

CLEANSAPCE EX PAPR INTRINSIC APPROVALS

PAF-0060
ATEX APPROVALS (REQUIRED FOR EU COUNTRIES)



I M1 Ex ia I Ma

I – Equipment Group: Suitable for use in underground mines.
M1 – Equipment Category: Mines involving methane gas.
Ex ia – Ignition Protection Level: Intrinsic Safety, Very High level of protection. Suitable for use in Zones 0, 1, & 2.
I – Gas Subdivision Group: Represented by Methane Gas.
Ma – Equipment Protection Level: Very High Level of Protection against methane & coal dust in underground mines.

SUMMARY: Suitable for use in underground mining applications Zones 0, 1 & 2 with presence of methane gas & coal dust that requires a very high level of equipment protection and very high level of ignition protection.

II 2 G Ex ib IIB T4 Gb

II – Equipment Group: Suitable for use in aboveground explosive atmospheres.
2G – Equipment Category: Aboveground explosive environments involving Gas, Vapor, Mist.
Ex ib – Ignition Protection Level: Intrinsic Safety, High level of protection. Suitable for use in Zones 1 & 2.
IIB – Gas Subdivision Group: Represented by Ethylene. Includes less ignitable groups IIA (Propane) and I (Methane).
T4 – Temperature Class: Max Surface Temperature of 135°C.
Gb – Equipment Protection Level: High, Suitable for use in Zones 1 & 2 in aboveground explosive environments.

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

Reference	Standard	Description
ATEX / EN EX Standards	EN 60079-0:2018	General Requirements
ATEX / EN EX Standards	EN 60079-11:2012	Equipment Protection by Intrinsic Safety (i)
ATEX Quality Assurance	Annex IV, Directive 2014/34/EU	Conformity to Type Based on Quality Assurance of the Production Process

ATEX/IECEx Definitions

Reference	Standard	Description
Equipment Group (ATEX Only)	I	Underground mining operations
	II	Operations other than underground mines
Equipment Category	M1	Two Faults
	M2	Severe Normal Operation
	1	Two Faults
	2	One Fault
Explosive Atmosphere	G	Gas, Vapor, Mist
	D	Dust
	Ex	Intrinsic Safety - Very High Ignition Protection
Explosion Protection (Ex)	ia	Intrinsic Safety - Very High Ignition Protection
	ib	Intrinsic Safety - High Ignition Protection
Gas Subgroup	I	Methane-Least easily ignited
	IIA	Propane-Less easily ignited
	IIB	Ethylene-More easily ignited
	IIC	Hydrogen/Acetylene-Most easily ignited
Temperature Class (Max Surface Temp)	T3	200°C
	T4	135°C
	T5	100°C
Equipment Protection Level	Ma	Very High against Methane & Coal Dust
	Mb	High against Methane & Coal Dust
	Ga	Very High against Gas, Mist & Vapor
Area Classification	Gb	High against Gas, Mist & Vapor
	Gc	Normal against Gas, Mist & Vapor
	Category 1	Zone 0 – A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is present continuously or for long periods or frequently.
Category 2	Zone 1 – A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is likely to occur in normal operation occasionally.	
Category 3	Zone 2 – A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.	



IECEx APPROVALS (INTERNATIONAL INTRINSICALLY SAFE REQUIREMENTS)

Ex ia I Ma

Ex – Explosion Proof Certification

ia – Ignition Protection Level: Intrinsic Safety, Very High level of protection. Suitable for use in Zones 0, 1, & 2.

I – Gas Subdivision Group: Represented by Methane Gas.

Ma – Equipment Protection Level: Very High Level of Protection against methane & coal dust in underground mines.

SUMMARY: Suitable for use in underground mining applications Zones 0, 1 & 2 with presence of methane gas & coal dust that requires a very high level of equipment protection and very high level of ignition protection.

Ex ib IIB T4 Gb

Ex – Explosion Proof Certification

ib – Ignition Protection Level: Intrinsic Safety, High level of protection. Suitable for use in Zones 1 & 2.

IIB – Gas Subdivision Group: Represented by Ethylene. Includes less ignitable groups IIA (Propane) and I (Methane).

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

Gb – Equipment Protection Level: High, Suitable for use in Zones 1 & 2 in aboveground explosive environments.

SUMMARY: Suitable for use in above ground applications Zones 1 & 2 with gases up to Ethylene that require a high level of equipment protection and a high level of ignition protection against gas, vapor and mist. Not suitable for use in Zone 0.

Reference	Standard	Description
IECEx Standards	IEC 60079-0:2017	General Requirements
IECEx Standards	IEC 60079-11:2011	Equipment Protection by Intrinsic Safety (i)
IECEx Quality Assurance	IEC 80079-34:2018	Application of Quality Management Systems for Ex Product Manufacture

ATEX/IECEx Definitions					
Equipment Group (ATEX Only)	I	Underground mining operations	Equipment Protection Level	Ma	Very High against Methane & Coal Dust
	II	Operations other than underground mines		Mb	High against Methane & Coal Dust
Equipment Category	M1	Two Faults		Ga	Very High against Gas, Mist & Vapor
	M2	Severe Normal Operation		Gb	High against Gas, Mist & Vapor
	1	Two Faults		Gc	Normal against Gas, Mist & Vapor
	2	One Fault			
Explosive Atmosphere	G	Gas, Vapor, Mist	Area Classification	Category 1	Zone 0 – A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is present continuously or for long periods or frequently.
	D	Dust			
Explosion Protection (Ex)	ia	Intrinsic Safety - Very High Ignition Protection		Category 2	Zone 1 – A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is likely to occur in normal operation occasionally.
	ib	Intrinsic Safety - High Ignition Protection			
Gas Subgroup	I	Methane-Least easily ignited			
	IIA	Propane-Less easily ignited			
	IIB	Ethylene-More easily ignited			
	IIC	Hydrogen/Acetylene-Most easily ignited			
Temperature Class (Max Surface Temp)	T3	200°C			
	T4	135°C			
	T5	100°C			

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