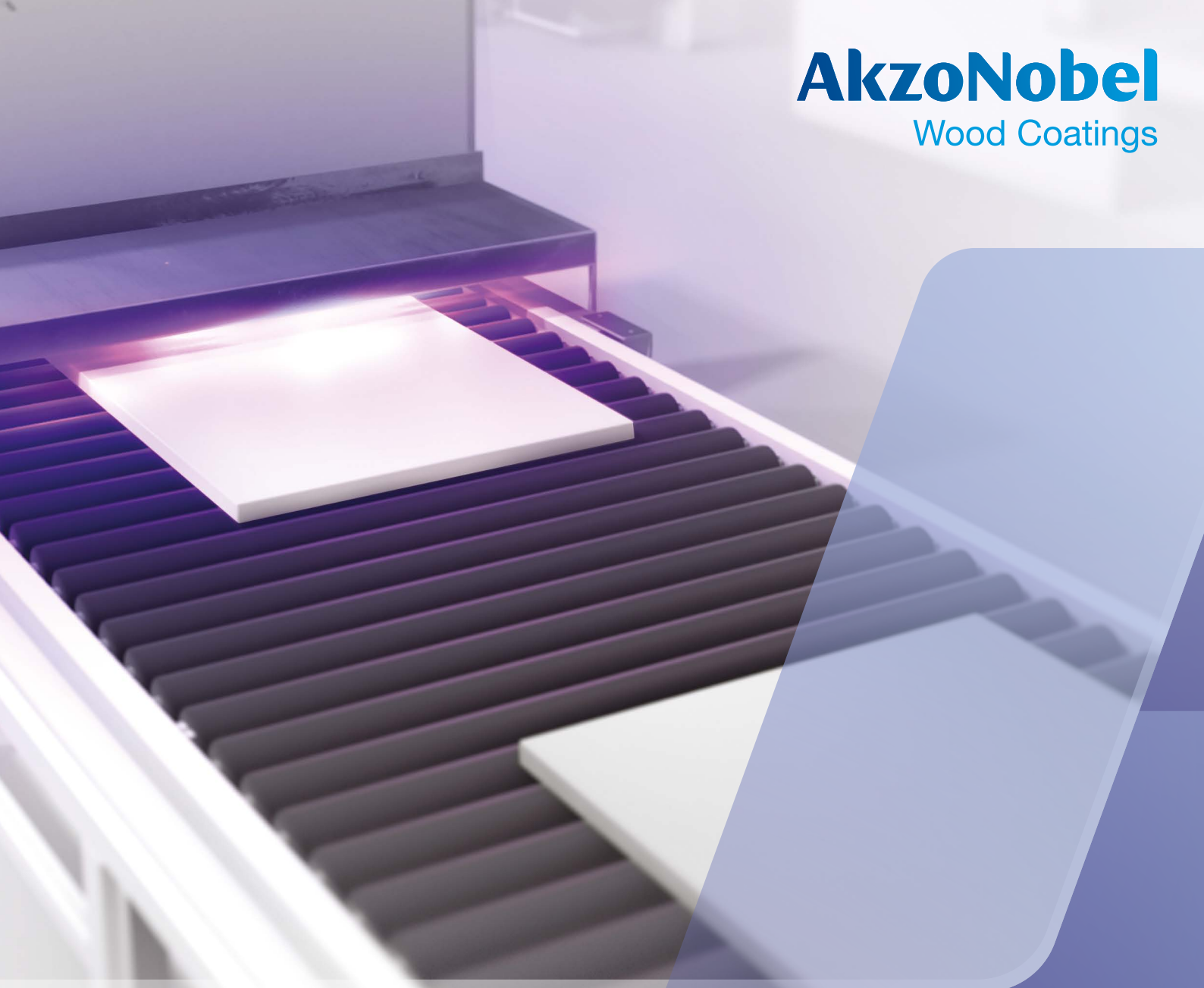




Illuminating the **future of UV curing**

Innovation doesn't wait. Neither should you.

akzonobel-industrial-woodcoatings.com

Discover more about UV / UV LED

At AkzoNobel Wood Coatings, we're pushing the boundaries of what's possible with UV and UV LED curing technology, a smarter, more sustainable way to instantly cure coatings that's built for the future.

Cut energy costs by up to 70%, boost throughput, and reduce carbon emissions, all without compromising on quality.

