BRITISH STANDARD

BS 6907-4: 1988

Electrical installations for open-cast mines and quarries —

Part 4: Recommendations for winning, stacking and processing machinery, pumps and low signal level and communications systems

Confirmed January 2011

UDC 622.3:622.271.3:[622.812.2:621.31]:622.663.4:622.271.482:622 – 1/– 9:383/388

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Mining and Quarrying Requisites Standards Committee (MQE/-) to Technical Committee MQE/23, upon which the following bodies were represented:

Associated Offices Technical Committee
British Coal
China Clay Association
Electric Cable Makers' Confederation
Electrical Contractors' Association
Engineering Equipment and Materials Users' Association
Federation of Civil Engineering Contractors
Federation of Manufacturers of Construction Equipment and Cranes
Health and Safety Executive
Independent Engineering Insurers' Committee
Institution of Mining and Metallurgy

This British Standard, having been prepared under the direction of the Mining and Quarrying Requisites Standards Committee, was published under the authority of the Board of BSI and comes into effect on
30 September 1988

The following BSI references relate to the work on this standard:
Committee reference MQE/23
Draft for comment 86/75883 DC

ISBN 0 580 16371 7

Amendments issued since publication

Amd. No.	Date of issue	Comments

Contents

Foreword

This Part of BS 6907 has been prepared under the direction of the Mining and Quarrying Requisites Standards Committee. BS 6907 is based on the International Electrotechnical Commission's publication IEC 621 "*Electrical installations for outdoor sites under heavy conditions (including open-cast mines and quarries)*" and, like that publication, is published in Parts as follows.

— *Part 1: Glossary*;

— *Part 2: General recommendations for protection against direct contact and electric shock*;

— *Part 3: Recommendations for equipment and ancillaries*;

— *Part 4: Recommendations for winning, stacking and processing machinery, pumps and low signal level and communications systems*;

— *Part 5: Recommendations for operation.*

BS 6907 sets out the guiding principles for the installation and operation of electrical equipment so as to ensure safety of persons, livestock, property and the proper functioning of the plant.

It applies to the installation and operation of electrical apparatus and systems associated with outdoor sites under heavy conditions, including open-cast mines, quarries, stockpiles, etc. It applies particularly to electrical apparatus and systems used for the following:

a) winning, stacking and primary processing machinery;

b) secondary processing machinery;

c) conveyor systems;

d) pumping and water supply systems;

e) movable railway systems;

f) control, signal, supervisory and communication systems.

BS 6907 does not cover temporary and provisional places of work in the open, such as building sites and earth-moving sites, unless the equipment used is similar to that used in surface mining applications.

It takes account of British practice, electrical regulations and law and thereby differs in several respects from the IEC publication. Both cover a subject not previously the subject of an international standard or a British Standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This Part of BS 6907 gives recommendations for the safe and efficient installation of winning, stacking and primary and secondary processing machinery, pumps and low signal level and communication systems.

It both supplements and gives specific exemptions to the recommendations given in BS 6907-2 and BS 6907-3 and should, therefore, be read in conjunction with those Parts.

NOTE 1 A glossary of terms used in this standard is given in BS 6907-1.

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

Section 2. Winning, stacking and primary and secondary processing machinery

NOTE The recommendations of BS 6907-2 and BS 6907-3 apply, except where specific exemptions are stated.

2 Protection against direct and indirect contact

2.1 Mounting of components

Protective conductors are not required for the exposed conductive parts of individual components provided that:

a) each component is mounted on a conductive part which is either

1) a protective conductor, or

2) directly connected to a protective conductor; and

b) the conductance between each component and the part on which it is mounted is at least equal to that resulting from the application of **11.5.2** of BS 6907-2:1988; and

c) the electrical continuity is assured, either by construction or by suitable connections, in such a way as to be protected against mechanical, chemical or electrochemical deterioration.

Where the equipment is required to operate under corrosive atmospheric conditions or extreme vibrating conditions, a separate protective conductor should be connected to the components.

