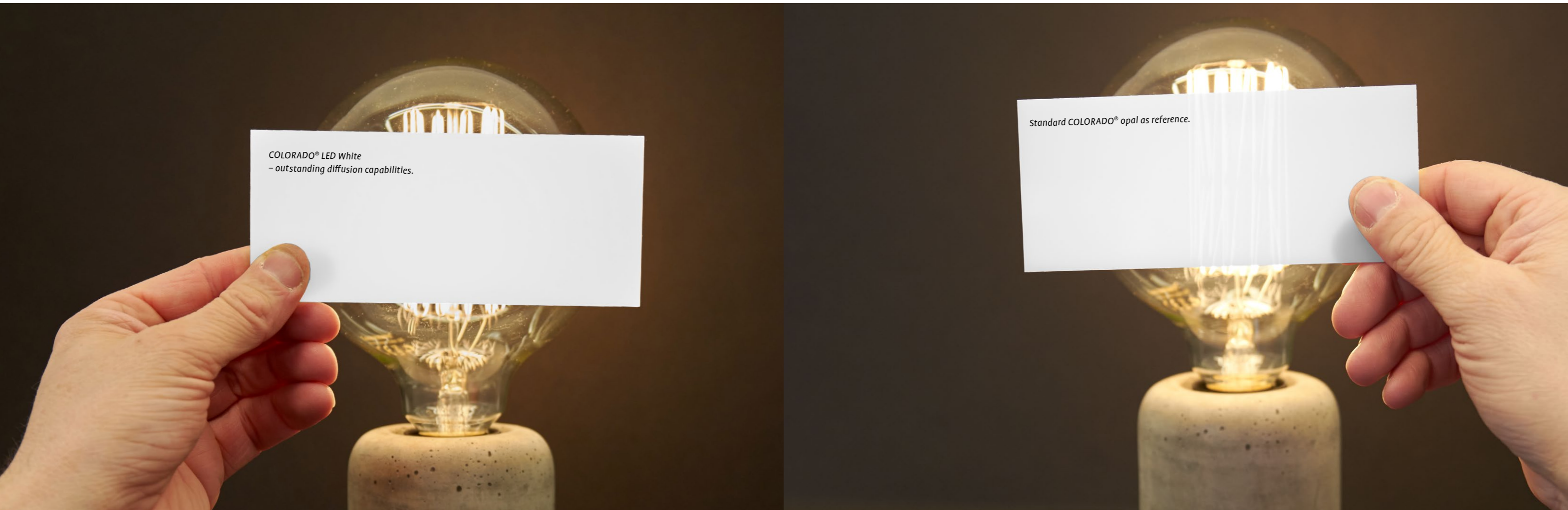


# LED SOLUTIONS

SEE THE DIFFERENCE





# COLORADO® LED

We are proud to present the COLORADO® LED product range!

The COLORADO® LED is based on transparent polycarbonate sheets with a LED diffusing masterbatch. The range offers excellent diffusing capabilities, superior to the COLORADO® Opal range, throughout the sheet thickness.

Today LED's are amongst the most efficient light sources available. LED has quickly become the technology of choice for many applications.

LED lighting improves the city environment by not only offering energy efficiency and safety but also for shopping experience, improved learning conditions, more productive and healthier office spaces and much more.

## Two basic colours

COLORADO® LED is available in two basic tints – LED with neutral tint called DB (Diffusive & Bluish) and LED White. LED White is a preferred choice to avoid the dull greyish appearance of alternative material, when the light is switched off. However, LED DB provide even better light transmission.

## MATT surface

COLORADO® LED is also available with an antireflective matt surface, not only reducing the reflections but also adding to the diffusivity. This is a good option when reflection of the surroundings must be avoided for esthetical excellence.

## UV-protection

LED's do not emit ultraviolet (UV) radiation, but for outdoor applications there is a need for UV protection to keep the sheet properties. Our COLORADO® LED UV has a special UV absorbing layer and comes with an extended warranty.

## Temperature range

COLORADO® LED can be used between -100 °C up to 120°C, covering the majority of LED lighting applications.

## Fire properties

COLORADO® LED has an oxygen index of more than 25%, which means it is a self-extinguishable material. It also has glow wire resistance sufficient for the majority of the lighting applications.

## Impact resistance

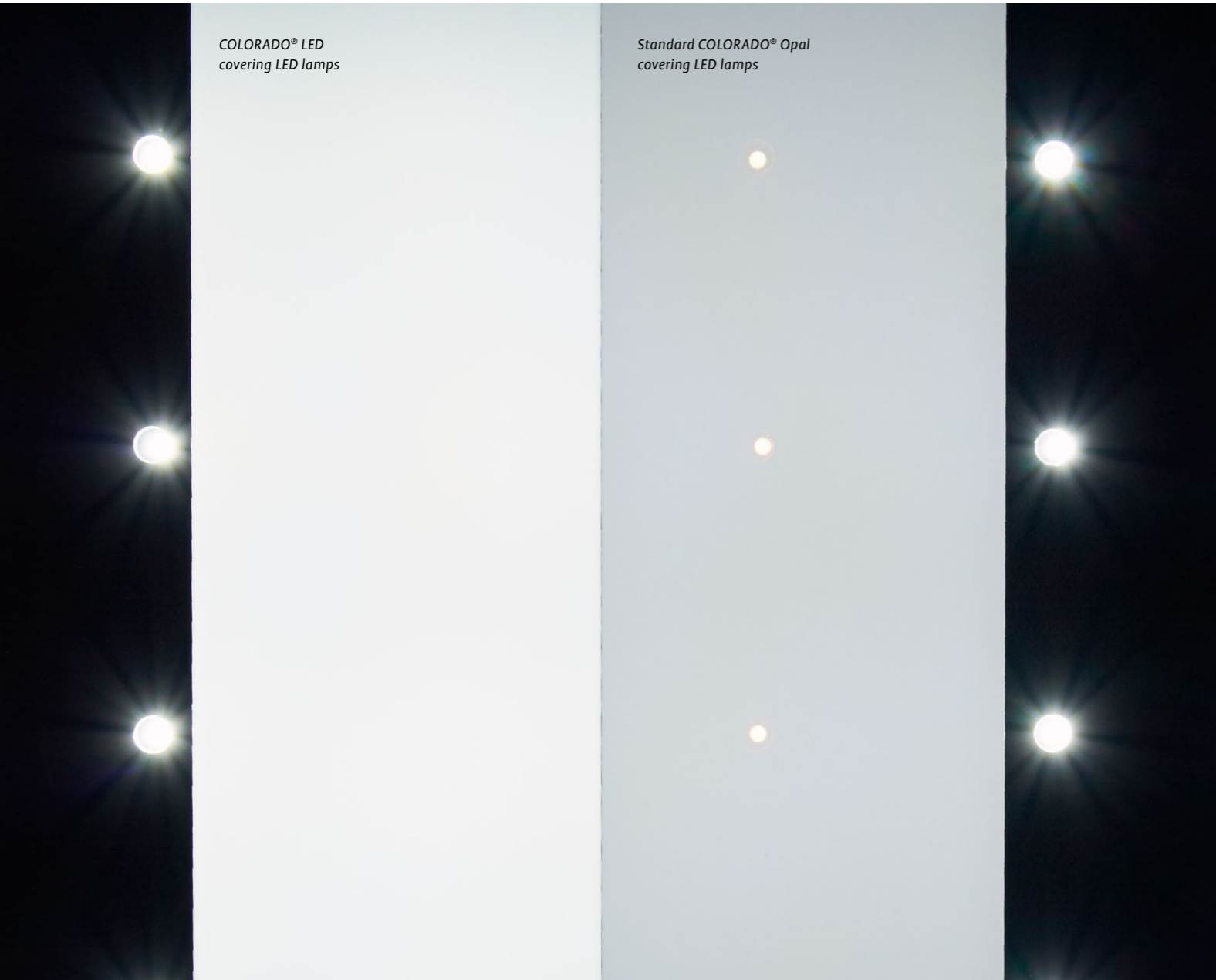
Polycarbonate is the most impact resistant light transmitting material. It is up to 280 times more impact resistant than glass and 30 times the impact strength of Acrylic (PMMA). This means a great protection for the LED application.

## Hard coating

When the scratch resistance or the chemical resistance of the standard COLORADO® LED is not sufficient, an optional hard coating operation can improve the surface properties.

## Dimensional stability

Being a thermoplastic material, COLORADO® can be formed in to most complex shapes using a variety of thermal forming techniques. The formed parts remain unaltered and inert during their lifespan.



COLORADO® LED covering LED lamps

Standard COLORADO® Opal covering LED lamps

# LED - the future of lighting



## Saves energy

LED lighting saves energy, which gives both economical and environmental benefits. More over LED light lamps are mercury free which is good for the environment.



## Speed of light

LED lamps have excellent light properties. The light switches on instantly and is flicker-free. The LED light emits hardly any UV or IR radiation.



## Less heat build up

LED lamps generate less heat compared to standard light/filament bulbs. This makes LED more efficient as a light source, it is safer and it also simplifies the design of light applications and allows more compact designs.



## Superior life time

The life time of LED lamps is very long. LED lamps have a life time of up to 50 000 hours. Conventional bulbs last around 1000 – 2000 hours.

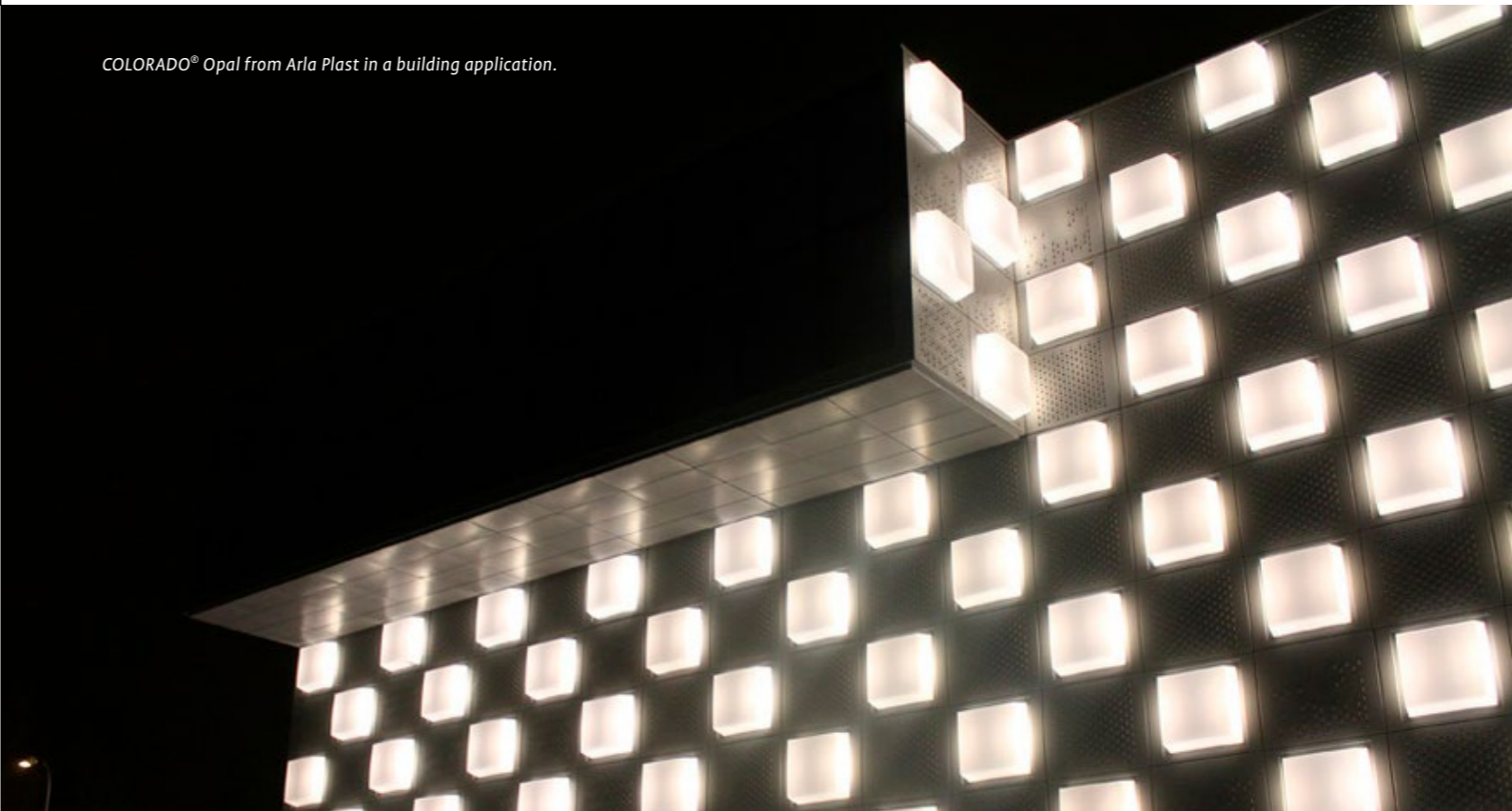
## Light transmission

In any lighting application the best possible light transmission is desired in order to achieve an energy efficient solution. Another aspect is not to alter the characteristics of the light itself. There may be a conflict between good diffusion and transmission, if the diffusive particles reduce the light transmission too much. The light transmission factor is important in order to obtain the highest possible illumination of the area. COLORADO® LED has a higher light transmission than common opalescent materials, meaning you obtain a higher light output for the application.

## Need to diffuse the light

LED light is a very distinct and sharp light source compared to traditional light bulbs or fluorescent lamps. In order to achieve an efficient and esthetic light appearance, the light from each LED needs to be diffused over the entire sheet surface area. This avoids that each distinct light source can be seen separately. Light diffusion can be described as the scattering or spreading out of light in translucent materials. The COLORADO® LED product range has excellent diffusion capability, also allowing shorter mounting distances between the sheet and the LED lamp.

COLORADO® Opal from Arla Plast in a building application.



# Light temperature - hot or cold?

The light spectrum from a modern Light Emitting Diode (LED) can be diverse from ultra violet to infra-red or distinct (narrow spectrum).

White light, as used in the majority of LED lighting applications, consists either of a combination of distinct red-green-blue (RGB) LED's or a blue LED emitting into a yellow phosphor. Both resulting spectra have a blue component and a yellow or red+green component. Variations in the components can create a range of white light ranging from cool white (more bluish) to warm white (more yellowish). The output of cool white is higher, which means that cool white LED's are typically the most cost-effective solution.

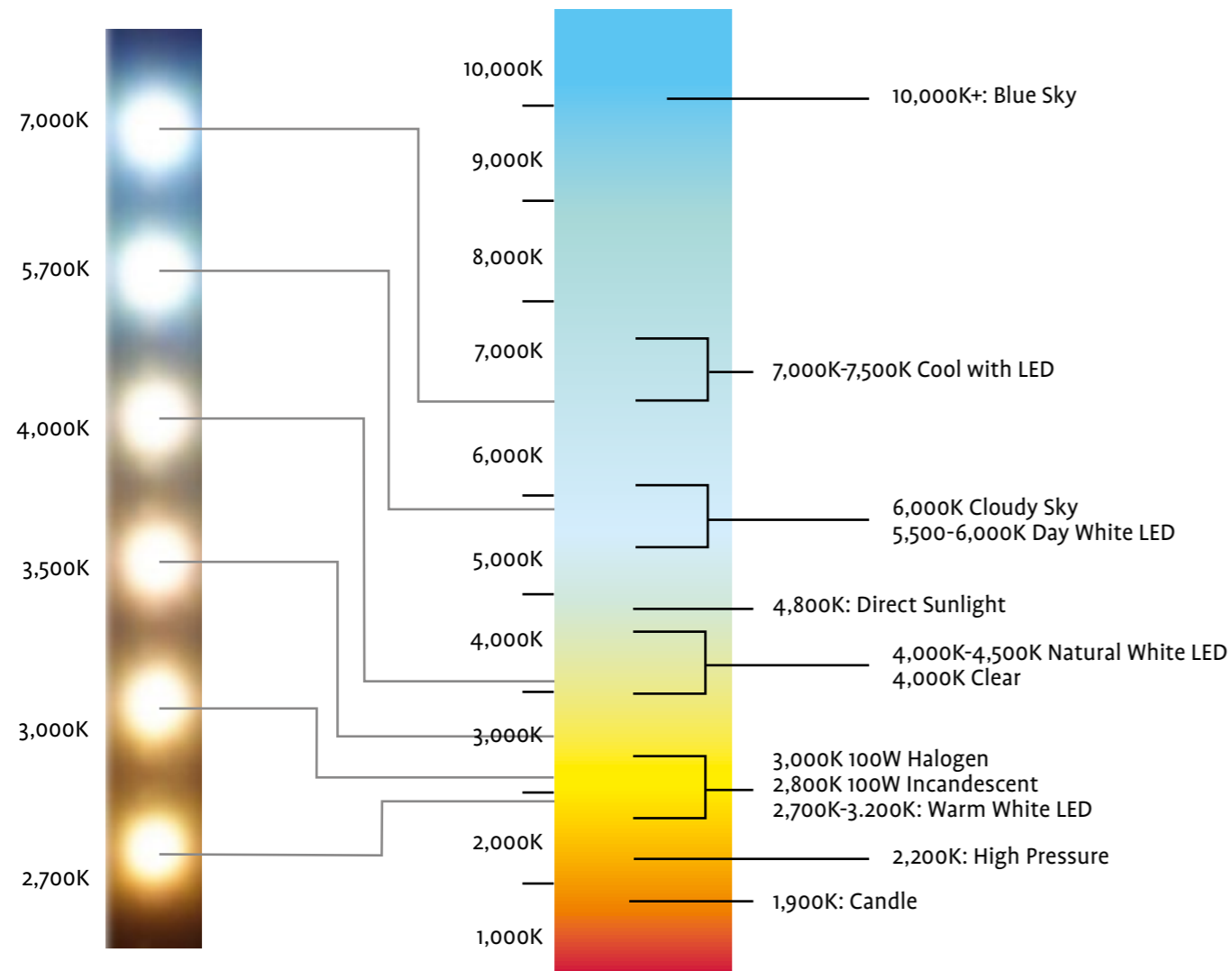
With LED it is possible to choose light with different appearance. The colour temperature, is measured in Kelvin (K). The Kelvin temperature scale goes from 1000 K to 10 000K. The 1000K will be considered as very warm and has the appearance of candlelight red/yellow and 10 000K, will be very cool and has the appearance of blue sky – blue.

Basic LED reference examples spreads from 2700K to 7000K. 2700K = Warm white. 7000K = Cool White.

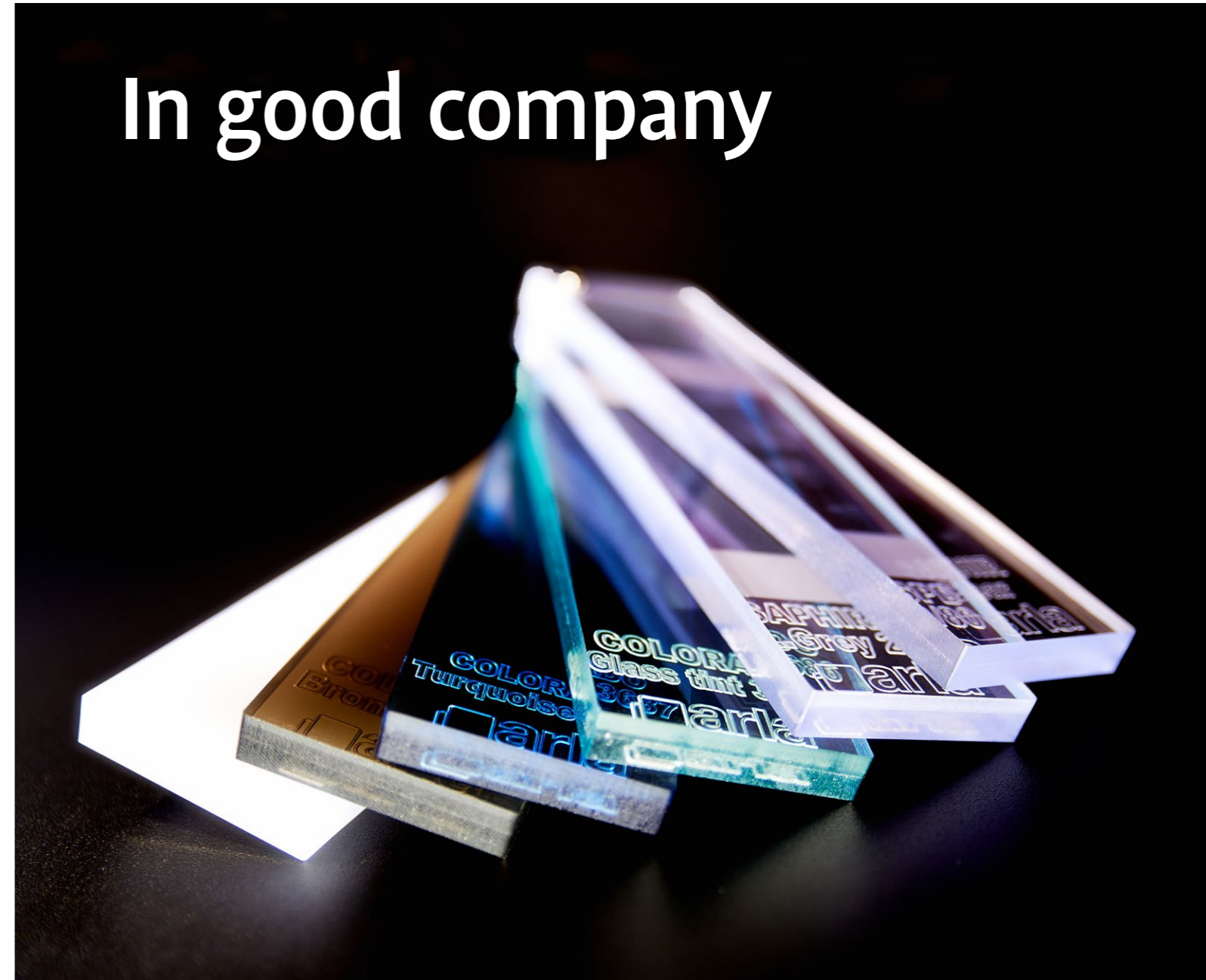
Daylight has a spectrum similar to that of a black body with a correlated color temperature of 6,500 K (D65 viewing standard).

## BASIC LED REFERENCE EXAMPLE

## KELVIN COLOR TEMPERATURE SCALE CHART



# In good company



COLORADO® is the name of the coloured transparent and opal polycarbonate sheets from Arla Plast. Arla Plast has long experience in producing coloured sheets according to specific customer demands.

COLORADO® offers a wide range of extruded transparent coloured polycarbonate sheet. The product is produced with vast knowledge of our production team experienced in producing mono, co and triex-trusion. The product is virtually unbreakable with extremely high impact resistance and offers high temperature performance too.

COLORADO® provides designers, specifiers and architects with possibilities to use transparent coloured polycarbonate sheets in applications where high clarity and optical performance is required.

Arla Plast AB offer a range of standard coloured tints but also offer good colour matching service with low minimum quantities.

### COLORADO® BENEFITS:

- Wide range of transparent colours
- More than 10 times the impact strength of high impact PMMA
- Easy to thermoform or cold bend into complex shapes
- Half the weight of glass

### APPLICATION AREAS:

For glazing, signs, displays, lighting, machine protection and in other applications where a high impact strength and good aesthetics are needed.



At Arla Plast we have developed and fine-tuned the extrusion techniques for plastic sheets since the 60's. We have developed the professional knowledge over many years, the machinery resources, the feel for quality and the willingness to always do a good job. Our experience ensures that you receive a product which satisfies your needs.

Good product quality is our primary target to be a good supplier, but this is not enough. Thanks to the cooperation with our customers and suppliers we have learned the meaning of high flexibility, delivery precision and good service in order to build trust and long term relations.

Today Arla Plast is one of the leading extruders of plastic sheets in Europe. But that is not good enough. Every day we strive for becoming better by developing new materials, new quality specifications and taking care by lowering our environmental impact. All in order to become and to remain your best long term partner.

