

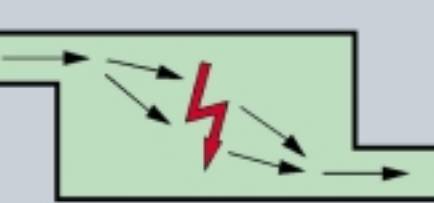
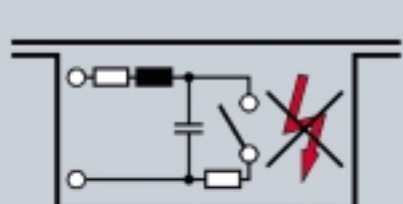

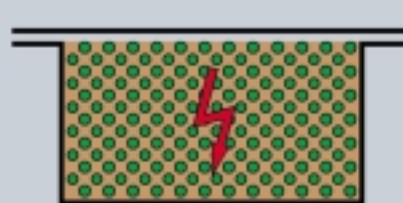
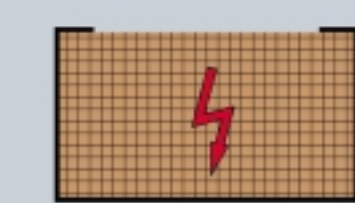


Type of protection in accordance with IEC or EN	Basic principle	Diagram	Main application
Flameproof enclosure d IEC 60 079-1 EN 50 018	Parts which can ignite a potentially explosive atmosphere are surrounded by an enclosure which withstands the pressure of an explosive mixture exploding inside the enclosure and prevents the propagation of the explosion to the atmosphere surrounding the enclosure.		Switchgear and control gear and indicating equipment, control systems, motors, transformers, heating equipment, light fittings
Increased safety e IEC 60 079-7 EN 50 019	Additional measures are taken to increase the level of safety, thus preventing the possibility of unacceptably high temperatures and the creation of sparks or electric arcs within the enclosure or on exposed parts of electrical apparatus parts, where such ignition sources would not occur under normal operation.		Terminal and connection boxes, control boxes for installing Ex-components (which have a different type of protection), squirrel-cage motors, light fittings
Pressurized apparatus p IEC 60 079-3 EN 50 016	The formation of a potentially explosive atmosphere inside a casing is prevented by maintaining a positive internal pressure of inert gas in relation to the surrounding atmosphere and, where necessary, by supplying the inside of the casing with a constant flow of inert gas which acts to dilute any combustible mixtures.		Switchgear and control cabinets, analysers, large motors
Intrinsic safety i IEC 60 079-11 EN 50 020	Apparatus used in a potentially explosive area contain intrinsically safe electric circuits only. An electric circuit is intrinsically safe if no sparks or thermal effects are produced under specified test conditions (which include normal operation and specific fault conditions) which might result in the ignition of a specified potentially explosive atmosphere.		Measurement and control technology, communication technology, sensors, actuators
Oil immersion o IEC 60 079-6 EN 50 015	Electrical apparatus or parts of electrical apparatus are immersed in a protective fluid (such as oil), such that a potentially explosive atmosphere existing over the surface or outside of the apparatus cannot be ignited.		Transformers, starting resistors
Powder filling q IEC 60 079-5 EN 50 017	Filling the casing of an electrical apparatus with a fine granular packing material has the effect of making it impossible for an electric arc created in the casing under certain operating conditions to ignite a potentially explosive atmosphere surrounding the casing. Ignition must not result either from flames or from raised temperature on the surface of the casing.		Transformers, capacitors, terminal boxes for heating conductors
Encapsulation m IEC 60 079-18 EN 50 028	Parts which may ignite a potentially explosive atmosphere are embedded in sealing compound such that the potentially explosive atmosphere cannot be ignited.		Switchgear with small capacity, control and signalling units, display units, sensors
Type of protection n IEC 60 079-15 EN 50 021	Electrical apparatus is not capable of igniting a potentially explosive atmosphere (under normal operation and under defined abnormal operating conditions).	Zone 2 This type of protection includes several methods of ignition protection.	All electrical apparatus for Zone 2, less suitable for switchgear and control gear