2.2 Off-board mobile and movable auxiliary equipment

For off-board mobile and movable auxiliary equipment (e.g. welding equipment, vulcanizing transformers) which require the provision of a protective conductor, either the protective conductor should be visible throughout its length or one or more of the following measures should be adopted.

a) The protective conductor should be monitored for continuity.

b) Sensitive earth leakage protection should be provided.

c) A visible equipotential bonding-conductor should be provided between the off-board mobile or movable auxiliary equipment and the plant from which it is supplied.

3 External power supply systems

3.1 System design

The supply system should meet the requirements of cyclic or periodic loads, motor starting, and inherent a.c. motor oscillations due to transient load changes, taking account of power factor, harmonic currents and any restrictions imposed by the electricity supplier.

3.2 Overcurrent protection

Overload and short-circuit protection for transformers, cables, etc. should take into consideration the starting requirements and fluctuating nature of the load.

3.3 Automatic reclosing or transferring

Where regeneration may delay the operation of undervoltage devices, automatic reclosing or transferring devices should not be used in the power distribution system unless:

a) such devices have sufficient time delay to allow motor disconnection (see **6.2**); or

b) the device is fitted with "out of step" protection; or

c) the combination of supply system and motor design is such as to permit automatic re-energization.

3.4 System voltage

Recognition should be taken of the difference in voltage between full load and no load conditions.

Where large variations in load can occur, it may be necessary to regulate the supply voltage to the installation.

4 Self-contained power systems

4.1 System design

The power generation systems should meet the requirements of motor starting, regeneration, peak load, r.m.s. load, power factor and frequency stability.

4.2 Fire protection

Consideration should be given to the need for special and/or additional fire protection due to the fuels used, see BS 6907-3.

4.3 Earthing

When the supply of electrical energy is self-contained within stationary, mobile, or movable items of equipment and there is no external supply, such equipment need not be connected to the general mass of the earth. Exposed and extraneous conductive parts should be equipotentially bonded.

4.4 Supply to off-board equipment

When power is supplied to off-board mobile and movable equipment the recommendations of **2.2** apply.

5 Cable types

Where cables are exposed to physical damage, they should be protected by enclosures, armouring or other suitable means.

Cables should be installed and terminated in such a manner that they are protected from damage resulting from corona or from physical and environmental conditions. Where installed in areas prone to corrosive atmospheres, steam, extreme heat, ultraviolet radiation, material build-up, etc. additional protection may be necessary.

6 Control circuits and control devices

6.1 Shock, vibration and voltage fluctuations

The effect of shock, vibration or voltage fluctuations on control devices should be taken into consideration, ensuring that the safety of personnel and equipment is not endangered by inadvertent operation of control devices. (See also **2.5** of BS 6907-3:1988.)

When mechanically latched switching devices are used and re-energization following loss of supply power would endanger personnel or equipment, means should be provided to automatically unlatch the switching device on loss of supply power. The device should also be unlatched on operation of protective devices.

6.2 Synchronous motor control

6.2.1 *Automatic discharge of field energy*. Where synchronous motors are used provision should be made for automatic discharge of the field energy upon disconnection of the motor.

6.2.2 *Automatic field excitation control*. Where synchronous motors are used to drive periodic or cyclic loads, an automatic field excitation control is recommended.

6.2.3 *Power loss protection*. Where synchronous motors are used to drive loads which may be regenerative, means should be provided to trip the motor starting switch or incoming line switch upon loss of power supply. Frequency-sensitive devices are recommended. When automatic reclosing or transferring devices are used in the distribution system, the recommendations of **3.3** apply.

6.3 Stop controls

6.3.1 *Use of stop controls*. The devices described in **6.3.2** to **6.3.4** inclusive should not be used for purposes of isolation or immobilization to allow work to be carried out on parts which would otherwise be electrically energized or moving, except where permitted in BS 6907-5.

6.3.2 *Stop control circuits*. The circuits of stop controls and of other safety protection devices should be as simple, reliable and direct acting as is practicable.

6.3.3 *Location of stop controls*. A stop control should be located near each start control, except for lift call controls. Additional stop controls may be provided.

