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COLOURS + SURFACES

COATED, VARNISHED, BLASTED, ANODISED
AND PRINTED METALLIC MESH

GKD - GEBRÜDER KUFFERATH AG

As a privately owned technical weaving mill, we are the world market leader in woven solutions made of metal and plastic. Under the slogan GKD – WORLD WIDE WEAVE, our company groups four independent business divisions: **SOLIDWEAVE** (industrial mesh), **WEAVE IN MOTION** (process belt mesh), **CREATIVEWEAVE** (architectural mesh) and **COMPACTFILTRATION** (compact filtration systems). GKD continuously develops new fields of applications with manufacturing technology and process expertise. We use GKD meshes to create efficient systems, equipment and components integrated perfectly in the customer's process across all industry sectors. With seven plants in Germany (headquarters), USA, United Kingdom, South Africa, China, India and Chile, GKD is close to the markets all over the world. More subsidiaries and worldwide representatives are also available to our customers in France, Spain, Dubai, Qatar and elsewhere.

BUSINESS DIVISION: CREATIVEWEAVE

Under the **CREATIVEWEAVE** brand GKD combines over twenty years of experience with a wide variety of architectural and design meshes. The scope of application is characterised by outstanding aesthetic and functional features: facades are transformed into shimmering building shells, that become sun protection systems with an improved energy balance or semi-transparent wind and rain filters. Sound-absorbing ceilingsystems with improved room acoustics, semi-transparent room dividers structure areas and media facade systems project colour transitions or high-resolution content onto facades day and night. Alongside custom manufacturing, GKD offers system components that comply with standards. Since the beginning of the 1990's GKD has become a growing force in internationally outstanding architectural projects. designers benefit from the company as a creative source of inspiration and a technical innovator.

GKD - PRODUCTS AND SERVICE CLOSE TO OUR CUSTOMERS, ALL OVER THE WORLD.

- 01 GKD GERMANY, Düren (HQ)
- 02 GKD UK, Sherburn in Elmet, Leeds
- 03 GKD FRANCE, La Roque d'Anthéron
- 04 GKD SPAIN, Barcelona
- 05 GKD USA, Cambridge, MD
- 06 GKD LATIN AMERICA, Santiago de Chile
- 07 GKD SOUTH AFRICA, Randfontein
- 08 GKD INDIA, Jaipur
- 09 GKD CHINA, Beijing
- 10 GKD MIDDLE EAST, Dubai
- 11 GKD MIDDLE EAST, Doha



GKD_BU03_COLOURED MESH_PB 01_GB_201403





AGAINST DRABNESS

The Bauhaus school inspired a purism that made white the ubiquitous colour in architecture. Here it was highly common to work with white surfaces; if any additional colour was needed, only grey would be considered. However, modern architecture is an altogether more colourful affair – in order to portray functionalities, represent dynamic change and innovation or forge a connection to nature and the environment. Colour does not have to be bright; rather, the emphasis lies on bringing together colour and form and combining them to form a unit. In modern architecture, colour has become a material – signalling the end of a colourless era. Metallic mesh

was discovered as a colourful and functional design element in architecture around twenty years ago. The project of the Bibliothèque Nationale de France in Paris in the 1990s was the first of its kind. Together with GKD – GEBR. KUFFERATH AG, Dominique Perrault developed deployment options for metallic meshes in the architecture and design fields. Since then, GKD has introduced architectural meshes to a wider range of applications worldwide. The company's innovative capacity and quality are based on decades of experience in manufacturing technical meshes for filtration and separation technology as well as process belt technology.

GKD is the world market leader in this field. Alongside a striking visual effect, metallic meshes also offer an impressive array of functional advantages. Some buildings require an outer shell that permits air transmission – e.g. multi-storey car parks or stadiums – require ventilation. On other buildings, large glass surfaces need to be protected from the sun, driving rain, wind or passers-by looking in. Elsewhere, a connecting outer shell is desired in order to lend surfaces a sense of homogeneity. The robust, high grade metallic mesh is perfect for all these fields of application. Mesh types developed specially for architecture, design and function are

manufactured from cables and wires, which are predominantly made of stainless steel, although other metals such as copper, bronze and aluminium are also used. Different mesh types offer different degrees of penetrability and reflectance, which vary strongly in terms of effect and colour on the building according to lighting and weather. These enable the creation of virtually invisible facades. Depending on the location, coloured coatings produce different impressions and external appearances. A continuous process allows GKD to apply special colour-true varnishes to metallic meshes – with flat and also round wire types.

