

CLASS I Flammable Gases, Vapors or Liquids

Area Classification

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.

Zone 0:

Where ignitable concentrations of flammable gases, vapors or liquids are present continuously or for long periods of time under normal operating conditions.

Zone 1:

Where ignitable concentrations of flammable gases, vapors or liquids are likely to exist 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 2:

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

Groups

Division 1 and 2

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

Zone 0, 1 and 2

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

Temperature Classes

Division 1 and 2

T1
T2
T2A
T2B
T2C
T2D
T3
T3A
T3B
T3C
T4
T4A
T5
T6

Zone 0, 1 and 2

T1
T2
—
—
—
—
T3
—
—
—
T4
—
T5
T6

Maximum Surface Temperature

≤ 450°C (842°F)
≤ 300°C (572°F)
≤ 280°C (536°F)
≤ 260°C (500°F)
≤ 230°C (446°F)
≤ 215°C (419°F)
≤ 200°C (392°F)
≤ 180°C (356°F)
≤ 165°C (329°F)
≤ 160°C (320°F)
≤ 135°C (275°F)
≤ 120°C (248°F)
≤ 100°C (212°F)
≤ 85°C (185°F)

North American Protection Techniques

Applicable Certification Documents

Area	Protection Techniques	USA	Canada
Div. 1	Intrinsic safety	UL913	CSA 157
	Explosionproof	UL 1203	CSA 30
	Purged/pressurized (Type X or Y)	NFPA 496	NFPA 496
	Class I, Zone 0 intrinsic safety, "ia"	UL60079-11	CSA E60079-11
Div. 2	Hermetically-sealed	ISA 12.12.01 or UL1604	CSA 213
	Nonincendive	ISA 12.12.01 or UL1604	CSA 213
	Non-sparking	ISA 12.12.01 or UL1604	CSA 213
	Purged/pressurized (Type Z)	NFPA 496	NFPA 496
	Any Class I, Division 1 technique	See above	See above
	Any Class I, Zone 0, 1 or 2 technique	See USA Zone techniques	See Canada Zone techniques

Note: Class I, Division 1 intrinsically safe system requirements are contained in a UL913 (USA) and CSA157 (Canada)