WHITE PAPER

Explosion-protected cameras

Safety first

January 2023

AXIS COMMUNICATIONS

Summary

An explosion-protected camera is certified for use in hazardous areas where flammable material (liquid, gas, vapor, or dust) may be present. Areas classified as hazardous are often found in industrial operations like oil and gas, chemical plants, underground mining, saw mills, and food processing, where the use of surveillance cameras can significantly improve safety and efficiency.

Electrical installations in hazardous areas are subject to rigorous requirements, and compliance is verified through testing to industry standards. All standards are based on the same criteria, mainly concerning the type of flammable gas or dust that may be present, its possible concentration, and duration.

In the US, hazardous areas are classified according to the Class/Division system described in the National Electrical Code (NEC). The rest of the world uses the Zone system described in the IEC 60079 set of standards for the IECEx certification, or national deviations of these standards.

Products that are certified for use in hazardous areas must be labeled to show the type and level of protection applied, as well as details about the certification.

Axis designs explosion-protected cameras that use the explosion protection principles of containment and prevention:

- The cameras that are certified for use in Zone/Division 1 hazardous areas have heavy-duty enclosures that confine the energy. In case of explosion caused by sparks or high temperatures in these cameras, the explosion will be limited to within the enclosure and not spread to the flammable atmosphere outside of it. These cameras can be used also in Zone/Division 2 hazardous areas.
- The cameras that are certified for use in Zone/Division 2 hazardous areas (the less explosive areas in a hazardous location) instead prevent explosions. By design, these cameras cannot provide sufficient energy to ignite the gas or dust and no explosion can occur.

In hazardous locations, Zone/Division 2 areas are typically significantly larger than Zone/Division 1 areas. Cameras certified for Zone/Division 1 areas can also be used in Zone/Division 2 areas, but Axis cameras specifically designed and certified for Zone/Division 2 areas are a more cost-efficient alternative.

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1 Introduction

In hazardous areas, strict rules apply regarding which type of equipment is allowed. Explosion-protected cameras are typically used for HSE (health, safety, environment) applications and process monitoring.

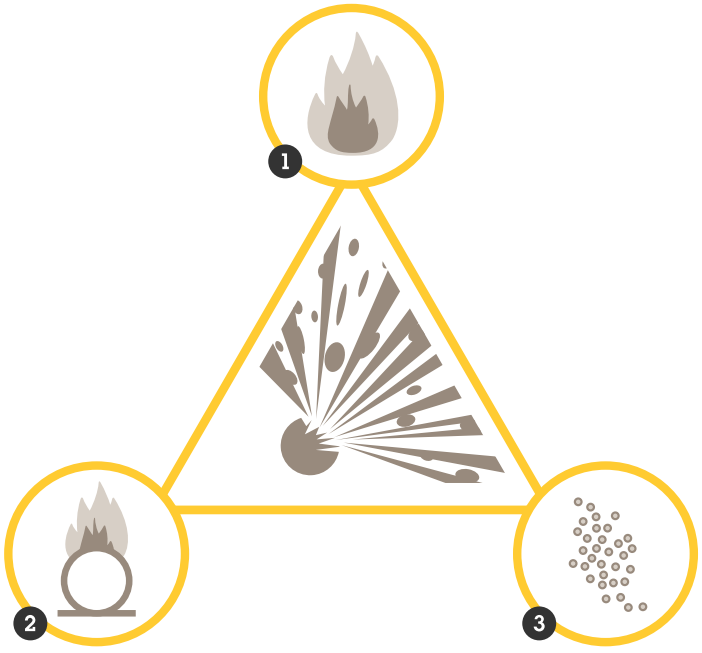
This white paper covers the basics of explosion and explosion protection. It also outlines the applicable industry standards, certifications, and product marking systems in place for cameras in hazardous environments.

2 Basics of explosion

An explosion is a rapid process that releases energy and gives rise to a shock wave. For an explosion to occur, three components must be present: fuel, oxygen, and energy. If one or more of these components is removed, no explosion will take place.

An explosive atmosphere is defined as a mixture of air and flammable substances in the form of gases, vapors, dusts, or fibers, under atmospheric conditions. Energy is required to ignite the combustible mixture, and after ignition the combustion spreads to the entire unburned mixture.

The source of an ignition can be lightning strikes, open flames, mechanically generated impact or friction sparks, electric sparks, radiation, electrostatic discharge, high surface temperature, or shock waves. An area where there is a risk for explosions is called a hazardous area.



Three components must be present for an explosion to occur:

1. *Energy — ignition caused by, for example, electric sparks or high surface temperature in an electric device.*
2. *Oxygen — naturally prevalent in most environments.*
3. *Fuel — flammable substances, such as gases, vapors, dusts, or fibers.*

2.1 Combustible dusts and fibers

A material can only burn at its surface, where it reacts with oxygen. Dusts and fibers have large surface areas compared to their masses, which makes material in dust or fiber form much more flammable than the same material in a bulk form. Because the particles are very small, they need much less energy to catch fire than the bulk material, since no energy is lost through thermal conduction within the material. Coal, sawdust, aluminum dust, starch, pollen, sugar, and flour are examples of combustible dusts. In regulations, they may be classified by whether they are conductive or non-conductive, and by the size of the particles. Cotton, rayon, and hemp are examples of combustible fibers.