6.3.4 *Pullwire stop controls*. Stop controls operated by a pullwire should be arranged so that a pull on the wire in any direction transverse to the conveyor axis or breakage of the wire will stop the controlled equipment.The stop controls should be of a type in which the contacts are actuated by a positive mechanical action and can be reset only by a further mechanical action.

6.3.5 *Stopping sequence*. It is essential that the operation of a stop control for a piece of equipment should initiate stopping of that equipment and where required:

a) stop all upstream equipment to a controlled loading point, or cause the material from all upstream equipment to be diverted to an alternative route;

b) initiate braking to stop the equipment in a safe time;

c) prevent run back.

On very long conveyor systems, however, the operation of a stop control within one stop zone need not stop all upstream conveyors beyond that zone, provided that the conveyor upstream of the zone is proved to be unloaded, for example by sensors.

Although the stop control may be reset automatically, restarting should be by manual initiation.

6.4 Start controls

Where equipment is started manually from one or more locations, audible and/or visual warning devices, together with appropriate notices, should be provided to give advance warning of equipment starting unless one or more of the following conditions apply:

a) personnel access to hazardous parts is prevented;

b) danger to personnel does not exist from equipment starting;

c) the hazardous parts of the equipment being started are in full and clear view from all starting locations.

Where equipment is started automatically, an audible and/or visual warning system should be provided unless conditions a) and/or b) apply.

For sequential starting of a localized plant group, a single warning system may be sufficient.

6.5 Interlocking of start controls

Where equipment can be started from more than one location, the control system should permit operation from only one nominated location at any one time. Safe operation may require that:

a) pre-start warning is used; or

b) the equipment is in sight for all starting locations; or

c) the equipment is guarded against inadvertent access.

6.6 Protection against unauthorized starting

Provision should be made to guard against unauthorized starting.

7 Emergency stopping and emergency devices

7.1 Emergency stopping

Effective means should be provided for stopping drives under emergency conditions. Consideration should be given, not only to disconnection of supply as the primary means of safe stopping, but also to other effective means where available, such as electrical braking.

Emergency stopping may be accomplished by means other than disconnection of power, provided that such means otherwise are in accordance with **6.3**. For example, when rotating converters are used, disconnection of the external excitation is permitted if protection against self-excitation is provided.

7.2 Emergency devices

Emergency stop controls should be provided for all equipment which is accessible to personnel and which can present a hazard to them. The emergency stop controls should be readily accessible and located in a suitable position for safe operation under all expected emergency conditions.

The circuits of emergency stop controls should be simple and reliable. Direct acting controls are preferred wherever practicable.

Where direct acting controls are not employed, the system should incorporate as far as practicable fail-safe features providing equally effective and reliable operation.

NOTE Manually operated stop controls and conveyor pullwire stop controls may also provide the function of an emergency stop control.

8 Provision for supply isolation

A means of mains supply isolation should be provided to isolate the power circuits from the equipment or parts thereof, inclusive of control and motor circuits. Separate means of isolation may be provided for control circuits, which may remain energized after disconnection of power circuits, provided that measures for the safety of personnel and equipment have been implemented.

NOTE Refer also to **6.2** of BS 6907-3:1988 regarding provision for the locking of isolators.

9 Potentially explosive atmospheres

For installation within a potentially explosive atmosphere, reference should be made to the appropriate Parts of BS 5345.

It should be recognized that certain fine dust particles in air can form an explosive atmosphere. In such cases, precautions should be taken to prevent the formation of explosive concentrations or, alternatively, equipment used in the area concerned should be of a type which will not give rise to risk of ignition.

10 Static electricity

10.1 General

For the purposes of clause **10**, generation of static electricity is taken to mean the separation of electric charges into equal quantities of opposite polarity by disunion or relative movement between contacting surfaces of two substances having a different physical and/or chemical structure at the contacting surfaces. The substances may be both solids, both liquids, or one solid and one liquid. No static is generated by disunion or relative movement between gas and solids or gas and liquids, except where the gas contains entrained substances.

