

BASEC
BRITISH APPROVALS SERVICE FOR CABLES



Corporate Brochure

WORLDWIDE CABLE EXPERTS

An introduction to our
cable testing and
certification services



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Introducing BASEC

BASEC (British Approvals Service for Cables) focuses exclusively on serving the needs and customers of the global cable industry.

Established in 1971, for over 45 years BASEC has been a mark of reassurance for those specifying, buying and installing cable. Our name is synonymous with quality and safety and our cable testing and certification is trusted and respected around the world.

Our reputation is built on the strong core values of; putting the customer first, trust, expertise, integrity and independence.



Our purpose is to be continuously improving quality and safety.

UKAS Accredited

UKAS is the only national accreditation body recognised by the UK government to assess organisations that provide certification, testing, inspection and calibration services, all against internationally agreed standards.

BASEC is accredited by UKAS against ISO/IEC 17065 for Product Certification, against ISO/IEC 17025 for Testing, and against ISO/IEC 17021-1 for Quality Management Systems Certification and for Environmental Management Systems Certification.



Our vision is to be the preferred testing and certification partner to the worldwide cable industry.



About us

What we do



BASEC is a global leader in product testing and certification services for the cable industry across numerous sectors, including Construction & Electrical Installation, Power Distribution, Rail, Marine, Oil & Gas and Renewables.

In addition, we offer triple standard Management Systems Certification, CPR testing, bespoke type testing, impartial investigation of conformity issues, and testing and reporting in the event of disputes.

Working to worldwide standards

We ensure that cable products meet appropriate national, European and international standards by a detailed examination of both manufacturers' production processes and regular, rigorous testing of their products.

We can test to:

- ✓ International standards
- ✓ European standards
- ✓ British and other national standards
- ✓ Private specifications
- ✓ Sector-specific standards (e.g. Rail, Marine)
- ✓ Utility standards

We work with:

- ✓ Cable manufacturers
- ✓ Standardisation bodies
- ✓ Manufacturer associations
- ✓ Installer associations
- ✓ Professional institutions
- ✓ Wholesalers
- ✓ Distributors
- ✓ Cable stockists

We don't just check our own cable

One of our founding objectives is to enhance the quality and safety of all cable and related products in the marketplace. So we don't just monitor BASEC approved cable, we also undertake market surveillance testing of cables on sale that do not carry BASEC approval.

When serious problems are found with compliance, BASEC provides warning and advice to traders, and if necessary notifies the relevant authorities.



This guide will tell you more about who we are, how we operate and the reasons why people around the world demand BASEC approved cable.

About us

Global Coverage



Working with companies worldwide

We tailor our services to our customers needs, wherever they are located in the world, and this forms a key part of our commitment to provide an excellent service. To further support this, we now have Regional Managers based in both the Middle East and Asia.

Alongside this global remit, we have not lost sight of our British roots and the rigour of the standards and testing that have been the foundation of BASEC's work from the beginning.

Our customers can be assured that the BASEC mark of approval carries the same weight and respect today as it has always done.

The benefits of BASEC approval

BASEC certification is amongst the most rigorous in the industry. By achieving it you will stand out clearly from your competitors and your cables will be recognised worldwide as market leaders in terms of quality, safety and ongoing conformity to all the relevant standards.

It will open up new opportunities and markets for you, as the BASEC mark has been a mark of reassurance for those specifying, buying and installing cable for over 45 years. We support our clients throughout the process and ensure that we deliver a truly international accreditation service.

BASEC operates globally, auditing in 27 countries around the world and expanding all the time.

UK & Ireland

UK
Ireland

Europe

Bosnia and Herzegovina
Czech Republic
Greece
Italy
Lithuania
Netherlands
Poland
Portugal
Spain
Switzerland
Turkey

MEAF

Egypt
Kuwait
Oman
Qatar
Saudi Arabia
UAE

Asia / ROW

Bangladesh
China
Hong Kong
India
Taiwan
Thailand
Trinidad and Tobago
USA

About the service

Our comprehensive product testing and approvals provide purchasers and contractors with the peace of mind that the cable they install is compliant, safe, fit for purpose and will provide years of reliable service.

Our certification scheme is recognised as one of the most demanding in the industry. Manufacturers of BASEC approved cables are subject to regular factory inspections and cables are sampled and tested several times a year to ensure ongoing conformity.

