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fabric&light

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S E F A R



Building on the effect of light: With fabrics by Sefar

Light influences our moods, emotions, expressions, and atmosphere. Designs which utilize both natural and artificial light sources are something of a balancing act. But with fabrics and systems by Sefar, this can be easily accomplished.

Zurich Airport, Switzerland. Architect Florin Baeriswil, Zurich, cleverly creates atmosphere and a much greater sense of space in a ceiling with low overall height. The light ceiling made with SEFAR LIGHTFRAME® and SEFAR® Architecture IA-80-CL opens the spatial effect upwards despite low headroom. An effect that is often desirable.



We weave light

In the Swiss town of Heiden, Sefar has been developing outstanding solutions with technical fabrics since 1830. Sefar products have applications in a wide range of industries from electronics, printing, medicine, automobiles, foodstuffs, and pharmaceuticals right up to the aerospace industry, mining, refining, and architecture. The Sefar Group uses its fabric expertise to support architects, planners, and construction companies in achieving optimum results.



New lighting standards for architects and specialist planners

The design possibilities when using fabrics in construction are endless – and for planners and designers are very attractive, as countless awards prove.

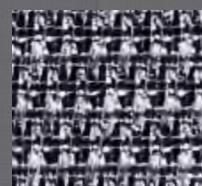
Fabrics add a gentle and tangible softness to solid construction materials such as concrete, glass, and metal.



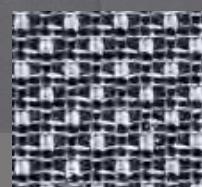
Their spectral transmittance and reflectance are valuable, unique selling points – and offer new lighting solutions for museums, reception areas, showrooms, offices, and public buildings.

Thus Sefar continues to drive innovative design development with the easy-to-install systems SEFAR LIGHTFRAME® and SEFAR® LIGHTCEILING.

Sefar's expertise begins with the right choice of yarn. Today, Sefar weaves high-tech, precision yarns into specific architecture fabrics in-house. Finished and suitably coated, these give astounding aesthetic and functional benefits to both interior and exterior applications. Experience light and acoustics in a new textile dimension.



Transparent PVDF yarn with twill weave



Transparent PVDF yarn finished with plain weave



PTFE yarn finished with plain weave



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Städel Museum, Frankfurt am Main, Germany. The central design element in this concept created by Frankfurt-based architect's office Schneider + Schumacher are 195 ground-level skylights, double-covered with SEFAR® Architecture IA-80-CL, which ingeniously pick out the topography of the garden.

We love it pure

Light-technical and acoustically effective fabric

Using textiles in construction has many advantages, and light-technical fabrics by Sefar always impress with their sound absorption qualities without any loss of light quality.

Light transmission rates of up to 85 % with minimal color shift are considered ideal. Unlike glass with light scattering of below 2 %, Sefar fabric can diffuse light from a single source extensively – whether the light source is natural or artificial. The positive result is clearly visible: an even illumination and greatly reduced contrasts, especially in shadow zones.

Together with lighting specialists and polymer experts, Sefar has developed corresponding fabric structures and special finishing and coating techniques to satisfy the highest aesthetic and functional expectations. Colors and spatial impressions appear pure and unadulterated. Valuable exhibits remain true to the original, bathed in a gentle light. Homogeneous, fluoropolymer-based fabric and coating technologies ensure an impressive visual appearance when surfaces are back-lit – for example, in galleries and museums, libraries, public places, and working areas. Back-lit fabric ceilings give the appearance of illuminated surfaces. And where protection from light is necessary, this is provided at all times thanks to the textile structure.

Atmosphere with a light touch

Equally important to many planners are the added benefits of Sefar fabrics. They have a positive influence on spatial acoustics thanks to the micro-perforated/open mesh fabric type.

The fabrics are UV resistant, will not yellow, are extremely robust and durable, contain no plasticizers and are almost VOC-free. They are available in bespoke designs for the different systems used by Sefar.

SEFAR LIGHTFRAME®

Modular fabric/frame system

Designed to optimize spaces and buildings without affecting the overall impression. Fast and easy to install.

