INTERNATIONAL ELECTROTECHNICAL COMMISSION SCHEME FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR EXPLOSIVE ATMOSPHERES (IECEx SCHEME)

Circulation to: Ex Management Committee

Title: IECEx Re-assessment Report for Intertek Testing and Certification Ltd, ITS, Accepted Ex Test Laboratory (ExTL), and a request for extension to scope

INTRODUCTION

This document contains the IECEx Re-assessment Report for ITS, Accepted Ex Test Laboratory (ExTL). During the re-assessment visit an assessment for an extension of scope was also carried out. ExMC Members are asked to consider ITS' request for an extension of scope.

Please complete and return the completed voting form to the Secretariat by 2008 10 24

Your speedy response to the voting process will be very much appreciated.

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IECEx Secretariat

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IECEx RE-ASSESSMENT REPORT FOR INTERTEK TESTING AND CERTIFICATION LTD (IECEx TEST LABORATORY ExTL)

Type of Assessment: (please mark)

Initial assessment for Candidate ExTL

Re-Assessment of ExTL **X**

Scope Extension of ExTL **X**

1. OBJECT AND FIELD OF APPLICATION

1.1. ***Country:***
GB

1.2. ***Name of Candidate TL***
Intertek Testing and Certification Ltd

Note: at the time of the assessment the website showed 'Intertek ETL SEMKO Division'

1.3. ***Members of the Assessment Team***
Jim Munro – Chairman Panel of Assessors – Lead Assessor
Alexander Zalogin – Managing Director Nanio CCVE, Assessor

1.4. ***Place and Date of Assessment***
Intertek House
Cleeve Road
Leatherhead
Surrey KT22 7SB
UNITED KINGDOM

25 to 26 June 2007, and 3 September 2007 (Jim Munro only)
(5 man-days)

1.5. ***Assessment References***

i) IECEx 02 Third Edition 2006 11IECEx Scheme rules of procedure
ii) IECEx Operational Document OD 003/V1 IECEx Assessment procedures
iii) IECEx Operational Document OD/009/V1 Issuing of CoCs, ExTRs and QARs
iv) ISO/IEC 17025:2005
v) IECEx Technical Guidance Documents (TGDs)
vi) ExTAG decision sheets (DSs)

1.6. Scope of Application

Current scope:
IEC 60079-0 Part 0: General requirements
IEC 60079-1 Part 1: Flameproof enclosures 'd'
IEC 60079-2 Part 2: Pressurized enclosures 'p'
IEC 60079-5 Part 5: Powder filling 'q'
IEC 60079-6 Part 6: Oil-immersion 'o'
IEC 60079-7 Part 7: Increased safety 'e'
IEC 60079-11 Part 11: Intrinsic safety 'i'
IEC 60079-15 Part 15: Construction, test and marking of type of protection 'n' electrical apparatus
IEC 60079-18 Part 18: Construction, test and marking of type of protection encapsulation 'm' electrical apparatus
IEC 60079-26 Part 26: Construction, test and marking of Group II Zone 0 electrical apparatus – also recommended for next edition – see below
IEC 60079-27 Part 27: Fieldbus intrinsically safe concept (FISCO) and Fieldbus non-incendive concept (FNICO)
IEC 61241-0 Part 0: General requirements
IEC 61241-1 Part 1: Protection by enclosures 'tD'
IEC 61241-1-1 Part 1-1 Apparatus for combustible dusts
IEC 61241-4 Part 4: Type of protection 'pD'
IEC 61241-11 Part 11: Protection by intrinsic safety 'iD'
IEC 61241-18 Part 18: Protection by encapsulation “mD” electrical apparatus
IEC 62086-1 Electrical apparatus for explosive gas atmospheres –
Electrical resistance trace heating – Part 1: General and testing requirements

Extension of Scope
IEC 60079-25 Part 25: Intrinsically safe systems
IEC 60079-26 Part 26: Equipment with equipment protection level (EPL) Ga