Title: mesh: ALU 6010, anodised in colour C33, project: Luna Apartments, Australia, architect: Elenberg Fraser / 1st: mesh: Kiwi with digital print / 2nd: mesh: Escale 5x1 anodised in gold, project: Court de Justice, Luxembourg, architect: Dominique Perrault Architectes / 3rd: mesh: Omega 1520 with blasted surface, project: Male & Female Student Housing, Qatar, architect: Treanor Architects / 4th: mesh: Special Escale 50x50 in bronze, project: Synagogue, Munich, architect: Wandel Höfer Lorsch

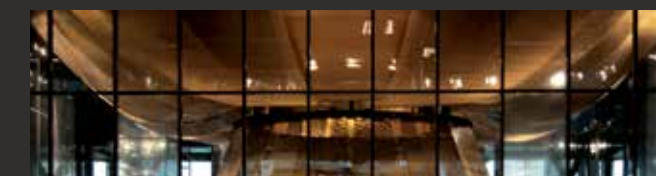
04|05 COATED METALLIC MESH



06|07 VARNISHED + BLASTED METALLIC MESH



08|09 ANODISED ALUMINIUM MESH



10|11 ANODISED ALUMINIUM MESH



12|13 PRINTED METALLIC MESH



14|15 PRINTED METALLIC MESH



The colour samples illustrated in this brochure are not necessarily true reproductions.



AVAILABLE COLOURS

All RAL colours listed below, GKD Gold and Venezia Gold

The blue colour numbers indicate the standard RAL colours, which have a shorter delivery time.

1000	2000	3000		5000	6000	7000		8000
1001	2001	3001	4001	5001	6001	7001		8001 9001
1002	2002	3002	4002	5002	6002	7002		8002 9002
1003	2003	3003	4003	5003	6003	7003		8003 9003
1004	2004	3004	4004	5004	6004	7004		8004 9004
1005		3005	4005	5005	6005	7005	7035	9005
1006			4006		6006	7006	7036	
1007		3007	4007	5007	6007		7037	8007
	2008		4008	5008	6008	7008	7038	8008
	2009	3009		5009	6009	7009	7039	
	2010		4010	5010	6010	7010	7040	9010
1011	2011	3011		5011	6011	7011		8011 9011
1012	2012	3012		5012	6012	7012	7042	8012
1013		3013		5013	6013	7013	7043	
1014		3014		5014	6014		7044	8014
1015		3015		5015	6015	7015	7045	8015
1016		3016			6016	7016	7046	8016 9016
1017				5017	6017		7047	8017 9017
1018		3018		5018	6018			9018
1019				5019	6019			8019
1020		3020		5020	6020			
1021				5021	6021	7021		
		3022		5022	6022	7022		8022
1023				5023		7023		8023
1024				5024	6024	7024		8024
					6025			8025
					6026	7026		
1027		3027		6027				
1028				6028			8028	
				6029				
						7030		
		3031				7031		
1032				6032	7032			
1033				6033	7033			
				6034	7034			

COLOURS FOR SPECIAL EFFECTS

All colours listed in the following. These colours can only be used indoors.

1035	2013	3032	4011	5025	6035	7048	8029	9006
1036		3033	4012	5026	6036			9007
								9022
								9023



Mesh: Escale 7x1 painted green, project: St. Pölten orientation system, architect: Zieser

COATED METALLIC MESH

Coloured metallic meshes open up a wide range of colourful architectural textures for planners. GKD uses a special continuous process for colour-coating both flat and round wires. During this continuous process, high-grade special varnishes are applied and heated to create a powerful bond. The continuity of the process allows any quantity of wires to be permanently colour-coated and, depending on the mesh, enables dimensions weavable by GKD of up to 8 metres and virtually any length to be realised. Stress tests carried out by an independent institute guarantee the durability of the material.

