Kessler-Ellis Application Note F013

Hazardous Area Ready Reference and Comparison Between USA and European Standards (CENELEC)

Hazardous Locations
Hazardous locations are classified according to the hazardous materials present.

- Class I locations are those in which flammable gasses or vapors are present.
- Class II locations are those in which combustible dust is present
- Class III locations are those in which combustible fibers are present

Classification of Areas

Definition	CENELEC	USA
That part of a hazardous area where a flammable atmosphere is continuously present under normal operating conditions	Zone 0	Division 1
That part of a hazardous area where a flammable atmosphere is likely to occur under normal operating conditions	Zone 1	Division 1
That part of a hazardous area where a flammable atmosphere is unlikely to occur under normal operating conditions	Zone 2	Division 2

Types of Protection for Electrical Equipment

Division 0 (Zone 0)	Division 1 (Zone 1)	Division 2 (Zone 2)
Exia	Exia	Exia
	Exib	Exib
	Exd	Exd
	Exe	Exe
	Exp	Exp
	Exs	Exs
		Exn

Exia intrinsically safe with two fault conditions
Exib intrinsically safe with one fault condition
Exd flame proof or explosion proof
Exe increased safety
Exp pressurized
Exn non incendive
Exs special, which includes encapsulation

Apparatus Gas Grouping

Typical Gasses	CENELEC	USA
Acetylene Hydrogen	IIC	A B
Ethylene Hydrogen Sulfide	IIB	C
Butane Propane Benzene	IIA	D
Methane (mining)	I	

Apparatus Temperature Classes

Temperature Class	Maximum Surface Temperature (ºF)	Maximum Surface Temperature (ºC)
T1	842	450
T2	572	300
T3	392	200
T4	275	135
T5	212	100
T6	185	85

Note tat the German authority (PTB) uses a G instead of a T