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ARLIGHT

2024

LIGHTING SOLUTIONS

Professional
Lighting Fixtures
Catalog

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Led Lighting Solutions

2024

ARLIGHT LED SOLUTIONS

ARLIGHT LED SOLUTIONS is one of the leading manufacturers in indoor lighting sector who continuously focuses on R&D and designs new generation lighting technologies with interpretation to the changing dynamics of the sector. The efforts to expand product range with LED systems have started in 2011 and today, our existing product range covers for almost every applications. ARLIGHT provides not only general lighting solutions, but also in retail lighting, industrial lighting, dynamic lighting solutions which take place in its product portfolio. In order to maintain the quality of our products, thermal and optical designs are re-ensured in our laboratory by conducting each experiment. Since 2010, ARLIGHT lighting laboratory presents scientific and technological opportunities by facilitating high-quality luminaires. In this way, ARLIGHT gradually enhances its capability in LED systems manufacturing. This capability does not cover only the technical aspects of manufacturing, it also encompasses more aesthetic, long lasting, smaller and more functional lighting fixtures and designs. This progress can be seen in our concept series, linear solutions, retail lighting solutions and tailor made products.

CUSTOM MADE PRODUCT DESIGNS

To answer all customer needs, ARLIGHT design and produce custom-made LED lighting systems specific to individual projects. From small variations of standard products to whole new lighting fixtures, all variations are possible with the ARLIGHT. Similar to all standard products, custom made ARLIGHT products go through the electrical safety tests, thermal tests, and photometrical tests in our lighting laboratory.

Arlight Factory

Let there be light was our motto in 1991 and the company was founded. The journey started out by illuminating the darkness has turned into a powerful and trendsetter enterprise which is caught up in the magic world of light.

Award winning designs brought the bright places together. Places where Arlight lived has exceeded Arlight's birthplace so much that there was no need to mention thousand of square meters of closed areas as well as thousand of square meters of outdoor areas. Placed where Arlight has enlivened turned into a showroom and took their places in the world. Arlight found the nature, the knowledge, the health and the elegance in light. Combined what it found with the design and took interest in not only furnishing the light bu also the light itself. In order to share its core aesthetic values, functional, healhty and elegant knowledge, it caught many different ways and sorts of light.

We always keep Arlight's dynamic structure alive with our never ending energy in order to provide the Professional service during sales and after sales that a customer expects from a lighting company.

Each passing day, we bring our power with more people and more places together and we consider the applications we've done by using the fine details of architecture as our reference point in the sector. Our goal is to develop a relationship with the people and enterprises that we serve and to have a firm relationship that goes beyond meeting the lighting requirements. we create an atmosphere by the perfect service quality and solutions created by our innovative designs as well as meeting your requirements completely to develop such relationship. With the high quality standarts which our factory where we produce the designs matching completely with architectural structure of places and thanks to the professional skills of our experienced staff, we work hard to make the point where we reached in lighting sector more significant.

Today, we share the happiness of the fact that the biggest step we took is being a world class company and also our transition to Fagerhult group.

Now, heart of the light beats all around the world...

Istanbul Showroom

Modernizing all its business processes within the framework of trust, responsibility and transparency and aiming greater targets to continue its journey of becoming a brand since 1991, Arlight will now be lighting İstanbul from its focal point with its inspiring solutions, dynamic structure and innovative and functional designs.

The brand which operates in Şişli İstanbul, and is not satisfied with its objectives in the field of lighting prioritiez “sustainable values” that contributes to social development. The company strives to construct an organization that will set an example with its capabilities and quality solutions.

Constantly improving its competencies looking out for the top standards in all business service processes and continuing with the objective of adding value to its stakeholders to achieve sustainable growth, Arlight continues its operations with the ideal to create permanent values anywhere it touches by prioritizing technology and human-focused investments at its new location in İstanbul.

Lighting Laboratory

The Laboratory which has been established with TUBITAK 1507 SME RDI (Research, Development & Innovation) Grant Programme in 2009 improves itself each passing days.

Arlight Lighting Laboratory, has accredited according to TS EN 60598-1 (Luminaire Safety Requirements) TS EN 13032-1/TS EN 13032-2 (Photometrical Measurements of Luminaires & Lamps), İESNA LM79-19 standars related indoor and outdoor lighting standards. Our Laboratory that has been made an important tests one of capital laboratory of the testing laboratory in Turkey.

On 2010 Laboratory Project, it was selected in the best 50 projects among 4000 projects presented to TUBITAK in the last 10 years. Laboratory has been accredited by TURKAK according to ISO/IEC 17025 (Test and Calibration Laboratories Management System) in 2014.TS EN 60598-1(Luminaire Safety Requirements), TS EN 13032-1/TS EN 13032-2 (Photometrical Measurements of Luminaires & Lamps) standards covered by accreditation scope.

Our Laboratory is glad to publish a new accreditation scope. At the beginning of 2015, Arlight Lighting Laboratory has been successfully completed to expansion process.

In this process;
· Degrees of IP Protection Standard (IP Code) (TS EN 60529),
· Fire Hazardous Tests (Glow Wire Tests) (TS EN 60695-2-11),
· Solid State Lighting Electrical and Photometrical Measurements (IESNA LM79-08),
· Environmental Tests (IK Code) (TS EN 62262),
· LED Modules Safety Requirements (TS EN 62031),
· Lamp Control Gears Safety Requirements (TS EN 61347-1) standards has been added to the accreditation scope.

In addition to make self CE declaration;
· Electromagnetic Emission Standard (TS EN 55015),
· Harmonic Current Emission Standard (TS EN 61000-3-2),
· Voltage Fluctuations, Deviations & Flickr Limitations (TS EN 61000-3-3) and check EMC compatibility (2004/108/EC) directive requirements tests can be evaluated by Arlight Lighting Laboratory.

We as an ARLIGHT utilize useful, safe, functional products with 24 years of knowledge to keep creates one thousand kinds of light by Accredited Laboratory to share with the world.

