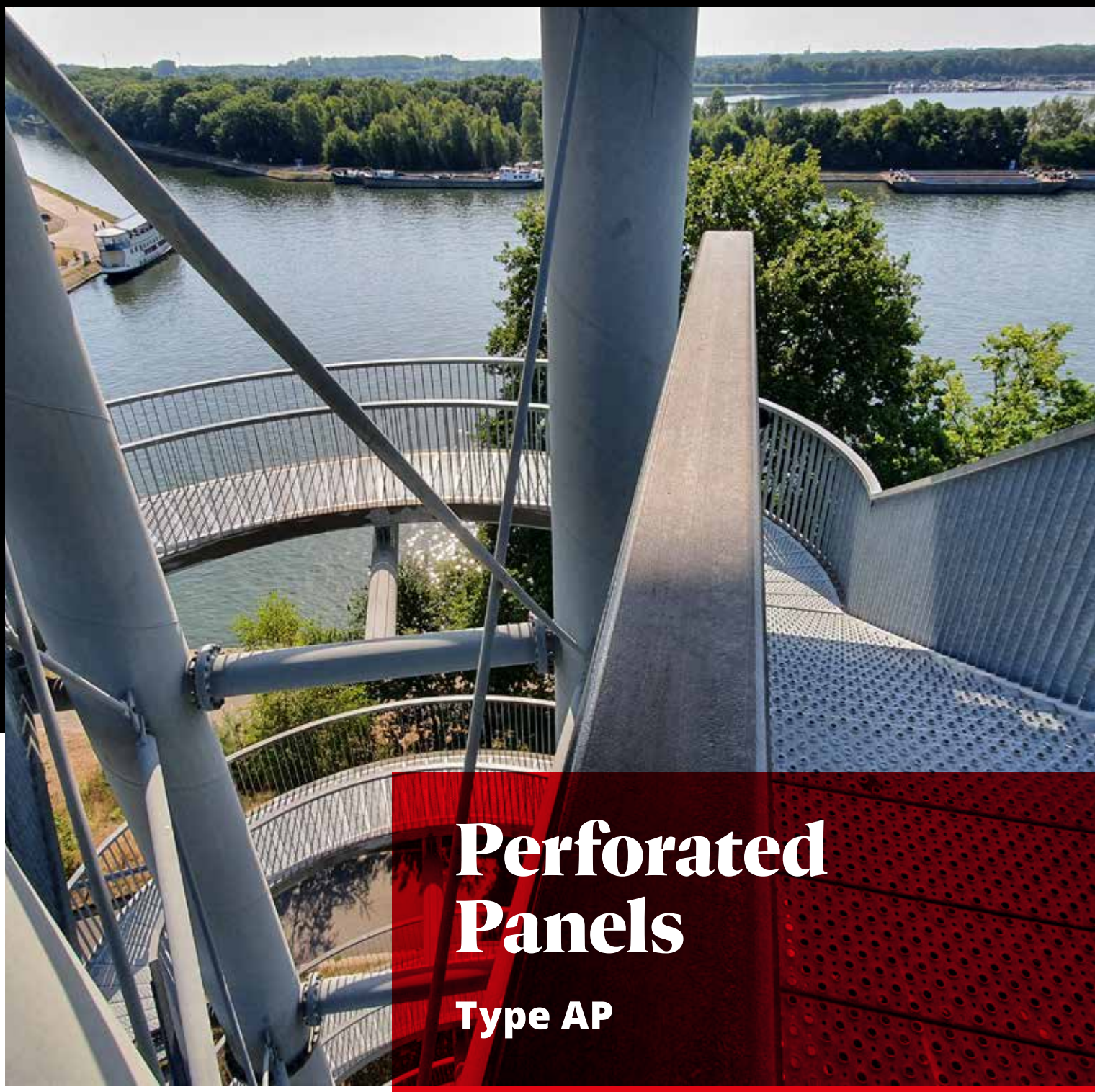


Perforated Panels

Type AP

A SOLUTION FOR EVERY APPLICATION

STACO

Create & Inspire

This is our brand story

We are Staco, we produce a wide range of construction panels and gratings for applications in the building, construction and industrial sectors. These include floors, stairs, façades, balconies, sun protections and ceilings. With our solutions, we inspire you to make the world more beautiful, safe, accessible and sustainable. Our panels and gratings are ideal for both vertical and horizontal applications.

Inspiring innovation

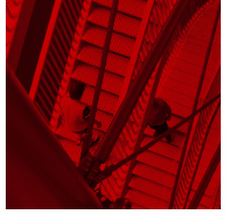
To remain sustainable, today's world needs innovation more than ever. In sectors where safety, quality and reliability matter, this can sometimes be a real challenge. We are proud when our solutions inspire you to contribute to a more beautiful, safer, accessible and sustainable world.

Creating together

Our solutions are often part of a bigger story. That is why we know better than anyone that you create impact together. Being part of an international family gives us the opportunity to work closely together. Our people make the real difference by using their knowledge, expertise and helpfulness to find a tailor-made solution to your challenge.

We are metal

Like us, metal is reliable, flexible and strong. It is also fully circular. That is why we choose metal to make our extensive range of construction panels for both vertical and horizontal applications.



The power of the group

We are part of the ROTO group. This means that we are part of a strong network of companies specialising in steel, steel processing, grating technology, surface treatment and expanded metal. This has a big advantage for you: through your Staco expert, you have easy access to multiple specialities. ROTO's core activities are divided into five Business Units.

