

# **ATEX & IECEx Certified Fans** **for Hazardous Areas**

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*A wide range of ATEX compliant fans supplied in semi-conducting polypropylene, fabricated steel with copper or aluminium non-sparking components, cast aluminium or stainless steel.*



# About Us

Axair are an independent UK distributor of industrial fans. In addition to supply, we pride ourselves on our fan integration specialisms that ensure we provide a full service solution to our wide customer base across varied market sectors.

## Our industrial applications

**Chemical Storage Ventilation** where ammonia, hydrogen and other corrosive fumes are present.

**Fume Cupboards** whether in laboratory, educational settings, extract arms, dust or fume extraction.

**Environmental Fume Extraction** for anaerobic and aerobic digestion plants and other toxic environments.

**Biomass, Biofuel & Renewables** for combustion, material handling, drying, explosion protection and corrosion management.

**Sewage & Waste Water Treatment** for sludge drying, toxic fume removals and eliminating hazardous gases.

**Mortuary & Autopsy** where formaldehyde is present and corrosive gas ventilation is required.

**ATEX Applications** to prevent explosions in potentially hazardous Zone 1, 2 or 0 applications.

## ATEX Fan Labelling

All equipment that is certified for use in a flameproof zone from Axair, is labelled with a code that defines its limitation to use as a complete ATEX product.

## Certifications & Group

Axair are a carbon zero ISO 9001 approved company. We are proud active members of the fan manufacturers and smoke control associations. Download a copy of our certifications at [www.axair-fans.co.uk](http://www.axair-fans.co.uk).

# Our Industrial Team

Our industrial team combine over 25 years of experience in air movement, construction and fan engineering to deliver exceptional product knowledge, fan integration expertise and a thorough knowledge of corrosive and explosive ATEX environments.



**Faye Brophy**  
Head of Industrial

With a background in construction and engineering, Faye heads our industrial division with exceptional customer service and organisation.



**Omar Siblini**  
Industrial Product Engineer

Having a thorough background in fan manufacturing and fan engineering, Omar provides excellent application advice.



**Andrew Jones**  
Sales Director

As director of our well established business, Andrew leads technical projects and continues to provide support to our wide customer base.

## Important Information Regarding ATEX Fan Selection

The Axair team have undertaken extensive training in ATEX regulations but have a duty of care to ensure we supply a suitable fan based upon a customer's correct ATEX coding specifications. ATEX has to be understood as an ever evolving subject requiring competence and training that is now provided by UK notified bodies and consultancies. We advise that if anyone requires additional training in ATEX that they contact an independent body for assistance. Axair can supply fans suitable for ATEX applications within zone 1 & 2 for Gas and Zone 22 for Dust, manufactured from either metal or corrosion resistant polypropylene depending on the specification.



# ATEX & IECEx Certified Fans for Hazardous Areas



ATEX compliant fans can be supplied in semi-conducting polypropylene, fabricated steel with copper or aluminium non-sparking components, cast aluminium or in stainless steel.



## High Pressure Centrifugal - Steel

Zone 1, 2G, Exd & Zone 2, 3G, ExNa  
Flow up to 22,000m<sup>3</sup>/h, pressures up to 13000Pa  
Available in Stainless Steel



## Forward Curved Centrifugal - Cast Aluminium

Zone 1, 2G, Exd & Zone 2, 3G, ExNa  
Flow up to 90,000m<sup>3</sup>/h, pressures up to 3000Pa



## Centrifugal Forward Curved - Steel

Zone 1, 2G, Exd & Zone 2, 3G, ExNa  
Flow up to 14000m<sup>3</sup>/h, pressures up to 2000Pa

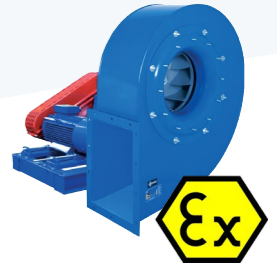
## Roof Fans

Zone 2, Ex ec with high efficiency backward curved impellers  
Roof Cowls made of aluminium or ABS  
Flow up to 25,000m<sup>3</sup>/h,



## Belt Driven

Zone 1, 2G, Exd & Zone 2, 3G, ExNa  
Flow up to 70,000m<sup>3</sup>/h, pressures up to 5000Pa  
Available in Stainless Steel



## Centrifugal Polypropylene Fan

Semi conducting corrosion resistant carbon loaded plastic,  
Weather protected options available on request  
ATEX category 3G, Zone 2, ExNa  
Flow up to 10,000m<sup>3</sup>/h, pressures up to 2000Pa



