



UL's Hazardous Locations Services

Over 75 Years of Domestic & International Hazardous Locations Certifier



CLASS I FLAMMABLE GASES, VAPORS OR LIQUIDS

Class I Area Classifications

Division 1:

Where ignitable concentrations of flammable gases, vapors or liquids can exist all of the time or some of the time under normal operating conditions.

Division 2:

Where ignitable concentrations of flammable gases, vapors or liquids are not likely to exist under normal operating conditions.

Zone 0:

Where ignitable concentrations of flammable gases, vapors or liquids can exist all of the time or for long periods of time under normal operating conditions.

Zone 1:

Where ignitable concentrations of flammable gases, vapors or liquids can exist some of the time under normal operating conditions.

Zone 2:

Where ignitable concentrations of flammable gases, vapors or liquids can exist some of the time under normal operating conditions.

Class I Groups

Division 1 & 2

A (acetylene)
B (hydrogen)
C (ethylene)
D (propane)

Zone 0, 1 and 2

IIC (acetylene & hydrogen)
IIB (ethylene)
IIA (propane)

Class I Temperature Codes

Division 1 & 2

T1 ($\leq 450^{\circ}\text{C}$)

T2 ($\leq 300^{\circ}\text{C}$)

T2A, T2B, T2C, T2D
($\leq 280^{\circ}\text{C}$, $\leq 260^{\circ}\text{C}$, $\leq 230^{\circ}\text{C}$, $\leq 215^{\circ}\text{C}$)

T3 ($< 200^{\circ}\text{C}$)

T3A, T3B, T3C
($\leq 180^{\circ}\text{C}$, $\leq 165^{\circ}\text{C}$, $\leq 160^{\circ}\text{C}$)

T4 ($\leq 135^{\circ}\text{C}$)

T4A ($\leq 120^{\circ}\text{C}$)

T5 ($\leq 100^{\circ}\text{C}$)

T6 ($\leq 85^{\circ}\text{C}$)

Zone 0, 1 and 2

T1 ($\leq 450^{\circ}\text{C}$)

T2 ($\leq 300^{\circ}\text{C}$)

T3 ($\leq 200^{\circ}\text{C}$)

T4 ($\leq 135^{\circ}\text{C}$)

T5 ($\leq 100^{\circ}\text{C}$)

T6 ($\leq 85^{\circ}\text{C}$)

Class I, Division 1 and 2 Protection Methods

Area	Protection Methods	Applicable Certification Standards	
		U.S.	Canada
Div. 1	• Explosion proof	ANSI/UL 1203	CSA-30
	• Intrinsically safe (2 fault);	ANSI/UL 913	CSA-157
	• Purged/pressurized (Type X or Y)	ANSI/NFPA 496	ANSI/NFPA 496
Div. 2	• Nonincendive	UL 1604	CSA-213
	• Non-sparking device	UL 1604	CSA-213
	• Purged/pressurized (Type Z)	ANSI/NFPA 496	ANSI/NFPA 496
	• Hermetically sealed	UL 1604	CSA-213
	• Any Class I, Div. 1 method	----	----

Class I, Zone 0, 1 and 2 Protection Methods

Area	Protection Methods	Applicable Certification Standards			
		U.S.	Canada	IEC	Europe
Zone 0	• Intrinsically safe, 'ia' (2 fault);	UL 2279, Pt. 11	CSA-E79-11	IEC 79-11	EN 50020
	• Class I, Div. 1 intrinsically safe (2 fault method)	ANSI/UL 913	CSA-157	----	----
Zone 1	• Encapsulation, 'm'	UL 2279, Pt. 18	CSA-E79-18	IEC 79-18	EN 50028
	• Flameproof 'd'	UL 2279, Pt. 1	CSA-E79-1	IEC 79-1	EN 50018
	• Increased safety, 'e'	UL 2279, Pt. 7	CSA-E79-7	IEC 79-7	EN 50019
	• Intrinsically safe 'ib' (1 fault)	UL 2279, Pt. 11	CSA-E79-11	IEC 79-11	EN 50020
	• Oil immersion 'o'	UL 2279	CSA-E79-6	IEC 79-6	EN 50015
	• Powder filling 'q'	UL 2279	CSA-E79-5	IEC 79-5	EN 50017
	• Purged/pressurized 'p'	UL 2279, Pt. 2	CSA-E79-2	IEC 79-2	EN 50016
	• Any Class I, Zone 0 method	----	----	----	----
Zone 2	• Nonincendive 'nC'	UL 2279, Pt. 15	CSA-E79-15	IEC 79-15	prEN 50021
	• Non-sparking device 'nA'	UL 2279, Pt. 15	CSA-E79-15	IEC 79-15	prEN 50021
	• Restricted breathing, 'nR'	UL 2279, Pt. 15	CSA-E79-15	IEC 79-15	prEN 50021
	• Hermetically sealed 'nC'	UL 2279, Pt. 15	CSA-E79-15	IEC 79-15	prEN 50021
	• Any Class I, Zone 0 or 1 method	----	----	----	----
• Any Class I, Div. 1 or 2 method	----	----	----	----	

The "Epsilon Ex" is the European mark indicating compliance with CENELEC requirements. This mark is recognized by all European Union member countries as a legal means of entry under the European Directives for Potentially Explosive Atmospheres, 761/117/EEC and 79/117/EEC. UL's Hazardous Locations staff can assist in obtaining both this mark and the associated Certificates of Conformity from a variety of European-Approved (Notified) Bodies. In addition to Notified Bodies such as KEMA and PTB, UL can also work directly through DEMKO A/S, a wholly owned subsidiary of Underwriters Laboratories Inc., to obtain the "Epsilon Ex" mark and the associated Certificates of Conformity. This relationship with DEMKO A/S, in conjunction with UL's other domestic and international services, now makes the process of gaining access to your key markets easier than ever.

