

CLEANSPEACE EX PAPR INTRINSIC APPROVALS

PAF-1060/2060
ETL CERTIFICATION THAT CLEANSPEACE EX
CONFORMS TO UL / CSA STANDARDS



DIVISION CLASSIFICATION SYSTEM

Class I, Division 2, Groups C and D, T4

Class I – Class: Type of hazard present. Flammable gases, flammable liquid-produced vapors, and combustible liquid-produced vapors.

Division 2 – Division: Degree to which the hazard is present.

Ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors can exist under abnormal operating conditions.

Groups C and D – Groups: C: Ethylene, D: Propane.

T4 – Temperature Class: Max Surface Temperature of 135°C, 257°F.

SUMMARY: Suitable for use in above ground explosive atmospheres when flammable gasses and vapors represented by Ethylene and Propane can exist under abnormal operating conditions.

Class Type of hazard present.	I	Flammable gases, flammable liquid-produced vapors, and combustible liquid-produced vapors	
	II	Combustible Dust	
	III	Ignitable Fibers / Flyings	
Divisions Degree to which the hazard is present.	1	Ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors can exist under normal operating conditions.	
	2	Ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors can exist under abnormal operating conditions.	
Groups The four gas groups were created so that electrical equipment intended to be used in hazardous locations could be rated for families of gases and vapors, and tested with a designated worst-case gas/air mixture to cover the entire group.	A	Acetylene	
	B	Hydrogen	
	C	Ethylene	
	D	Propane	
Temperature The outside surface temperature of the explosionproof enclosure must be controlled so it does not become an ignition source for the outside atmosphere. The temperature marking shall not exceed the autoignition temperature of the specific gas or vapor to be encountered.	T3	200°C	392°F
	T4	135°C	275°F
	T5	100°C	212°F

Reference	Standard	Description
ANSI/UL	UL 60079-0:2019	General Requirements
ANSI/UL	UL 60079-11:2014	Equipment Protection by Intrinsic Safety 'i'
CAN/CSA	ICSA 60079-0:2019 CAN/CSA-C22.2 No. 60079-0:2019	General Requirements
CAN/CSA	CSA 60079-11:2014 CAN/CSA-C22.2 No. 60079-0:2014	Equipment Protection by Intrinsic Safety 'i'





ZONE CLASSIFICATION SYSTEM

Class I, Zone 1, AEx ib IIB T4 Gb

Class I – Class: Type of hazard present. Flammable gases, flammable liquid-produced vapors, and combustible liquid-produced vapors.

Zone 1 – Zone: Based on likelihood of presence of flammable gas and vapors and their associated properties. Likely to exist under normal operating conditions.

AEx –Symbol for equipment built to American standards.

ib – Intrinsically safe protection for use in Zone 1.

IIB – Gas Group: Represented by Ethylene. Includes less ignitable group IIA (Propane).

T4 – Temperature Class: Max Surface Temperature of $\leq 135^{\circ}\text{C}$.

Gb – Equipment Protection Level: High level of protection against ignition of an explosive atmosphere.

SUMMARY: Suitable for use in aboveground applications located in Zones 1 & 2 with gases up to Ethylene that require a high level of equipment protection and high level of ignition protection. Not suitable for use in Zone 0.

Zones

Class I, Zone 0, 1, and 2 Locations
- Those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

0	Ignitable concentrations of flammable gases, flammable liquid-produced vapours, or combustible liquid-produced vapours are present continuously or for long periods of time under normal operating conditions.
1	Ignitable concentrations of flammable gases, flammable liquid-produced vapours, or combustible liquid-produced vapours are likely to exist under normal operating conditions.
2	Ignitable concentrations of flammable gases, flammable liquid-produced vapours, or combustible liquid-produced vapours are not likely to exist under normal operating conditions.

Explosion Protected

AEx	Symbol for equipment built to American standards
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Intrinsic Safety

Type of protection where any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions.

ia	For use in Zone 0
ib	For use in Zone 1
ic	For use in Zone 2

Groups

Class I, Zone 0, 1 and 2 Groups: Group II gases are not in mining situations, and are divided into three groups: Group IIC, Group IIB and Group IIA, from lowest ignition energy to highest.

IIC	Acetylene and Hydrogen
IIB	Ethylene
IIA	Propane

Temperature

Max surface temperature of electrical equipment

T3	$\leq 200^{\circ}\text{C}$	$\leq 392^{\circ}\text{F}$
T4	$\leq 135^{\circ}\text{C}$	$\leq 275^{\circ}\text{F}$
T5	$\leq 100^{\circ}\text{C}$	$\leq 212^{\circ}\text{F}$

Equipment Protection Level (EPL)

EPLs are designated as G for gas, D for dust, or M for mining.

Ga	Very High level of protection against ignition of an explosive atmosphere
Gb	High level of protection against ignition of an explosive atmosphere
Gc	Enhanced level of protection against ignition of an explosive atmosphere

This information is a guide only and is not intended to be comprehensive.
We recommend a safety manager or qualified technical engineer is consulted.

For more information visit our website: WWW.CLEANSPEACEUSA.COM
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