

INFINITY® TECHNICAL DATA SHEET

*Infinity*®

## Identification

**Date of Publication:**

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**Product name:** Eva-Last® Infinity® co-extrusion composite decking.

**Product use:** This product is primarily used for decking, facades, screens, cladding, and railing.

**Website:** www.eva-last.com

### Manufacturers information:

Eva-last® Distributors

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Product information: +27 10 593 9220

## Technology description

The innovation of co-extrusion technology resulted in the development of our capped. These advancement allowed for the cellulose-polymer composite to be wrapped in a protective cap, further improving the product's longevity. Eva-Last's engineered polymer coat is loaded with a variety of additives that result in an extremely robust outer layer. This layer protects the products from weathering and biodegradation, even within particularly harsh cladding conditions.

## Composite compositions



Substance name	Approximate weight %	CAS Number	Agency	Exposure limit	Comment
<b>Core</b>					
Polyethylene (HDPE)	35 - 40 %	9002-99-4	N/A	N/A	Thermoplastic
Bamboo fibre	55 - 60%	N/A	OSHA OSHA ACGIH ACGIH	PEL-TWA 15 mg/m <sup>3</sup> PEL-TWA 5 mg/m <sup>3</sup> TLV-TWA 3 mg/m <sup>3</sup> TLV-STEL 10 mg/m <sup>3</sup>	Total dust Respiratory dust fraction Respiratory dust fraction Inhabitable particles

### Cap

Infinity® Information withheld

### Additional additives

Anti-mould agents, coupling agents, anti-UV agents, colour pigments, etc. Information withheld

## Material properties

Physical properties	Measured value	Test standard	Note
Linear thermal expansion coefficient	39.3 10 <sup>-6</sup> K <sup>-1</sup>	ASTM D6341	Temperature range of - 20 °C to 60 °C
Bulk density kg/m <sup>3</sup>	1390		
Creep recovery	89%	ASTM D7032	Average Recovery ≥ 75 %
Water absorption after 24 hours %	0.2	EN 15534-1:2014	Change in mass
Swelling after 24 hours %	thickness	0.1	EN 15534-1:2014
	width	0	EN 15534-1:2014
	length	0	EN 15534-1:2014

Physical properties	Measured value	Test standard	Note	
Water absorption after 28 days %	0.6	EN 15534-1:2014	Change in mass	
Swelling after 24 hours %	thickness	0.2	EN 15534-1:2014	
	width	0	EN 15534-1:2014	
	length	0.1	EN 15534-1:2014	
Termite resistance %	Mass loss 0.02	ASTM D2017	Pass	
Fungal decay resistance %	G.trabeum	Mass loss 0.77	ASTM D2017	Pass
	P.placenta	Mass loss 0.91	ASTM D2017	Pass
	T.versicolor	Mass loss 0.90	ASTM D2017	Pass
	I.lacteus	Mass loss 0.91	ASTM D2017	Pass
Flame spread index	110	ASTM E84	Requirement pass rate <=200	
Smoke emissions	500	ASTM E84		

## Weathering effects and reduction factors (ASTM D 7032)

Mechanical properties	Differences		Reduction factors	
	Strength	Stiffness	Strength	Stiffness
High temperatures	96.80 %	90.30 %	0.97	0.90
Low temperatures	145.60 %	137.50 %	1.00	1.00
Moisture	108.30 %	108.50 %	1.00	1.00
UV Resistance	92.70 %	94.40 %	1.00	1.00
Freeze-thaw	104.80 %	100.70 %	1.00	1.00

## Infinity® Surface properties

Physical properties	Measured value	Test standard	Note	
Value of residual indentation (mm)	0.08	EN 15534-1:2014	Falling ball test	
Maximum crack length (mm)	No crack	EN 15534-1:2015	Falling ball test	
Scratch resistance (N)	20	FORD FLTM B0 162-01		
Colour fade (Tiger cove)	1500 hours	ΔE 0.9	ASTM G154-7	No significant change
	3000 hours	ΔE 1.7	ASTM G154-7	No significant change
Gloss Change (%)	0.1	EN 15534-1:2014	1008 hours testing	
Abrasion (mg/c)	13	ASTM D4060	mg/cycle	
Brinell hardness (N/mm <sup>2</sup> )	39.8	EN 15534-1		
Shore hardness (HD)	71	ISO 868		
Cap delamination (N/mm)	60N/50mm	ISO 24345-2006	Average peel off - 5.32 mm (max allowable = 10mm)	

## Pendulum slip resistance test results (BS7976-2)

**Note \*1** Although DIN51130 certification requires laboratory mounted ramp equipment, the HSE have determined that an approximate cross reference is possible between the DIN51130 R ratings test and wet Pendulum Test Values (PTV) using a 96 slider replicating footfall with shod feet.