The Sustainable Colourful Metal Family Group

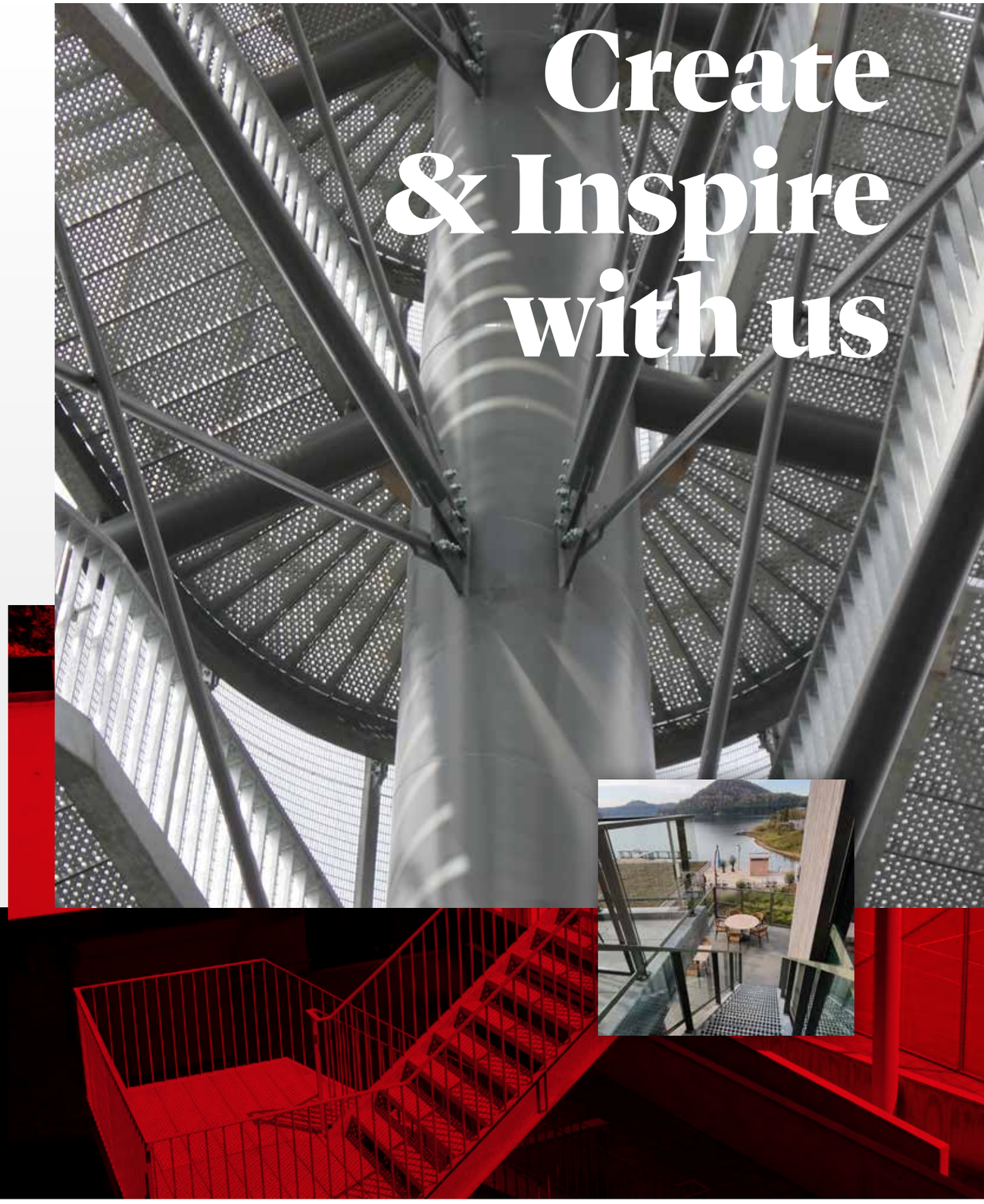
A strong network

Staco has offices in the following countries: Germany, Belgium, France, Poland, England and the Netherlands.

Perforated panels type AP

Table of content

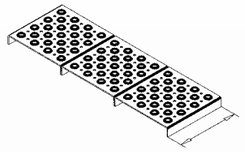
Staco offers a suitable solution for every application, many of which are described in our detailed general product brochure. In this AP brochure, you will find more information about our perforated product category. On our website, besides a lot of additional information, you will also find our current stocks and available downloads such as drawings, 3D files and our other (product) brochures. There you will also find our interactive calculation tools for strength and air flow analysis calculations. For more information, please visit **www.staco.eu**.



Technical specifications

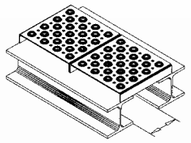
Terms

Direction of load



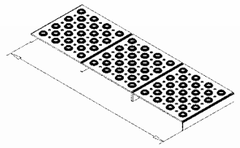
The panels that are required to take the load should be supported at both ends.

Clear span



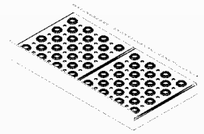
This is the clear width between two supports. A grating can cover multiple supports.

Transverse direction



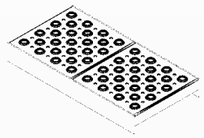
This runs at right angles to the direction of load.

Kick plate



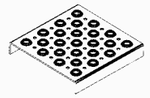
A strip welded to the grating. This strip projects above the grating.

Lower edge



A strip welded to the grating. This strip projects below the grating.

Type of pressing



Hole depth and hole c.t.c. diameter and sheet gauge can all vary.

Gross panel surface area

The total grating surface area before it is cut to size and any recesses are created (see dotted line).

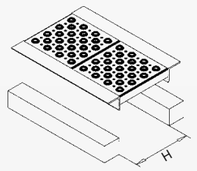
Net panel surface area

The net grating surface area remaining after it has been cut to size and any recesses have been created.

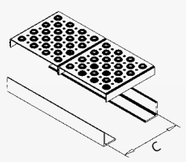
Shaping

The general term for all holes and cut-outs in the grating. This includes cuts that run through the perforations.

Hole size



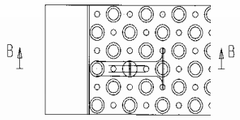
Clear width



The net internal dimensions, between the mounting profiles, or the net recess dimensions. The grating size must be smaller than the hole size or clear width.

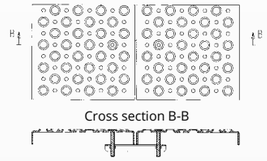
Fixings

Fixing clamp set



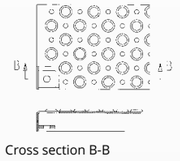
Bolt + nut and lower bracket. Available for various grating types. Versions: Hot-dip galvanised or stainless steel.

Coupling set



2 x Bolts + nuts, 1 x lower bracket.
Hot-dip galvanised or stainless steel.

Welded plate



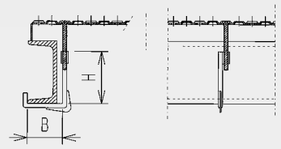
S-element

Fixing system consists of:
- S-clamp and screw
- Disc

(State dimension 'h' when ordering)

Staco fixing sets for serrated gratings include a special disc to be used as the upper fastening component. Available in plastic or steel (galvanised according to EN-ISO 1461).

Hook bolt

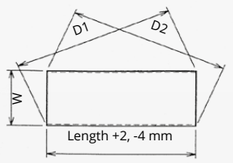


Hook + bolt.
Version: Hot-dip galvanised.