1.7. *Candidate TL Persons Interviewed*

Andy Austin – Head of Technical Advisory Group
Adrian Smart – Principal Engineer
Vijay Varma - Engineer
Anthony Colgate – Engineer
Neil Irvine - Deputy Quality Manager (Quality Manager for second visit)

1.8. Legal Entity Of The Candidate TL

Intertek Testing and Certification Ltd is a listed company in the UK, company number 03272281. It is part of the Intertek Group PLC which is a publicly listed company. This in turn is part of the division of the international company, Intertek. This division is called Intertek ETL SEMKO but will be undergoing a name change,

1.9. *Associated ExCB*

The ExCB is integral with the ExTL.

1.10. *Financial Support*

The company relies on fees charged to applicants for certification and testing for its operation.

1.11. History

Intertek Testing and Certification Limited was formed on the 1st July 1999 subsequent to the purchase by ITS of ERA Technology's Product Assessment Division. The purchase involved the merging of ITS Cranleigh (UK) Limited and the Product Assessment Division of ERA Technology Ltd. to form Intertek Testing and Certification Limited to be based on the ERA Technology site at Leatherhead, Surrey. A further site at Milton Keynes has been added with the purchase of the Consumers' Association Research & Testing Centre. The name was changed to Intertek Testing & Certification on 1 September 2003.

2. ORGANISATION

2.1. Names, Titles and Experience of the Senior Executives

Name	Title	Experience in Ex
Andy Austin	Technical Manager	28 years
Adrian Smart	Principal Engineer	25 years
Vijay Varma	Senior Engineer	15 years

The senior staff of the ExTL are the same as the ExCB. Procedures have been put in place to require that the same personnel involved in the certification function for a certificate cannot be involved in the testing function for the same certificate.

2.2. Name, Title and Experience of the Quality Management Representative

Name	Title	Experience
Rob Kellock	Quality Manager and Certification	5 years as QM
Then Neil Irvine	Quality Manager	15 years
and Philippa Hutton	Assistant Quality Manager	15 Years
And later David Bosson from Epsilon	Quality Manager	2 in Ex 9 in QA & 11 in EMC

Note: Rob Kellock left soon after the first visit and his position as Quality Manager was taken by Neil Irvine. Then when Intertek acquired Epsilon, David Bosson, who had been Quality Manager at Epsilon took on the role of Deputy Quality Manager for Intertek with responsibility for Ex matters.

2.3. Name and Title of Nominated Principal Contact

Name	Title	Contact
Andy Austin	Technical Manager, Commercial & Electrical	

2.4. Employees

Name	Title	Experience in Ex
Anthony Colgate	Engineer	7 years
Rob Watson	Engineer	18 Months
Lloyd Curling	Engineer	2 years
Simon Hills	Engineer	2 years

2.5. Organizational Structure

See Annexes A and B.

3. RESOURCES

There is a total of 7 staff employed in Ex activities. 2 staff are dedicated to the ExCB and the rest are involved in testing but may also be used for some other activities related to the ExCB or assessment of manufacturers.

The laboratory is well equipped and the majority of tests required by the standards can be done. The flameproof testing area has been moved since the initial assessment and the new facilities are a significant improvement.

4. DOCUMENTATION

4.1. Quality Manual

The highest level document is a Quality Assurance Manual. The manual viewed at the first assessment visit had a number of deficiencies and was subsequently essentially rewritten. The new manual was found to be a significant improvement. Requirements that where previously addressed in a separate certification manual were included in the revised quality manual and the certification manual was withdrawn.

At the time of the first assessment visit there no procedures relevant to the Scheme that addressed issuing and withdrawal of certificates. A new procedure was subsequently issued that covered this.

4.2. Test Methods/Procedures

The next level of the quality system is Standard Operating Procedures, Forms and a Master Document List. There is also a competency matrix.

At the time of the assessment there were a number of existing procedures that had not been brought in to the new format. A program was put in place to do this.

4.3. Test Records

Test records are recorded in proformas, including the ExTRs. In addition each job has a project notebook.

