



SPSCLEANTECH.COM

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# **LED** Cleanroom and Containment Luminaires

*Sealed Enclosure Lighting for Reduced Contamination and Spectral Control*

Sealed Enclosure  
LED Luminaires

**SE**



Designed and manufactured in the USA



# Kenall is the Leading Authority for Cleanroom Luminaires

## SimpleSeal™ Luminaires, Built for Your Industry

Kenall utilizes decades of research and industry experience to specifically address three of the most urgent cleanroom and containment lighting issues: contamination, spectral control (UV) and costly unscheduled downtime. SimpleSeal™ Luminaires are sealed to prevent ingress of dirt, moisture and bacteria and to protect the integrity of pressurized plenums. Superior spectral control is essential for a number of processes, such as preventing damage to photosensitive products or protecting the natural behavior of laboratory animals. Finally, SimpleSeal helps facilities avoid costly downtime due to unscheduled maintenance by using properly designed LED and driver systems that provide extended L70 LED lifetime. Whether your project requires luminaires that must meet NSF2 or corrosive conditions, maintain critical environmental barriers (UL/cUL, IP65 / IP66, ISO, BSL and P442), or must illuminate research areas without interfering with sensitive electronic devices (MIL-STD-461F), you can trust Kenall to reliably protect your people, products and processes.

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## We Understand Your Applications



Pharmaceutical



Research



Semiconductor



Biosafety and Containment



Vivariums



Cleanrooms



Laboratories



Anterooms



## Kenall's Sealed Enclosure Lighting Designed for New NSF Protocols



NSF Protocol P442  
Controlled Environment Light Fixture

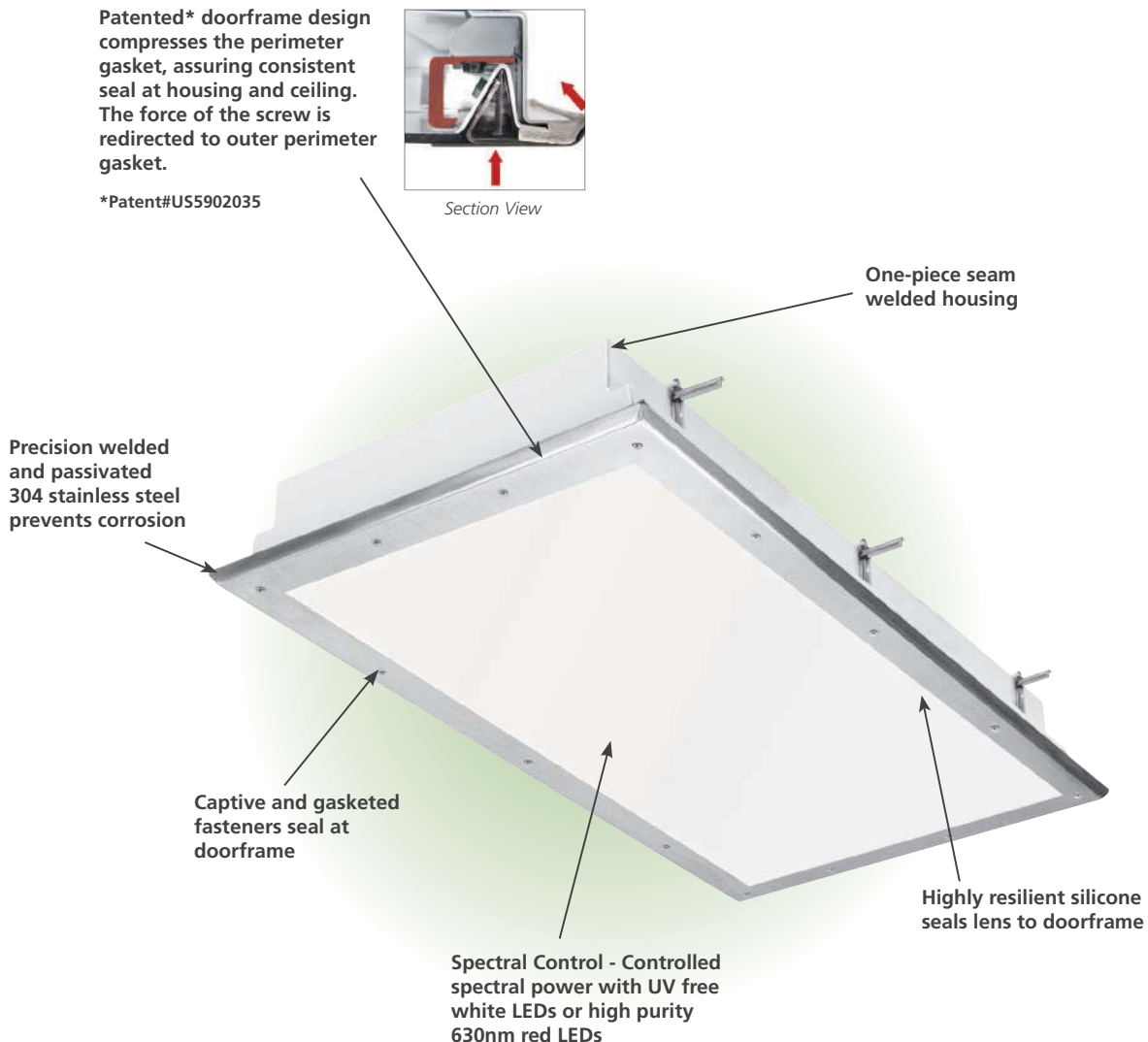
Kenall has spent decades perfecting sealed enclosure lighting: prior to new protocols created by NSF International, we developed our own rigorous pressure-testing protocol, called K230, to ensure that the SimpleSeal™ luminaires are built to prevent both the ingress and egress of moisture, dust, fungus, bacteria and other contaminants that might put processes and people at risk.