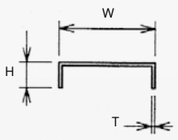
Dimensions		Suitable for UNP	
B	H	Min.	Max.
67	100	UNP 100	UNP 160
77	140	UPN 140	UPN 200
85	180	UPN 180	UPN 240
97	220	UPN 220	UPN 280

Tolerances

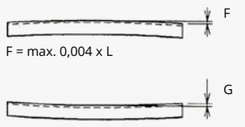
Width
+ 2, -2 mm



D1-D2 = max. 0,005 x L

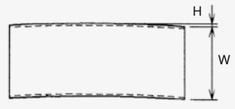


W = +2, -2 mm
H = +1,5 mm, -1,5 mm
T = +/- 0,2 mm

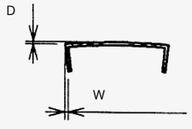


F = max. 0,004 x L

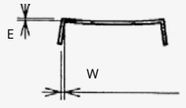
G = max. 0,002 x L



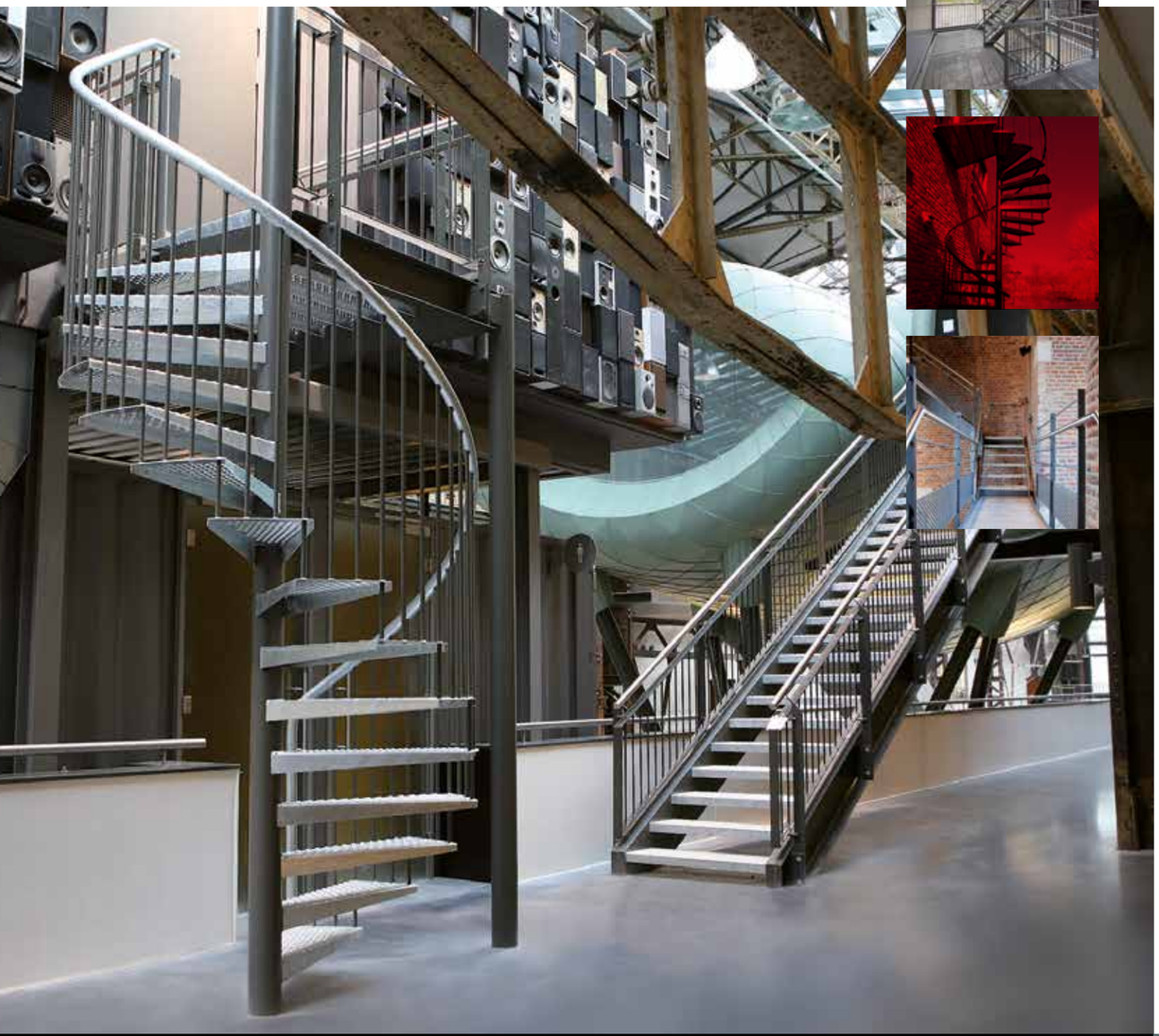
H = max. 0,002 x W



D = max. 0,015 x W
W = 0,05 x D



E = max. 0,015 x W
W = 0,05 x E



Perforated panels and stair treads
type AP

Perforated panels, also known as perforated or perfo planks & treads, are the basis for a versatile product with a wide range of applications. For instance stair cases, access platforms, walkways, step overs and wall partitions. Manufactured from various qualities of steel, aluminium or stainless steel coils in standard sizes or customised. Folding the panels gives them strength, which makes them widely applicable and suitable for any case.

Perforated panels type AP

Advantages:

- Perforated panels have a limited transparency, giving peace of mind to those with a fear of heights
- Anti-slip features help to prevent accidents
- The small hole size stops falling objects

Choice of the following materials:

- Steel quality S235JR
- Stainless steel quality AISI 304 (1.4301) and AISI 316L (1.4404)
- Aluminium quality AlMg3G22

Versions:

- Mild steel self colour, 1.5/2/2.5 and 3 mm thick
- Mild steel galvanised to EN-ISO 1461, 1.5/2/2.5 and 3 mm thick
- Stainless Steel quality AISI 304 (1.4301) and AISI 316L (1.4404), 1.5 and 2 mm thick
- Aluminium quality AlMg3G22, 2/2.5 and 3 mm thick (depends on type)
- Powder coated in all standard RAL colours
- Various perforation types available
- Stair treads fitted with rubber caps
- Galvanized stair treads from stock
- Ungalvanised spiral treads from stock
- Completely assembled panels

For current stocks please visit:
staco.eu/en/product-categories/stock-items

Versions AP MAW / ZAW / DOP / MAA / ZAA / NOP / VMA / VZA can be supplied according to the following cross-sections:

A

B

C

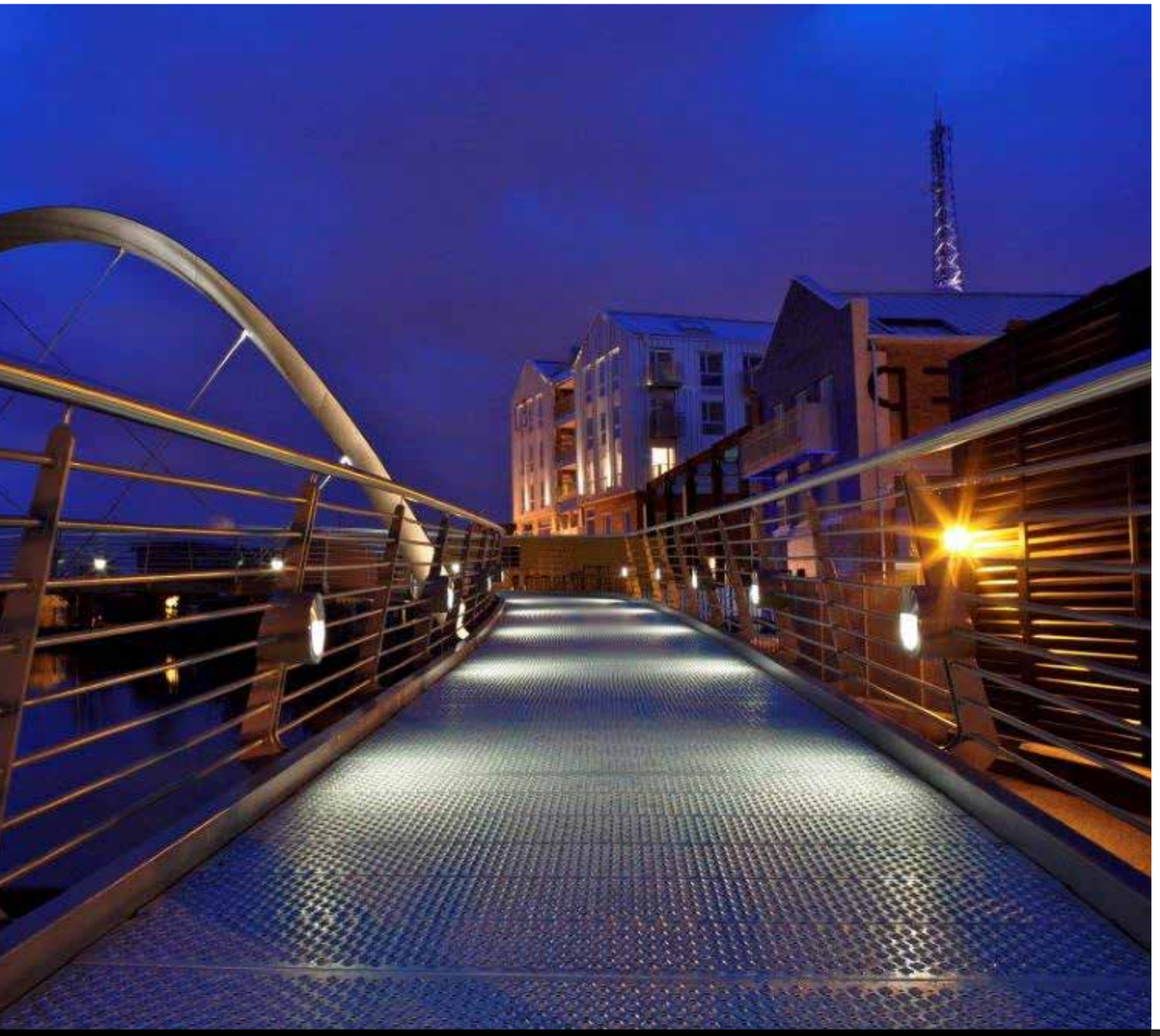
Version A is the starting point for the strength calculations of the above versions.

Versions AP SER / STE / GES / OFF / RUN can be supplied according to the following cross-sections:

A

B

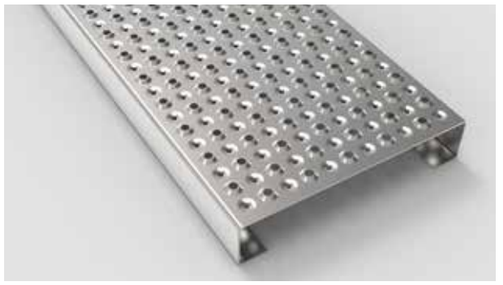
Version B is the starting point for the strength calculations of the above versions.



Perforated panel
type AP 30

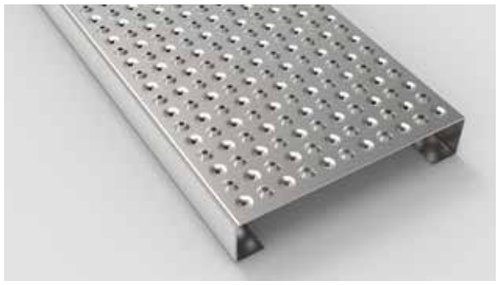
Our Perforated panel 30, also known as perfo or perfo planks, can be used almost anywhere due to its simplicity. This makes the panel ideal for use in publicly accessible areas. Examples include access platforms, ramps, footbridges, landings, stairs and spiral staircases.

The AP30 punched hole design provides exceptional anti slip, drainage, reduced transparency and heel proof properties due to its small hole diameter. The folded design of the plank creates a safe, strong and stable platform to inspire your design. In addition to horizontal applications, the panels can also be used vertically as wall cladding or enclosures for stores & compounds such as bike or HVAC.



Type AP 2 - 30 with drainage (MAW)
Anti-slip perforation Ø 8 mm punched up 3 mm high.
Drainage perforation Ø 5 mm punched down 3 mm deep both on a 30 mm c.t.c staggered pitch.

Type AP 2 - 30 without drainage (ZAW)
Anti-slip perforation Ø 8 mm punched up 3 mm high on a 30mm c.t.c staggered pitch.
No drainage perforations.

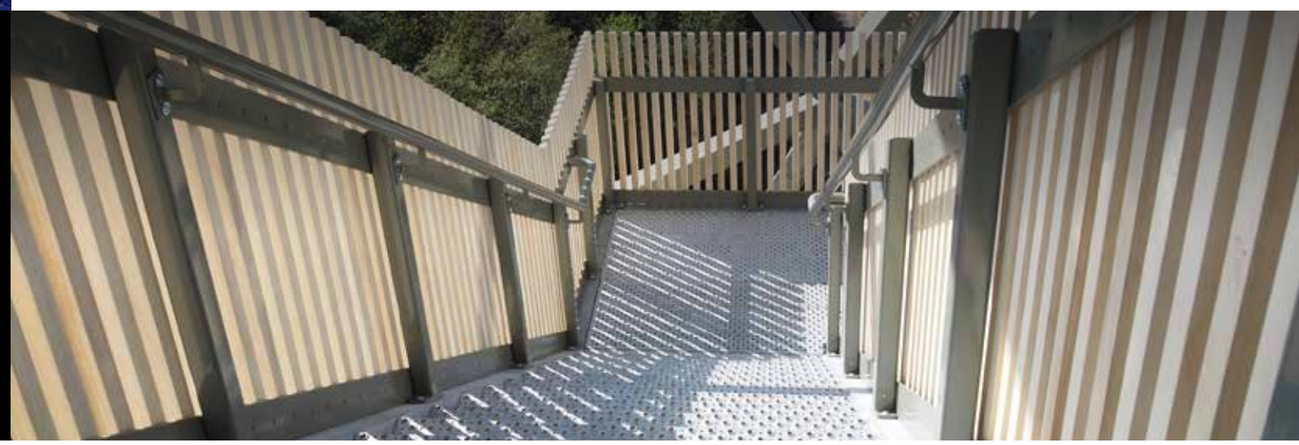


Type AP 2 - 30 safety with drainage (VMA)
Anti-slip perforation Ø 5 mm punched up 3 mm high.
Drainage perforation Ø 5 mm punched down 3 mm deep both on a 30 mm c.t.c staggered pitch.

