

# VeroLux™



# VeroLux™ – Natural Light, Perfected for Architecture

At Zaniboni Lighting, we believe that light should never feel artificial. It should make spaces breathe, colors sing, and people feel alive. That’s the vision behind VeroLux, our most advanced LED solution. Unlike conventional high-CRI LEDs, VeroLux is designed to replicate the experience of natural daylight indoors with scientific precision and unmatched beauty.

## The Science of Light Quality

For decades, the lighting industry has measured quality with **CRI (Color Rendering Index)**. CRI describes how faithfully a light source renders a handful of test colors compared to a reference source. But CRI alone is limited. Two light sources with identical CRI can render colors very differently, often hiding weaknesses such as dull reds or poor cyan tones.

That’s why new metrics like **TM-30** are critical. TM-30 expands color fidelity testing from 8 pastel hues to 99 colors, reporting two values:

- **Rf (fidelity)** – how close colors appear to the reference light.
- **Rg (gamut)** – whether colors look muted or oversaturated.

VeroLux consistently achieves **Rf in the mid to high 90s and Rg close to 100**. In practical terms, this means colors under VeroLux look both accurate and naturally vibrant – not washed out, not artificially boosted, simply *real*.

Another important detail is the **R9 score**, which represents saturated red. Many “90+ CRI” LEDs fall short on R9, leaving skin tones flat and food unappetizing. VeroLux maintains very high R9 values, so reds, skin tones, wood, and earth materials look true to life.

## Spectral Power Distribution (SPD) Explained

To truly understand why VeroLux is different, we need to look at the **Spectral Power Distribution (SPD)** – a graph that shows how much power a light source emits at each wavelength of visible light (roughly 380–780 nm). SPDs are measured with a **spectroradiometer**, capturing radiant power in fine increments, typically every nanometer.

Daylight has a smooth, balanced SPD. By contrast, most LEDs show sharp peaks and valleys, such as a tall spike in blue light and a dip in cyan. These gaps distort how certain colors appear to the human eye.

VeroLux was engineered to flatten those irregularities. Its SPD closely follows the smooth profile of natural daylight, without harsh peaks or missing regions. This balanced distribution is why materials and colors look “right” under VeroLux, even compared side-by-side with actual sunlight.

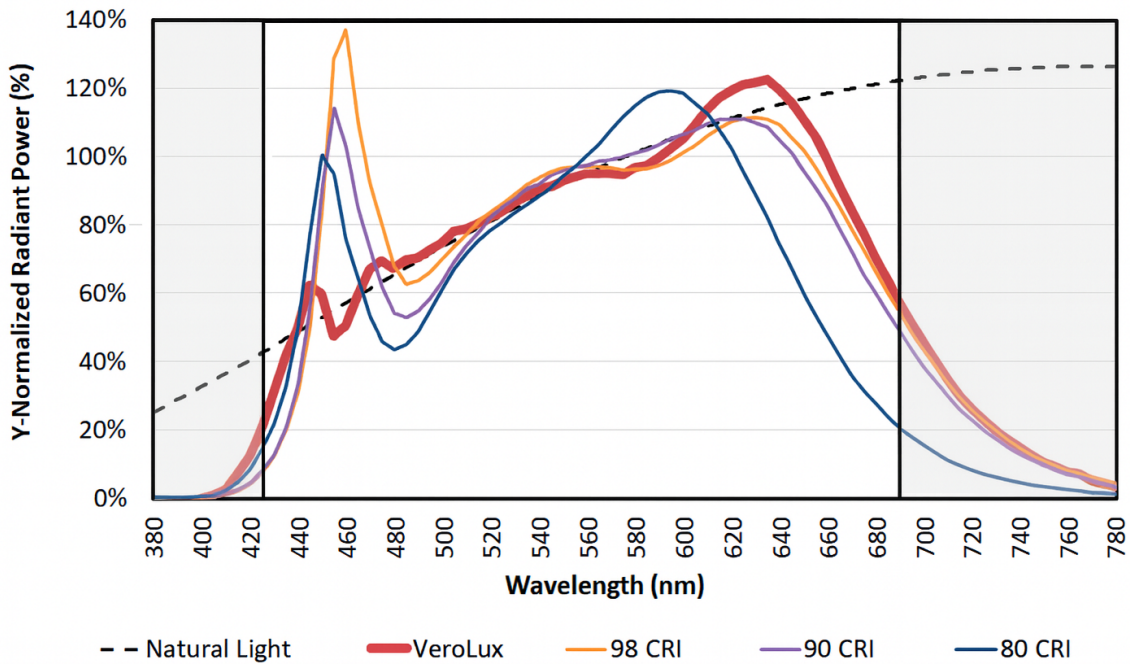


Figure 5: SPDs of LED light sources at 4000K against the blackbody curve.

## Average Spectral Difference (ASD) – Measuring Naturalness

While CRI and TM-30 describe aspects of color rendering, they don't directly measure how *natural* a light source is. That's where **Average Spectral Difference (ASD)** comes in. ASD calculates the percentage difference between a light source's SPD and the SPD of daylight or a blackbody reference at the same color temperature. The lower the ASD, the closer the light is to natural light.

Typical high-CRI LEDs may show ASD values **2 to 6 times higher** than Verolux. In critical regions like cyan, the difference can be as much as **20 times greater**. Verolux maintains ASD values as low as **3–7%**, and in some ranges even **~2%**, meaning it is nearly indistinguishable from sunlight in the wavelengths where other LEDs fail.

Evaluation Metric		Natural Light	Verolux	80 CRI	90 CRI	98 CRI
ASD		0%	9%	28%	20%	18%
TM-30	Ra	100	98	83	92	98
	Rf	100	98	84	91	94
	Rg	100	101	93	97	102

Table 1: Typical ASD, CRI and TM-30 valued for 3000K light sources.

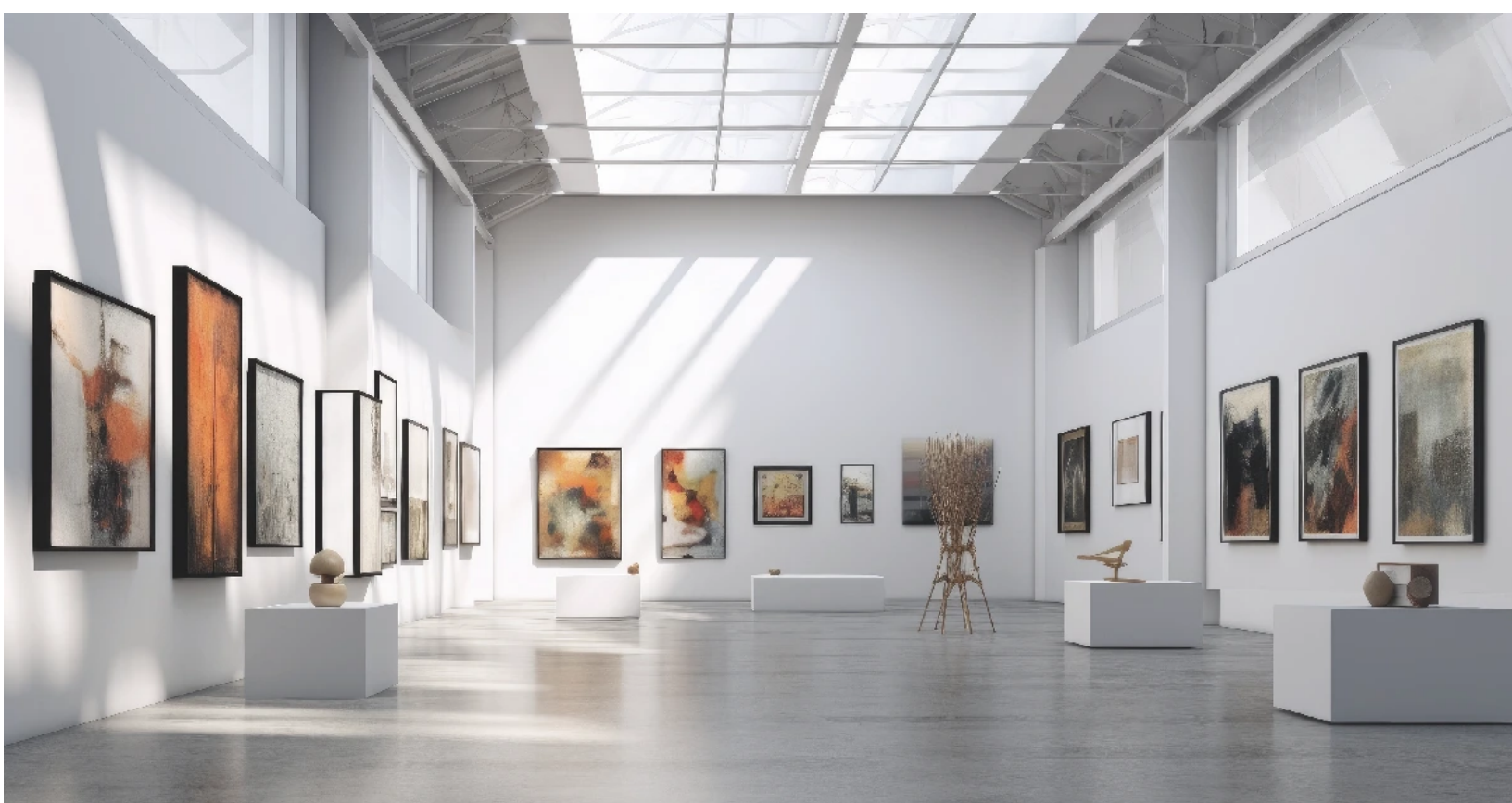
## Lighting as a Value Multiplier

The technical story is clear: VeroLux outperforms conventional LEDs across every meaningful measure of quality. But the impact goes far beyond numbers.

Light is not just about visibility – it's about **experience**. Museums understand this better than anyone: they invest heavily in light quality because a painting, textile, or artifact can be either diminished or brought to life depending on the spectrum shining on it. Shouldn't every space deserve that same level of care?

With VeroLux, the natural vibrancy reserved for museum galleries can now enrich restaurants, retail, hospitality, offices, and healthcare spaces. Imagine food in a restaurant looking as appetizing as it does under daylight, or a retail showroom where colors are true to life and inspire confidence in every purchase. Picture offices where people feel more alert and comfortable because the light mirrors the sun.

At Zaniboni, we see **light as a value multiplier**. It enhances architecture, elevates experiences, and influences how people feel and behave. With VeroLux, your projects gain not just light, but *living light* – a tool that transforms spaces into environments people remember and love.



## The VeroLux™ Promise

VeroLux is not a commodity LED. It is the result of years of research into how to replicate natural light indoors and make it available for everybody and set a new quality standard. At Zaniboni Lighting, we made it our mission to bring that science into architectural practice.

When you specify VeroLux, you are choosing a solution that is:

- Scientifically validated with CRI, TM-30, and ASD metrics.
- Uniquely balanced to replicate daylight's spectrum.
- Designed to maximize the value and beauty of every space it illuminates.

Lighting is the most powerful invisible material in architecture. With VeroLux, you have the closest thing to sunlight itself – crafted for your projects, ready to elevate every experience.

**Zaniboni Lighting | VeroLux™ – Because Real Light Creates Real Value.**