Now, NSF has introduced a new protocol very similar to K230 – called **NSF P442**. It requires stringent pressure testing and third party certification to prove that luminaires are qualified for clean industrial applications; they must prevent the flow of air between the plenum space and the controlled environment, be protected from contaminants, particulates and moisture, and be easily cleanable. This protocol is very difficult to achieve, but proves that a luminaire is truly leak-proof and ready for use in the most challenging environments.

Not every situation demands this protocol – but for those that do, look for the **NSF P442** certification, like the one you'll find on our SimpleSeal CSEDO series. These luminaires have a patented, triple-gasket design that seals the fixture three ways: lens to door, door to housing and housing to structure.

## Eliminate Lighting as a Variable in Your Process Control

Kenall luminaires are engineered to reduce contamination and unscheduled maintenance while maintaining crucial spectral control.



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10200 55th Street Kenosha, WI 53144

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### Kenall Cleanroom and Containment Luminaires with a Certified Seal

Kenall provides sealed enclosure luminaires for your most challenging cleanroom and containment applications. To meet your current Good Manufacturing Practices (cGMP) we include our cGMP in every SimpleSeal Luminaire. Kenall now offers the new NSF P442 Protocol which proves your luminaire is ready for the most severe cleanroom installations. From one-piece seam welded housings and NSF Listings to advanced IEC and ISO certifications, we provide impermeable luminaires ready for performance.



#### CSEDI Series

- Available in 1'x4', 2'x2', 2'x4'
- Universal housing for flange or grid ceilings
- One piece inset door provides an integrated seal independent of the installation
- Delivered Lumens: 4,388 - 22,392 lm
- ISO 14644-1 rated ISO-5 (FED STD 209e Class 100)



#### CSEDO Series

- Available in 1'x4', 2'x2', 2'x4'
- Universal housing for flange or grid ceilings
- Patented overlapping door with 60° beveled perimeter edge provides one smooth surface for easy cleaning
- Delivered Lumens: 4,388 - 22,392 lm
- ISO 14644-1 rated ISO-5 (FED STD 209e Class 100)
- Certified fixture-to-room seal with NSF P442 protocol