We're here to help you optimize efficiency on your line while moving you closer to your sustainability goals. Stay ahead of industry trends, meet evolving environmental standards and reveal new opportunities with UV curing.



Discover more by visiting the
AkzoNobel Wood Coatings website

Key benefits of UV/UV LED

- **Process efficiency** – Higher productivity and output, thanks to instant drying which allows immediate handling / stacking of parts
- **Cost efficiency** – More energy efficient* compared to other curing methods
- **Performance** – Good stain and scratch resistance, and excellent application flexibility
- **Sustainability** – Little to no VOCs and no overspray when using soft roller technology

It all adds up

When it comes to sustainability, every action counts. From renewable materials to smart adjustments along the value chain, being part of AkzoNobel means we're also committed to helping you to seize the opportunities to reduce waste, save energy, reduce your carbon footprint and save costs.

Join the sustainability journey



We're continuously exploring new options to make our solutions more sustainable. AquaSilk waterborne wood coatings systems could help you on your sustainability journey.
akzonobel-industrial-woodcoatings.com/en-nam/sustainability

Frequently asked questions

The following sections provide explanations of terms commonly used in UV and UV LED curing.

Question

What is UV / UV LED curing technology?

Answer

UV and UV LED (light emitting diode) are technologies that use high-intensity ultraviolet (UV) light to instantly cure coatings through polymerization. The technology transforms a liquid coating to a solid coating instantly, through a process where photoinitiators absorb UV-light and generate radicals. This in turn initiates a chain-reaction with monomers and oligomers in the coating. UV LED curing systems are a more advanced form of the technology. They use LEDs to provide a more energy-efficient* and an alternative that can help reduce process emissions to traditional heat-cured systems.

*Actual energy saving will depend on several factors such as current line configuration and coating system considered.

Question

Is UV / UV LED technology available across all Wood Finishes segments?

Answer

In principle, yes, depending on the customer's equipment and the items to be coated. AkzoNobel has a full system for cabinets, furniture and flooring, and sealers for building products.

Question

What types of coatings technologies are used for UV curing?

Answer

Two main product technologies are used for UV curing, depending on the application method:

- 100% solids UV
- Waterborne UV

Solventborne UV technologies are also available, but these are less popular due to their weaker sustainability performance.

It is important to assess the shape of the item being coated to determine which technology or combination of technologies suits best.

Key differences of UV / UV LED, and conventional curing

Question

What are the differences between UV and UV LED curing?

Answer

A conventional UV curing system uses mercury arc lamps. These emit UV, visible and infrared light across a broad spectrum of wavelengths. Sometimes the (arc) lamps are modified by other materials, such as gallium. This moves the emitted light towards the visible part of the spectrum and provides improved curing depth in pigmented coatings. Emitting light across a broad spectrum means the technology is compatible with the absorption spectrum of multiple photoinitiators, which are needed to generate the radicals used to cure the coatings. However, a lot of energy is wasted either as heat or in wavelengths where the photoinitiators do not absorb the light.

In contrast, UV LEDs emit light across a narrow bandwidth, which limits the number of photoinitiators they can be used with. However, LEDs require less maintenance and are more energy efficient, using 50%-70% less energy compared to a mercury arc lamp.* They also provide better process control, reducing re-work and scrap, and have a much longer lifespan: an arc lamp will typically last for 1,000-1,500 hours, while an LED will last for more than 20,000 hours.*