4.4. Document Change Control

The only authorised copies are those held on the Intranet. Copying of single procedures is permitted but it should be noted that they are only valid for the period of the test for which they have been called up. Where copies are made, they must be marked 'UNCONTROLLED'.

5. TEST REPORTS

5.1. Test Reports Issued

Number of test reports issued under the IECEx Scheme or ATEX:

Standards	Number of issued test reports				
	2004	2005	2006	2007	Total
IEC 60079-0	5	7	9	27	**48**
IEC 60079-1	3	7		4	**15**
IEC 60079-2				1	**1**
IEC 60079-7	3		1	3	**7**
IEC 60079-11			8	17	**25**
IEC 60079-15	1		6	1	**8**
IEC 60079-18	1			3	**4**
IEC 60079-26			4	10	**14**
IEC 60079-25			1		**1**
IEC 61241-0				1	**1**
IEC 61241-1			1	4	**5**
IEC 61241-1-1	1	3		4	

6. CALIBRATION

Calibration is managed by the company Universal Instrument Services Ltd. They have the instruments calibration data base. This is regularly updated and a copy sent to Intertek. Based on this, each month a report is sent out to the test areas nominating the instruments that need to be returned for calibration.

7. CONFIDENTIALITY

All staff are required, on joining the company, to sign a confidentiality agreement, requiring them to observe confidentiality in all aspects of their work and to preserve the proprietary rights of the company and its customers. A copy of this agreement is maintained by the HR Executive. An example of a signed agreement was sighted.

8. NATIONAL ACCREDITATION

The accreditation held is from UKAS, Testing Laboratory No. 0029 Group (Annex 3). The schedule is listed on the UKAS website and an extract is shown at Annex 4. The accreditation schedule mainly shows superseded versions of IEC standards or draft versions only in some cases. Intertek indicated that UKAS assesses to the latest standards but there is an administrative cost of applying to have the schedule changed. However, they have applied to have the schedule updated and have been advised that this will take some time (possibly more than a year). In the mean time Intertek have supplied a copy the proposed revised UKAS 17025 Schedule that they have sent to UKAS.

9. RECOGNITION AND AGREEMENTS

None

10. INTERNAL AUDIT AND PERIODIC REVIEW

There is a yearly program managed by the Deputy Quality Manager that aims to audit each area once in the year these are horizontal audits. They also do vertical audits. A number of staff have been trained as internal auditors. The program and an example of an audit report was seen.

The report for the meeting of Quality Management Review held on 13 December 2006 was reviewed. These meetings are held at the end of each year.

11. COMPLAINTS AND APPEALS (Including appeals to IECEx)

All complaints are to be brought to the attention of the relevant Department Manager and the Quality Manager. If either considers the complaint to be serious, it shall be brought to the attention of the General Manager. Details of the complaint and any remedial action are to be recorded to enable review at the Annual Review, and included as an agenda item in management meetings Refer to Quality Manual Section 4

The Quality Manual has procedures for appeal but there is also a separate more detailed procedure. At the time of the first assessment visit there was a discrepancy between the two procedures regarding composition of the appeals panel. There was also no reference to the provision for appeals to the Scheme or the provision of information to the customer that they are entitled to appeal to the Scheme. This was subsequently addressed in the revised procedures.

12. SPECIAL FACTS TO BE NOTED

12.1. *Supporting Documentation*

Copies of additional supporting information for this assessment have been provided to the applicant and the IECEx Secretariat. These include:

- Details of issues raised and how these have been resolved
- Checklists for ISO/IEC 17025 both for the first assessment visit and after changes in the quality management documentation.
- Completed technical guidance notes (TGDs) for Ex d, i, e, n, m and dusts
- Photos of the facilities

12.2. Tests Witnessed

Witnessed tests included:

- Temperature rise test of a luminaire
- Dust test for IP6X
- Pressure determination test for Ex d

13. COMMENTS (Including issues found during assessment)

There were a number of issues found during the assessment as detailed throughput this report and in Annex B of the site report.