**Note \*\*2** Although DIN51097 certification requires laboratory mounted ramp equipment, the HSE have determined that an approximate cross reference is possible between the DIN51097 ABC ratings test and wet Pendulum Test Values (PTV) using a 55 slider replicating footfall with bare feet.

Finish type		Lowest rest result		DIN equivalent rating		HSE equivalent rating	
Slider type	Finish	Dry conditions	Wet conditions	R rating*	ABC rating**	Risk of slip	Probability of slip
55	R	71	24		A	High	1 in 20
96	R	32	21	R10		High	1 in 20
55	T	80	22		A	High	1 in 20
96	T	39	24	R10		High	1 in 20
55	J1	72	23		A	High	1 in 20
96	J1	44	29	R10		Moderate	1 in 10 000
55	J1R1	74	26		A	Moderate to high	1 in 200
96	J1R1	39	24	R10		High	1 in 20
55	M	69	23		A	High	1 in 20
96	M	37	22	R10		High	1 in 20
55	Q1R	81	23		A	High	1 in 20
96	Q1R	39	24	R10		High	1 in 20
55	TR	64	29		A	Moderate	1 in 10 000
96	TR	36	21	R10		High	1 in 20
55	Q	84	29		A	Moderate	1 in 10 000
96	Q	44	27	R10		Moderate	1 in 10 000
55	S	76	26		A	Moderate to high	1 in 200
96	S	43	27	R10		Moderate	1 in 10 000
55	E	79	24		A	High	1 in 20
96	E	41	24	R10		High	1 in 20
55	U	79	25		A	Moderate to high	1 in 200
96	U	43	25	R10		Moderate to high	1 in 200
55	L	77	25		A	Moderate to high	1 in 200
96	L	34	23	R10		High	1 in 20

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**Infinity® cap chemical resistance**

REAGENT	CONCENTRATION	LDPE		HDPE	
		70°	140°	70°	140°
Acetone		o	-	o	-
Acetaldehyde*	100%	o	-	o	-
Acetic Acid*	10%	+	+	+	+
Acetic Acid*	60%	+	o	+	o
Acetic Anhydride*		-	-	-	-
Air		+	+	+	+
Aluminum Chloride	all conc	+	+	+	+
Aluminum Fluoride	all conc	+	+	+	+
Aluminum Sulphate	all conc	+	+	+	+
Alums	all types	+	+	+	+
Ammonia	100% dry gas	+	+	+	+
Ammonium Carbonate		+	+	+	+
Ammonium Chloride	sat'd	+	+	+	+
Ammonium Fluoride	sat'd	+	+	+	+
Ammonium Hydroxide	10%	+	+	+	+
Ammonium Hydroxide	28%	+	+	+	+
Ammonium Nitrate	sat'd	+	+	+	+
Ammonium Persulphate	sat'd	+	+	+	+
Ammonium Sulphate	sat'd	+	+	+	+
Ammonium Metaphosphate	sat'd	+	+	+	+
Ammonium Sulfide	sat'd	+	+	+	+
Amyl Acetate##	100%	-	-	-	-
Amyl Alcohol##	100%	+	+	+	+
Amyl Chloride#	100%	-	-	-	-
Aniline##	100%	+	-	-	o
Aqua Regia+		-	-	-	-
Arsenic Acid	all conc	+	+	+	+
Aromatic Hydrocarbons##		-	-	-	-
Ascorbic Acid	10%	+	+	+	+
Barium Carbonate	sat'd	+	+	+	+
Barium Chloride	sat'd	+	+	+	+
Barium Hydroxide		+	+	+	+
Barium Sulphate	sat'd	+	+	+	+
Barium Sulphide	sat'd	+	+	+	+
Beer		+	+	+	+
Benzene##		-	-	-	-
Benzoic Acid	all conc	+	+	+	+
Bismuth Carbonate	sat'd	+	+	+	+
Bleach Lye	10%	+	+	+	+
Borax	sat'd	+	+	+	+
Boric Acid	all conc	+	+	+	+
Boron Trifluoride		+	+	+	+
Brine		+	+	+	+
Bromine+	liquid	-	-	-	-
Bromine Water#	sat'd	-	-	-	-
Butanediol*	10%	+	+	+	+
Butanediol*	60%	+	+	+	+
Butanediol*	100%	+	+	+	+
Butter*		+	+	+	+
n-Butyl Acetate##	100%	o	-	+	o
n-Butyl Alcohol*	100%	+	+	+	+
Butyric Acid#	conc	-	-	-	-
Calcium Bisulphide		+	+	+	+
Calcium Carbonate	sat'd	+	+	+	+
Calcium Chlorate	sat'd	+	+	+	+
Calcium Chloride	sat'd	+	+	+	+
Calcium Hydroxide	conc	+	+	+	+
Calcium Hypochloride	bleach sol	+	+	+	+
Calcium Nitrate	50%	+	+	+	+
Calcium Oxide	sat'd	+	+	+	+