*The State of UV-LED Curing - An Investigation of Chemistry and Applications.pdf

Question

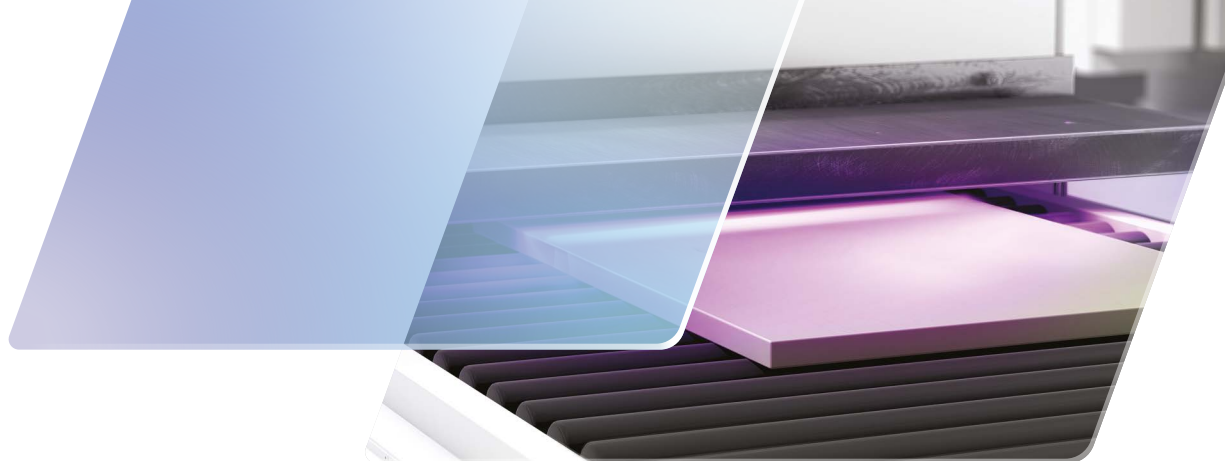
What are the key differences between these technologies?

Answer

100% solids UV – is mainly used on roller lines, edge or narrow spray lines or vacuum lines, and is based on acrylate binders. There is immediate curing after application, allowing for immediate stacking. It has high film performance with good resistance and no VOCs.

Waterborne UV – is mainly used for spray and curtain coaters and is usually based on acrylate binders. Waterborne UV contains water as a diluent. The water needs to be evaporated off using dryers before the UV-curing step. Waterborne UV products have better film resistance than conventional waterborne products. In addition, they produce virtually no VOCs and can be an ideal replacement for solventborne technologies, especially for cabinets or furniture spray lines.

Solventborne UV – is mainly used for spray lines, mostly based on unsaturated polyester (UPE) and acrylic binders. These coatings are significantly less sustainable than the other technologies and have higher VOC levels.



Question

How does UV / UV LED curing compare to non-radiation cured coating?

Answer

On 2D substrates, 100% UV systems are superior in performance in terms of stain and scratch resistance compared to other technologies.**

The best waterborne UV (WBUV) reference in benchmark tests was on par with 2K PU solventborne (SB) coatings.

The performance of WBUV systems is better in terms of stain and scratch resistance, as well as productivity, compared to 1K WB and 2K WB, while WBUV systems have lower VOCs.

UV Systems compared to 2K PU SB

	Equal performance	Superior performance
Scratch resistance		✓
Stain resistance		✓

**Based on internal benchmark study

Question

How can moving to UV from conventionally cured coatings help reduce carbon footprint?

Answer

Carbon reduction benefits will depend on the current coatings and processes used and which type of UV coating is adopted. When moving from a solvent-based coating system (e.g. acid catalyzed) to a waterborne UV or 100% solids UV system, the carbon footprint can typically be reduced in several ways:

Lower product carbon footprint – Lower VOC emissions – up to 60% reduction.[†]

Lower absolute carbon emissions - Due to a reduction in product usage (100% solids UV) – up to 90% reduction.[†]

Lower energy usage and carbon emissions – Up to 55% reduction in carbon footprint with 100% solids UV LED.[†]

In addition, switching from a fossil-fuel powered curing process to UV curing enables ultra-low carbon emissions from coating lines by allowing full electrification of the process. This in turn makes it possible to power operations entirely with renewable electricity. With our carbon footprint calculator, our specialists can help you to identify exactly what this means for you.

[†]Based on cradle-to-gate GWP, with options including A1-A5, VOC, and C3+C4

Application of UV / UV LED curing

Optimizing curing processes for high-performance results.

Question

What are the most common application methods used with UV / UV LED curing technology?

