Liite 0. / Appendix 0.

Balconies

TRESPA®

Liite 0. / Appendix 0.

Trespa provides this document and all related data for informational purposes only and strongly advises customers, project owners, architects etc. to seek independent advice from a qualified construction professional to ensure proper application, installation, and compliance with all relevant codes, laws, regulations, and design requirements; always check your local requirements before use.

General

Trespa® Meteon® may be used as vertical exterior wall coverings such as balustrade cladding. National standards, regulations and certificates must be observed when designing and installing balustrade cladding using Trespa® Meteon® panels.

Trespa® Meteon® has only been tested as cladding for balustrades according to the German ETB guideline “Building components that protect against falling” (“Bauteile, die gegen Absturz sichern”).

The tested fixing methods, in combination with Trespa® Meteon® as a balustrade cladding material, fulfilled the requirements of this ETB guideline with regard to their resistance in case of hard and soft impact. The technical details in this document are based on this German guideline and test.

General guidelines

The following aspects must receive attention when designing and installing balustrade cladding using Trespa® Meteon® panels.

- The complete German ETB guideline “Building components that protect against falling” (“Bauteile, die gegen Absturz sichern”) must be observed.
- The customer, project owner and architect must always seek independent advice from a construction professional regarding the accordance to national and/or local building regulations of balustrade cladding. Trespa does not make any representations as to the implications of using a specific use or fixing system and disclaims any and all liability or damages related thereto.
- Balustrade heights, maximum permissible openings in the cladding material and anchor facilities must be in accordance with the provisions of the applicable local standards, regulations and certificates.
- When balustrade systems are used, please observe and follow the installation guidelines provided by the balustrade system manufacturer.
- Allow for free panel movement of 2.5 mm per metre (± 3/100 in per foot) in the length and in the width.
- Any modification to Trespa® panels or components thereof, its geometry or its specifications, and any use or installation of Trespa® panels or fixing system in combination with any material or component other as advised by Trespa, shall be exclusively at the risk of the parties involved in such modification, use or installation, and each of such parties assumes all such risks.

Liite 0. / Appendix 0.

Technical installation details

The various fixing options for Trespa® Meteon® have been tested with the applicable additional loads and stresses in accordance with German ETB guideline “Building components that protect against falling” (“Bauteile, die gegen Absturz sichern”). The results of these tests have been incorporated in the following technical installation details and tables.

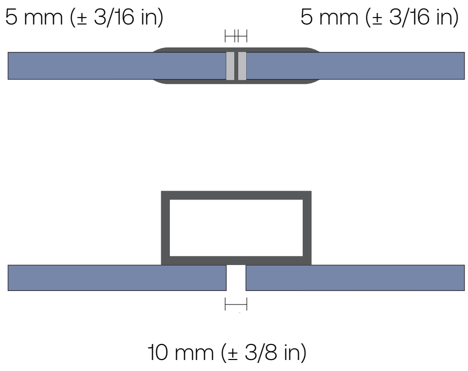
Balustrade system

Trespa® panels must be installed using a balustrade system of sufficient strength and permanent durability. Quality and/or treatment of the balustrade system must be in accordance with applicable building standards, regulations and certificates.

Joints

In all cases, tolerances with respect to the panel, assembly and building itself play an important role in the joint details. Therefore the following guidelines apply.

- Allow for free panel movement of 2.5 mm per metre (± 3/100 in per foot) in the length and in the width.
- Allow for at least 5 mm (± 3/16 in) space around every single panel.
- Ensure a minimum joint width of 10 mm (± 3/8 in) between two panels.
- If joint profiles are used, their body thickness must be considered as well.



Liite 0. / Appendix 0.

Fixing with rivets

Panels may be fixed using aluminium rivets (AlMg5) or stainless steel rivets (available in a wide range of Trespa® Meteon® colours through third parties). Only stainless steel rivets must be used for steel balustrade systems. For suppliers of fixings, please contact your local Trespa representative.

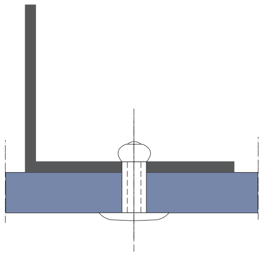
Note: use blind rivets and rivet tools of the same brand to ensure uniform dimensions.

- Trespa® Meteon® panels with a minimum thickness of 6 mm (± 1/4 in) may be fixed using rivets.
- Shank diameter of the rivet is 5 mm (± 3/16 in).
- Head diameter of the rivet is 16 mm (± 5/8 in).
- Minimum length of the rivet: thickness of the panel + thickness of balustrade system (subframe) + 5 mm (± 3/16 in). Total length must be at least 16 mm (± 5/8 in).
- To retain the panel position, each panel must have one fixed point in the centre of the panel. All other fixing points are sliding points.
- Hole diameter in the panel for fixed point is 5.1 mm (± 3/16 in).
- Hole diameter in the panel for sliding point is 10 mm (± 3/8 in).
- Edge clearance must be at least 20 mm (± 3/4 in) to the centre of the hole and maximum 20 x panel thickness.
- Rivets must always be centred in the holes.
- Drill holes for sliding points using a stepped drill or a drilling template, so that the shank of the rivet is perfectly centred in the wider hole drilled.
- The rivet head should be 0,3 mm (± 1/8 in) free from the panel surface by using a special tool (spacer nosepiece).
- Tighten the blind rivet on the fixed point without using the special tool.
- The maximum permissible panel length is 3050 mm (± 120 in).

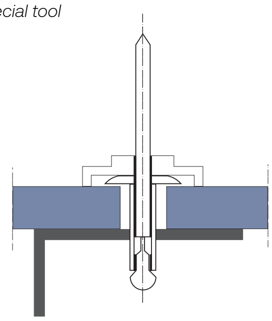
Diameter of the hole	In the panel	In the subframe
Fixed point	5.1 mm (± 3/16 in)	5.1 mm (± 3/16 in)
Sliding point	10 mm (± 3/8 in)	5.1 mm (± 3/16 in)

Liite 0. / Appendix 0.

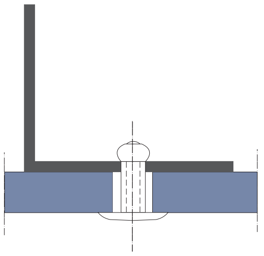
Fixed point



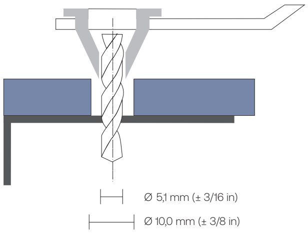
Special tool



Sliding point



Drill template



Fixing with balcony screws

Panels may be fixed using stainless steel balcony screws (available in a wide range of Trespa® Meteon® colours through third parties). For suppliers of fixings, please contact your local Trespa respresentative.

- Trespa® Meteon® panels with a minimum thickness of 6 mm (± 1/4 in) may be fixed using screws.
- Shank diameter of the screw is 5 mm (± 3/16 in).
- Head diameter of the screw is 16 mm (± 5/8 in).
- Minimum length of the screw: thickness of the panel + thickness of balustrade system (subframe) + 10 mm (± 3/8 in).
- To retain the panel position, each panel must have one fixed point in the centre of the panel. All other fixing points are sliding points.
- Hole diameter in the panel for fixed point is 5.1 mm (± 3/16 in).
- Hole diameter in the panel for sliding point is 10 mm (± 3/8 in).
- Edge clearance must be at least 20 mm (± 3/4 in) to the centre of the hole and maximum 20 x panel thickness.
- Screws must always be centred in the holes und must not be over tightened.
- The maximum permissible panel length is 3050 mm (± 120 in).

Diameter of the hole	In the panel	In the subframe
Fixed point	5.1 mm (± 3/16 in)	5.1 mm (± 3/16 in)
Sliding point	10 mm (± 3/8 in)	5.1 mm (± 3/16 in)

Visit trespa.info for the latest version of this document.

Liite 0. / Appendix 0.

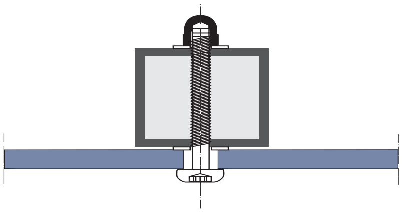
Balcony screws with sleeves

Panels may be fixed using stainless steel balcony screws (available in a wide range of Trespa® Meteon® colours through third parties) and accompanying stainless steel sleeves. The sleeves are also coated available in a wide range of Trespa® Meteon® colours through third parties. For suppliers of fixings, please contact your local Trespa representative.

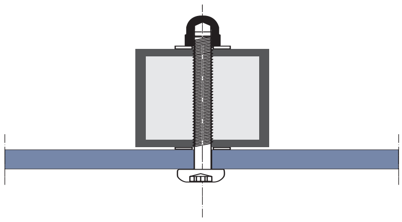
- Trespa® Meteon® panels with a minimum thickness of 6 mm (± 1/4 in) may be fixed using balcony screws with sleeves.
- Shank diameter of the screw is 5 mm (± 3/16 in).
- Head diameter of the screw with is 16 mm (± 5/8 in).
- Minimum length of the screw: thickness of the panel + thickness of balustrade system (subframe) - 5 mm (± 3/16 in).
- Sleeve diameter is 8 mm (± 5/16 in).
- Head diameter of the sleeve is 14 mm (± 1/2 in).
- To retain the panel position, each panel must have one fixed point in the centre of the panel. All other fixing points are sliding points.
- Hole diameter in the panel for fixed point is 5.1 mm (± 3/16 in).
- Hole diameter in the panel for sliding point is 10 mm (± 3/8 in).
- Edge clearance must be at least 20 mm (± 3/4 in) to the centre of the hole and maximum 20 x panel thickness.
- Screws must always be centred in the holes und must not be over tightened.
- The maximum permissible panel length is 3050 mm (± 120 in).

Diameter of the hole	In the panel	In the subframe
Fixed point	5.1 mm (± 3/16 in)	8.5 mm (± 5/16 in)
Sliding point	10 mm (± 3/8 in)	8.5 mm (± 5/16 in)

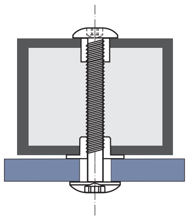
Sliding point



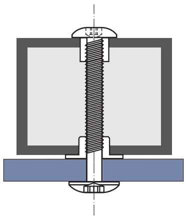
Fixed point



Sliding point



Fixed point



Visit trespa.info for the latest version of this document.

Liite 0. / Appendix 0.

Fixing with clamps

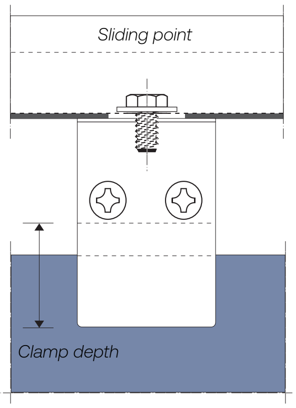
- Trespa® Meteon® panels with a minimum thickness of 8 mm (± 5/16 in) may be fixed using clamps.
- Clamps are screwed to the horizontal rails or vertical battens.
- If the clamps are fixed to vertical battens, each panel has to be secured to prevent it from sliding out of position, for example by means of lock pins.
- Minimum clamp depth 35 mm (± 1 3/8 in).
- Adjust the distance between the clamps depending on the panel thickness taking into account dimensional tolerances and fixed EPDM gaskets.
- Leave minimum 2.5 mm/m (± 3/100 in per foot) free space between the clamp and the edge of the panel.
- Sliding points are slotted holes in the section of the balustrade system.
- Edge clearance must be maximum 20 x panel thickness.

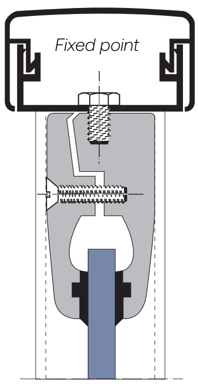
For suppliers of fixings, please contact your local Trespa representative.

Fixing using welded metal lugs

- Trespa® Meteon® panels with a minimum thickness of 8 mm (± 5/16 in) may be fixed using welded metal lugs.
- Metal lugs are welded to the horizontal rails or vertical battens.
- To retain the panel position, each panel must have one fixed point (hole diameter = screw diameter) in the centre of the panel. All other fixing points are sliding points.
- Leave minimum 2.5 mm/m (± 3/100 in per foot) free space at the edge of the panel.
- Shank diameter of the screw is 5 mm (± 3/16 in).
- Head diameter of the screw is 16 mm (± 5/8 in).
- Hole diameter in the panel for sliding point is 10 mm (± 3/8 in).
- Hole diameter in the panel for fixed point is 5.1 mm (± 3/16 in).
- Edge clearance must be at least 20 mm (± 3/4 in) to the centre of the hole and maximum 20 x panel thickness.

For suppliers of fixings, please contact your local Trespa representative.



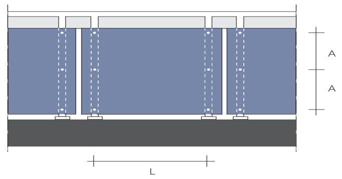


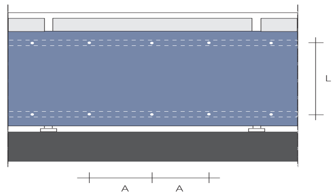
Liite 0. / Appendix 0.

Maximum spans and fixing distances for panels only secured via fixing points on the edges

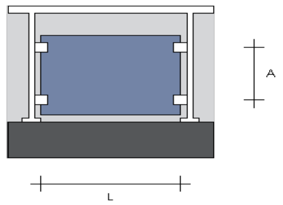
Panel thickness	Fixing	Fixing distance
6 mm (± 1/4 in)	Rivet	A = 450 mm (± 17 11/16 in)
	Screw	A = 450 mm (± 17 11/16 in)
	Support distance	L = 550 mm (± 21 5/8 in)
8 mm (± 5/16 in)	Rivet	A = 500 mm (± 19 11/16 in)
	Screw	A = 600 mm (± 23 5/8 in)
	Clamp or welded metal lug	A = 600 mm (± 23 5/8 in)
	Support distance	L = 750 mm (± 29 1/2 in)
10 mm (± 3/8 in)	Rivet	A = 500 mm (± 19 11/16 in)
	Screw	A = 750 mm (± 29 1/2 in)
	Clamp or welded metal lug	A = 750 mm (± 29 1/2 in)
	Support distance	L = 950 mm (± 37 3/8 in)
13 mm (± 1/2 in)	Rivet	A = 500 mm (± 19 11/16 in)
	Screw	A = 1000 mm (± 39 3/8 in)
	Clamp or welded metal lug	A = 1000 mm (± 39 3/8 in)
	Support distance	L = 1250 mm (± 49 3/16 in)

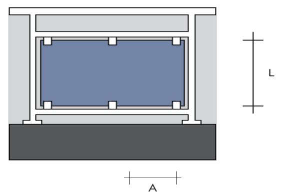
Only secured on the edges





Clamps or welded metal lugs





A = Screw / blind rivet / welded metal lug or clamp distance
L = Panel span; distance to the centre of the carrier profile (or strip) to the centre of the carrier profile (or strip).

For aesthetical reasons we recommend decreasing the fixing centres and panel spans listed by 5 to 10% for building heights of over 8 metres (± 315 in). We recommend decreasing these values by 10 to 15% for building heights of over 20 metres (± 787 in) and that no 6 mm (± 1/4 in) panels are used in this case.

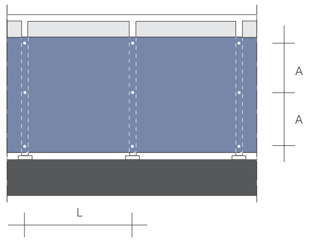
The various fixing and corresponding fixing distances for Trespa® Meteon® have been tested with the applicable additional loads and stresses in accordance with German ETB guideline “Building components that protect against falling” (“Bauteile, die gegen Absturz sichern”).

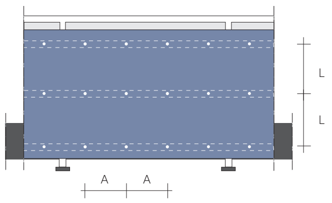
Liite 0. / Appendix 0.

Maximum spans and fixing distances for panels secured via fixing points on the edges and in the centre

Panel thickness	Fixing	Fixing distance
6 mm (± 1/4 in)	Rivet	A = 600 mm (± 23 5/8 in)
	Screw	A = 600 mm (± 23 5/8 in)
	Support distance	L = 750 mm (± 29 1/2 in)
8 mm (± 5/16 in)	Rivet	A = 600 mm (± 23 5/8 in)
	Screw	A = 800 mm (± 31 1/2 in)
	Support distance	L = 950 mm (± 37 3/8 in)
10 mm (± 3/8 in)	Rivet	A = 600 mm (± 23 5/8 in)
	Screw	A = 1200 mm (± 47 1/4 in)
	Support distance	L = 1200 mm (± 47 1/4 in)
13 mm (± 1/2 in)	Rivet	A = 600 mm (± 23 5/8 in)
	Screw	A = 1500 mm (± 59 1/16 in)
	Support distance	L = 1500 mm (± 59 1/16 in)

Secured both on the edges and in the centre





A = Screw / rivet distance
L = Panel span; distance to the centre of the carrier profile (or strip) to the centre of the carrier profile (or strip)

For aesthetical reasons we recommend decreasing the fixing centres and panel spans listed by 5 to 10% for building heights of over 8 metres (± 26 feet). We recommend decreasing these values by 10 to 15% for building heights of over 20 metres (± 66 feet) and that no 6 mm (± 1/4 in) panels are used in this case.

The various fixing and corresponding fixing distances for Trespa® Meteon® have been tested with the applicable additional loads and stresses in accordance with German ETB guideline "Building components that protect against falling" ("Bauteile, die gegen Absturz sichern").

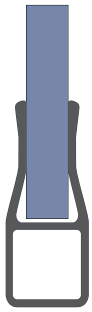
Liite 0. / Appendix 0.

Fixing with profiles

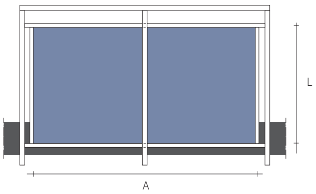
- Trespa® Meteon® panels with a minimum thickness of 6 mm (± 1/4 in) may be fixed with profiles on two or four panel sides. Permissible panel thickness is depending on the building height.
- The profiles must offer static bearing support in a longitudinal direction.
- The profile dimensions must be adjusted to the panel thickness, taking into account dimensional tolerances and fixed EPDM gaskets.
- Depth of the groove in the panel must be minimum 20 mm (± 3/4 in).
- Keep the edges of the panel at least 5 mm (± 3/16 in) free from the profiles on all sides, to allow for free panel movement.
- Ensure drainage by:
  – fitting slotted holes of 5 x 25 mm (± 3/16 in x 1 in) or drilling holes of 8 mm (± 5/16 in) in the lower horizontal rail.
  – installing two supports (minimum 5 x 50 mm (± 3/16 in x 2 in)) in the lower profile for every panel.
- For aesthetical reasons Trespa recommend to use a metal H-section where two panels meet.

For suppliers of fixings, please contact your local Trespa representative.

Fixing detail



Fixing detail



Maximum panel spans and fixing distances for panels fixed on two sides

panel thickness	span L
6 mm (± 1/4 in)	550 mm (± 21 5/8 in)
8 mm (± 5/16 in)	750 mm (± 29 1/2 in)
10 mm (± 3/8 in)	950 mm (± 37 3/8 in)

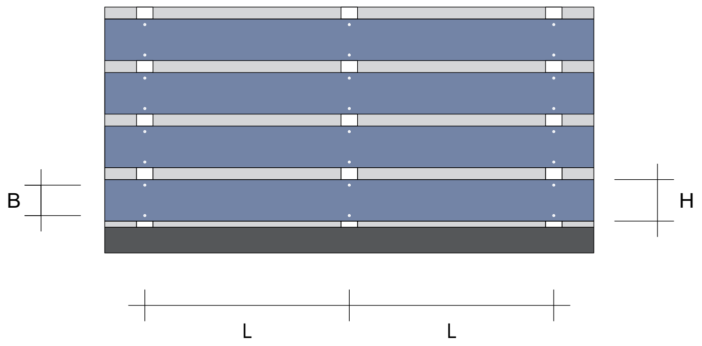
L = Maximum panel span in mm

For aesthetical reasons we recommend decreasing the fixing centres and panel spans listed by 5 to 10% for building heights of over 8 metres (± 26 feet). We recommend decreasing these values by 10 to 15% for building heights of over 20 metres (± 66 feet) and that no 6 mm (± 1/4 in) panels are used in this case.

The various fixing and corresponding fixing distances for Trespa® Meteon® have been tested with the applicable additional loads and stresses in accordance with German ETB guideline “Building components that protect against falling” (“Bauteile, die gegen Absturz sichern”).

Liite 0. / Appendix 0.

Maximum panel spans and fixing distances for panels in strips with point fixing



The minimum strip height is H = 150 mm

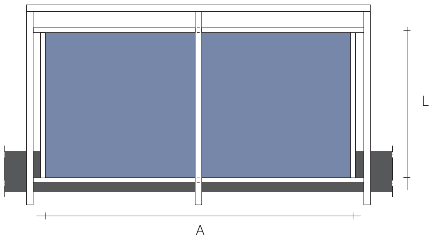
Panel thickness	Fixing	Fixing distance
10 mm (± 3/8 in)	Rivet	B = 110 mm (± 4 21/64 in)
	Screw	B = 110 mm (± 4 21/64 in)
	Support distance	L = 800 mm (± 31 1/2 in)
13 mm (± 1/2 in)	Rivet	B = 110 mm (± 4 21/64 in)
	Screw	B = 110 mm (± 4 21/64 in)
	Support distance	L = 1000 mm (± 39 3/8 in)

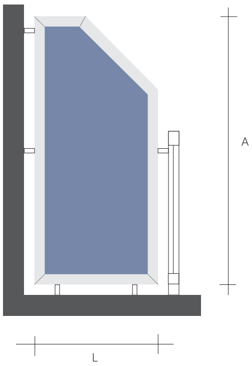
Special feature: 2 vertically arranged fixed points in the centre of the panel strip as a 5 mm hole or as an alternative use of the fixed point sleeves. All other fixing points are sliding points

Liite 0. / Appendix 0.

