

BS EN 764-5:2014



BSI Standards Publication

## Pressure equipment

Part 5: Inspection documentation of metallic materials and compliance with the material specification

**bsi.**

...making excellence a habit.™

**National foreword**

This British Standard is the UK implementation of EN 764-5:2014. It supersedes BS EN 764-5:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PVE/1, Pressure Vessels.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2015. Published by BSI Standards Limited 2015

ISBN 978 0 580 78028 8

ICS 23.020.30

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2015.

**Amendments issued since publication**

Date	Text affected
------	---------------

---

English Version

## Pressure equipment - Part 5: Inspection documentation of metallic materials and compliance with the material specification

Equipements sous pression - Partie 5 : Documents de  
contrôle de matériaux métalliques et conformité avec la  
spécification de matériau

Druckgeräte - Teil 5: Prüfbescheinigungen für metallische  
Werkstoffe und Übereinstimmung mit der  
Werkstoffspezifikation

This European Standard was approved by CEN on 8 November 2014.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Contents

Page

Foreword.....	3
1 Scope .....	4
2 Normative references .....	4
3 Requirements with respect to classification into pressure equipment categories .....	4
3.1 General.....	4
3.2 Material for main pressure-bearing parts of pressure equipment in category II, III and IV .....	5
3.3 Material for main pressure-bearing parts of pressure equipment in category I .....	5
3.4 Material for pressure-bearing parts not covered by 3.2 or 3.3 and for attachments to pressure equipment in category II, III and IV.....	5
3.5 Other material.....	5
3.6 Welding consumables .....	5
3.7 Use of higher document levels.....	5
4 Material manufacturers Quality management system route .....	5
4.1 General.....	5
4.2 Quality management system .....	5
4.3 Material testing and inspection documents.....	7
5 Direct inspection route.....	7
5.1 First production .....	7
5.2 Inspectors .....	7
5.3 Material verification testing and inspection documents .....	8
6 Material from stockists.....	8
6.1 Inspection documents and marking .....	8
6.2 Cut off material pieces .....	8
7 Specific requirements for components .....	9
7.1 General.....	9
7.2 Welding procedures and welder qualifications .....	9
7.3 Non-destructive testing of permanent joints .....	9
Annex A (normative) First testing of the production of a material covered by harmonized standard or EAM .....	10
A.1 General.....	10
A.2 Responsibilities .....	10
A.3 Procedure for the first testing of established materials not previously produced.....	10
A.4 Statistical methods .....	10
Annex B (informative) History of EN 764-5 .....	11
B.1 Changes from EN 764-5:2002 to EN 764-5:2014 .....	11
Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives .....	12
Bibliography .....	13

## Foreword

This document (EN 764-5:2014) has been prepared by Technical Committee CEN/TC 54 “Unfired pressure vessels”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2015 and conflicting national standards shall be withdrawn at the latest by June 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 764-5:2002.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For relationship with EU Directive 97/23/EC (PED), see informative Annex ZA, which is an integral part of this document.

Regarding the most significant technical changes that have been implemented in this new edition of EN 764-5, see Annex B.

This European Standard, *Pressure equipment*, consists of the following parts:

- *Part 1: Terminology - Pressure, temperature, volume, nominal size;*
- *Part 2: Quantities, symbols and units;*
- *Part 3: Definition of parties involved;*
- *Part 4: Establishment of technical delivery conditions for metallic materials;*
- *Part 5: Inspection documentation of metallic materials and compliance with the material specification (the present document);*
- *Part 6: Structure and content of operating instructions [Technical Report CEN/TR 764-6];*
- *Part 7: Safety systems for unfired pressure equipment;*
- *Part 8: Proof test [Technical Specification prCEN/TS 764-8, currently under development].*

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This European Standard specifies the provisions for inspection documentation of metallic materials, intended to be used under the regime of the PED, to comply with the Essential Safety Requirements 4.2 (b) and 4.3 of Annex I and to comply with the required material specification.

A simplified diagram of the routes for inspection documentation including compliance with the material specification is shown in Figure 1.