10.2 Common sources of generation

Common sources of generation of static electricity include the following:

a) pulverized materials passing through chutes or pneumatic conveyors;

b) low conductivity liquids, e.g. liquid hydrocarbons flowing at high velocity through pipes and associated equipment;

c) steam, air or gas containing particulate matter flowing from any opening in a pipe or hose;

d) non-conductive drive belts or conveyor belts in motion;

e) moving vehicles

10.3 Fire and explosion hazards

10.3.1 *Static.* The generation or presence of static electricity does not necessarily create a danger of fire or explosion, but will initiate it only when all the following four conditions are fulfilled:

a) an effective means of static electricity generation;

b) a means of accumulating the separated charges and attaining sufficient potential difference between them;

c) a static discharge having sufficient energy for ignition;

d) the static discharge occurring in or on a flammable or explosive substance.

10.3.2 *Reduction of hazards.* Measures for the reduction of fire or explosion hazards may include one or more of the following.

a) Elimination of any source of generation of static electricity from localities where flammable or explosive substances are present or are likely to be present. Machinery which produces static electricity should not be used in these localities, e.g. use of direct coupled gear drives rather than belt drives;

b) Provision of means for adequate dissipation and prevention of accumulation of static electricity, thereby ensuring that static discharges do not occur, e.g. use of discharge pickups;

c) Ensuring that there are no flammable or explosive substances in areas where static discharges are likely to occur.

11 Electrostatic precipitators

Where electrostatic precipitators and separators operating at high voltage are used, precautions such as coded locks and interlocking should be taken to prevent access of personnel to high-voltage areas.

12 Radioactive sources

Where ionizing sources are used reference should be made to "The Ionizing Radiations Regulations 1985" and the associated code of practice[1)].

13 Rail-mounted equipment

High dust levels and corrosive atmospheres may cause problems due to poor electrical conductivity between wheels and rails. Special precautions should be taken to ensure that protective conductor paths remain effective under these conditions.

14 Hazards from electromagnetic induction

Consideration should be given to the possibility of hazards arising from electromagnetic induction from installations involving extremely high currents such as may exist with pot lines and arc furnaces. This applies particularly to the installation of cables and extraneous conductive parts in the vicinity of such equipment.

[1)] "The protection of persons against ionizing radiation arising from work activity" obtainable from HMSO.

Section 3. Deep-well submersible type pumps

NOTE The recommendations of BS 6907-2 and BS 6907-3 apply, except where specific exemptions are stated.

15 Protection against direct and indirect contact

Where a continuous metallic riser pipe is fitted between the motor and the well head, no protective conductor is required between the motor and the protective conductor connected directly to the fixed riser provided that:

a) the bore hole cable is terminated close to the well head and any exposed cable beyond that point is suitably protected;

b) the conductivity of the metallic riser (stand pipe) and the connections (couplings) is at least equal to the conductivity of the protective conductor which would otherwise be necessary; and

c) personnel do not have access down the well.

Section 4. Low signal level systems and communication systems

16 General

This section gives recommendations for low signal level systems (for transmitting measured values, control data, control instructions, etc.) and communication systems (for transmitting speech, sounds, pictures, characters, etc.) in order to protect persons and property against:

a) the transfer of unsafe voltages from power systems or other circuits; and

b) malfunctions due to interference originating either from within the system or from an external influence such as nearby power cabling, etc.

It applies to the installation of low signal level systems and communication systems in the locations covered by BS 6907-1. These systems should be in accordance with BS 6907-2 and BS 6907-3.

17 Assessment of general characteristics

An assessment should be made of the following characteristics of the installation:

a) means of transmission, for example cable, power line carrier, radio or optical systems;

b) signal type, e.g. analogue or digital;

c) interference to signal transmission by power supplies (e.g. harmonics, voltage transients), other circuits, lighting, radio signals, etc.;

d) interference by indirect transfer of voltage, e.g. inductive (electromagnetic), capacitive (electro-static), resistive (ohmic), galvanic (electrolytic);

e) interference by direct transfer of voltage from power systems;

f) interference from fault current in the earthing system influencing the reference potential;

g) power supply for the low signal level system and communication system, including regulation of voltage, current and frequency, effects of fault current, effects of harmonics, maintenance of potential reference for the system, effects of loss of power.

These characteristics should be taken into account in the choice of methods of protection to ensure safety of personnel and to avoid malfunction of equipment.