REAGENT	CONCENTRATION	LDPE		HDPE	
		70°	140°	70°	140°
Calcium Sulphate		+	+	+	+
Camphor Oil##		-	-	o	-
Carbon Dioxide	all conc	+	+	+	+
Carbon Disulphide		-	-	-	-
Carbon Monoxide		+	+	+	+
Carbon Tetrachloride#		-	-	o	-
Carbonic Acid		+	+	+	+
Castor oil*	conc	+	+	+	+
Chlorine+	100% dry gas	o	-	-	-
Chlorine Liquid+		-	-	-	-
Chlorine Water+	2% sat'd sol	+	+	+	+
Chlorobenzene##		-	-	-	-
Chloroform*#		-	-	o	-
Chlorosulphonic Acid	100%	-	-	-	-
Chrome Alum	sat'd	+	+	+	+
Chromic Acid	80%	-	-	-	-
Chromic Acid	50%	+	o	+	o
Chromic Acid	10%	+	+	+	+
Cider*		+	+	+	+
Citric Acid*	sat'd	+	+	+	+
Coconut oil Alcohols*		+	+	+	+
Coffee		+	+	+	+
Cola Concentrate*		+	+	+	+
Copper Chloride	sat'd	+	+	+	+
Copper Cyanide	sat'd	+	+	+	+
Copper Fluoride	2%	+	+	+	+
Copper Nitrate	sat'd	+	+	+	+
Copper Sulphate	sat'd	+	+	+	+
Corn oil*		+	+	+	+
Cottonseed oil*		+	+	+	+
Cuprous Chloride	sat'd	+	+	+	+
Detergents Synthetic*		+	+	+	+
Developers Photographic		+	+	+	+
Dextrin	sat'd	+	+	+	+
Dextrose	sat'd	+	+	+	+
Diazo Salts		+	+	+	+
Dibutylphthalate*		o	o	o	o
Dichlorobenzene##		-	-	-	-
Diethyl Ketone##		o	-	o	o
Diethylene Glycol*		+	+	+	+
Diglycolic Acid*		+	+	+	+
Dimethylamine		-	-	-	-
Disodium Phosphate		+	+	o	+
Emulsions, Photographic*		+	+	+	+
Ethyl Acetate##	100%	100%	o	-	o
Ethyl Alcohol*	100%	+	+	+	+
Ethyl Alcohol*	35%	35%	+	+	+
Ethyl Benzene##		-	-	-	-
Ethyl Chloride#		-	-	-	-
Ethyl Ether#		-	-	-	-
Ethylene Chloride##		-	-	-	-
Ethylene Glycol*		+	+	+	+
Fatty Acids*		+	+	+	+
Ferric Chloride	sat'd	sat'd	+	+	+
Ferric Nitrate	sat'd	sat'd	+	+	+
Ferrous Chloride	sat'd	sat'd	+	+	+
Ferrous Sulphate		+	+	+	+
Fish Solubles*		+	+	+	+
Fluoboric Acid		+	+	+	+
Fluosillicic Acid	conc	conc	+	o	+
Fluosillicic Acid	32%	32%	+	+	+
Formic Acid	all	all conc	+	+	+
Fructose	sat'd	d	+	+	+
Fruit Pulp*		+	+	+	+

