

Technical product specification (TPS) — Specification

ICS 01.100.01; 01.110

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee TDW/4, Technical product specification — Methodology, representation and verification, upon which the following bodies were represented:

- Ball and Roller Bearing Manufacturers' Association
- BEAMA — Power Generation Contractors' Association
- British Standards Society
- Cast Metals Federation
- GAMBICA
- Gauge and Tool Makers' Association
- Institution of Engineering Designers
- Institute of Incorporated Engineers
- Joint Information Systems Committee
- London South Bank University
- Loughborough University
- Ministry of Defence — Defence Standardization
- National Physical Laboratory
- Railway Industry Association
- Society of British Aerospace Companies Ltd.
- Society of Motor Manufacturers and Traders
- Taylor Hobson Ltd.
- United Kingdom Accreditation Service
- United Kingdom Laser and Electro-Optic Association
- Writing Instruments Association

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 21 October 2004

© BSI 21 October 2004

First published August 2000
Second edition October 2002
Third edition October 2004

The following BSI references relate to the work on this British Standard:
Committee reference: TDW/4
Draft for comment: 04/30093572 DC

ISBN 0 580 44512 7

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
Foreword	iii
1 Scope	1
2 References	1
3 Terms and definitions	1
4 Global standards underpinning BS 8888	2
5 Expression of the concept	3
6 Types of documentation	4
7 Relationships	5
8 Presentation media	5
9 Scales	6
10 Lines, arrows and terminators	6
11 Lettering	7
12 Projections	7
13 Views	7
14 Sections	8
15 Item references	8
16 Symbols and abbreviations	9
17 Representation of features	10
18 Representation of components	11
19 Dimensioning and tolerancing	12
20 Geometrical tolerancing	21
21 Surface texture indication	22
22 Graphical representation and annotation of 3-D data (3-D modelling output)	22
23 Security	23
24 Storage and retrieval	23
25 Marking	23
26 Protection notices	24
Annex A (normative) Normative references	25
Annex B (informative) Informative references	30
Annex C (normative) Standard symbols and abbreviations	32
Annex D (normative) Document security — Enhanced	34
Annex E (normative) Geometric dimensioning and tolerancing	34
Annex F (informative) Technical product specification — Current activity and future development	36

	Page
Figure 1 — Metric reference graduations	6
Figure 2 — Auxiliary view showing true shape of inclined surface	8
Figure 3 — Dimensions of diameters placed on the view providing greatest clarity	13
Figure 4 — Diameter dimensions indicated by leader lines	14
Figure 5 — Dimensioning of concentric diameters on partial views	14
Figure 6 — Dimensioning of holes	15
Figure 7 — Dimensioning of keyways	15
Figure 8 — Interpretation of limits of size with dependency of size and form	17
Figure 9 — Interpretations using the principle of independency for a cylindrical component for which a tolerance of size only is given on the drawing	19
Figure 10 — Examples of general tolerance notes	20
Figure 11 — Comparison of chain and parallel methods of dimensioning toleranced centre distances	20
Figure 12 — Coaxiality tolerance of a single feature referred to a datum feature	21
Figure 13 — Method of indicating that the independency system of tolerancing has been used	24
Figure 14 — Method of indicating that the dependency system of tolerancing has been used	24
Figure F.1 — The GPS matrix model	38
Figure F.2 — Model of the relationship between specification, verification and the actual workpiece	39
Figure F.3 — The duality principle	40
Table A.1 — Normative references	25
Table B.1 — Informative references	30
Table C.1 — Standard symbols and abbreviations	32

Foreword

This British Standard has been prepared by Technical Committee TDW/4. It revises and supersedes BS 8888:2002, which is withdrawn.

This third revision updates and extends the second edition, bringing in relevant standards published during 2003 and the first few months of 2004. Particular attention is drawn to the publication of the revised BS ISO 1101, *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*, expected soon after this standard is approved, which is applied as a normative element in this standard.