Type AP 2 - 30 safety without drainage (VZA)
Anti-slip perforation Ø 5 mm punched up 3 mm high on a 30mm c.t.c staggered pitch.
No drainage perforations.

For dimensions and detailed drawings of perforation patterns, please visit:
staco.eu/en/product-categories/perforated

Material	Quality	Thickness
Steel	S235JR	2 mm
Stainless steel	AISI 304 (1.4301) AISI 316L (1.4404)	2 mm



Perforated panel
type AP 40

Our perforated panel 40, also known as perfo or perfo planks, can be used almost anywhere in the industry. The range of applications including stair cases, access platforms and walkways, step overs and wall partitions are all examples of this products versatility. The AP40 punched hole design provides anti slip, excellent drainage and reduced transparency. The folded design of the plank creates a safe, strong and stable platform to inspire your design. In addition to horizontal applications, the panels can also be used vertically as wall cladding or enclosures for stores & compounds such as bike or HVAC.

Perforated panel Type AP 40 is suited for use in areas where a heelproof option is not required. It offers a tighter and more open punched plank which allows faster drainage or more airflow.

Type AP 2 - 40 with drainage (MAW)
Type AP 3 - 40 with drainage (MAW)
Anti-slip perforation Ø 14 mm punched up 4 mm high.
Drainage perforation Ø 8 mm punched down 2 mm deep both on a 40 mm c.t.c staggered pitch.

Type AP 2 - 40 without drainage (ZAW)
Type AP 3 - 40 without drainage (ZAW)
Anti-slip perforation Ø 14 mm punched up 4 mm high on a 40 mm c.t.c staggered pitch.
No drainage holes.

Type AP 2 - 40 closed (NOP)
Type AP 3 - 40 closed (NOP)
Embossed Ø 14 mm dome 4 mm high on a 40 mm staggered pattern.
No drainage holes.

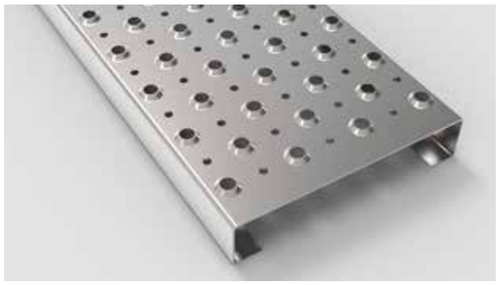
For dimensions and detailed drawings of perforation patterns, please visit:
staco.eu/en/product-categories/perforated

Material	Quality	Thickness
Steel	S235JR	2 / 3 mm
Stainless steel	AISI 304 (1.4301) AISI 316L (1.4404)	2 mm
Aluminium	AlMg3-G22	3 mm

Perforated panel
type AP 50

This perforated panel is versatile and can be used on both stairs and floors. This makes it ideal for both industrial and public applications. The panel is used as construction steel, aluminium where products need to be light and in stainless steel for the food and nutrition industry.

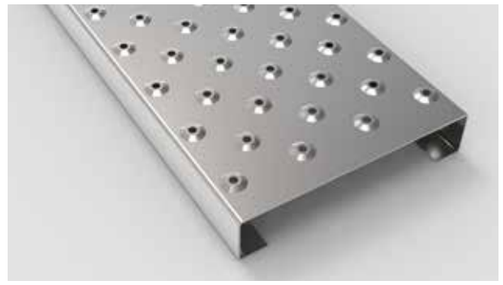
In addition to horizontal applications, the panels can also be used vertically as wall cladding or enclosures for stores & compounds such as bike or HVAC. The AP 50 punched hole design provides anti slip, drainage and reduced transparency. The folded design of the plank creates a safe, strong and stable platform to inspire your design.



Type AP 2 - 50 with drainage (MAW)
Type AP 3 - 50 with drainage (MAW)
Anti-slip perforation Ø 14 mm punched up 4 mm high.
Drainage perforation flat Ø 8 mm both on a 50 mm c.t.c staggered pitch.

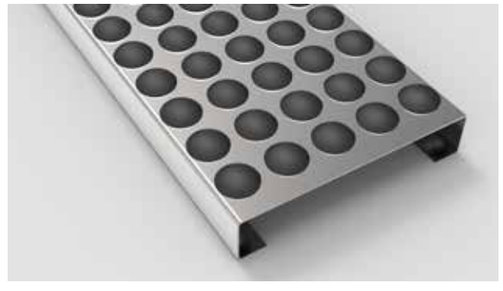
Type AP 2 - 50 without drainage (ZAW)
Type AP 3 - 50 without drainage (ZAW)
Anti-slip perforation Ø 14 mm punched up 4 mm high on a 50 mm c.t.c staggered pitch.
No drainage holes.

Type AP 2 - 50 with drainage (MAA)
Type AP 3 - 50 with drainage (MAA)
Embossed dome with Ø 8 mm perforation punched up 3 mm high.
Drainage perforation flat Ø 8 mm both on a 50 mm c.t.c staggered pitch.



Type AP 2 - 50 without drainage (ZAA)
Type AP 3 - 50 without drainage (ZAA)
Embossed dome with Ø 8 mm perforation punched up 3 mm high.
No drainage holes.

Type AP 2 - 50 closed (NOP)
Type AP 3 - 50 closed (NOP)
Embossed Ø 16 mm dome 4 mm high on a 50 mm staggered pattern.
Also available with drainage perforation Ø 8 mm if required.



Type AP 2 - 50 rubber caps (DOP)
Type AP 3 - 50 rubber caps (DOP)
Perforation Ø 14 mm, c.t.c. 50 mm, 4 mm deep, also with drainage perforation Ø 8 mm if required, c.t.c. 50 mm, 0 mm deep. Suitable for using rubber caps. Preferred widths in multiples of 50 mm.

Material	Quality	Thickness
Steel	S235JR	2 / 3 mm
Stainless steel	AISI 304 (1.4301) AISI 316L (1.4404)	2 mm
Aluminium	AlMg3-G22	3 mm

For dimensions and detailed drawings of perforation patterns, please visit:
staco.eu/en/product-categories/perforated

Perforated panel
type AP SER / STE / GES / OFF / RUN

We also have a selection of variations, each with its unique properties suitable for a variety of applications.

A variant with ultimate grip and drainage, a variant that is extremely suitable as a drainage channel, a completely closed variant for internal use, a variant especially for offshore that can resist the most extreme weather conditions and a variant with a hole pattern very close together for optimal drainage.

Perforated panel serrated
type AP SER

This variant has serrated raised slots.

The special hole pattern in the panel provides extra grip and excellent drainage, perfect for raised floors such as landings, stair treads or even as a walking panel on trucks.

In addition, the panel has minimal transparency, both from above and below.

Type AP 1.5 - 30 serrated (SER)
Type AP 2 - 30 serrated (SER)
Type AP 2.5 - 30 serrated (SER)
Anti-slip perforation oval 44x14 mm, c.t.c. 30 mm, 12 mm high.

Perforated panel slotted
type AP STE

Special perforated panel with long oval drainage slot for optimal drainage.