This thoroughness means that when purchasers and contractors specify BASEC approved cable they can be sure it meets the highest quality standards and that it conforms with all relevant regulatory requirements.

Rigorous testing and ongoing surveillance

During the application process and our subsequent factory visits we check:

- ✓ The manufacturer's range of cable types and sizes against the Product Certification Requirements (PCR).
- ✓ Production equipment (including witnessing cable being made).
- ✓ The manufacturer's laboratory, including witnessing testing and checking the reliability of results.
- ✓ Calibration of machines and instruments.

In addition to our factory visits we select up to 200 cable samples a year from each factory to test in our own laboratory. All certification systems are based on a sampled process – not every batch of cable can be independently tested.

However, because BASEC samples more frequently than other certification schemes, with BASEC you can be assured that any problems or deviations in production are identified quickly, and so can be promptly rectified.



If you see the BASEC mark on a cable you can rest assured that both cable and manufacturer are, and continue to be, compliant with the world's most rigorous quality testing processes.



The BASEC Mark



Only BASEC approved manufacturers are awarded the BASEC certificate which allows them to use the BASEC mark on their product.

Gaining the BASEC Mark

Manufacturers can apply for a licence to display the BASEC mark only when we are satisfied that their manufacturing systems are capable of consistently producing compliant cable products.

We also verify that the products comply with the relevant specification by full type testing at the BASEC laboratory, or if appropriate, by witnessing tests at the factory.

Maintaining the BASEC Mark

To maintain their licence, manufacturers undergo both planned and unannounced factory audits to ensure ongoing conformity. Our global team of experts in cable-making and certification audit manufacturers' sites several times a year, with a mixture of planned and unannounced visits.

We also call in as many as 200 cable samples a year from each factory for surveillance testing in our own laboratory to ensure the cables being produced continue to conform to the required standards.



The BASEC mark of approval isn't easy to earn – and isn't easy to keep. Approved manufacturers work hard to maintain their BASEC approvals, which is what keeps them ahead of the competition.

What is involved

Six steps to gaining and maintaining the BASEC mark

The certification process can be broken down into six steps and we will work closely with you throughout to ensure it runs smoothly.

Step 1 Planning & Preparation

We offer a pre-audit visit to provide guidance and support in getting the necessary systems in place.

Step 2 Initial Audit & Audit Report issued

The audit comprises both a Management Systems Review and an Operation & Production Audit.

Step 3 Samples sent to BASEC for testing

Cables are tested in the BASEC laboratory in accordance with the relevant standards.

