene	-	-
Trichloroethane	-	-
Trichloroethylene	-	-
Trichlorophenol	-	-
Tricresyl phosphate	-	-
Triethanolamine	+	+
Triethylene glycol	+	+
Triglycol acetate	-	-
Trypaflavin (R)	+	+
Tryptophane (d or l)	+	+
Turpentine	0	0
Turpentine substitute	+	0
Tyrosine (d or l)	+	+
Undecanol	+	+
Urea (soln.)	+	+
Urotropin (soln.)	+	+
Valerian drops	+	+
Verbena oil	-	-
Vinegar	+	+
Water	+	+
Watercolours	+	+
Water glass	+	+
Wax (bleached)	+	+
White oil	+	+
Xylene	-	-
Zinc bromide	+	+
Zinc carbonate	+	+
Zinc chloride (soln.)	+	+
Zinc nitrate	+	+
Zinc ointment	+	+
Zinc oxide	+	+
Zinc stearate	+	+
Zinc sulphate (soln.)	+	+