

FACADES, SAFETY AND
INTERIOR DESIGN MADE
OF METAL FABRICS



COLOURS + SURFACES

COATED, VARNISHED, BLASTED, ANODISED
AND PRINTED METALLIC MESH





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 co-

lourless 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.



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 Architects / **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 Lorch

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

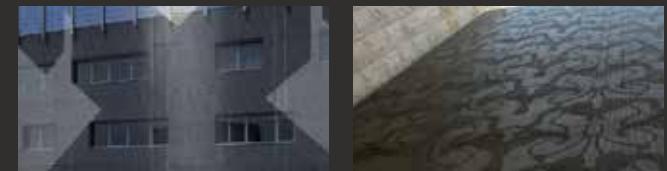
manufactured from cables and wires, which are predominantly made of stainless steel, although other metals such as copper, bronze and aluminium are also used. Different mesh types offer different degrees of penetrability and reflectance, which vary strongly in terms of effect and colour on the building 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.

* Further information on this issue is available from our brochure „Solar control with metal mesh“. The colour samples illustrated in this brochure are not necessarily true reproductions.

04|05 COATED METALLIC MESH



06|07 VARNISHED + BLASTED METALLIC MESH



08|09 ANODISED ALUMINIUM MESH



10|11 PRINTED METALLIC MESH



12|13 PRINTED METALLIC MESH



14|15 A SELECTION OF PROJECTS

Further brochures on architecture + design are available on our website:

- > SOLAR CONTROL WITH METAL MESH
- > CEILING SYSTEMS MADE OF METAL MESH
- > SAFETY MADE OF METAL MESH
- > TRANSPARENT MEDIA FACADES
- > COLOURS + SURFACES
- > PICTUREBOOK



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		5016	6016	7016	7046	8016	9016
1017		3017		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				
	3031					7030			
						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	



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 (slight colour variations are possible)

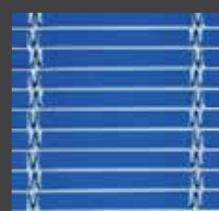
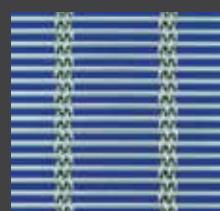
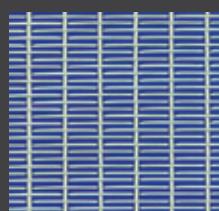
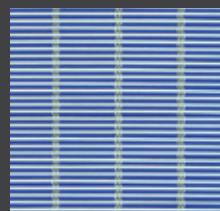
SUITABLE MATERIALS:

Stainless steel and aluminium

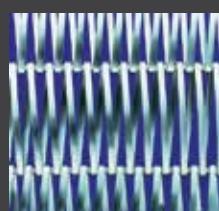
APPLICATIONS:

Suitable for both indoor and outdoor applications

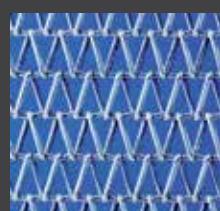
Cable mesh: Baltic, Lamelle, Lago, Omega, Sambesi, Tigris



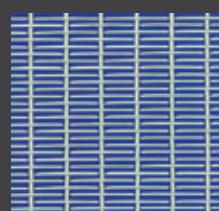
Escale



Licorne



PC mesh



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 cus-

tomer 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 into 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.

C35*¹C34*¹C33*¹C32*¹C31*¹EV3*¹EV2*¹EV1*¹

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

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.