Spiral and cable meshes can be coated in a variety of stylish colours: black, white, red and gold are available as standard, and custom colours, i.e. any RAL colour, are also available to anyone ordering large quantities. Practical analysis methods can be implemented for assessing colour accuracy. Other influencing factors such as the background, viewing distance and viewing angle as well as lighting and

light reflections on the mesh have a particularly significant effect on the structure and mounted object. The influences can be further strengthened through these effects and constantly changing light conditions, such as daylight with varying sun positions and cloud cover, or artificial light from different light sources.

TYPES OF MESH:

Cable mesh: Baltic, Lamelle, Lago, Omega, Sambesi, Tigris (only wire is coated, cables remain uncoated); spiral mesh: Escale 5x1, Escale 7x1 (only spirals are coated, connecting wires remain uncoated); PC mesh: PC Omega (all wires are coated). The maximum diameter of stainless steel wires that can be coated is 3 mm. The maximum diameter of aluminium wires that can be coated is 4 mm (for Escale 5x1 in aluminium).

DIMENSIONS:

All weavable dimensions

POSSIBLE COLOURS:

See left-hand flap

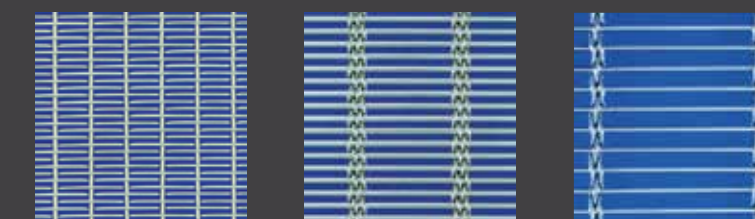
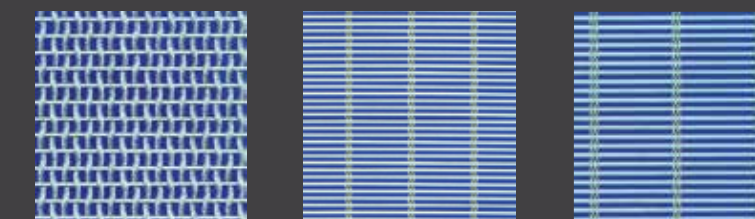
SUITABLE MATERIALS:

Stainless steel and aluminium

APPLICATIONS:

Suitable for both indoor and outdoor applications

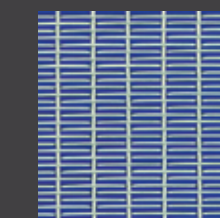
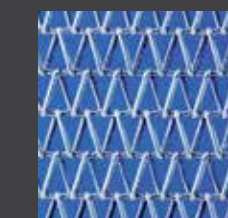
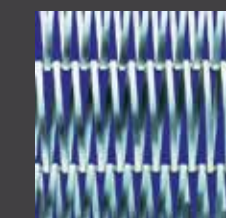
Cable mesh: Baltic, Lamelle, Lago, Omega, Sambesi, Tigris



Escale

Licorne

PC mesh



*1 The colour samples illustrated in this brochure are not necessarily accurate.

TYPES OF MESH:

PC mesh, aluminium mesh

DIMENSIONS:

6.00 x 2.50 m

POSSIBLE COLOURS:

All NCS colours possible. Customer colour samples can also be analysed and duplicated. A special coding procedure allows the same colour to be reproduced at any time.

APPLICATIONS:

Suitable for both indoor and outdoor applications



Mesh: Omega 1540 with coated logo, project: RAIKA Bruck, architect: Architekturbüro Tschom

PAINTED METALLIC MESH WET COATING PROCESS

In wet coating, ready-cut meshes are subsequently coated using a paint spraying process. Primarily PC mesh with a size of up to 6 x 2.50 m can be completely coated on one or both sides using this procedure.

During this process, wet varnish is sprayed onto the work-pieces using spray guns. This allows an even coating of the mesh with a high surface quality. As well as using the colours of the Natural Colour System® (NCS), it is also possible to analyse individual colour samples from the customer and

reproduce them as varnish. Furthermore, the comprehensive range of colours used by the automobile industry can be used to produce metallic effects. Wet-coated meshes are suitable for both indoor and outdoor applications.

