

# 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

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	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.
	3	Normal Operation			
Explosive Atmosphere	G	Gas, Vapor, Mist		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.
	D	Dust			
Explosion Protection (Ex)	ia	Intrinsic Safety - Very High Ignition Protection		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.
	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			

## CLEANSPEACE EX PAPR INTRINSIC APPROVALS

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 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 For Gases: 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.

### Ex ib IIIB T150 Db

Ex – Explosion Proof Certification

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

IIIB – Dust Subdivision Group: Represented by non-conductive dust. Includes less ignitable groups IIIA (combustible flyings).

T150 – Temperature Class for Dusts: Max Surface Temperature of 150°C.

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

**SUMMARY:** Suitable for use in above ground applications Zones 1 & 2 with up to non-conductive dust that require a high level of equipment protection against Dust, 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

## CLEANSAPCE EX PAPR INTRINSIC APPROVALS

IECEX APPROVALS  
(INTERNATIONAL INTRINSICALLY SAFE REQUIREMENTS)



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
		Ga		Very High against Gas, Mist & Vapor	
		Gb		High against Gas, Mist & Vapor	
Equipment Category	M1	Two Faults		Gc	Normal against Gas, Mist & Vapor
	M2	Severe Normal Operation		Da	Very High against Dust
	1	Two Faults		Db	High against Dust
	2	One Fault		Dc	Normal against Dust
	3	Normal Operation			
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			
		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..	
Explosion Protection (Ex)	ia				Intrinsic Safety - Very High Ignition Protection
	ib				Intrinsic Safety - High Ignition Protection
					Category 3
Gas Subgroup	I	Methane-Least easily ignited			
	IIA	Propane-Less easily ignited			
	IIB	Ethylene-More easily ignited			
	IIC	Hydrogen/Acetylene-Most easily ignited			
		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..	
Dust Subgroup	IIIA				Combustible flyings - Less easily ignited
	IIIB				Non-conductive dust - More easily ignited
	IIIC	Conductive dust - Most easily ignited			
		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..	
Dust Subgroup	T3		200°C		
	T4		135°C		
	T5	100°C			
		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..		
Temperature Class For Dust (Max Surface Temp)	T150			150°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.

