



RETAIL LIGHTING GUIDE



Lighting is a crucial factor in creating a unique shopping environment: An environment that attracts the buyer, contributes to the store's personality, highlights the corporate image, the Brand of the store..

Successful lighting of a store presupposes the correct application of lighting techniques and the utilization of modern technology.

The customer who will be thrilled by his in-store experience will stay in the store longer, spend more money, and will not only be more likely to return to the store but look forward to returning..

TECHLUMEN LED Lighting presents a guide to shop lighting. Our company manufactures luminaires that cover a wide range of luminaires, meeting every need for quality store lighting.

Among them, track luminaires, suspended ceiling luminaires, pendant luminaires, safety luminaires, linear luminaires, and all of them incorporate intelligent lighting management systems. At the same time, they ensure excellent performance that helps reduce operating costs.

RETAIL LIGHTING GUIDE

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THE GOALS OF LIGHTING A STORE

The quantity and quality of lighting, the impression it creates for the products for sale, as well as the effect on the overall aesthetics of a store space are parameters that are taken into account in the process of successful lighting design.

A lighting designer should consider various characteristics, **such as the luminaire's life, its performance, its dimming over time, color rendering (CRI), natural light involvement, light distribution, cost, control capabilities, and flexibility.**

The goals of a proper lighting design are:

1. Attracting customers. Attracting them to the store and guiding them inside it safely and effectively.
2. The promotion of the Brand, the corporate identity. To give the customer a first impression of the store's image and the prices of its products.
3. Creating an aesthetically pleasing shopping environment. Providing a sense of comfort and well-being to the customer.
4. The promotion of products. Highlighting features, colors, shapes, and textures while avoiding glare.
5. The promotion of products, the creation of buying desire
6. The increase in sales
7. The reduction of energy consumption.

With the advancement of technology, the development of the internet, and the widespread use of smartphones and tablets, the customer's journey is not limited to the store's physical space.

Parameters such as Brand, corporate image, and shopping experience matter more than ever. Lighting gives the customer a signal, determines his expectations for the quality of a product, as well as his overall willingness to proceed with its purchase.

Appropriate lighting is crucial in creating the desired image of a store, in focusing and attracting the customer's attention, in highlighting the products that will lead to the sale.

The lighting solution depends on the type of desired customer, the store's style, and the corporate image. Optimal lighting in each case sets the store apart from the competition.

A good and cheap lighting solution, as opposed to the increase of the overall level of lighting and energy consumption, is the use of high contrast solutions, the creation of brightly lit areas and low lighting areas that will guide the customer's attention.

The use of indirect lighting creates a pleasant atmosphere, while vertical lighting improves the orientation in the space.

Detailed direct lighting improves the perception and attractiveness of the displayed products. In the area of the store where the corporate image should dominate, the products should look "alive" with the use of high color rendering (CRI) lighting.

Products, offers and showcases frequently change, so lighting systems need to be flexible to adapt to contemporary lighting needs each time.



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WHEN LIGHT MATTERS

COLOR REFLECTIONS AND CONTRAST

There are many factors to consider when lighting a store.

The type of products for sale, the size and shape of the space, the audience to which the store is addressed, and the message that the Brand wants to promote.

The color and color temperature of the lighting, reflections, contrasts, and low energy consumption **contribute to the efficiency of a lighting solution.**

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The lighting of a store should be excellent color, choosing the right color temperature and the right color rendering index (CRI) is essential. Lighting is a key factor in highlighting and supporting the image of a store, it is not limited to improving the appearance and attractiveness of products but aims to improve the comfort and beauty of the entire store.

There are two quantitative parameters used to define the color of a light source: **Color temperature (CCT) and color rendering (CRI).**

Light sources often differ. Two sources of white light may look the same, but they can give different colors or create a different feeling in the space.

Using luminaires of the same color temperature and the same or similar CRI, the illuminated space will have similar lighting everywhere.

Reflections and glare are useful but also potentially harmful to store lighting. Used properly, they can enhance the look of your product. Instead of using them incorrectly, it can become tedious and annoying for the customer.