2.2 Combustible gases

Combustible gases normally require very little energy to react with naturally prevalent oxygen. They are often compounds of hydrogen and carbon.

2.3 Hazardous areas

A hazardous area is an area where flammable liquids, vapors, gases, or combustible dusts and fibers are likely to occur in quantities sufficient to cause a fire or explosion. Such areas include oil refineries, rigs and processing plants, gas pipelines, automotive and aircraft refueling stations, but also sewerage treatment plants, woodworking areas, and places where grain is handled and stored.

Other names for hazardous areas are Ex areas, classified areas, explosive areas, or hazardous locations, also known as HAZLOCs.

2.4 Safe areas

Explosion-protected cameras are designed for use in hazardous areas. In non-hazardous areas, also called safe areas, Axis standard product portfolio can be used. This comprises a wide range of versatile, high-quality cameras, video analytics applications, physical access control products, and network audio products for normal and harsh environments.

3 Principles of explosion protection

Equipment used in hazardous areas must be designed to be explosion protected. There are three basic principles for explosion protection:

- **Containment** – if an explosion should occur it will be confined to a well-defined area and prevented from propagating to the surrounding atmosphere. Flameproof or explosion-protected enclosures take advantage of this principle.
- **Prevention** – the electrical and thermal energy is limited to safe levels, both during normal operation and if a fault should occur. Equipment that is intrinsically safe and equipment with increased safety use this principle.
- **Segregation** – electrical parts or hot surfaces are physically separated from the explosive atmosphere. Segregation can be accomplished by various techniques, such as pressurization and encapsulation.

Not all principles may be applicable in all zones or divisions defined in the industry standards.

4 Area classification

Area classification is a method of analyzing and classifying the environment where explosive gas atmospheres may occur, so as to facilitate the proper selection, installation, and operation of electrical equipment to be used safely in that environment. The classification also takes into account the ignition characteristics of the gas or vapor, such as ignition energy and ignition temperature. It is also used to give an assessment of the likelihood of an explosive dust atmosphere occurring.

The procedure for identifying combustible dust zones is as follows:

1. Identify whether the material is combustible and, for the purpose of assessment of ignition sources, determine the material characteristics. Parameters such as particle size, moisture content, cloud and layer minimum ignition temperature and electrical resistivity shall be considered. The appropriate dust group, Group IIIA for combustible flyings, Group IIIB for non-conductive dust, or Group IIIC for conductive dust, shall be identified.
2. Identify items of equipment where explosive dust mixtures may be contained or sources of dust release can be present.
3. Determine the likelihood that dust will be released from those sources and thus, the likelihood of explosive dust atmospheres in various parts of the installation. Wind direction, distance to the sources, and other aspects related to the surroundings should also be factored in.

After these steps have been taken, zones can be identified and their boundaries defined in line with the Zone system specified in the next chapter.

A corresponding procedure can be followed for identifying combustible gas zones.

A similar approach is also used when classifying divisions according to the Class/Division system used in North America.

5 Industry standards and certification

Electrical installations in hazardous areas are subject to rigorous requirements, both on equipment and on the competence of the installer. Compliance to the requirements is verified through testing to various industry standards.

Besides the main equipment, cable glands must be certified for hazardous areas. Cables must be suitable for use in the area according to local regulations, which may incorporate requirements regarding the type and thickness of the cable and how it is protected.

For classification and certification of explosion-protected equipment, the different standards are based on the same criteria. They mainly concern whether an explosive atmosphere will be caused by gas or by dust (or both), what the concentration is of gas and/or dust, and the duration of this concentration.

In the US, explosion-protected electrical equipment is classified according to the Class/Division system described in NFPA 70, National Electrical Code (NEC), articles 500–503.

The rest of the world uses a Zone system described in the IEC 60079 set of standards for the IECEx certification.

Installations in Canada shall follow the Zone system unless they were previously classified according to the Class/Division system, in which case they can continue that way. Both systems are described in CSA C22.1, Canadian Electrical Code, Section 18 and Appendix J.

Note that local variations and exceptions to the Zone system may apply, for example ATEX, EAC, or INMETRO.

5.1 Class/Division system (used in the US)

The authority in charge of the applicable regulation in the US is the Occupational Safety and Health Association (OSHA). OSHA points to the National Electric Code (NEC) of the NFPA 70 (published by National Fire Protection Association), or more specifically the NEC articles 500-506 which regulate the classification. OSHA also supplies a list of test standards in accordance with NEC, for electrical products installed in hazardous areas, as well as a list of nationally recognized testing laboratories (NRTL).

Several test standards, such as FM3600, FM3615, and UL1203, can be used for certification according to the Class/Division system (described in NEC articles 500-503), while the ISA/UL 60079 series of standards can be used for certification according to a Class/Zone system (described in NEC articles 505-506).

The testing according to a specific standard must be performed by a test laboratory that is officially recognized as an NRTL for testing against that standard. Examples of laboratories include FM, UL, CSA, MET, and DEKRA. While also issuing the test standards, these laboratories are generally approved for testing according to the other laboratories' standards, as well as their own.

5.1.1 Classes

The classes are defined according to the type of explosive or ignitable substances that may be present in the atmosphere.