#### CSESO Series

- Available in 1'x4', 2'x2', 2'x4'
- Surface mounting with sealed wireway option
- One-piece door with 60° beveled perimeter edge provides a smooth surface for easy cleaning
- Delivered Lumens: 4,258 - 20,595 lm
- ISO 14644-1 rated ISO-5 (FED STD 209e Class 100)





Until now, providing a uniform nocturnal lighting cycle for laboratory animals has been achieved by applying red filtering films to white lights, which is unreliable and expensive. Kenall's NEW SimpleSeal™ CSEDI / CSEDO Series offers the industry's first true red LED luminaire for vivarium applications. This 630nm wavelength LED luminaire is more reliable and longer-lasting than the incumbent technology. It promotes the well-being, natural behavior and sleep/wake patterns of lab animals, and valuable research outcomes are protected.



**CSEDI Series**  
Switchable - White/Red LED

- Available in 1'x4', 2'x2', 2'x4'
- Universal housing for flange or grid ceilings
- Dual function white and red LED sources provide individually dimmable illumination
- 630nm Red LED circuit provides narrow spectrum light for photosensitive applications
- One piece inset door provides an integrated seal that is independent of the installation
- Delivered Lumens: 4,388 - 15,138 lm (White)  
1,021 - 2,042 lm (Red)

**CSE\_O series**  
Switchable - White/Red LED

- Available in 1'x4', 2'x2', 2'x4'
- Surface Mount; Universal housing for flange or grid ceilings
- Dual function white and red LED sources provide individually dimmable illumination
- Patented overlapping door with 60° beveled perimeter edge provides one smooth surface for easy cleaning
- 630nm Red LED circuit provides narrow spectrum light for photosensitive applications
- Certified fixture-to-room seal with NSF P442 protocol
- Delivered Lumens: 4,388 - 15,138 lm (White)  
1,021 - 2,042 lm (Red)

**OTHER SUITABLE APPLICATIONS:**  
Pharmaceutical, Biosafety and Containment, Cleanrooms, Veterinary and Medical Research Laboratories



SimpleSeal™ Downlights



**CDL Series**

- Recessed ceiling mount – 6" aperture LED downlight
- Flush lens for easy cleanability
- Delivered Lumens: 1,001 to 1,283 lm
- Minimum 80 CRI
- 125,000 hr LED lifetime (L70)
- IP65 per IEC 60598
- 0-10V dimming, 10% - 100% range

**MRDL6ICL**

- Recessed ceiling mount – 6" aperture LED downlight
- Sealed regressed lens and optical chamber
- Fastenerless trim for clean aesthetic
- Delivered Lumens: 1,558 to 3,281
- Minimum 80 CRI / optional 90 CRI
- 125,000 hr LED lifetime (L70)
- 1% dimming





#### CMEXR Series Exit Sign

- Semi-recessed wall mount
- 20-gauge cold-rolled steel
- Indirect red or green LED
- Single face
- Optional internal battery backup system
- Optional Self-diagnostic testing features



#### MET\_U Series Exit Sign

- Surface mount –wall or ceiling mount, single or double face
- Indirect red or green LEDs
- Internal battery backup system
- Cold temperature option
- High impact polycarbonate lens

PEACE OF MIND  
Guarantee®



Wet Locations

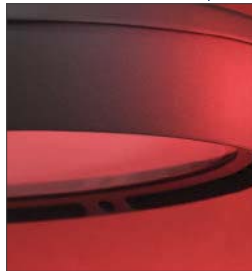
## State-of-the-art, certified testing facility

Kenall is equipped with a state-of-the-art certified safety laboratory, providing comprehensive in-house testing capabilities:

### Thermal Testing



Cold Weather Testing



High Temperature Testing

### Photometrics Testing



### Ingress Testing



Solids and Particulates Testing



Water Ingress Testing

## Warranties

PEACE OF MIND  
Guarantee®

When installed according to our instructions, Kenall will repair or replace any fixture rendered inoperable due to physical abuse for the life of the product installation.

### LED 5-Year Warranty

Kenall offers a 5-year limited warranty on LED products. For complete warranty information, please visit us on the web at [www.kenall.com](http://www.kenall.com).