18 Protection of personnel against the transfer of unsafe voltages

18.1 Causes of voltage transfer

Unsafe voltages may be transferred to low signal level systems and communication systems by:

a) direct transfer of voltages due to insulation failure, mechanical damage, accidental contact, leakage between adjacent terminals, failure of equipment, etc.;

b) indirect transfer of voltages resulting from inductive and capacitive coupling with other circuits.

18.2 Measures for protecting personnel against direct transfer of unsafe voltages

One or more of the measures described in a) to k) should be adopted, or other measures providing equivalent protection. Not all of the measures listed are effective for all types of TN, TT and IT systems described in clause **6** of BS 6907-2:1988.

a) Use of safety extra-low voltage[2)] for the power system.

b) Use of cables in the power system with metallic screens and/or armouring.

c) Use of cables in the power system with semiconducting layers.

d) Use of cables in the power system with double insulation[2)] or reinforced insulation[2)].

e) Inclusion in the protective measures against indirect contact of the power system of all exposed conductive parts of the low signal level system or communication system which may become live in the event of a fault in the power system.

f) Application of conductive shielding between conductors of the low signal level system or communication system and conductors of other circuits. The shielding should be connected to a protective conductor and sized in accordance with the prospective fault current.

g) Use of isolating transformers or optical isolators to terminate the conductors of low signal level systems or communication systems for the purpose of providing isolation from other circuits.

[2)] See definition in BS 2754.

h) Installation of cables of low signal level systems or communication systems physically separate throughout their entire length from other cables, with or without the use of barriers. Terminals should be grouped physically separate from terminals of other systems and, if necessary, provided with barriers, shrouds, etc.

i) Use of cables provided with either armouring and/or double insulation[3)] or reinforced insulation[3)] for the circuits of low signal level systems and communication systems.

j) Use of fuses and/or overvoltage protection equipment for each conductor of low signal level systems or communication systems.

k) Use of Class II equipment[3)] for low signal level systems or communication systems.

18.3 Measures for protecting personnel against indirect transfer of unsafe voltages

One or more of the following measures should be adopted, or other measures providing equivalent protection:

a) use of isolating transformers or optical isolators to terminate the conductors of low signal level systems or communication systems for the purpose of providing isolation from other circuits;

b) use of fuses and/or overvoltage protection equipment for each conductor of the low signal level system or communication system.

19 Protection of low signal level against malfunction due to interference

19.1 General

Where electrical interference can cause malfunctioning and can result in a condition dangerous to personnel or property, measures should be taken to reduce the effect of the interference. Examples of the measures which can be taken are given in a) and b). A combination of these measures may be required.

a) Design features which may be incorporated in the equipment to reduce its susceptibility to interference include:

1) common mode rejection;

2) propagation delay methods of input interface;

3) majority logic;

4) feedback supervision;

5) cross-monitoring techniques;

6) circuit isolation (for example optical isolators, isolating transformers), coding of signals, parity checks, etc.;

7) overvoltage protection equipment;

8) use of Class II equipment[3)];

9) use of cables with double insulation[3)] or reinforced insulation[3)].

b) Other measures which may be taken to minimize the effects of interference include:

1) screening against capacitive (electrostatic) interference;

2) shielding against inductive (electromagnetic) interference;

3) physical separation of cables;

4) segregation of circuits;

5) physical isolation of sensitive components;

6) suppression of interference at source, e.g. of harmonics, voltage transients;

7) use of higher signal levels or signal amplification;

8) use of line fuses.

19.2 Transmission by cable

19.2.1 *Screening against capacitive (electrostatic) interference.* Screening of cables by means of conductive materials may be employed to eliminate or minimize capacitive interference. The screening should extend over the length of the cable and should be taken as close as practicable to the cable terminations.

The screen should be insulated from earth along its entire length and left unearthed or connected directly at one location only with the lowest practicable impedance to the low signal level system common earthing point or zero potential common reference point.

Cable armouring, conduit or cable tray, if constructed of materials having good electrical conductivity and installed as described above, can provide a measure of screening from capacitive interference, but will be less effective than the use of cables incorporating screens designed specifically for the purpose.