TYPES OF MESH:

Relatively dense mesh types are best suited, for example Omega 1510 or Omega 1520

DIMENSIONS:

All weavable dimensions up to 7.80 m wide

APPLICATIONS:

Suitable for both indoor and outdoor applications



Mesh: Omega 1520 with blasted surface, project: Male & Female Student Housing, Qatar, architect: Treanor Architects

ETCHING ABLATION PROCESS

Etching is a process that transfers graphic elements onto a metal surface. Because the graphic elements are etched directly in to the surface, it is weather-resistant, durable, and fade-resistant. The result is stunningly attractive and unique.

Presenting a high quality image, these etched material fabrics also preserve the transparency elements. Daylight comes through and can be seen; add lighting and the effects are endless. The etching process begins with graphic files created in an AutoCAD program. These files are used to create

masks which are then transferred onto grids and applied to the metal fabric for etching. Almost any design can be etched using this process. Results are unique and artistic, with appearance changing as the viewing and lighting angles change and as daylight yields to night.



SANODAL 4N GOLD
0,5 min*1

SANODAL 4N GOLD
5 min*1

SANODAL 4N GOLD
15 MIN*1

Mesh: Canisse with golden anodised wires, project: Bungalow, Stuttgart, architect: Dongus Architekten

ANODISED ALUMINIUM MESH CONTINUOUS PROCESS

Aluminium is the ideal material for designing facades. The lightweight metal has a low, specific weight while at the same time offering high strength and good corrosion resistance properties. When exposed to air, aluminium gradually forms a natural protective layer that protects it from corrosion and gives it a matt-grey appearance. However, aluminium profiles or plates in facades are usually anodised to protect them from environmental influences and mechanical effects.

GKD uses anodisation in a continuous process for coating flexible meshes. Here, an oxide coating is created on the metal using an electrochemical process. In contrast to the batch process (page 10/11), in this continuous process the wire is anodised prior to the actual weaving process and subsequently coloured. Even flexible colouring is possible by interweaving differently coloured wires. Alongside its deco-

orative properties, this type of coating also guarantees protection against environmental influences such as UV radiation, temperature deviations or mechanical effects. A 6 to 12 μm -thick layer is formed that protects the aluminium from corrosion. Thanks to this layer thickness, the shades of gold pictured above can be used both indoors and outdoors.

*1 The colour samples illustrated in this brochure are not necessarily true reproductions.



Mesh: Escale 5x1 anodised in gold, project: Cour de Justice, Luxembourg, architect: Dominique Perrault Architectes

TYPES OF MESH:

Escale 5x1, Escale 7x1, Omega (only the aluminium wires can be anodised), Tigris (only the aluminium wires can be anodised, 4 mm wire diameter required for reasons of stability)

DIMENSIONS:

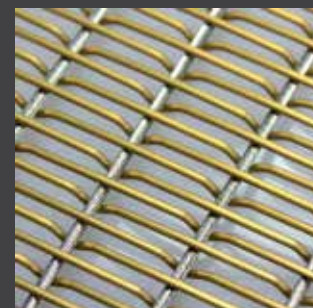
All weavable dimensions

POSSIBLE COLOURS:

Only in the colour „Gold Sanodal 4N“ for indoor and outdoor applications. Colour tolerances are possible due to the production process.

APPLICATIONS *1:

Suitable for both indoor and outdoor applications



MESH TYPE: Omega 1520
COLOUR: Golden anodised
aluminium in weft wires
OPEN AREA: 50.6%
WEIGHT: 2.6 kg/m²



MESH TYPE: Tigris
COLOUR: Golden anodised
aluminium in weft wires
OPEN AREA: 55.5%
WEIGHT: 3.0 kg/m²



MESH TYPE: Escale 7x1
COLOUR: Golden anodised
aluminium in spirals
OPEN AREA: 36%
WEIGHT: 3.90 kg/m²

These meshes are only an exemplary selection; more types are available (see **TYPES OF MESH**).

*1 Outdoor applications: The combination of aluminium / stainless steel can lead to contact corrosion



Mesh: ALU 6010, anodised in colour C33, project: Luna Apartments, Australia, architect: Elenberg Fraser

TYPES OF MESH:

Escale 5x1, Escale 7x1, ALU 6010, ALU 3540, Omega (only the aluminium wires can be anodised), Tigris (only the aluminium wires can be anodised, 4 mm wire diameter required for reasons of stability)

DIMENSIONS:

In accordance with the maximum tank size: 6.50 x 1.45 m

POSSIBLE COLOURS:

See left page

Applications*1:

Suitable for both indoor and outdoor applications



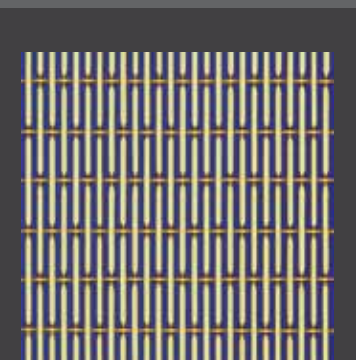
Mesh: ALU 6020, anodised in gold, project: Cour de Justice, Luxembourg, architect: Dominique Perrault Architectes

ANODISED ALUMINIUM MESH BATCH PROCESS

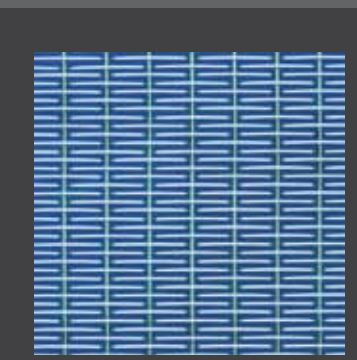
Similarly to the continuous procedure, the batch process is also an electrochemical process for creating a protective layer on the aluminium wires. However, this method differs in that it is only suitable for comparably rigid mesh types. The interwoven material is divided into mesh sections and immersed in individual tanks, where the divided and pre-assembled panels undergo various coating stages in a static tank system.

As is the case in the continuous process, the mechanical or chemical pre-treatment is retained: the aluminium parts are degreased and stained. For this purpose the thin, natural oxide layer of the aluminium is removed and a clean, matt, smooth surface is created. After further cleaning steps, the aluminium parts can then be coloured using a special batch procedure. The protective mechanisms for the treatment

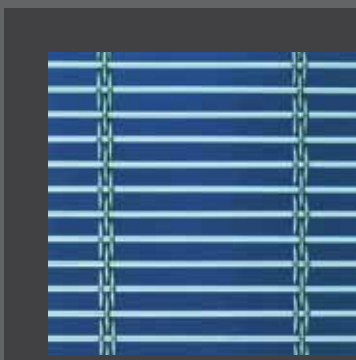
are the same here as for the continuous coating process and can be further reinforced by adding additional layers. What's more, the oxide layers created can also be given highly individual properties with the selection of different electrolytes and bath parameters such as temperature, aluminium content, etc. This allows us to meet a wide range of customer requirements.



MESH TYPE: ALU 6010
OPEN AREA: 45.7%
WEIGHT: 2.5 kg/m²



MESH TYPE: PC Omega 1520 in aluminium
OPEN AREA: 50.6%
WEIGHT: 2.25 kg/m²



MESH TYPE: PC Tigris in aluminium
OPEN AREA: 36%
WEIGHT: 2.40 kg/m²

*1 The colour samples illustrated in this brochure are not necessarily true reproductions.

*1 Outdoor applications: The combination of aluminium / stainless steel can lead to contact corrosion



Mesh: Omega 1505 with screen print, project: Liverpool Catholic Club, Australia, architect: Wood & Day Partnership

TYPES OF MESH:

Flat and dense mesh types are best suited, for example Omega 1510, Omega 1520, Lamelle, Lago, Kiwi or ALU 6010

DIMENSIONS:

Max. 4.00 m wide x approx. 10.00 m long

POSSIBLE COLOURS:

All colours can be printed. As blended colours cannot be printed, screen printing is more suited to full-surface graphics.