**Infinity® cap chemical resistance**

REAGENT	CONCENTRATION	LDPE		HDPE		
		70°	140°	70°	140°	
Furtural#	100%	100%	-	-	0	-
Furturyl Alcohol#*			-	-	0	-
Gallic Acid*	sat'd		+	+	+	+
Gasoline#*			-	-	0	0
Glucose			+	+	+	+
Glycerine*			+	+	+	+
Glycol*			+	+	+	+
Glycolic Acid*	30%	30%	+	+	+	+
Grape Sugar			+	+	+	+
n-Heptane#*			-	-	0	0
Hexachlorobenzene			+	+	+	-
Hexanol Tertiary*			+	+	+	+
Hydrobromic Acid 50%		50%	+	+	+	+
Hydrochloric Acid conc	all	all conc	+	+	+	+
Hydrocyanic Acid	sat'd	sat'd	+	+	+	+
Hydrofluoric Acid* 60%		60%	+	+	+	+
Hydrogen	100%		+	+	+	+
Hydrogen Chloride gas	dry	dry gas	+	+	+	+
Hydrogen Peroxide	30%	30%	+	+	+	+
Hydrogen Peroxide	10%	10%	+	+	+	+
Hydrogen Sulphide			+	+	+	+
Hydroquinone			+	+	+	+
Hypochlorous Acid conc.		conc.	+	+	+	+
Inks*			+	+	+	+
Iodine+ sol'n	in KI	in KI sol'd	0	-	0	-
Isopropyl Alcohol 100%		100%	-	-	-	-
Lead Acetate	sat'd	sat'd	+	+	+	+
Lead Nitrate			+	+	+	+
Lactic Acid*	20%	20%	+	+	+	+
Linseed Oil* 100%		100%	0	-	0	-
Magnesium Carbonate	sat'd		+	+	+	+
Magnesium Chloride	sat'd		+	+	+	+
Magnesium Hydroxide	sat'd		+	+	+	+
Magnesium Nitrate	sat'd		+	+	+	+
Magnesium Sulphate	sat'd		+	+	+	+
Mercuric Chloride	40%		+	+	+	+
Mercuric Cyanide	sat'd		+	+	+	+
Mercury			+	+	+	+
Methyl Alcohol*	100%		+	+	+	+
Methylethyl Ketone#*	100%		0	-	0	-
Methylene Chloride#*	100%		-	-	0	0
Milk			+	+	+	+
Mineral Oils#			0	-	0	-
Molasses			+	+	+	+
Naphtha#*			0	-	0	-
Naphthalene#*			-	-	0	-
Nickel Chloride	conc		+	+	+	+
Nickel Nitrate	sat'd		+	+	+	+
Nickel Sulphate	conc		+	+	+	+
Nicotine*	dilute		+	+	+	+
Nitric Acid	0-30%		+	+	+	+
Nitric Acid+	30-50%		+	0	+	0
Nitric Acid+	70%		+	0	+	0
Nitric Acid+	95-98%		-	-	-	-
Nitrobenzene#*	100%		-	-	-	-
n-Octane			+	+	+	+
Oleic Acid			0	-	0	-
Oxalic Acid*	sat'd		+	+	+	+
Perchloroethylene#			-	-	-	-
Phosphoric Acid	95%		+	0	+	+
Photographic Solutions			+	+	+	+
Plating Solutions*			+	+	+	+
Brass			+	+	+	+
Cadmium			+	+	+	+

REAGENT	CONCENTRATION	LDPE		HDPE		
		70°	140°	70°	140°	
Chromium			+	+	+	+
Copper			+	+	+	+
Gold			+	+	+	+
Indium			+	+	+	+
Lead			+	+	+	+
Nickel			+	+	+	+
Rhodium			+	+	+	+
Sliver			+	+	+	+
Tin			+	+	+	+
Zinc			+	+	+	+
Potassium Bicarbonate	sat'd		+	+	+	+
Potassium Bromide	sat'd		+	+	+	+
Potassium Bromate	10%		+	+	+	+
Potassium Carbonate			+	+	+	+
Potassium Chlorate	sat'd		+	+	+	+
Potassium Chloride	sat'd		+	+	+	+
Potassium Chromate	40%		+	+	+	+
Potassium Cyanide	sat'd		+	+	+	+
Potassium Dichromate	40%		+	+	+	+
Potassium Ferri/Ferro Cyanide	Ferro sat'd		+	+	+	+
Potassium Fluoride			+	+	+	+
Potassium Hydroxide	conc		+	+	+	+
Potassium Nitrate	sat'd		+	+	+	+
Potassium Perborate	sat'd		+	+	+	+
Potassium Perchlorate	10%		+	+	+	+
Potassium Permanganate	20%		+	+	+	+
Potassium Persulphate	sat'd		+	+	+	+
Potassium Sulphate	conc		+	+	+	+
Potassium Sulphide	conc		+	+	+	+
Potassium Sulphite	conc 100%		+	+	+	+
Propargyl Alcohol*			+	+	+	+
n-Propyl Alcohol*			+	+	+	+
Propylene Dichloride#*			-	-	-	-
Propylene GlyCol*	sat'd		+	+	+	+
Pyridine*			+	-	+	-
Resorcinol			+	+	+	+
Salicylic Acid	sat'd		+	+	+	+
Sea Water			+	+	+	+
Selenic Acid Shortening*	any conc		+	+	+	+
Sliver Nitrate Sol'n			+	+	+	+
Soap Solutions*	any conc		+	+	+	+
Sodium Acetate	sat'd		+	+	+	+
Sodium Benzoate	35%		+	+	+	+
Sodium Biscarbonate	sat'd		+	+	+	+
Sodium Bisulphate	sat'd		+	+	+	+
Sodium Bisulphite	sat'd		+	+	+	+
Sodium Borate	dilute		+	+	+	+
Sodium Bromide	dilute		+	+	+	+
Sodium Carbonate	conc		+	+	+	+
Sodium Chlorate	sat'd		+	+	+	+
Sodium Chloride	sat'd		+	+	+	+
Sodium Cyanide	sat'd		+	+	+	+
Sodium Dichromate	sat'd		+	+	+	+
Sodium Ferri/Ferro Cyanide	sat'd		+	+	+	+
Sodium Fluoride	sat'd		+	+	+	+
Sodium Hydroxide	conc		+	+	+	+
Sodium Hypochlorite	sat'd		+	+	+	+
Sodium Nitrate	sat'd		+	+	+	+