Using luminaires with a low glare index helps avoid direct glare and annoying reflections on glossy surfaces.

A very bright store is not the most efficient solution. The use of contrasts to display the products and different areas of the store helps customers feel comfortable and draws attention to the products.

LIGHT COLOR TEMPERATURE (CCT)

The color temperature of light (CCT) is measured in Kelvin (K). White light has three general categories, warm, neutral, and cold.

White light that turns slightly yellow like the light of a candle, called warm white, is light that has a temperature equal to or less than 3000K. Emphasizes red and orange colors, blurs blues, and adds a yellow tint to whites and greens.

Neutral white (3500K - 4000K) emphasizes most colors to the same degree, does not add either yellow or blue.

Blue white (> 4000K), also known as cool white, emphasizes blue tones, blurs red, and adds a blue tone to whites and greens.

The warm light reduces the spaces, offers comfort, and relaxes the person. On the contrary, the cold light gives the impression that the spaces are bigger. Neutral white improves the mood and can extend the customer's time in the store, leading him to make purchases..



WARM WHITE



NEUTRAL WHITE



COOL WHITE

COLOR RENDERING INDEX (CRI)

The color rendering index, or CRI, measures how faithfully a light source renders colors compared to a reference source. Indicator values range from 0 to 100. Standard light sources with a CRI index of 100 are the sun (natural light source) and the incandescent lamp (artificial light source).

The CRI indicator can be used to compare luminaires of the same type and the same light temperature.

The higher the CRI, the better and more natural the colors are rendered. The products of a store, to be presented as they are, which increases the store's reliability, must be illuminated with light that has a CRI index > 80.

Especially in products where the product's color is essential to the consumer, such as a garment or a work of art, the CRI must be > 90.



HIGH CRI



LOW CRI

REFLECTIONS

The reflections of light on the various surfaces in the space must be considered in the lighting design of a store.

When surfaces and materials with high reflectivity are used, the light is reflected in the space and helps increase the lighting level.

Reflectivity is measured on a scale of 0-100, with 0 receiving surfaces that fully absorb light, while 100 receiving surfaces that fully reflect light.

There are regular reflecting materials, which act as mirrors which should be used with caution, as they can increase glare.

Mixed reflectors, such as aluminum, reflect 5-10% of light.

Other materials, diffuse light, such as a white wall, give uniform brightness and are good reflective backgrounds for small spaces or recesses. In addition to reducing energy consumption, they favor the avoidance of shadows on shelves and stacked goods.

Retail spaces should make visitors feel comfortable and at the same time to display the notable goods and the other areas of the store.

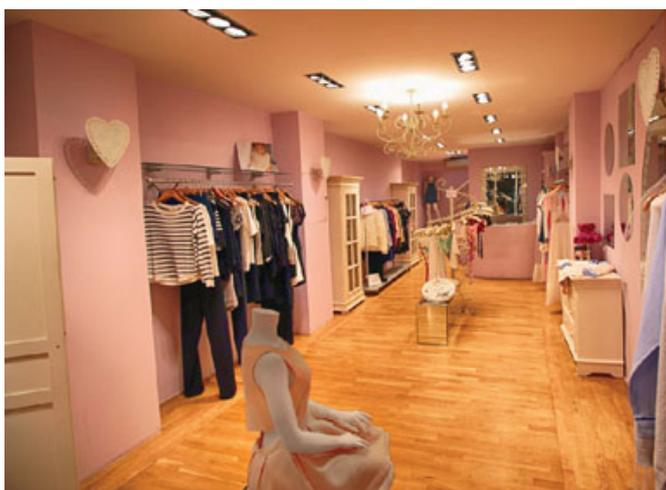
Simply increasing the brightness is not only a waste of electricity, but it is also inefficient. Bright stores with a high level of general lighting create an unpleasant environment for customers and reduce the likelihood of visiting the store again.

The key is to combine different types of lighting and use contrast throughout the space. There are four basic levels of store lighting: General or ambient lighting, focal lighting, work lighting, and decorative lighting. The combination of these types of lighting gives depth and interest to the space.

