

## Indigo-Clean<sup>®</sup> Technology Frequently Asked Questions

To assist you in finding your answer quickly, we have broken our Frequently Asked Questions (FAQ) down into 4 topics:

- **Safety**
- **General**
- **Product Performance**
- **Operations**

### Safety

#### Is Indigo-Clean Technology harmful to occupants and materials?

Indigo-Clean Technology contains no UV and utilizes visible light making it is safe for room occupants and materials.

#### Has this technology been certified as safe by any third parties?

Yes, there are multiple international standards which assess the safety of light sources against the skin and eyes. Indigo-Clean Technology has been tested and evaluated against all of these standards and is certified as “risk exempt”. This means that people can be in the space without exposure limits for any period of time. Safety compliance is managed through the IEC 62471, ACGIH, and/or ICNIRP standards. The IEC is an international standards organization. Before deciding on a disinfecting light solution, ask your lighting rep for the IEC certificate to validate that the solution is “risk exempt”.

#### Does Indigo-Clean Technology light strain occupant’s eyes?

No, and when mixed with complementary colors, it provides a white light that is the same as normal, overhead lighting and so it creates no additional strain for the eye.

### General

#### What is Indigo-Clean?

Indigo-Clean is a lighting technology that lights the space while providing continuous environmental disinfection using visible light technology. Because it uses safe, visible light, people can be in the room while the technology is in use.

#### What is the significance of the Indigo-Clean announcement?

The path to managing COVID just got a whole lot brighter and is as easy as turning on the lights with the announcement of Finelite integrating Indigo-Clean Technology in select luminaires. Indigo-Clean Technology is safe, continuous, and effective at killing Influenza-A, SARS-CoV-2\* (the virus that causes COVID-19), and a list of pathogens that negatively impact health and wellness.

**How does Indigo-Clean Technology work?**

Indigo-Clean Technology uses light-emitting diodes (LEDs) with a wavelength of 405 nanometers (nm). The light is absorbed by the organism creating an internal oxidizing reaction that kills it. Unlike UV, Indigo-Clean lighting technology is both direct and indirect. Reflecting off walls and other surfaces, it reaches the many shadowed areas UV light can't. Once exposed, pathogens are oxidized from within, no matter where they exist: in the air and on surfaces.

**How does Indigo-Clean Technology compare to UV light?**

Indigo-Clean Technology uses safe, visible light to continuously disinfect the environment. As such, it can be used while people are in the space. Its effectiveness is also measured differently than UV. It provides a continuous reduction in bacterial count (measured over 24 hours) as compared to episodic (non-continuous) technologies whose effectiveness is measured in log10 kill (during the limited period in which it's applied).

**What applications are suitable for Indigo-Clean Technology?**

Indigo-Clean Technology is ideal for any application where people congregate, including Commercial, Healthcare, Educational, Retail, Transportation, and more.

**How does Indigo-Clean relate to Finelite?**

Finelite licensed and integrated Indigo-Clean Technology into a broad selection of luminaires to provide safe, environmental disinfection. Not only is Finelite providing better lighting, it is also providing the added benefit of fighting infectious bacteria and viruses at work, school, and any place people congregate. So mitigating COVID is now as easy as turning the lights on.

**Does Finelite offer Single-Mode and Dual-Mode Indigo-Clean Technologies?**

Yes.

**What is Finelite's disinfection claim for luminaires using Single-Mode Indigo-Clean Technology?**

Finelite luminaires using Indigo-Clean Technology are proven to be effective by recently conducted independent lab testing to kill bacteria, Influenza-A, and SARS-CoV-2\*\* – the virus that causes COVID-19.

**How does Single-Mode Indigo-Clean Technology work?**

Single-Mode Indigo-Clean Technology is a continuous environmental disinfection system that employs blended white + 405nm visible light on a single circuit board design to disinfect the space. When the light is on, disinfection is active. Recommended operation schedule of 24/7 with an average of 50-60 footcandles on work plane and high touch surfaces.

**How does Dual-Mode Indigo-Clean Technology work?**

Dual-Mode Indigo-Clean Technology utilizes a two circuit board design. When the space is occupied it utilizes a combination of blended white LEDs and 405nm LEDs. When the space is unoccupied, it utilizes just the 405nm LEDs with increased output to increase disinfection efficacy. Dual-Mode switches between occupied and unoccupied via automated controls, such as occupancy sensors and timeclocks. Recommended operation schedule of 12 hours blended mode and 12 hours Indigo mode with an average of 50-60 footcandles on work plane and high touch surfaces.

**What is the Dual Mode Indigo-Clean Technology disinfection claim?**

Most recently, Indigo-Clean technology has been clinically proven effective in killing 94% of SARS-CoV-2 and Influenza-A\*\*. Legrand North America in partnership with the Icahn School of Medicine at Mount Sinai\* published on September 30<sup>th</sup>, 2021 the scientific research report demonstrating the occupant safe, 405nm visible light disinfection technology Indigo-Clean effectively kills SARS-CoV-2 and Influenza A viruses in a range of real-world clinical settings.