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

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

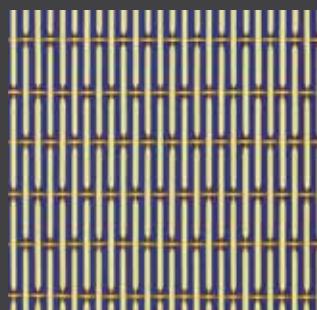
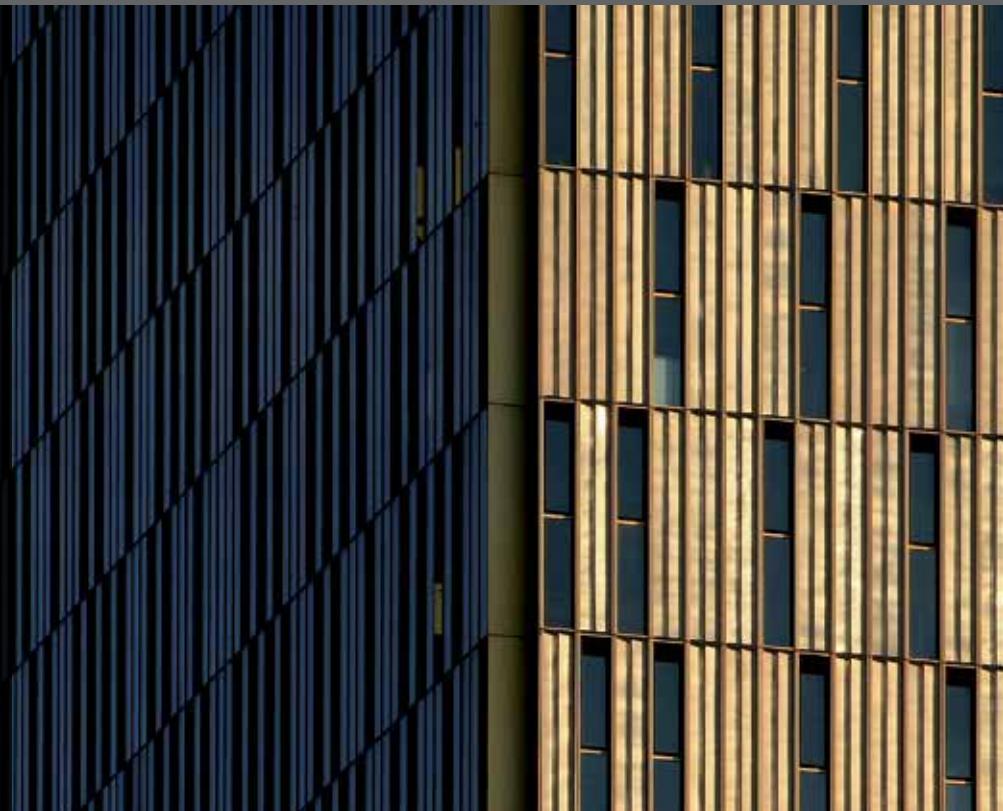
POSSIBLE COLOURS:

See left page, Variations in colour are unavoidable due to production processes.

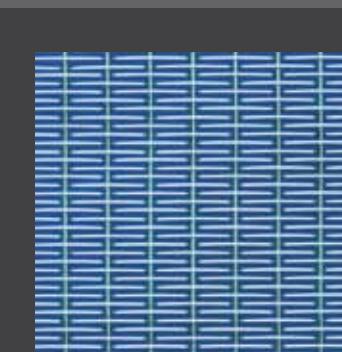
Applications^{*1}:

Suitable for both indoor and outdoor applications

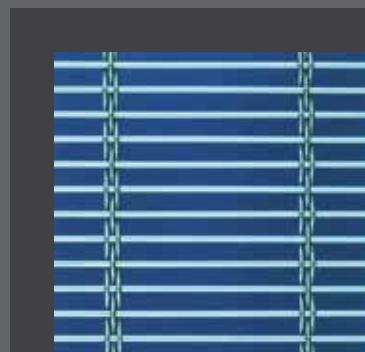
Mesh: ALU 6020, anodised in gold, project: Cour de Justice, Luxembourg, architect: Dominique Perrault Architectes



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: 65%
WEIGHT: 2.40 kg/m²

^{*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

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 20 m in length can be applied to the mesh in a single process.

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:

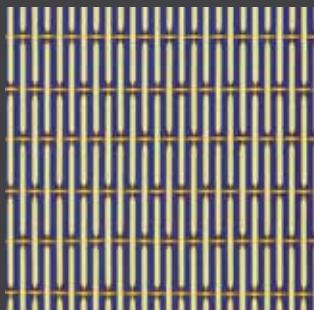
All colours can be printed. As blended colours cannot be printed, screen printing is more suited to full-surface graphics.

APPLICATIONS:

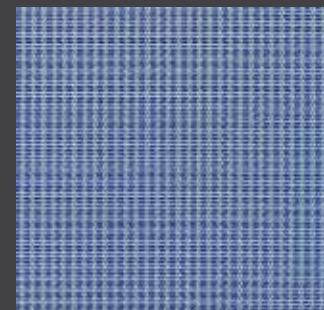
Suitable for both indoor and outdoor applications



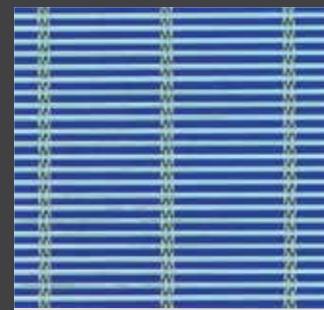
Mesh: Baltic, project: Bulthaup, Seoul, architect: San Architects