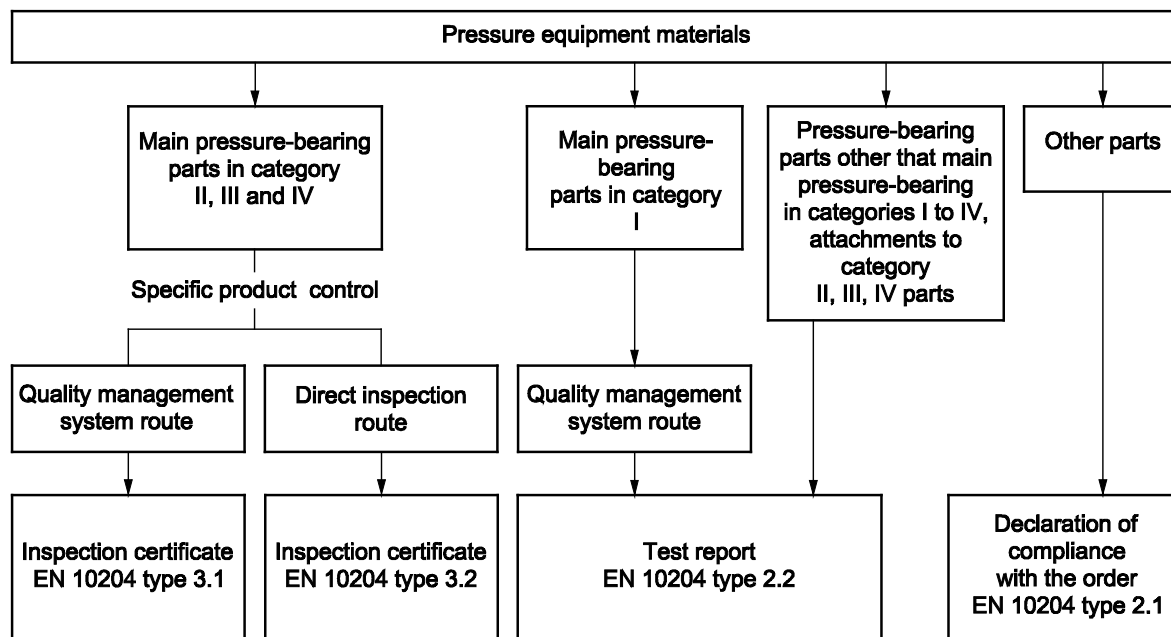


Figure 1 — Types of inspection documents required (minimum requirement)

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 764-4:2014, *Pressure equipment — Part 4: Establishment of technical delivery conditions for metallic materials*

EN 10204, *Metallic products — Types of inspection documents*

## 3 Requirements with respect to classification into pressure equipment categories

### 3.1 General

For material intended for use as pressure-bearing parts of pressure equipment of all categories and for attachments (e.g. support feet, lifting lugs, baffles, pipe supports, stiffening rings) welded directly to pressure-bearing parts of pressure equipment of all categories, the pressure equipment manufacturer shall ensure compliance of these materials by obtaining from the material manufacturer a declaration of compliance, which is traceable to the material, as specified in 3.2 to 3.5.

The issuing of any one of the inspection documents referred to in 3.2 to 3.5 is a declaration from the material manufacturer that the delivered products are in compliance with the requirements of the specification and the order (see EN 10204).

### **3.2 Material for main pressure-bearing parts of pressure equipment in category II, III and IV**

For material intended for use as main pressure bearing parts of pressure equipment classified in categories II, III and IV, a specific inspection and testing route according to Clause 4 or Clause 5 shall be followed. This shall be either:

- by a material manufacturers Quality management system route (production under Quality management system coverage) according to Clause 4; or
- by direct inspection route (production without Quality management system coverage) according to Clause 5.

### **3.3 Material for main pressure-bearing parts of pressure equipment in category I**

For material intended for use as main pressure-bearing parts of pressure equipment classified in category I, at least a test report, EN 10204 — “type 2.2”, shall be obtained from the material manufacturer.

### **3.4 Material for pressure-bearing parts not covered by 3.2 or 3.3 and for attachments to pressure equipment in category II, III and IV**

Pressure-bearing parts other than main pressure-bearing parts in categories I to IV and for attachments welded directly to pressure-bearing parts of pressure equipment classified in categories II, III and IV at least a test report, EN 10204 — “type 2.2” shall be obtained from the material manufacturer.

### **3.5 Other material**

For materials for other parts not covered by 3.2 to 3.4 at least a declaration of compliance with the order, EN 10204 — “type 2.1” shall be obtained from the material manufacturer.