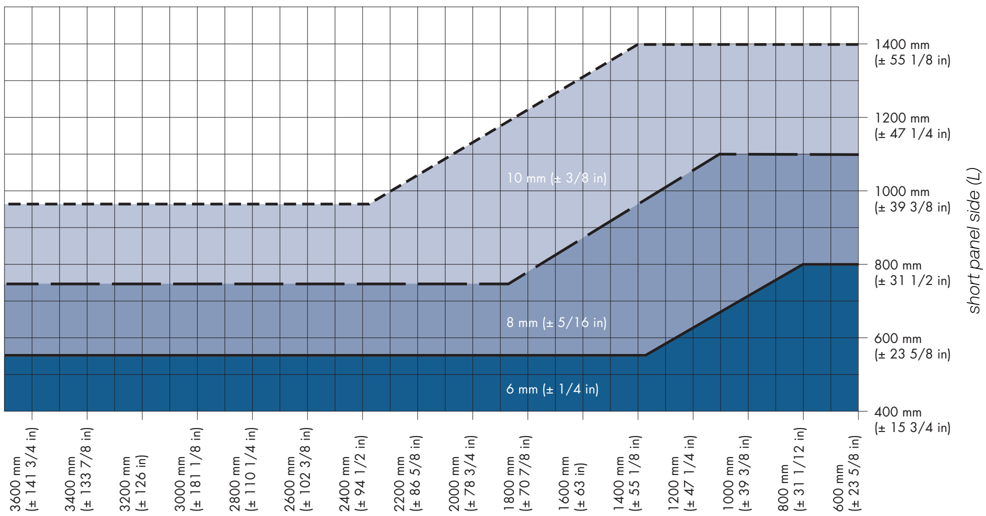
Maximum spans and fixing distances for panels fixed on four sides

Fixed on four panel sides





Maximum fixing distances



L = always the short panel side
A = always the long panel side

For aesthetical reasons we recommend decreasing the fixing centres and panel spans listed by 5 to 10% for building heights of over 8 metres (± 26 feet). We recommend decreasing these values by 10 to 15% for building heights of over 20 metres (± 66 feet) and that no 6 mm (± 1/4 in) panels are used in this case.

The various fixing and corresponding fixing distances for Trespa® Meteon® have been tested with the applicable additional loads and stresses in accordance with German ETB guideline “Building components that protect against falling” (“Bauteile, die gegen Absturz sichern”).

Visit trespa.info
for the latest version
of this document.

Liite 0. / Appendix 0.

EN-GB3075 • Version 5.0 • Date 04-2026

Liite 1. / Appendix 1

TRESPA®

DECLARATION OF PERFORMANCE

No.: 001-5

METEON® FR

Unique identification code of the product-type	METEON® FR
Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer	Compact laminate panels for external wall and ceiling finishes Type EDF according to EN438 part 6
Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5)	TRESPA International B.V. Wetering 20 / NL – 6002 SM Weert
System or systems of AVCP (=assessment and verification of constancy of performance)	System 1
Name and identification number of the notified body	NB 0958 / SGS INTRON Certificatie B.V. NB 1173 / WFRGENT N.V.

Declared performance

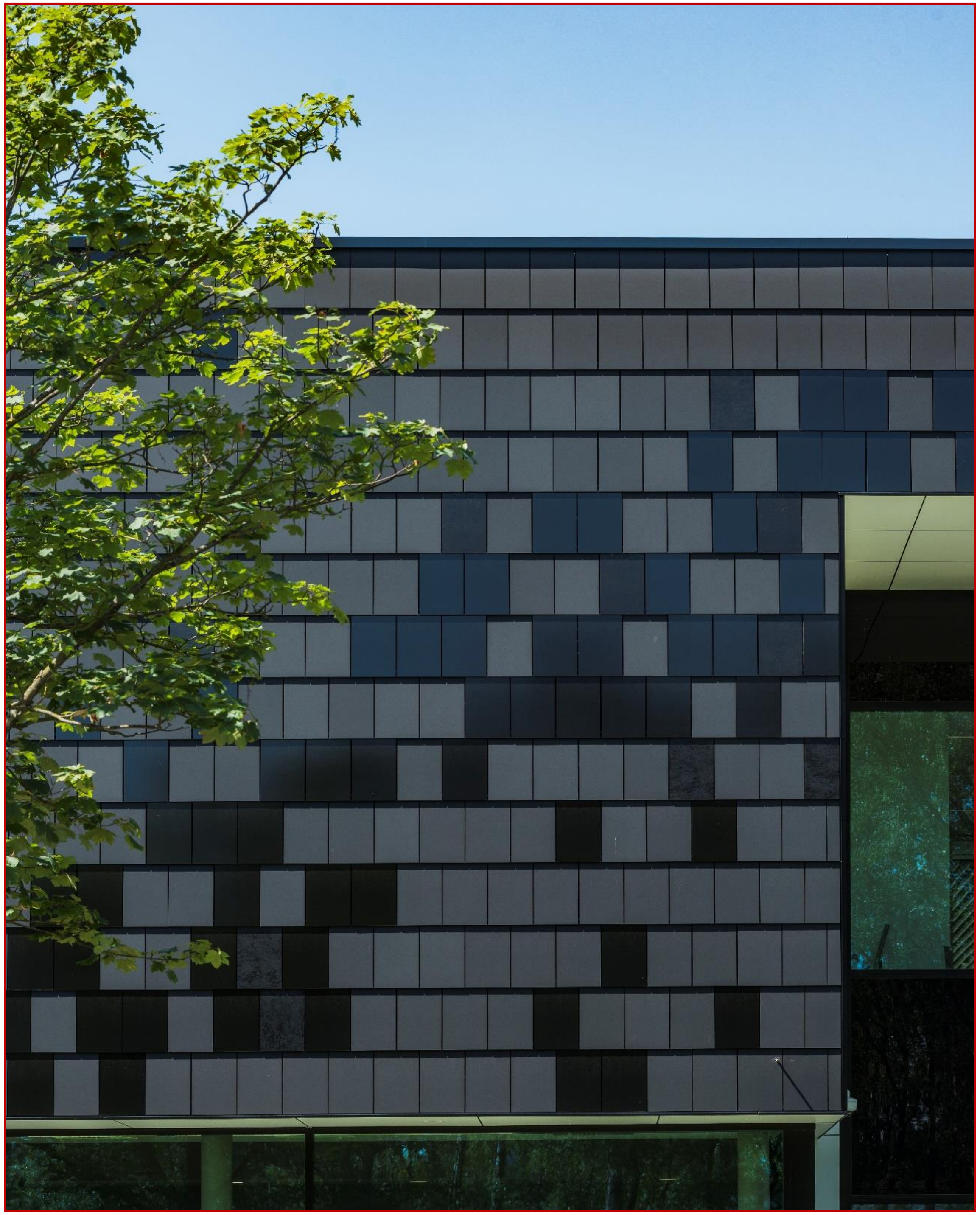
Essential characteristics	Performance	Harmonized technical specification
Reaction to fire	6 mm B-s2,d0 ≥ 8 mm B-s1,d0	EN 438 – 7:2005
Fire Resistance	NPD	
Water vapour permeability	NPD	
Resistance to fixings	6 mm ≥ 2.000 N 8 mm ≥ 3.000 N ≥ 10 mm ≥ 4.000 N	
Direct airborne sound insulation	NPD	
Flexural strength	≥ 120 MPa	
Flexural modulus	≥ 9000 MPa	
Thermal resistance / conductivity	NPD	
Resistance to climatic shock	Appearance ≥ 4 Ds ≥ 0.80 / Dm ≥ 0.80	
Durability: Resistance to wet conditions	Mass Increase ≤ 3 % Appearance surface rating ≥ 4 Appearance edge rating ≥ 3	
Density	≥ 1,35 g/cm^3	

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Gilles Rabot (CEO) Weert, The Netherlands, January 2023

A fully signed copy of this document can be requested at: certification@trespa.com



Liite 2. / Appendix 2.

Environmental Product Declaration

In accordance with ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021, and ISO 21930:2017

Meteon® EDF grade 6mm

Trespa International B.V.

By Nemho, centre of excellence for innovation and technology for Broadview Holding B.V.

Programme	The International EPD® System www.environdec.com
Programme operator	EPD International AB
EPD registration number	S-P-10182
Publication date	2024-09-30
Revision date	2024-10-18 (version 1)
Valid until	2029-09-30

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

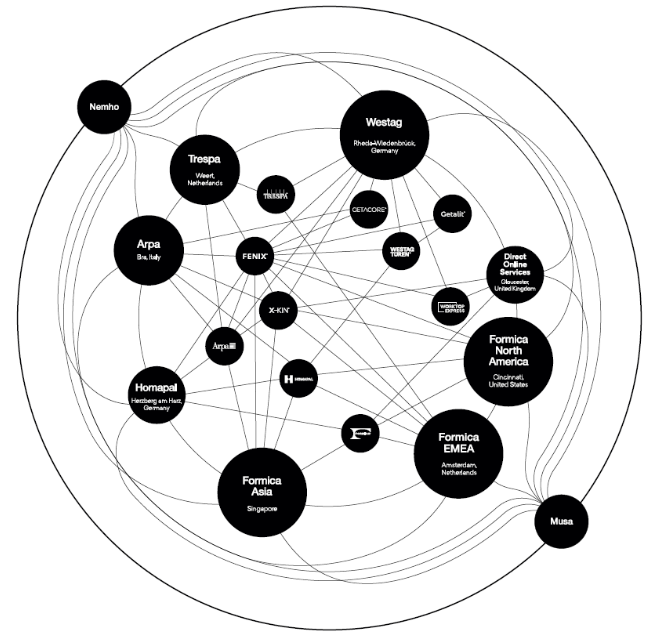
THE INTERNATIONAL EPD® SYSTEM

NEMHO

Nemho is located in Weert in the Netherlands and it is the Innovation Centre of the material companies of the Broadview Holding. Nemho carries sustainability-related activities, including LCA studies, for Trespa International B.V.

Nemho is the owner of this EPD.

Contact Person: Sara Corrado (s.corrado@nemho.com).



TRESPA

Trespa International B.V. is located in Weert in the Netherlands, and is a leading innovator in the field of architectural materials, recognised internationally as a premier developer of high quality panels for exterior cladding, decorative façades, and scientific surface solutions. Since its founding in 1960, Trespa has worked closely with architects, designers, installers, distributors, raw material suppliers and end users globally. Trespa's focus is on product development, combining quality-manufacturing technologies with intelligent solutions for architectural and scientific surface applications. With unique insights into key market challenges, trends and demands, Trespa passionately delivers innovative aesthetically pleasing and high performance solutions for a wide range of needs.

Trespa International B.V. holds, amongst others, certifications based on ISO 9001, ISO 14001, PEFC and FSC certification. For a full overview of certificates please visit www.trespa.info.

METEON® EDF GRADE 6MM

HPLs are decorative high-pressure panels. These products, in all their build-ups, are comprised of individual layers of natural fibres, treated with thermosetting resins and pressed under high pressure. The panels are attributed with an integrated decorative layer on one or both sides of the panels.

PRODUCT DESCRIPTION

Trespa Meteon® EDF grade, 6mm thick panels comprise sheets consisting of layers of natural fibre, impregnated with thermosetting resins and pressed under high pressure. The panels are attributed a decorative on one or both sides of the panels. In case of one-sided décor layer, the back side is plain black showing production batch information. The panels are available in a number of colors and décors with different finishes. Trespa Meteon® EDF grade panel in 6mm is a versatile exterior cladding for innovative and functional ventilated façades and other exterior vertical applications like sunblind solutions.

The abbreviations EDF is an abbreviation standardized in the norm EN 438 - High pressure decorative laminate (HPL) - Sheets based on thermosetting resins - commonly called laminates - Part 1: Introduction and general information.

Explanation on meaning of EDF:

Main classification: E - denotes Exterior grade

Sub classification: D - denotes Heavy duty or severe use

F - denotes Flame-retardant grade

For detailed information on product performance in relation to type EDF see our material property datasheets published on the website www.trespa.info.

PRODUCT IDENTIFICATION

Decorative high-pressure compact laminates (high-pressure laminates, HPL) tested according to EN 438-4:2016. Information on the product performance can be found on www.trespa.info

UN CPC CODE

Not applicable.

METHODOLOGY

This EPD has been developed based on the PCR for construction products 2019:14, Version 1.3.2.

DECLARED UNIT

The declared unit is 1 square meter of finished panel, 6 mm thick, weighing 8,4 kg, plus primary packaging. All the possible product décor layers, different for the color and for the finishing, are covered by this EPD.

Meteon® EDF Grade 6mm corresponds to a weighted average of panels produced in the plant of Weert (The Netherlands).

REFERENCE SERVICE LIFE

50 years provided to appropriate design of the solution, installation, use and maintenance under normal conditions.

TIME REPRESENTATIVENESS

Data used for the LCA calculation refer to the production year 2022.

DATA, DATABASE(S) AND LCA SOFTWARE

Activities under the direct control of the company are modelled using specific data.

The LCA study was performed with the support of the Simapro LCA software (version 9.5).

Generic data are taken from ecoinvent 3.9.1 ad Carbon Minds database.

ELECTRICITY MODELLING

Electricity is modelled according to the guarantees of origin for the specific electricity mix purchased by Trespa for the production location in Weert, which corresponds to 100% renewable energy, specifically from wind. The climate impact of electricity is 0,0267 kg CO_2 eq./kWh (using GWP-GHG indicator).

ALLOCATION APPROACH

Environmental impacts of multi-output processes at the plant level are allocated to the outputs based on their mass.

INFRASTRUCTURES AND CAPITAL GOODS

Infrastructures and capital goods in our production sites are excluded from the analysis. Other infrastructures and capital goods are included in the analysis, as reported in ecoinvent database, with the exception of chemicals taken from Carbon Minds database.

ENVIRONMENTAL PERFORMANCE ASSESSMENT

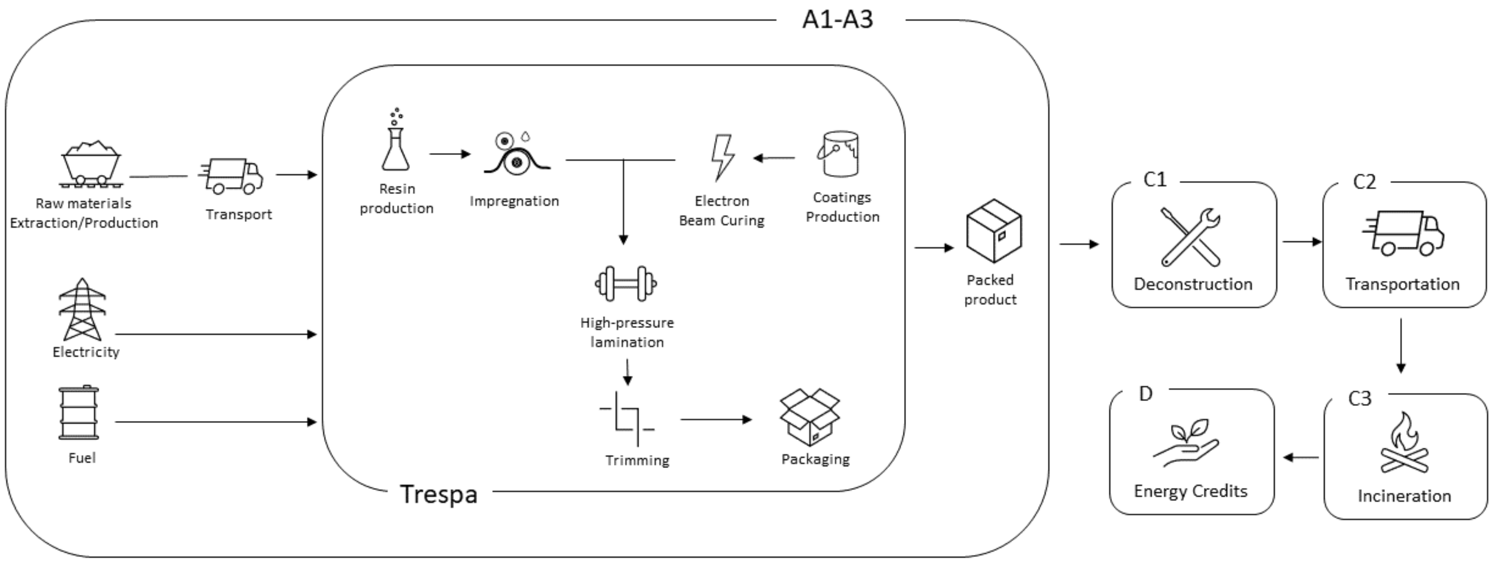
Mandatory potential impact indicators are calculated using the EN 15804 reference package based on EF 3.1.

SYSTEM BOUNDARIES

The system boundary of this EPD is from cradle to gate with modules C1–C4 and module D (A1–A3 + C + D).

The product stage (modules A1-A3) includes the manufacturing process of Meteon® EDF grade 6mm, carried out in the plant of Weert (NL), the production of raw materials, electricity, and natural gas.

The deconstruction of Meteon® EDF grade 6mm (module C1) is modelled according to Gervasio et al. (2018). The transport of HPLs at the end of life (module C2) assumed an average transport distance equal to 100km. HPLs are commonly used as secondary material for energy recovery, therefore it is assumed that 100% of the HPL at the end of life is sent to incineration with thermal efficiency higher than 60% (module C3). Loads from material incineration and resulting energy credits (module D) are declared. Energy credits are calculated considering a lower heating value (LHV) of panels equal to 19 MJ/kg as shown from a test run by BioMassaKraftcentrale (Germany, Luhnen) that incinerates Trespa products.



Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	NL	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	n.a.			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X: module declared, ND: module not declared, n.a: not applicable

CONTENT INFORMATION

Product components	Weight *kg*	Post-consumer material *Weight %*	Biogenic material *Weight-% of product*	Biogenic material *kg C/m²*
Kraft paper	5,154 ± 0,103	0%	61,4% ± 1,2%	2,51 ± 0,05
Phenolic Resin	2,988 ± 0,06	0%	0% ± 0%	0 ± 0
Coating Chemicals	0,258 ± 0,005	0%	0% ± 0%	0 ± 0
TOTAL	**8,4 ± 0,168**	**0%**	**61,4% ± 1,2%**	**2,51 ± 0,05**

Packaging materials	Weight *kg*	Weight *% (versus the product)*	Weight biogenic carbon *kg C/m²*
PP Coversheets	0,093	1,11%	0
PE film	0,009	0,11%	0
Steelbands	0,016	0,20%	0
TOTAL	**0,118**	**1,41%**	**0**

The build-up is calculated based on production values in 2022 by dividing the total amount of used raw materials by the total amount of panels produced.

Meteon® EDF grade 6mm does not contain substances listed on the candidate list of Substances of Very High Concern, as published on the ECHA website, in concentrations exceeding 0.1 percentage by mass.

ENVIRONMENTAL PERFORMANCE

POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804

Results for 1 m² of Meteon® EDF grade 6mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Climate change – total	kg CO_2 eq.	1,08E+01	5,10E-01	8,51E-02	1,64E+01	0,00E+00	-1,13E+01
Climate change - fossil	kg CO_2 eq.	1,99E+01	5,08E-01	8,50E-02	7,17E+00	0,00E+00	-1,12E+01
Climate change – biogenic	kg CO_2 eq.	-9,13E+00	1,22E-03	2,30E-05	9,22E+00	0,00E+00	-1,39E-02
Climate change – land use and land use change	kg CO_2 eq.	4,10E-02	1,18E-03	3,09E-05	8,82E-05	0,00E+00	-1,39E-02
Ozone depletion	kg CFC 11 eq.	3,68E-06	3,44E-09	1,38E-09	7,13E-09	0,00E+00	-1,35E-07
Acidification	mol H^+ eq.	7,99E-02	2,44E-03	3,66E-04	2,95E-03	0,00E+00	-3,47E-02
Eutrophication aquatic freshwater	kg P eq.	9,03E-04	2,65E-05	6,76E-07	3,42E-06	0,00E+00	-3,33E-04
Eutrophication aquatic marine	kg N eq.	1,79E-02	4,37E-04	1,37E-04	1,47E-03	0,00E+00	-6,72E-03
Eutrophication terrestrial	mol N eq.	1,94E-01	4,86E-03	1,48E-03	1,49E-02	0,00E+00	-7,46E-02
Photochemical ozone formation	kg NMVOC eq.	6,88E-02	1,46E-03	5,28E-04	3,76E-03	0,00E+00	-2,75E-02
Depletion of abiotic resources - minerals and metals*	kg Sb eq.	8,72E-05	4,84E-07	1,38E-07	5,07E-07	0,00E+00	-1,06E-05
Depletion of abiotic resources - fossil fuels*	MJ	3,65E+02	6,78E+00	1,24E+00	2,60E+00	0,00E+00	-1,52E+02
Water use*	m^3 eq.	6,57E+00	8,94E-02	5,63E-03	8,39E-03	0,00E+00	-1,16E+00

** The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator. The results of the impact categories abiotic depletion of minerals and metals may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.*

POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

Results per for 1 m^2 of Meteon® EDF grade 6mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG**	kg CO2 eq.	2,00E+01	5,10E-01	8,51E-02	7,19E+00	0,00E+00	-1,13E+01

POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL VOLUNTARY INDICATORS. RESULTS FOR NORTH AMERICA CALCULATED ACCORDING TO ISO 21930

Results per for 1 m^2 of Meteon® EDF grade 6mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Climate change – GWP 100 (ISO 21930)	kg CO2 eq.	2,00E+01	5,10E-01	8,51E-02	7,19E+00	0,00E+00	-1,13E+01
Ozone depletion - ODP (ISO 21930)	kg CFC-11 eq.	3,72E-06	5,93E-09	1,51E-09	7,62E-09	0,00E+00	-1,73E-07
Eutrophication potential - EP (ISO 21930)	kg N eq	7,01E-02	2,49E-04	3,00E-05	7,70E-04	0,00E+00	-3,33E-03
Acidification potential - AP (ISO 21930)	kg SO2 eq	6,96E-02	2,10E-03	3,31E-04	2,75E-03	0,00E+00	-3,00E-02
Photochemical ozone formation potential – POCP (ISO 21930)	kg O3 eq.	9,80E-01	2,75E-02	8,53E-03	8,55E-02	0,00E+00	-4,25E-01

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

*.** The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product.*

USE OF RESOURCES

Results for 1 m² of Meteon® EDF grade 6mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)***	MJ	2,29E+02	8,65E-01	1,38E-02	0,00E+00	0,00E+00	-1,03E+01
Use of renewable primary energy resources used as raw materials (PERM)***	MJ	7,09E+00	0,00E+00	0,00E+00	-4,25E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (PERT)***	MJ	2,36E+02	8,65E-01	1,38E-02	-4,25E+00	0,00E+00	-1,03E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)***	MJ	2,75E+02	6,78E+00	1,24E+00	0,00E+00	0,00E+00	-1,51E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)***	MJ	9,07E+01	0,00E+00	0,00E+00	-5,44E+01	0,00E+00	0,00E+00
Total use of non-renewable primary energy re-sources (PENRT)***	MJ	3,65E+02	6,78E+00	1,24E+00	-5,44E+01	0,00E+00	-1,51E+02
Use of secondary material (SM)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW)	m^3	1,97E-01	3,87E-03	1,79E-04	1,27E-03	0,00E+00	-4,66E-02

***** *Primary energy use indicators are calculated following option B described in Annex 3 of PCR for Construction products v 1.3.1.*

WASTE PRODUCTION

Results for 1 m² of Meteon® EDF grade 6mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	3,65E-02	2,13E-04	3,00E-05	5,35E-01	0,00E+00	-3,05E-03
Non-hazardous waste disposed	kg	3,30E+00	2,98E-02	1,12E-01	2,82E-01	0,00E+00	-4,79E-01
Radioactive waste disposed	kg	9,92E-04	2,01E-05	2,44E-07	8,25E-07	0,00E+00	-2,25E-04

OUTPUT FLOWS

Results for 1 m² of Meteon® EDF grade 6mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	1,87E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	3,16E+01	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	6,42E+01	0,00E+00	0,00E+00

ADDITIONAL INFORMATION

Reducing the carbon footprint is key for Trespa's overall sustainability policy and it is based on the core belief that it is the right thing to do. We are also convinced that reducing our overall environmental footprint is essential to the long-term success of our business and the environment around us. That is why sustainability is embedded in our business philosophy with the credo 'do no harm, do good, do better.'