Table 5.1 Class definitions in the Class/Division system.

Class	Substances present
I	Flammable vapor or gas
II	Combustible dust
III	Ignitable fibers or flyings

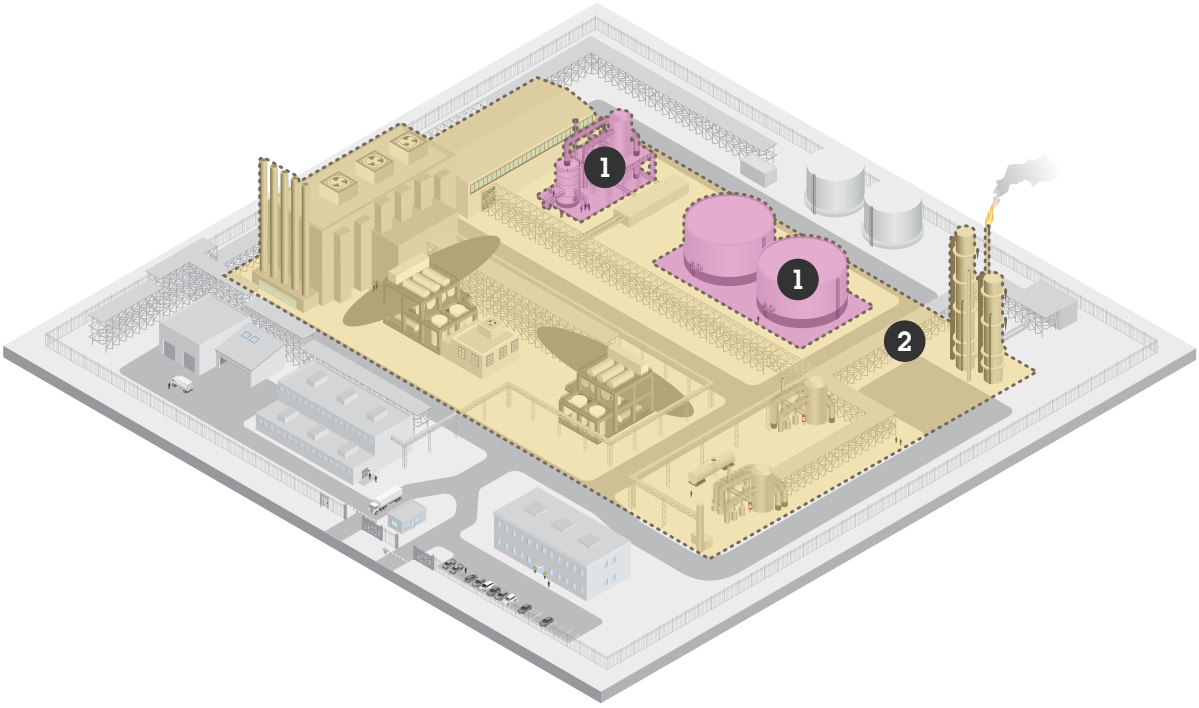
Class I locations are those in which flammable vapors and gases may be present. Class II locations are those in which combustible dust may be present. Class III locations are those that are hazardous because of the presence of easily ignitable fibers or flyings.

5.1.2 Divisions

Each of the three classes is further subdivided into Division 1 or Division 2. The division is defined according to the likelihood of the hazardous material being present in a flammable concentration. Equipment approved for Division 1 can also be used in Division 2 within the same class.

Table 5.2 Division definitions in the Class/Division system.

Division	Definition
1	In which ignitable concentrations of hazards exist under normal operation conditions and/or where hazard is caused by frequent maintenance or repair work or frequent equipment failure.
2	In which ignitable concentrations of hazards are handled, processed, or used, but which are normally in closed containers or closed systems from which they can escape only through accidental rupture or breakdown of such containers or systems.



An industry facility with areas classified in divisions.

1 Division 1 areas

2 Division 2 area

In a Division 2 area, an explosive atmosphere is present only under abnormal conditions.

In a Division 1 area, explosive atmospheres will occur continuously or intermittent periodically more than ten hours per year. This is typically inside tanks filled with flammable liquids, and in the proximity of valves.

5.1.3 Groups

The three classes are also subdivided into groups of hazardous materials. The groups are associated with substances rated by how flammable they are, which is based on, among other things, maximum explosion pressures. The tables below show typical flammable material of each group. The materials represent certain ignition energies, for which the equipment is safe.

Table 5.3 Groups of flammable substances (Class I: vapor or gas) in the Class/Division system.

Group	Flammable material (examples) of Class I (vapor or gas)
A	Acetylene
B	Hydrogen
C	Ethylene
D	Propane

Table 5.4 Groups of flammable substances (Class II and III: combustible dust and ignitable fibers or flyings) in the Class/Division system.

Group	Flammable material (examples) of Class II and III (combustible dust and ignitable fibers or flyings)
E	Metal dusts
F	Carbonaceous dusts
G	Combustible dusts

5.1.4 Temperature classes

The temperature classes specify the maximum permissible temperatures on the surface of the equipment. This temperature should not exceed the ignition temperature of the surrounding atmosphere. Ignition temperature is the minimum temperature required, at normal atmospheric pressure in the absence of a spark or flame, to set afire or cause self-sustained combustion independently of the heating or heated element.

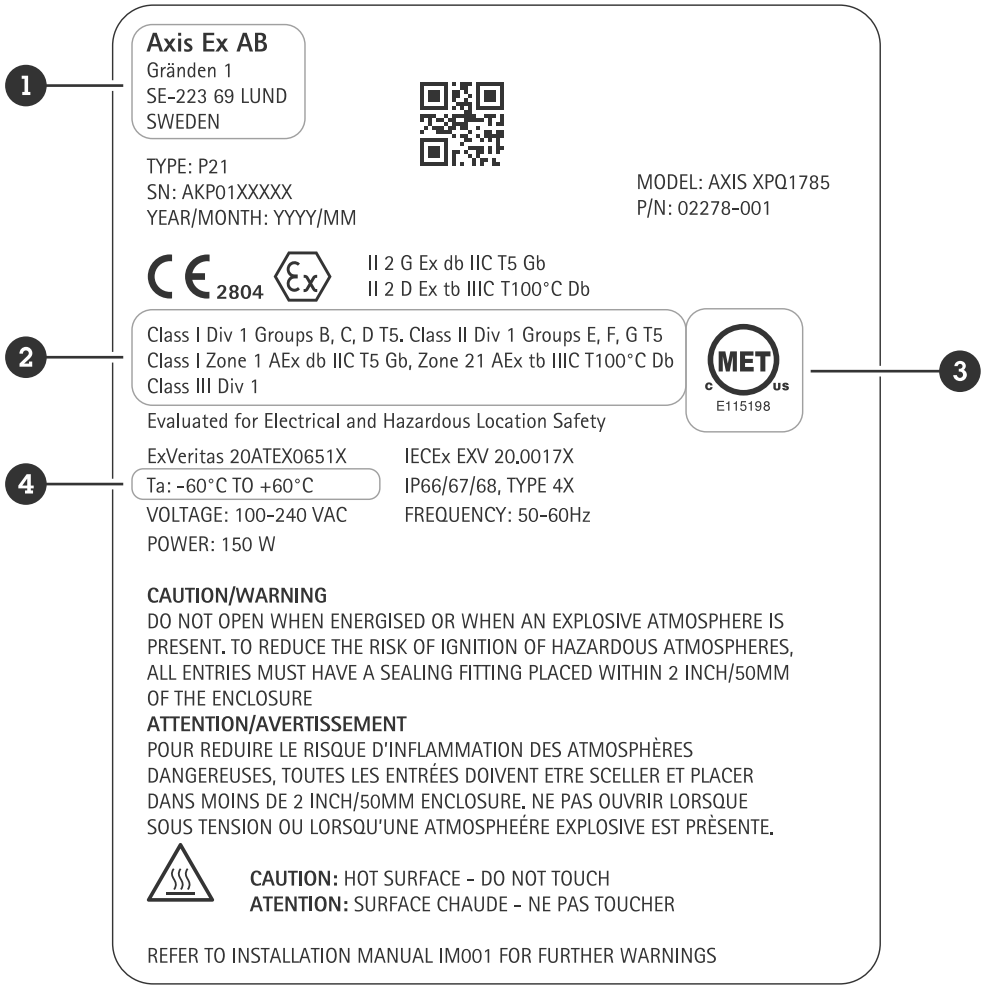
Class I temperature marking shall not exceed the ignition temperature of the specific gas or vapor to be encountered as specified in NEC section 500-5(d).

Table 5.5 Temperature classes in the Class/Division system.

Temperature class	Permissible surface temperature of electrical equipment	
	°C	°F
T1	450	842
T2	300	572
T2A	280	536
T2B	260	500
T2C	230	446
T2D	215	419
T3	200	392
T3A	180	356
T3B	165	329
T3C	160	320
T4	135	275
T4A	120	248
T5	100	212
T6	85	185

5.1.5 Product marking

In North America, explosion-protected products must be equipped with a marking label that specifies the manufacturer, the certificate issuer and file number, and the marking according to NFPA 70 (NEC 500-506) and CSA C22.1.



Product marking label

1 *Manufacturer of the equipment*
2 *Marking according to NFPA 70 and CSA C22.1*
3 *Issuer of the certificate and certificate (file) number*
4 *Safe operating temperature*

The following tables provide quick guides to product marking in the US.

Table 5.6 A quick guide to product marking according to the Class/Division system (as described in NEC article 500), exemplified by a product marked Class I, Division 1, Groups B, C, D, T5.

Explosive atmosphere	Area classification	Gas/dust group	Temperature code
Class I: Gas/Vapor Class II: Dust Class III: Flyings	**Division 1** Division 2	A: Acetylene **B: Hydrogen** **C: Ethylene** **D: Propane** E: Metal dusts F: Carbonaceous dusts G: Combustible dusts	T1–T6 **T5: 100 °C** (Maximum surface temperature of equipment)

Table 5.7 A quick guide to product marking according to the Zone system in the US (as described in NEC article 505), exemplified by a product marked "Class I, Zone 1, IIC, T5".