### **3.6 Welding consumables**

For welding consumables for all categories of pressure equipment at least a test report EN 10204 — “type 2.2” shall be obtained from the welding consumable manufacturer.

### **3.7 Use of higher document levels**

An inspection document of a higher level is always acceptable.

## **4 Material manufacturers Quality management system route**

### **4.1 General**

The pressure equipment manufacturer shall ensure himself that the material manufacturer has a certified Quality management system for manufacture, inspection and testing in accordance with 4.2 and obtain inspection documents in accordance with 4.3.3.

### **4.2 Quality management system**

#### **4.2.1 Assessment of the Quality management system**

The material manufacturer shall have undergone a material related assessment of his Quality management system by a competent body of his choice. The competent body shall be established as a legal entity within the European Union (see also the PED Guideline 7/2) and which has been subject to appropriate accreditation. The accreditation body shall be authorized to grant accreditation by a EU Member State.

The Quality management system and its assessment shall fulfil the following requirements:

- a) The competent body shall, when assessing the Quality management system, evaluate the capability of the material manufacturer to produce materials covered by the Quality management system certificate. This implies that for each production site, production process, grade, dimensional range, heat treatment condition etc., it shall be verified by production-data that the manufacturer, with statistical confidence, meets the minimum requirements of the specifications covered by the scope of the Quality management system certificate;
- b) At least one member of the auditing team of the competent body responsible for assessment who has experience of assessing the material manufacturing and the material groups concerned shall take part in the certification procedure;
- c) The assessment procedure shall include a visit to the material manufacturers premises;
- d) The assessment shall include a review of:
  - 1) the type of manufacturing processes applied for the manufacture of the products covered by the scope of the intended certification;
  - 2) the type of equipment utilized;
  - 3) the essential parameters to be controlled during production in order to consistently achieve the required quality;
  - 4) the function of the persons responsible for the Quality management system, the manufacture and the inspection and testing;
- e) The competent body shall evaluate by interviews or by the examination of documents:
  - 1) that the manufacturing equipment and the equipment controlling the essential parameters are available. They shall be capable of permitting the consistent delivery of products in the required quality;
  - 2) that competent personnel are available for operating and maintaining the equipment and supervising the manufacturing and inspection and testing activities;
- f) Where valid results of preceding reviews of the Quality management system are available, these reviews shall not be repeated.

#### **4.2.2 Content of the Certificate**

Following positive assessment the competent body shall issue a document stating the scope of approval relating to material for pressure purposes including:

- product form;
- their dimensional range;
- their relevant production processes;
- date of issue and validity.



#### **4.2.3 Reassessment and periodic audits**

The competent body shall carry out periodic audits to make sure that the material manufacturer maintains and applies the Quality management system. The frequency of periodic audits shall be such that a full reassessment is carried out every three years, with at least one visit per year.

#### **4.2.4 Assessment reports**

The result of the assessment and periodic audits of the Quality management system shall be summarized in an assessment report, which shall be retained by the material manufacturer for a period of 10 years.

### **4.3 Material testing and inspection documents**

#### **4.3.1 First production of a material covered by harmonized standard or EAM**

Where a material manufacturer starts the first production of a material covered by harmonized standard or EAM Annex A shall be applied.

Where a material manufacturer starts production of another material, EN 764-4 shall be applied.

#### **4.3.2 Ordering of material**

When ordering the material, the pressure equipment manufacturer shall specify:

- a) the technical delivery conditions; and
- b) any additional requirements, where applicable;
- c) an inspection document in accordance with 4.3.3.

#### **4.3.3 Inspection documents**

The material manufacturer shall issue inspection documents to EN 10204, "type 3.1" traceable to the product, to ensure compliance with the applicable material specification and order requirements.

## **5 Direct inspection route**

### **5.1 First production**

Where a material manufacturer starts production of a material covered by harmonized standard or EAM, Annex A shall be applied. Where a material manufacturer starts production of other material EN 764-4 shall be applied.

### **5.2 Inspectors**

If the pressure equipment manufacturer chooses not to carry out direct inspections himself he shall appoint:

- a body which has been subject to appropriate accreditation. The accreditation body shall be authorized to grant accreditation by a EU Member State; or
- a notified body as required by Article 12 of the PED; or
- a user inspectorate, where applicable.