At the core of our sustainability strategy is the principle that we should start with ourselves when we seek to improve the world: 'do no harm.' Our approach is straightforward: we measure our impact, select targets to reduce this impact and monitor and report on progress. To measure our impact, we use the Life Cycle Assessment (LCA) methodology.

The second element of our strategy is to look for opportunities that support the environment beyond the direct scope of our own manufacturing footprint: 'do good.' This includes creating highly durable products that have a long lifespan that limit the need for replacement. Additionally, we will develop projects that absorb or reduce carbon emissions that are not directly linked to our factories or product portfolio.

We believe that addressing sustainability challenges will allow our company to continue to grow and 'do better' in the future. Investing in sustainability should – in the end – ensure that these efforts go beyond established regulatory requirements and the net effect of our efforts will positively impact the environment in which we operate.

Further details on our philosophy, approach and goals can be found in our position paper available online at https://www.trespa.com/documentation

Information on the product, its performance, testing and certification evidence can be found at www.trespa.info.

PROGRAM INFORMATION

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 CONSTRUCTION PRODUCTS VERSION 1.3.2.
PCR review was conducted by: the Technical Committee of the International EPD® System. Chair of the review is Claudia A. Peña. The review panel may be contacted via info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: Ambre Thiriez, Nemho
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006 via: ☒ EPD verification by EPD Process Certification* Internal auditor: Sara Corrado, Nemho Third-party verification: SGS Italia S.p.A. Via Caldera 21, 20153 Milano.(www.it.sgs.com) is an approved certification body accountable for third-party verification Third-party verifier is accredited by: *Accredia, certificate n. 0005VV* *For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see GPI v.4, Section 7.5.
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

DIFFERENCES WITH PREVIOUS VERSIONS

2024-09-30

- PCR updated to version 1.3.2

REFERENCES

- General Programme instructions of the International EPD® System. Version 4.0.
- Gervasio, Dimova, Pinto (2018). Benchmarking the Life-Cycle Environmental Performance of Buildings. Sustainability.
- LCA background report for Meteon® EDF grade 6mm
- PCR 2019:14 Construction products, Version 1.3.2

Liite 2. / Appendix 2.

Environmental Product Declaration

In accordance with ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021, and ISO 21930:2017

Meteon® EDF grade 8mm

Trespa International B.V.

By Nemho, centre of excellence for innovation and technology for Broadview Holding B.V.

Programme	The International EPD® System www.environdec.com
Programme operator	EPD International AB
EPD registration number	S-P-07213
Publication date	2022-12-23
Valid until	2027-12-22

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

EPD® THE INTERNATIONAL EPD® SYSTEM

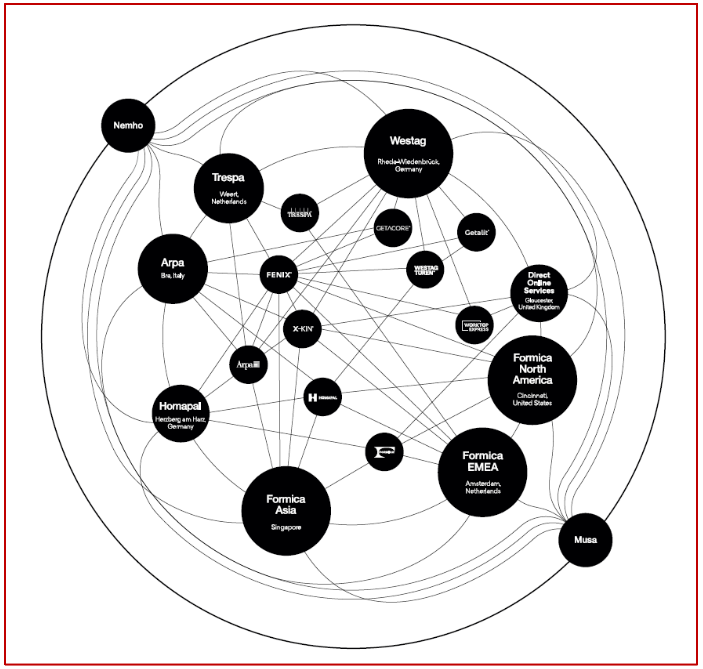
ECO PLATFORM EPD VERIFIED

NEMHO

Nemho is located in Weert in the Netherlands and it is the Innovation Centre of the material companies of the Broadview Holding. Nemho carries sustainability-related activities, including LCA studies, for Trespa International B.V.

Nemho is the owner of this EPD.

Contact Person: Sara Corrado (s.corrado@nemho.com).



TRESPA

Trespa International B.V. is located in Weert in the Netherlands, and is a leading innovator in the field of architectural materials, recognised internationally as a premier developer of high quality panels for exterior cladding, decorative façades, and scientific surface solutions. Since its founding in 1960, Trespa has worked closely with architects, designers, installers, distributors, raw material suppliers and end users globally. Trespa's focus is on product development, combining quality-manufacturing technologies with intelligent solutions for architectural and scientific surface applications. With unique insights into key market challenges, trends and demands, Trespa passionately delivers innovative aesthetically pleasing and high performance solutions for a wide range of needs.

Trespa International B.V. holds, amongst others, certifications based on ISO 9001, ISO 14001, PEFC and FSC certification. For a full overview of certificates please visit www.trespa.info.

METEON® EDF GRADE 8MM

HPLs are decorative high-pressure panels. These products, in all their build-ups, are comprised of individual layers of natural fibres, treated with thermosetting resins and pressed under high pressure. The panels are attributed with an integrated decorative layer on one or both sides of the panels.

PRODUCT DESCRIPTION

Trespa Meteon® EDF grade, 8mm thick panels comprise sheets consisting of layers of natural fibre, impregnated with thermosetting resins and pressed under high pressure. The panels are attributed a decorative on one or both sides of the panels. In case of one-sided décor layer, the back side is plain black showing production batch information. The panels are available in a number of colors and décors with different finishes. Trespa Meteon® EDF grade panel in 8mm is a versatile exterior cladding for innovative and functional ventilated façades and other exterior vertical applications like sunblind solutions.

The abbreviations EDF is an abbreviation standardized in the norm EN 438 - High pressure decorative laminate (HPL) - Sheets based on thermosetting resins - commonly called laminates - Part 1: Introduction and general information.

Explanation on meaning of EDF:

Main classification: E - denotes Exterior grade

Sub classification: D - denotes Heavy duty or severe use

F - denotes Flame-retardant grade

For detailed information on product performance in relation to type EDF see our material property datasheets published on the website www.trespa.info.

PRODUCT IDENTIFICATION

Decorative high-pressure compact laminates (high-pressure laminates, HPL) tested according to EN 438-4:2016. Information on the product performance can be found on www.trespa.info

UN CPC CODE

Not applicable.

METHODOLOGY

This EPD has been developed based on the PCR for construction products 2019:14, Version 1.2.4.

DECLARED UNIT

The declared unit is 1 square meter of finished panel, 8 mm thick, weighing 11,2 kg, plus primary packaging. All the possible product décor layers, different for the color and for the finishing, are covered by this EPD.

Meteon® EDF Grade 8mm corresponds to a weighted average of panels produced in the plant of Weert (The Netherlands).

REFERENCE SERVICE LIFE

50 years provided to appropriate design of the solution, installation, use and maintenance under normal conditions.

TIME REPRESENTATIVENESS

Data used for the LCA calculation refer to the production year 2021.

DATA, DATABASE(S) AND LCA SOFTWARE

Activities under the direct control of the company are modelled using specific data.

The LCA study was performed with the support of the Simapro LCA software (version 9.3).

Generic data are taken from ecoinvent 3.8 ad Carbon Minds database.

ELECTRICITY MODELLING

Electricity is modelled according to the guarantees of origin for the specific electricity mix purchased by Trespa for the production location in Weert, which corresponds to 100% renewable energy, specifically from wind. The climate impact of electricity is 0,0267 kg CO2 eq./kWh (using GWP-GHG indicator).

ALLOCATION APPROACH

Environmental impacts of multi-output processes at the plant level are allocated to the outputs based on their mass.

INFRASTRUCTURES AND CAPITAL GOODS

Infrastructures and capital goods are excluded for core processes (module A3). They are instead included in upstream and downstream processes taken from ecoinvent database (modules A1-A2, C1, C2, and C3).

ENVIRONMENTAL PERFORMANCE ASSESSMENT

Mandatory potential impact indicators are calculated using the EN 15804 reference package based on EF 3.0.

SYSTEM BOUNDARIES

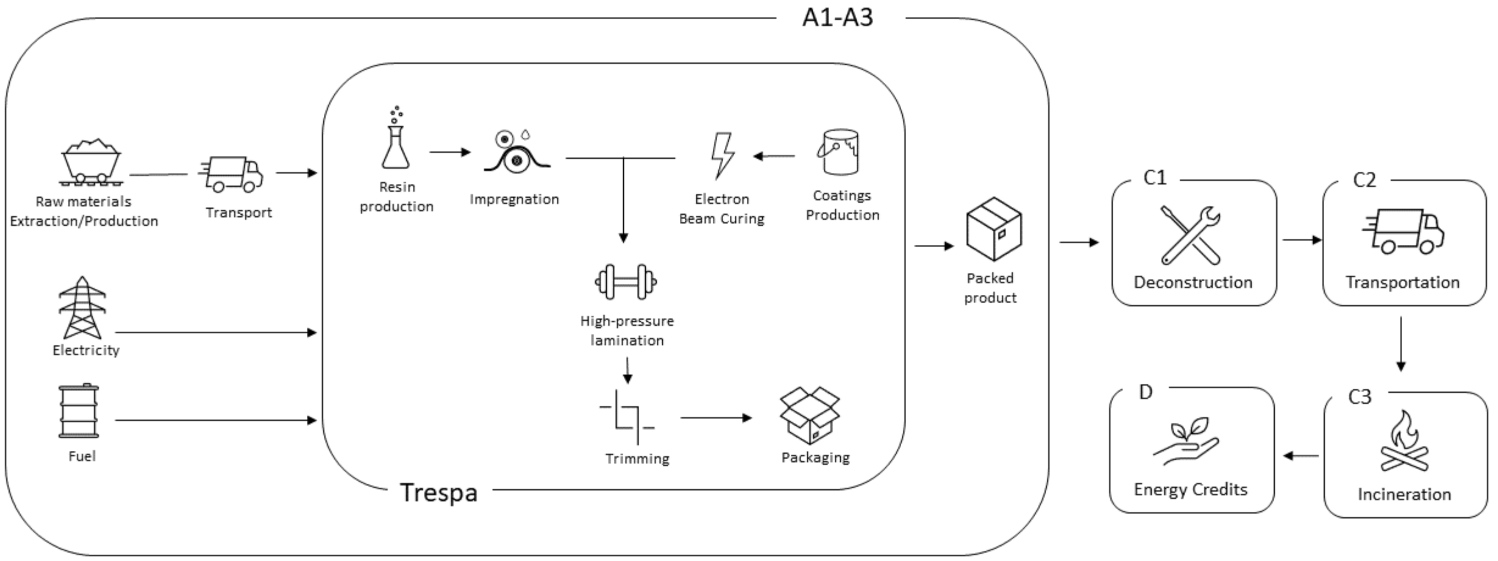
The system boundary of this EPD is from cradle to gate with modules C1–C4 and module D (A1–A3 + C + D).

The product stage (modules A1-A3) includes the manufacturing process of Meteon® EDF grade 8mm, carried out in the plant of Weert (NL), the production of raw materials, electricity, and natural gas.

The deconstruction of Meteon® EDF grade 8mm (module C1) is modelled according to Gervasio et al. (2018). The transport of HPLs at the end of life (module C2) assumed an average transport distance equal to 100km.

HPLs are commonly used as secondary material for energy recovery, therefore it is assumed that 100% of the HPL at the end of life is sent to incineration with thermal efficiency higher than 60% (module C3). Loads from material incineration and resulting energy credits (module D) are declared. Energy credits are calculated considering a lower heating value (LHV) of panels equal to 19 MJ/kg as shown from a test run by BioMassaKraftcentrale (Germany, Luhnen) that incinerates Trespa products.

Trespa launched Trespa Second Life, a take-back program to facilitate the reuse of Trespa panels. The reduced impact of the end-of-life of Meteon® EDF grade 8mm allowed by Trespa Second Life, is reported in the additional information section. For more information on Trespa Second Life, go to https://www.trespa.com/nl_NL/second-life.



MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	NL	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	n.a.			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X: module declared, ND: module not declared, n.a: not applicable

CONTENT INFORMATION

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Kraft paper	6,640-6,912	0	61% ± 1,21% 0,292 ± 0,006
Phenolic Resin	4,084-4,250	0	0%
Coating Chemicals	0,252-0,262	0	0%
TOTAL	**11,2**	**0**	**61% ± 1,21%** **0,292 ± 0,006**

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
PP Coversheets	0,113	1,01%	0
PE film	0,011	0,10%	0
Steelbands	0,020	0,18%	0
TOTAL	**0,143**	**1,28%**	**0**

The build-up is calculated based on production values in 2021 by dividing the total amount of used raw materials by the total amount of panels produced.

Meteon® EDF grade 8mm does not contain substances listed on the candidate list of Substances of Very High Concern, as published on the ECHA website, in concentrations exceeding 0.1 percentage by mass.

ENVIRONMENTAL PERFORMANCE

POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804

Results for 1 m² of Meteon® EDF grade 8mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Climate change – total	kg CO_2 eq.	1,45E+01	7,09E-01	1,04E-01	2,16E+01	0,00E+00	-1,51E+01
Climate change - fossil	kg CO_2 eq.	2,65E+01	7,08E-01	1,04E-01	9,55E+00	0,00E+00	-1,51E+01
Climate change – biogenic	kg CO_2 eq.	-1,20E+01	0,00E+00	0,00E+00	1,20E+01	0,00E+00	0,00E+00
Climate change – land use and land use change	kg CO_2 eq.	4,36E-02	1,30E-03	3,91E-05	9,66E-05	0,00E+00	-1,61E-02
Ozone depletion	kg CFC 11 eq.	6,17E-06	2,34E-08	2,37E-08	2,76E-08	0,00E+00	-1,27E-06
Acidification	mol H^+ eq.	1,13E-01	3,49E-03	5,30E-04	3,99E-03	0,00E+00	-4,80E-02
Eutrophication aquatic freshwater	kg P eq.	1,09E-02	3,32E-04	7,59E-06	7,88E-05	0,00E+00	-4,07E-03
Eutrophication aquatic marine	kg N eq.	2,44E-02	6,67E-04	1,80E-04	2,42E-03	0,00E+00	-9,45E-03
Eutrophication terrestrial	mol N eq.	2,49E-01	6,67E-03	1,96E-03	1,97E-02	0,00E+00	-9,58E-02
Photochemical ozone formation	kg NMVOC eq.	7,88E-02	1,80E-03	5,85E-04	4,79E-03	0,00E+00	-2,79E-02
Depletion of abiotic resources - minerals and metals*	kg Sb eq.	1,76E-04	9,20E-07	2,39E-07	8,94E-07	0,00E+00	-1,90E-05
Depletion of abiotic resources - fossil fuels*	MJ	5,03E+02	9,22E+00	1,60E+00	3,00E+00	0,00E+00	-2,14E+02
Water use*	m^3 eq.	9,39E+00	1,13E-01	6,16E-03	2,18E-02	0,00E+00	-1,40E+00

** The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator. The results of the impact categories abiotic depletion of minerals and metals may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.*

POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

Results per for 1 m² of Meteon® EDF grade 8mm							
Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG**	kg CO2 eq.	2,62E+01	6,96E-01	1,03E-01	9,54E+00	0,00E+00	-1,48E+01

POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL VOLUNTARY INDICATORS. RESULTS FOR NORTH AMERICA CALCULATED ACCORDING TO ISO 21930

Results per for 1 m² of Meteon® EDF grade 8mm							
Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
Climate change – GWP 100 (ISO 21930)	kg CO2 eq.	2,59E+01	6,87E-01	1,03E-01	9,54E+00	0,00E+00	-1,46E+01
Ozone depletion - ODP (ISO 21930)	kg CFC-11 eq.	6,32E-06	2,79E-08	2,50E-08	2,91E-08	0,00E+00	-1,36E-06
Eutrophication potential - EP (ISO 21930)	kg N eq	1,61E-01	2,58E-03	1,11E-04	4,67E-03	0,00E+00	-3,18E-02
Acidification potential - AP (ISO 21930)	kg SO2 eq	9,35E-02	2,98E-03	4,71E-04	3,68E-03	0,00E+00	-4,11E-02
Photochemical ozone formation potential – POCP (ISO 21930)	kg O3 eq.	1,26E+00	3,76E-02	1,13E-02	1,13E-01	0,00E+00	-5,43E-01

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

*.** The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product.*

USE OF RESOURCES

Results for 1 m^2 of Meteon® EDF grade 8mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	2,65E+01	9,16E-01	1,33E-02	4,81E-02	0,00E+00	-1,12E+01
Use of renewable primary energy resources used as raw materials (PERM)	MJ	2,67E+02	1,42E-01	4,44E-03	2,38E-02	0,00E+00	-1,76E+00
Total use of renewable primary energy resources (PERT)	MJ	2,94E+02	1,06E+00	1,78E-02	7,19E-02	0,00E+00	-1,30E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	3,81E+02	9,22E+00	1,60E+00	3,00E+00	0,00E+00	-2,14E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	1,23E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy re-sources (PENRT)	MJ	5,03E+02	9,22E+00	1,60E+00	3,00E+00	0,00E+00	-2,14E+02
Use of secondary material (SM)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW)	m^3	2,99E-01	5,14E-03	2,01E-04	1,93E-03	0,00E+00	-6,35E-02

WASTE PRODUCTION

Results for 1 m² of Meteon® EDF grade 8mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	6,56E-02	3,38E-03	1,23E-04	7,14E-01	0,00E+00	-4,17E-02
Non-hazardous waste disposed	kg	4,70E+00	4,47E-02	1,49E-01	3,72E-01	0,00E+00	-5,98E-01
Radioactive waste disposed	kg	1,66E-03	2,86E-05	1,06E-05	6,03E-06	0,00E+00	-3,53E-04

OUTPUT FLOWS

Results for 1 m² of Meteon® EDF grade 8mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	2,64E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	1,12E+01	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	4,21E+01	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	8,55E+01	0,00E+00	0,00E+00

ADDITIONAL INFORMATION

Reducing the carbon footprint is key for Trespa's overall sustainability policy and it is based on the core belief that it is the right thing to do. We are also convinced that reducing our overall environmental footprint is essential to the long-term success of our business and the environment around us. That is why sustainability is embedded in our business philosophy with the credo 'do no harm, do good, do better.'

At the core of our sustainability strategy is the principle that we should start with ourselves when we seek to improve the world: 'do no harm.' Our approach is straightforward: we measure our impact, select targets to reduce this impact and monitor and report on progress. To measure our impact, we use the Life Cycle Assessment (LCA) methodology.

The second element of our strategy is to look for opportunities that support the environment beyond the direct scope of our own manufacturing footprint: 'do good.' This includes creating highly durable products that have a long lifespan that limit the need for replacement. Additionally, we will develop projects that absorb or reduce carbon emissions that are not directly linked to our factories or product portfolio.

We believe that addressing sustainability challenges will allow our company to continue to grow and 'do better' in the future. Investing in sustainability should – in the end – ensure that these efforts go beyond established regulatory requirements and the net effect of our efforts will positively impact the environment in which we operate.

Further details on our philosophy, approach and goals can be found in our position paper available online at https://www.trespa.com/documentation

Information on the product, its performance, testing and certification evidence can be found at www.trespa.info.

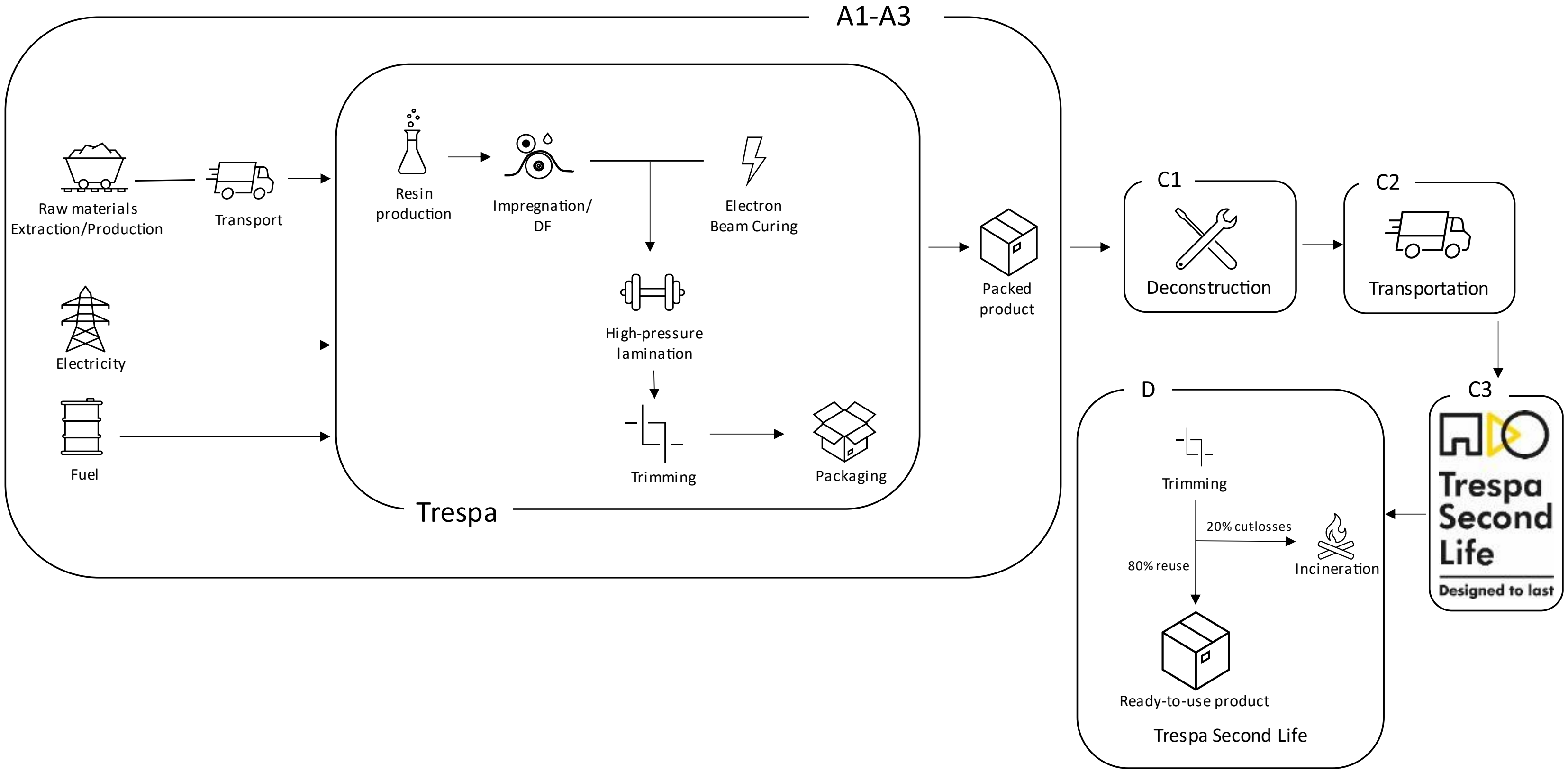
Trespa Second Life

Trespa Second Life is a take-back system that facilitates the reuse of HPLs after their use stage. The HPLs that are taken back after dismantling get trimmed and cleaned as preparation for a second life in another application that appreciates the properties of HPLs. Trespa Second Life is currently available in the Benelux, Germany and France.