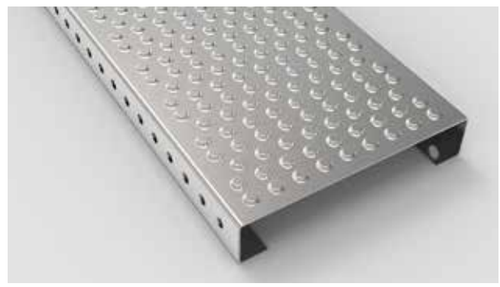
The upward punched holes in the panel also enhance the products coefficient of friction. This makes the panels perfect for use as drainage gutters or stair treads.

Type AP 1.5 - 30 slotted (STE)
Type AP 2 - 30 slotted (STE)
Type AP 2.5 - 30 slotted (STE)
Anti-slip perforation Ø 8 mm, c.t.c. 62,5 mm, 2 mm high. Slot width 20 mm and length depends on the width of the panel.

Perforated panel closed
type AP GES

This panel is completely closed and has a punched convex points pattern. This makes it impossible to see through from above or below the product. This reduces the risk of vertigo.

This panel is typically used indoors because water or snow remains on the surface. The range of application includes landings and steps.



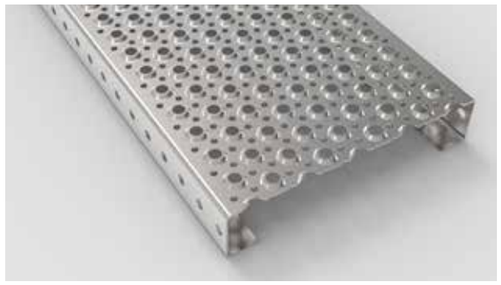
Type AP 1.5 - 30 closed (GES)
Type AP 2 - 30 closed (GES)
Type AP 2.5 - 30 closed (GES)
Anti-slip perforation Ø 15 mm not fully punched out, c.t.c. 20/40 mm, 3 mm high.
Perforation pattern 2 rows equal followed by 1 staggered line.

Perforated panel offshore

type AP OFF

Unique offshore variant. This panel type has been specially developed for applications in the most extreme weather conditions and where optimum safety is required.

This includes maximum drainage and anti-slip protection. Perfect for use on walkways, platforms, landings and as steps. Its characteristics reduce risks such as falling and tripping. Choose safety!



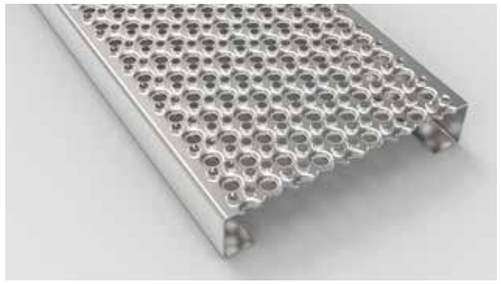
Type AP 1.5 - 30 offshore (OFF)
Type AP 2 - 30 offshore (OFF)
Type AP 2.5 - 30 offshore (OFF)
Anti-slip perforation Ø 11 mm, c.t.c. 15/30 mm, 2 mm high.
Drainage perforation 2x Ø 6 mm, c.t.c. 15/30 mm, 0 mm deep.

Perforated panel round

type AP RUN

Specially developed panel where the hole pattern is manufactured closer together. This allows for even better drainage, but keeps the anti-slip properties.

The upward and downward punching holes make the panels perfect for use as a walkway, platform or stair tread.



Type AP 1.5 - 30 round (RUN)
Type AP 2 - 30 round (RUN)
Type AP 2.5 - 30 round (RUN)
Anti-slip perforation 2x Ø 8 mm, c.t.c. 15/30 mm, 2 mm high.
Drainage perforation Ø 11 mm, c.t.c. 15/30 mm, 3 mm deep.

Material	Quality	Thickness
Steel	S235JR	1,5 / 2 / 2,5 mm
Stainless steel	AISI 304 (1.4301)	1,5 / 2 mm
Aluminium	AlMg3-G22	2,5 mm

For dimensions and detailed drawings of perforation patterns, please visit:
staco.eu/en/product-categories/perforated

Perforated ladder rungs

type LAD 1 + 2

Is optimum safety a requirement for your ladder? Our ladder rungs provide very good anti-slip properties. This product is specifically designed to make the ladder rungs remain accessible. Ladder rungs are available with one or two rows of holes for optimal grip. You also have the option of choosing ladder rungs with a recess.

Type AP 2 - 50 ladder rung (LAD1)
Anti-slip perforation Ø 12 mm, c.t.c. 25 mm, 5 mm high.
Width 25 mm, height setting 37 mm.

Type AP 2 - 50 ladder rung (LAD2)
Anti-slip perforation Ø 12 mm, c.t.c. 25 mm, 5 mm high.
Width 50 mm, height setting 37 mm.

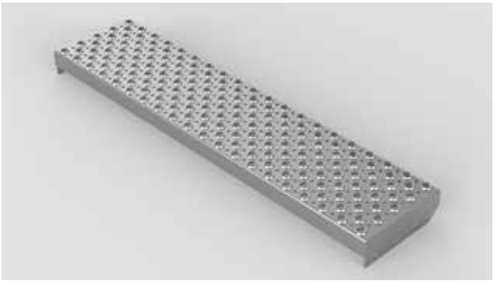
Type AP 2 - 50 ladder rung (LAD2) with recess, at 48,3 mm
Anti-slip perforation Ø 12 mm, c.t.c. 25 mm, 5 mm high.
Width 50 mm, height setting 37 mm.

For current stocks, dimensions and detailed drawings of perforation patterns, please visit: **staco.eu/en/product-categories/perforated/perforated-ladder-rungs**

Material	Quality	Thickness
Steel	S235JR	2 mm

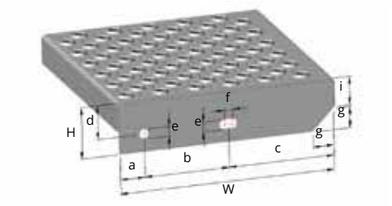
Perforated stair treads
type AP

All our perforated panels are also available as corresponding perforated stair treads. So a unified look is easy to create by keeping the same hole pattern consistent throughout a project. A good choice for industrial applications in places where high anti-slip protection and drainage are of great importance. These stair treads are available in various materials.