CAUTION

1. The products in our catalogue can not be used or published without knowledge or permission.
2. Arlight Aydınlatma A.Ş. reserves the right to change or cancel any features of its products without any notification.
3. The colors of the products in pictures may not reflect the true colors due to print.
4. Most of the products are designed by Arlight Aydınlatma A.Ş. and patented by Turkish Patent Institute.
5. Products shown in this catalog have been separated as indoor and outdoor. Indoor products shouldn’t be used at the outside.

contents

01 Suspended Fixtures

02 Linear Fixtures

03 Cove Lighting

04 Downlights

05 Spotlights

06 Recessed Fixtures
- *-3DIEN Series*
- *-Concept Series*
- *-Standard Lighting Fixtures*

07 Surface Mounted Fixtures
- *-Concept Series*
- *-Standard Lighting Fixtures*

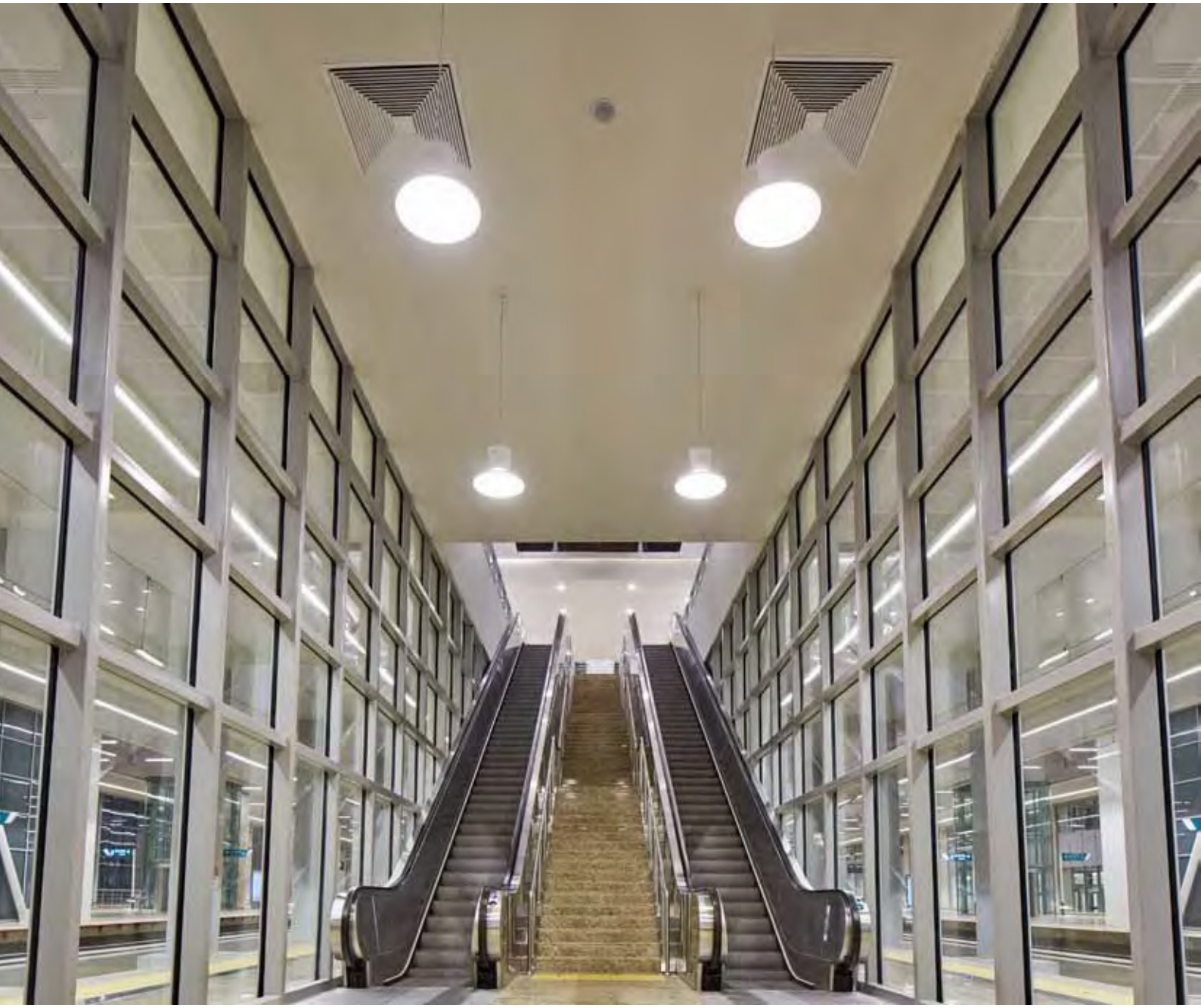
08 Healthcare Lighting Fixtures

09 Industrial Lighting Fixtures

10 Outdoor Lighting Fixtures

INDOOR
LED LIGHTING

01 SUSPENDED FIXTURES



Design: Ece Yalım Design Studio

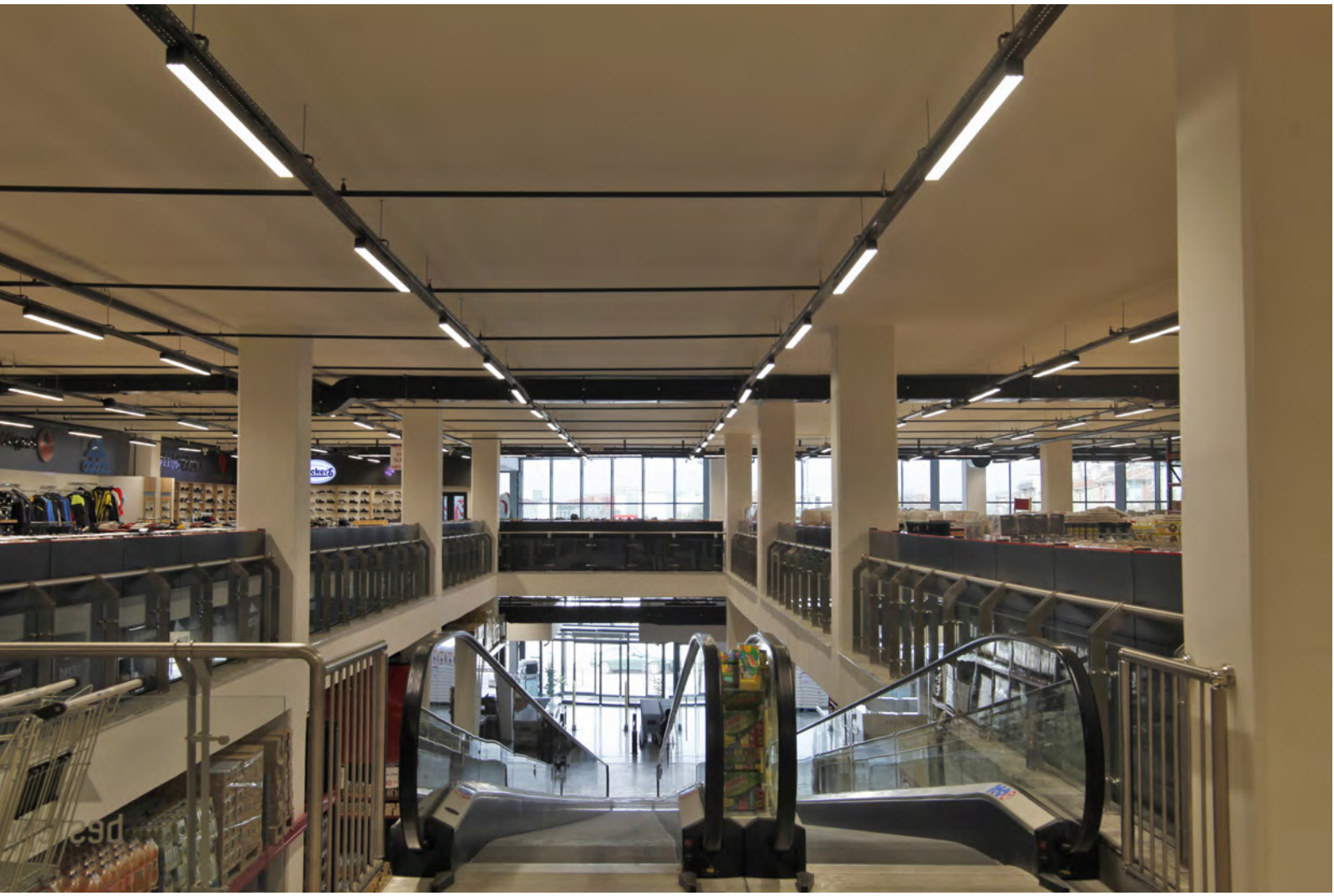
Design: Ece Yalım Design Studio


ANGORA
10 TL


Selpak
Papia
KOMILI
Solo

02 LINEAR FIXTURES

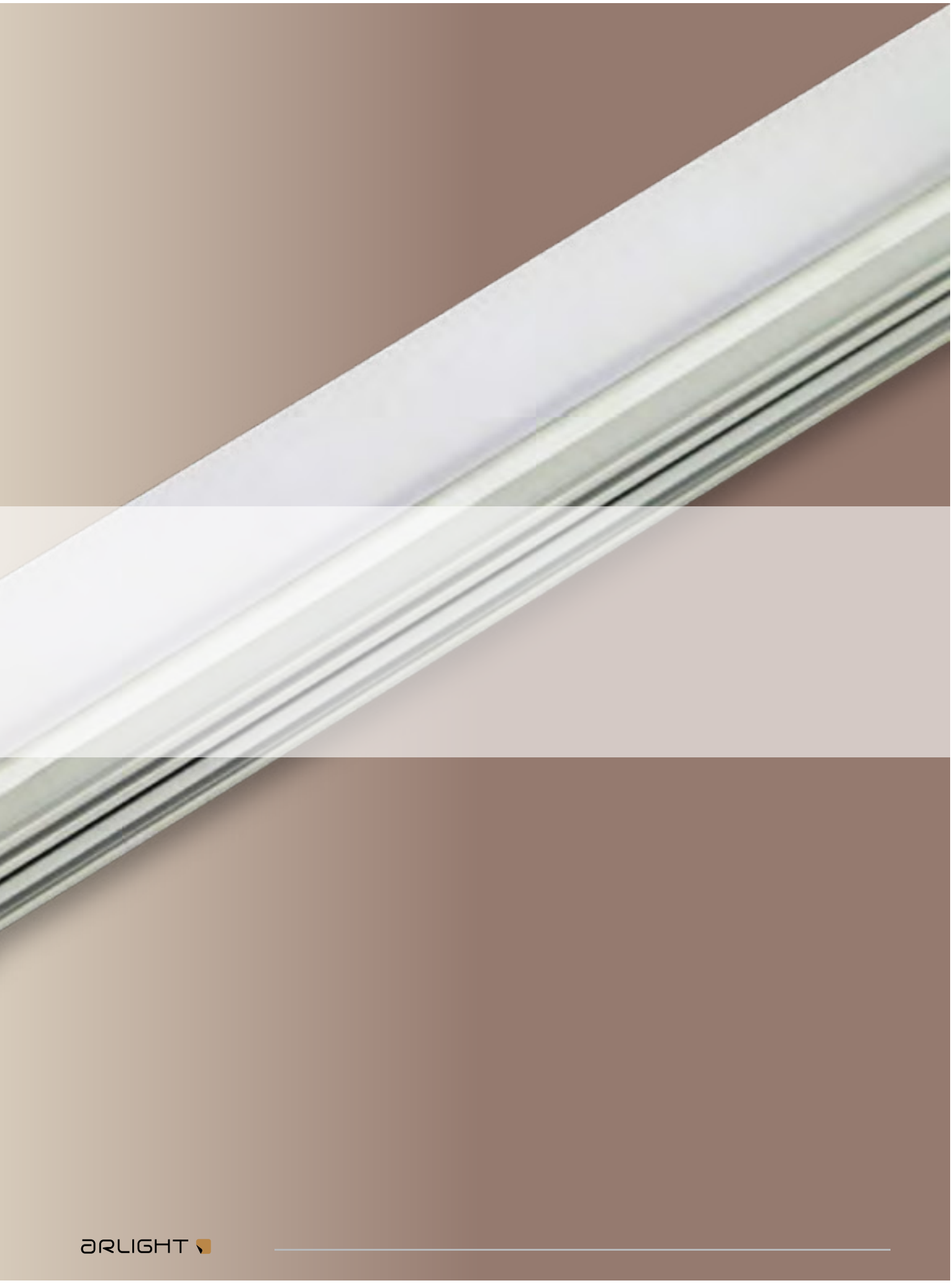

© yasserphotography.com



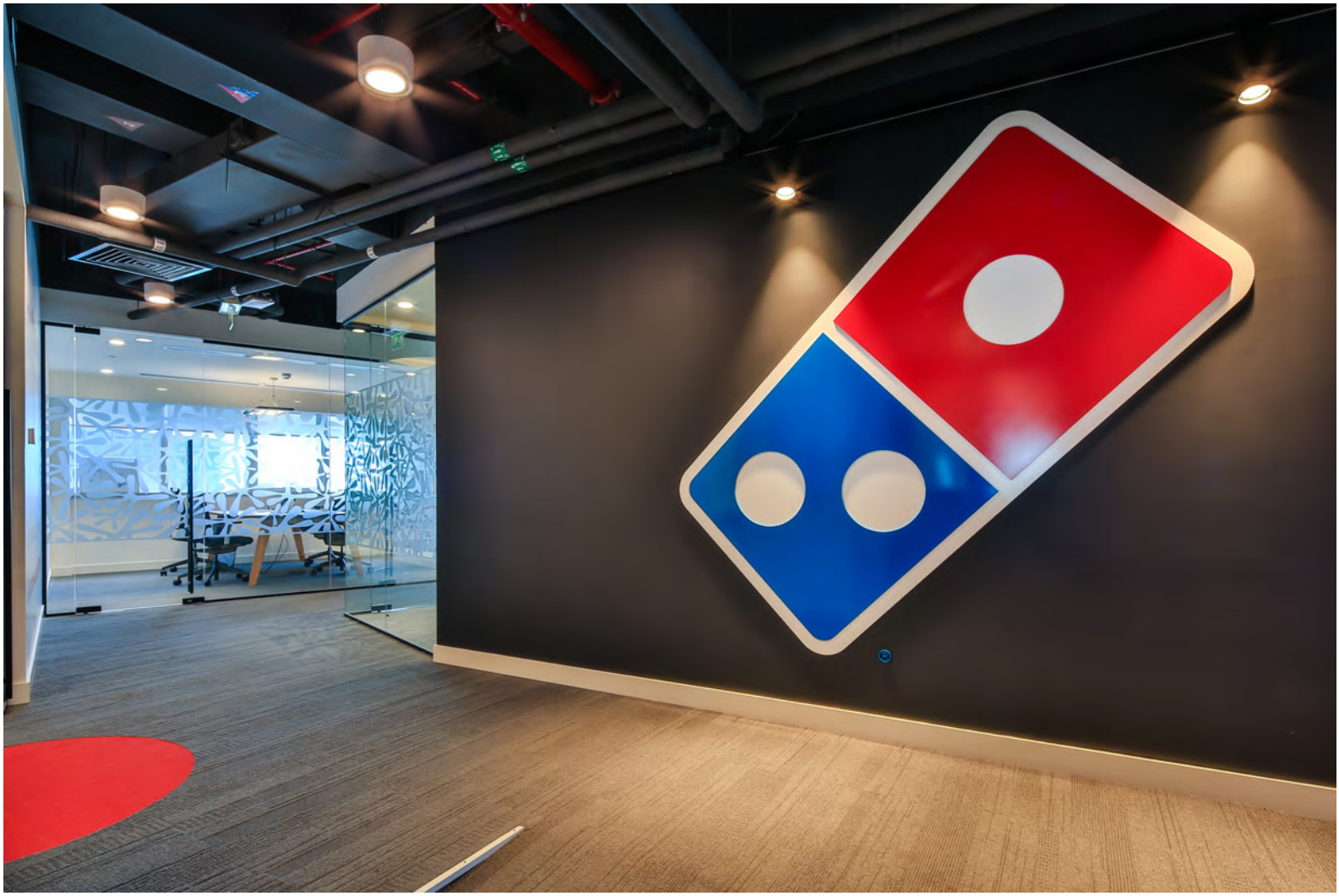

თეგეტა | TEGETA
TEGETA TRUCK & BUS
SHOWROOM

03

COVE LIGHTING



04 DOWNLIGHTS




TEGETA

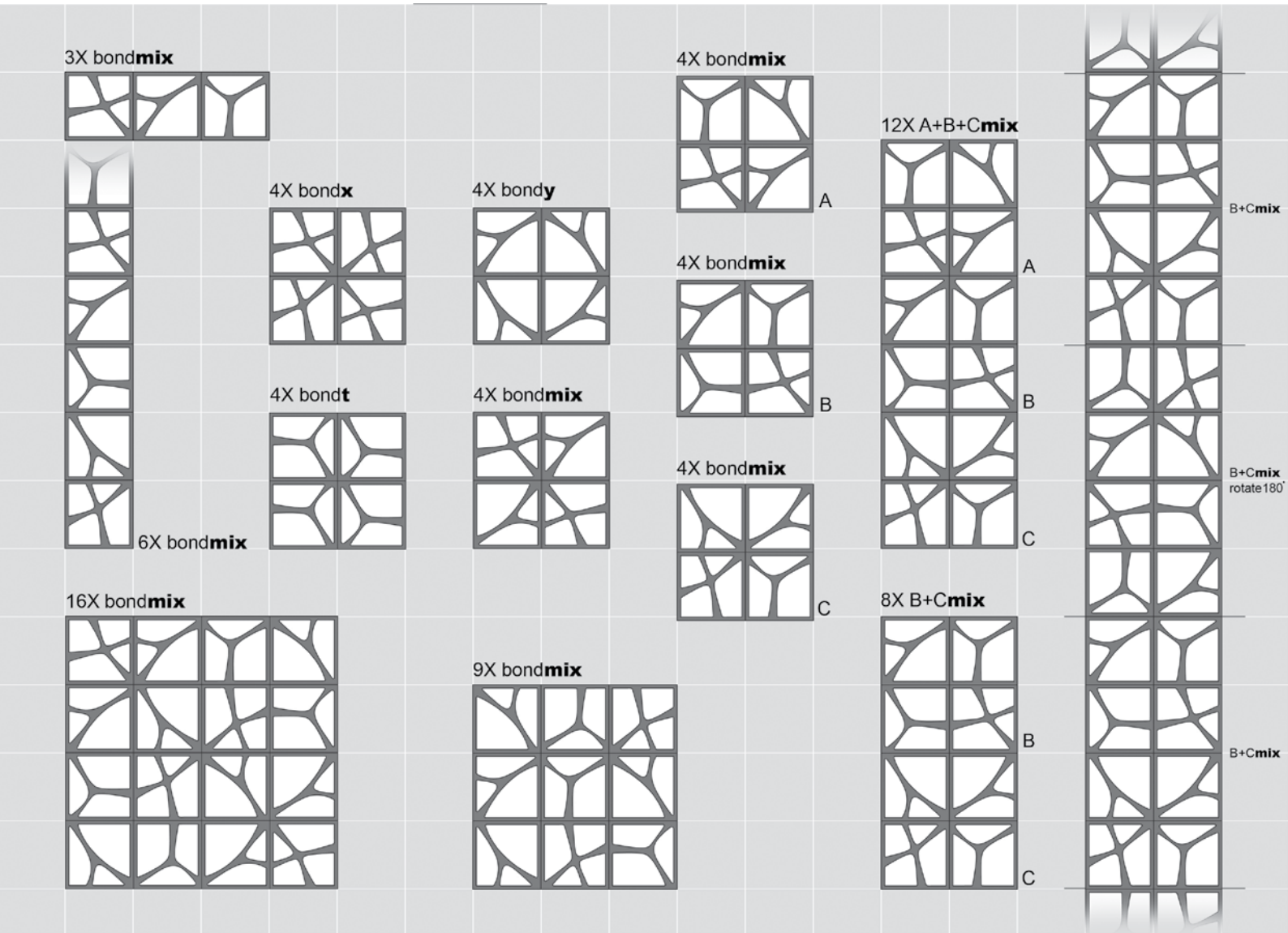
05 SPOTLIGHTS


KASAP
PİLİÇ
8·90

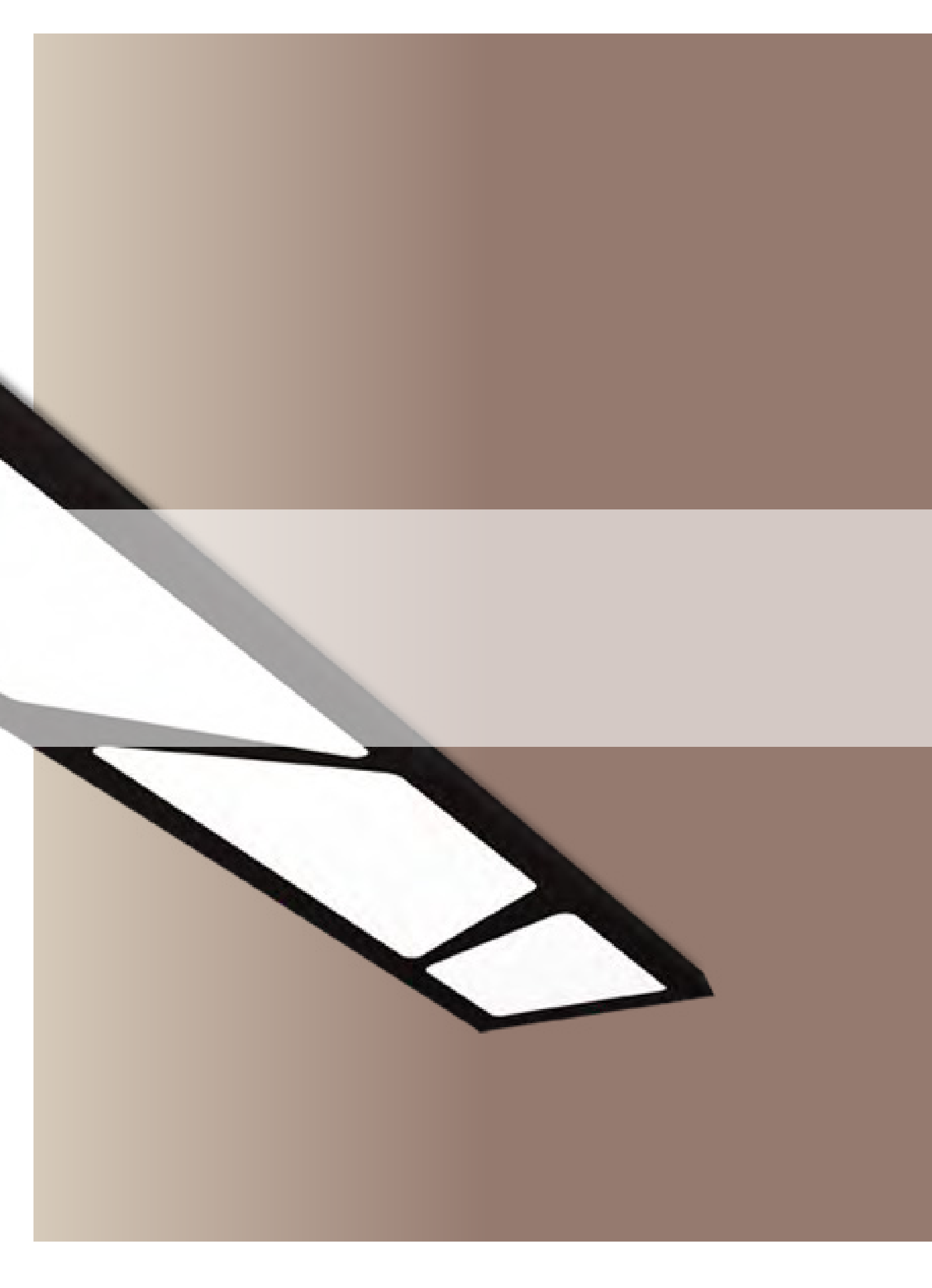

Gurmella
undan lezzetler

06 RECESSED FIXTURES

Bond Series Combinations



07 SURFACE MOUNTED FIXTURES



Design: Ece Yalım Design Studio

For updated information about product lighting specifications please visit our website.

08 HEALTHCARE LIGHTING FIXTURES


MAQUET
MODUTEC
11:10
23.6
51

09 INDUSTRIAL LIGHTING FIXTURES


D1
C1 C1
B1 B1

OUTDOOR
LED LIGHTING

10 OUTDOOR LIGHTING FIXTURES

LED TECHNICAL INFORMATION

LED is an acronym for Light Emitting Diode. It is an electroluminescence semiconductor device. While electricity flow through the LED, electrons(-) recombine with holes(+) at junction of two doped semiconductors, which causes emitting a photon whose energy is determined by the band gap of the material used.

Luminous flux: It is a measure of power of light in visible spectrum. In other words, it describes the quantity of the output light, visible to humans, from a light source and its unit is lumen. In the case of a lighting fixture, it is used for the output light from the luminaire after optical losses. For luminaires with traditional light sources, generally the electrical power is used, for instance 4x14W; however, with LED luminaires it is best to use luminous flux to describe a luminaire.

Efficacy: Efficacy of a light source is its capacity to produce light. Electrical light sources convert electrical power into heat and light. The ratio of the heat and light determine how efficient a light source is. In short, it is luminous flux divided by consumed power. The efficacy of LEDs used in ARLIGHT's luminaires is minimum 100 lumens per 1 Watt and for mid-power class LEDs this value increases up to 180lm/W.

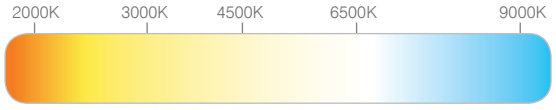
Illuminance: It is used to describe how much a surface is lit. Illuminance is found by dividing total luminous flux incident on surface by its area and its unit is lux. The required illuminance levels for various places is shown on pg(195) according to EN 12464-1.

CRI (Color Rendering Index): Color rendering index of a light source shows its quality to reveal true colors of the objects compared to natural light source. White light is composed of several colors and their mixing ratios determine the CRI value. It ranges from 0 to 100 and there are 15 different wavelengths chosen to calculate CRI. For interior lighting, minimum 80 is recommended. As long as optics used in luminaire is high-quality, the CRI value of a luminaire is determined by only the light source.

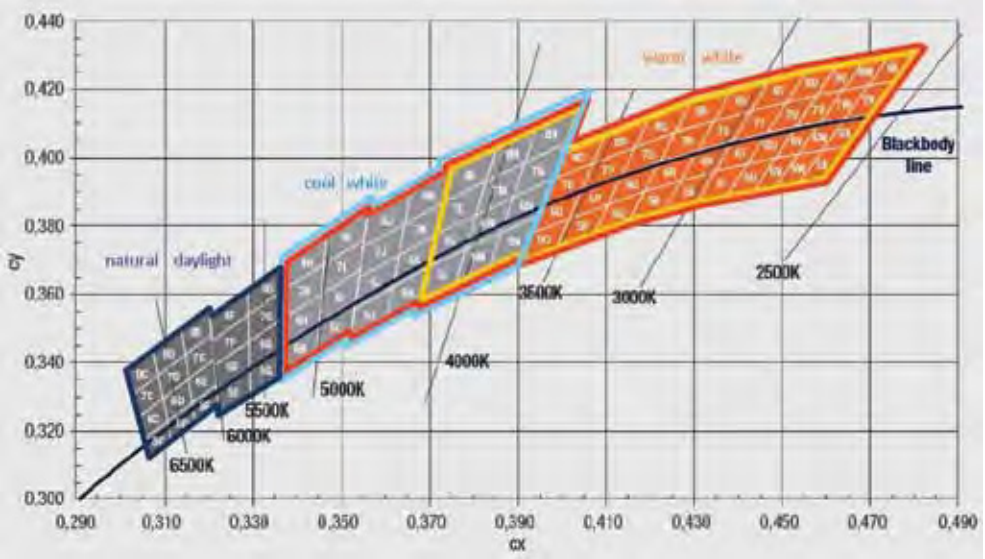
CRI › 90

CRI › 70

CCT (Correlated Color Temperature): The color of a white light source defines its color temperature. On color space, white light is defined on not a singular point but rather in a region. In this region, white light shifts from yellowish white to bluish white. CCT is defined by using black body which emits light when it is heated. What is special about black body is that it emits through all of the spectrum, which consequently means that it can emit perfect white light. Therefore, when white light is described as 4000K, it means that if we heat the black body to 3727°C, it emits the white light with same color.



During manufacturing process of LEDs, fluorescence material coating is used to convert blue light to white light. Due to this stage's complications, LEDs are made in various colors centered on targeted color temperature. Therefore, manufacturers simply classify LEDs into different groups which are defined by ANSI (American National Standards Institute) binning. Below is the binning diagram on color space.



UGR (Unified Glare Rating): Every light source begets a certain amount of glare. UGR is used to determine that amount and it is calculated by dividing the sum of luminance of each luminaire in an environment by average illuminance on the background of the luminaire. The rating that it must be under is stated in standards. In European Norms, EN 12464-1, the required values can be found.

LM79: LM-79-08 has been composed by IES(Illuminating Engineering Society) to have consumers be properly informed about the luminaires. Misleading information and inappropriate conventional test methods are tried to be avoided. LM-79 does not state any requirement for a luminaire to fulfill. Instead, it dictates the procedure of testing.

This procedure is described to measure following:

- Luminous flux (lm)
- Electrical power (W)
- Efficacy (lm/W)
- Optic properties (CCT, CRI…)
- Light distribution

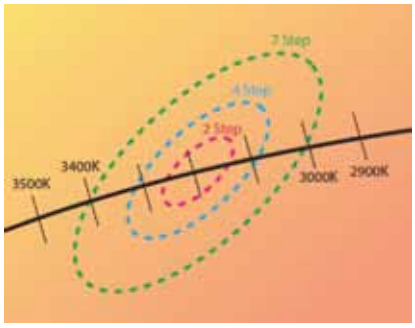
LM-79-08 can be applied on only whole luminaires, which encompasses heat sink, LED, optic components, control gear, etc… This is due to effect of heat on LED. Therefore, LM79 states that LEDs tested apart from luminaire cannot give correct information.

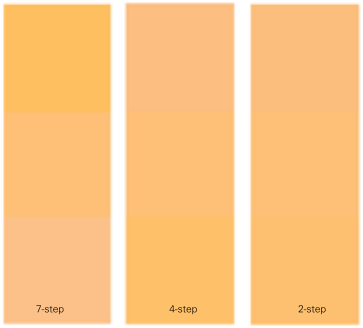
LM80: Same with LM-79, LM-80 has been composed by IES with same goal. Similar to LM-79, it is test method but not for luminaires instead for an LED.

LEDs have a little common with conventional light sources in terms of aging. If the necessary conditions are met, their lifetime is infinite. However, their light output degrades over time due to high temperature, moisture, etc… After some point they need to be replaced and for this generally accepted notion is that when an LED's light output decreases to 70% of its initial light output, it has run its course. LM-80 aims to address how to measure correctly luminous flux of LED over a long period.

Moreover, LM-80 does not project lumen maintenance after test period. The resulted data is used by another method (TM-21 generally) to project further data.

MacAdam: MacAdam ellipses are the regions that people will not be able to detect the differences between different colors on CIE color diagram. Although there may be differences between people's visions, it will not alter a lot when average visions skills of people are considered. According to these vision skills, people can distinguish the colors in certain levels. MacAdam has worked on this concept to make it more scientific and did some experiments. Nowadays, the results of these experiments are called as MacAdam ellipses. We cannot differentiate different colors in the MacAdam ellipses. During the phosphorus coating of LEDs, it is hard to achieve to produce same color as desired. Therefore, products in different color spectrums will appear. To classify these products, MacAdam ellipses' scaled version is used. For example at 3200K centered MacAdam ellipses are as follows:





Advantages of LEDs

The most consequential advantage of LED is that they are significantly more efficient when compared to other sources of light. The LED technology which is still developing became the pioneering technology in its class. Most of the LEDs available are able to produce luminous flux up to 100lm by using 1W of power. The reason behind this minimum value is aligning the LEDs in which they are so close to each other so that they will produce more light. However, this leads producing more intense heat and affecting LEDs. In the name of efficiency, they may even reach to the high values such as 180lm/W. The LED producers are forecasting the lm to W ratio will reach well above 200lm/W and as of 2014 Q1 experimental LED has been announced with 303lm/W efficacy.

Besides the high efficiency, since the source of the light is radiating in one way, the losses occurring due to the reflections in the armatures will be prevented. Because of this reason, the products, such as downlights, spots and troffers, have the efficiency much higher compared to others.

In addition, another advantage is that the lifetime of LEDs is theoretically unlimited. However, in practice, LEDs are assumed to fill their lifetimes when their light output is down to %70 of their initial value. A misleading notion about LEDs is that they have lifetime of 50.000 hours which is a wrong argument owing to the fact that this time interval can be decreased to 1000 to 10000 hours with a bad thermal design. We know that, with a successful thermal design, their lifetimes can be above 100000 hours. When a LED which works 10 hours per day is considered, this duration corresponds to 34 years.

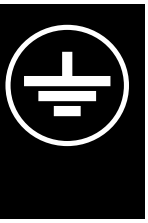
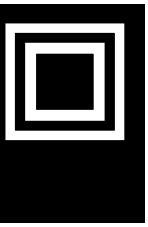
LEDs are occupying less space compared to other light sources. This provides elasticity in designing the layout of luminaire. Since the light emitting surface is small, optic lenses can be used. With these lenses, the light emission can be manipulated and desired light distribution can be obtained easily.

Since LEDs do not contain mercury and harmful gasses it is eco-friendly. Their high efficiency and low power factor is beneficial to both consumers and government. Due to small power factor, losses at power grid become minimal. They do not require capacitors for compensation and it minimizes the cost. In the case of fluorescent sources, for instance, dimming can be problematic because they are not supposed to be turned on and off frequently. On the other hand, this is not the case for LEDs. Since dimming is easier, also there will be savings in the consumption of energy.

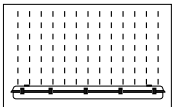
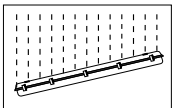
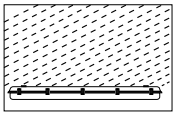
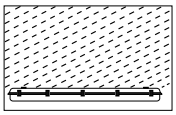
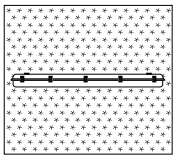
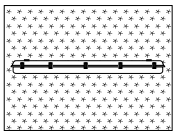
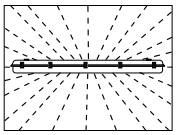
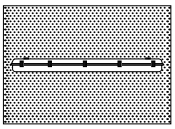
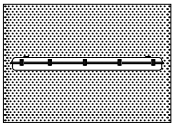
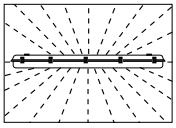
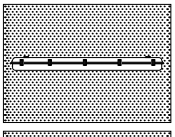
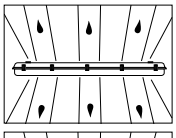
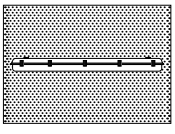
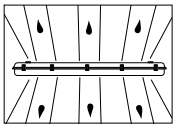
Illuminance Levels

Offices	Levels
General offices	500 Lux
Open-plan offices	750 Lux
Drawing offices	1000 Lux
Waiting rooms	200 Lux
Computer work station	300 Lux
Shopping center	**Levels**
Self - serviceshop and showrooms	500 Lux
Shops (general)	300 Lux
Supermarkets	750 Lux
Concert halls, cinemas,and theaters	**Levels**
General	100 Lux
Foyer	200 Lux
Museums and art galleries	**Levels**
Exhibits insensitive to lights	300 Lux
Light - sensitive exhibits	150 Lux
Education	**Levels**
Classroom	500 Lux
Lecture halls	300 Lux
Laboratories	500 Lux
Libraries	500 Lux
Residence, hotels, restaurants	**Levels**
Bedrooms (general)	50 Lux
Bed-head	200 Lux
Bathrooms (general)	100 Lux
Bathrooms (shaving, make-up)	500 Lux
Living rooms (general)	100 Lux
Living rooms (reading)	500 Lux
Stairs	100 Lux
Kitchen (general)	300 Lux
Kitchen (working areas)	500 Lux
Hospitals	**Levels**
Night	50 Lux
Daytime	200 Lux
Treatment rooms	500 Lux
Staff rooms	100 Lux
Laboratories	500 Lux
Industrial areas	
Textile workshops	750 Lux
Testing and inspection positions	750 Lux
Sewing workshops	750 Lux
Leather workshops	500 Lux
Furniture workshops	300 Lux
Processing of metal sheets	300 Lux

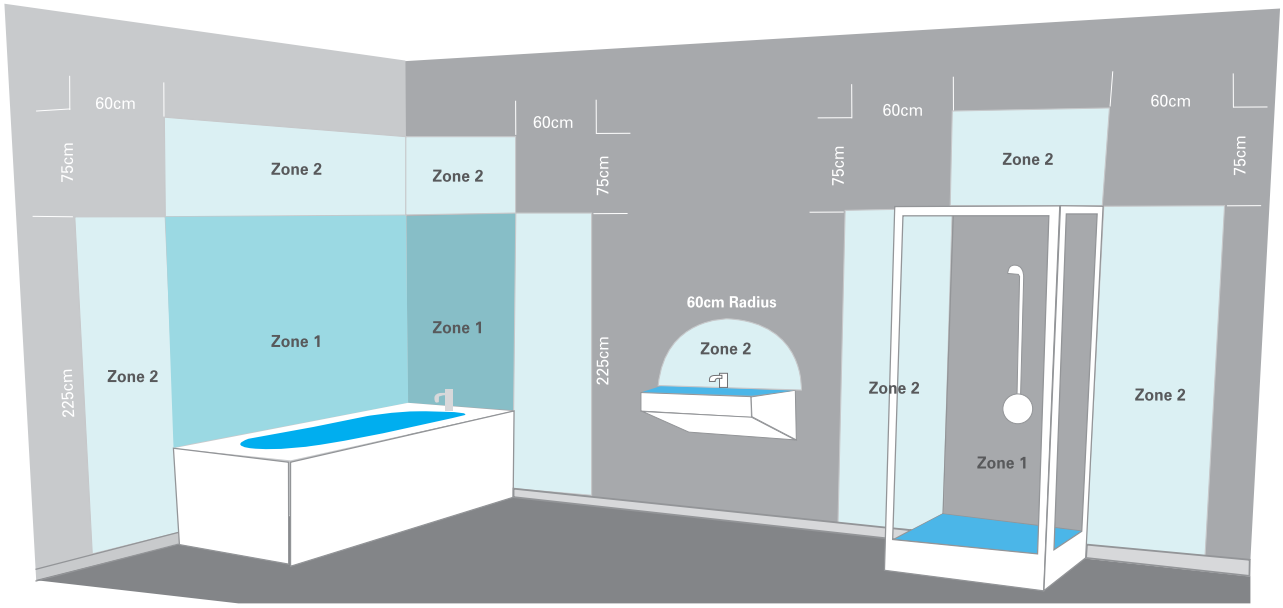
Class of Protection

Class	Meaning	Comments	Symbol
I	Lights with connection for a grounding wire that must be connected to all exposed metal parts which, in case of a malfunction, will ground any current.	Connection to grounding wire is absolutely essential. This symbol belongs on the connecting terminal	
II	In these lights, there can be no exposed metal parts that, in case of a malfunction, carry a current (protective isolation or double isolation)	These lights are not allowed to have a grounding connection and cannot be connected to a grounding circuit	
III	Lights intended for operation with protective low voltage circuits (Schutzklein spannung (SELV)),that is,with voltage under 50V, that comes from a safety transformer according to DIN VDE 0551 (EN 60742) or is taken from batteries or accumulators.	Lights are not allowed to have a grounding connection and cannot be connected to a grounding circuit.	

IP Class of Protection

Class	1st Number Dust and Foreign Object Protection		2st Number Water and Moisture Protection		Symbol
IP00		Unprotected		Unprotected	
IP11		Protected aganist foreing bodies larger than 50 mm		Protected aganist dripping water angle of impact from vertical	
IP20		Protected aganist foreing bodies larger than 12 mm		Unprotected	
IP22		Protected aganist foreing bodies larger than 12 mm		Protected aganist dripping water angle of impact from vertical 15°	
IP23		Protected aganist foreing bodies larger than 12 mm		Protected aganist sprays at a pitch of up to 60° from vertical	
IP33		Protected aganist foreing bodies larger than 2.5mm		Protected aganist sprays at a pitch of up to 60° from vertical	
IP40		Protected aganist foreing bodies larger than 1 mm		Unprotected	
IP44		Protected aganist foreing bodies larger than 1 mm		Protected against sprays from all directions	
IP50		Protected against dust		Unprotected	
IP54		Protected against dust		Protected against sprays from all directions	
IP55		Protected against dust		Protected against a water stream from a hose any direction	
IP65		Protected against dust		Protected against a water stream from a hose any direction	

Wet Location - Lighting Fixture IP Classification



Zone O: Inside of bath tub, shower cabinet etc, at least IP67 and low voltage (max.12V)

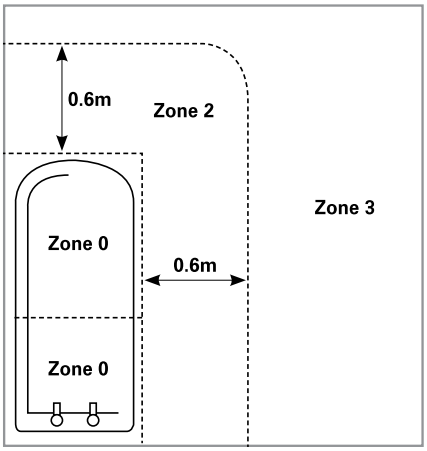
Zone 1: 225 cm over wet surface, minimum IP65

Zone 2: 60cm around wet surface, at least IP44

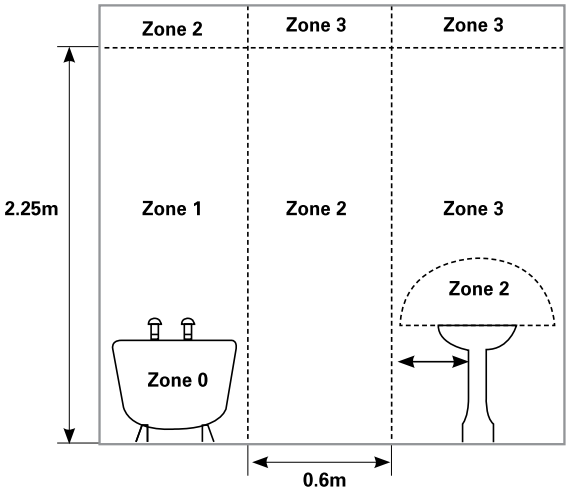
Zone 3: Other areas excluded Zone1 and Zone2, IP is not required

IMPORTANT: If wet surface is cleaned with high pressure water. Zone1, Zone2, Zone3 the min protection must be IP65

BATHROOM PLAN



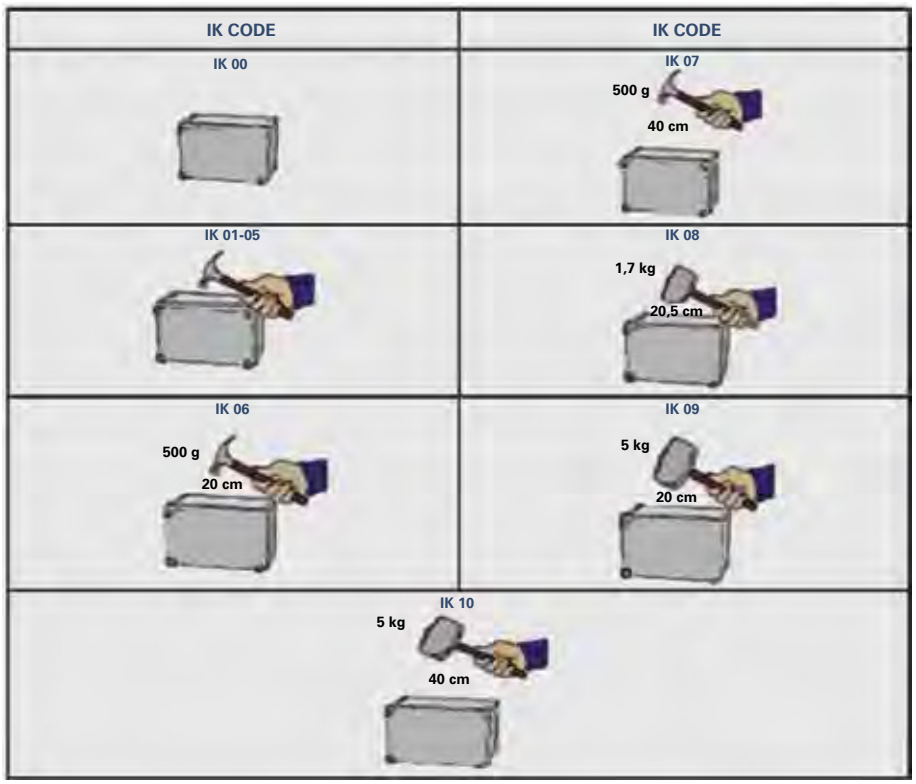
BATHROOM CROSS SECTION



IK (Resistance to Mechanical Impacts): There is always a risk for electrical equipment that they can be exposed to mechanical impacts which can cause mechanical stress on the product. For this reason, an international rating system has been founded to indicate the protection level of the housing to external impacts.

Testing can be done via 3 different methods: spring hammer testing equipment, pendulum hammer testing equipment, free fall testing equipment. For each IK rating, the required impact energy is depicted in table below:

IK RATING	IK 01	IK 02	IK 03	IK 04	IK 05	IK 06	IK 07	IK 08	IK 09	IK 10
Energy (Joule)	*0,15*	*0,2*	*0,35*	*0,5*	*0,7*	*1*	*2*	*5*	*10*	*20*
Radius (mm)	*10*	*10*	*10*	*10*	*10*	*10*	*25*	*25*	*50*	*50*
Material Polyamide-Steel	*P*	*P*	*P*	*P*	*P*	*P*	*Ç*	*Ç*	*Ç*	*Ç*
Pendulum Hammer	*OK*	*OK*	*OK*	*OK*	*OK*	*OK*	*OK*	*OK*	*OK*	*OK*
Spring Hammer	*OK*	*OK*	*OK*	*OK*	*OK*	*OK*	*Not OK*	*Not OK*	*Not OK*	*Not OK*
Free Fall	*Not OK*	*Not OK*	*Not OK*	*Not OK*	*Not OK*	*Not OK*	*OK*	*OK*	*OK*	*OK*



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