The system boundaries are represented below.

The transport of HPLs at the end of life (module C2) assumed an average transport distance equal to 500km. It is assumed that 100% of the HPL at the end of life is headed for Trespa Second Life (module C3). Module C accounts for the biogenic emissions of the reusable HPL, to balance out the carbon uptake in module A1-A3 as prescribed by the EN15804:2012+A2:2019. Loads and benefits from the reuse of HPL are declared (module D). It accounts for trimming of the material, incineration of cutting-losses (20% of the HPL) and avoided production of new HPL. The impact of cleaning is assumed to be negligible.

Please see in the table below the impact reduction on Climate Change indicators.



POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804

End-of-life Scenario	Results for 1 m^2 of Meteon® EDF grade 8mm							
Trespa Second Life	**Indicator**	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
	Climate change – total	kg CO_2 eq.	1,45E+01	7,09E-01	5,20E-01	1,20E+01	0,00E+00	-1,98E+01
	Climate change - fossil	kg CO_2 eq.	2,65E+01	7,08E-01	5,20E-01	0,00E+00	0,00E+00	-1,98E+01
	Climate change – biogenic	kg CO_2 eq.	-1,20E+01	0,00E+00	0,00E+00	1,20E+01	0,00E+00	0,00E+00
	Climate change – land use and land use change	kg CO_2 eq.	4,36E-02	1,30E-03	1,96E-04	0,00E+00	0,00E+00	-3,10E-02

End-of-life Scenario	Results for 1 m^2 of Meteon® EDF grade 8mm							
Incineration	**Indicator**	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
	Climate change – total	kg CO_2 eq.	1,45E+01	7,09E-01	1,04E-01	2,16E+01	0,00E+00	-1,51E+01
	Climate change - fossil	kg CO_2 eq.	2,65E+01	7,08E-01	1,04E-01	9,55E+00	0,00E+00	-1,51E+01
	Climate change – biogenic	kg CO_2 eq.	-1,20E+01	0,00E+00	0,00E+00	1,20E+01	0,00E+00	0,00E+00
	Climate change – land use and land use change	kg CO_2 eq.	4,36E-02	1,30E-03	3,91E-05	9,66E-05	0,00E+00	-1,61E-02

	Trespa Second Life	Incineration
Climate Change – total A1-A3 + C1-C4	27,7 kg CO_2 eq.	36,8 kg CO_2 eq.
Impact Reduction	**- 25%**	-

PROGRAM INFORMATION

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

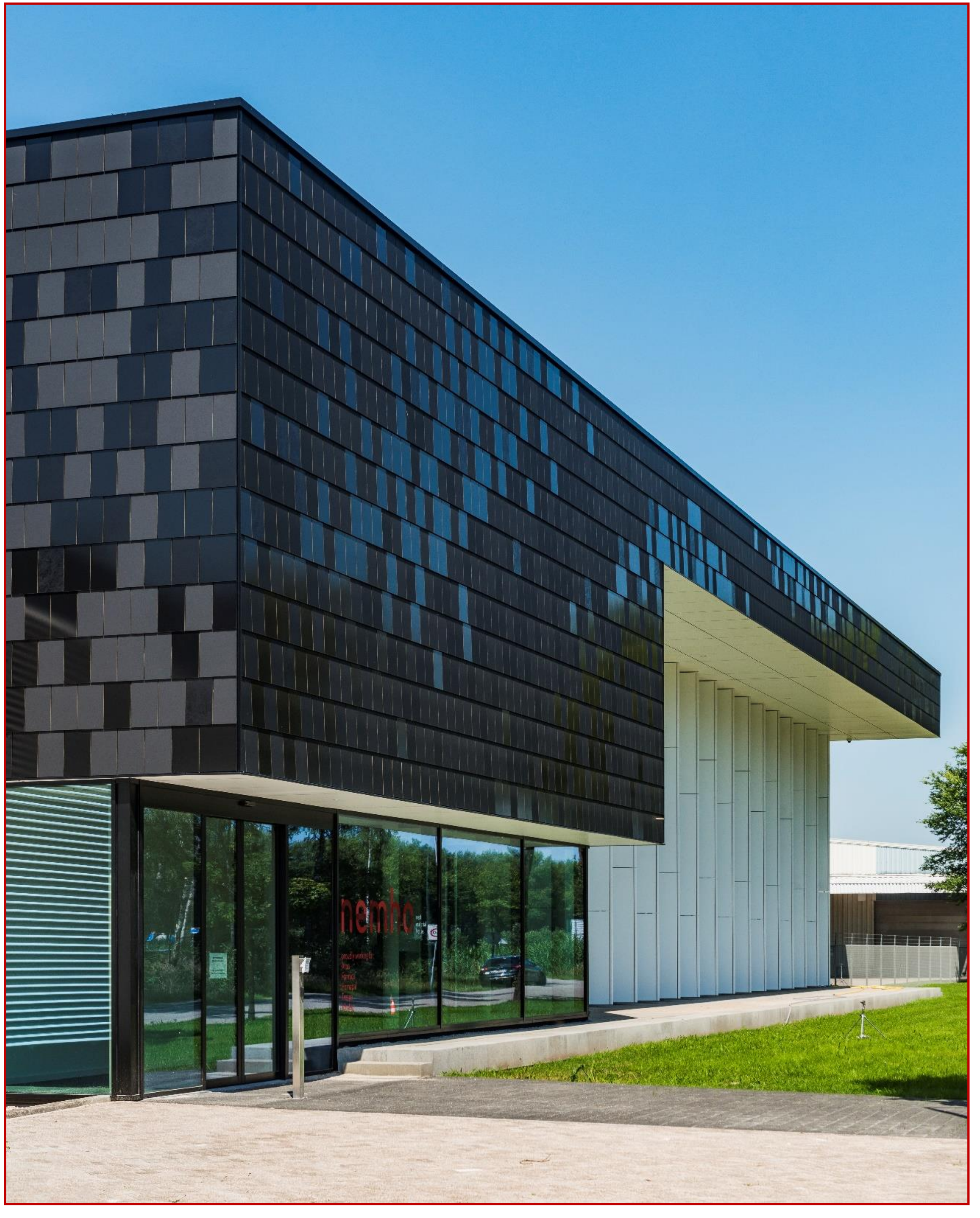
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 CONSTRUCTION PRODUCTS VERSION 1.2.4.
PCR review was conducted by: the Technical Committee of the International EPD® System. Chair of the review is Claudia A. Peña. The review panel may be contacted via info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: Irmak Akal, Andrea Scandroglio, Nemho
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006 via: ☒ EPD verification by EPD Process Certification* Internal auditor: Sara Corrado, Nemho Third-party verification: SGS Italia S.p.A. Via Caldera 21, 20153 Milano.(www.it.sgs.com) is an approved certification body accountable for third-party verification Third-party verifier is accredited by: *Accredia, certificate n.006H* *For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see GPI v.4, Section 7.5.
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

REFERENCES

- General Programme instructions of the International EPD® System. Version 4.0.
- Gervasio, Dimova, Pinto (2018). Benchmarking the Life-Cycle Environmental Performance of Buildings. Sustainability.
- LCA background report for Meteon® EDF grade 8mm
- PCR 2019:14 Construction products, Version 1.2.4
- ICDLI (2015). Technical characteristics and physical properties of HPL (Technical leaflet).
- EN 438-4:2016 High-pressure decorative laminates (HPL).
- EN 15804:2012+A2 Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products.
- ISO. (2006). ISO 14040: Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.
- ISO. (2006). ISO 14044: Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.
- Plastics Europe (2018). European Plastic Waste: Recycling Overtakes Landfill For The First Time European plastic waste: recycling overtakes landfill for the first time: PlasticsEurope taken from: https://www.plasteurope.com/news/PLASTICS_RECYCLING_EUROPE_t238815



Liite 2. / Appendix 2.

nemho next material house

Environmental Product Declaration

In accordance with ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021, and ISO 21930:2017

Meteon® EDF grade 10mm

Trespa International B.V.

By Nemho, centre of excellence for innovation and technology for Broadview Holding B.V.

Programme	The International EPD® System www.environdec.com
Programme operator	EPD International AB
EPD registration number	S-P-10183
Publication date	2024-09-30
Revision date	2024-10-21 (version 1)
Valid until	2029-09-30

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

EPD® THE INTERNATIONAL EPD® SYSTEM

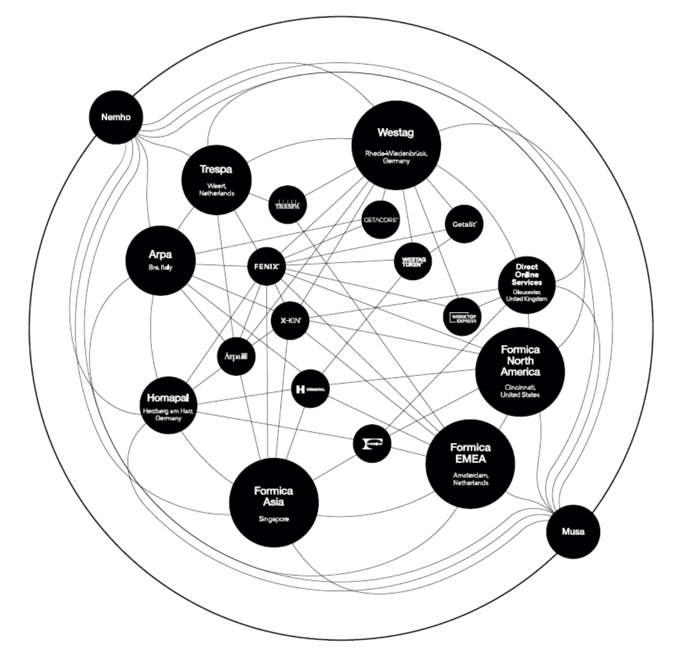
ECO PLATFORM EPD VERIFIED

NEMHO

Nemho is located in Weert in the Netherlands and it is the Innovation Centre of the material companies of the Broadview Holding. Nemho carries sustainability-related activities, including LCA studies, for Trespa International B.V.

Nemho is the owner of this EPD.

Contact Person: Sara Corrado (s.corrado@nemho.com).



TRESPA

Trespa International B.V. is located in Weert in the Netherlands, and is a leading innovator in the field of architectural materials, recognised internationally as a premier developer of high quality panels for exterior cladding, decorative façades, and scientific surface solutions. Since its founding in 1960, Trespa has worked closely with architects, designers, installers, distributors, raw material suppliers and end users globally. Trespa's focus is on product development, combining quality-manufacturing technologies with intelligent solutions for architectural and scientific surface applications. With unique insights into key market challenges, trends and demands, Trespa passionately delivers innovative aesthetically pleasing and high performance solutions for a wide range of needs.

Trespa International B.V. holds, amongst others, certifications based on ISO 9001, ISO 14001, PEFC and FSC certification. For a full overview of certificates please visit www.trespa.info.

METEON® EDF GRADE 10MM

HPLs are decorative high-pressure panels. These products, in all their build-ups, are comprised of individual layers of natural fibres, treated with thermosetting resins and pressed under high pressure. The panels are attributed with an integrated decorative layer on one or both sides of the panels.

PRODUCT DESCRIPTION

Trespa Meteon® EDF grade, 10mm thick panels comprise sheets consisting of layers of natural fibre, impregnated with thermosetting resins and pressed under high pressure. The panels are attributed a decorative on one or both sides of the panels. In case of one-sided décor layer, the back side is plain black showing production batch information. The panels are available in a number of colors and décors with different finishes. Trespa Meteon® EDF grade panel in 10mm is a versatile exterior cladding for innovative and functional ventilated façades and other exterior vertical applications like sunblind solutions.

The abbreviations EDF is an abbreviation standardized in the norm EN 438 - High pressure decorative laminate (HPL) - Sheets based on thermosetting resins - commonly called laminates - Part 1: Introduction and general information.

Explanation on meaning of EDF:

Main classification:	E - denotes Exterior grade
Sub classification:	D - denotes Heavy duty or severe use
	F - denotes Flame-retardant grade

For detailed information on product performance in relation to type EDF see our material property datasheets published on the website www.trespa.info.

PRODUCT IDENTIFICATION

Decorative high-pressure compact laminates (high-pressure laminates, HPL) tested according to EN 438-4:2016. Information on the product performance can be found on www.trespa.info

UN CPC CODE

Not applicable.

METHODOLOGY

This EPD has been developed based on the PCR for construction products 2019:14, Version 1.3.2.

DECLARED UNIT

The declared unit is 1 square meter of finished panel, 10 mm thick, weighing 14 kg, plus primary packaging. All the possible product décor layers, different for the color and for the finishing, are covered by this EPD.

Meteon® EDF Grade 10mm corresponds to a weighted average of panels produced in the plant of Weert (The Netherlands).

REFERENCE SERVICE LIFE

50 years provided to appropriate design of the solution, installation, use and maintenance under normal conditions.

TIME REPRESENTATIVENESS

Data used for the LCA calculation refer to the production year 2022.

DATA, DATABASE(S) AND LCA SOFTWARE

Activities under the direct control of the company are modelled using specific data.

The LCA study was performed with the support of the Simapro LCA software (version 9.5).

Generic data are taken from ecoinvent 3.9.1 ad Carbon Minds database.

ELECTRICITY MODELLING

Electricity is modelled according to the guarantees of origin for the specific electricity mix purchased by Trespa for the production location in Weert, which corresponds to 100% renewable energy, specifically from wind. The climate impact of electricity is 0,0267 kg CO2 eq./kWh (using GWP-GHG indicator).

ALLOCATION APPROACH

Environmental impacts of multi-output processes at the plant level are allocated to the outputs based on their mass.

INFRASTRUCTURES AND CAPITAL GOODS

Infrastructures and capital goods in our production sites are excluded from the analysis. Other infrastructures and capital goods are included in the analysis, as reported in ecoinvent database, with the exception of chemicals taken from Carbon Minds database.

ENVIRONMENTAL PERFORMANCE ASSESSMENT

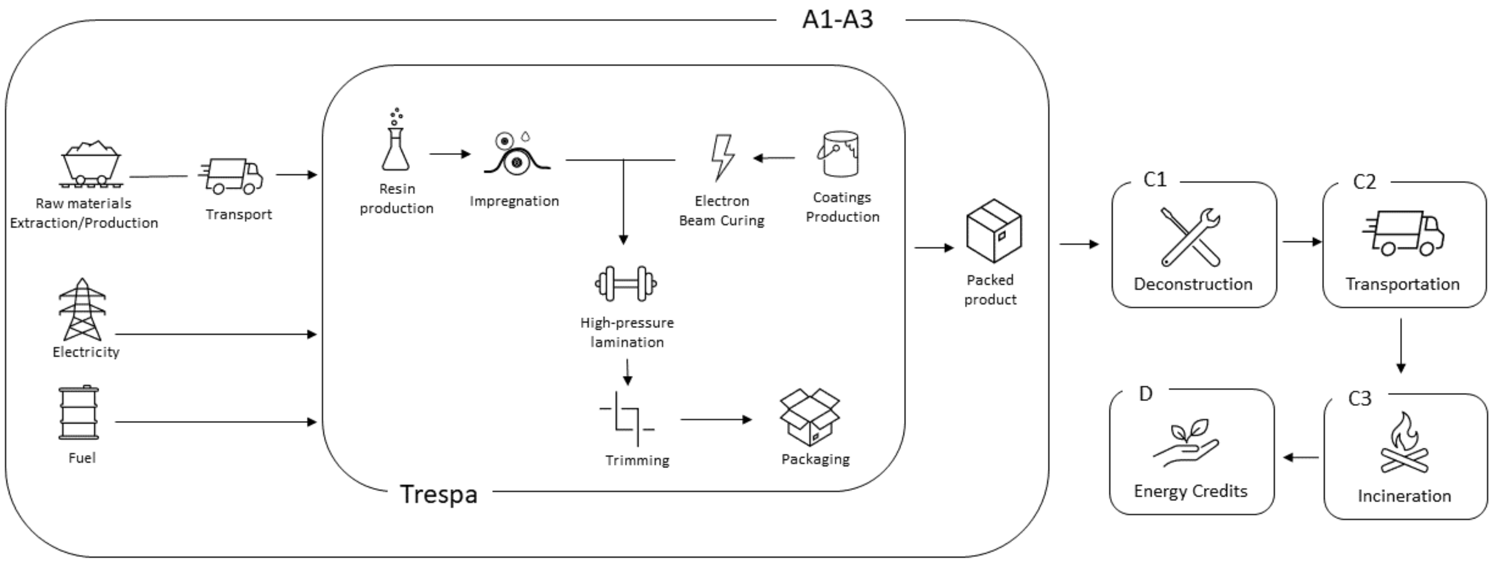
Mandatory potential impact indicators are calculated using the EN 15804 reference package based on EF 3.1.

SYSTEM BOUNDARIES

The system boundary of this EPD is from cradle to gate with modules C1–C4 and module D (A1–A3 + C + D).

The product stage (modules A1-A3) includes the manufacturing process of Meteon® EDF grade 10mm, carried out in the plant of Weert (NL), the production of raw materials, electricity, and natural gas.

The deconstruction of Meteon® EDF grade 10mm (module C1) is modelled according to Gervasio et al. (2018). The transport of HPLs at the end of life (module C2) assumed an average transport distance equal to 100km. HPLs are commonly used as secondary material for energy recovery, therefore it is assumed that 100% of the HPL at the end of life is sent to incineration with thermal efficiency higher than 60% (module C3). Loads from material incineration and resulting energy credits (module D) are declared. Energy credits are calculated considering a lower heating value (LHV) of panels equal to 19 MJ/kg as shown from a test run by BioMassaKraftcentrale (Germany, Luhnen) that incinerates Trespa products.



MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	NL	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	n.a.			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X: module declared, ND: module not declared, n.a: not applicable

CONTENT INFORMATION

Product components	Weight *kg*	Post-consumer material *Weight %*	Biogenic material *Weight-% of product*	Biogenic material *kg C/m²*
Kraft paper	8,648 ± 0,173	0%	61,8% ± 1,2%	4,14 ± 0,083
Phenolic Resin	5,094 ± 0,102	0%	0% ± 0%	0 ± 0
Coating Chemicals	0,258 ± 0,005	0%	0% ± 0%	0 ± 0
TOTAL	**14 ± 0,28**	**0%**	**61,8% ± 1,2%**	**4,14 ± 0,083**

Packaging materials	Weight *kg*	Weight *% (versus the product)*	Weight biogenic carbon *kg C/m²*
PP Coversheets	0,155	1,11%	0
PE film	0,015	0,11%	0
Steelbands	0,027	0,20%	0
TOTAL	**0,197**	**1,41%**	**0**

The build-up is calculated based on production values in 2022 by dividing the total amount of used raw materials by the total amount of panels produced.

Meteon® EDF grade 10mm does not contain substances listed on the candidate list of Substances of Very High Concern, as published on the ECHA website, in concentrations exceeding 0.1 percentage by mass.