It was found during the first on-site visit that the quality documentation, including procedures relevant to the IECEx Scheme, needed to be revised. When this was done there was a further on-site visit to review and discuss the new documentation to investigate progress in resolving the issues raised during the first visit. Progress on resolving these issues continued after this visit and were subsequently resolved to the satisfaction of the assessment team.

During this latter period Intertek acquired Epsilon Compliance Limited and the Quality Manager from Epsilon, David Bosson, took on the Deputy Quality Manager role with responsibility for Ex.

14. RECOMMENDATION

Based on the assessment performed on 25-26 June and 3 September 2007, Intertek Testing and Certification Ltd is recommended for continued acceptance in the IECEx scheme as an IECEx Testing Laboratory (ExTL) according to the scope of the standards listed in this document, including the extension of scope.

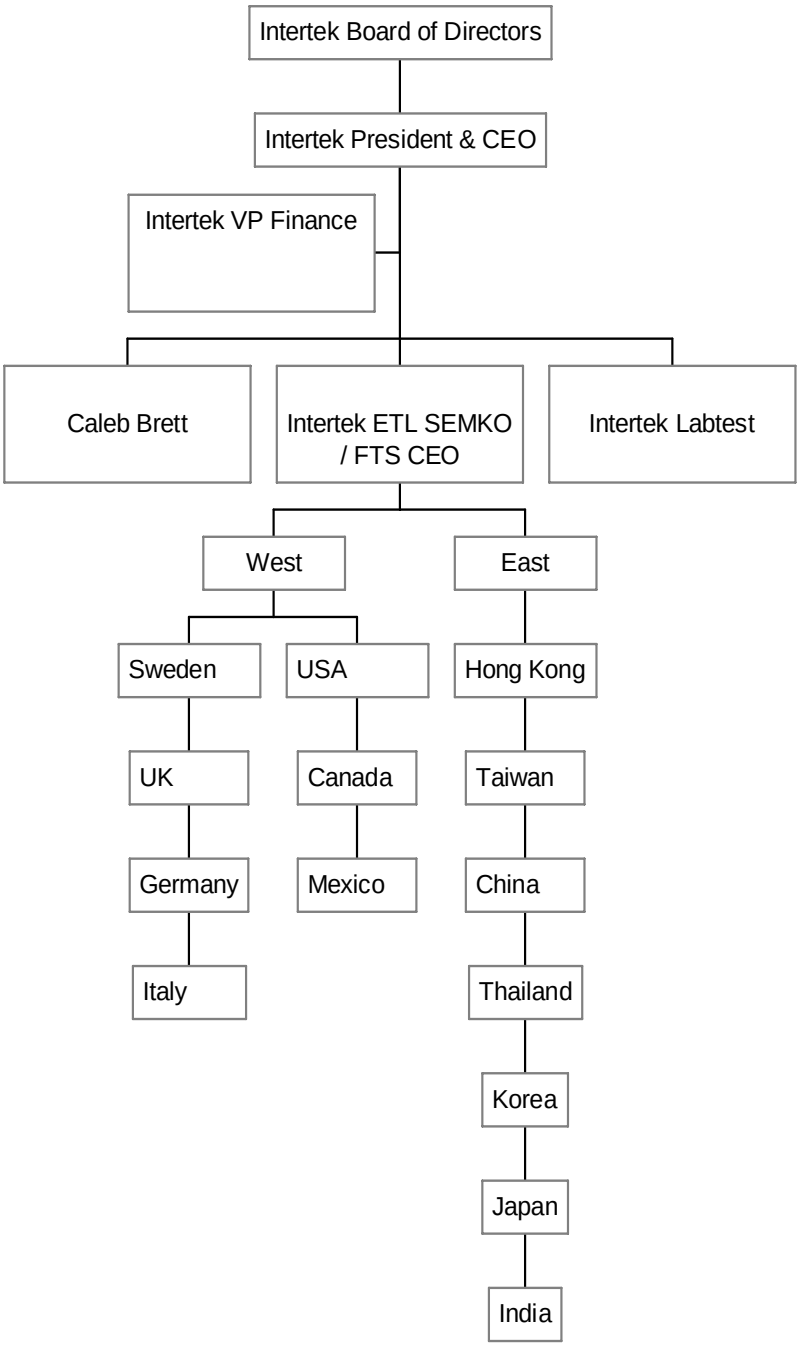
Jim Munro	Alexander Zalogin
Lead Assessor	Expert Assessor