Type stair tread AP 30-40-50 (MAW, ZAW, VMA, VZA, NOP, DOP, MAA, ZAA)

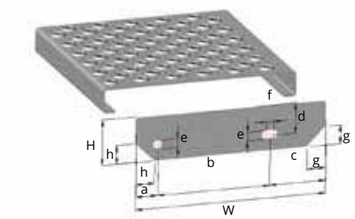
Typical endplate dimentions:



Width in mm (W)	a	b	c	d	e	f	g	i	H
205	35	100	70	55	13	20	30	42,5	**70**
230	35	120	75	55	13	20	30	42,5	**70**
255	35	150	70	55	13	20	30	42,5	**70**
280	35	180	65	55	13	20	30	42,5	**70**

Type stair tread AP STE, SER, GES, OFF, RUN

Typical endplate dimentions:

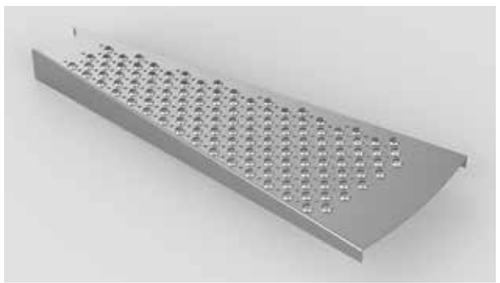


Width in mm (W)	a	b	c	d	e	f	g	h	H
180	35	90	55	55	14	20	30	30	**70**
240	35	120	85	55	14	20	30	30	**70**
300	35	180	85	55	14	20	30	30	**70**

For current stocks, dimensions and detailed drawings of perforation patterns, please visit:
staco.eu/en/product-categories/perforated/perforated-stair-treads

Perforated spiral treads
type AP

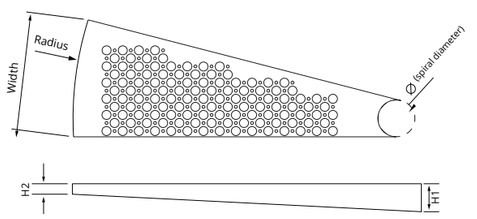
Limited space in the project to install a conventional staircase? Our perforated panels can also be produced as spiral treads, making them widely applicable in environments where space is limited. Is a high coefficient of friction and good drainage necessary? We have many different hole patterns that meet the most stringent requirements.

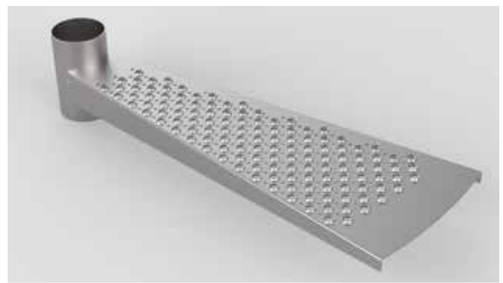


Type spiral tread AP

Type AP spiral stair treads are also available.

- Supplied in galvanised steel or stainless steel 304.
- Made to customer specifications.
- Spindle holes and zinc outlets possible.
- Composite landings spiral steps and/or straight steps.

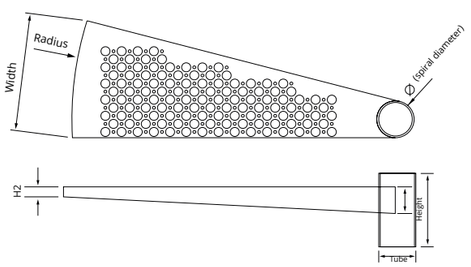




Type spiral tread AP with welded-on boss

These spiral stair treads are fitted with a welded-on boss. The treads are then galvanised. In existing construction, the treads can easily be mounted over a spiral tube.

- Made to customer specifications.



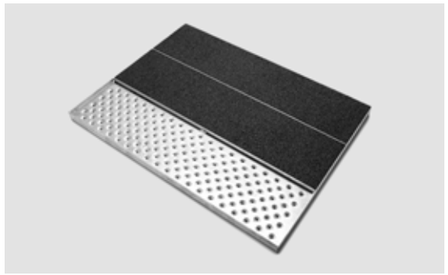
For current stocks, dimensions and detailed drawings of perforation patterns, please visit:
staco.eu/en/product-categories/perforated/perforated-spiral-treads

Perforated panel Specials
type JettyDeck®

Are you looking for something unique? Thanks to its weather-resistant characteristics, JettyDeck® is perfect for sustainable, aesthetic applications, such as a jetty, balcony floor, platform or bridge deck. The perfect combination of metal and wood or EPDM. Most sub and superstructures are made of similar materials, JettyDeck® brings together the 'best of both worlds'. We inspire you by combining steel with wood, EPDM or other filling material to create a sturdy and aesthetic design.

Specifications JettyDeck Wood filling

- Different types of wood: Bamboo, Bilinga or Cumaru hardwood
- Very long lifespan and fully recyclable
- Durable and aesthetic application with a sleek appearance
- Also available in corresponding stair treads
- Partial filling or combinations of materials possible
- Perfect water drainage



Specifications JettyDeck EPDM filling

- Permeable and sound-absorbing
- Very long lifespan and fully recyclable
- High temperature resistance
- The standard EPDM used has a Euro class of Dfl-S1, Euro class D Flooring and Smoke class S1
- Available in various colours
- Partial filling or combinations of materials possible
- Anti-slip category R10 / PTV 36+ (in wet conditions)

For current stocks, dimensions and detailed drawings of perforation patterns, please visit:
https://staco.eu/en/product-categories/specials/jettydeck

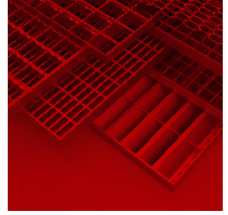
Material	Quality	Thickness
Steel	S235JR	3 mm
Stainless steel	AISI 304 (1.4301)	2 mm

Applications

Perforated panels and stair treads stand out for their characteristic high-grade anti-slip and drainage properties, which can ensure a safe workplace for any environment. By choosing the right perforation for the right application.

On landings and steps, the anti-slip properties ensure an excellent grip. Even in the most extreme weather conditions, ramps and other working environments are extremely safe. Do you have questions about a specific application? Feel free to contact our sales department for advice.

Your partner in sustainability

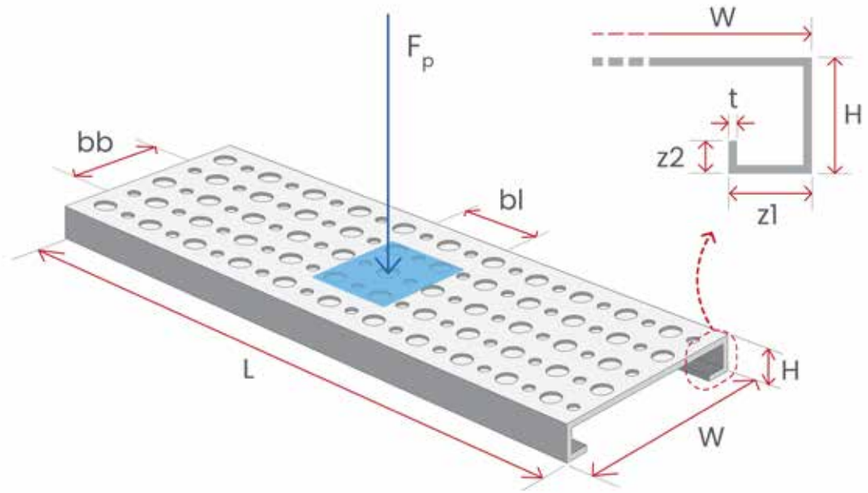


Sustainability is one of Staco's core values. We, but also our clients and partners, are increasingly being judged on sustainability and corporate social responsibility. We keep people, the environment and business interests in mind with every business decision. We continuously invest in economical and environmentally friendly production methods, raw materials and products.