The SEFAR LIGHTFRAME® System meets the highest aesthetic demands. The system combines ultra-thin modular frames with crease-free and extremely light-transmissive SEFAR® Architecture Fabric. A translucent double membrane is created by two separate layers, tensioned in both directions, which together with the frames is easy to install on-site in a short amount of time.

In this way, large areas can be quickly and permanently covered with an overall floating ceiling effect. Based on various profile types, different geometric shapes can be created for the individual light modules.

Thanks to an unobtrusive frame, the overall optical effect is preserved and the existing spatial characteristics retained.

Light alloy frames invisibly incorporate both the tensioning device and the fabric edges, while brackets, light fittings, and cables are housed in a special technical track.

The two-layer system is sealed so that dust and bugs cannot reach the fabric. A variety of light sources can be installed invisibly behind the panels. The visible side has an acoustically-active layer and the spatial effect is correspondingly gentle and flattering.





AUDI Dealership, New York, USA. Acquiring a new car is associated with emotions such as appreciation, confidence-building and excited anticipation. The requirements laid down by the client and the architects from CR Studio New York were therefore exacting. With SEFAR LIGHTFRAME® modules and SEFAR® Architecture IA-85-OP fabric, a convincing aesthetic and light-technical solution was achieved. The concept for this spacious showroom, in which clients take delivery of their new Audis, is a reduction to the bare essentials. Discreet and intentionally minimalist, the SEFAR LIGHTFRAME® wall and ceiling panels, covered with particularly translucent fabric, focus attention on the vehicle while at the same time contributing to optimal spatial acoustics.

Assembly/Maintenance

For inspection purposes, replacement of artificial light sources, or cleaning, the individual modules are simply folded down vertically.

A flowing sky – assembled completely on-site

Designed to create a translucent effect across its large surface area and optimize the use of daylight.

Large illuminated surfaces always create optical challenges for discerning planners and the manufacturers they commission. The SEFAR® LIGHTCEILING System, however, allows for membrane panels up to 10 x 25 m in size.

By means of fixing components, the system is virtually invisible on the main structure, e.g., secured to steel or concrete and tensioned to be crease-free.

A hinged, continuous tensioning rail ensures safe and simple installation.

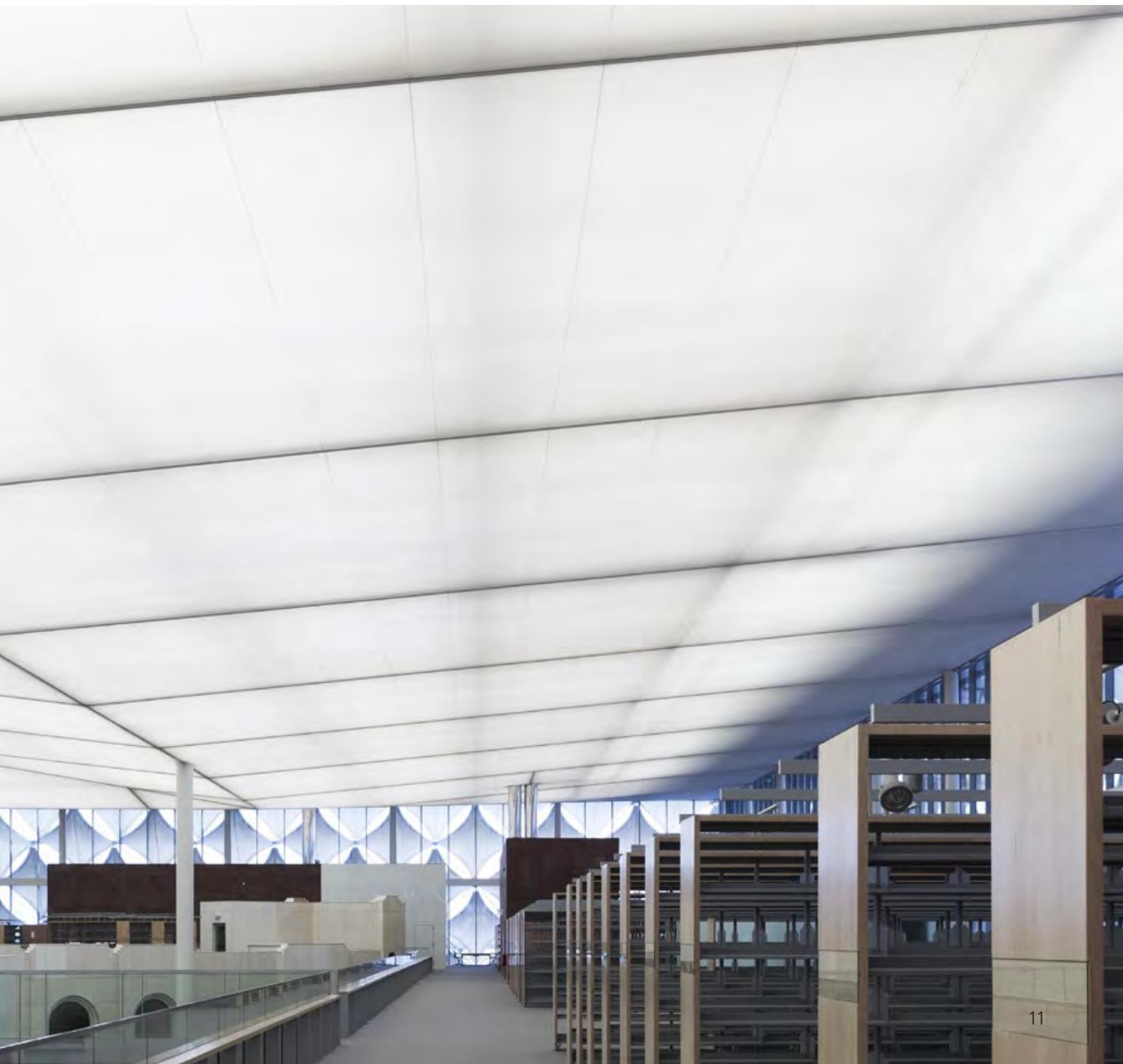
The membrane fields, which have been made to measure, are inserted into the tensioning tracks on-site directly from the floor. In this way, the seams of two adjacent membrane fields can be precisely aligned once installed.