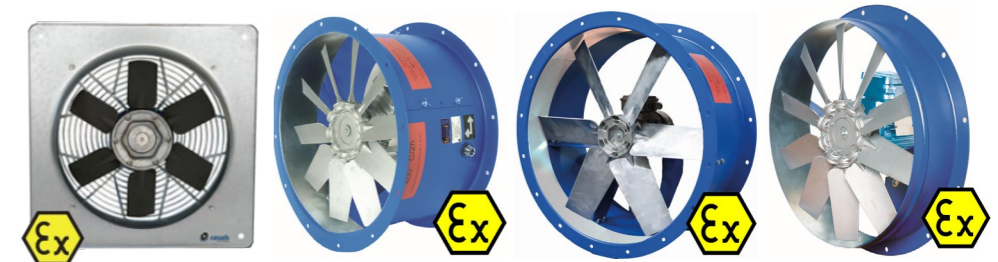
## Centrifugal Backward Curved - Steel

Zone 1, 2G, Exd & Zone 2, 3G, ExNa  
Flow up to 90,000m<sup>3</sup>/h, pressures up to 3000Pa  
Available in Stainless Steel



## Axial Fans

Zone 1, 2G, Exd & Zone 2, 3G, ExNa  
Flow up to 70,000m<sup>3</sup>/h,  
Pressures up to 500Pa  
Available in Stainless Steel



Air diluted fumes to be ducted may require forward or backward curved centrifugal fans. For general ventilation of rooms and buildings, we supply axial fans in plate mounted and cased construction. Polypropylene fans will handle corrosive fumes.

Please note: Equipment manufacturers and distributors are not ATEX consultants, cannot play any role in the process of determining the risk of explosion and cannot therefore specify the ATEX 2014/34/EU code for any product supplied.

# Directive, Coding & Motors

The following brief notes are provided for guidance purposes and must not be considered to form part of any contract for supply of equipment or accessories.

## ATEX User & Manufacturer Directives

99/92/EC ATEX 137 (formerly 118a), often referred to as “The Users Directive” is concerned with safe working conditions and is implemented in UK law by the Health & Safety Executive in the form of the Dangerous Substances and Explosive Atmospheres regulation, or DSEAR.

“ATEX 137 requires the end user to define what the equipment manufacturer can lawfully supply”

94/9/EC ATEX 95 (formerly 100a), often referred to as “The Manufacturers Directive” is concerned with ATEX product compliance. The legislation enables the equipment manufacturer to supply product that meets or exceed the minimum requirements of the end users DSEAR risk assessment.

“ATEX 95 requires the equipment manufacturer to supply safe and lawfully suitable products”

## ATEX Motors

The type of flameproof motor depends on the duration of the risk of explosion - generally identified by an Equipment Category number. Non Incendive motors are designed to avoid internal contact sparking, increased safety motors are a non-incendive type with thermistors to limit the shell temperature while Explosion proof motors will contain an internal explosion and prevent the flame from escaping.

To Recap:

Ex d is Cat.2 flameproof i.e not sparking but a spark induced internal flame cannot escape from the motor.

Ex nA is Cat.3 non-incendive i.e anti-sparking in normal operation, but not flame proof.

Electric motors are susceptible to over-heating when running on overload, when their supply or self cooling air is reduced, when the ambient air is too high, or when part of the motor surface is thermally insulated by its installed situation. Any one of these conditions could lead to an explosion.

All speed controlled ATEX motors receive less cooling air on speed reduction and must therefore be supplied with thermistor over-temperature sensors to protect against shell temperature in excess of the motor temperature class.

Manufacturers generally select the type of motor required to meet the regulations, clients sometimes choose to over specify the motor for extra security.

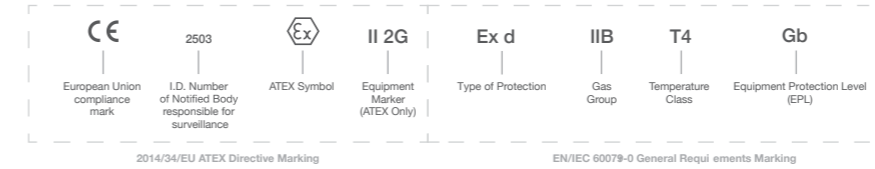
## ATEX Fans

In addition to their ATEX coding, ATEX fans must be selected with reasonably good knowledge of their flow rate or pressure operating point; the temperature and fume content of the air to be transported; especially whether hydrogen or acetylene fumes are present; whether they are being installed indoors or outdoors; the voltage of the anti-condensation heaters (if specified) and which handing is required in the case of centrifugal fans.