The connection of spare cores in a cable to earth or to the common reference potential at the receiving end will also afford a limited measure of screening against capacitive interference provided the spare cores are connected as described above for a cable screen.

[3)] See definition in BS 2754.

Extremely sensitive low signal level systems may require the use of cables incorporating screening for each signal circuit pair in addition to the overall screening of the cable.

19.2.2 *Shielding against inductive (electromagnetic) interference.* Interference arising from inductive coupling may be minimized by keeping the area enveloped by the circuit as small as possible, for example, when signal-carrying conductors run alongside the conductor serving as the common return or reference potential conductor. The most effective shielding against inductive interference is achieved by twisting a conductor serving as the common reference potential with each-signal carrying conductor in a multi-core twisted pair cable. This measure minimizes inductive interference from other cables and from other conductors incorporated in the cable.

Shielding of cables by means of ferrous materials (e.g. steel conduits, steel cable trays, steel cable armouring) may be employed to minimize electromagnetic coupling with other cables.

The effectiveness of the shielding will generally be reduced where bonded to adjacent earthed metallic parts, or where it is impracticable to maintain the insulation of the shielding over its entire length.

The effectiveness of cable trays and cable armouring as shielding depends on the construction and method of earthing. Generally, cable tray and armouring is significantly less effective than steel conduit enveloping the entire cable. Conduits and cable trays should be solidly connected and bonded, where necessary, to bridge any discontinuities in order to maintain electrical continuity throughout their entire length.

19.2.3 *Physical separation from power cables and equipment*. Where cables of low signal level systems are run in parallel with power cables (or busbar systems), or in close proximity to equipment producing external variable magnetic fields, it may be necessary to separate the signal cables from the power cables with or without metallic barriers or equipment to minimize interference. This applies particularly where the signal cables are not screened in accordance with **19.2.1** or shielded in accordance with **19.2.2**.

The question of whether separation is required and the degree of separation which might be necessary will depend on factors such as the type of cables used (both signal and power cables), the signal level employed, the distance over which the signal cables are run in parallel with the power cables, and the maximum expected current in the power cables (e.g. motor starting current, power cable fault current).

19.2.4 *Segregation of circuits*. Circuits having widely different current or voltage levels should be run in separate cables or cable looms, particularly if none of the measures described in **19.2.1** to **19.2.3** inclusive are taken.

19.3 Transmission by power line carrier

Reference should be made to the following publications relating to power line carrier systems, BS 4996, IEC 481, IEC 495 and IEC 663.

19.4 Transmission by radio

19.4.1 *Safety precautions relating to the use of radio.* Precautions should be taken to prevent accidental ignition of detonators.

Reference should also be made to BS 6907-5.

19.4.2 *Physical isolation of sensitive elements.* Equipment of low signal level systems may be enclosed separately from power equipment (e.g. transformers, switchgear, etc.) in enclosures constructed of ferrous material (e.g. steel cabinets, cubicles), so as to provide effective shielding from likely sources of interference.

blank

Publications referred to

BS 2754, *Memorandum. Construction of electrical equipment for protection against electric shock.*

BS 4996, *Specification for line traps for power line carrier systems.*

BS 5345, *Code of practice for the selection, installation and maintenance of electrical apparatus for use in potentially explosive atmospheres (other than mining applications or explosive processing and manufacture).*

BS 6907, *Electrical installations for open-cast mines and quarries.*

BS 6907-1, *Glossary.*

BS 6907-2, *General recommendations for protection against direct contact and electric shock.*

BS 6907-3, *Recommendations for equipment and ancillaries.*

BS 6907-5, *Recommendations for operation.*

IEC 481, *Coupling devices for power line carrier systems.*

IEC 495, *Recommended values for characteristic input and output quantities of single sideband power line carrier terminals.*

IEC 621, *Electrical installations for outdoor sites under heavy conditions (including open-cast mines and quarries)*[4)].

IEC 663, *Planning of (single sideband) power line carrier systems. The protection of persons against ionizing radiation arising from work activity*[5)].

[4)] Referred to in the foreword only.

[5)] Available from HMSO.

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL