

LIGHTING GUIDE



Residential
BATHROOM LIGHTING



CONTENTS



BASICS OF LIGHTING

Basic terms, IP rating chart, and information about lighting and terminologies.

LAYERS OF LIGHTING

Layering light in a space is the key to effective lighting design and is important because it provides functionality and visual interest to every space.

DO'S AND DONT'S

The common lighting mistakes during luminaire selection and installation process, and how to avoid them to get the maximum output from the luminaires in each space.

KEY POINTS & RULES OF THUMB

Key points and standard values that help the lighting design easier and will avoid additional costs and mess-ups.

COMMONLY USED TERMS IN LIGHTING

A

Alternating Current (AC): Electric Current in which the flow of electric charge reverses direction at regular intervals.

Amps (A): Standard Unit of Measurement of electric current.

B

Beam Angle: The Angle between the two planes of light where the intensity is at least 50% of the maximum intensity at the center beam.

C

Candela (cd): Measurement of luminous intensity of a source in a given direction.

Color Rendering Index (CRI): A Measure of a light source's ability to show colors accurately. The Scale is from 1 to 100. The sun is considered 100.

Color Temperature: Correlated Color Temperature (CCT). A measurement of the hue of the light produced by a source.

D

Diffuser: A device used to alter light by scattering it in order to create a softer light with minimal glare.

Dimmer: A device used to control the light output of a light source.

Direct Current (DC): Electrical current that flows in only one direction without cycling. DC current is most commonly used with batteries and PV cells.

Driver: Electrical or electronic circuit that controls other components. In LED Lighting Systems, the driver regulates the power to the LEDs.

E

Efficacy: Lumens per Watt of a light source

F

Footcandle (fc): Unit of Measurement for Illuminance. One footcandle is equal to one lumen per square foot.

G

Glare: Glare is a visual sensation caused by excessive brightness. It can be discomforting or disabling.

H

Halogen Lamp: Halogen Lamp is a type of incandescent lamp that incorporates halogen in order to increase the average life and light output of the light source.

Heat Sink: Device incorporated in LED Lighting Systems to disperse heat away from the LED diode.

I

Illuminance: Measured in Lux or Footcandles, Illuminance is the total luminous flux on a surface.

Ingress Protection (IP) Ratings: Measurement of environmental protection for electronic equipment. Utilizes two numbers. First Digit rates ingress of solid objects. Second digit rates ingress of liquids.

COMMONLY USED TERMS IN LIGHTING



K

Kelvin Temperature (K): Unit of measurement of the Correlated Color Temperature of a light source.

L

Lamp Base: The Portion of a lamp that connects to the luminaire socket and power.

Light Emitting Diode (LED): A semiconductor device that emits light as an electrical current passes through it. Light-emitting diodes are more efficient than other light sources and offer exceptionally long life.

Lumen: Standard unit of measurement of luminous flux. Used to measure the total quantity of visible light emitted by a light source.

Luminaire: Light Fixture. A complete unit consisting of lamp, ballast, reflectors, lens, and other parts.

Luminaire Efficiency: Lumens emitted by a light fixture compared to lumens emitted by the lamp source used in the fixture.

Lux: SI unit to measure illuminance. One lux equals one lumen per square meter.

M

N

O

P

Photocell: Light Control that turns a light source on/off depending on daylight

Power Factor: The ratio of real to apparent power supplied to a circuit. Power factor can range from 0 to 1.

Q

R

Reflection: Light bouncing off a Medium.

Refraction: Bending of light as it passes through a medium. The bending in light is a result of the change of speed as it passes from one medium to the next.

Retrofit: Upgrading old and inefficient technology with new equipment to improve the efficiency of a light system.

S

T

U

V

Voltage: Potential Difference in charge between two points in an electrical field. Measured in Volts (V).

Voltage Drop: Loss of voltage caused by resistance. Voltage Drops can be created by a too-long or too thin wire.

W

Wall Sconce: Decorative Style Luminaire commonly hung on walls.

Watt: Standard unit of measurement for power. One Watt equals one Volt-Amp.

X

Y

Z

IP RATE







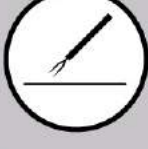


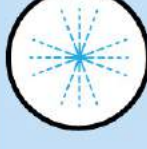


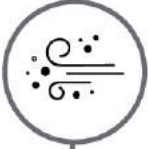





An IP rating of light fixture is the measurement of protection that light will have against liquid (water) and solid (dirt, dust etc.) objects.

There are two numbers in the IP rating,

- The first number (0 to 6), in an solid IP rating. It shows the resistance against solid objects.
- The second number (0 to 8) implies the protection against water.

IP RATING CHART

IP ratings are represented by combining the first and second digits of the following columns:

SOLIDS	WATER
 <p>Protected against a solid object greater than 50mm, such as hand.</p> 1	 <p>Protection against water drops.</p> 1
 <p>Protection against a solid object greater than 12.5mm, such as finger.</p> 2	 <p>Protection against water drops at 15 degree angle.</p> 2
 <p>Protection against a solid object greater than 2.0mm, such as a wire.</p> 3	 <p>Protection against water spray at 60 degree angle.</p> 3
 <p>Protection against a solid object greater than 1.0mm such as a thin strap.</p> 4	 <p>Protection against water splashing from any angle.</p> 4
 <p>Protection from limited dust ingress.</p> 5	 <p>Protection against water jets from any angle.</p> 5
 <p>Dust tight. No ingress of dust.</p> 6	 <p>Protection against powerful water jets and heavy seas.</p> 6
EXAMPLE:	
	
IP	
	
6	5
<p>Dust tight. No ingress of dust.</p>	<p>Protection against water jets from any angle.</p>
 <p>Protection against the effects of temporary submersion in water. (30 minutes at 3 feet)</p> 7	
 <p>Protection against the effects of permanent submersion in water. (Up to 13 feet)</p> 8	

INTRO DUCTION



The bathroom is a space often overlooked from a lighting point of view when applied with precision the LED Light for bathroom lighting can regenerate and relax like it can make all the difference when carrying out routine tasks such as applying makeup or shaving and crucially it can be the defining factor with an interior scheme accentuating a feature or finish.

In bathrooms where water is present – certain lighting must meet a minimum IP rating to reduce the risk of electric shock. When installing bathroom lighting, it's important to understand the bathroom 'zones' and which IP rating applies to each. In this blog we will cover topics from basics of bathroom lighting design, what kind of lighting is best for bathrooms, IP rated bathroom light, etc,

LAYERS OF LIGHTING



Let's break down the various layers of bathroom lighting

- **Task lighting** for precision tasks such as applying makeup, shaving, applying creams, etc.
- **Accent lighting** that highlights key focal views such as your reflection framed within your mirror
- **Ambient lighting** that brings balance and harmony to the bathroom
- **Feature lighting** that gives the space personality and character

TASK LIGHTING

Task lighting specifically targets the main task areas like a mirror which is often the focal point in a bathroom where you need to achieve a flattering and uniform light effect on your face this can be achieved by implementing diffused light either by integrating the lighting into the mirror or by adding wall sconces on either side of the mirror to produce an even vertical lit effect task lighting to the shower area should be located in relation to the shower head

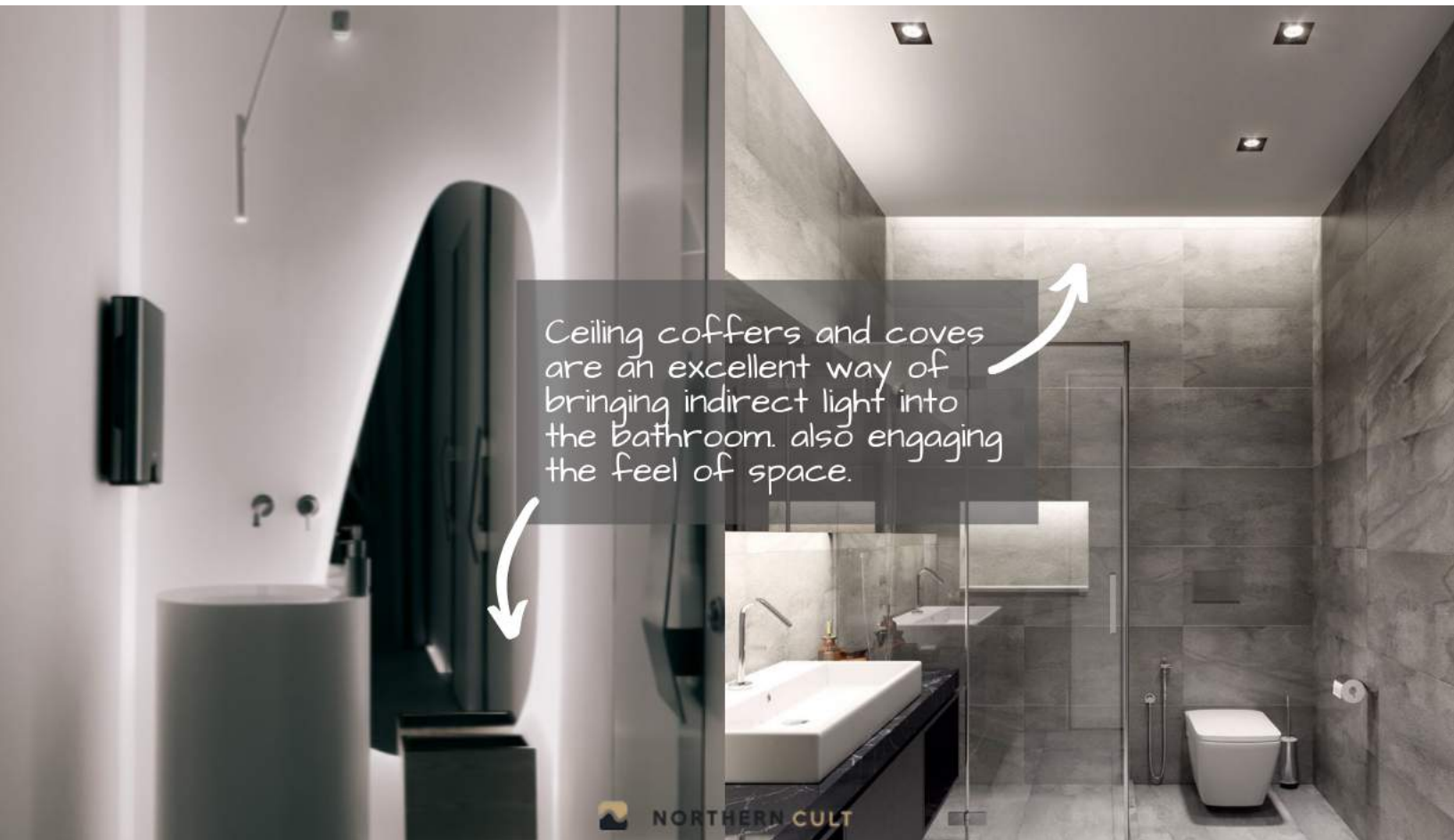
In order to prevent harsh shadows lastly make sure that you position a low glare deep recessed down light over the bathtub to the center of the tub rather than either side otherwise this can be uncomfortable for a person when laying down. Adding LED Mirror Light for the Bathroom shouldn't be treated as a top priority.



ACCENT LIGHTING

Let's now move on to accent lighting that guides the eye and creates points of interest along with the bathroom the bathroom offers many opportunities for joinery lighting that can serve as accents. Lighting within a shower niche can accentuate the depth of the wall. Directional downlights over the basin create a sparkle effect on the basin and tap which prevent the space from feeling a little bit flat.

It's crucial that you carefully position this down light in a way that avoids shadows from the person in front of the mirror. Uplights positioned on the back of the bath and shower instantly create a dramatic effect this technique can also bring out any special finishes used in the space by grazing light onto them lighting to bathroom joinery helps add a soft accent to what may otherwise be a bland space.



AMBIENT LIGHTING

Ambient lighting gives bathroom giving the space a welcoming and inviting mood also helping to relax and rejuvenate if the space allows for it ceiling coffers and coves are an excellent way of bringing indirect light into the bathroom.

Consider installing a row of two or three at the back of the shower or bath, instead of over the centre, so the shafts of light create an effect almost like running water down the wall. The light will also reach the extremities of the room, engaging the feel of space.

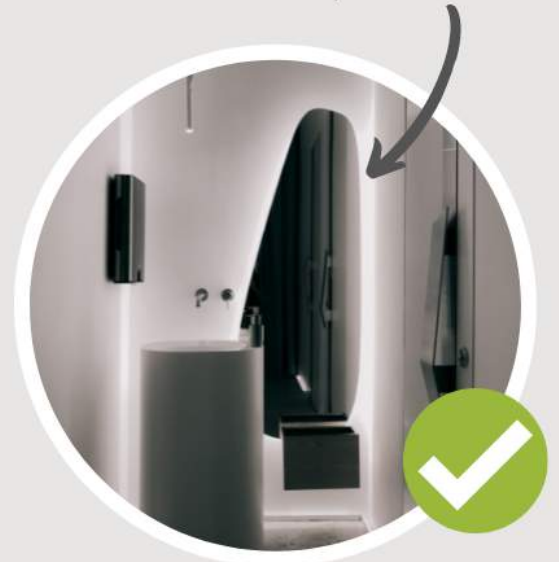


Lighting within a shower niche can accentuate the depth of the wall



Uplights positioned on the back of the bath and shower instantly create a dramatic effect.