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

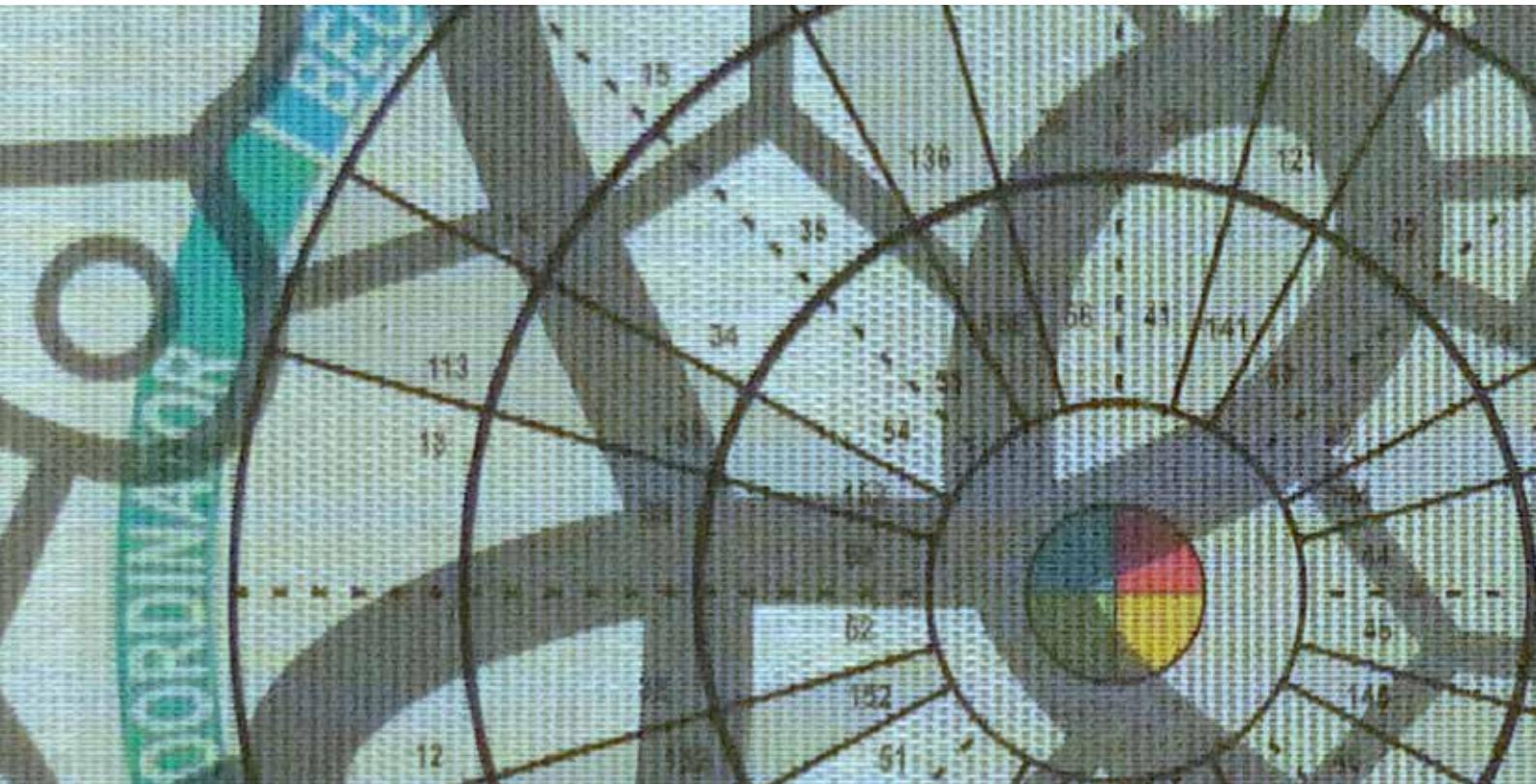


MESH TYPE: Kiwi
OPEN AREA: 37.2%
WEIGHT: 2.30 kg/m²



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

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.

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 1520, printed, project: WZT Therapy Center, Freiburg

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	CC	*.indd, *.pdf, *.eps	*.indd, *.pdf, *.eps
Adobe Illustrator	CC	*.ai, *.eps, *.pdf	*.ai, *.eps, *.pdf, *.jpeg, *.tiff
Adobe Photoshop	CC	-> not available	*.psd, *.jpeg, *.tiff
Acrobat X Pro	CC	-> not available	-> not available
Corel Draw	13	*.cdr, *.eps, *.pdf	*.cdr, *.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.

COLOURS AND SURFACES

A SELECTION OF PROJECTS



SAMSUNG PARKING GARAGE, SAN JOSE, USA

Metal fabric façade at the new Samsung HQ in Silicon Valley: the architects at NBBJ selected Omega 1520 architectural fabric from GKD to clad the 3,345 m² façade. The stainless steel mesh was printed by GKD using a special color-coating process. The graphic design provided by Samsung is reminiscent of electrical circuits on PCBs – a great example of corporate architecture.