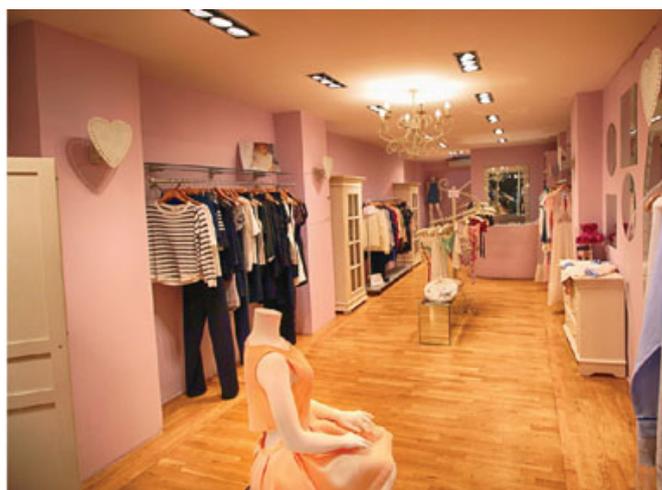
Contrast is achieved by using increased illumination levels in the case of lighting fixtures, usually focal and work lighting, to accentuate the goods compared to general lighting.

Contrast can create a visual hierarchy in store space, attracting attention and focusing on specific goods based on the contrast ratio. For example, a 2: 1 contrast ratio, with focal illumination 2 times brighter than general illumination, creates a less noticeable contrast. Instead, a 30:1 contrast ratio will create a strong focal effect on the focused objects.

Each type of lighting has many application options, and with the use of appropriate lighting levels and contrast ratios, the result in the space will have high visual interest, with depth.



Contrast 1:2



Contrast 1:30

The following table shows the recommended color temperatures and recommended CRI for different types of stores

Type of Store	Color Rendering Index (CRI)	Correlated Color Temperature(K)
Butcher shop	>80	2500K - 3000K <u>or ideally</u> TECHLUMEN LED light for RED and Marbled meat
Fish shop	>80	silver, blue fish >5000K, white and gold 4000K, red fish <4000K
Bakery	>80	2500K - 3000K <u>or ideally</u> TECHLUMEN LED lights with spectrum for pastries
Greengrocer's	>80	fruits (apples, oranges etc): 2700K - 3000K green vegetables: 4000K, or ideally Techlumen LED lights with spectrum for produce
Clothing / fashion store	>90	3500 - 4000
Sport equipment	>80	4000
Shoes / leather	>80	3000 - 4000
Jewelry, watches, optics	>80	2700 - 4000
Perfumes, pharmacies	>80	4000
Hairdressers	>90	4000
Furniture, carpets	>80	2700 - 4000
Glassware / gift shops / household items	>80	2700 - 4000
Electronics	>80	2700 - 4000
Bookstores	>80	3500 - 4000

There are 4 lighting systems commonly used in shop lighting:

General lighting, work lighting, focal or highlight lighting, and decorative lighting.

The combination and balance of these types of lighting create an interesting visual effect and an attractive environment.

GENERAL LIGHTING

General lighting is the primary source of lighting for the store. This uniform, low-level lighting can quickly become the focus of reducing energy consumption, especially with LED luminaires. High levels of general lighting are not required, as a large part of it is directed to areas that are not of interest and leads to a pointless increase in operating energy costs.

The recommended general lighting level is 300lx - 500lx. These lighting levels facilitate employees' daily work, such as cleaning, replacement of stock of products, and the movement of customers in the space.

Diffuse general lighting ensures a sense of well-being, making customers feel comfortable and pushing them to stay in the store for longer. A simple way to achieve this is to use luminaires with a low glare index.

For general lighting, downlight fixtures, linear fixtures, or panel fixtures can be used. Alternatively, if the ceiling has a sufficient height and does not contain visible electrical installations, such as ceiling air conditioners, it is desirable to illuminate the ceiling, either with suspended luminaires or indirect concealed lighting in the panels.

