

HAZARDOUS LOCATION LIGHTING

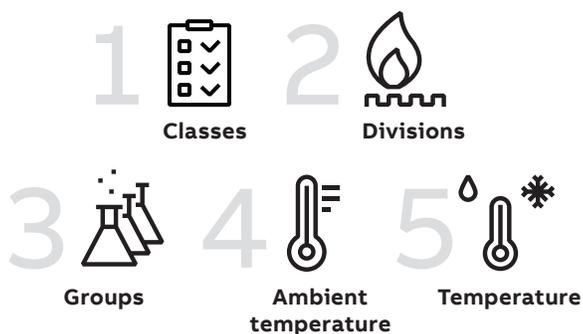
# Ex-Solutions™

## Five elements to consider to choose the right hazardous location lighting fixture



Besides providing light, hazardous location lighting fixtures must address the unique challenges of hazardous environments playing a massive role in the safety, productivity and efficiency of any industrial facility. Selecting the right hazardous location lighting fixture can help you reduce potential risk of explosions keeping applications and personnel safe.

### Five elements to consider when choosing fixtures



Hazardous locations are areas where explosive atmospheres and materials create the risk of potential fire or explosion. That’s why they are labeled “Hazardous areas” or “Classified locations.” In the United States, hazardous locations have been historically classified with the Class/Division system based on Article 500 of the National Electrical Code (NEC).

Hazardous location lighting fixtures are designed to handle the highly combustible dusts, corrosive elements, and flammable gases or vapors that are or may be present in the air in any industrial facility. Hence, the selection of the right fixture is critical to

help reduce potential risks of explosions and keep applications and personal safe. To select the right hazardous lighting fixture, five elements must be considered: classes, divisions, groups, ambient temperature, and temperature (t-code).

### 1. Classes

Classes – define the general nature of the hazardous material in the surrounding atmosphere. Per the NFPA Publication 70, NEC, and CE Code, there are three categories of hazardous materials designated as Class I, Class II, or Class III. The classes define the type of explosive or ignitable substances which are present in the atmosphere, such as:

- **Class I – Gas and vapors environments**  
Class I locations are categorized by the presence of flammable gases or vapors.
- **Class II – Dust environments**  
Class II locations are categorized by the presence of dust.
- **Class III – Fibres and flying environments**  
Class III locations are categorized by the presence of ignitable fibers and flying debris.

Classification	
<input type="checkbox"/>	Class I
<input type="checkbox"/>	Class II
<input type="checkbox"/>	Class III

## 2. Divisions

Divisions – define the probability of hazardous material being present in the surrounding atmosphere.

- **Division 1:** ignitable elements are present regularly or at periodic times during normal operations, or they may be released with regular maintenance or any equipment malfunction.
- **Division 2:** ignitable elements are present, but are contained and controlled with positive ventilation and other systems.

Division	
<input type="checkbox"/>	Division I
<input type="checkbox"/>	Division II

## 3. Groups

Groups – define the type of hazardous material in the surrounding atmosphere. Materials are grouped based on their ignition temperatures and explosion pressures. Class I and Class II are further subdivided into Groups of hazardous materials. Groups define substances by rating their flammable nature in relation to other known substances.

Groups	Flammable material
<input type="checkbox"/> A	Acetylene
<input type="checkbox"/> B	Hydrogen
	Butadiene
	Ethylene Oxide
	Propylene Oxide
<input type="checkbox"/> C	Ethylene
	Cyclopropane
	Ethyl Ether
<input type="checkbox"/> D	Propane
	Acetone
	Ammonia

## 4. Ambient temperature

Ambient temperature – the environmental temperature to which your fixtures are exposed.

## 5. Temperature

Temperature (T-Code) – is the temperature rating of the fixture. The T rating needs to be considered when specifying the optimum luminaire configuration based on environmental conditions.” T-Code ratings shall not exceed the ignition temperature of the chemicals substances.

NEC 500 CEC	Max. surface temperature
<input type="checkbox"/> T1	450° C (842° F)
<input type="checkbox"/> T2	300° C (572° F)
<input type="checkbox"/> T2A	280° C (536° F)
<input type="checkbox"/> T2B	260° C (500° F)
<input type="checkbox"/> T2C	230° C (446° F)
<input type="checkbox"/> T2D	215° C (419° F)
<input type="checkbox"/> T3	200° C (392° F)
<input type="checkbox"/> T3A	180° C (356° F)
<input type="checkbox"/> T3B	165° C (329° F)
<input type="checkbox"/> T3C	160° C (320° F)
<input type="checkbox"/> T4	135° C (275° F)
<input type="checkbox"/> T4A	120° C (248° F)
<input type="checkbox"/> T5	100° C (212° F)
<input type="checkbox"/> T6	85° C (185° F)

Understanding these 5 elements makes selecting the right fixture simpler. Download the Ex-Solutions Hazardous Location Lighting 5 elements selector for easier ordering.