NOTE A list of notified bodies (NANDO-List) can be found on the internet [3].

The material manufacturer shall ensure that the inspector has access to the inspection facility of the material manufacturer.

### **5.3 Material verification testing and inspection documents**

#### **5.3.1 Testing and traceability of the test samples**

The inspector according to 5.2 shall see the material prior to parting off the samples to be tested and ensure the traceability of the test samples to the product by stamping with an identification mark or other appropriate means.

The inspector to 5.2 shall test or witness the testing of the material in accordance with the order.

#### **5.3.2 Ordering of the material**

When ordering, the pressure equipment manufacturer shall specify:

- a) the technical delivery conditions; and
- b) additional requirements, where applicable;
- c) an inspection document in accordance with 5.3.3.

#### **5.3.3 Inspection documents**

The inspection documents, which certify compliance with the applicable material specification and order requirement, shall ensure traceability to the product.

The pressure equipment manufacturer shall specify in his order an inspection certificate to EN 10204, type 3.2.

## **6 Material from stockists**

### **6.1 Inspection documents and marking**

Material bought by the pressure equipment manufacturer from a material stockist shall be accompanied by inspection documents as defined in 4.3.3. In addition, the material shall also contain the original material manufacturers marking and if applicable the cast number except as permitted in 6.2 and shall be traceable to the material certificates.

### **6.2 Cut off material pieces**

#### **6.2.1 General**

When the original marking is cut out by the stockist, identification shall be applied to the other parts of the material before cutting as defined below.

#### **6.2.2 Transfer of marking by material stockists with a certified Quality management system**

Where a material stockist has a Quality management system which has been certified by an competent body, he shall transfer the original material markings, except manufacturers name or mark. He shall also issue a transfer report, containing transferred item, his name and date of transfer.

#### **6.2.3 Transfer of marking by material stockists without a certified Quality management system**

Where the material stockist does not have a Quality management system certified by an competent body then the transfer of the original marking shall be witnessed by either the pressure equipment manufacturer or his appointed competent n body. A transfer report shall be issued as referenced in 6.2.2.

## **7 Specific requirements for components**

### **7.1 General**

The component manufacturer shall ensure that the accompanying inspection documents enable traceability to the starting materials.

Where appropriate, the inspection documents shall confirm that the applicable ESRs in 3.1 of Annex I of PED are fulfilled.

**NOTE** It is important that a manufacturer of components describes how the components are manufactured and tested and supplies the inspection document issued by the material manufacturer (see PED Guideline 7/19 and 7/25). This information can be provided in the form of a component certificate or an inspection document issued by the component manufacturer with the inspection document from the material manufacturer as an enclosure or included separately.

### **7.2 Welding procedures and welder qualifications**

Welding shall be performed by suitably qualified welders/operators and welding procedures. For material which forms part of pressure equipment in categories II, III and IV, the qualification of welding procedures and welder qualifications shall also be approved by a competent third party, which can be either a notified body according to Article 12 of the PED or a recognized third-party organization according to Article 13 of the PED.

### **7.3 Non-destructive testing of permanent joints**

Non-destructive testing shall be carried out by suitably qualified personnel. For material which forms part of pressure equipment in categories III and IV, non-destructive testing shall be carried out by personnel approved by a recognized third party organization according to Article 13 of the PED.

## **Annex A** (normative)

### **First testing of the production of a material covered by harmonized standard or EAM**

#### **A.1 General**

The first production of an established material not previously produced by a material manufacturer shall be subject to first testing as defined in A.3.

Where a material manufacturer has already produced very similar materials and can put forward data regarding chemical composition, material characteristics, manufacturing process and product forms, the data of this material can be used in fulfilling the requirements of A.3.

Where a material manufacturer applies only for an extension of the scope of an existing EAM and has experience with that material the amount of testing as defined shall be reduced and justification given in the assessment report.

Where a material manufacturer has already produced and delivered the established material previously, and can provide satisfactory information on this material no testing as required in A.3 is requested.

#### **A.2 Responsibilities**

Subclauses 5.2 and 5.3 apply.

#### **A.3 Procedure for the first testing of established materials not previously produced**

The first three casts shall be melted to represent the specified range of material composition specified by the material manufacturer.

The number of samples required by the technical delivery conditions shall be doubled for the first three casts, but not be greater than two samples per plate as rolled, coil, tube in manufactured length, forging or casting.