ENVIRONMENTAL PERFORMANCE

POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804

Results for 1 m^2 of Meteon® EDF grade 10mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Climate change – total	kg CO_2 eq.	1,69E+01	8,50E-01	1,42E-01	2,72E+01	0,00E+00	-1,88E+01
Climate change - fossil	kg CO_2 eq.	3,19E+01	8,46E-01	1,42E-01	1,20E+01	0,00E+00	-1,87E+01
Climate change – biogenic	kg CO_2 eq.	-1,50E+01	2,04E-03	3,83E-05	1,52E+01	0,00E+00	-2,32E-02
Climate change – land use and land use change	kg CO_2 eq.	5,68E-02	1,97E-03	5,15E-05	1,47E-04	0,00E+00	-2,31E-02
Ozone depletion	kg CFC 11 eq.	5,38E-06	5,73E-09	2,31E-09	1,19E-08	0,00E+00	-2,25E-07
Acidification	mol H^+ eq.	1,28E-01	4,06E-03	6,11E-04	4,92E-03	0,00E+00	-5,78E-02
Eutrophication aquatic freshwater	kg P eq.	1,33E-03	4,42E-05	1,13E-06	5,70E-06	0,00E+00	-5,56E-04
Eutrophication aquatic marine	kg N eq.	2,88E-02	7,28E-04	2,29E-04	2,45E-03	0,00E+00	-1,12E-02
Eutrophication terrestrial	mol N eq.	3,13E-01	8,10E-03	2,46E-03	2,48E-02	0,00E+00	-1,24E-01
Photochemical ozone formation	kg NMVOC eq.	1,11E-01	2,43E-03	8,80E-04	6,27E-03	0,00E+00	-4,59E-02
Depletion of abiotic resources - minerals and metals*	kg Sb eq.	1,38E-04	8,06E-07	2,30E-07	8,45E-07	0,00E+00	-1,76E-05
Depletion of abiotic resources - fossil fuels*	MJ	5,86E+02	1,13E+01	2,06E+00	4,33E+00	0,00E+00	-2,53E+02
Water use*	m^3 eq.	1,04E+01	1,49E-01	9,38E-03	1,40E-02	0,00E+00	-1,93E+00

** The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator. The results of the impact categories abiotic depletion of minerals and metals may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.*

POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

Results per for 1 m² of Meteon® EDF grade 10mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG**	kg CO2 eq.	3,22E+01	8,50E-01	1,42E-01	1,20E+01	0,00E+00	-1,88E+01

POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL VOLUNTARY INDICATORS. RESULTS FOR NORTH AMERICA CALCULATED ACCORDING TO ISO 21930

Results per for 1 m² of Meteon® EDF grade 10mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Climate change – GWP 100 (ISO 21930)	kg CO2 eq.	3,22E+01	8,50E-01	1,42E-01	1,20E+01	0,00E+00	-1,88E+01
Ozone depletion - ODP (ISO 21930)	kg CFC-11 eq.	5,51E-06	9,88E-09	2,51E-09	1,27E-08	0,00E+00	-2,88E-07
Eutrophication potential - EP (ISO 21930)	kg N eq	1,14E-01	4,16E-04	5,00E-05	1,28E-03	0,00E+00	-5,54E-03
Acidification potential - AP (ISO 21930)	kg SO2 eq	1,12E-01	3,51E-03	5,52E-04	4,59E-03	0,00E+00	-5,01E-02
Photochemical ozone formation potential – POCP (ISO 21930)	kg O3 eq.	1,58E+00	4,59E-02	1,42E-02	1,43E-01	0,00E+00	-7,08E-01

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

*.** The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product.*

USE OF RESOURCES

Results for 1 m^2 of Meteon® EDF grade 10mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)***	MJ	3,74E+02	1,44E+00	2,29E-02	0,00E+00	0,00E+00	-1,72E+01
Use of renewable primary energy resources used as raw materials (PERM)***	MJ	1,04E+01	0,00E+00	0,00E+00	-6,25E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (PERT)***	MJ	3,85E+02	1,44E+00	2,29E-02	-6,25E+00	0,00E+00	-1,72E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)***	MJ	4,37E+02	1,13E+01	2,06E+00	0,00E+00	0,00E+00	-2,52E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)***	MJ	1,48E+02	0,00E+00	0,00E+00	-8,89E+01	0,00E+00	0,00E+00
Total use of non-renewable primary energy re-sources (PENRT)***	MJ	5,86E+02	1,13E+01	2,06E+00	-8,89E+01	0,00E+00	-2,52E+02
Use of secondary material (SM)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW)	m^3	3,12E-01	6,45E-03	2,98E-04	2,11E-03	0,00E+00	-7,76E-02

**** Primary energy use indicators are calculated following option B described in Annex 3 of PCR for Construction products v 1.3.1.*

WASTE PRODUCTION

Results for 1 m² of Meteon® EDF grade 10mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	5,93E-02	3,55E-04	4,99E-05	8,92E-01	0,00E+00	-5,09E-03
Non-hazardous waste disposed	kg	5,36E+00	4,97E-02	1,86E-01	4,70E-01	0,00E+00	-7,98E-01
Radioactive waste disposed	kg	1,62E-03	3,34E-05	4,07E-07	1,37E-06	0,00E+00	-3,75E-04

OUTPUT FLOWS

Results for 1 m² of Meteon® EDF grade 10mm							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	3,12E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	5,27E+01	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	1,07E+02	0,00E+00	0,00E+00

ADDITIONAL INFORMATION

Reducing the carbon footprint is key for Trespa's overall sustainability policy and it is based on the core belief that it is the right thing to do. We are also convinced that reducing our overall environmental footprint is essential to the long-term success of our business and the environment around us. That is why sustainability is embedded in our business philosophy with the credo 'do no harm, do good, do better.'

At the core of our sustainability strategy is the principle that we should start with ourselves when we seek to improve the world: 'do no harm.' Our approach is straightforward: we measure our impact, select targets to reduce this impact and monitor and report on progress. To measure our impact, we use the Life Cycle Assessment (LCA) methodology.

The second element of our strategy is to look for opportunities that support the environment beyond the direct scope of our own manufacturing footprint: 'do good.' This includes creating highly durable products that have a long lifespan that limit the need for replacement. Additionally, we will develop projects that absorb or reduce carbon emissions that are not directly linked to our factories or product portfolio.

We believe that addressing sustainability challenges will allow our company to continue to grow and 'do better' in the future. Investing in sustainability should – in the end – ensure that these efforts go beyond established regulatory requirements and the net effect of our efforts will positively impact the environment in which we operate.

Further details on our philosophy, approach and goals can be found in our position paper available online at https://www.trespa.com/documentation

Information on the product, its performance, testing and certification evidence can be found at www.trespa.info.

PROGRAM INFORMATION

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 CONSTRUCTION PRODUCTS VERSION 1.3.2.
PCR review was conducted by: the Technical Committee of the International EPD® System. Chair of the review is Claudia A. Peña. The review panel may be contacted via info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: Ambre Thiriez, Nemho
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006 via: ☒ EPD verification by EPD Process Certification* Internal auditor: Sara Corrado, Nemho Third-party verification: SGS Italia S.p.A. Via Caldera 21, 20153 Milano.(www.it.sgs.com) is an approved certification body accountable for third-party verification Third-party verifier is accredited by: *Accredia, certificate n. 0005VV* *For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see GPI v.4, Section 7.5.
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

DIFFERENCES WITH PREVIOUS VERSIONS

2024-09-30

- PCR updated to version 1.3.2

REFERENCES

- General Programme instructions of the International EPD® System. Version 4.0.
- Gervasio, Dimova, Pinto (2018). Benchmarking the Life-Cycle Environmental Performance of Buildings. Sustainability.
- LCA background report for Meteon® EDF grade 10mm
- PCR 2019:14 Construction products, Version 1.3.2

TRESPA® METEON®

Material Property Datasheet

Liite 3. / Appendix 3.

Decorative high-pressure compact laminates according to EN 438-6:2016 with thicknesses of 6 mm (± ¼ in) or greater for outdoor applications. Sheets consisting of layers of natural fibres (paper and/or wood) impregnated with thermosetting resins and surface layer(s) on one or both sides, having decorative colours or designs. A transparent topcoat is added to the surface layer(s) and cured by Trespa's unique in-house technology Electron Beam Curing (EBC), to enhance weather and light protecting properties. These components are bonded together with simultaneous application of heat and high specific pressure to obtain a homogeneous closed material with increased density and integral decorative surface. They are available in the Standard grade (EDS; not available in all worldwide areas) and in the Fire-Retardant grade (EDF).

Properties	Test method	Property or attribute	Unit	Result[AB]	
				Grade: EDS (Meteon®)	Grade: EDF (Meteon® FR)
				Standard: EN 438-6	Standard: EN 438-6
				Colour/decor: all[B]	Colour/decor: all[B]
Surface quality					
	EN 438-2 : 4	Spots, dirt, similar surface defects	mm^2/m^2	≤ 2	
			in^2/ft^2	≤ 0.0003	
		Fibres, hairs & scratches	mm/m^2	≤ 20	
			in/ft^2	≤ 0.073	
Dimensional tolerances					
	EN 438-2 : 5	Thickness	mm	6.0 ≤ t < 8.0: +/- 0.40	
				8.0 ≤ t < 12.0: +/- 0.50	
				12.0 ≤ t < 16.0: +/- 0.60	
			in	0.2362 ≤ t < 0.3150: +/- 0.0157	
				0.3150 ≤ t < 0.4724: +/- 0.0197	
				0.4724 ≤ t < 0.6299: +/- 0.0236	
	EN 438-2 : 9	Flatness	mm/m	≤ 2	
			in/ft	≤ 0.024	
	EN 438-2 : 6	Length & width	mm	+ 5 / - 0	
			in	+ 0.1968 / - 0	
	EN 438-2 : 7	Straightness of edges	mm/m	≤ 1	
			in/ft	≤ 0.012	
	Trespa Standard	Squareness	mm	2550 x 1860 = max. difference between diagonals (x-y) = 4	
				3050 x 1530 = max. difference between diagonals (x-y) = 4	
				3650 x 1860 = max. difference between diagonals (x-y) = 5	
				4270 x 2130 = max. difference between diagonals (x-y) = 6	
			in	100.39 x 73.23 = max. difference between diagonals (x-y) = 0.1575	
				120.08 x 60.24 = max. difference between diagonals (x-y) = 0.1575	
				143.70 x 73.23 = max. difference between diagonals (x-y) = 0.1969	
				168.11 x 83.86 = max. difference between diagonals (x-y) = 0.2362	
Physical properties					
Resistance to impact by large diameter ball	EN 438-2 : 21	Indentation diameter - 6 ≤ t mm with drop height 1.8 m	mm	≤ 10	
Impact resistance	ASTM D5420-04	Mean failure height	ft	1.0466	
		Mean failure energy	J	11.3	
Dimensional stability at elevated temperature	EN 438-2 : 17	Cumulative dimensional change	Longitudinal %	≤ 0.25	
			Transversal %	≤ 0.25	
Resistance to wet conditions	EN 438-2 : 15	Mass increase	%	≤ 3	
		Appearance	Rating	≥ 4	
	ASTM D2247-02	Water resistance	Rating	No change	
	ASTM D2842-06	Water absorption	%	0.5	
Modulus of elasticity	EN ISO 178	Stress	MPa	≥ 9000	
	ASTM D638-08	Stress	psi	≥ 1305000	
Flexural strength	EN ISO 178	Stress	MPa	≥ 120	
	ASTM D790-07	Stress	psi	≥ 17500	
Tensile strength	EN ISO 527-2	Stress	MPa	≥ 70	
	ASTM D638-08	Stress	psi	≥ 10150	
Density	EN ISO 1183	Density	g/cm^3	≥ 1.35	
	ASTM D792-08	Density	g/cm^3	≥ 1.35	

Visit trespa.info for the latest version of this document.

TRESPA®

Properties	Test method	Property or attribute	Unit	Result[AB]	
				Grade: EDS (Meteon®)	Grade: EDF (Meteon® FR)
				Standard: EN 438-6	Standard: EN 438-6
				Colour/decor: all[B]	Colour/decor: all[B]
Physical properties					
Resistance to fixings	ISO 13894-1	Pull out strength	N	6 mm: ≥ 2000	
				8 mm: ≥ 3000	
				≥ 10 mm: ≥ 4000	
				0.2362 in: ≥ 2000	
				0.3150 in: ≥ 3000	
				≥ 0.3937 in: ≥ 4000	
Other properties					
Thermal resistance / conductivity	EN 12524	Thermal resistance / conductivity	W/mK	0.3	
Weather resistance properties					
Resistance to climatic shock	EN 438-2 : 19	Flexural strength index (Ds)	Index	≥ 0.80	
		Flexural modulus index (Dm)	Index	≥ 0.80	
		Appearance	Rating	≥ 4	
Resistance to artificial weathering (incl. Light fastness) West European cycle	EN 438-2 : 29	Contrast	Grey scale ISO 105 A02	4-5	
		Appearance	Rating	≥ 4	
Resistance to artificial weathering (incl. Light fastness) Florida cycle 3000hrs	Trespa Standard	Contrast	Grey scale ISO 105 A02	4-5	
		Appearance	Rating	≥ 4	
Resistance to SO_2	DIN 50018	Contrast	Grey scale ISO 105 A02	4-5	
		Appearance	Rating	≥ 4	
Fire performance					
Europe					
Reaction to Fire	EN 438-7	Classification t = 6 mm / 0.2362 in	Euroclass	D-s2, d0	B-s2, d0
		Classification t ≥ 8 mm / 0.3150 in	Euroclass		B-s1, d0
North America					
Material Surface Burning Characteristics[C]	ASTM E84	Classification	Class	n.a.	A
		Flame Spread Index	FSI	n.a.	0-25
		Smoke Developed Index	SDI	n.a.	0-450
Asia Pacific					
Reaction to Fire (China)	GB 8624	Classification	Class	D-s2, d0	B-s1, d0, t1

[A] *Due to conversion from metric values, the US values provided are approximate.*
[B] *All data are related to the products mentioned in the Trespa® Meteon® standard delivery programme.*
[C] *Laboratory test results are not intended to represent hazards that may be present under actual fire conditions. For multi-story applications, where local or national building codes may require full-scale fire testing in accordance with NFPA 285 (U.S.) or Can/ULC-S134 (Canada), please visit our website www.trespa.info or contact your local Trespa representative for more details.*

Please note: Trespa® Meteon® is engineered for vertical exterior wall coverings such as façade cladding, balcony panelling as well as horizontal exterior ceiling applications. For other applications please contact your local Trespa representative. Storage, machining, mounting and cleaning instructions are provided by the manufacturer.

Liite 4. / Appendix 4.

Cleaning and maintaining

TRESPA®

Liite 4. / Appendix 4.

Trespa provides this document and all related data for informational purposes only and strongly advises customers, project owners, architects etc. to seek independent advice from a qualified construction professional to ensure proper application, installation, and compliance with all relevant codes, laws, regulations, and design requirements; always check your local requirements before use.

General

Trespa® Meteon® has a closed surface that is virtually pore-free making it highly impenetrable to contamination. In addition, Trespa® Meteon® is highly resistant to a large number of chemicals including many different non-aggressive and aggressive cleaning agents.

Although Trespa® Meteon® requires minimum maintenance, it is advisable to clean the panels after installation on site and at yearly intervals or whenever the windows are being cleaned thereafter, depending on the area, type of application and the care taken with processing and assembly.

Dirt prevention

Design considerations

The effect of dirt on decorative panels varies depending on the cause. An even layer of dust, for instance, is less obvious than streaks or patches caused by rainwater running off and leaving concentrated deposits of dust and dirt. Various construction solutions exist to prevent concentrated dirt marks e.g. by

- applying fitting overhangs with water deflecting edges;
- using flat-headed fast-fixing screws for Trespa® Meteon®;
- ensuring that joints do not occur above the centre of another panel.

Construction considerations

Some dirt is bound to be generated during construction, but unnecessary soiling should be avoided:

- remove any labels or stickers immediately after installation;
- apply adhesives and mastic accurately;
- mask panel edges while frames are being painted;
- remove severe stains such as paint, cement or tar immediately.

Visit trespa.info for the latest version of this document.

Liite 4. / Appendix 4.

Cleaning and repairing

Trespa® panels may not just be affected by dust, dirty handprints or algae growth. More serious problems such as soot coating, stubborn graffiti or accidents on site may occur. A wide range of special cleaning agents specifically for these types of staining are available through third parties. Do not use cleaning agents with abrasive or polishing components. Only use clean sponges, soft nylon brushes or cloths and avoid brushes with hard rigid bristles. Always follow the manufacturer's instructions closely. Recommended concentrations and soaking times should not be exceeded. Good cleaning results will depend on how well the contamination dissolves under the influence of the cleaning agent used. Some products, such as 2-component paint systems, polyurethane, silicone or other polymers, do not dissolve, making them very difficult to remove. Incomplete removal or removal with an unsuitable product may create a permanent film on the panels. This residue may cause an uneven discolouration of the surface. Trespa's warranties do not apply in case of improper or incorrectly performed cleaning. For the use of any cleaning agent, please consider (national) safety and environmental regulations.

Shoe-polish, crayons, pencil and chalk

Even stubborn marks such as shoe polish and children's crayons are easy to clean from panels using an organic solvent. Rinse the panels with water and wipe to prevent streaks. Location codes written in pencil or chalk and those which are exposed to the weather for long periods of time are more difficult to remove.

Paint

Remove solvent based paint with an organic solvent. Rinse or wipe the panels to avoid streaks. Remove two-component paint immediately with water and/or an organic solvent. Once this type of paint has dried it cannot be removed.

Adhesives, mastic and synthetic resins

When using adhesives, mastic or synthetic resins always consult the manufacturer's instructions. Not only for the execution instructions but also to determine whether the product is suitable to achieve the desired cleaning result. Remove solvent-based products with an organic solvent. Then rinse and/or wipe to avoid streaking. Remove two-component adhesive or synthetic resin immediately with water and/or an organic solvent. Silicon mastic should be rubbed off with a dry clean cloth and any residues removed with a silicon remover. Once these products have dried, they cannot be removed.

Traces of cement and lime

These should be removed with concentrated acid cleaning agents (i.e. hydrochloric acid), then rinse the panels thoroughly with clean water and wipe them dry.

Grease and grime

Over time, rain, wind, traffic and industrial pollution will deposit a light to medium layer of dirt on panel surfaces. Depending on the degree of dirt deposited, the panels can be cleaned at yearly intervals, whenever the windows are being cleaned or longer using a window cleaning agent. Dust, splashes of mud, oil, greasy and dirty handprints are easy to remove by washing the panels with a universal household cleaning agent. Rinse and/or wipe the panels after washing to avoid streaks.

Liite 4. / Appendix 4.

Green growth
Algae and mosses thrive on surfaces which stay mostly cool and damp and are rarely exposed to direct sunlight. The closed surface of Trespa® panels, however prevents them from penetrating the surface, making them easy to wipe off.

Graffiti
Trespa® Meteon® has a closed surface that is virtually pore-free preventing paint, varnish, adhesive, ink and other graffiti materials from penetrating. The offending items can be easily removed if they are soluble in water, otherwise use organic solvent or special graffiti cleaner. Avoid streaks by rinsing the panel and wiping dry.

Damage
Should the surface of Trespa® Meteon® be scratched through vandalism, this may in many occasions be repaired by applying a small amount of acrylic paint with a fine brush to the scratches. This “touch up paint” is available in almost every standard Trespa® colour. Please contact your local Trespa representative for availability. Any panels which are accidentally broken should be replaced.

Visit trespa.info
for the latest version
of this document.

Liite 4. / Appendix 4.

Disclaimer

These terms govern your use of information provided by Trespa International B.V. ("Trespa"). The information is indicative, general, and used at your own risk. It does not guarantee product properties, suitability, accuracy, or completeness. Any recommendations are general guidelines only and must be verified for your specific application, taking local conditions into account. Professional advice is required to assess Trespa products' suitability and compliance with laws, codes, and standards. Trespa accepts no liability for use of the information. Product and sample colours may vary within tolerances, and perception may differ by angle or batch. All transactions are subject to Trespa's General Terms and Conditions of Sale (see www.trespa.com and www.trespa.info). Any disputes are governed by Dutch law under the exclusive jurisdiction of the District Court of Roermond, the Netherlands.

TRESPA®

EN-GB3064 • Version 4.0 • Date 04-2026

Liite 5. / Appendix 5.

Weert, January 2026

Subject: **RoHS (Restriction of Hazardous Substances) statement**

Trespa International B.V. is a producer of High Pressure Decorative Laminates (HPL), which comply with and are tested in accordance with the European product standard EN 438.

HPL is not electrical or electronic equipment, as it does not depend on electric currents or electromagnetic fields for its intended function, nor is it designed for the generation, transfer, or measurement of such currents or fields. In accordance with Article 2(1) and Article 3(1) of Directive 2011/65/EU (RoHS), the scope of RoHS is limited to electrical and electronic equipment (EEE).

As HPL does not meet the definition of EEE under Article 3(1), it falls outside the scope of the RoHS Directive. Consequently, Trespa International B.V., as a manufacturer of High Pressure Decorative Laminates, has no obligations under the RoHS Directive.

Sincerely,

TRESPA

International B.V.

Wetering 20

6002 SM Weert
The Netherlands

Liite 6. / Appendix 6.

Certificate of constancy of performance

Certificate number: 0958-CPR-1001/3

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction products Regulation or CPR), this certificate applies to the construction products

High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins

Scope of certificate:

- **Compact Laminate panels/sidings for interior wall and ceiling finishes (including suspended ceilings);**
- **Compact Laminate panels/sidings for exterior wall and ceiling finishes (including suspended ceilings).**

The products and their performances are listed on page 2 of this certificate.

Placed on the market under the name or trade mark of

Trespa International B.V.

Wetering 20
NL-6002 SM WEERT
THE NETHERLANDS

and produced in the manufacturing plant

Trespa International B.V.
Wetering 20
NL-6002 SM WEERT
THE NETHERLANDS

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in (Annex ZA of the standard):

EN 438-7:2005

under system 1 for the performance set out in this certificate are applied and that the factory production control conducted by the manufacturer is assessed to ensure the

constancy of performance of the construction product

This certificate was first issued on 5 December 2005 and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

Waardenburg, 30 July 2026

ing. L.J.M. Grannetia
Certificatiemanager

PRODUCTEN
RvA C 015

Notified body 0958
SGS INTRON Certificatie B.V., Regterweistraat 7
4181 CE WAARDENBURG
T : +31 88 21 45 133
www.sgs.com/intron-certificatie

Liite 6. / Appendix 6.

SCOPE:

Compact EDF/CGF - flame retardant grade - intended for external, internal wall and ceiling finishes

product	**METEON® FR (Type EDF/CGF)**		**PURA® NFC (Type EDF/CGF)**
Nominal Thickness (mm)	6	≥ 8	8
Reaction to Fire (Class)	B-s2, d0	B-s1, d0	B-s2, d0

Compact CGF- flame retardant grade - intended for internal wall and ceiling finishes

product	**Toplab® Vertical® FR (Type CGF)**	
Nominal Thickness (mm)	6	≥ 8
Reaction to Fire (Class)	B-s2, d0	B-s1, d0

EPH®
SUCCESS BY QUALITY
Entwicklungs- und Prüflabor Holztechnologie GmbH
Zellescher Weg 24 · 01217 Dresden · Germany
www.eph-dresden.de

Liite 7. / Appendix 7.

ilac-MRA
DAkkS
Deutsche
Akkreditierungsstelle
D-PL-11054-01-00

accredited by Deutsche Akkreditierungsstelle GmbH (DAkkS)

TEST CERTIFICATE

PT-16-12-21-02

Product: Fall prevention parapet system made from TRESPA METEON compact high-pressured laminate board (HPL), thickness: 6 mm
Single-span system, riveted
Single-span system, screwed
Multi-span system, riveted
Multi-span system, screwed

The system dimensions are given in Test Report 2616129-1.

Client: Trespa International B. V.
Wetering 20, 6002 SM Weert, The Netherlands

Order: Test of parapet systems in accordance with ETB Guideline “Fall Prevention Components“ (version June 1985) regarding soft impact stress and hard impact stress (§§ 3.2.2 and 3.2.3 of ETB Guideline).

Basis: Test Report no. 2616129-1 dated on 21st December 2016

Result: The tested parapet systems meet the requirements according to ETB Guideline “Fall Prevention Components“.

Dresden, 21st December 2016

i.V.
Head of laboratory

Im Institut für Holztechnologie Dresden
eph
QUALITÄT GEPRÜFT
gemeinnützige GmbH

Engineer in charge

Liite 7. / Appendix 7.

