



Movement by Perfection



The Royal League in ventilation, control and drive technology



## **ATEX fans**

What you should know

# ATEX – what is it all about?



**ATEX 94/9 EC** – We use this new EU directive for all devices, components and protective systems intended for use in potentially explosive atmospheres.

Our explosion-proof fans are designed, produced and tested in compliance with ATEX 94/9 EC and 1999/9 EC and are therefore suitable for operation in zones 1 and 2 as well as 21/22.

## Internal zoning

The inside of storage containers that are exposed to the atmosphere and used to store liquids and where the temperature often rises above flashing point, must be designated as explosion zone 0. The explosion zone can be reduced, for example through inertisation using pressure control. Zone 1 can be achieved if the probability of occurrence of an explosive mixture in accordance with the definition for Zone 1 can be reduced (occasional occurrence) through the use of additional monitoring equipment.

Equipment or pipelines that, even taking into account very rare faults, always contain a gas mixture that exceeds the upper explosive limit are not potentially explosive zones. These include, for example, natural gas pipelines and liquid gas lines, as these are always operating under positive pressure. However, particular conditions are imposed if these components are to be refilled with the combustible substance after being emptied. Any air that is contained must be removed or the equipment must be inertised before filling. Appropriate operating

instructions are required for this (see also explosion protection document).

In the following cases, classification of explosive zones is necessary when handling potentially explosive substances: opening equipment, decanting, atomising or sampling. The information provided by the employers' liability insurance associations (BGI bulletins) can be helpful for defining zones. An area designated as Zone 1 usually follows an area specified as Zone 2. If the whole room is designated as Zone 1, then the doorway to an adjacent room may have to be classified as Zone 2.

## Groups

Devices that are suitable for use in potentially explosive atmospheres, are split into three groups. Until the introduction of EN 60079-0:2009, all devices were divided into just two groups.

### Group II

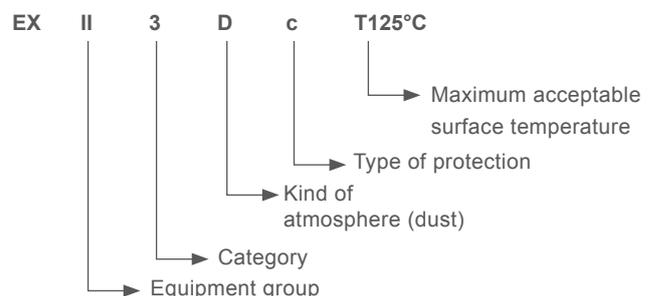
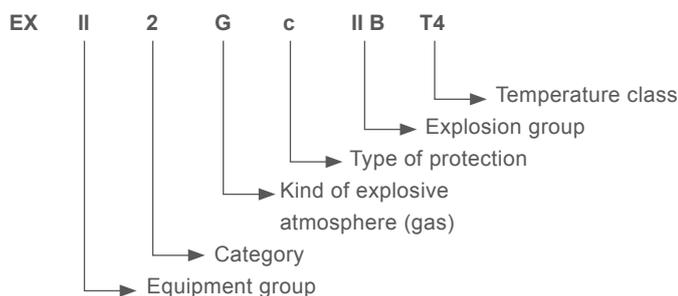
- represents potentially explosive gases and is divided into the subgroups IIA, IIB and IIC for some types of protection (Ex d, Ex n).

For Ex d (pressure-proof housing): The letter indicates the maximum permitted gap (maximum width of the gap on a flashback arrester through which ignition cannot be transmitted). For Ex n this is subdivided, as it is dependent on the relevant type: Ex nA.

Subgroup A includes, for example, diesel, petrol, ethane, methane and carbon monoxide. Subgroup B is for substances such as town gas, hydrogen sulphide and ethylene. Subgroup C covers hydrogen, acetylene and carbon disulphide.



## Labeling for ZIEHL-ABEGG fans



## Suitability of ZIEHL-ABEGG fans

Category	Atmosphere G (Gas)	Atmosphere D (Dust)	Sufficient safety
Category 2	Zone 1	Zone 21	At normal mode occasionally
Category 3	Zone 2	Zone 22	Not at normal mode usually or only momentary

## Types of protection (electrical maintenance resource)

Type of protection	Definition	Category	Use in Zone	Temperature class	Inverter operation
<b>e</b> Increased safety	Methods to avoid forbidden high temperatures, sparks and arcs inside and outside the parts	2G	1; 2	T1; T2; T3	No
<b>d</b> Pressure-proof housing	Housing holds explosion pressure and prevents expansion of the explosion to the outside	2G	1; 2	T1; T2; T3; T4	Yes
<b>nA</b> Non-sparking apparatus	Surrounded explosive atmosphere will be not detonate under normal modes and definite abnormal operating conditions	3G	2	T1; T2; T3	With checked inverter
<b>tD</b> Protection by housing	Limitation of the maximum surface temperature and dust entrance	2D; 3D	21; 22	T125°C	With checked inverter

## Types of protection (no electrical maintenance resource)

<b>c</b> Constructive safety	Technical principles will be applied to reduce risks of mechanical failures which conduct to the generation of flammable temperatures and spark	all	1; 2; 21; 22		
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## Temperature classification

Maximum surface temperature	Temperature classes for gases
450°C	T1
300°C	T2
200°C	T3
135°C	T4

Dust indication of the max. surface temperature in °C

## Gas groups

Group	Typical gas
II A	Propane
II B	Ethylene
II C	Hydrogen

## Application areas of Ziehl-Abegg built-in and scroll fans of the series PR-T and PRdry

<b>Equipment group</b>	II
<b>Category</b>	2 or 3
<b>Type of potentially explosive atmosphere</b>	G, D G/D (no hybrid mixtures)
<b>Fan protection type</b>	c
<b>Motor protection type</b>	de, e, na, tD, de/tD, nA/tD
<b>Gas explosion groups</b>	IIA, IIB and hydrogen from IIC
<b>Temperature classes</b>	T1, T2, T3, T4
<b>Maximum acceptable surface temperature with presence of dust</b>	T125°C
<b>Intake temperature</b>	min. -20°C max. +60°C
<b>Ambient temperature</b>	min. -20°C max. +40°C (up to +60°C on request)
<b>Installation height</b>	max. 1000 m NN (higher on request)

# The Royal League



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