The visible structure is a distinctive characteristic of this system, which is also much appreciated when installation conditions are difficult.



SEFAR® LIGHTCEILING

King Fahad National Library, Riyadh, Saudi Arabia. «No heavy-duty ceiling, but a sky of glare-free light and optimal acoustics» – these were the exacting requirements laid down by Gerber Architekten International GmbH, Berlin. The requirements were met by SEFAR® LIGHTCEILING panels measuring 10 x 25 m and SEFAR® Architecture IL-80-OP light technical fabric.





Louis Vuitton Store, Singapore. Maritime lightness, graceful elegance, and nautical flair enveloped by generous glass fronts are characteristics of the first Louis Vuitton store in South Asia, designed by New York-based interior architect Peter Marino. Particular attention was paid to the protection of the luxury items from intensive sunlight.

For this reason, the cassette elements covered with SEFAR® Architecture EH-35-T2 that are used to protect the precious materials, fabrics and leather articles from too much intensive light and to provide the store with sufficient natural light for a warm and welcoming shopping ambiance, are custom-made.

The decisive advantage: Light transmission

SEFAR® Architecture Fabric can scatter a light source extensively, achieving light transmission rates of $\geq 85\%$. The high proportion of diffuse light (scattered light) ensures uniform illumination and weakens contrasts significantly, especially in areas of shade.

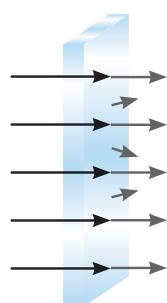
Sefar uses fluoropolymers – an enormously valuable and high-quality material – in the utilization of light sources. Unlike PVC, polyester, and coated fibreglass fibers, fluoropolymer fibers boast a very high level of light transmission.

PVDF fabric scatters, reflects, bends, and breaks incoming light, but never blocks it out.

Once installed, the fabric itself appears to be the light source, functioning as a diffuser for daylight or artificial light.

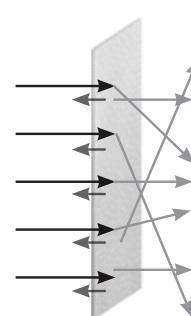
Depending on the fabric chosen, the character of the textile can be heightened or softened. The opportunities for aesthetic and functional interior lighting concepts are endless: Structures with lighting and back lighting, light scene control with programmable lighting moods, and even a color temperature control with dynamic scene sequence.

Comparison of light transmission – glass and fabric



Glass

has a weak light-scattering surface.
Diffuse light amounts to $< 2\%$.



Fabric

is able to diffuse light falling on it to a very large degree.
A back-lit fabric ceiling gives the appearance of a single illuminated surface.

Additional benefits: Acoustic properties

Folkwang Museum, Essen, Germany. One of the most important art centers in Germany, the museum is home among other things to collections of 19th Century paintings and sculptures, classical Modernism, and post-1945 works. Designed by David Chipperfield, this new building makes use of a 1400 m² light ceiling without supporting columns to distract the eye, so displaying the exhibits in the best-possible light. Light-technical and acoustically-effective SEFAR® Architecture IA-95-CL fabric guarantees excellent light scattering while optimizing the required acoustic requirements.



Many people find echo-intensive spaces uncomfortable. Working spaces or public areas with a lot of reverberation cause stress and can also trigger aggression.

For this reason, sound-absorbing Sefar fabrics are used to positively influence room acoustics, to reduce volume levels within a given space, and to improve the general atmosphere.

The most important factor in room acoustics is the reverberation period. If sound is not absorbed but instead reflected, the reverberation effect is correspondingly greater. It determines speech intelligibility and therefore plays a crucial role in feelings of overall well-being.

Acoustically-optimized, light-technical fabrics, i.e. defined perforated or open-mesh fabric structures, are used to improve spatial acoustics.

As light ceilings, light walls, or room dividers, they provide glare-free light as well as actively reducing reverberation time. Light transmission and echo reduction are therefore no longer conflicting issues in design.



Comprehensively tested

Acoustics and flame resistance
Maximum safety for your chosen project

Frequencies between 300 Hz and 700 Hz mirror most everyday sounds. Independent tests show that open-pore or perforated fabrics constructions are best suited for improving acoustics. Influencing factors include the parameters of the fabric surface, the number of layers, the distance between the layers, the distance from the wall/ceiling, and what the supporting structure is made from. Even when using a single-layer application and behind it a concrete wall, Sefar fabrics achieve a high absorption coefficient, especially in the relevant frequency range of 200 – 500 Hz, with an α -value of around 0.9.

Similar rigorous testing applies to construction materials in respect of fire safety, especially when it is planned to use artificial light sources and a power supply.

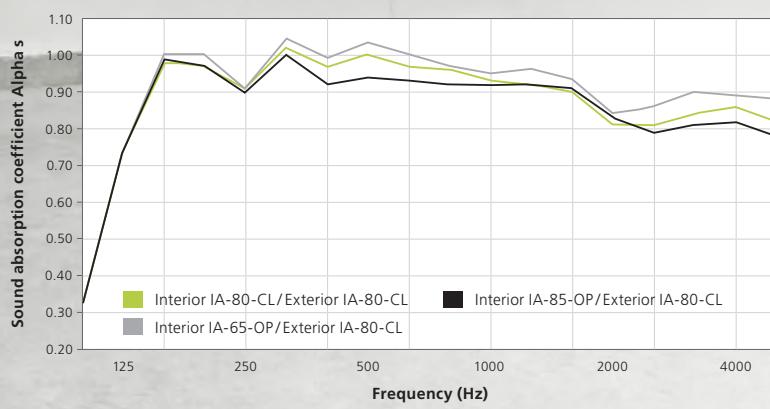
All the fabrics used for special designs and in Sefar systems are essentially flame-resistant, have low smoke emission, and produce no burning droplets. They are continuously monitored by building authority-recognized test institutes and possess all the necessary certifications. Account is taken of the European classification standard EN 13501-1 concerning the determination of heat and smoke release rates.

For national standards, including the especially stringent DIN 4102-1, the test results for Sefar Architecture fabrics with regard to limitation of fire spread and heat output, burning droplet specifications, and smoke emission are documented in the test certificate. The American standard ASTM E84 & NFPA701 is also fulfilled.





Sound absorption comparison of different fabric types



Other benefits

Free from plasticizers
and Tested to CDPH 1350

Color-fast and color-stable

Odor-free

Dirt and water resistant

Highly flame-resistant, no burning droplets,
low smoke emission

10 year fabric replacement warranty



Further information
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