Step 4 Certification

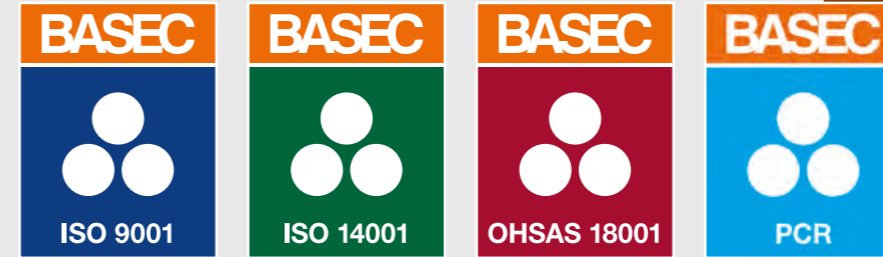
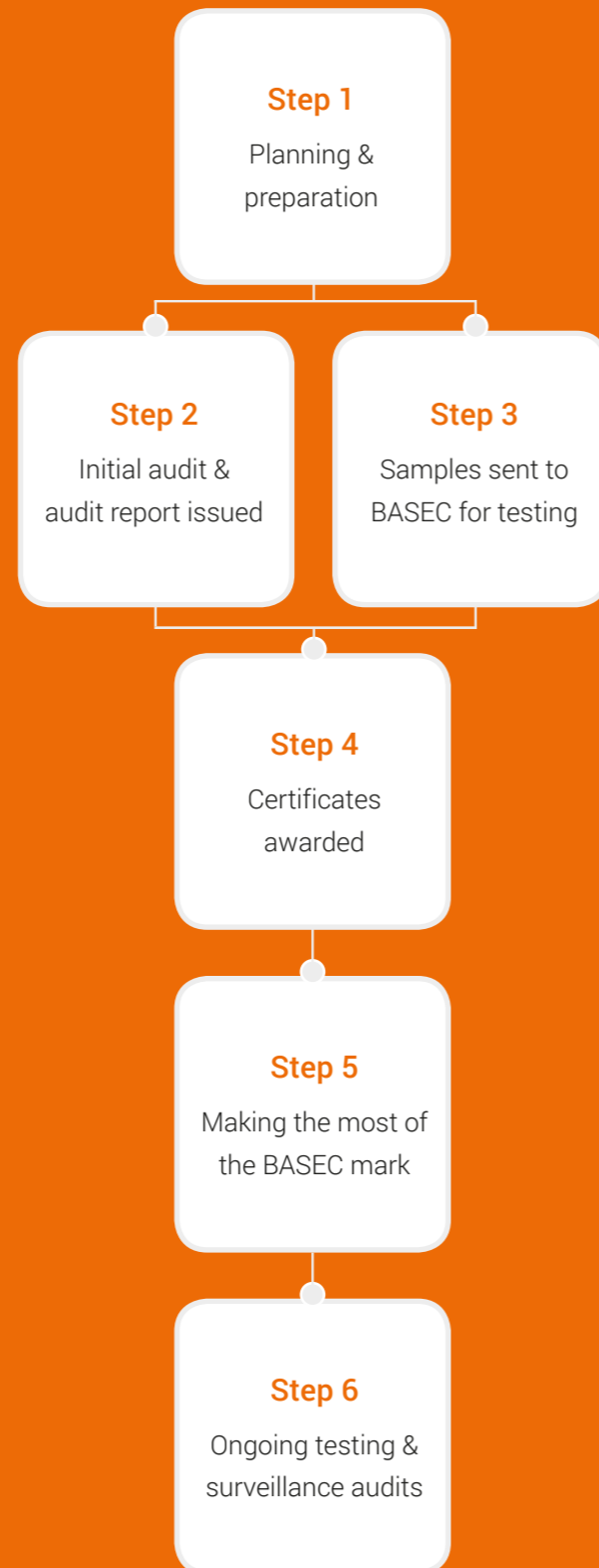
Following successful completion of the audit and testing, a Management Systems Certificate and Product Marking Licence are awarded.

Step 5 Using the BASEC mark

Once you have been awarded the BASEC mark you will be able to use it on your sales and marketing materials.

Step 6 Ongoing testing and surveillance audits

Between two and four routine audits, plus one unannounced visit per year, depending on the size and complexity of your business. At each routine audit, samples will be selected for testing to ensure ongoing conformity. Recertification takes place after three years.



Management Systems Certification

BASEC is a UKAS accredited certification body for management systems, on the specific requirements of the cable sector. This makes us perfectly placed to offer an integrated or discrete solution to your management systems requirements.

Integrated Triple Standard

Integration of management systems reduces duplication and improves efficiency. We offer an integrated service to companies seeking approval to two or more standards

- ✓ Quality management systems to ISO 9001
- ✓ Environmental management systems to ISO 14001
- ✓ Health & Safety management systems to OHSAS 18001*

Reasons to integrate management systems:

- ✓ More efficient and cost effective than operating separate systems
- ✓ Reduces disruption to your business and the amount of time required for assessments
- ✓ Increases efficiency by reducing the duplication of policies, procedures and auditing
- ✓ Integrate management systems with the BASEC PCR and demonstrate industry best practice

The benefits of choosing BASEC

- ✓ BASEC Product Approval clients will benefit from cost savings when you move your management systems certification to BASEC
- ✓ We tailor the requirements of ISO 14001 to local environmental and legislative obligations, to enhance your environmental performance.
- ✓ We look beyond the legislation and compliance to OHSAS 18001*, to aim for good risk management and organisational continuity, addressing the needs of all stakeholders.

Discrete Standards

Where required we can issue stand-alone management systems certification for ISO 9001, ISO 14001 and OHSAS 18001*



BASEC auditors all have cable manufacturing experience so bring real value to your audit and your business.

* OHSAS 18001 has been replaced by ISO 45001. Companies will have 3 years to transition.

Sector Specialists

As the experts in cables across numerous sectors, we work with manufacturers to ensure the supply of safe and compliant cable in line with sector-specific standards and regulations, offering peace of mind to installers and specifiers.

Many sectors, such as Rail, Marine and Oil & Gas, rely on third-party testing to demonstrate product conformity to their customers.

BASEC's laboratory can carry out a range of tests to verify a cable's construction, materials and its electrical properties. Our state-of-the-art fire laboratory can carry out tests on fire resistance, circuit integrity and reaction to fire, supported by a range of smoke emission, halogens, acid gas and toxicity tests.

BASEC offers a range of services including product certification and approval; third-party testing; investigations and assessments of non-standard cables; and pre-shipment testing, inspection and batch testing.



As cable experts, we work with manufacturers across multiple sectors to ensure the installation of safe and compliant cable in line with sector specific standards and regulations, offering peace of mind to installers and specifiers.

Aerospace & Defence

Cables used in a variety of aerospace and defence applications often need to conform to special requirements and rigorous approval and procurement processes. Specific tests are applied to them to address the need to cope with high performance, lightweight and aggressive environments.

We can test to DEF STAN 61-12 series and BS (G) series.



Construction & Electrical Installation

In the Construction and Electrical Installation Sector, cable needs to be installed to tight quality requirements and must conform to regulatory requirements such as local wiring codes and regulations like BS 7671 and CPR.

At BASEC we test to International, European and British standards for building wire, installation cables, flexible cables, armoured and non-armoured power distribution cables, control and instrumentation cables and modular wiring.



Fire & Security

Nowhere is a guarantee of product performance more essential than in the Fire and Security sector and independent assurance of performance through testing and certification will be expected.

At BASEC we test to International, European and British standards for fire resistance and fire performance cables. These include BS 6387, BS EN 50200, BS 8434-2, BS 8491, IEC 60331, IEC 60332 series. We are also a Notified Body under the Construction Products Regulation and as such can undertake CPR testing and classification.



Marine

Marine cables must operate in some of the most hostile environments on earth. The BASEC name is synonymous with quality and safety and our cable testing enables you to demonstrate to your clients that your cables meet the required standards and will deliver reliable service for many years.

We test to sector standards and specifications for LV, MV and instrumentation & control cables such as NEK 606, IEC 60092 series, IEEE 1580, BS 6883, BS 7917, IEC 60331, IEC 60332 series.



Nuclear

Cables supplied to the nuclear sector need high performance characteristics such as assuring reliable performance for the lifetime of the power plant and maintaining integrity in a LOCA scenario.

We can perform tests such as longevity thermal endurance testing and LOCA scenarios, plus testing for enhanced fire performance. We can undertake fire tests to IEC 60332-3 series and IEC 60331 series, smoke emission to IEC 61034-2 and acid, gas and halogens to IEC 60754 series. We can also organise testing to IEEE 383.



Oil, Gas & Petrochemical

Cables supplied to the Oil, Gas & Petrochemical sector must conform to tight regulatory and design standards as they are installed in hazardous areas and challenging environments.

We test to sector standards and specifications for LV, MV and instrumentation & control cables such as NEK 606, IEC 60092 series, IEEE 1580, BS 6883, BS 7917, EEMUA 133, IEC 60331, IEC 60332.



Power Distribution

Huge structural changes are currently underway in the power industry. This, coupled with an ageing existing infrastructure, means that it's essential that the cabling supplied provides a reliable, long term service.

We test the following cables: insulated power, armoured and non-armoured, control and instrumentation. We undertake tests to BS 7870 series, BS 6622, BS 7835 and IEC 60502-2, including copper, aluminium, alloy, reinforced, waveform, triplex, concentric and split concentric cables.



Rail

Cables supplied for rail networks and rolling stock must conform to exacting performance and safety standards and often additional fire safety and performance specifications are applied.

For rolling stock we can test to EN 50306 series, EN 50305, EN 45545, BS EN 50264 series and TFL/LUL S1-085. For rail infrastructure, we test MV track feeder cables to Network Rail standards (& LUL), BS 7835 / BS 6622 / IEC 60502-2, tests, and regular power cables such as BS 7846, BS 6724, BS 8592, BS 7629-1.



Renewables

Cables for the growing renewables sector must be resilient in often challenging conditions such as harsh sunlight, extreme heat and high winds. In addition, they often come in to regular contact with rainwater.

We test to sector standards and specifications such as IEC 62930 and EN 50618 for solar photovoltaic systems and MV cables such as IEC 60502 for wind power.



CPR (Construction Products Regulation)



As a designated Notified Body (No 2661) for the **CPR System 1+ and System 3**, BASEC can test and classify cables for all the requirements of CPR, enabling manufacturers and distributors around the world to supply within the EU.