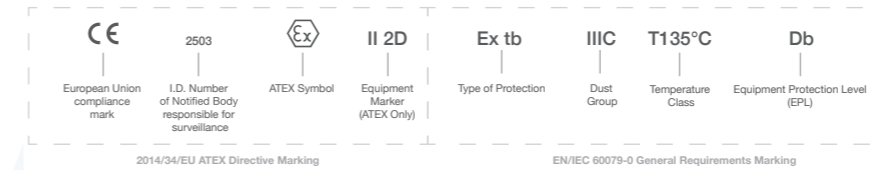
# Hazardous Area Guide

It is strictly the responsibility of the end user to perform a DSEAR risk assessment to ensure that flameproof zones are properly defined in terms recognised by ATEX 99/92/EC. The below guide is intended for guidance only.

### Typical Equipment Marking for Gas Atmospheres



### Typical Equipment Marking for Dust Atmospheres



Gas Zones				
Gas Zones	Definition	ATEX Category	EPL	Required Protection
Methane	Mines with methane and dust. Equipment remains energised in explosive atmosphere	M1	Ma	Two Faults
Methane	Mines with methane and dust. Equipment is de-energised in explosive atmosphere	M2	Mb	Severe Normal Operation
Zone 0	Explosive atmosphere present continuously or for long periods, frequently	1G	Ga	Two Faults
Zone 1	Explosive atmosphere is likely to occur under normal conditions, occasionally	2G	Gb	One Fault
Zone 2	Explosive atmosphere is unlikely to occur under normal conditions, short periods	3G	Gc	Normal Operation

Dust Zones				
Dust Zones	Definition	ATEX Category	EPL	Required Protection
Zone 20	Explosive atmosphere present continuously or for long periods, frequently	1D	Da	Two Faults
Zone 21	Explosive atmosphere is likely to occur under normal conditions, occasionally	2D	Db	One Fault
Zone 22	Explosive atmosphere is unlikely to occur under normal conditions, short periods	3D	Dc	Normal Operation

Enclosure Ingress Protection (IP) Level	
Enclosure Ingress Protection (IP) Level: To EN/IEC 60529	
First Number (Solid objects / dust)	Second Number (Water)
0 No protection	0 No protection
1 Objects > Ø50 mm	1 Vertically dripping water
2 Objects > Ø12.5 mm	2 Vertically dripping water with enclosure tilted by 15°
3 Objects > Ø2.5 mm	3 Sprayed water up to 60° from the vertical
4 Objects > Ø1.0 mm	4 Sprayed water from all directions
5 Dust protected	5 Water jets
6 Dust tight	6 Powered water jets
-	7 Temporary submersion < 1m depth
-	8 Extended submersion > 1m depth

Ambient Temperature Range (T amb)	
T amb =	Temperature relating to the immediate surroundings of the equipment (assumed to be -20°C to +40°C, unless stated)

Protection Concept - Electrical - Gas	
Type of Protection (electrical - gas)	Reference
General Requirements	EN/IEC 60079-0
Flameproof - Ex d / da / db / dc	EN/IEC 60079-1
Purge/Pressurised - Ex p / pxb / pyb / pzc	IEC 60079-2
Quartz/Sand Filled - Ex q / qb / qc	EN/IEC 60079-5
Oil Immersion - Ex o / ob / oc	EN/IEC 60079-6
Increased Safety - Ex e / eb / ec	EN/IEC 60079-7
Intrinsic Safety - Ex i / ia / ib / ic	EN/IEC 60079-11
Non Sparking - Ex nA / nC / nL	EN/IEC 60079-15
Encapsulation - Ex m / ma / mb / mc	EN/IEC 60079-18
Optical Radiation - Ex op is / op sh / op pr	EN/IEC 60079-28
Trace Heating Systems - Ex e / Ex 60079-30-1	EN/IEC 60079-30-1
Special Protection Ex s	EN/IEC 60079-33
Caplights	EN/IEC 60079-35-1
Controlled Spark Duration Power-i	TS 60079-39
Process Sealing	TS 60079-40
Flame Arresters	EN 16852
Diesel Engines	EN 1834-1,2,3

