

CERTIFICATIONS

ATEX (TUV NORD CERTIFICATION)

The Videotec explosion proof products have been designed in accordance with the **ATEX 94/9/EC** directive for hazardous area installations, where gas and dust are present. All products have been designed as “explosion proof housings”. (“Ex d” gas, “Ex td” dust). ATEX is the common name given to the EU 94/9/EC directive regarding Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres. The word ATEX is derived from the French “ATmosphères EXplosives”.



| ATEX - GASES | |
|--------------|---|
| Cod. | Description |
| | Explosion-proof symbol |
| II | Group (surface device, no mining) |
| 2G | Gases category |
| Ex d | Explosion-proof housing for potentially explosive environments with presence of gases |
| IIC | Gases group |
| T6 | Gases temperature classification |
| Gb | Protection level for gases equipment |

| ATEX - DUSTS | |
|--------------|---|
| Cod. | Description |
| | Explosion-proof symbol |
| II | Group (surface device, no mining) |
| 2D | Dusts category |
| Ex t | Explosion-proof housing for potentially explosive environments with presence of dusts |
| IIIC | Dusts group |
| T85 °C | Maximum surface temperature for dusts |
| Db | Protection level for dusts equipment |
| IP66 | IP protection degree |

IECEX (TUV NORD CERTIFICATION)

The IECEx Certification has the same characteristics as ATEX, but with international value (check which countries recognize this certification on the www.iecex.com website).



| IECEX - GASES | |
|---------------|---|
| Cod. | Description |
| Ex d | Explosion-proof housing for potentially explosive environments with presence of gases |
| IIC | Gases group |
| T6 | Gases temperature classification |
| Gb | Protection level for gases equipment |

| IECEX - DUSTS | |
|---------------|---|
| Cod. | Description |
| Ex t | Explosion-proof housing for potentially explosive environments with presence of dusts |
| IIIC | Dusts group |
| T85 °C | Maximum surface temperature for dusts |
| Db | Protection level for dusts equipment |
| IP66 | IP protection degree |

GOST-R (CERTIFICATION NANIO CCVE)

The Gost-R certificate, where Gost-R is an abbreviation for Gosstandard, in other words the “State Standard”, is a document that confirms the conformity of a product to Russian standards. The certificate is necessary for importing and selling products in the Russian Federation. **RTN RosTekhNadzor authorisation** is also necessary together with certification of conformity to GOST standards for using explosion proof products in dangerous industrial areas during flammable and explosive processes.



| GOST-R | |
|-------------------|--|
| Cod. | Description |
| 1 | Protection level |
| Ex d | Explosion-proof housing for potentially explosive environments |
| IIC | Gas group |
| T6 | Gas temperature classification |
| и | |
| DIP A21 | Dust ignition protection for zone types 21-22 |
| T _A T6 | Maximum surface temperature for dusts |

CHINESE CERTIFICATION

The certification of the China explosion proof products, is a voluntary certification. The basic requirements for testing, in general, comply with existing standards IECEx with some national deviations.

EQUIPMENT CLASSIFICATION

Electrical equipment is enclosed in housings that can contain any internal explosion and prevent its transmission to the outside atmosphere without being damaged.

According to standards **EN60079-0 of CENELEC** (European Committee for Electrical Standards, or the European Committee for Electrotechnical Standardization) and **IEC 60079-0** (IECEX International Electrotechnical Commission System for Certification to Standards Relating to Equipment for use in explosive atmospheres), the devices intended for use in potentially explosive atmospheres are divided into three groups.

GROUP I

Group I equipment is intended for use in mines susceptible to firedamp (methane). This group is divided into categories M1 and M2.

- **M1** identifies equipment that must continue to operate when a potentially explosive atmosphere is present.
- **M2** identifies equipment that must not operate when a potentially explosive atmosphere is present.

GROUP II

Group II is intended for all other situations.

Group II obviously covers a wide range of potentially explosive gases and vapours as well as many that can create different levels of risk. Therefore, in order to distinguish more clearly the various characteristics required for a particular gas or vapor, Group II gases are divided as shown in the table.

GROUP III

Electrical equipment of Group III is subdivided according to the nature of the explosive dust atmosphere for which it is intended.

Group III subdivisions:

- **IIIA** - combustible flyings
- **IIIB** - non-conductive dust
- **IIIC** - conductive dust

Equipment marked IIIC is suitable for applications requiring Group IIIB and IIIA.

TEMPERATURE CLASS

The temperature class is an important factor when selecting devices for detecting gases or mixtures (in the case of gas mixtures it is advisable to consider the worst component).

The temperature class refers to the maximum temperature that the surface of the device can reach. This ensures that the ignition temperature of gases or vapours or dust that may be present is not exceeded.

The field ranges from T1 to T6 for gases and 450°C to 85°C for dust. The certified equipment shall be approved according to the gas, vapour or dust particle types.

The group and the temperature class are listed in the certificate and on the unit itself.

GAS GROUP CLASSIFICATION

Temperature class (Maximum surface temperature °C of the housing) *

| Class | T1 450 °C | T2 300 °C | T3 200 °C | T4 135 °C | T5 100 °C | T6 85 °C |
|-------|--|---------------------|---|-----------------------|-------------------|---------------|
| I | Methane | | | | | |
| IIA | Acetone Ethanol Ethyl acetate Ammonia Pure benzene Acetic acid Carbon monoxide Methanol Propane Toluene | N-Butane N-Butyl | Petrol Diesel fuel Avgas Heating oil N-Hexane | Acetaldehyde Ether | | Ethyl nitrate |
| IIB | | Ethylene | | | | |
| IIC | Hydrogen | Acetylene | | | Carbon disulphide | |

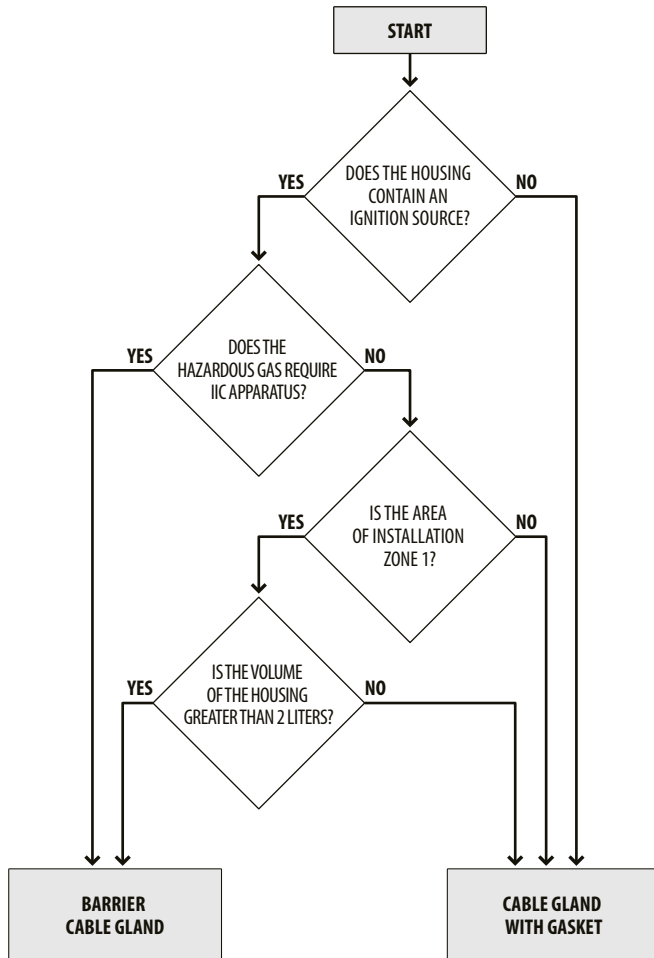
The above temperature classes automatically cover the lower classes (T6 is better than T1).

Class IIB also covers class IIA. Class IIC also covers classes IIB and IIA.

* Normally refers to the maximum ambient temperature of the installation. The lower is the ignition temperature of the related explosive atmosphere, the higher should be the maximum allowed surface temperature of the housing.

CABLE GLANDS

The use of different types of cable gland must follow the **IEC/EN 60079-14** Standard. Depending on the type of installation (certification required) and the volume of the housings, barrier cable glands or simple cable glands with gasket can be used.



CHOICE OF CABLE GLANDS

The choice of cable glands must be made considering:

- the type of certification required
- the gas group
- type of cable, armoured or non-armoured
- temperature range

Normally, the glands are divided into two main categories: “Barrier” cable glands and cable glands with gaskets.

“Barrier” cable glands: The barrier cable glands are similar to normal cable glands, except a compound sealant material is used to seal around the individual cable cores, ensuring that the inside and outside of the cable are gas tight.

Cable glands with gaskets: to be chosen according to the diameter of the cable. Sealing is guaranteed by a rubber gasket that tightens around the diameter of the cable. This prevents the spread of fire outside the housing.

The minimum and maximum usable diameters of the cable are indicated on the gaskets. It is forbidden to fit more than one cable in one cable gland, or increase the outside diameter of the cable sheath with electric tape or in any other way to make it correspond to the diameter of the gasket. Cable glands for armoured cables have two gaskets: the first is at the front and seals the internal diameter of the cable to protect against explosions; the second is at the rear and seals the external sheath of the cable, protecting against liquid penetration inside the gland, where the armour is blocked by two conical rings that provide electrical continuity to earth.

If you remove a cable gland for maintenance, you should replace the seals because they could no longer be reliable.

In the below table the cable glands offered by Videotec.

SELECTION TABLE FOR CABLE GLANDS

| Zone - Gas | Cable gland type | Certification | Operating temperature | Cable | Cable glands part code | External diameter (mm) | Diameter under armour (mm) |
|--|------------------|---------------------|-----------------------------|-------------|------------------------|------------------------|----------------------------|
| IIC Zone 1 or Zone 2 IIB or IIA, Zone 1 | Barrier | IECEX / ATEX / GOST | -60 / +80°C -76 / 176°F | Not armored | OCTEXB3/4C | 13 - 20.2 | - |
| | | | | Armored | OCTEXBA3/4C | 16.9 - 26 | - |
| IIB o IIA Zone 2 | With gasket | IECEX / ATEX / GOST | -60 / +100°C -76 / 212°F | Not armored | OCTEX3/4C | 13 - 20.2 | - |
| | | | | Armored | OCTEXA3/4C | 16.9 - 26 | 11.1 - 19.7 |
| | | ATEX | -20 / +80°C -4 / 176°F | Not armored | OCTEX3/4 | 14 - 17 | - |
| | | | | Armored | OCTEXA3/4 | 18 - 23 | 14 - 17 |