CPR Explained

As of 1st July 2017, under the European Construction Products Regulation (CPR), it is now mandatory for cable manufacturers and suppliers to apply CE marking to any products covered by the harmonised European standard EN 50575.

The CPR applies to all cables placed on the market for use in fixed installation in domestic, commercial and industrial premises and other civil engineering works anywhere in the European Union.

It applies to power, communications and fibre optic cables irrespective of the place of manufacture and includes novel/unique cables and those which are not designed to any particular design standard. These tests, with a few exceptions, need to be carried out by an independent Notified Body such as BASEC.



We have invested heavily in new equipment to allow us to test to all the requirements of the CPR in respect of cables, providing a full service to manufacturers and traders.



As a designated Notified Body, BASEC tests and classifies for CPR, enabling manufacturers and distributors around the world to supply within the EU.

CPR Classification According to Fire Performance

Reduced fire performance



Depending on the Class for which classification is sought, different tests are conducted.

BS EN/ISO 1716

The gross heat of combustion is measured for each of the cable's components.

Used for Class Aca only.



BS EN 60332-1-2

A single length of cable is exposed to a 1kW flame and the total char length is measured after all combustion has ceased.

Used for Classes B1ca, B2ca, Cca, Dca, Eca and Fca.



BS EN 50399

An array of individually spaced cable or spaced bundles of cable are exposed to a flame. The flame spread, heat release, smoke production and droplet generation are measured.

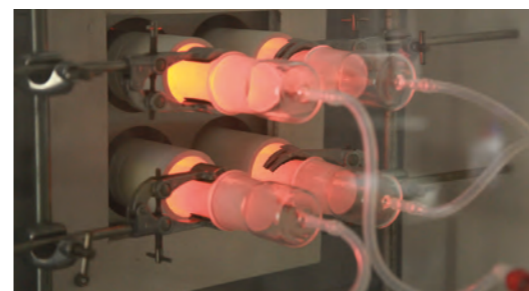
Used for Classes B1ca, B2ca, Cca, Dca.



BS EN 61034-2

The reduction in light transmission gives a measure of smoke density generated during the combustion of cables.

Used for Classes B1ca, B2ca, Cca, Dca where applicable.

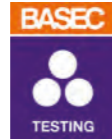


BS EN 60754-2

The pH and conductivity of effluent gasses from the combustion of the cable components are measured to indicate the degree of acidity and corrosivity of the cable under fire conditions.

Used for Classes B1ca, B2ca, Cca, Dca.

Laboratory & Testing Facilities



The state-of-the-art, accredited BASEC laboratory is the largest independent cable testing service in the UK, allowing us to test to any international standard, product code or bespoke requirement.

Our scope of cable testing includes:

- ✓ Product certification
- ✓ Product approvals
- ✓ One-off type testing
- ✓ Pre-shipment and batch testing
- ✓ Operational failure analysis
- ✓ CPR testing

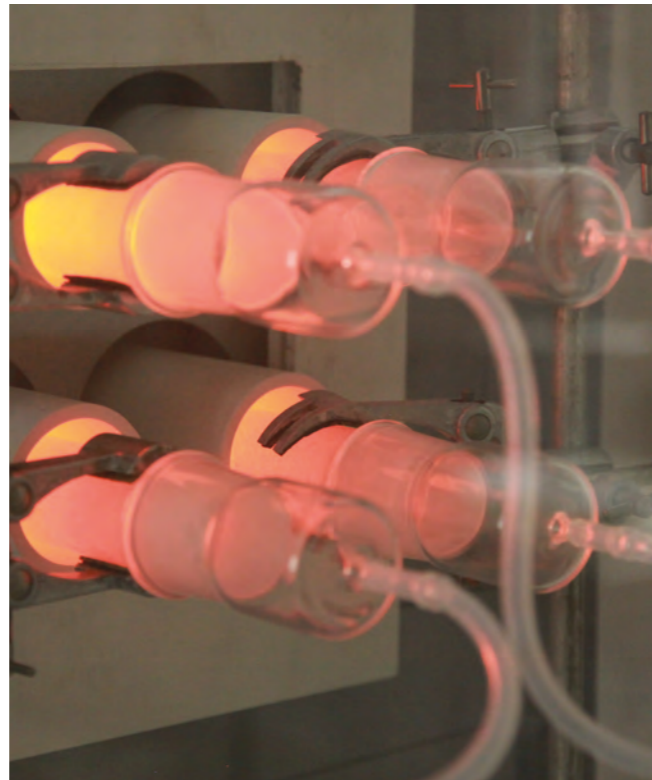


The rigour of our testing and the experience of our staff means that any cable tested and approved by BASEC is fit for purpose, safe to use and has long-term reliability.