Protection Concept - Electrical - Dust	
Type of Protection (electrical - dust)	Reference
General Requirements	EN/IEC 60079-0
Enclosure - ta / tb / tc	EN/IEC 60079-31
Purge/Pressurised - Ex p / pxb / pyb / pzc	EN/IEC 60079-2
Intrinsic Safety - Ex i / ia / ib / ic	EN/IEC 60079-11
Encapsulation - Ex m / ma / mb / mc	EN/IEC 60079-18

Protection Concept - Non Electrical		
Type of Protection (non-electrical) (gas & dust)	Reference (ATEX only)	IECEX
General Requirements	EN 80079-36	IEC / ISO 80079-36
Flow Restricting Enclosure - fr	EN 13463-2	-
Flameproof - d	EN 13463-3	-
Constructional Safety - c / h	EN 80079-37	IEC / ISO 80079-37
Control of Ignition - b / h	EN 80079-37	IEC / ISO 80079-37
Pressurisation - p	EN 60079-2	-
Liquid Immersion - k / h	EN 80079-37	IEC / ISO 80079-37

Gas Groups	
Gas Groups	Gases are classified according to the ignitability of the gas/air mixture as defined in EN/IEC 60079-20-1
IIA	Acetic Acid, Acetone, Ammonia, Butane, Cyclohexane, Propane, Gasoline (petrol), Methane (natural gas, non-mining), Toluene, Xylene, Methanol (methyl alcohol), Propane-2-ol (iso-propyl alcohol)
IIB	Group IIA gases plus, Di-ethyl ether, Ethylene, Ethanol Methyl ethyl ketone (MEK), Propane-1-ol (n-propyl alcohol)
IIC	Group IIA and IIB gases plus, Acetylene, Hydrogen

Dust Groups	
Dust Groups	Dusts are classified by the types of material that make up the dust
IIIA	Combustible Fibres and Flyings
IIIB	Group IIIA dusts plus, Non-Conductive Dusts
IIIC	Group IIIA and IIIB dusts plus, Conductive Dusts

Equipment Group	
Equipment Group	Definition
Group I	Electrical equipment intended for use in mines susceptible to fire damp
Group II	Electrical equipment intended for use in explosive gas atmospheres
Group III	Electrical equipment intended for use in explosive dust atmospheres

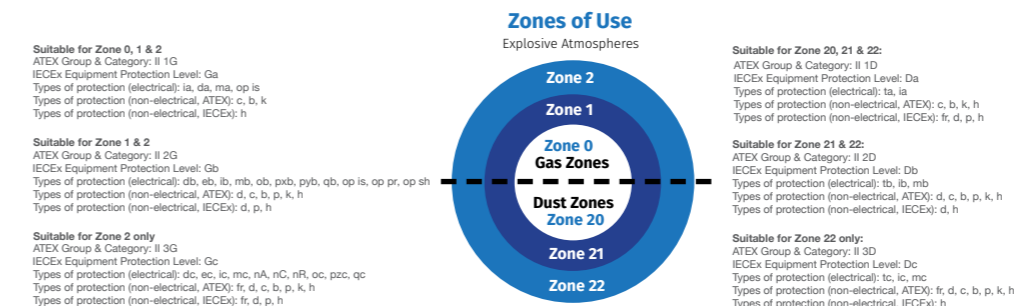
Temperature Class (T Class)	
Temperature Class	Highest temperature achieved under the most adverse equipment rating and heating conditions. (Flashpoint temperature of some gases)
T1: 450°C	Ammonia (830°C), Hydrogen (560°C), Methane (537°C), Propane (470°C)
T2: 300°C	Ethylene (425°C), Butane (372°C), Acetylene (905°C)
T3: 200°C	Cyclohexane (259°C), Kerosene (210°C)
T4: 135°C	Di-ethyl Ether (160°C)
T5: 100°C	-
T6: 85°C	Carbon Disulphate (85°C)

## ATEX Gas & Dust Zones

If an explosive atmosphere of flammable substances is specified, the following zones may exist:

ATEX Category	ATEX Zone (Gas & Vapour)	ATEX Zone (Dust)	Presence	ATEX Description
Category 2	Zone 1	Zone 21*	Present Intermittently	An explosive mixture may be present occasionally in normal operation
Category 3	Zone 2	Zone 22*	Present Abnormally	An explosive mixture is not expected to be present in normal operation or will only be present for a short time

Zone 22 dust fans available on request





## Contact Us

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*Whatever your issue, concern or question, contact our industrial team using the below contact details. Alternatively, visit our website and open a live chat to start discussions.*

**01782 349 430**

**[sales@axair-fans.co.uk](mailto:sales@axair-fans.co.uk)**