Bathroom joinery helps add a soft accent to what may otherwise be a bland space



FEATURE LIGHTING

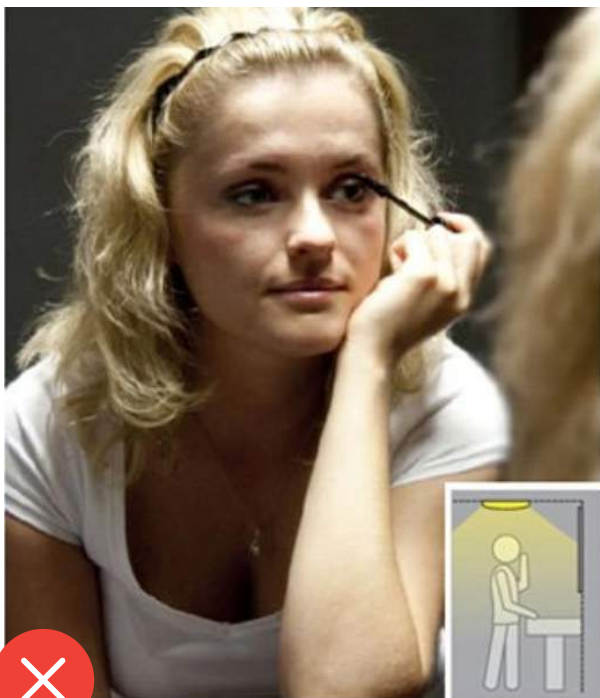
Feature lighting gives an opportunity to make a statement and give the space personality it can also add to overall light levels feature lighting can refer to the fitting itself which makes a statement whether on or off or any interesting light effect that adds an extra dimension but is not absolutely essential.

Decorative pendants in finishes and materials of your choice are good examples of feature lighting if you need useful lighting from your pendant, however, you may also need to check its lighting output miniature uplights to the window reveal are wonderfully dainty details that can add a bit of drama to the kitchen thank you for listening to this an installment in our dark art of light series.



Pendants on either side of the mirror which can also contribute as task lighting of the bathroom

DO'S AND DONT'S



MIRROR LIT FROM ABOVE



MIRROR LIT FROM SIDES

WHAT KIND OF LIGHTING IS BEST FOR APPLYING MAKEUP?

Make sure that you have no lighting directly over your head at the basin, as this will create unflattering shadows (see mirror lit from above). Pendant lights on both sides of Wall lights mounted on either side of the mirror, or using an illuminated mirror will create a more even spread of light on the face (see mirror lit from two sides).

Also, make sure the light color temperature is suitable for your skin tone, For makeup application, 4500K-5000K is recommended as it is not too warm or too cool. Kelvin (K) is a unit to describe the color temperature of light. 2700-3000K is a soft warm light and suitable if you would like a healthy glow for photography and not the make-up application.

Also make sure the lights are high CRI (color rendering index), follow our detailed blog about color rendering to understand more about color rendering.

WHICH IP RATE OR PROTECTION CLASS FOR BATHROOM LUMINAIRES?

While considering the IP-rated bathroom lights, we divide them into 3 sections, luminaires in the floor where the immediate vicinity of the bathtub or shower must have an IP 67 protection class. This means that they are protected against temporary immersion. Normally we use LED Strips or uplights to highlight the bathtub or lights positioned on the back of the bath and shower instantly create a dramatic effect as mentioned in the accent lighting section. Protection class IP65 is the right choice for bathroom luminaires in areas up to a height of 2.25 m around the showerhead and the bathtub or shower tray. This means they are protected against jets of water.

Use light fixtures with an IP44 protection class for walls up to 2.25 m high and at a distance of up to 60 cm around the bathtub or shower, to ensure they are protected against splash water.

KEY POINTS

AREA	FIXTURE TYPE	IP RATING	LUX LEVEL	COLOR TEMPERATURE
GENERAL AREAS	SURFACE MOUNT, RECESSED DOWNLIGHTS	IP54	300LX	WARM WHITE 2700K - 3500K
TASK AREA FOR MAKEUP, SHAVING	ILLUMINATED MIRROR, PENDANT LIGHTS,	IP20	500lx	NATURAL WHITE 4000K - 5000K
JOINERY LIGHT	LED STRIP LIGHT WITH PROFILE & DIFFUSER	IP68	100lx-200lx	AS PER THE MOOD*
COVE LIGHT / SKIRTING	LED STRIP LIGHTS	IP68	100lx-200lx	WARM WHITE 2700K - 3500K

BATHROOM LIGHTING DESIGN RULES OF THUMB

To make things short while considering the LED lights for bathroom lighting design, here are the five points to make bathroom lighting design better.

- Prepare a basic lighting plan highlighting the specific areas and incorporating all your needs and atmosphere you want to create in the bathroom,
- Check whether all four layers of lighting can be incorporated, ie Ambient lighting, Accent lighting, Task lighting, and Feature lighting,
- Choose the right color temperature, IP Rating, CRI >90, and energy consumption, especially areas where applying makeup,
- Match the style of bathroom light fixtures with the overall bathroom design including the lighting finish, installation type, and color temperature,
- Don't overload the space with too many light fixtures.

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