Explosive atmosphere	Area classification	Gas/dust group	Temperature code
Class I: Gas/Vapor (For dust environments, the class of the hazard (Class II) shall not be mentioned in the marking.)	Zone 0 (Gas) **Zone 1 (Gas)** Zone 2 (Gas) Zone 20 (Dust) Zone 21 (Dust) Zone 22 (Dust)	IIA: Propane IIB: Ethylene **IIC: Acetylene** IIIA: Combustible flyings IIIB: Non-conductive dusts IIIC: Conductive dusts	Gas: T1–T6 **T5: 100 °C** (Maximum surface temperature of equipment)

5.2 Zone system (used in the rest of the world)

The International Electrotechnical Commission (IEC) issues the IEC 60079 set of standards about electrical equipment in explosive atmospheres. National deviations of these standards are used throughout the world.

In the European Union, equipment must comply with the essential requirements of EU Directive 2014/34/EU, also known as the ATEX Directive, describing what equipment and work environment is allowed in an area with an explosive atmosphere.

The voluntary IECEx Equipment Certification Scheme can facilitate acceptance of equipment for use in an explosive atmosphere in other major jurisdictions around the world. IECEx is IEC's system for certification to standards relating to equipment for use in explosive atmospheres.

5.2.1 Zones

Hazardous areas are divided into zones. The zone is defined by the probability that hazardous material will be present in an ignitable concentration in the surrounding atmosphere.

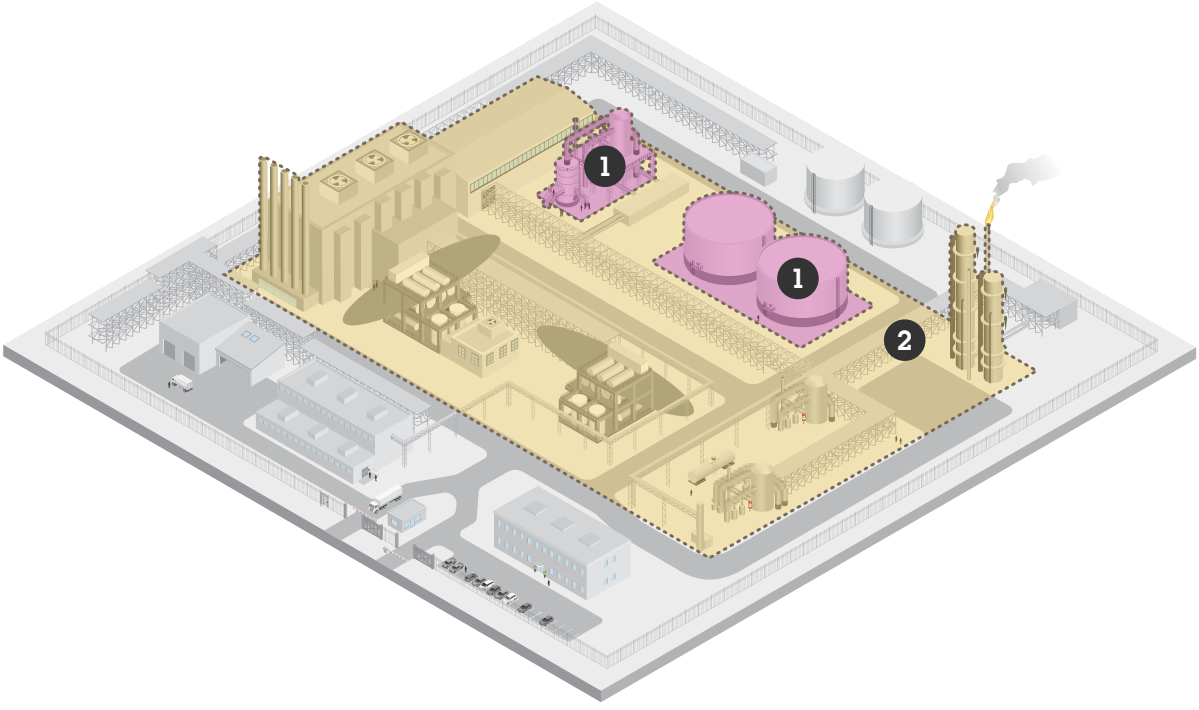
Table 5.8 Hazardous area zones.

Zone		Hours per year of flammable gas-air mixture or dust clouds present
Gas	Dust	
0	20	1000 or more hours/year (10%)
1	21	10 < hours/year < 1000 (0.1% - 10%)
2	22	1 < hours/year < 10 (0.01% - 0.1%)

For gases, Zone 0 is an area in which an explosive gas-air mixture is continuously or frequently present, or present for lengthy periods. Zone 1 is an area in which an explosive gas-air mixture is likely to occur for short periods during normal operation. In Zone 2, an explosive gas-air mixture is not likely to occur. If it does occur, it will exist due to abnormal conditions and for a very short time.

For clouds of combustible or conductive dusts, the equivalent zones are 20, 21, and 22.

Zones 1 and 2 (or 21 and 22 for dust) are the most common classifications, whereas Zone 0 (or 20 for dust) is restricted to small, inaccessible areas or areas inside technical equipment. Products certified for Zone 0 (20) can be used in Zones 0, 1, and 2 (20, 21, and 22). Zone 1-certified (21) products can be used in Zones 1 and 2 (21 and 22).



An industry facility with areas classified into zones.