Entwicklungs- und Prueflabor Holztechnologie GmbH · Zellescher Weg 24 · 01217 Dresden · Germany

Trespa International B. V.
Christine Klomp
Wetering 20
6002 SM
Weert
THE NETHERLANDS

Entwicklungs- und Prueflabor
Holztechnologie GmbH
Zellescher Weg 24
01217 Dresden · Germany

Phone: +49 351 4662 0
Fax: +49 351 4662 211
info@eph-dresden.de
www.eph-dresden.de

Dresden, 21 December 2016

Test Report
2616129-1

Client:	Trespa International B. V. Wetering 20 6002 SM, Weert, THE NETHERLANDS
Date of order:	29 August 2016
Order:	Test of a balcony parapet system according to ETB Guideline "Fall prevention components" HPL board TRESPA METEON 6 mm
Contractor:	Entwicklungs- und Prueflabor Holztechnologie GmbH (EPH)
Engineer in charge:	Dipl.-Ing. J. Gecks

i.V.

Dipl.-Ing. J. Gecks
Head of Laboratory Material and Product Testing

Liite 7. / Appendix 7.

1 Terms of Reference

Entwicklungs- und Prüflabor Holztechnologie GmbH (EPH) was ordered by Trespa International B. V. to test balcony parapet systems regarding its fall protection. TRESPA METEON 6 mm HPL compact boards were mounted on a steel construction. The following static systems and fixation systems were tested:

- Single-span system, riveted
- Single-span system, screwed
- Multi-span system, riveted
- Multi-span system, screwed

The tests regarding soft and hard impact were carried out according to ETB Guideline "Fall prevention components", §§ 3.2.2 and 3.2.3 (ETB: Introduced Technical Building Regulation in Germany).

2 Test Material

Trespa International B. V. sent 6 mm thick, pre-drilled TRESPA METEON HPL boards and fixing material. The material arrived to the test body on 4 November 2016. Drawings of the parapet system were sent on 20 November 2016. The drawings are attached to this test report.

The following parapet system was tested:

Single-span system, riveted:

- 4 TRESPA METEON HPL boards, thickness: 6 mm, overall dimension of one board: 1200 mm x 950 mm,
- pre-drilled boards (see drawing of the system in the annex, page 1, at the bottom), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 750 mm,
- centre distance between the fasteners within one line: 500 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: MBE façade rivets made from aluminium, diameter: 5 mm, head diameter: 16 mm,
- formation of one fixed-point (see drawing of the system in the annex, page 1, at the bottom) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 7, 8, 9).

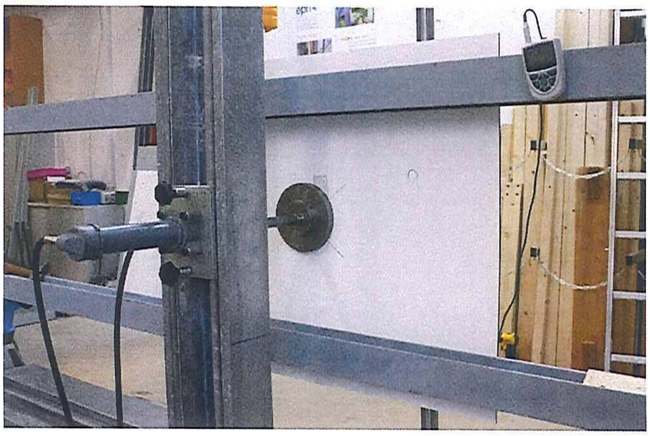


Figure 1: Test specimen No. 9, interior view

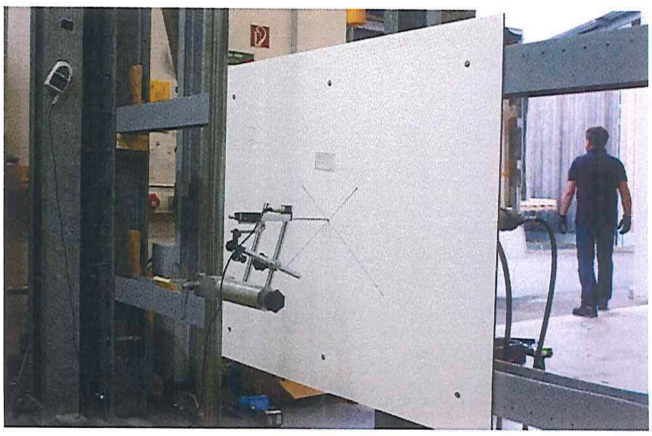


Figure 2: Test specimen No. 7, exterior view

Liite 7. / Appendix 7.

Single-span system, screwed:

- 4 TRESPA METEON HPL boards, thickness: 6 mm, overall dimension of one board: 1200 mm x 950 mm,
- pre-drilled boards (see drawing of the system in the annex, page 2, at the bottom), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 750 mm,
- centre distance between the fasteners within one line: 500 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: façade screws made from stainless steel, diameter: 5 mm, head diameter: 16 mm, adhesive-backed rubber ring between HPL board and girder, washer between girder and screw nut,
- formation of one fixed-point (see drawing of the system in the annex, page 2, at the bottom) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 10, 11, 12).

Multi-span system, riveted:

- 4 TRESPA METEON HPL boards, thickness: 6 mm, overall dimension of one board: 2000 mm x 2000 mm,
- pre-drilled boards (see drawing of the system in the annex, page 1, at the top), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 900 mm,
- centre distance between the fasteners within one line: 600 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: MBE façade rivets made from aluminium, diameter: 5 mm, head diameter: 16 mm,
- formation of one fixed-point (see drawing of the system in the annex, page 1, at the top) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 20, 21, 22).

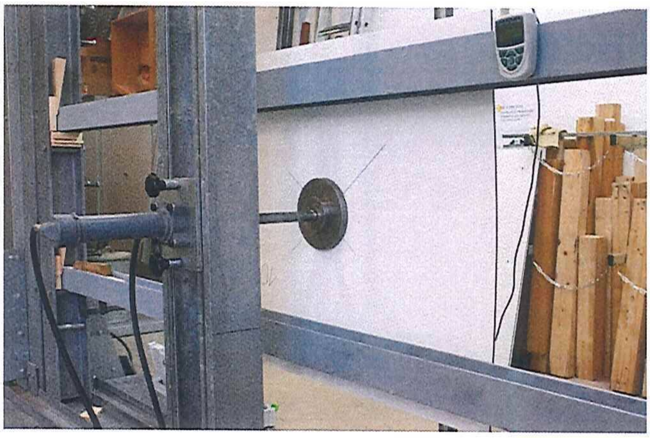


Figure 3: Test specimen No. 10, interior view

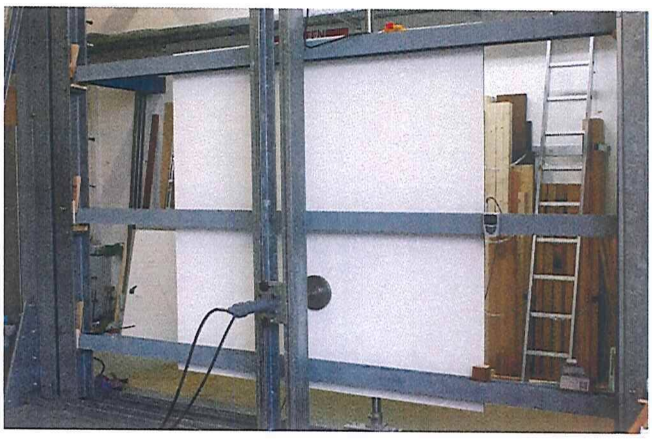


Figure 4: Test specimen No. 20, interior view

Liite 7. / Appendix 7.

Multi-span system, screwed:

- 4 TRESPA METEON HPL boards, thickness: 6 mm, overall dimension of one board: 2000 mm x 2000 mm,
- pre-drilled boards (see drawing of the system in the annex, page 2, at the top), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 900 mm,
- centre distance between the fasteners within one line: 600 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: façade screws made from stainless steel, diameter: 5 mm, head diameter: 16 mm, adhesive-backed rubber ring between HPL board and girder, washer between girder and screw nut,
- formation of one fixed-point (see drawing of the system in the annex, page 2, at the top) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 19, 23, 24).

The hard body impact test was carried out on the 4th specimen of each variant.

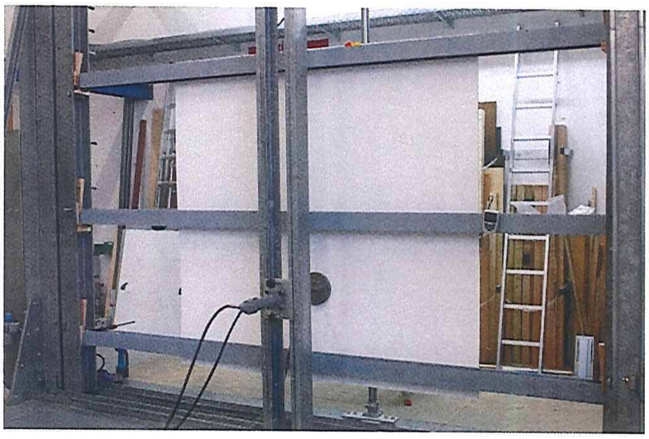


Figure 5: Test specimen No. 23, interior view

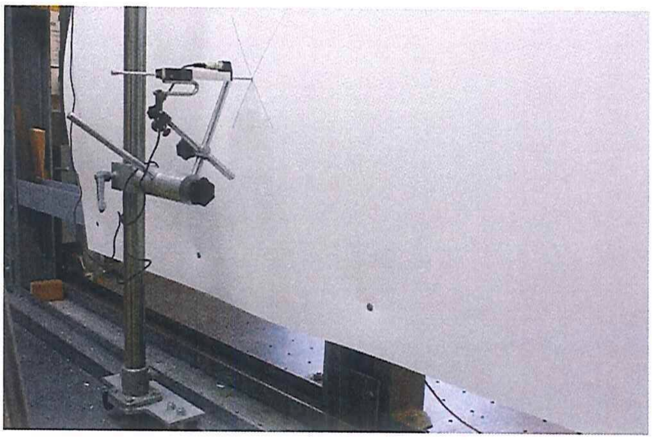


Figure 6: Test specimen No. 23, exterior view

Liite 7. / Appendix 7.

3 ETB Guideline and Test Procedure

3.1 Determination of the Impact Energy by Evidence by Testing according to § 3.2.2.2.2 of ETB Guideline

The ETB Guideline specifies in § *3.2.2.2.2 Evidence by Test* as part of § *3.2.2.2 Determination of Impact Energy* the following:

The numerical evidence can be replaced by bending test. In this case, the decisive value E_{test} (absorbed energy during the test, until the test assembly fails) shall be opposed to the proportional energy $\alpha' \cdot E_{basis}$ as follows:

The following evidence shall be provided[1]:

$$E_{test} \geq v \cdot \alpha'' E_{basis}$$

with:

$v = 1.25$ coefficient for assurance against scattering which are not covered by the tests

α'' impact coefficient depending on the mass of the element
mass of tested system < 50 kg → $\alpha'' = 1.0$
(see Table 1 in the Guideline)
E_{basis} = impact energy as a result of soft impact, acc. to the Guideline = 100 Nm

Thus, the parapet systems shall meet the following requirement for the impact energy E_{test}:

$$E_{test} \geq 1.25 \cdot 1.0 \cdot 100 \text{ Nm} \geq 125 \text{ Nm}$$

The impact energy E_{test} will be calculated according the following equation using the mean value E_u (calculated from the measured values and divided by a safety factor):

$$E_{test} = E_u / \gamma$$

The safety factor can be estimated using the following equation:

$$\gamma = (1 + (s_E / E_u)^2)^{½} \cdot \exp(K \cdot s_E / E_u)$$

with E_u as mean value and s_E as standard deviation of the measured values and K = 0.9.

The test arrangement is shown in Figures 1-6. The HPL board was mounted outside the parapet. The load was applied using a circular steel disc with a diameter of 200 mm. The steel disc was coated with a 8 mm thick rubber pad of a Shore A hardness of approximately 80. The load was applied at the geometrical center of single-span boards and at the geometrical center of one section of multi-span boards. The deformation of the compact board was measured during the test at several force ranges. The maximum cylinder stroke was 200 mm, the maximum applicable load 20 kN.

1 ETB Guideline – Fall Prevention Components, Version June 1985, Equation (10)

Liite 7. / Appendix 7.

3.2 Hard Body Impact Test according to § 3.2.3 of ETB Guideline

The hard body impact test was carried out by free fall of a steel ball with a diameter of 63.5 mm and a mass of 1 kg from a height of 1 m. The parapet system laid freely movable. According to the ETB guideline, § 3.2.3, the test was carried out on 15 positions of the compact board.

4 Test Results

4.1 Determination of the Impact Energy by Evidence by Testing according to § 3.2.2.2.2 of ETB Guideline

Table 1: Test results **single-span system, riveted**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
7	4.70	70.3	165	The test was interrupted at a load of approximately 4.7 kN because of the forthcoming failure. At the given loads, no failure was distinguishable.
8	4.74	68.8	163	
9	4.75	61.0	145	

E_u = 158 Nm

s_E = 11.2 Nm

γ = 1.07

E_{test} = 148 Nm > 125 Nm

Table 2: Test results **single-span system, screwed**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
10	4.90	63.0	154	The test was interrupted at a load of approximately 4.9 kN because of the forthcoming failure (No. 10 and 11). At the given loads, no failure was distinguishable. Test assembly No. 12 failed at a load of 4.9 kN.
11	4.87	62.4	152	
12	4.86	68.3	166	

E_u = 157 Nm

s_E = 7.5 Nm

γ = 1.04

E_{test} = 151 Nm > 125 Nm

Liite 7. / Appendix 7.

Table 3: Test results **multi-span system, riveted**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
20	5.00	75.1	188	The test was interrupted at a load of 5.0 kN. At the given loads, no failure was distinguishable. Test assembly No. 20 failed at a load of 6.3 kN.
21	5.00	70.4	176	
22	5.00	70.1	175	

E_u = 180 Nm

s_E = 7.0 Nm

γ = 1.04

E_{test} = 173 Nm > 125 Nm

Table 4: Test results **multi-span system, screwed**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
23	4.80	66.9	161	The test was interrupted at a load of 4.8 kN At the given loads, no failure was distinguishable.
24	4.80	63.5	152	
19	4.80	63.7	153	

E_u = 155 Nm

s_E = 4.6 Nm

γ = 1.03

E_{test} = 151 Nm > 125 Nm

Liite 7. / Appendix 7.

4.2 Hard Body Impact Test according to § 3.2.3 of ETB Guideline

The parapet systems met the requirement regarding hard body impact according to ETB Guideline, § 3.2.1. There were no damages identified by macroscopic viewing.

5 Evaluation

The fall prevention test was carried out on 6 mm thick TRESPA METEON HPL compact boards as single-span system and as multi-span system. The boards were fixed on steel girders with rivets or screws (see drawing of systems in the annex).

The parapet systems meet the requirement regarding impact energy tested by soft body impact according ETB Guideline "Fall Prevention Components", § 3.2.2.2.2.

The parapet systems meet the requirement regarding hard body impact according ETB Guideline "Fall Prevention Components", § 3.2.3.

Note that different results can be obtained in case of use of other supporting construction and other fasteners.

Dipl.-Ing. J. Gecks
Person in-charge

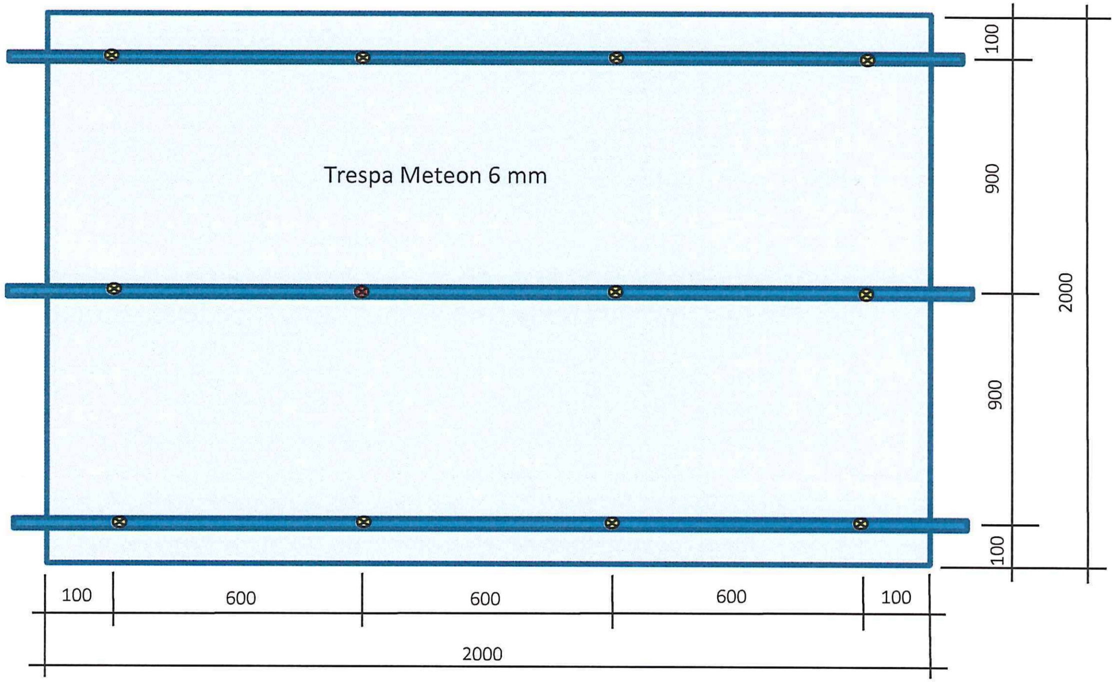
Annex: Drawings of parapet system (2 pages)

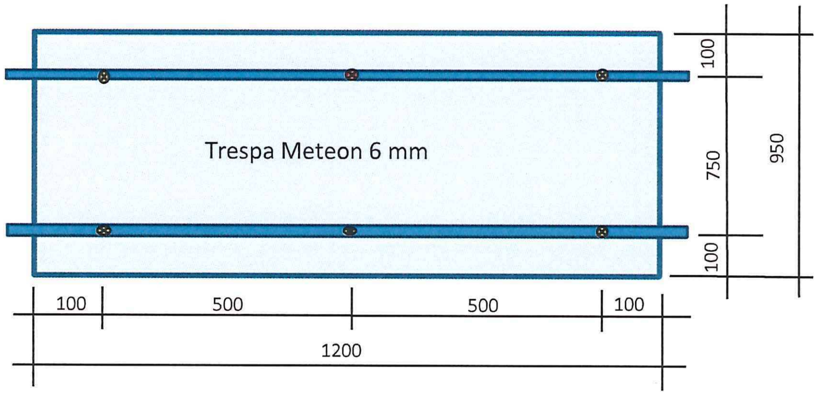
Prüfbericht 2616123-1

Anlage Seite 1/2

Liite 7. / Appendix 7.

ETB Prüfung Trespa 6 mm
Genietet





Festpunkt

Gleitpunkte

ETB Püfung Trespa International

System: Riegel oder Pfosten

Material : Trespa Meteon

Plattendicke: 6,0 mm

Befestigung mit: Nieten

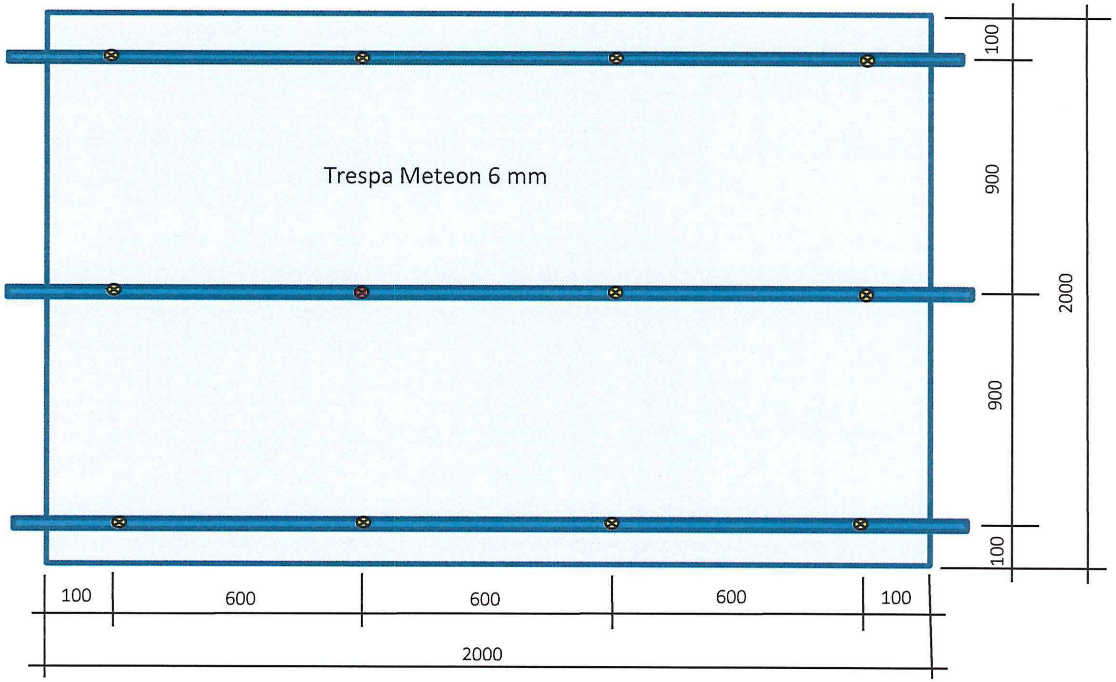
Anmerkung : Zeichnungen sind nur Chema Darstellungen und nicht im Massstab

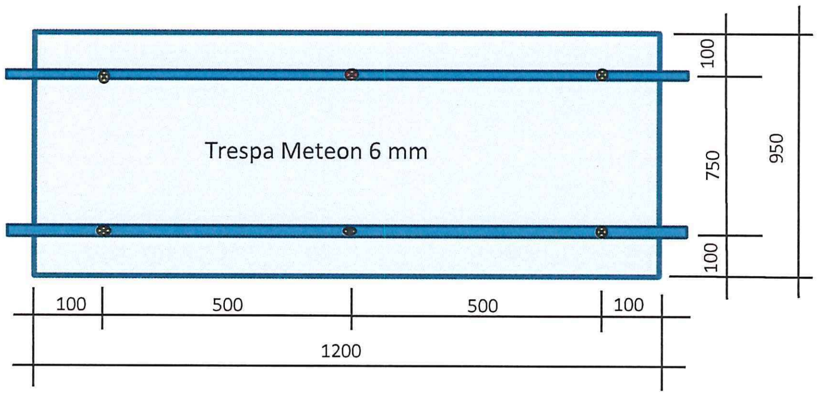
Datum : 19.08.2016
Gezeichnet. L.W

ETB Prüfung Trespa 6 mm
Geschraubt

Prüfbericht 2616129-1
Anlage Seite 2/2

Liite 7. / Appendix 7.