Date: 12 September 2008

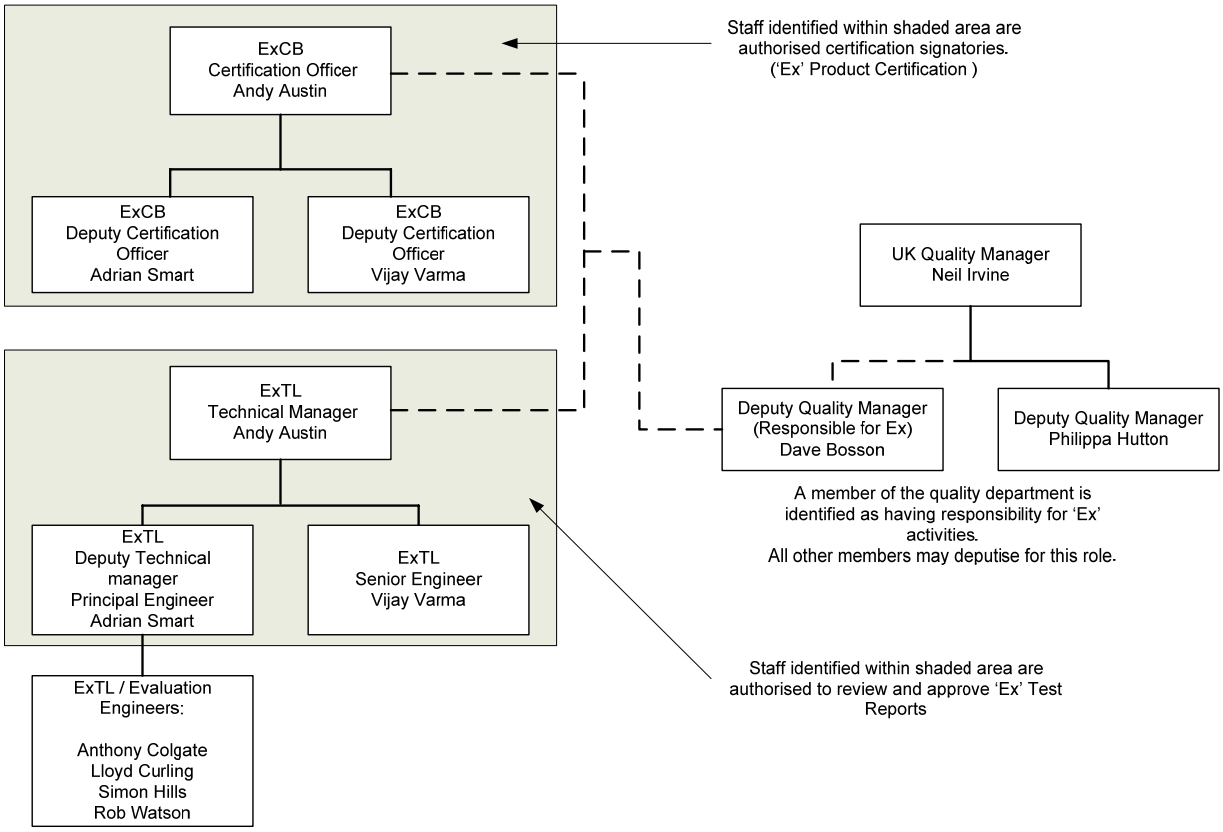
List of Annexes:

1. Overall Organization Chart of Intertek
2. Organization Chart of Intertek
3. Accreditation Certificate for Intertek ISO/IEC 17025
4. Scope of accreditation

Annex 1
Overall Organization Chart of Intertek



Annex 2
Structure of IECEx CB and IECEx TL



Annex 3
Accreditation Certificate for Intertek ISO/IEC 17025

United Kingdom Accreditation Service

ACCREDITATION CERTIFICATE

UKAS
UNITED KINGDOM ACCREDITATION SERVICE

TESTING LABORATORY
No. 0029

Intertek Testing & Certification Ltd

is accredited in accordance with the recognised International Standard ISO/IEC 17025:2005
General Requirements for the competence of testing and calibration laboratories.

This accreditation demonstrates technical competence for a defined scope as detailed in and at the locations specified in the schedule to this certificate, and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated 18 June 2005).

The schedule to this certificate is an essential accreditation document and from time to time may be revised and reissued by the United Kingdom Accreditation Service. The most recent issue of the schedule of accreditation, which bears the same accreditation number as this certificate, is available from the UKAS website www.ukas.org.

This accreditation is subject to continuing conformity with United Kingdom Accreditation Service requirements. The absence of a schedule on the UKAS website indicates that the accreditation is no longer in force.

Accreditation Manager, United Kingdom Accreditation Service

Initial Accreditation date
22 February 1982

This certificate issued on
18 September 2006

The Department of Trade and Industry (DTI) has entered into a memorandum of understanding with the United Kingdom Accreditation Service (UKAS) through which UKAS is recognised as the national body responsible for assessing and accrediting the competence of organisations in the fields of calibration, testing, inspection and certification of systems, products and persons

Annex 4
Scope of Ex Accreditation to ISO/IEC 17025

0029 Accredited to ISO/IEC 17025:2005	**Schedule of Accreditation** Issued by **United Kingdom Accreditation Service** 21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK
	Intertek Testing & Certification Ltd **Issue No:** 040 **Issue date:** 03 January 2008
Testing performed by the Organisation at the locations specified	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SECTION 2: (cont'd) Electrical equipment of industrial machines General requirements	<u>Electrical Products Tests</u> (cont'd) Electrical safety	EN 60204:Part 1:1985 BS 2771:Part 1:1986	CR
SECTION 3: ELECTRICAL APPARATUS, SYSTEMS, COMPONENTS, ACCESSORIES AND ENCLOSURES FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES Electrical Apparatus, Systems, Components, Accessories and Enclosures for use in Potentially Explosive Atmospheres	<u>Electrical Products Tests</u> Tests for the General Requirements for Electrical Apparatus for Potentially Explosive Atmospheres or hazardous (Classified) Locations	BS EN 50014:1998 BS EN 50014:1993, Amd 1 EN 50014:1997 EN 50014:1992 EN 50014:1977, Amds A1 to A5 BS 5501:Part 1:1977, Amds 1 to 7 Excluding: Resistance to light (eg EN 50014:1977, Clause 22.4.7.5) Tests of Ignition by electrostatic Charges (eg BS 5501:Part 1: Clause 6.3.1) Hands and Cap Lamps Chemical Resistance of materials Oil and Flame Resistance (eg BS 5501:Part 1:Clause 21.1 and 21.2)	CR

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SECTION 3: (cont'd) Electrical Apparatus, Systems, Components, Accessories and Enclosures for use in Potentially Explosive Atmospheres (cont'd)	<u>Electrical Products Tests</u> (cont'd) Tests for Apparatus in Flameproof Enclosures (Ex d)	BS EN 50018:2000 EN 50018:2000 BS EN 50018:1995 EN 50018:1994 EN 50018:1977, Amds A1 to A3 BS 229:1957 BS 4683:Part 2:1971 BS 5000:Part 17:1981 BS 5501:Part 5:1977, Amds 1 to 7 BASEEFA Specification Memorandum SM 5501/5.1:1986 Excluding: Ageing test for elastomeric sealing rings for cable entries (eg. BS 5501:Part 5:Clause 14.3)	CR
	Tests for Increased Safety Apparatus (Ex e)	BS EN 50019:2000 BS EN 50019:1994 EN 50019:1994 EN 50019:1977, Amds A1 to A5 BS 4683:Part 4:1973 BS 5000:Part 15:1980 BS 5501:Part 6:1977 Excluding: Thermal performance testing of electrical machines at frequencies other than 50 Hz, or with rated supply voltages above 660V or with rated powers above 15 Kw Sulphur dioxide test for bi-pin lamp caps/lampholders Vibration test on luminaires with bi-pin caps/lampholders	CR