APPLICATIONS:

Suitable for both indoor and outdoor applications



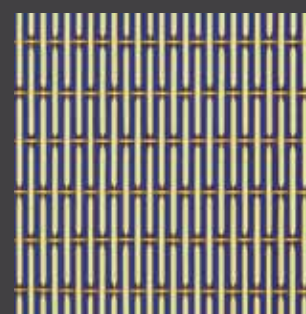
Mesh: Baltic, project: Bulthaup, Seoul, architect: San Architects

PRINTED METALLIC MESH SCREEN PRINTING PROCESS

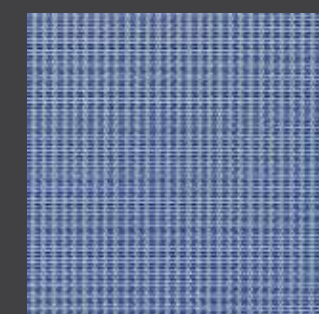
Complex graphics on metallic meshes in outdoor deployments – such as facades – are applied using the screen printing technique. Depending on the application, the print format ranges from a few centimetres to several metres. One advantage of screen printing lies in the ability to vary the colour application by using different grades of mesh fineness. This results in very thick paint layers – five to ten times thicker than other printing methods.

The paint is applied on the mesh by a template on a frame; the paint hardens under UV light. Areas which are not to be printed are covered by the template. The desired print motif is thereby reproduced on the surface of the metal. This process

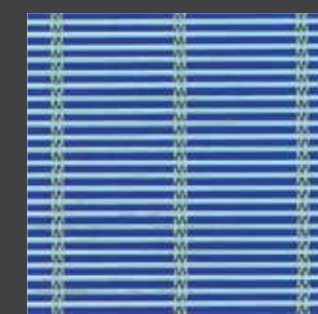
creates a very thick paint layer, making screen-printed meshes perfect for indoor and outdoor applications. Prints with a maximum dimension of 4 m of width and 10 in length can be applied to the mesh in a single process.



