Zone Information Guide

HAZARDOUS LOCATIONS

Hazardous locations are defined by the Canadian Electrical Code (CEC) section 18 and the National Electrical Code (NEC) as; those areas in which the potential for fire or explosion exists due to the presence of flammable gases or vapours, combustible dusts and easily ignited flyings.
For the most current information and complete details pertaining to hazardous locations refer to the Canadian and National Electrical Codes.

Class: Refers to the type of hazard present in area.

Division: Refers to the conditions, frequency or duration an explosive or flammable substance is present.

Group: Relate to the explosive pressures and flame temperatures generated by a substance and the minimum gap through which an explosive can travel.

Class	Group	Division 1	Division 2
Gases Vapors Liquids	A: Acetylene B: Hydrogen C: Ether, etc. D: Hydrocarbons, fuels, solvents etc.	Normally explosive and hazardous	Not normally present in an explosive concentration (may accidentally exist)
Dusts	E: Metals, dusts (conductive explosive) F: Carbon dusts (some conductive and all explosive) G: Flour, starch, grain combustible plastic or dust explosive	Ignitable quantities of dust normally are or may be in suspension, or conductive dust may be present	Dust not normally suspended in an ignitable concentration (but may accidentally exist). Dust layers are present
Fibers Flyings	Textiles, wood working etc. (easily ignitable but not likely to explode)	Handled or used in manufacturing	Stored or handled in storage (exclusive of manufacturing)

T-CODES

The temperature code relates to the temperature at which a substance will ignite without a spark or flame.

Temp Code	Maximum External Temperature		
	°C	°F	
T1	450	842	Note: If no maximum surface temperature is shown on Class I equipment approved for the class and group, the equipment, if of the heat producing type, shall be considered as having a surface temperature of 100°C/212°F
T2	300	572	
T2A	280	536	
T2B	260	500	
T2C	230	446	
T2D	215	419	
T3	200	392	
T3A	180	356	
T3B	165	329	
T3C	160	320	
T4	135	275	
T4A	120	248	
T5	100	212	
T6	85	185	

ZONE CLASSIFICATION SYSTEM

Division System vs Zone System

Under both the Division and the Zone Systems, areas are classified based on the following:

- The likelihood that the explosive gas atmosphere is present when the equipment is operating.
- The ignition-related properties of the explosive gas atmosphere.
- The maximum surface temperature of the equipment under normal operating conditions and the protection method(s) used by the equipment to address the issue of possible ignition of the surrounding atmosphere.

Zone Classification System

Division 1: Where ignitable concentrations can exist all of the time under normal operating conditions. **Division 2:** Where ignitable concentrations are not likely to exist under normal operating conditions.	**Zone 0:** Where ignitable concentrations exist all of the time or for long periods of time under normal operating conditions. **Zone 1:** Where ignitable concentrations can exist some of the time under normal operating conditions. **Zone 2:** Where ignitable concentrations are not likely to exist under normal operating conditions.

Temperature Codes

The temperature codes for Division 1 & 2 are the same for Zones 0, 1 and 2. The use of the Zone System requires that:

- Supervision of work: Classification of areas and selection of equipment and wiring methods shall be under the supervision of a qualified Registered Professional Engineer.
- Dual Classification: In instances of areas within the same facility classified separately, Class 1 Zone 2, locations shall be permitted to abut, but not overlap, Class 1 or 2 locations.
- Reclassification Permitted: A Class 1 Division 1 or 2 location shall be permitted to be reclassified as a Class 1 Zone 0, 1 or 2 location provided that all of the space that is classified because of a single flammable gas or vapour source is reclassified under the requirements of this article.
  (Extracted from NEC 2002, section 505.7(C)