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SECTION 3: (cont'd) Electrical Apparatus, Systems, Components, Accessories and Enclosures for use in Potentially Explosive Atmospheres (cont'd)	<u>Electrical Products Tests</u> (cont'd) Tests for Intrinsically Safe Apparatus, Associated Apparatus and Systems (Ex i)	BS EN 50020:1995 EN 50020:1994, Amd 1 EN 50020:1977, Amds A1 to A5 EN 50039:1980 prEN 50281-5 draft IEC 61241-5 draft:1998 BS 1259:1958 BS 5501:Part 7:1977 BS 5501:Part 9:1982	CR
	Tests for Electrical Apparatus for Explosive Atmospheres with Type of Protection n (Ex n) + (Ex N)	BS EN 50021:1999 EN 50021:1999 BS 4683:Part 3:1972 BS 5000:Part 16:1985 BS 6941:1988 BASEEFA Specification Memorandum SM 4683/3:1980 Excluding: Thermal performance testing of electrical machines at frequencies other than 50 Hz, or with rated supply voltages above 660V or with rated powers above 15 kW	CR
	Tests for Encapsulated Apparatus (Ex m)	BS EN 50028:1987, Amd 1 prEN 50281-5 draft prEN 50281-6 draft IEC 61241-6 draft BS 5501:Part 8:1988, Amd 1	CR
	Tests for Oil Immersed Apparatus (Ex o)	BS EN 50015:1998 BS EN 50015:1994 EN 50015:1998 EN 50015:1994 EN 50015:1977, Amd A1 BS 5501:Part 2:1977	CR

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Testing performed by the Organisation at the locations specified

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SECTION 3: (cont'd) Electrical Apparatus, Systems, Components, Accessories and Enclosures for use in Potentially Explosive Atmospheres (cont'd)	<u>Electrical Products Tests</u> (cont'd) Tests for Pressurised and Purged Apparatus (Ex p)	BS EN 50016:1996 EN 50016:1995 EN 50016:1977, Amd A1 prEN 50281-4 draft IEC 61241-4 draft:1997 BS 5501:Part 3:1977	CR
	Tests for Sand Filled Apparatus (Ex q)	BS EN 50017:1998 BS EN 50017:1994 EN 50017:1998 EN 50017:1994 EN 50017:1977, Amd A1 BS 5501:Part 4:1977	CR
	Tests for Apparatus having special Protection (Ex s)	SFA 3009:1985	CR
Electrical apparatus for explosive gas atmospheres General requirements	Construction, safety and marking	IEC 60079-0:1998 IEC 60079-0:1983 Excluding: Resistance to light Tests of Ignition by electrostatic Charges Hands and Cap Lamps Chemical Resistance of materials Oil and Flame Resistance	CR
Tests for Apparatus in Flameproof Enclosures (Exd)	Construction, safety and marking	IEC 60079-1:1990, Amd 1 IEC 60079-1:1971, Amds 1 & 2 Excluding: Ageing test for elastomeric sealing rings for cable entries	CR
Tests for Pressurised and Purged Apparatus (Exp)	Construction, safety and marking	IEC 60079-2:1983	CR