## Infinity® cap chemical resistance

REAGENT	CONCENTRATION	LDPE		HDPE	
		70°	140°	70°	140°
Sodium Sulphate	sat'd	+	+	+	+
Sodium Sulphide	sat'd	+	+	+	+
Sodium Sulphite	sat'd	+	+	+	+
Stannic Chloride	sat'd	+	+	+	+
Stannous Chloride	sat'd	+	+	+	+
Starch Solution*	sat'd	+	+	+	+
Stearic Acid*	100%	+	+	+	+
Sulphuric Acid	0-50%	+	+	+	+
Sulphuric Acid+	70%	+	o	+	o
Sulphuric Acid+	80%	+	-	+	-
Sulphuric Acid+	96%	o	-	o	-
Sulphuric Acid+	98-conc	o	-	o	-
Sulphuric Acid+	fuming	-	-	-	-
Sulphurous Acid Tallow#	sat'd	+	+	+	+
Tannic Acid*	sat'd	+	o	+	-
Tartaric Acid Tetrahydrofuran**	sat'd	+	+	+	+
Titanium Tetrochloride	sat'd	+	+	+	+
Toluene#*	sat'd	-	-	-	-
Trichloroethylene#*	sat'd	-	-	-	-
Triethylene Glycol*	sat'd	-	-	o	o
Trisodium Phosphate	sat'd	+	+	+	+
Turpentine# Urea	0-30%	-+	-+	o+	o+

  

REAGENT	CONCENTRATION	LDPE		HDPE	
		70°	140°	70°	140°
Urine		+	+	+	+
Vanilla Extract*		+	+	+	+
Vinegar		+	+	+	+
Water		+	+	+	+
Wetting Agents*		+	+	+	+
Whiskey*		+	+	+	+
Wines*		+	+	+	+
Xylene#		-	-	o	o
Yeast		+	+	+	+
Zinc Bromide	sat'd	+	+	+	+
Zinc Carbonate	sat'd	+	+	+	+
Zinc Chloride	sat'd	+	+	+	+
Zinc Oxide	sat'd	+	+	+	+
Zinc Stearate		+	+	+	+
Zinc Sulphate	sat'd	+	+	+	+

### Codes

+ Resistant no indication that serviceability would be impaired.

o Variable resistance, depending on conditions of use.

"REAGENT" + # Plasticizer.

Certain types of chemicals are absorbed to varying degrees by polyethylene causing swelling, weight-gain, softening and some loss of yield strength. These plasticizing materials cause no actual chemical degradation of the resin. Several of these chemicals have a strong plasticizing effect (e.g. aromatic hydrocarbons benzene), whereas others have weaker effects (e.g. gasoline). Certain plasticizers are sufficiently volatile that if they are removed from contact with the polyethylene, the part will "dry" out and return to its original condition with no loss of properties.

"REAGENT"+ = Oxidizers.

Oxidizers are the only group of materials capable of chemically degrading polyethylene. The effects on the polyethylene may be gradual even for strong oxidizers and short-term effects may not be measurable. However, if continuous long-term exposure is intended, the chemical effects should be checked regularly.