Where two samples per sample product are taken they shall be from opposite ends of the product. In all other respects, the sampling conditions shall be the same as specified in the technical delivery condition.

For each sample a tensile test at room temperature and, where Charpy impact energy is specified in the technical delivery condition, three Charpy V-notch impact tests shall be carried out.

Where the impact energy is specified for more than one temperature the test shall be carried out at the temperature for which the value of 27 J for ferritic and 1,5 % to 5 % Ni-alloyed steel and 40 J for austenitic material is specified or at the test temperature nearest to this energy level. If other values for Charpy impact energy are required in European harmonized standards or EAM these values shall apply.

For materials with specified tensile properties at elevated temperatures these properties shall be determined with reference to EN 764-4:2014, 5.2.4 c) for each cast melted up to the defined maximum test temperature.

#### **A.4 Statistical methods**

Where appropriate, the relevant data or test results shall be evaluated by the manufacturer according to common statistical procedures.

## **Annex B** (informative)

### **History of EN 764-5**

#### **B.1 Changes from EN 764-5:2002 to EN 764-5:2014**

The most important changes include:

- Figure 1: new column inserted with respect to category I parts and Directive 97/23/EC, Annex I, section 4.3 last paragraph;
- Content of Annex A (Clauses A.2 to A.5) shifted into new Clause 3. Definitions, Clause A.6 was deleted;
- Clause A.4 from EN 764-4:2002 included as new Annex A to EN 764-5.

## Annex ZA (informative)

### Clauses of this European Standard addressing essential requirements or other provisions of EU Directives

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 97/23/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

**Table ZA.1 — Comparison between PED and this European Standard with respect to material of pressure equipment**

Clause(s)/subclause(s) of this EN	Qualifying remarks/Notes	Essential Requirements (ERs) of Pressure Equipment Directive 97/23/EC
Clause 3, Clause 6, Clause 7	Technical documentation for materials taken from harmonized standards, EAM or particular appraisals	Annex I, 4.2 (b)
Clause 4, Clause 5, Clause 6, Clause 7	Conformity of materials and inspection documents	Annex I, 4.3

**WARNING** — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

## Bibliography

- [1] EN ISO 9001, *Quality management systems — Requirements (ISO 9001)*
- [2] Directive 97/23/EC of the European Parliament and the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment (PED), Official Journal of the European Communities, L181, 1997
- [3] PED Guidelines under: [http://ec.europa.eu/enterprise/sectors/pressure-and-gas/documents/ped/index\\_en.htm](http://ec.europa.eu/enterprise/sectors/pressure-and-gas/documents/ped/index_en.htm)
- [4] List of Notified Bodies under PED: <http://ec.europa.eu/enterprise/newapproach/nando/index.cfm>







# British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

## About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards-based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

## Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at [bsigroup.com/standards](http://bsigroup.com/standards) or contacting our Customer Services team or Knowledge Centre.

## Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at [bsigroup.com/shop](http://bsigroup.com/shop), where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

## Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to [bsigroup.com/subscriptions](http://bsigroup.com/subscriptions).

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

**PLUS** is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit [bsigroup.com/shop](http://bsigroup.com/shop).

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email [bsmusales@bsigroup.com](mailto:bsmusales@bsigroup.com).

## BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

## Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

## Copyright

All the data, software and documentation set out in all British Standards and other BSI publications are the property of and copyrighted by BSI, or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI. Details and advice can be obtained from the Copyright & Licensing Department.

## Useful Contacts:

### Customer Services

**Tel:** +44 845 086 9001

**Email (orders):** [orders@bsigroup.com](mailto:orders@bsigroup.com)

**Email (enquiries):** [cservices@bsigroup.com](mailto:cservices@bsigroup.com)

### Subscriptions

**Tel:** +44 845 086 9001

**Email:** [subscriptions@bsigroup.com](mailto:subscriptions@bsigroup.com)

### Knowledge Centre

**Tel:** +44 20 8996 7004

**Email:** [knowledgecentre@bsigroup.com](mailto:knowledgecentre@bsigroup.com)

### Copyright & Licensing

**Tel:** +44 20 8996 7070

**Email:** [copyright@bsigroup.com](mailto:copyright@bsigroup.com)



...making excellence a habit.™