RAIFFEISEN-LANDESBANK, RAABA, AUSTRIA

The bank's new multi-functional center received the "Gold Certificate" from the Austrian Sustainable Building Council (ÖGNB), one reason for this being its exterior shading. A total of nine GKD metal fabric panels protect the building from direct sunlight and give the structure its individual character. Not least due to the large-format bank logo that was applied to the semi-transparent metal fabric and can be viewed from a great distance. GKD's Fusiomesh system was used for attachment.



CCLRT WESTBANK STATION, MINNEAPOLIS, USA

Art, architecture, and solar protection come together in a unique metal fabric façade. Designs created by artist Nancy Blum were applied to the Omega 1510 metal fabric using the etching process. In combination with large-format motifs made of stainless steel, migratory birds symbolize the region's eventful immigration history. The multi-functional solar protection façade shields the large glazed area of the two-story building from unpleasant heat in summer without restricting the use of daylight or transparency.



NEW WORLD SYMPHONY, MIAMI, USA

A GKD special fabric with round wires was used for the façade of the parking garage at the New World Symphony, the renowned concert hall in Miami Beach, USA, that was designed by architect Frank Gehry. The special Helix 12 spiral fabric was woven specifically in accordance with the specifications defined in the project for its many and varied applications. The almost 2,500 m² façade of the parking garage, consisting of 49 wire mesh panels in total, is illuminated in color by ground-mounted LED luminaires and functions as both a semitransparent eyecatcher and a multifunctional building shell.

BMW DEALERSHIP, NEW YORK, USA

Façade cladding with large company logo: the desired logo was applied permanently to a large area of the Omega 1510 fabric using GKD's etching process to ensure visibility. Just over 562 m² of mesh, comprising 19 individual elements, dynamically change the appearance of the façade through alternating sun reflections and lighting at night. The logo applied can always be clearly seen.



TENCENT HEADQUARTERS, SHENZHEN, CHINA

Some 1,850 m² of gold-colored metal fabric (28 panels, each measuring 16.5 m x 4 m) in a specially developed fabric design enhance the HQ of Internet giant Tencent. The decorative cladding of the public atrium also serves as reliable fall guard protection. Installed above the lobby, the transparent architectural fabric grants unencumbered views from the entry hall to the higher floors and vice versa. The new Tencent headquarters were designed by the renowned NBBJ architecture firm from New York.



WORLD WIDE WEAVE

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www.gkd.de

GKD - GEBR. KUFFERATH AG

As a privately owned technical weaver, GKD-Gebr. Kufferath AG is the world market leader in metal, synthetic and spiral mesh solutions. Four independent business divisions bundle their expertise under one roof: **INDUSTRIAL MESH** (woven metal mesh and filter solutions), **PROCESS BELTS** (belts made of woven mesh and spirals), **METALFABRICS** (façades, safety and interior design made of metal fabrics) and **MEDIAMESH®** (transparent media façades). GKD continuously develops new fields of application through its manufacturing technology and process expertise. We use GKD meshes to create efficient systems, equipment and components that are perfectly integrated into our customers' processes across all industrial sectors. GKD is active on the international stage from its headquarters in Germany, five further production sites in the US, South Africa, China, India and Chile, as well as branches in France, Spain, Dubai and representatives all over the world.

BUSINESS UNIT: METALFABRICS

With top quality metal fabrics and design mesh, GKD combines aesthetics with function, experience with innovation. Whether custom metal fabrics or standardized system components, planners and architects have been benefiting from our creative impulses and technical innovations for more than 20 years – also in internationally outstanding architectural projects. The design options in terms of shapes, colors and surfaces ensure unique façade designs. Building shells become energy-efficient solar protection systems that can be adjusted for different times of the day. Bright LED media façades display high resolution content. Sound-absorbing ceiling systems improve room acoustics, while semi-transparent room dividers help structure interior designs. Roll-up doors offer effective burglary protection. GKD's diverse product portfolio offers the right solution for a very wide range of architectural applications.

CLOSE TO THE MARKET AROUND THE GLOBE.

- ① GKD GERMANY, Düren (headquarters)
- ② GKD FRANCE, La Roque d'Anthéron, Croisilles
- ③ GKD SPAIN, Barcelona
- ④ GKD USA, Cambridge, MD
- ⑤ GKD LATIN AMERICA, Santiago de Chile
- ⑥ GKD SOUTH AFRICA, Randfontein
- ⑦ GKD INDIA, Jaipur
- ⑧ GKD CHINA, Beijing, Qufu
- ⑨ GKD MIDDLE EAST, Dubai

