

WHAT TO KNOW WHEN SUBMITTING PRODUCTS FOR TESTING

Contact the responsible person(s) directly or get referred by our support group. To enable us to render the required service effectively, you our client have to keep the following in mind.

Types of testing

Type testing Determining by means of assessment and testing whether a product design complies with a specific standard(s). A product design that passes type testing can be certified.

Intrinsically safe apparatus as well as loops have to be certified.

Batch testing Determining by means of assessment and routine tests whether a batch of production units complies with the certified design and with the specified standard(s).

Assessment of imported certified apparatus Determining by means of an assessment of certification documentation and samples whether a product complies with a specific standard(s). In cases where the standard(s) is not an IEC or EN standard, a comparison against this standard and additional assessment/testing as required may be carried out.

Please note:

- The validity of local certification of imported certified apparatus depends on the continued validity of the overseas certification in most cases. It is the responsibility of the supplier and end user to verify this. The local certificate therefore normally refers to an assessment report with a finite validity period (typically 12 months) after which validity has to be renewed.
- Group II products certified under the ATEX New Approach Directive (Directive 94/9/EC of the European Community) have valid certification provided that they fully comply with an EN standard (indicated by marking such as Ex d IIB T3) and were not self-certified. All Group I products must be assessed locally (by an Inspection Authority such as Explolabs).

Requirements for products and documentation

Give an accurate description of what has to be done, the deliverables, timescale and provision for payment. Also any particular requirement such as confidentiality arrangements between a supplier and a manufacturer, procedures to prevent unnecessary damage to sensitive expensive samples.

Submitting products for testing

The table specifies the tests for enclosures and enclosure parts that contribute to the explosion protection (as is the case for Ex d, Ex e, Type "n" and DIP techniques). Note the number of samples (production units or specially prepared test pieces) and the sequence of testing.

Material of enclosure or enclosure part	Ex technique	Material assessments		Material tests								
		Material specification	Material properties	Resistance to heat	Resistance to cold	Resistance to chemicals	Mechanical (Impact=2 or 3 samples; Drop)	Flameproofness	Flammability	IP rating	Resistance to light (if exposed)	Insulation resistance
Plastic	Group I: 6 units; Group II: 2 units; Dust: 2 units										Test pieces	
	Ex d	Supplier data sheets	TI 20000h	x	x	x (Group I)	x	x	x	x	x	x
	Ex e	Supplier data sheets	TI 20000h	x	x	X (Group I)	x			x	x	x
	Type n	Supplier data sheets	TI 20000h	x	x		x			x	x	x
	DIP	Supplier data sheets	TI 20000h	x	x		x			x		x (Zone 20,21)
Light alloy	Ex d	Supplier data sheets	Group I: max 15% by mass Al/Mg/Ti Group II: max 6% by mass Mg+Ti				x	x		x		
	Ex e	Supplier data sheets	max 6% by mass Mg+Ti				x			x		
	Type n	Supplier data sheets	max 6% by mass Mg+Ti				x			x		
	DIP	Supplier data sheets	max 6% by mass Mg+Ti				x			x		
Other eg steel, brass, glass	Ex d	Supplier data sheets	Cast iron: at least 150				x	x		x		
	Ex e	Supplier data sheets					x			x		
	Type n	Supplier data sheets					x			x		
	DIP	Supplier data sheets					x			x		

Standards used:

(All the latest standards are used for the product tested)

- **Ex d** IEC/SANS 60079-1 (with IEC/SANS 60079-0)
- **Ex e** IEC/SANS 60079-7
- **Ex n** IEC/SANS 60079-15
- **DIP** IEC/SANS 61241-1-1

Items to be included in submissions for testing**Prototype (modification)**

- Samples
- Documentation

Batch

- Units for testing
- Previous reports

Imported

- Sample
- Overseas certificate and certification drawings
- Report (if available)
- Manufacturer quality system certificate

Samples

Find out which number of samples is required and if they need to be prepared in a particular way. For example:

- Enclosures or parts of enclosures made of plastic materials have to undergo a number of environmental resistance tests, followed by the prescribed tests related to the explosion protection. Actual production units have to be used as follows: Group I: 6 units; Group II: 2 units; Dust: 2 units, except for the Resistance to light (if exposed) and Insulation resistance tests which are done on test pieces with specific dimensions.
- Impact tests on windows in enclosures have to be done on three mounted samples.
- Enclosures of equipment to be submitted for certain ingress protection tests, such as increased safety (Ex e), type "n", IP54 or better ingress protected enclosures and dust ignition protected (DIP) equipment, must have at least one entry hole to accept an approximately 6mm plastic tube.
- Where equipment contains encapsulated or potted assemblies as part of the protection, sealed as well as unsealed samples of such assemblies must be provided. For Ex m apparatus only, provide the following samples of the encapsulant: six test

bars 50 x 6 x 4mm and three discs 50mm diameter and 3mm thick (Group II), or three discs only (Group I).

- Specific components of intrinsically safe apparatus, eg transformers, gas sensors, relays, and opto-couplers, may have to undergo individual destructive tests. In such cases, component samples must be provided in addition to the complete unit.
- Spigoted joints on flameproof enclosures must be prepared by the supplier to have a gap of at least 90% (Groups I, IIA, IIB) or 150% (Group IIC) of the maximum gap specified on the engineering drawings. (For flanged joints, spacers will be used. Threaded joints will be partly unscrewed.) In the case of flanged joints with relatively large maximum gaps, sealing gaskets for the overpressure test may be requested.
- Unless it is a general-purpose enclosure, a flameproof enclosure must be fitted with its electrical components or dummy components of the same shape. Typically, three holes per flameproof compartment (M20 or alternatively ½ inch BSP) are required for gas circulation; additional holes may therefore have to be provided.
- A flameproof motor must be tested with the motor stationary as well as rotating, therefore for bigger motors a suitable V-belt pulley must be fitted to the drive shaft. Smaller motors can also be run from mains power.

Documentation

We require documentation describing the safety aspects of the apparatus, ie that demonstrates that the apparatus complies with the relevant standard. This includes the design of the apparatus, but also instructions to the end user covering installation, use and maintenance.

Apparatus drawings have to comply with acceptable drawing practice. Two sets of especially large drawings required for production have to be provided, as one set is placed on record and the other approved (stamped) and returned.

Proof of certain physical and chemical properties of materials (eg antistatic, insulation, heat resistance or water absorption properties of polymeric materials), and performance properties of electrical and electronic equipment (eg maximum surface temperature of equipment under rated load, charge dissipation periods of capacitors, intrinsically safe cable parameters) that are relevant to explosion protection, may be provided in the form of data sheets from reputable manufacturers, thereby saving testing costs.

For approval of intrinsically safe loops, we require a loop drawing and system parameter calculations (examples are available), cable specifications from the manufacturers, and copies of apparatus certificates.