How do we contribute to a more sustainable world?

We save on energy, waste as few resources as possible, use the right materials and chemicals. We also reuse materials, save on water consumption and comply with Social Fairness, such as international human rights.

As a result, Staco applies the principle of permanent recycling. By using our gratings, panels and treads, you also demonstrate your social commitment and contribute to making our environment sustainable.



Strength analysis

Before ordering perforated panels, it is important to calculate whether the panels have sufficient strength and stiffness for the project. Whether the right panel has been chosen for the right application.

Our online calculation tool is designed to help dimension the perforated panels. It automates the engineering work required to calculate the strength and stiffness of the perforated panels. The document resulting from this calculation summarises all the general technical information related to the calculation and describes the validation tests carried out. An extended version can also be downloaded in PDF format with all specific calculation details, if required.

Reference document based on RAL-GZ 639

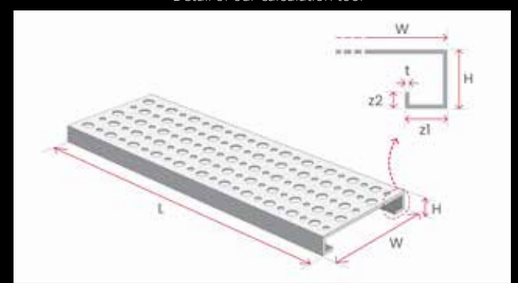
The generated document is intended as a reference document only and goes into more detail on the calculation method followed. The calculations are based on quality standard RAL-GZ 639 and refer to the situation with one span and one load on the perforated panel. The load can be a point load at the centre of the span or a distributed load.

The perforated panels can be made of three different materials: steel, stainless steel and aluminium. By entering a few parameters in the online calculation tool, you get a correct and appropriate advice based on the RAL-GZ 639 and the Eurocode.

This advice and reference document meets the latest static calculation, production and quality requirements set by the RAL for the industry for perforated panels of steel, stainless steel and aluminium. The strength calculation tool should only be used as an assistance tool, no rights can be claimed from the results.

The strength calculation can be found on our website: **staco.eu/en/analysis-tools/srength-analysis-perforated-panels**.

Detail of our calculation tool



Surface treatment & finishing

Hot-dip galvanising

Hot-dip galvanising in accordance with EN ISO 1461:
For protection of our products, the steel gratings, stair treads and fasteners are hot-dip galvanised in one of our own workshops or associated group companies.

For more information on hot-dip galvanising check our website.

Process:

Norm	EN ISO 1461
Degrease	Degreasing bath
Etching	Hydrochloric acid solution
Dipping	Flux solution
Drying/preheating	approx. 100° Celsius
Galvanising	approx. 445° Celsius

Thickness of protection in accordance with EN ISO 1461:

Material thickness in mm.	Zinc coating thickness in Microns (µm)
< 1,5	45
> 1,5 - 3	55
> 3 - 6	70
> 6	85

Colour differences:
After hot-dip galvanising, the colour of the zinc coating may change. This is usually caused by zinc iron alloy elements coming through.

Polyester powder coating

Polyester powder coating according to VISEM quality requirements
To give an extra dimension to our products we can coat our steel galvanised, stainless steel and aluminium products with any required RAL colour. Either in house or with carefully selected powder coating units. We supply in compliance with quality requirements for the industrial application of organic coatings on hot-dip galvanised steel. For more information on polyester powder coating, please visit our website.

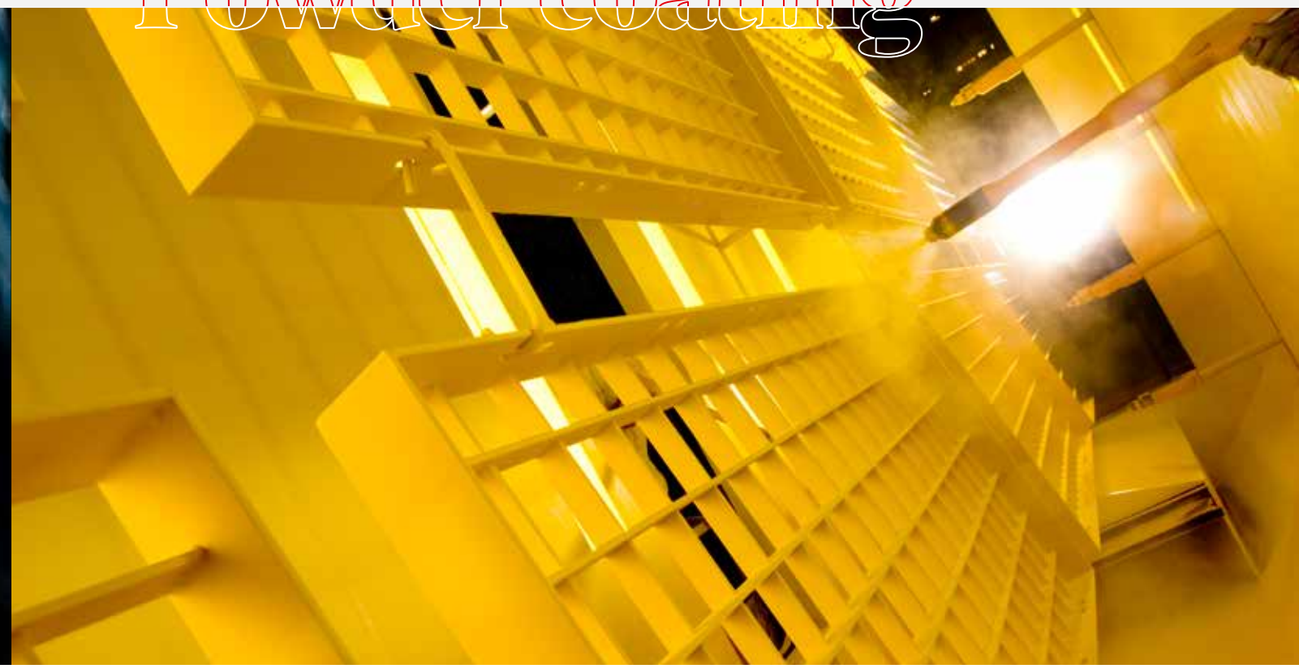
Process:
- Chemical pre-treatment
- Drying where necessary
- Application of coating
- Enamelling

Advice:
In order to maintain a good end result, we always recommend applying a 2-layer coating to an already applied zinc layer for our products.

Maintenance:
It is important that the coating is cleaned regularly to prevent chlorides from adhering to the coating and shortening its working life.

Hot-dip galvanising

Powder coating



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Create & Inspire

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ROTO

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