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SECTION 3: (cont'd) Method of test for Ignition Temperature	<u>Electrical Products Tests</u> (cont'd) Construction and safety	 IEC 60079-4:1975, Amd 1	 CR
Tests for Sand Filled Apparatus (Exq)	Construction, safety and marking	IEC 60079-5:1997 IEC 60079-5:1967	CR
Tests for Oil Immersed Apparatus (Ex o)	Construction, safety and marking	IEC 60079-6:1995 IEC 60079-6:1968	CR
Tests for Increased Safety Apparatus (Ex e)	Construction, safety and marking	BS EN 60079-7:2003 IEC 60079-7:2001 IEC 60079-7:1990, Amds 1 & 2 Excluding: Thermal performance testing of electrical machines at frequencies other than 50 Hz, or with rated supply voltages above 660V or with rated powers above 15 Kw Sulphur dioxide test for bi-pin lamp caps/lampholders Vibration test on luminaires with bi-pin caps/lampholders Tests for high-voltage machines	CR
Tests for Intrinsically Safe Apparatus, Associated Apparatus and Systems (Ex I)	Construction, safety and marking	IEC 60079-11:1999 IEC 60079-11:1991 IEC 60079-11:1984 IEC 60079-3:1990	CR
Tests for Electrical Apparatus for Explosive Atmospheres with Type of Protection n (Ex n) + (Ex N)	Construction, safety and marking	IEC 60079-15:1990, Amds 1 & 2 Excluding: Thermal performance testing of electrical machines at frequencies other than 50 Hz, or with rated supply voltages above 660 V or with rated powers above 15 kW	CR

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SECTION 3: (cont'd) Tests for Encapsulated Apparatus (Ex m)	Electrical Products Tests (cont'd) Construction, safety and marking	IEC 60079-18:1992	CR
Electrical Apparatus Protected by Enclosures - Construction and Testing	Construction, safety and marking	BS EN 50281-1-1:1999 Excluding: Clause 6.10 Radiating equipment IEC 61241-1-1:1999	CR
Small Craft - Protection against ignition of surrounding flammable gas	Safety tests	BS 4683:Part 1:1971	CR
Surface heating devices	Safety tests	BS 6351:Part 1:1983	CR
Concentration of Gas	Safety tests	SFA 3007:1981	CR
Special requirements for construction, test and marking of electrical apparatus of equipment group II, Category 1G	Safety tests	BS EN 50284:1999 EN 50284:1999	CR
Explosive Atmosphere Tests	Safety tests	MIL STD 810B, Method 511:1967 MIL STD 810C Procedures I and II: 10 March 1975 Method 511.1:10 March 1975 MIL STD 810D, Method 511.2:1983 MIL STD 810E Method 511.3:1989 MIL STD 810F Method 511.4:2002 MIL STD 810F Method 511.4:2000 PANAVIA SP-P-90033 Para 6.10.2 Issue 7:Explosive Atmosphere Test Method, 19 April 1974 RTCA/DO-160C Section 9 only	CR

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SECTION 3: (cont'd) Explosive Atmosphere Tests (cont'd)	Electrical Products Tests (cont'd) Safety tests (cont'd)	RTCA-DO-160D Section 4.6.2 only Section 9 only EFJ-J-EFA-000-0083 Issue A, Sept 1988	CR
Reciprocating internal combustion engines	Safety Tests	BS EN 1834-1:2000 EN 1834-1:2000 Excluding: Clause 6.3, Installation and auxiliary fittings Clause 6.4, Spark arrestor test	CR
Equipment in Aircraft	Explosion - Proofness	BS 3G100:Part 2:Section 3: Sub-section 3.5:1972	CR
Battery operated vehicles	Explosion Protection	SFA 3006:1981	CR
Mechanical Cable Glands	Dimensional Tests Tests to demonstrate compliance with Constructional Requirements	BS 6121:Part 1:1989 Excluding: Seal Compression, Hardness and Ageing (eg. BS 6121:Part 1 Clauses 8.6.2, 8.6.3 and 8.6.4)	CR
Flame Arresters for General Use	Performance Tests Tests to classify arresters in terms of their performance	BS 7244:1990 Excluding: Clause 3.4.2, Pressure Drop Test BS EN 12874:2001 EN 12874:2001	CR