1 *Zone 0 or Zone 1 areas*
2 *Zone 2 area*

5.2.2 Types of protection

Electrical equipment used in hazardous areas can be protected from explosions in several ways. The table below lists the types of protection that can be used in different zones.

Table 5.9 Types of protection.

Designation	Type of protection	Zone
Ex d	Flameproof (explosion-protected) enclosure	1, 2
Ex e	Increased safety	1, 2
Ex I	Intrinsically safe	0, 1, 2, 20, 21, 22
Ex o	Oil immersion	1, 2
Ex p	Pressurized (purged) apparatus	1, 2, 21, 22
Ex q	Powder (sand) filling	1, 2
Ex m	Encapsulation	0, 1, 2, 20, 21, 22
Ex n	Non-incentive and/or normally no sparking circuits	2
Ex t	Enclosure	20, 21, 22

Axis explosion-protected cameras belong to the protection category Ex d, Ex e, or Ex t, while some accessories belong to Ex e. For equipment designated Ex d, an explosion-protected housing should prevent any inner explosion from spreading to the surrounding gas mixture. Ex e, increased safety, is an explosion protection method for gas environments that prohibits arcs, sparks, or hot surfaces. Ex t is an explosion protection method where the enclosure restricts the surface temperature and keeps ignitable dust out from the electronics.

5.2.3 Groups of apparatus

For the certification of explosion-protected equipment, all types of apparatus are divided into three groups. Group I covers equipment used in mines and Groups II and III cover all other applications.

Table 5.10 Groups of apparatus according to the Zone system.

Application	Group	Sub-group	Concerns applications where hazards due to the following substance(s) may exist
Mining	I		Methane
Explosive gases	II	A	Propane, methane, and similar gases
		B	Ethylene and other such industrial gases
		C	Acetylene, hydrogen, and other very easily ignited gases
Combustible dusts	III	A	Flammable particles
		B	Non-conductive dust
		C	Conductive dust

IIC is the group with the lowest ignition energy (i.e., easiest to ignite) for a gaseous atmosphere. Products certified for IIC can be used also in environments that require equipment to be IIB or IIA classified. Similarly, IIB products can be used in environments that require equipment to be IIA classified. For dust environments, the case is similar and the group with the lowest ignition energy is IIIC.

5.2.4 Temperature classes

A mixture of air and hazardous gases may ignite by coming in contact with a hot surface. Whether an ignition will occur depends on the temperature of the surface area and the concentration of the gas. The ignition temperature, or auto-ignition temperature (AIT), is the lowest temperature of a substance, whether solid, liquid, or gaseous, to initiate a self-sustaining combustion. Apparatus used in any hazardous area must not have any surface whose temperature exceeds the AIT, neither during normal nor abnormal operation.

The maximum temperature of a piece of equipment must always be lower than the AIT of the gas, vapor, or air mixture in which it is placed. Certified equipment is tested for maximum temperature ratings by approval agencies. Tested equipment receives a temperature code indicating the maximum surface temperature.

Table 5.11 Temperature codes according to the Zone system.

Temperature code	Max. surface temperature	
	°C	°F
T1	450	842
T2	300	572
T3	200	392
T4	135	275
T5	100	212
T6	85	185

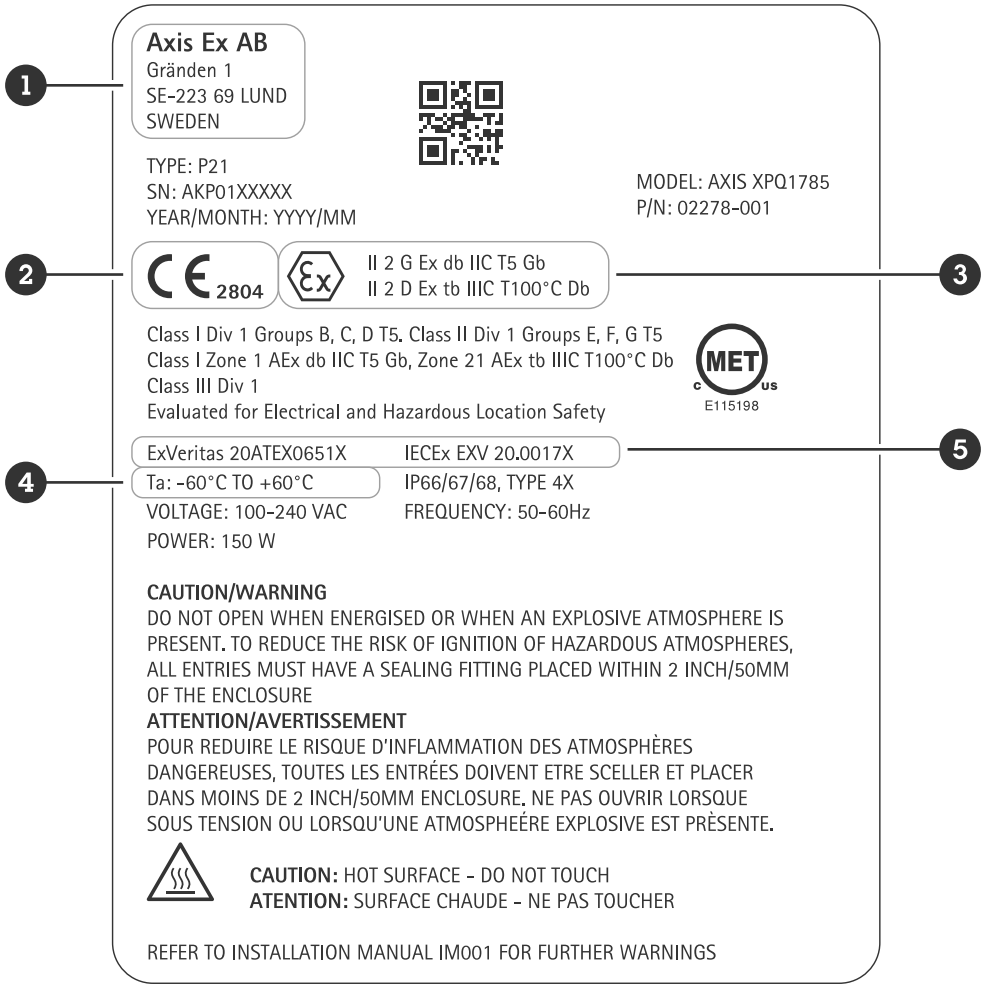
Note that the ambient temperature also affects which temperature code is applicable. For example, if the product by itself generates 10 °C (or, for example, 10 °F), but is used in an ambient temperature of maximum 80 °C (or 180 °F), the maximum surface temperature will be 90 °C (or 190 °F), and the product must be classified as T5. Products that are classified as T6 are allowed for use in areas that require T5-classified equipment, and so on, while T5 equipment cannot be used in areas that require T6-classified products.

5.2.5 Product marking

All electrical equipment certified for use in hazardous areas must be labeled to show the type and level of protection applied.

In Europe, the label must show the CE mark and the code number of the notified body that monitors the quality system of the manufacturer. The CE mark is complemented with the ATEX Ex symbol, followed by the group, category and, if Group II equipment, whether the marking relates to gases (G) or dust (D). The

marking further specifies the type of protection, the group of apparatus, the temperature category, and the equipment protection level.



Product marking label

1 *Manufacturer of the equipment*
2 *CE mark and notified body auditing the quality system*
3 *ATEX and IECEx marking*
4 *Safe operating temperature*
5 *ATEX and IECEx certificate numbers and test laboratories.*

The tables below provide quick guides to product marking according to the ATEX standard.

Table 5.12 A quick guide to product marking, in relation to gas, according to the Zone system (as described in the ATEX standard), exemplified by a product marked "II 2 G Ex db IIC T5 Gb".

Equipment group	**Equipment category**	**Surrounding atmosphere**	**Explosion protected**
I: Mines **II: Surface industry**	1: Zone 0 (or 20) **2: Zone 1 (or 21)** 3: Zone 2 (or 22)	**G: Gas** D: Dust	**Ex**
Type of protection	**Gas group**	**Temperature code**	**Equipment protection level**
d: Flameproof enclosure **b: Zone 1**	IIA: Methane IIB: Ethylene **IIC: Hydrogen**	**Gas: T1–T6** **T5: 100 °C**	**G: Gas** **b: Zone 1**

Table 5.13 A quick guide to product marking, in relation to dust, according to the Zone system (as described in the ATEX standard), exemplified by a product marked "II 2 D Ex tb IIIC T100°C Db".

Explosive atmosphere	**Equipment category**	**Surrounding atmosphere**	**Explosion protected**
I: Mines **II: Surface industry**	1: Zone 0 (or 20) **2: Zone 1 (or 21)** 3: Zone 2 (or 22)	G: Gas **D: Dust**	**Ex**
Type of protection	**Dust group**	**Max. surface temperature**	**Equipment protection level**
t: By enclosure **b: Zone 21**	IIIA: Combustible flyings IIIB: Non-conductive dust **IIIC: Conductive dust**	**100 °C**	**D: Dust** **b: Zone 21**

6 Comparisons between Class/Division system and Zone system

This section displays tables for easy comparison between the systems.

Table 6.1 Class I area classification comparison.

Zone 0	Zone 1	Zone 2
Where ignitable concentrations of flammable gases, vapors, or liquids are present continuously or for long periods of time under normal operating conditions.	Where ignitable concentrations of flammable gases, vapors, or liquids: - are likely to exist under normal operating conditions - may exist frequently because of repair, maintenance operations, or leakage	Where ignitable concentrations of flammable gases, vapors, or liquids: - are not likely to exist under normal operating conditions - occur for only a short period of time - become hazardous only in case of an accident or some unusual operating condition
Division 1		**Division 2**
Where ignitable concentrations of flammable gases, vapors, or liquids: - are likely to exist under normal operating conditions - exist frequently because of maintenance/repair work or frequent equipment failure		Where ignitable concentrations of flammable gases, vapors, or liquids: - are not likely to exist under normal operating conditions - are normally in closed containers where the hazard can escape only through accidental rupture or breakdown of such containers or in case of abnormal operation of equipment

Table 6.2 Class I group comparison.

Zone	Class/Division
IIC — Acetylene and hydrogen	A — Acetylene
	B — Hydrogen
IIB — Ethylene	C — Ethylene
IIA — Propane	D — Propane

Table 6.3 Class I temperature class comparison.

