

A Quick Guide to

# HazLOC

## LIGHTING



**ikio**  
LED LIGHTING

[www.ikioledlighting.com](http://www.ikioledlighting.com)





Hazloc LED lights come with various certifications according to rigid industry standards. They can be divided into various Class, categories and divisions on the basis of risk involved.

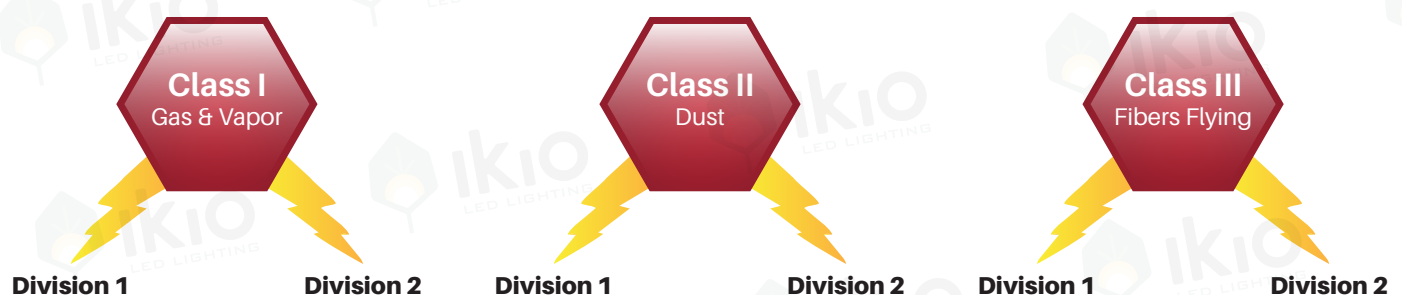
LED lighting is perhaps one of the most energy efficient contributions to the lighting and electrical equipment industry that has transformed the way we perceive the concept of illumination. Its steady acceptance can be witnessed in various industries owing to its efficiency and versatility. The innovative technology has also been a ground-breaking addition to different sectors, and is gradually becoming the most sought-after lighting option in hazardous locations as well.

Hazardous locations can be defined as highly industrialized areas with harsh & hazardous environments that may contain explosive vapors & gases, and as a result, have specialized lighting requirements. According to OSHA (Occupational Safety and Health Administration), Hazardous locations are those areas "where fire or explosion hazards may exist due to flammable gases or vapors, flammable liquids, combustible dust, or ignitable fibers or flyings."

Hazardous locations or areas are usually classified by specialists in the field, such as electrical inspectors, engineers, owners, area experts, and insurance companies. They may divide extreme locations into either ordinary (shocks & fires) or hazardous (explosion prone) areas.

## Classification of Hazardous Locations

OSHA says that hazardous locations can be divided into three different classes and their respective divisions; division 1 is for presence of flammable or ignitable substances under normal operations or machinery malfunction, while division 2 is for presence of ignitable or flammable substances under unusual operating conditions.





## Class I Gas & Vapor

**Class I Locations :** Class I hazardous locations are defined by the presence of sufficient flammable vapors or gases present in the air that can cause harm by potential explosion or ignition caused by an electrical issue or any other source that can cause fire. LEDs like Enzo UFO High Bay have a rugged explosion-proof construction that makes them ideal for rough industrial environment, and certified for use in Class I, Division 2, Groups A, B, C, D.

**Following can be considered Class I hazardous locations:**

- Petroleum refineries
- Gasoline storage and dispensing areas
- Utility gas plants
- Places for storage and handling of liquefied petroleum gas or natural gas



## Class II Dust

**Class II Locations :** These locations are defined as those locations that have enough presence of combustible dust in the air that could cause explosion or are ignitable. For such areas, LEDs like Ergo Linear High Bay for Class II, Division 1 & 2, Groups E, F, G can be a valuable addition as its compact design makes an excellent replacement for bulky, high maintenance fixtures in dusty locations.