With our commitment to ongoing investment, the BASEC laboratory contains the latest state-of-the-art technology and equipment.

Our extensive range of equipment includes:

- ✓ Tensometers
- ✓ Ageing ovens
- ✓ Freezers
- ✓ Conductor testers
- ✓ Fire test resistance
- ✓ Ladder fire test rig
- ✓ Voltage testers
- ✓ Smoke cube
- ✓ Chemistry laboratory



Testing is provided for certification and product approval purposes, or independently to any party such as Trading Standards, Certification Bodies, wholesalers/distributors, consultants and end users.

We can test for:



Fire & Smoke

Regulatory safety standards testing for cables used for emergency power, fire alarms and in public spaces including flammability, reaction to fire, resistance to fire, smoke emission and toxic gases.



Construction and Mechanical

Tests for conformity to specification and ease of identification, installation and usability including armour testing, marking and colour checking.



Chemical Testing

Testing for chemical composition of cable compounds (insulation and sheath) and other chemical tests on cable components such as metal coatings.



Electricity

Safety and performance tests including conductor resistance, insulation resistance, voltage tests and flex testing.



Materials and polymers

Testing for performance including ageing, compatibility of polymers, compliance of polymers for high and low-temperature conditions and checks on the correct processing of polymers during manufacture.



Training



All our courses are run by cable experts which means they are tailored specifically to your industry, and will focus on the issues that will make a difference to your organisation.

BASEC training ensures your staff are up-to-date with the latest industry requirements and standards and new regulations. Courses can be run either at our Milton Keynes offices or if you prefer, at your own site. They are relevant for those involved in testing, quality assurance and quality control, as well as those running BASEC systems.

BASEC's training courses include:

✓ **CPR**

Designed for manufacturers, distributors and specifiers, these course will provide you with all the knowledge you'll need to gain CE marking for cables that fall under the requirements of the Construction Products Regulation.

✓ **Cable Testing**

Designed for manufacturers' technicians, this course focuses on cable test methods, test equipment setup, calibration and operation.

✓ **Cable Standards**

This course provides cable users with an understanding of the scope and structure of standards for cable design, cable performance, materials and test methods for various types of cable.

✓ **LVD Compliance**

This course provides detailed information on the requirement of the Low Voltage Directive, as applied to cables and related products.

✓ **Management Systems**

Focussed specifically on cable manufacturing and distribution, this course covers quality management systems (ISO 9001), environmental management systems (ISO 14001) and health & safety management systems (OHSAS 18001 / ISO 45001).

✓ **BASEC PCR**

Designed for cable manufacturers, this course covers BASEC's requirements for enhanced quality management systems for cable manufacturing, as set out in BASEC's Product Certification Requirements (PCR) document.



All courses are run by cable experts and are invaluable for cable manufacturers, auditors, wholesalers and installers.

Other Services

BASEC HAR Scheme

BASEC is a member of the pan-European HAR scheme for the mutual acceptance of certification of harmonised cables and provides HAR scheme certification to manufacturers based in the UK, Ireland and other eligible countries.

With HAR scheme certification, manufacturers' cables within the scope of the scheme (cable types made to harmonised European standards) will be accepted by all other HAR scheme approval bodies as if they have been certified by themselves.

This gives manufacturers and distributors access to European markets without the need for additional certification, saving time and money.

Certificate of Assessed Design

We offer a Certificate of Assessed Design for new concepts where no national or international standard exists, or for variants from an existing standard.

This enables manufacturers to offer innovative new designs to the market, whilst at the same time verifying their quality, safety and fitness for purpose.

Notified body services

BASEC maintains appropriate Notifications to European Directives covering cable products. BASEC can provide advice, perform assessments and prepare technical reports for manufacturers and importers of cable products.

Investigation, Testing & Advice

When a concern or dispute arises around the use of cable, for example - failure or performance problems - we can conduct an independent investigation in our own laboratory into performance or compliance to specification.

We will then advise on the causes of the problem and help with identifying and correcting the selection of specifications.



