

ATEX Certified Fans

Understanding Temperature Classes

Understand why the temperature classification of gas and dust is an important aspect of hazardous area equipment labelling and selection.



ATEX Temperature Classes

Hazardous area equipment is classified according to the maximum surface temperature produced under the maximum operating capacity at an ambient temperature of 45°C, or as otherwise specified. ATEX fans should be selected based on the correct T class identified in your explosive area assessment.

Maximum Surface Temperature

The temperature class determines the maximum acceptable surface temperature that can be reached on the motors surface to maintain its integrity. If the temperature on the surface of the motor exceeds this level, ignition of either the gas or dust is possible.

It is a requirement of ATEX regulations that the end user or customer should communicate this temperature class before an equipment manufacturer can select an industrial fan for use in an explosive atmosphere.

Hot surfaces become dangerous around 135 degrees Celsius so for that reason all ATEX equipment should be selected as having a minimum T class of T4, T5 or T6. Generally we'll work with a safety margin of around 15% between the ignition temperature of the gas present, and the equipment nameplate rating to ensure you're covered with the industrial fan that is selected. This is the reason the T class must be given when enquiring for an ATEX fan.

For dust, two different ignition temperatures classes apply as shown in the lower table on the next page. IIIC conductive dusts temperature class of T120°C and IIIB non conductive dusts that have a temperature class of T135°C. You should also advise what needs to be controlled; the ignition temperature of a dust cloud or that of a dust layer up to 5mm.

T1 Hydrogen Example

For example, if a potentially hazardous explosive gas is hydrogen, then all equipment used must meet the 'T1' rating as shown in the table on the next page. This means that all equipment used must not have a surface temperature of greater than 450°C. Any equipment used that can generate a hotter surface temperature of greater than 450°C must not be used as this will then increase the likelihood of an explosion by igniting the hydrogen in the atmosphere.

Combustible Dust

Combustible dust is any material that has the ability to disperse in air and catch fire when exposed to an ignition source. Self ignition temperatures can vary by dust type so this should be communicated, along with the concentration of dust present, at the point of enquiry to prevent potential explosions.

Important Information

In line with the ATEX Directive it is strictly the responsibility of the end user to undertake a DSEAR risk assessment to ensure that ATEX classifications are properly defined in terms recognised by ATEX 99/92/EC. Please contact SGS on 0151 350 660 or visit www.sgs.co.uk to book an assessment.

Temperature Classes - Gas

Note: we supply ATEX fans to zone 1 & 2. We cannot supply ATEX fans required for zone 0.

Gas Explosion Group	Temperature Class / Maximum Surface Temperature Allowed					
	T1	T2	T3	T4	T5	T6
Ignition Temp	>450°	>300°	>200°	>135°	>100°	>85°
I	Methane	l-amyl acetate	Amyl alcohol	Acetaldehyde		
IIA Ignition energy higher than 0.18mj	Acetone	n-butane	Petrols			
	Ammonia	n-butanol	Diesel Oils			
	Benzene	1-butene	Heating Oils			
	Ethylacetate	Propylacetate	n-hexane			
	Methane	l-propanol				
	Methanol	Vinyl Chloride				
	Propane					
	Toluene					
IIB Ignition energy lower than 0.18mj	Cyanide Hydrogen	Butadleno	Dimethylether	Diethylether		
	Dioxane	Ethyloglicol				
	Coal Gas (lighting gas)	Ethylene Oxide	Sulfide Hydrogen			
IIC Ignition energy lower than 0.06mj	Hydrogen	Acetylene				Carbon Disulphur

Temperature Classes - Dusts

Note: we can only supply dust fans for zone 22 where the risk of dust explosions is rare.

Dust Explosion Group	Temperature Class / Maximum Surface Temperature Allowed		
	Temperature Class	Type of Dust	Representative Dust
IIIC	T135° C	Conductive Dusts	Graphite Powder, Toner
IIIB	T120° C	Non-Conductive Dusts	Milk Powder, Sugar, Flour
IIIA		Fibres / Combustible Flyings	Sawdust, Tobacco



Contact Us

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