ATEX ELECTRICAL EQUIPMENT

Technical Data Sheet — Protection Methods, Zone Selection & Installation Requirements

ATEX equipment must be selected as a complete certified solution
The correct equipment depends on the hazardous-area classification, substance, gas/dust group, temperature requirements, protection method, environmental conditions and installation arrangement.

1. Hazardous-area zones

Zone	Atmosphere	Meaning	Typical equipment level
0	Gas / vapour / mist	Present continuously, for long periods or frequently.	Equipment suitable for the classified area; typically the highest protection level.
1	Gas / vapour / mist	Likely to occur occasionally during normal operation.	Equipment certified for the zone and specified substance/environment.
2	Gas / vapour / mist	Not likely in normal operation; if it occurs, it exists for a short period.	Equipment certified for Zone 2 and the specified conditions.
20	Combustible dust	Present continuously, for long periods or frequently.	Dust-protected equipment suitable for the classified area.
21	Combustible dust	Likely to occur occasionally during normal operation.	Dust-protected equipment certified for the zone and conditions.
22	Combustible dust	Not likely in normal operation; if it occurs, it exists for a short period.	Dust-protected equipment certified for Zone 22 and the specified conditions.

2. Common ATEX protection methods

Marking	Protection	Principle	Examples
Ex d	Flameproof enclosure	Enclosure designed to withstand an internal explosion and prevent flame transmission to the surrounding atmosphere.	Motors, junction boxes, control equipment, luminaires
Ex e	Increased safety	Construction measures reduce the likelihood of arcs, sparks and excessive temperatures under defined conditions.	Terminals, junction boxes, motors, luminaires
Ex i	Intrinsic safety	Circuit energy is limited so that the electrical/thermal energy cannot ignite the specified atmosphere under defined conditions.	Instrumentation, sensors, barriers, control circuits
Ex p	Pressurisation	Protective gas or air maintains pressure within an enclosure to prevent the hazardous atmosphere entering.	Specialist control panels and equipment
Ex m	Encapsulation	Potential ignition sources are encapsulated to prevent contact with the explosive atmosphere.	Electronic components, coils, specialist equipment
Ex t	Protection by enclosure	Enclosure limits dust ingress and controls maximum surface temperature.	Dust hazardous areas; Zones 20, 21 & 22

Important: The protection method alone does not establish suitability. The complete equipment marking, certification, group, temperature rating/EPL or category, ambient conditions and installation requirements must be checked.

3. Equipment selection checklist

Check	Requirement
Hazardous area	Confirm the applicable zone and extent from the site's hazardous-area classification.
Substance	Identify whether the hazard is gas, vapour, mist or combustible dust and confirm relevant properties.
Equipment marking	Check the complete Ex marking rather than relying on an 'ATEX' description alone.
Group	Confirm the gas or dust group is appropriate for the hazardous substance.
Temperature	Confirm temperature class or maximum surface temperature is suitable for the substance.
Protection concept	Select the protection method appropriate to the equipment and zone.
Cable entry	Select compatible Ex glands, cable entries, stopping plugs, adaptors and accessories.
Environment	Check IP rating, corrosion, temperature, UV, impact and other environmental requirements.
Installation	Follow the equipment certificate, manufacturer instructions and BS EN IEC 60079-14 requirements.
Inspection	Complete initial and ongoing inspection in accordance with the applicable requirements and maintenance regime.

4. Typical ATEX electrical equipment

Equipment	Typical application
ATEX lighting	Ex-rated luminaires and emergency lighting for the applicable zone and substance.
Ex junction boxes	Certified enclosures with appropriate protection method, entries and internal components.
Ex isolators	Local isolation and switching equipment selected for the zone and protection concept.
Ex control stations	Start/stop, selector and emergency-stop stations designed for hazardous areas.
Motors	Hazardous-area motors selected against zone, group, temperature and duty.
Instrumentation	Sensors, transmitters and associated intrinsically safe circuits where required.
Cable glands	Ex-certified glands and cable entry systems matched to equipment and cable construction.
Distribution / panels	Specialist Ex distribution and control equipment where required by the installation.

5. Installation & verification

• Design & selection: equipment and installation methods should be selected using the hazardous-area classification, equipment certification and applicable standards.

• Installation: cable systems, entries, glands, earthing, bonding, isolation and mounting arrangements must preserve the intended protection concept.

• Initial inspection: BS EN IEC 60079-14:2024 covers design, selection, installation and required initial inspection of Ex installations. □cite□turn0search1□

• Inspection & maintenance: BS EN IEC 60079-17:2024 covers inspection and maintenance of electrical installations in explosive atmospheres and supports ongoing confirmation of equipment suitability. □cite□turn0search0□

• Product requirements: UK ATEX product regulations include requirements relating to suitable cable/conduit entries and safe interfaces between equipment and protective systems. □cite□turn0search35□

6. QUEST ATEX capability

• ATEX installation: specialist electrical installation works within classified hazardous areas.

• Equipment replacement: replacement of obsolete, damaged or unsuitable Ex equipment with correctly specified alternatives.

• Lighting & emergency lighting: hazardous-area lighting installations and associated wiring.

• Ex isolation & distribution: isolators, junction boxes, distribution equipment and local control.

• Cabling & terminations: suitable cable systems, Ex glands, entries and termination arrangements.

• Inspection & remedials: identification and correction of electrical defects affecting Ex installations.

• Testing & documentation: electrical testing and project documentation appropriate to the scope.

WHY QUEST?

ATEX/CompEx-qualified engineers • Industrial and commercial hazardous-area experience • Installation and remedial works • Electrical testing and documentation • Support from planned works through to maintenance • Nationwide capability

7. Key references

BS EN IEC 60079-14:2024 — Explosive atmospheres — Electrical installation design, selection and installation of equipment, including initial inspection. BSI identifies this as the latest edition and states that it covers design, selection, installation, initial inspection, documentation and personnel competency. □cite□turn0search1□

BS EN IEC 60079-17:2024 — Explosive atmospheres — Electrical installations inspection and maintenance. BSI identifies this as the current edition for inspection and maintenance of electrical installations in explosive atmospheres. □cite□turn0search0□

UK Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 — requirements for equipment and protective systems intended for potentially explosive atmospheres, including suitable cable/conduit entries and safe interfaces. □cite□turn0search35□

Related standards: BS EN IEC 60079-0, BS EN IEC 60079-10-1, BS EN IEC 60079-10-2 and other applicable parts of the BS EN IEC 60079 series should be considered according to the equipment and installation.

Important technical note
This datasheet is intended as general technical guidance. It does not replace the site's hazardous-area classification, DSEAR assessment, equipment certificate, manufacturer instructions, project specification or competent engineering assessment. QUEST works from the client's hazardous-area classification and project documentation; final equipment selection must be confirmed for the specific installation.