Answer

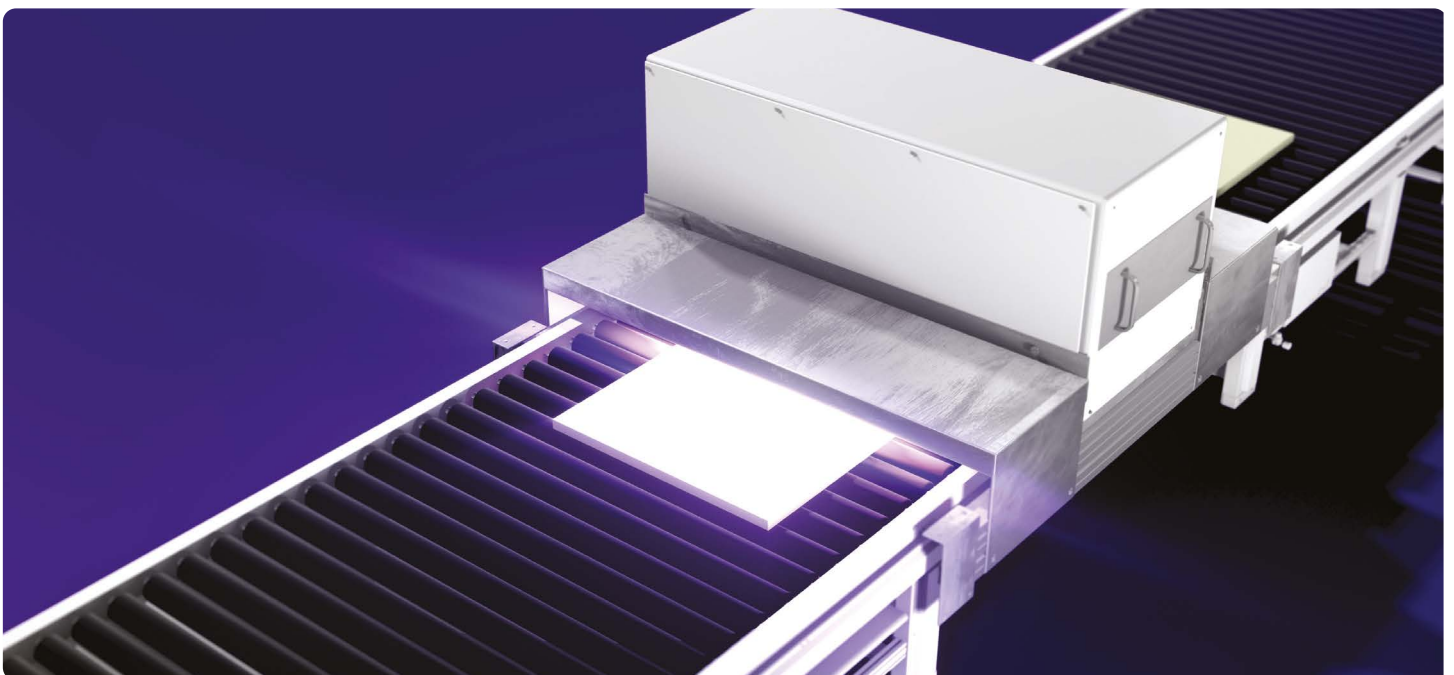
The most common UV / UV LED application methods are via roller lines (including soft roller), spray lines and curtain coaters.

Question

How does soft roller application compare to spray application?

Answer

Soft roller systems can deliver efficiency, sustainability, quality, and economic benefits. They also open up application possibilities for more complex geometries, leading to productivity and efficiency gains, with superior transfer efficiency. Soft roller technology is particularly beneficial for applications on profiled panels (up to a certain depth) and can also cover profiles to a certain depth. Fewer layers are needed and removing one application step delivers large savings for customers.



Find out more about **UV / UV LED curing**

New possibilities with UV Wood Coatings from AkzoNobel.

Question

I'm interested in switching to UV / UV LED technology. How can AkzoNobel help?

Answer

At AkzoNobel, we have more than 40 years' experience in UV technology. We can support your business with bespoke UV curing advice, depending on the technology you are switching from.

We can provide business case calculations with our Cost2Coat calculator. This helps you assess the benefits of switching to UV / UV LED technology by looking at the initial investment costs and long-term operational savings and payback times compared to traditional curing methods. Our specialists can help you assess how much energy you can save, calculate the expected upfront investment and maintenance costs, and identify the process advantages you can gain in terms of throughput, so you can make an informed decision.

Our dedicated Technical Service and R&D colleagues are on hand to ensure the right product selection and ensure a successful line set up, while our technical application centre in Malmö is fully equipped with the latest UV and UV LED curing technologies. We also have long-running collaborations with all major equipment suppliers to ensure our products work well on different types of UV lines, and we are happy to work with prospective customers to help them understand the best coating solutions for their products.

Question

Where can I find more information?

Answer

You can find more information about UV and UV LED curing technologies, our products, and our service offering on our website. You can also reach out to your local AkzoNobel sales or Technical Service representative.



**Discover more by visiting the
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