In general lighting, perimeter lighting is used with wall-washing, i.e., lighting vertical surfaces from bottom to top or vice versa. It is achieved either with linear bodies mounted on the walls or with asymmetric photometric ceiling lamps. In this way, the perimeter of the spaces is delimited, the feeling is given how the space is bigger, and at the same time, it sweetens it. The lighting of the vertical surfaces affects the customer's perception of the space by improving his safe movement and orientation in the store.

TASK LIGHTING

Task lighting is used to illuminate an area for a specific job, providing a focused, local, and a higher level of illumination.

It is essential for the functionality of a space, and it is important to use efficient light sources, such as LED luminaires, to reduce operating costs.

Task lighting is most effective when used to supplement General Lighting in workplaces, meeting rooms, and cash desks.

Adequate work lighting should eliminate shadows in the area being used while preventing glare from the luminaire or its reflecting surfaces.

Completing the sale is the most crucial task in a store, it is the last interaction between the customer and the staff.

Pendant lights in stores are a good solution for providing work lighting, making it easy for staff to pack goods quickly and accurately, operate the cash register, pass credit cards, and minimize mistakes.

The recommended working lighting level ranges from 500lx to 2000lx. When designing work lighting, the contrast of brightness between the work area and the surrounding area must be considered. In general, a 3: 1 ratio of work lighting to ambient lighting creates a pleasant contrast to the evaluation of goods, the reading of labels, the packaging of products, and the reading of signs identifying parts of the store.

The level of lighting required for work is one of the most flexible variables of work lighting, as it can be increased to compensate for low contrast levels.

Focal lighting creates a dramatic emphasis on the goods.

A focused or spotlight source adds depth, contrast and makes the goods stand out from their environment.

Highlights the shape, texture, finish, and color of objects give shine and attract customers. If the light is in the wrong direction, the result can have a lot of unwanted shadows, blur the details of the displayed products and create an unpleasant glare.

The key is to make the lighting more accurate and higher intensity compared to ambient lighting.

Track luminaires, or rotatable recessed lights, are extremely effective for highlight lighting. They can easily aim accurately to highlight the best properties of the goods and influence the customers' impression.

A common mistake is to focus the lighting on a large number of goods so that no one is emphasized, as in the end, excessive lighting is provided.

The use of a 5: 1 contrast between the focused object and the surrounding space is generally sufficient to highlight the object and create a significant visual stimulus. If the goods are dark, a higher contrast ratio is likely to be required.

The levels of focal lighting are proposed to be 1500lx - 5000lx. In shop windows, the contrast ratio is proposed to be 1:15 or even 30: 1, especially in jewelry or crystals, to create the desired shine.

DECORATIVE LIGHTING

This lighting system has the sole purpose of adding beauty, style and visually upgrading the space. Most of the time, it focuses more on the luminaires themselves than on the Lighting they provide. Therefore, decorative Lighting serves a dual purpose: not only to contribute to lighting systems in a store environment but also to improve the appearance of the space as a design element.

Decorative Lighting includes hanging lamps, sconces, chandeliers, table lamps, and floor lamps.

Decorative Lighting should complement and add visual interest to the space and contribute to the overall lighting design.

Suspended luminaires should be placed at 2.5m to 3.5m above the floor to be within sight, but not too low, as it can make the shopping experience difficult.

Suspended luminaires are projected above the cash desks, they should be placed 90cm - 120cm above the counter to not obstruct the view of customers.

Wall lamps and other wall lamps should be placed about 1.8m from the floor, this helps create a human scale, especially in an ample space.

Decorative Lighting offers beauty and style and reflects the store's corporate identity, enhancing the style of the space.

Decorative Lighting also adds a sense of hospitality and comfort, adds intimacy, relaxes shoppers, and encourages them to stay longer in the store, leading to more sales.

By combining and layering these types of Lighting, your store will be more attractive, exciting, and welcoming.

Decorative Lighting is not offered for all types of stores. For example, it usually does not fit in tool shops, supermarkets, sporting goods stores, etc. On the contrary, it is suitable for lighting boutiques, furniture stores, jewelry stores, etc.

LIGHTING IN PARTS OF A STORE

There are many factors involved in achieving excellent retail lighting design, in any case, the ultimate goal is to increase sales.

Techlumen LED luminaires offer a wide range of lighting products to improve a store's merchandise appearance while reducing operating costs.

Smartly using lighting to flatter the merchandise and create a sense of well-being for the customer increases the tendency to purchase.

STOREFRONT LIGHTING



Each store competes to attract the attention of customers. The shop window is the first opportunity to stand out.

It should provide a strong attraction and create a connection between passers-by and the displayed goods, prompting them to discover the store's interior.

Theatrical lighting effects attract the customer, the high level of lighting, the targeted lighting that erases the form and highlights the details of the products, pushes the passer-by to stop in front of the shop window and take an interest in the products.

The lighting of the shop window varies between day and night. During the day, the intense natural light of the environment leads to the need to provide a higher level of light to create the necessary contrast that will allow the effective display of the products of the showcase. Energy requirements are exceptionally high, and the use of efficient LED luminaires is appropriate.

A low level of general lighting and the clever use of brightly targeted highlight lighting can provide the desired result during the night.

Ideally, there should be flexibility in the lighting of the window, either with the use of 2 circuits or with a more complex and advanced lighting control using DALI technology or similar, and the creation of ignition and dimming scenarios.

Suspended or ceiling spots and rail lights are usually used to illuminate the shop window. Their optimal placement aims to minimize glare, as the goal is to display the products and not the light sources that can unpleasantly distract the customer.

Diffuse lighting with direct luminaires at a wide angle of 40o-75o generally illuminates the products with minimization of shadows, but it does not have theatricality and does not arouse the observer's interest. On the contrary, the highlight lighting with the use of narrow beam luminaires adds interest to the scene, but at the expense of the visual information received by the observer. The type of lighting or their combination depends on the atmosphere that is sought to be achieved.



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WHEN LIGHT MATTERS

SHOWCASE, SHELVES, RACKS AND BENCH LIGHTING

The most common way of illuminating these spaces is to use thin profile light sources, for example, linear LEDs, LED strips, etc., very close to the displayed products but in invisible places. The products must be lighted in a way that makes them attractive.

The brightness levels should be 3-5 times higher than the ambient lighting to be easily distinguished and evaluated by the customer.

The choice of color temperature and the color rendering index CRI are essential parameters in choosing the appropriate lighting, as the appearance of the goods must not be distorted or damaged.

The way the light is directed to the shelves is extremely important. The backlight can produce a more pleasing effect, compared to the use of focal lighting only. The lower shelves go relatively unnoticed, but with backlighting and accent lighting on them, customers look at them, stay longer in the store, and encourage sales.

The only case where the lighting of showcases and shelves is not useful is the existence of a mirror back, as it will create glare and possibly blind the customer.



STAND LIGHTING

Stand or rack lighting attracts customers and allows easy evaluation of goods.

The lighting system should achieve 2 purposes:

1. To fully illuminate the merchandise.
2. To display colors and textures accurately.

As the positions of the goods and their items change over time, the presentation needs are constantly changing.

Therefore lighting systems must be flexible. TECHLUMEN LED track lights are ideal, as they can be added, removed, or rotated.

The light intensity of the displayed goods should be 3 to 5 times higher than that of the environment.



DRESSING ROOM LIGHTING

Quality lighting of the dressing room is necessary because most purchase decisions are made in it.

High-quality lighting with a high color rendering index provides texture and form to the goods and makes the colors appear natural and realistic.

The color of the product must be displayed in the same way as in the salesroom. Using luminaires with the same color temperature and color performance will make the products look similar in both spaces.

The combination of diffused and directional light in the dressing rooms, with a good CRI index, offers flattering light and makes the customer and the products look more beautiful.

The use of LED luminaires in the dressing rooms, in addition to the energy benefits, offers another advantage. They radiate less heat, reduce the need for cooling and improve comfort conditions.

EMERGENCY LIGHTING

When there is a power outage, emergency lighting provides the necessary lighting and directs people to the store's exit.

Techlumen LED luminaires have the option of providing emergency lighting for 3 hours of continuous operation, allowing staff to complete all the necessary work to close the store.