Zone 0, 1, and 2	Division 1 and 2	Maximum temperature
T1	T2	450°C (842°F)
T2	T2	300°C (572°F)
	T2A	280°C (536°F)
	T2B	260°C (500°F)
	T2C	230°C (446°F)
	T2D	215°C (419°F)
T3	T2	200°C (392°F)
	T3A	180°C (356°F)
	T3B	165°C (329°F)
	T3C	160°C (320°F)
T4	T4	135°C (275°F)
	T4A	120°C (248°F)
T5	T5	100°C (212°F)
T6	T6	85°C (185°F)

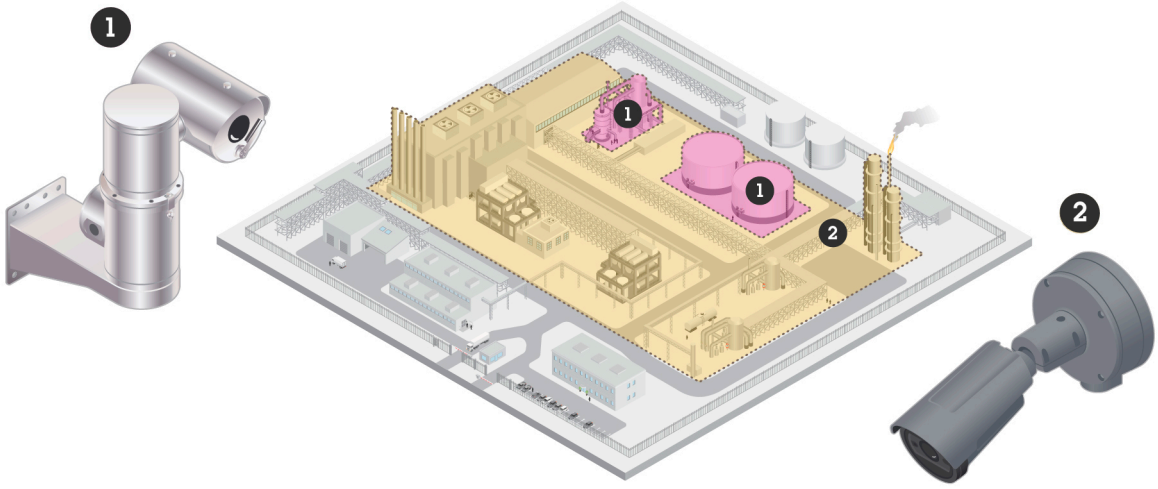
7 Axis explosion-protected cameras

To select the proper equipment for hazardous areas you first perform an area classification to define the probability of hazardous materials being present. This means identifying which type of explosive or ignitable substance that the equipment might be exposed to, the concentration, and the duration of the exposure. If the result is that ignitable concentrations are likely to exist for short periods during normal operation, the area is a Zone/Division 1 area. If ignitable concentrations are not likely to exist, except in case of abnormal conditions and only for very short periods of time, the area is a Zone/Division 2 area.

- **Axis cameras certified for Zone/Division 1 areas** are protected through the protection methods Ex d (enclosure prevents any inner explosion from spreading to the surrounding gas mixture) (Explosionproof in US/CAN, flameproof according to ATEX/IECEx) and Ex t (enclosure restricts the surface temperature and keeps ignitable dust out from the electronics) (Dust-ignitionproof (US/CAN), dust ignition protection ATEX/IECEx). These are heavy-duty, robust enclosures usually made from stainless steel or aluminum. This gives a fairly heavy camera.
- **Axis cameras certified for Zone/Division 2** areas are protected through the protection method Ex e: increased safety (ATEX/IECEx) or nonincendive electrical equipment (US/CAN). The protection here lies in the mechanics and electronic components. By design, the camera cannot provide sufficient energy to ignite the gas or dust (there will be no arcs, sparks, or hot surfaces), and no extra enclosure is needed around the camera. This results in a significantly lighter and more compact camera.

Proper design of hazardous areas aims at limiting the explosive areas as much as possible. Hence, Zone/Division 2 areas (the less explosive areas on the site) are significantly larger than Zone/Division 1 areas. Cameras certified for Zone/Division 1 areas can also be used in Zone/Division 2 areas, but Axis cameras specifically designed and certified for Zone/Division 2 areas are a more cost-efficient

alternative. Both installation costs and purchasing costs are kept down, while the cameras are sturdy with outdoor rating for impact, cold weather, and rain.



1 *In Zone/Division 1 areas you must use a camera specifically certified for Zone/Division 1 areas.*

2 *In the large, less explosive (Zone/Division 2) areas of a hazardous area site it is also possible to use the lighter and more cost-efficient camera certified for Zone/Division 2 areas.*

T10171706/EN/M2.4/2301

About Axis Communications

Axis enables a smarter and safer world by creating solutions for improving security and business performance. As a network technology company and industry leader, Axis offers solutions in video surveillance, access control, intercom, and audio systems. They are enhanced by intelligent analytics applications and supported by high-quality training.

Axis has around 4,000 dedicated employees in over 50 countries and collaborates with technology and system integration partners worldwide to deliver customer solutions. Axis was founded in 1984, and the headquarters are in Lund, Sweden