**Some locations that can be classified under this category are as follows:**

- Grain elevators
- Flour & feed mills
- Industrial plants that deal with magnesium or aluminum powders



## Class III Fibers Flying

**Class III Locations:** Class III hazardous locations are defined as places that contain easily ignitable fibers and flyings, which even though are not suspended in the air, can be found near machinery or lighting fixture, and may get ignited from heat or electric spark. LEDs like Trabuco Outdoor Area Light are excellent for Class III hazardous locations as they provide wide & narrow optics for uniform illumination, leading to better visibility and making flyings easily noticeable.

**Following locations can be classified under this category:**

- Textile mills, cotton gins (engine)
- Cotton seed mills
- Industrial plants involved in wood-based construction, creating sawdust or flyings





## Hazardous Location Lighting

Lighting for hazardous locations are often termed as HazLoc lights and are designed to minimize the risk of explosions caused by any sparks within its housing or any other accidental events. Such lights are explosion-proof, and are meant to ensure overall well-being of not just workers, but businesses as well.

When you add LEDs to the mix, it further makes sure that you save on energy costs as well without compromising on safety. HazLoc LEDs are put through rigorous tests and safety procedures, go through stringent quality checks, and are certified before being sold for use.

Let us go through different industry standards and certifications for HazLoc LEDs and how they make sure that you find the right product based on your needs.

## HazLoc LED Industry standards

**NFPA:** The National Fire Protection Association (NFPA) is a global non-profit organization that publishes information about different codes and standards that are relevant to various industries and their practices. It also delivers information and knowledge on hazard assessment via NFPA 497 (explosive gas) and NFPA 499 (dust). The NFPA 70® is for National Electrical Code (NEC), which will be discussed next.

**NEC:** The National Electrical Code (NEC) under NFPA 70® is "the benchmark for safe electrical design, installation, and inspection to protect people and property from electrical hazards". It covers electrical installations/removal, electrical conductors, equipment, and raceways among others in locations like public & private premises, industrial substations, etc.

**IP Rating:** Ingress Protection or International Protection rating is a set of codes implemented to rate and classify the degree of protection provided by mechanical casings and electrical enclosures against different elements. Some of these elements include dust and water, intrusion, accidental contact, etc.

**IK Rating:** Impact protection rating, according to UL, is defined "as IKXX, where "XX" is a number from 00 to 10 indicating the degrees of protection provided by electrical enclosures (including luminaires) against external mechanical impacts". It determines the ability of electrical or lighting enclosures to withstand high energy impacts, how it should be mounted, atmospheric conditions, among other criteria.

**NEMA:** The National Electrical Manufacturers Association (NEMA) defines different heavy-duty electrical enclosures for various categories of lighting depending on access to hazardous parts and additional type-dependent designated environmental conditions. Such LED products are usually seen in industrial as well as hazardous locations.

**ATEX:** The Atmosphères Explosibles (ATEX) is a certification standard by the European Union that "covers equipment and protective systems intended for use in potentially explosive atmospheres". According to UL, HazLoc and explosion-proof equipment that are 'intended for installation' in the EU region should be compliant with ATEX Directive 2014/34/EU.

## Types of HazLoc LEDs and their Application areas :

Now, let us explore some common types of HazLoc LEDs available for different lighting requirements.



**LED High Bays:** High Bay LEDs are used for lighting or illuminating spaces with high ceilings. Such luminaires are an excellent option for units/buildings in hazardous locations as they allow for clear visibility through even light distribution. The placement of such LED fixtures makes them ideal for commercial and industrial use in areas like ocean, marine and aerospace fields, pumping stations or any other space with high humidity, high temperature, or high dust environments.

**LED Area Lights:** As the name suggests, LED area lights are used to illuminate outdoor spaces. HazLoc LED outdoor area lights are designed to be explosion-proof, and can be used to provide optimum lighting in areas like oil refineries & gas stations, oil & gasoline loading docks, distilleries, and other hazardous outdoor locations.