Festpunkt

Gleitpunkte

ETB Püfung Trespa International

System: Riegel oder Pfosten

Material : Trespa Meteon

Plattendicke: 6,0 mm

Befestigung mit: Schrauben

Anmerkung : Zeichnungen sind nur Chema Darstellungen und nicht im Massstab

Datum : 19.08.2016
Gezeichnet. L.W

EPH
SUCCESS BY QUALITY
Entwicklungs- und Prüflabor Holztechnologie GmbH
Zellescher Weg 24 · 01217 Dresden · Germany
www.eph-dresden.de

Liite 7. / Appendix 7.

ilac-MRA
DAkkS Deutsche Akkreditierungsstelle D-PL-11054-01-00

accredited by Deutsche Akkreditierungsstelle GmbH (DAkkS)

TEST CERTIFICATE

PT-16-12-21-04

Product: Fall prevention parapet system made from TRESPA METEON compact high-pressured laminate board (HPL), thickness: 8 mm
Single-span system, riveted
Single-span system, screwed
Multi-span system, riveted
Multi-span system, screwed

The system dimensions are given in Test Report 2616129-2.

Client: Trespa International B. V.
Wetering 20, 6002 SM Weert, The Netherlands

Order: Test of parapet systems in accordance with ETB Guideline "Fall Prevention Components" (version June 1985) regarding soft impact stress and hard impact stress (§§ 3.2.2 and 3.2.3 of ETB Guideline).

Basis: Test Report no. 2616129-2 dated on 21st December 2016

Result: The tested parapet systems meet the requirements according to ETB Guideline "Fall Prevention Components".

Dresden, 21st December 2016

i.V. [signature]
Head of laboratory

Im Institut für Holztechnologie Dresden
eph
QUALITÄT GEPRÜFT
gemeinnützige GmbH

[signature]
Engineer in charge

Liite 7. / Appendix 7.

SUCCESS BY QUALITY

Entwicklungs- und Prueflabor Holztechnologie GmbH · Zellescher Weg 24 · 01217 Dresden · Germany

Trespa International B. V.
Christine Klomp
Wetering 20
6002 SM
Weert
THE NETHERLANDS

Entwicklungs- und Prueflabor
Holztechnologie GmbH
Zellescher Weg 24
01217 Dresden · Germany

Phone: +49 351 4662 0
Fax: +49 351 4662 211
info@eph-dresden.de
www.eph-dresden.de

Dresden, 21 December 2016

Test Report
2616129-2

Client:	Trespa International B. V. Wetering 20 6002 SM, Weert, THE NETHERLANDS
Date of order:	29 August 2016
Order:	Test of a balcony parapet system according to ETB Guideline "Fall prevention components" HPL board TRESPA METEON 8 mm
Contractor:	Entwicklungs- und Prueflabor Holztechnologie GmbH (EPH)
Engineer in charge:	Dipl.-Ing. J. Gecks

i. V. [signature]

Dipl.-Ing. J. Gecks
Head of Laboratory Material and Product Testing

The test report contains 8 pages and 1 annex with 2 pages. Any duplication, even in part, requires written permission of EPH. These test results are exclusively related to the tested material.

1 Terms of Reference

Entwicklungs- und Prüflabor Holztechnologie GmbH (EPH) was ordered by Trespa International B. V. to test balcony parapet systems regarding its fall protection. TRESPA METEON 8 mm HPL compact boards were mounted on a steel construction. The following static systems and fixation systems were tested:

- Single-span system, riveted
- Single-span system, screwed
- Multi-span system, riveted
- Multi-span system, screwed

The tests regarding soft and hard impact were carried out according to ETB Guideline "Fall prevention components", §§ 3.2.2 and 3.2.3 (ETB: Introduced Technical Building Regulation in Germany).

2 Test Material

Trespa International B. V. sent 8 mm thick, pre-drilled TRESPA METEON HPL boards and fixing material. The material arrived to the test body on 4 November 2016. Drawings of the parapet system were sent on 20 November 2016. The drawings are attached to this test report.

The following parapet system was tested:

Single-span system, riveted:

- 4 TRESPA METEON HPL boards, thickness: 8 mm, overall dimension of one board: 1200 mm x 1100 mm,
- pre-drilled boards (see drawing of the system in the annex, page 1, at the bottom), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 900 mm,
- centre distance between the fasteners within one line: 500 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: MBE façade rivets made from aluminium, diameter: 5 mm, head diameter: 16 mm,
- formation of one fixed-point (see drawing of the system in the annex, page 1, at the bottom) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 4, 5, 6).

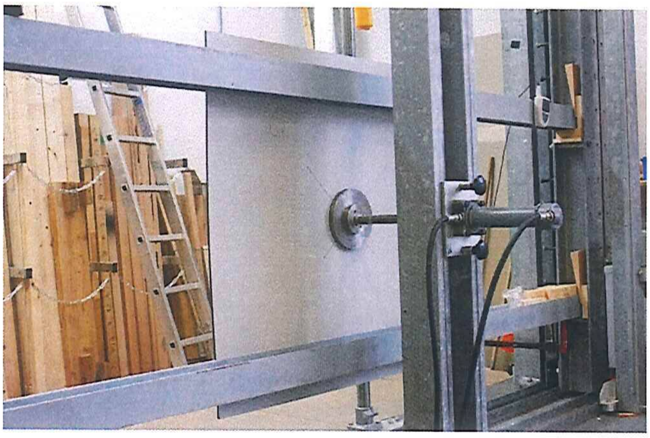


Figure 1: Test specimen No. 6, interior view

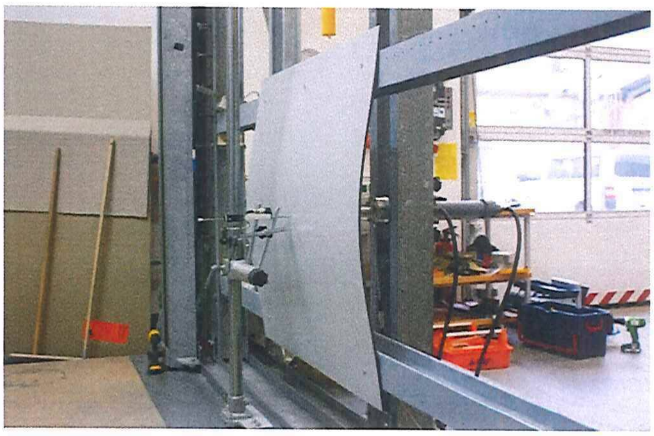


Figure 2: Test specimen No. 5, exterior view

Single-span system, screwed:

- 4 TRESPA METEON HPL boards, thickness: 8 mm, overall dimension of one board: 1400 mm x 1100 mm,
- pre-drilled boards (see drawing of the system in the annex, page 2, at the bottom), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 900 mm,
- centre distance between the fasteners within one line: 600 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: façade screws made from stainless steel, diameter: 5 mm, head diameter: 16 mm, adhesive-backed rubber ring between HPL board and girder, washer between girder and screw nut,
- formation of one fixed-point (see drawing of the system in the annex, page 2, at the bottom) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 1, 2, 3).

Multi-span system, riveted:

- 4 TRESPA METEON HPL boards, thickness: 8 mm, overall dimension of one board: 2000 mm x 2100 mm,
- pre-drilled boards (see drawing of the system in the annex, page 1, at the top), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 1000 mm,
- centre distance between the fasteners within one line: 600 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: MBE façade rivets made from aluminium, diameter: 5 mm, head diameter: 16 mm,
- formation of one fixed-point (see drawing of the system in the annex, page 1, at the top) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 28, 29, 30).

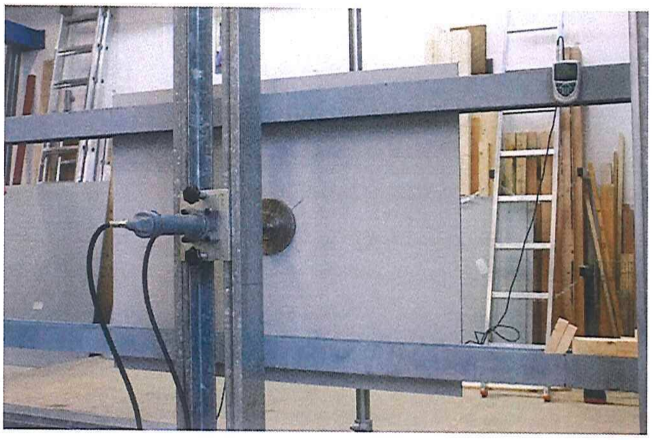


Figure 3: Test specimen No. 2, interior view

Figure 4: Test specimen No. 30, interior view

Multi-span system, screwed:

- 4 TRESPA METEON HPL boards, thickness: 8 mm, overall dimension of one board: 1800 mm x 2100 mm,
- pre-drilled boards (see drawing of the system in the annex, page 2, at the top), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 1000 mm,
- centre distance between the fasteners within one line: 800 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: façade screws made from stainless steel, diameter: 5 mm, head diameter: 16 mm, adhesive-backed rubber ring between HPL board and girder, washer between girder and screw nut,
- formation of one fixed-point (see drawing of the system in the annex, page 2, at the top) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 25, 26, 27).

The hard body impact test was carried out on the 4^{th} specimen of each variant.

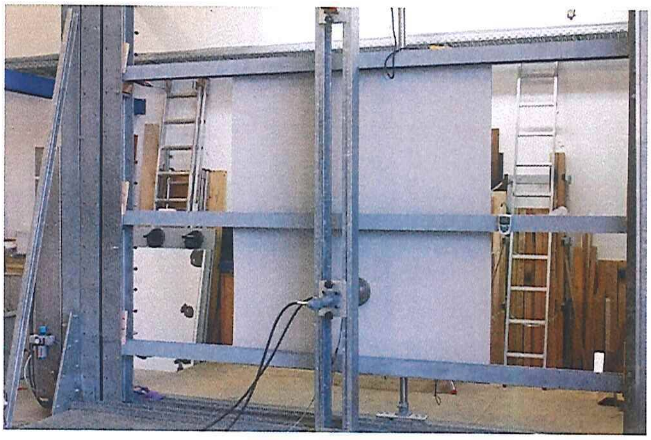


Figure 5: Test specimen No. 25, interior view

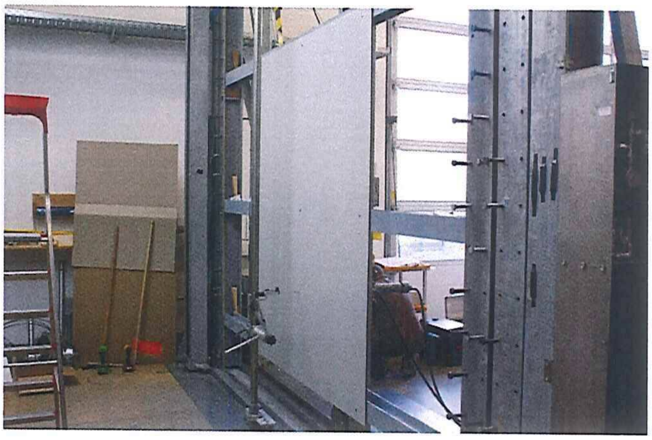


Figure 6: Test specimen No. 27, exterior view

3 ETB Guideline and Test Procedure

3.1 Determination of the Impact Energy by Evidence by Testing according to § 3.2.2.2.2 of ETB Guideline

The ETB Guideline specifies in § *3.2.2.2.2 Evidence by Test* as part of § *3.2.2.2 Determination of Impact Energy* the following:

The numerical evidence can be replaced by bending test. In this case, the decisive value E_{test} (absorbed energy during the test, until the test assembly fails) shall be opposed to the proportional energy $\alpha' \cdot E_{basis}$ as follows:

The following evidence shall be provided[1]:

$$E_{test} \geq v \cdot \alpha'' E_{basis}$$

with:

v = 1.25	coefficient for assurance against scattering which are not covered by the tests
α''	impact coefficient depending on the mass of the element mass of tested system < 50 kg → α'' = 1.0 (see Table 1 in the Guideline) E_{basis} = impact energy as a result of soft impact, acc. to the Guideline = 100 Nm

Thus, the parapet systems shall meet the following requirement for the impact energy E_{test}:

$$E_{test} \geq 1.25 \cdot 1.0 \cdot 100 \text{ Nm} \geq 125 \text{ Nm}$$

The impact energy E_{test} will be calculated according the following equation using the mean value E_u (calculated from the measured values and divided by a safety factor):

$$E_{test} = E_u / \gamma$$

The safety factor can be estimated using the following equation:

$$\gamma = (1 + (s_E / E_u)^2)^{½} \cdot \exp(K \cdot s_E / E_u)$$

with E_u as mean value and s_E as standard deviation of the measured values and K = 0.9.

The test arrangement is shown in Figures 1-6. The HPL board was mounted outside the parapet. The load was applied using a circular steel disc with a diameter of 200 mm. The steel disc was coated with a 8 mm thick rubber pad of a Shore A hardness of approximately 80. The load was applied at the geometrical center of single-span boards and at the geometrical center of one section of multi-span boards. The deformation of the compact board was measured during the test at several force ranges. The maximum cylinder stroke was 200 mm, the maximum applicable load 20 kN.

1 ETB Guideline – Fall Prevention Components, Version June 1985, Equation (10)

3.2 Hard Body Impact Test according to § 3.2.3 of ETB Guideline

The hard body impact test was carried out by free fall of a steel ball with a diameter of 63.5 mm and a mass of 1 kg from a height of 1 m. The parapet system laid freely movable. According to the ETB guideline, § 3.2.3, the test was carried out on 15 positions of the compact board.

4 Test Results

4.1 Determination of the Impact Energy by Evidence by Testing according to § 3.2.2.2.2 of ETB Guideline

Table 1: Test results **single-span system, riveted**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
4	4.80	59.8	144	The rivets failed at a force of 5.0 kN, 5.2 kN and 4.9 kN.
5	4.80	59.4	143	
6	4.80	56.9	137	

E_u = 141 Nm

s_E = 3.8 Nm

γ = 1.02

E_{test} = 137 Nm > 125 Nm

Table 2: Test results **single-span system, screwed**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
1	5.00	61.5	154	The boards failed at the mentioned forces near one of the screws.
2	4.91	73.9	181	
3	5.00	64.0	160	

E_u = 165 Nm

s_E = 14.5 Nm

γ = 1.09

E_{test} = 152 Nm > 125 Nm

Table 3: Test results **multi-span system, riveted**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
28	6.00	44.4	133	The test assemblies failed at the mentioned forces.
29	5.70	45.6	130	
30	5.80	46.0	133	

E_u = 132 Nm

s_E = 1.9 Nm

γ = 1.01

E_{test} = 130 Nm > 125 Nm

Table 4: Test results **multi-span system, screwed**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
25	4.75	65.8	156	Test assembly No. 25 failed at a force of 4.8 kN. The test was interrupted at a load of 6.0 kN (assemblies No. 26 and 27). At the given loads, no failure was distinguishable.
26	6.00	67.8	203	
27	6.00	64.5	193	

E_u = 184 Nm

s_E = 24.8 Nm

γ = 1.14

E_{test} = 162 Nm > 125 Nm

4.2 Hard Body Impact Test according to § 3.2.3 of ETB Guideline

The parapet systems met the requirement regarding hard body impact according to ETB Guideline, § 3.2.1. There were no damages identified by macroscopic viewing.

5 Evaluation

The fall prevention test was carried out on 8 mm thick TRESPA METEON HPL compact boards as single-span system and as multi-span system. The boards were fixed on steel girders with rivets or screws (see drawing of systems in the annex).

The parapet systems meet the requirement regarding impact energy tested by soft body impact according ETB Guideline "Fall Prevention Components", § 3.2.2.2.2.

The parapet systems meet the requirement regarding hard body impact according ETB Guideline "Fall Prevention Components", § 3.2.3.

Note that different results can be obtained in case of use of other supporting construction and other fasteners.

Dipl.-Ing. J. Gecks
Person in-charge

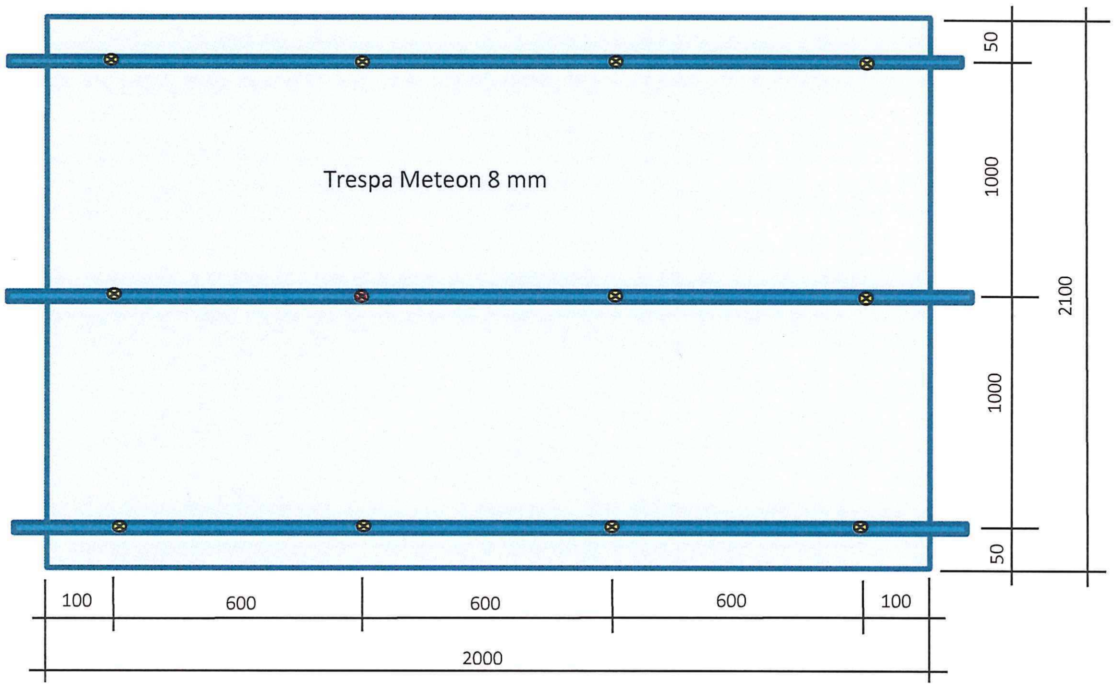
Annex: Drawings of parapet system (2 pages)

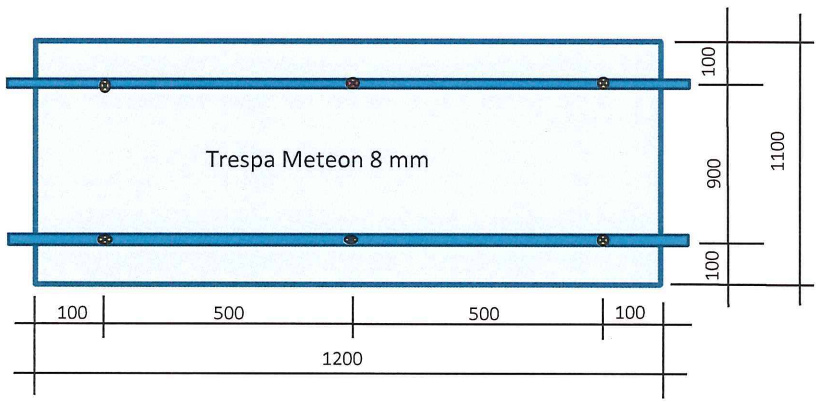
Test Report 2616129-2

Annex Page 1/2

Liite 7. / Appendix 7.

ETB Prüfung Trespa 8 mm
Genietet





Festpunkt

Gleitpunkte

ETB Püfung Trespa International

System: Riegel oder Pfosten

Material : Trespa Meteon

Plattendicke: 8,0 mm

Befestigung mit: Nieten

Anmerkung : Zeichnungen sind nur Chema Darstellungen und nicht im Massstab

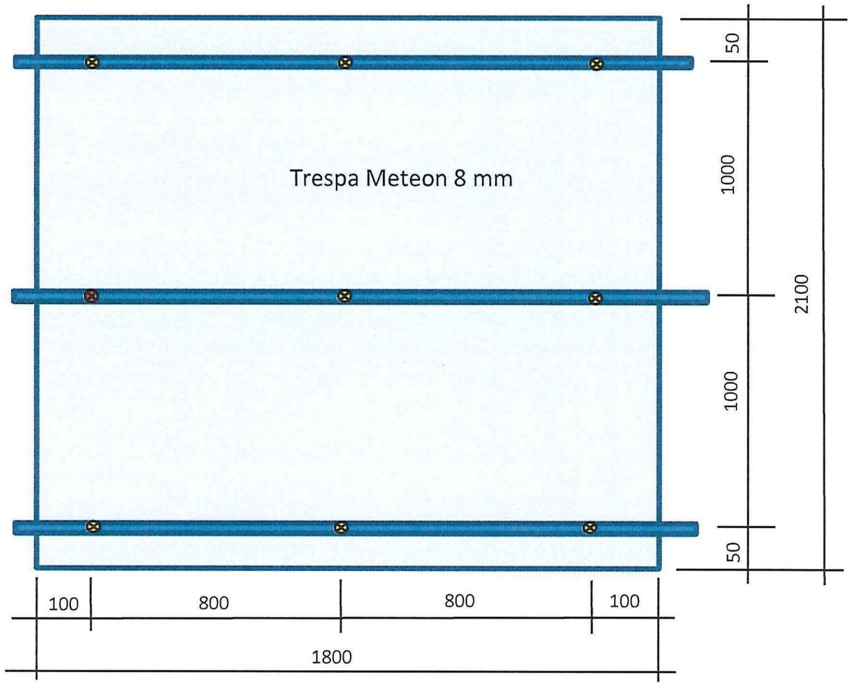
Datum : 19.08.2016
Gezeichnet. L.W

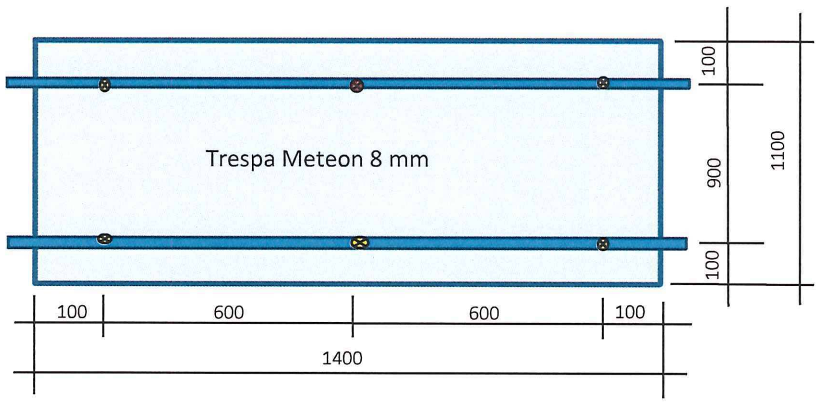
ETB Prüfung Trespa 8 mm
Geschraubt

Test Report 2616129-2

Annex Page 2/2

Liite 7. / Appendix 7.





