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# **KENALL** THE COMPETITIVE **EDGE**

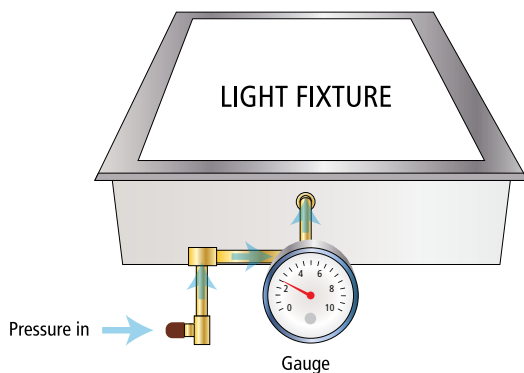
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**Issue #2**

**New NSF P442 Listing**

## **New NSF P442-2015 Heralds Critical Changes to Cleanroom Protocols**

**P442** In August 2015, NSF International (formerly the National Sanitation Foundation) issued a demanding new protocol for controlled environment light fixtures: **Kenall is the first lighting manufacturer to have a luminaire certified to this standard.**



### **Fighting for a New Standard**

For two decades, Kenall has led the fight for the creation and adoption of specifications for cleanroom fixtures, while demonstrating the importance of proven compliance with standards that advance and provide safety to the industry. There are a number of governmental, educational and business concerns regarding the absolute reliability of controlled environments, including medical research laboratories, universities, semiconductor and pharmaceutical manufacturers, sterile packagers and biosafety labs.

Over the years, the lighting industry has recommended various construction standards and ratings, but they all required a certain amount of interpretation when judging the suitability of a fixture for cleanroom installations.

***Now, with the development of NSF P442-2015, there is one protocol that encompasses the construction and rigorous testing of a sealed cleanroom fixture and requires independent verification of each aspect of the process.***

This new protocol will help curtail the use of vague and slippery terms such as "meets standard x" or "complies with x" and replaces it with "Certified by".

**NSF P442-2015 Defined**

The P442-2015 protocol is a series of minimum requirements for the design, construction, performance and certification 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. 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. The pressure testing mimics the conditions found in actual installations where air handling equipment regularly induces dynamic positive and negative pressures, which can cause seal failure and ingress or particle passage in substandard fixtures.

The pressure test is performed under controlled conditions by a nationally recognized independent testing lab, and calls for airtight fittings and pump to be secured to the fixture body to simulate the type of positive or negative pressures that the fixture will be exposed to during cleanroom use. The fixture is then pressurized to the prescribed level and

sealed, with pressure readings recorded on a manometer at five-minute intervals. To meet the P442 leakage prevention requirement, the fixture must be able to maintain 2 inches WC (498 Pa) of pressure, plus or minus 10 percent, for 30 minutes. While the test sounds relatively simple to pass, that is actually not the case. The seemingly small pressures (<0.1 psi) are made difficult by the size of the fixture in square inches. A typical 2x4 troffer presents over 1000 square inches of surface area; making a small pressure result in over 80 lbs. of load on the doorframe and flange seals. This type of force must be anticipated by the fixture design.

**Kenall's SimpleSeal™ CSEDO**

Kenall's SimpleSeal™ CSEDO is the first and only light fixture certified the NSF P442-2015 standard (at the time of this publication). Competitive attempts to certify luminaires have failed, demonstrating that Kenall has a unique understanding of sealed lighting and the needs of the cleanroom and containment industry to provide a safe, clean space to work and study. Kenall is currently in the process of certifying other cleanroom fixtures. Consult your regional sales manager or the kenall.com website for additional information.

**Sample Specification Language****Recommended specifications:**

**Brief (For lighting schedule):** Certified NSF P442 Protocol

**Abbreviated (For lighting schedule):** 20-gauge CRS housing with a 20-gauge type 304 stainless steel (#4 finish-post fabrication) doorframe utilizing a one-piece 60° beveled perimeter construction. Doorframe secured to housing with stainless steel aircraft cables and captive flush mounted Phillips head stainless steel fasteners. UL1598 listed, ISO-5 classified, IP66 listed, Certified to the NSF Protocol P442 for controlled environment lighting fixtures.

**Full-length (For 16500 specifications):** A qualifying fixture will be constructed according to NSF Protocol P442-2016 Controlled Environment Lighting Fixtures and will be certified and labeled as such. The fixture housing shall be constructed of a one piece design with an overlapping one-piece doorframe containing a 60 degree perimeter beveled edge that creates a progressive surface with the ceiling. The lens shall be sealed to the first surface of the doorframe interface. A one-piece closed cell extruded silicone doorframe perimeter gasket shall seal to both the fixture flange and to the ceiling at the nearest perimeter point of contact without concealed crevices. Stainless steel doorframe fasteners shall be captive and gasketed to prevent leakage.