MESH TYPE: ALU 6010
OPEN AREA: 45.7%
WEIGHT: 2.50 kg/m²

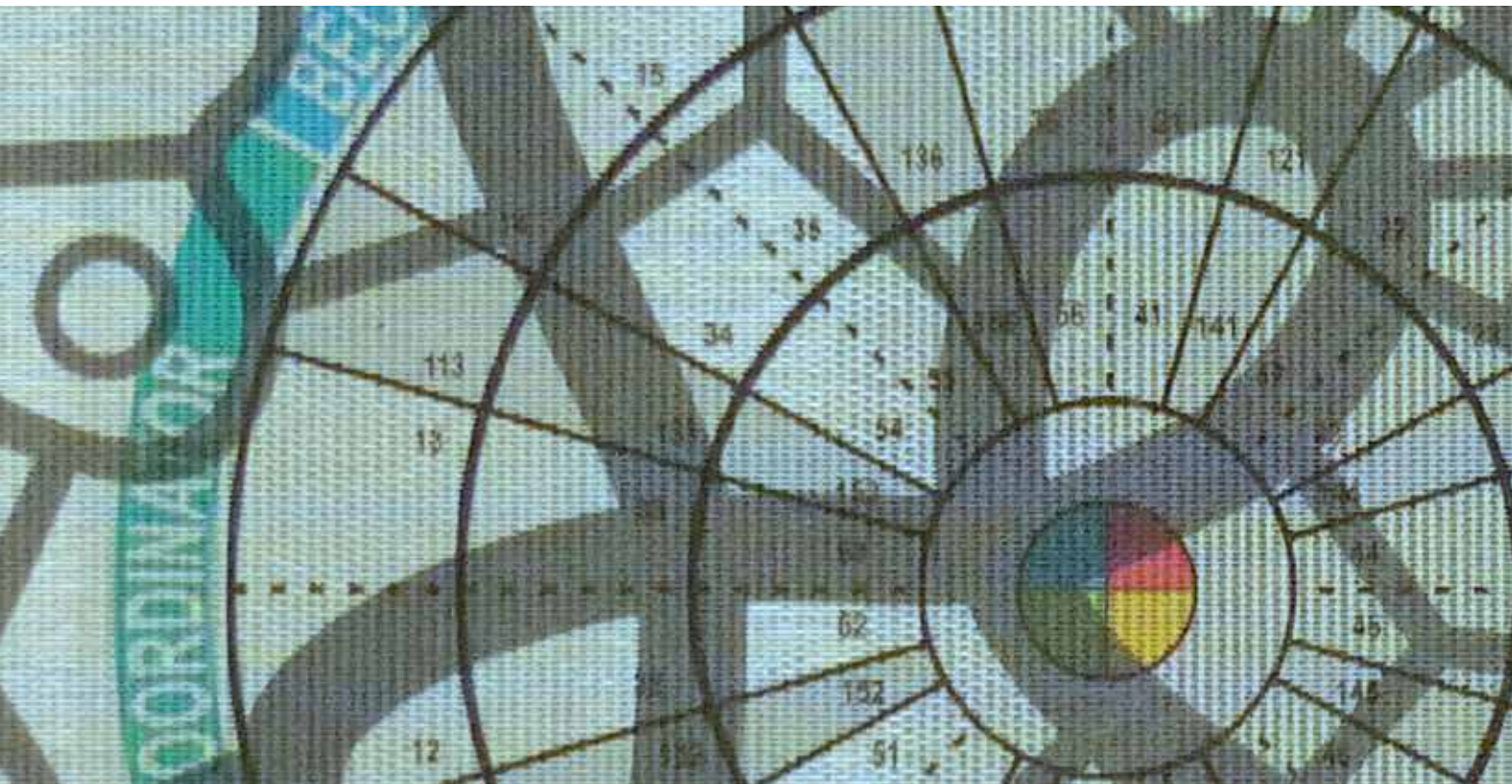


MESH TYPE: Kiwi
OPEN AREA: 37.2%
WEIGHT: 2.30 kg/m²



MESH TYPE: Lago
OPEN AREA: 44%
WEIGHT: 6.80 kg/m²

These meshes are only an exemplary selection; more types are available (see **TYPES OF MESH**).



Mesh: Kiwi with digital print

TYPES OF MESH:

Flat and dense mesh types are best suited, for example Omega 1510, Omega 1520, Lamelle, Lago, Kiwi or ALU 6010

DIMENSIONS:

Max. 2.50 m wide x approx. 20.00 m long, ALU 6010
Max. 3.00 m x 2.50 m

POSSIBLE COLOURS:

All colours excluding white can be printed in a single process. If a white background is desired, this has to be applied in a separate printing pass prior to the main printing process. If the colour white is not printed in an extra pass, all „white“ areas remain unprinted, producing a stainless steel look.

APPLICATIONS:

Suitable for indoor applications. Not recommended for outdoor applications.



Mesh: Omega 1510 with screen print, project: Billiton Perth, Australia, architect: Hassell Studio

PRINTED METALLIC MESH DIGITAL PRINTING METHOD

Alongside the various methods for printing solid coloured mesh surfaces, UV direct printing allows complex graphics and even photographs with fine colour gradients to be printed onto meshes. Thanks to its structure and surface, the printed mesh is generally wind-permeable and robust in all weather conditions regardless of the weave type.

The digital printing process can be used to print mesh sheets up to 2.50 metres wide and 20 metres long. The motif is applied to the surface of the mesh using a large-format printer and is then immediately hardened with ultraviolet light. Therefore, the ink does not dry out through the ambient air – as is the case on paper – but is rather hardened immediately after its application. With mesh types such as Omega,

Lamelle or Lago this produces impressive results. If the motif to be printed has a white background, the mesh surface is printed white in the first printing pass and the actual motif is applied in a second pass. GKD uses metallic mesh printed using a digital printing process solely for indoor applications. UV technology produces the best matt or glossy effects or a combination of the two.

WHICH GRAPHICS OR PHOTOS CAN BE PRINTED?

All graphics and photos can be printed providing the following conditions are met:

Software up to following version:

Software	up to version	vector	pixel
Adobe Indesign	CS5	*.indd, *.pdf, *.eps	*.indd, *.pdf, *.eps
Adobe Illustrator	CS5	*.ai, *.eps, *.pdf	*.ai, *.eps, *.pdf, *.jpeg, *.tiff
Adobe Photoshop	CS	→ not available	*.psd, *.jpeg, *.tiff
Acrobat X Pro	CS5	→ not available	→ not available
Corel Draw	13	*.crd, *.eps, *.pdf	*.crd, *.eps, *.pdf, *.jpeg, *.tiff

Images must always be saved and used in CMYK, greyscale or bitmap mode. The image resolution should be 150 dpi for a 1:1 placement for CMYK and greyscale. Files with the CMYK, RGB or LAB colour spaces can be provided.