Festpunkt

Gleitpunkte

ETB Püfung Trespa International

System: Riegel oder Pfosten

Material : Trespa Meteon

Plattendicke: 8,0 mm

Befestigung mit: Schrauben

Anmerkung : Zeichnungen sind nur Chema Darstellungen und nicht im Massstab

Datum : 19.08.2016
Gezeichnet. L.W

EPH
SUCCESS BY QUALITY
Entwicklungs- und Prüflabor Holztechnologie GmbH
Zellescher Weg 24 · 01217 Dresden · Germany
www.eph-dresden.de

Liite 7. / Appendix 7.

DAkkS Deutsche Akkreditierungsstelle D-PL-11054-01-00

accredited by Deutsche Akkreditierungsstelle GmbH (DAkkS)

TEST CERTIFICATE

PT-16-12-21-06

Product: Fall prevention parapet system made from TRESPA METEON compact high-pressured laminate board (HPL), thickness: 10 mm
Single-span system, riveted
Single-span system, screwed
Multi-span system, riveted
Multi-span system, screwed

The system dimensions are given in Test Report 2616129-3.

Client: Trespa International B. V.
Wetering 20, 6002 SM Weert, The Netherlands

Order: Test of parapet systems in accordance with ETB Guideline "Fall Prevention Components" (version June 1985) regarding soft impact stress and hard impact stress (§§ 3.2.2 and 3.2.3 of ETB Guideline).

Basis: Test Report no. 2616129-3 dated on 21st December 2016

Result: The tested parapet systems meet the requirements according to ETB Guideline "Fall Prevention Components".

Dresden, 21st December 2016

i.V. [signature]
Head of laboratory

Im Institut für Holztechnologie Dresden
eph
QUALITÄT GEPRÜFT
gemeinnützige GmbH

[signature]
Engineer in charge

Liite 7. / Appendix 7.

EPH®
SUCCESS BY QUALITY

Entwicklungs- und Prueflabor Holztechnologie GmbH · Zellescher Weg 24 · 01217 Dresden · Germany

Trespa International B. V.
Christine Klomp
Wetering 20
6002 SM
Weert
THE NETHERLANDS

Entwicklungs- und Prueflabor
Holztechnologie GmbH
Zellescher Weg 24
01217 Dresden · Germany

Phone: +49 351 4662 0
Fax: +49 351 4662 211
info@eph-dresden.de
www.eph-dresden.de

Dresden, 21 December 2016

Test Report
2616129-3

Client:	Trespa International B. V. Wetering 20 6002 SM, Weert, THE NETHERLANDS
Date of order:	29 August 2016
Order:	Test of a balcony parapet system according to ETB Guideline "Fall prevention components" HPL board TRESPA METEON 10 mm
Contractor:	Entwicklungs- und Prueflabor Holztechnologie GmbH (EPH)
Engineer in charge:	Dipl.-Ing. J. Gecks

i.V. [signature]
Dipl.-Ing. J. Gecks
Head of Laboratory Material and Product Testing

Liite 7. / Appendix 7.

1 Terms of Reference

Entwicklungs- und Prüflabor Holztechnologie GmbH (EPH) was ordered by Trespa International B. V. to test balcony parapet systems regarding its fall protection. TRESPA METEON 10 mm HPL compact boards were mounted on a steel construction. The following static systems and fixation systems were tested:

- Single-span system, riveted
- Single-span system, screwed
- Multi-span system, riveted
- Multi-span system, screwed

The tests regarding soft and hard impact were carried out according to ETB Guideline "Fall prevention components", §§ 3.2.2 and 3.2.3 (ETB: Introduced Technical Building Regulation in Germany).

2 Test Material

Trespa International B. V. sent 6 mm thick, pre-drilled TRESPA METEON HPL boards and fixing material. The material arrived to the test body on 4 November 2016. Drawings of the parapet system were sent on 20 November 2016. The drawings are attached to this test report.

The following parapet system was tested:

Single-span system, riveted:

- 4 TRESPA METEON HPL boards, thickness: 10 mm, overall dimension of one board: 1200 mm x 1300 mm,
- pre-drilled boards (see drawing of the system in the annex, page 1, at the bottom), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 1100 mm,
- centre distance between the fasteners within one line: 500 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: MBE façade rivets made from stainless steel, diameter: 5 mm, head diameter: 16 mm,
- formation of one fixed-point (see drawing of the system in the annex, page 1, at the bottom) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 16, 17, 18).

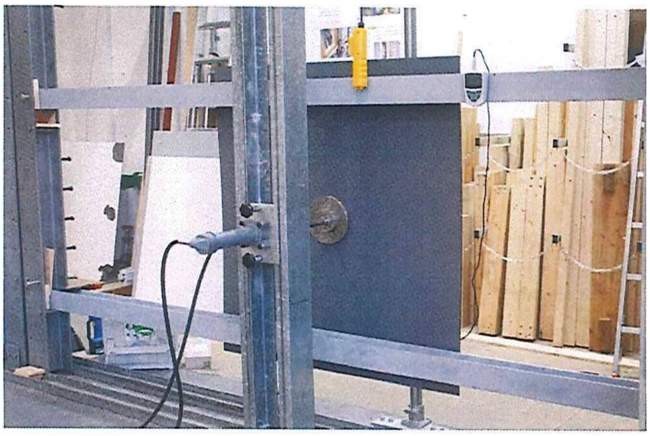


Figure 1: Test specimen No. 18, interior view

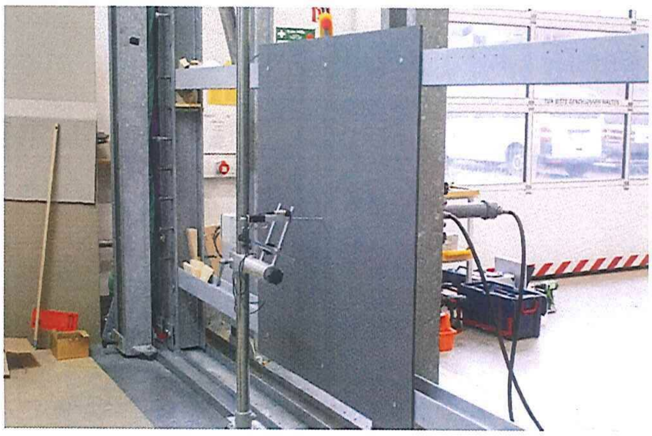


Figure 2: Test specimen No. 16, exterior view

Single-span system, screwed:

- 4 TRESPA METEON HPL boards, thickness: 10 mm, overall dimension of one board: 1700 mm x 1300 mm,
- pre-drilled boards (see drawing of the system in the annex, page 2, at the bottom), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 1100 mm,
- centre distance between the fasteners within one line: 750 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: façade screws made from stainless steel, diameter: 5 mm, head diameter: 16 mm, adhesive-backed rubber ring between HPL board and girder, washer between girder and screw nut,
- formation of one fixed-point (see drawing of the system in the annex, page 2, at the bottom) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 13, 14, 15).

Multi-span system, riveted:

- 4 TRESPA METEON HPL boards, thickness: 10 mm, overall dimension of one board: 2000 mm x 2600 mm,
- pre-drilled boards (see drawing of the system in the annex, page 1, at the top), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 1200 mm,
- centre distance between the fasteners within one line: 600 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: MBE façade rivets made from stainless steel, diameter: 5 mm, head diameter: 16 mm,
- formation of one fixed-point (see drawing of the system in the annex, page 1, at the top) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 31, 32, 33).

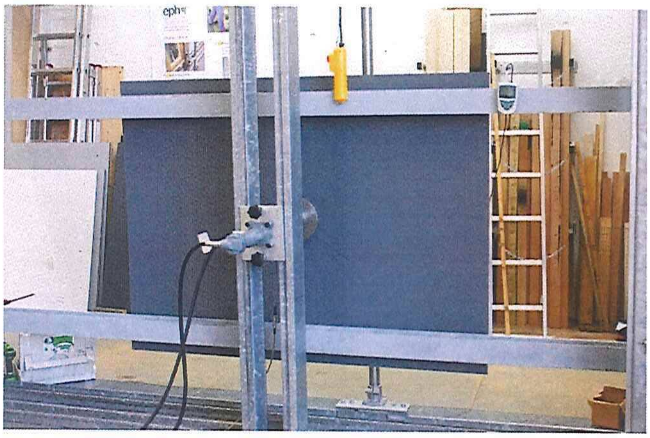


Figure 3: Test specimen No. 14, interior view

Figure 4: Test specimen No. 33, interior view

Liite 7. / Appendix 7.

Multi-span system, screwed:

- 4 TRESPA METEON HPL boards, thickness: 10 mm, overall dimension of one board: 2100 mm x 2600 mm,
- pre-drilled boards (see drawing of the system in the annex, page 2, at the top), diameter of holes: 10 mm,
- centre distance between the lines of fasteners: 1200 mm,
- centre distance between the fasteners within one line: 1000 mm,
- fixation of the boards to pre-drilled steel girders (Type HEA 100), diameter of the holes: 5.1 mm,
- fastener: façade screws made from stainless steel, diameter: 5 mm, head diameter: 16 mm, adhesive-backed rubber ring between HPL board and girder, washer between girder and screw nut,
- formation of one fixed-point (see drawing of the system in the annex, page 2, at the top) using a fixed-point-sleeve Ø10.0 x 6 mm,
- compact board on the outside of parapet,
- 3 boards tested (No. 34, 35, 36).

The hard body impact test was carried out on the 4th specimen of each variant.

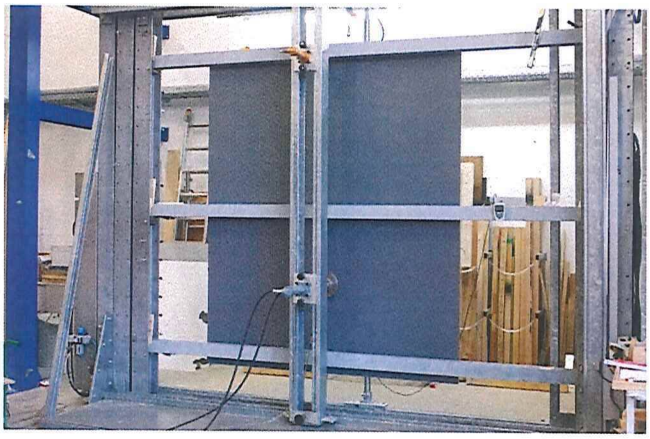


Figure 5: Test specimen No. 35, interior view

Figure 6: Test specimen No. 36, exterior view

Liite 7. / Appendix 7.

3 ETB Guideline and Test Procedure

3.1 Determination of the Impact Energy by Evidence by Testing according to § 3.2.2.2.2 of ETB Guideline

The ETB Guideline specifies in § *3.2.2.2.2 Evidence by Test* as part of § *3.2.2.2 Determination of Impact Energy* the following:

The numerical evidence can be replaced by bending test. In this case, the decisive value E_{test} (absorbed energy during the test, until the test assembly fails) shall be opposed to the proportional energy $\alpha' \cdot E_{basis}$ as follows:

The following evidence shall be provided[1]:

$$E_{test} \geq v \cdot \alpha' \cdot E_{basis}$$

with:

$v = 1.25$ coefficient for assurance against scattering which are not covered by the tests

α' impact coefficient depending on the mass of the element
mass of tested system < 50 kg → $\alpha' = 1.0$
(see Table 1 in the Guideline)
E_{basis} = impact energy as a result of soft impact, acc. to the Guideline = 100 Nm

Thus, the parapet systems shall meet the following requirement for the impact energy E_{test}:

$$E_{test} \geq 1.25 \cdot 1.0 \cdot 100 \text{ Nm} \geq 125 \text{ Nm}$$

The impact energy E_{test} will be calculated according the following equation using the mean value E_u (calculated from the measured values and divided by a safety factor):

$$E_{test} = E_u / \gamma$$

The safety factor can be estimated using the following equation:

$$\gamma = (1 + (s_E / E_u)^2)^{½} \cdot \exp(K \cdot s_E / E_u)$$

with E_u as mean value and s_E as standard deviation of the measured values and $K = 0.9$.

The test arrangement is shown in Figures 1-6. The HPL board was mounted outside the parapet. The load was applied using a circular steel disc with a diameter of 200 mm. The steel disc was coated with a 8 mm thick rubber pad of a Shore A hardness of approximately 80. The load was applied at the geometrical center of single-span boards and at the geometrical center of one section of multi-span boards. The deformation of the compact board was measured during the test at several force ranges. The maximum cylinder stroke was 200 mm, the maximum applicable load 20 kN.

---

[1] ETB Guideline – Fall Prevention Components, Version June 1985, Equation (10)

Liite 7. / Appendix 7.

EPH SUCCESS BY QUALITY

3.2 Hard Body Impact Test according to § 3.2.3 of ETB Guideline

The hard body impact test was carried out by free fall of a steel ball with a diameter of 63.5 mm and a mass of 1 kg from a height of 1 m. The parapet system laid freely movable. According to the ETB guideline, § 3.2.3, the test was carried out on 15 positions of the compact board.

4 Test Results

4.1 Determination of the Impact Energy by Evidence by Testing according to § 3.2.2.2.2 of ETB Guideline

Table 1: Test results **single-span system, riveted**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
16	6.00	73.5	220	The test was interrupted at a load of 6.0 kN At the given loads, no failure was distinguishable.
17	6.00	72.1	216	
18	6.00	72.1	216	

E_u = 218 Nm

s_E = 2.4 Nm

γ = 1.01

E_{test} = 216 Nm > 125 Nm

Table 2: Test results **single-span system, screwed**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
13	7.00	61.3	215	The test was interrupted at a load of 7.0 kN At the given loads, no failure was distinguishable.
14	7.00	58.6	205	
15	7.00	58.1	203	

E_u = 208 Nm

s_E = 6.0 Nm

γ = 1.03

E_{test} = 202 Nm > 125 Nm

Liite 7. / Appendix 7.

Table 3: Test results **multi-span system, riveted**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
31	7.00	53.9	189	The test was interrupted at a load of 7.0 kN At the given loads, no failure was distinguishable.
32	7.00	54.2	190	
33	7.00	55.0	192	

E_u = 190 Nm

s_E = 2.0 Nm

γ = 1.01

E_{test} = 188 Nm > 125 Nm

Table 4: Test results **multi-span system, screwed**

Test assembly	F in kN	δ_{max} in mm	E_{test} in Nm	Note
34	7.00	56.9	199	The test was interrupted at a load of 7.0 kN At the given loads, no failure was distinguishable.
35	7.00	57.0	199	
36	7.00	62.1	217	

E_u = 205 Nm

s_E = 10.4 Nm

γ = 1.05

E_{test} = 196 Nm > 125 Nm

4.2 Hard Body Impact Test according to § 3.2.3 of ETB Guideline

The parapet systems met the requirement regarding hard body impact according to ETB Guideline, § 3.2.1. There were no damages identified by macroscopic viewing.

5 Evaluation

The fall prevention test was carried out on 10 mm thick TRESPA METEON HPL compact boards as single-span system and as multi-span system. The boards were fixed on steel girders with rivets or screws (see drawing of systems in the annex).

The parapet systems meet the requirement regarding impact energy tested by soft body impact according ETB Guideline “Fall Prevention Components”, § 3.2.2.2.2.

The parapet systems meet the requirement regarding hard body impact according ETB Guideline “Fall Prevention Components”, § 3.2.3.

Note that different results can be obtained in case of use of other supporting construction and other fasteners.

Dipl.-Ing. J. Gecks
Person in-charge

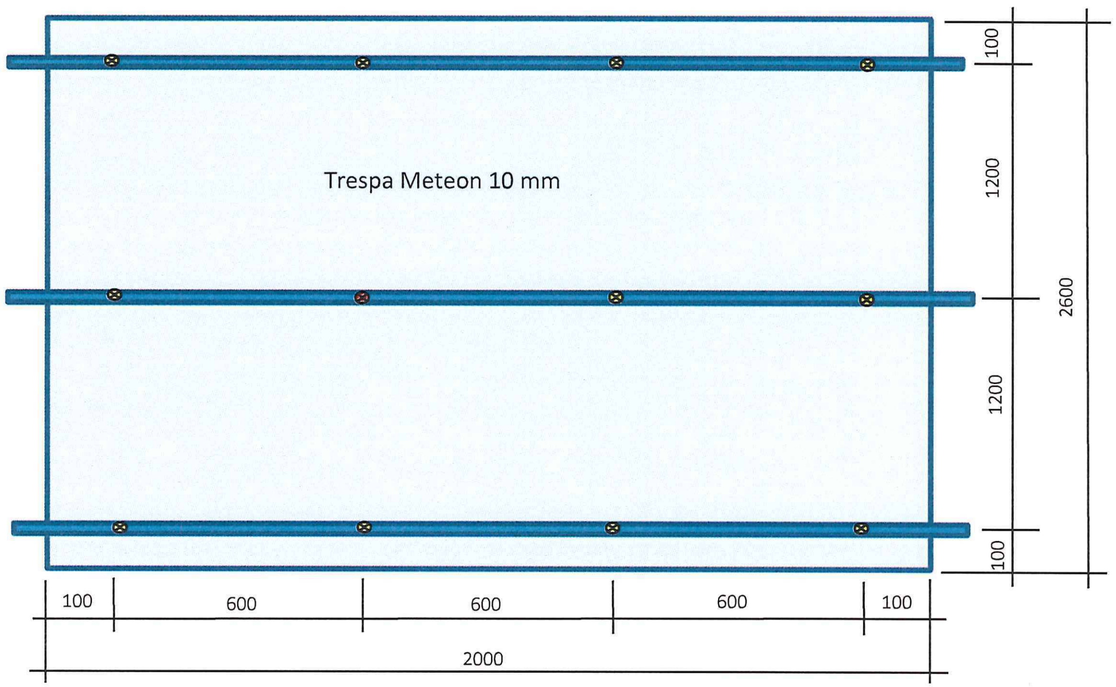
Annex: Drawings of parapet system (2 pages)

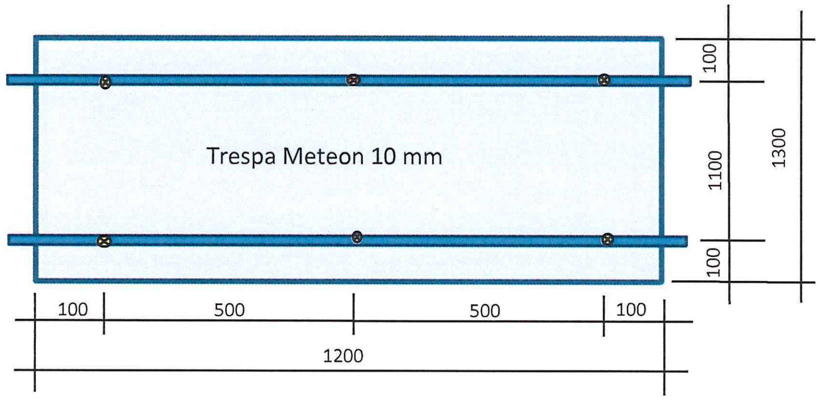
Test Report 2616129-3

Annex Page 1/2

Liite 7. / Appendix 7.

ETB Prüfung Trespa 10 mm
Genietet





Festpunkt

Gleitpunkte

ETB Püfung Trespa International

System: Riegel oder Pfosten

Material : Trespa Meteon

Plattendicke: 10 mm

Befestigung mit: Nieten

Anmerkung : Zeichnungen sind nur Chema Darstellungen und nicht im Massstab

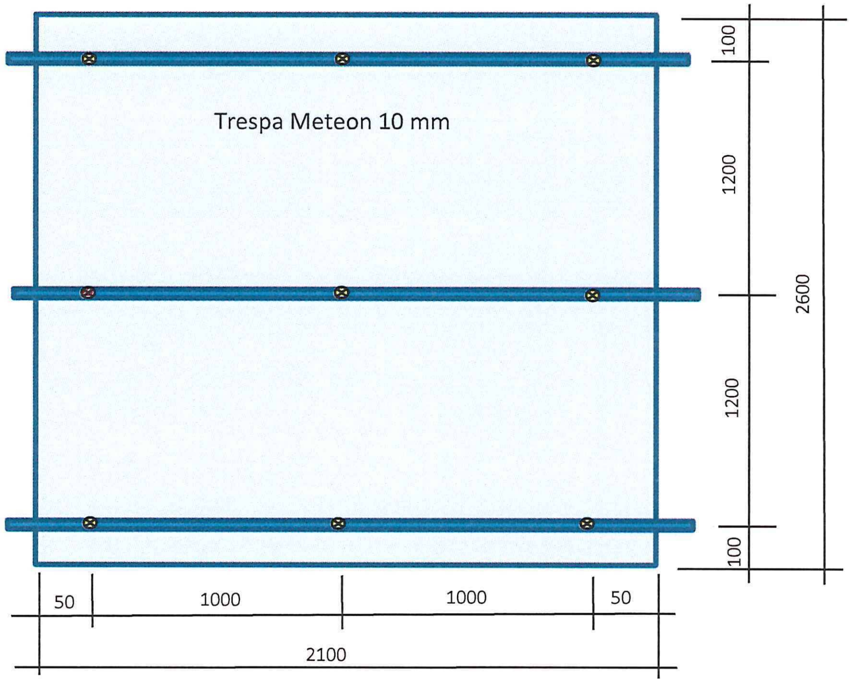
Datum : 19.08.2016
Gezeichnet. L.W

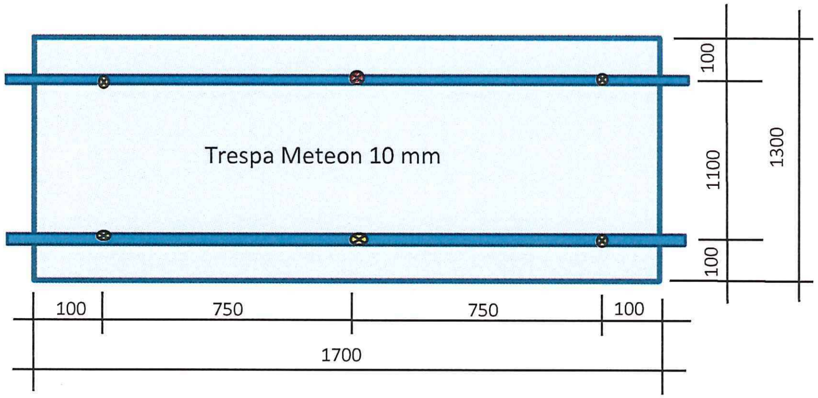
Test Report 2616129-3

Annex Page 2/2

Liite 7. / Appendix 7.

ETB Prüfun Trespa 10 mm
Geschraubt





Festpunkt

Gleitpunkte

ETB Püfung Trespa International

System: Riegel oder Pfosten

Material : Trespa Meteon

Plattendicke: 10 mm

Befestigung mit: Schrauben

Anmerkung : Zeichnungen sind nur Chema Darstellungen und nicht im Massstab

Datum : 19.08.2016
Gezeichnet. L.W