\*<https://www.nature.com/articles/s41598-021-97797-0>

\*\*<https://www.biorxiv.org/content/10.1101/2021.03.14.435337v1>

**What Finelite products are available with Indigo-Clean Technology?**

Nearly all HP-2, HP-4, HP-6, and HPR fixtures are available with both Single-Mode and Dual-Mode Indigo-Clean Technology.

**What are the key differences between Dual-Mode and Single-Mode Technology?**

| Technology               | White + Indigo 405nm Blended Only | White + Indigo 405nm Blended or Indigo 405nm Only | Automated Controls | SARS-CoV-2 & Influenza-A Claim | Recommended Hours of Operation                       | Optimum Performance       |
|--------------------------|-----------------------------------|---|--------------------|--------------------------------|--|---------------------------|
| Dual-Mode Indigo-Clean   |                                   | Yes   | Yes                | 94% Kill Rate                  | 24/7 Operation (12 hrs blended / 12 hrs Indigo only) | Average 50-60 footcandles |
| Single-Mode Indigo-Clean | Yes                               |   | No                 | Effectively Kills              | 24/7 Operation                                       | Average 50-60 footcandles |

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**How should Indigo-Clean Technology be used to be most effective?**

For optimum performance, continuously provide an average of 50-60 footcandles on the work plane and high touch surfaces 24x7. Unlike UV lighting solutions, because it is safe to occupy space while Indigo-Clean Technology is in use, you can depend on it 24x7 to protect people from viruses and bacteria. Dimming generally reduces effectiveness and increases the variation in the disinfecting light's visual appearance.

**Is Indigo-Clean Technology effective at less than 24 hours?**

Yes, additional information on intermediate conditions is contained in the scientific results here:

<https://www.nature.com/articles/s41598-021-97797-0>.

Users are invited to come to their own conclusions regarding their specific conditions using this information.

**How do you know it is working?**

When you see Indigo-Clean Technology lighting a space, you can be sure the technology is working.

**Do I still have to clean the room when using Indigo-Clean Technology?**

Indigo-Clean Technology is intended to bolster your current cleaning efforts to further reduce harmful viruses and bacteria in the environment.

### **Product Performance**

**How many Indigo-Clean Technology light fixtures are needed in a room?**

Multiple light fixtures are typically required in a room based on the need for occupant safety, visual acuity, and the perform the tasks at hand. These lighting principles remain true for both traditional LED systems and Indigo-Clean Technology. As a simple guideline for optimal disinfection, it is recommended to illuminate the space similar to that of traditional LED lighting but with a target of 50-60 footcandles on the work plane and high touch surfaces. Nearly all HP-2, HP-4, HP-6, and HPR fixtures are available with Indigo-Clean Technology and can be designed to meet this recommended practice.

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**How long do the lights need to be on each day?**

The longer the lights are continuously on the better the disinfection. For optimal disinfection when using Single-Mode Technology it's recommended that the system operates 24x7 in White + Indigo 405nm blended. For optimal disinfection when using Dual-Mode Technology it's recommended that the system operates 12 hours (when occupied) in White + Indigo 405nm blended and 12 hours (when unoccupied) in Indigo 405nm only. Both modes recommend achieving an average of 50-60 footcandles on the work plane and high touch surfaces.

**Do you have any data and research demonstrating your product's performance?**

Yes, Indigo-Clean Technology has been the subject of many third-party referred publications and laboratory conducted research. Past research includes projects conducted at the Medical College of Wisconsin, University of Tennessee Health Science Center\*\*\*, and United Hospital Kenosha Medical Center Campus. The most recent research published by the Icahn School of Medicine at Mount Sinai has proven its effectiveness at killing Influenza-A and SARS-CoV-2\* (the virus that causes COVID-19).

**Will Finelite be offering additional Indigo-Clean luminaires beyond HP-2, HP-4, HP-6, and HPR?**

Yes, Finelite will continually monitor the market applications and needs and will continue to integrate Indigo-Clean into existing and future products. Contact Finelite for inquiries into the potential integration with other Finelite luminaires.

**How long will it take to ship Indigo-Clean luminaires?**

Finelite ships all standard and Indigo-Clean products in 10 working days.

### **Operations**

**Are there any special installation instructions?**

Indigo-Clean Technology fixtures do install the same way standard functioning light fixtures do however there are special control requirements for Dual-Mode luminaires. Please refer to the Application Guide for specific details.

**Is complete energy consumption data available?**

Yes, please refer to the specific product technical sheet for performance data.

**Is there a warranty?**

Indigo-Clean Technology is covered under Finelite's 5-year performance based-warranty against defects in material and workmanship.

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**Resources:**

\*<https://www.nature.com/articles/s41598-021-97797-0>

\*\*<https://www.biorxiv.org/content/10.1101/2021.03.14.435337v1>

\*\*\*[https://kenall.com/Kenall-Files/HTML-Images/PDFs/2021\\_6\\_22\\_UTHSC\\_Kenall\\_Report.pdf](https://kenall.com/Kenall-Files/HTML-Images/PDFs/2021_6_22_UTHSC_Kenall_Report.pdf)

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