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Email: [info@kenall.com](mailto:info@kenall.com)

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NSF Protocol P442  
Controlled Environment Light Fixture

## NSF Protocol P442-2015 Controlled Environment Lighting Fixtures

This protocol is a series of minimum requirements for the design, construction, performance and certifications of luminaires for cleanrooms. Intended to protect the controlled environment from the common causes of particulate contamination related to or resulting from the use of lighting fixtures, this protocol first requires ingress protection IEC 60529/60598 (IP-65) and NSF-2 Food Equipment certifications. In addition, there is a new performance testing requirement for pressure decay resistance similar to our K230 test.

This new testing requirement is demanding: the sealed fixture is stressed with positive and negative pressure and acceptance is granted only after it is proven that no leaks are present. This type of testing is particularly beneficial for pharmaceutical and semiconductor manufacturing, bio-tech research, biosafety labs, clean rooms, and surgical suites.

Kenall is the first manufacturer to be certified to this new standard, which affirms that Kenall's design and materials are the preeminent choice for even the most stringent clean environments



NSF2—An NSF2 Listing denotes that the luminaire has been evaluated for corrosion resistance, cleanability and the ability of exposed material to withstand normal wear. This supports the infection control standards established by healthcare facilities as it indicates that the luminaire is easy to sanitize.



IP64—UL Certified IP64 per IEC 60598 ensures that the enclosure is dust-tight and protected against splashing water without any harmful effects.



IP65—UL Certified IP65 per IEC 60598 ensures that the enclosure is dust-tight and protected against jet streams of water from any direction without any harmful effects.



IP66 - UL Certified IP66 per IEC 60598 ensures that the enclosure is dust-tight and heavy seas and water projected in powerful jets will not enter the enclosure in harmful quantities.



BioSafety Level (BSL-x) classifies the relative danger from biohazardous material to the surrounding people and environment. There are four biosafety levels (BSL1 – BSL4), with the highest number representing the greatest risk. Luminaires in each class are designed to provide the protections necessary for containing the risks associated with that level. For example, BSL-1 laboratories provide protection for pathogens such as E. coli and are most often found in high schools and colleges. BSL-2 labs protect against more dangerous organisms such as HIV, influenza A and MRSA. BSL-3 labs work with SARS-CoV, West Nile and other very dangerous viruses in tightly controlled clinical spaces with close supervision. BSL-4 is reserved for the most exotic and dangerous diseases where treatments are not available, such as viral hemorrhagic fever (Ebola and Marburg are examples) and smallpox. Fixtures for BSL-3 and 4 spaces must demonstrate an extremely reliable seal.



CCEA Approved—The City of Chicago Environmental Air (CCEA) rating ensures that the luminaire is inherently airtight. Wiring and/or branch circuit terminations are sealed off and gasketed from the plenum air space. This listing ensures that the luminaire is sealed to limit air flow from the room side to the plenum.



UL/CUL Listed—The UL symbol signifies that Underwriter's Laboratory (UL) has determined that a manufacturer has demonstrated the ability to produce a product complying with UL's requirements with respect to specific risk, performance under specific conditions, compliance with regulatory codes and specified standards, or any other conditions as determined by UL.



ETL—A product bearing the ETL Listed Mark is determined to have met the minimum requirements of prescribed product safety standards as certified by a Nationally Recognized Testing Laboratory (NRTL). The mark also indicates that the manufacturer's production site conforms to a range of compliance measures and is subject to periodic follow-up inspections to verify continued conformance.



FN refers to Food Zone/Non-Food Contact. Fixtures are located in food preparation and handling areas but do not come in contact with food under normal conditions. All fixtures in this category have a higher level of construction: housing painted with paint that meets U.S. Code of Federal Regulations; fasteners constructed with stainless-steel and removable without tools; and FDA-approved Food Grade polycarbonate material outer exposed lensing.



ISO 5—Suitable for ISO 5, Class 100 Rated Rooms (FED-STD 209E). Measures the number of particles equal to or greater than 0.5 mm in one cubic foot of air. The measurement must not exceed specified particle limits in order for the space to be considered a controlled 'clean room' environment.



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