Cable Standards

Cable standards and testing

One of the most common causes of confusion and issues on site when specifying cable is understanding the various standards that cables must meet.

More importantly, how do you trust that the cable you have, is actually compliant and not going to damage your reputation as an installer or specifier?

A key part of our role is to ensure that the claims of conformity made by the cable manufacturers about their cable are valid. Only when we are 100% satisfied with the cable we have tested do we allow the manufacturers to use the BASEC mark on them.

“We verify that the design, electrical, mechanical, material properties as well as any specialist performance meet the necessary requirements outlined in all the relevant standards.”

Here are some of the common types of cable that BASEC approves and their relevant standards.

Installation cables (building wire)

BS 6004	The main standard for PVC wire and cable commonly used in final circuits in UK buildings, including the familiar “flat twin and earth” and “meter tails”.
BS 7211	Low smoke halogen free (LSHF) versions of many of the types of wire and cable found in BS 6004.
BS EN 50525	Harmonised types of building wire, including single core and multicore cable with PVC or low smoke halogen free (LSHF) insulation/sheathing.

Power distribution cables (low voltage)

BS 5467	Armoured power cables with PVC sheathing.
BS 6724	Armoured power cables with low smoke halogen free (LSHF) sheathing.
BS 7846	Fire resisting armoured power cables with low smoke halogen free (LSHF) sheathing, and enhanced circuit integrity properties.
BS 7889	Non-armoured power cables with PVC sheathing.
BS 8573	Non-armoured power cables with low smoke halogen free (LSHF) sheathing.
BS 8436	Multi-core screened cables with low smoke halogen free (LSHF) sheathing for use in walls, partitions and building voids.
IEC 60502-1	Armoured and non-armoured low voltage power cables.

Control and instrumentation cables

BS 6231	Single core instrument wire, often the basis of “tri-rated”.
PAS 5308	Control and instrumentation cables.

Flexible cables

BS 6004 Table 6	Arctic-grade flexible cable previously in BS 7919 now in BS 6004.
BS EN 50525 Series	Harmonised European standards for flexible cables. HAR scheme approval for these and other cables is also available.

Medium and high voltage cables

BS 6622	Armoured medium voltage cables with PVC sheathing, for rated voltages up to 33 kV.
BS 7835	Armoured medium voltage cables with low smoke halogen free (LSHF) sheathing, for rated voltages up to 33 kV.
IEC 60502-2	Armoured and non-armoured medium voltage power cables.
BS 7870 (many parts)	Low voltage and medium voltage polymeric insulated cables for use by distribution and generation utilities.

Data and telecom cables

BASEC offers approval to a range of data and telecom standards, including IEC 11801, BS EN 50173 and TIA/EIA 568.

Fire performance cables

Most cable product standards include a basic requirement for single cable flame propagation testing. Some cables are made using polymer compounds that are low smoke halogen free (LSHF). Other cable types are specifically designed to have a high level of material performance during a fire and have fire survivability (circuit integrity) characteristics.

Many standards and codes of practice for safety-critical systems set requirements for fire performance cables, including BS 5839 for fire detection and alarm systems, BS 5266 for emergency lighting and BS 8519 for life safety and firefighting applications. BASEC approves fire performance cables to various standards, including:

BS 7629-1	British Standard type of “soft skin” fire resistant screened cables commonly used with fire alarms and emergency lighting.
BS 7846	Fire resisting armoured power cables, low smoke halogen free sheathing, with grades, F2 and F30-F120.
BS EN 60702-1 (IEC 60702-1)	Mineral insulated cables.
BS 5839-1	Alarm system design standard which sets two levels of performance – “Standard” and “Enhanced”.

Fire test standards for cables

BS EN 50399	Vertical test with heat release and smoke measurement for CPR classification (Construction Products Regulation).
BS EN 60332-3	Vertically-mounted bunched cables using a 3m vertical ladder rack.
BS 6387	Circuit integrity under fire conditions. Leading to “CWZ” classification.
BS EN 50200	Test for resistance to fire of unprotected small cables (20mm max) for use in emergency circuits, with mechanical shock and optional water spray (Annex E).
BS 8434-2	Modifies BS EN 50200 with a hotter flame and with water spray.
BS 8491	Challenging fire test with direct impact and water jet.
BS EN 61034	Smoke emission test using a 3m cube.
BS EN 60754	Tests on gases evolved during the combustion of cables.

BASEC
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