**LED Jelly Jar Lights:** Jelly jar lights are designed to be vapor-proof, meaning these fixtures are sealed and gasketed. Such fixtures are rated for wet/damp locations, and can be used in industries like oil & gas, and LNG & chemicals. It can also find application in flour & fine particle production and storage facilities, and other high humidity, high dust, high temperature, and high vapor locations.

**LED Exit Signs:** LED emergency exit signs are suitable for hazardous locations, especially those that have a presence of flammable vapors or gases, or combustible dust. It provides distinct, highly visible exit marking to indicate safe egress areas during power outages and other emergencies. Some common application areas are: manufacturing & chemical plants, paint shops, oil refineries, gas stations, industrial facilities, warehouses, processing plants, and other Class I, Division 2 hazardous locations.

**Trouble Work Lights:** Trouble work lights are a small, yet significant addition to HazLoc lighting. Such handheld work site luminaires are excellent for tasks or general illumination in small and confined spaces, and can be used in Class I, II and III hazardous locations like manufacturing plants, chemical plants, oil refineries, industrial facilities, warehouses, processing plants.

## Benefits of HazLoc LEDs

There are several advantages of using LEDs designed specifically for hazardous locations. Let us discuss some of them.

**Explosion-proof design:** Standard light fixtures are usually composed of a design that exposes the bulb, contacts, wiring, and switches to external atmosphere. In such cases, spark from a loose contact, movement of the switch, or even heat from the bulb is enough to ignite and lead to a flammable environment. However, in case of explosion-proof LED lights, the components are encased to prevent potential sparks or flames from escaping the internal housing.

**Allow greater mobility:** Explosion-proof LED lights are built with a sturdy frame and thicker tempered glass lenses, making them highly resistant to vibrations. This durable design allows the easy transportation of these lights from one place to another by forklifts or other machines without the risk of damage or malfunction, thus making them more portable. This feature also makes them an ideal choice for operators who require mobile illumination.

**Durable & tough:** Given the rugged build of the explosion-proof light fixtures with sturdier materials, they offer a high degree of durability in comparison to standard light fixtures as they can withstand harsher working environments. This makes them a better choice for operators as it will not be easily damaged like standard light fixtures, and would reduce maintenance & refurbishing costs.

**High efficiency:** Explosion-proof HazLoc LED lights are extremely energy efficient. They put to use more than 90% of the energy to produce light and have near-zero heat or conversion loss to account for, which means that they use a lot less power to function. Additionally, organizations save on-site energy from portable generators and other in situ sources, providing more sustainable and profitable operations. In other words, you can save more money from explosion-proof LEDs in comparison to standard non-LED explosion-proof luminaires.

**Flexible options:** Modern explosion-proof LED lights come in modular designs and multiple mounting options to allow multitudes of options in their application. They allow light output to be easily adjusted to match your required light levels or adapt to existing access points, all while saving energy and money.

**Mercury-free:** Apart from the above-mentioned benefits, another aspect that sets apart HazLoc LEDs from other HazLoc luminaires is that the former is mercury-free and environment-friendly. It reduces disposal costs and is a sustainable alternative to your lighting requirements.

In terms of market reach, Mordor Intelligence predicts that the Hazardous Location LED Lighting sector is "expected to reach USD 636.6 million by 2025, registering a CAGR of 8.86%, during the period of 2020 - 2025". The report further suggests that the largest market for HazLoc LEDs is North America. It also adds that the industrial & manufacturing industry in the United States accounts for 32% of the country's energy usage. If such encouraging projections are to be believed, it might lead to greater adoption of LEDs in hazardous locations.

Establishments in hazardous locations create some of the most extreme work environments in the world, and as it has been established, can be prone to explosions and other accidents, impacting those who work in such dangerous circumstances. Therefore, it is apparent that ensuring the safety of workers and establishments in such locations should be prioritized, and explosion-proof LEDs can help you achieve that goal with an improved ROI as a bonus.

When you think about safety, think explosion-proof HazLoc LEDs!