It is important to note that, notwithstanding the effect of the “most recent edition rule” that applies throughout this standard, the “interpretation rules for specifications indicated in a Technical Product Specification (TPS) (previously TPD set)”, have precedence¹⁾.

Work on 3-D modelling standards continues to be a priority and considerable progress has been made since the release of the draft for development, DD 16792 released in 2002. This document has now been updated and its release for public comment (as a draft of BS ISO 16792) will enable industry in the UK to continue to put the modelling output procedures to practical use and influence the final content of the International Standard, through input of informed comment to the National Committee. This revision of BS 8888 continues to apply the proposals for digital product definition-data practices as recommendations only but this status will inevitably change to normative, with the publication of the full International Standard, early in 2005.

BS 8888 does not set out to explain to or educate the user in the principles and methodology required for full implementation of TPS. Its function is to draw together, in an easily accessible manner, the full complement of relevant International Standards, leaving those standards to provide such explanation as might be appropriate. However, where the Technical Committee believes such explanation to be inadequate, further explanation has been provided within the body of this standard. Further, BSI does make educational/training aids available in this field and is currently planning a major education/training initiative which, it is expected, will lead to a programme of competency certification.

All dimensions shown in the figures in this standard are in millimetres.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its 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 to iv, pages 1 to 41 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

¹⁾ See Clause 4.

1 Scope

This British Standard specifies requirements for the preparation of all forms of technical product specification. The requirements cross-refer substantially to International and European Standards which have been implemented as British Standards either in the BS ISO, BS EN, BS EN ISO series or as International Standards re-numbered as British Standards. The requirements are supplemented by commentary and recommendations on technical matters that are considered to be of assistance to users of this standard in the UK and which do not conflict with published International Standards in this field.

Annex A and Annex B list cross-referenced standards and other documents, normative and informative respectively, by primary reference, indicating the Standards Kit (see Note) in which they can be found. Annex C (normative) provides a list of standard symbols and abbreviations. Annex D (normative) sets out requirements for enhanced document security and Annex E (normative) identifies the main differences in approach between the provisions of this standard and those of the American Society of Mechanical Engineers (ASME) Y14.5 series. Annex F (informative) provides a summary report on the concepts that have underwritten the development of technical product specification (TPS) and its primary constituent, geometrical specification, to date and discusses some of the drivers for future change.

NOTE This British Standard is available in CD-ROM format, in which form it is accompanied by the full range of cross-referenced standards, all hyperlinked to the relevant reference(s) within the text of the primary standard. When used in paper form, it is necessary that this standard be used in conjunction with the relevant cross-referenced standards. To facilitate this, four Standards Kits are available under the general heading BS 8888, *Technical Product Specification*, with each kit comprised of a group of the cross-referenced standards relating to a particular aspect of the scope of BS 8888.

2 References

2.1 Normative references

The normative documents listed in Annex A contain provisions which, through reference in this text, constitute provisions of this British Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

2.2 Informative references

This British Standard refers to other publications that provide information or guidance. These informative documents are listed in Annex B. Care should be taken to ensure that reference is made to the most recent edition.

3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply, together with those given in:

BS ISO 10209-1	<i>Technical product documentation — Vocabulary — Part 1: Terms relating to technical drawings: general and types of drawing.</i>
BS EN ISO 10209-2	<i>Technical product documentation — Vocabulary — Part 2: Terms relating to projection methods.</i>
BS EN ISO 14660-1	<i>Geometrical product specification (GPS) — Geometrical features — Part 1: General terms and definitions.</i>

3.1

technical product document

TPD

means of conveying all or part of a design definition or specification of a product for manufacturing and verification purposes

3.2

technical product specification

TPS

collection of technical product documents comprising the complete design definition and specification of a product, for manufacturing and verification purposes

NOTE 1 A TPS was previously called a technical product document set.

NOTE 2 A TPS can consist of one or more TPDs.

4 Global standards underpinning BS 8888

4.1 Introduction

The ISO Geometrical Product Specification (GPS) Standards Matrix (see F.4) embodies the concept of “global” standards that underpin the whole GPS process. This principle is adopted in BS 8888 and the following standards shall be applied as “global” standards in support of BS 8888.

BS EN ISO 1	<i>Geometrical Product Specifications (GPS) — Standard reference temperature for geometrical product specification and verification.</i>
PD 6461-1	<i>General metrology — Part 1: Basic and general terms (VIM).</i>
PD 6461-3	<i>General metrology — Part 3: Guide to the expression of uncertainty in measurement (GUM).</i>
BS ISO 10579	<i>Technical drawings — Dimensioning and tolerancing — Non-rigid parts.</i>
BS EN ISO 14253-1	<i>Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 1: Decision rules for proving conformance or non-conformance with specifications.</i>
BS EN ISO 14253-2	<i>Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 2: Guide to the estimation of uncertainty in GPS measurement, in calibration of measuring equipment and in product verification.</i>
ISO/TR 14638	<i>Geometrical product specification (GPS) — Masterplan.</i>
DD TS 17450-1	<i>Geometrical product specification (GPS) — Part 1: Model for geometrical specification and verification.</i>
DD TS 17450-2	<i>Geometrical product specification (GPS) — Part 2: Operators and uncertainties.</i>

NOTE DD TS 17450-1 was close to publication at the time this standard was approved.

4.2 The fundamental TPS principles

4.2.1 Introduction

The following principles shall always be applied where compliance with BS 8888 is claimed.

4.2.2 The operator principle

An operator is a definition of a geometrical characteristic based upon operations and controlled unambiguously by indication in a TPD. Technical specification operators are formulated as virtual measuring procedures. The verification operator is the physical implementation of the specification operator in a measuring process (see DD TS 17450-1 and DD TS 17450-1-2).

4.2.3 The duality principle

The principle that the specification operator defines the requirement in the TPS is the core of the “duality principle”, which requires that the specification operator be defined independently of any measuring procedure or item of measuring equipment. Were the verification operator (measuring procedure) to be a theoretically perfect implementation, the measurement result would be without measurement uncertainty. However, likely deviation of the verification operator from the specification operator indicated in the TPS will contribute to the overall measurement uncertainty (see DD TS 17450-1 and DD TS 17450-1-2).

4.2.4 The TPS at its acceptance date is definitive, principle

What is not specified in a TPS at the date of acceptance cannot be required. Requirements only exist where explicitly indicated in the TPS at the date of acceptance or if defined in BS 8888, at that date. The main implication of this is that the acceptance date of the TPS implicitly restricts the interpretation of the specification contained within the TPS to those standards in force at the date of acceptance.

4.2.5 The default principle

A complete specification operator can be indicated by the most concise indication for the relevant geometrical characteristic (i.e. the *basic geometrical specification*). The basic geometrical specification constitutes the default definition of the specification operator, which might not be visible in the TPS (see DD TS 17450-2).

4.2.6 The reference condition principle

If not otherwise indicated in the TPS, the reference temperature for the tolerances given in that TPS is 20 °C (see BS EN ISO 1) and the workpiece is assumed not to be influenced by any other external physical condition.

4.2.7 The uncertainty in conformance principle

Within this TPS system, three categories of uncertainty are defined (DD TS 17450-2):

- a) specification uncertainty (attributed to the designer);
- b) correlation uncertainty (attributed to the designer); and
- c) measurement uncertainty (attributed to the metrologist).

Where no prior agreement as to the application of uncertainty exists, between two (or more) parties and:

- where conformance with a specification is to be proven, measurement uncertainty, U reduces the specification to the conformance zone at both tolerance limits and shall always be applied against the interests of the party making the measurement; or
- where non-conformance with a specification is to be proven, measurement uncertainty, U expands the tolerance at both tolerance limits, uncertainty of measurement always counts against the party making the measurement and always acts against the party making the measurement.

5 Expression of the concept

COMMENTARY AND RECOMMENDATIONS

Before specifying a technical product, the broad requirement should be established, with particular attention being paid to the functions that the product will be expected to fulfil. The conceptual, design intent can then be depicted in the form of a design layout, scheme or simplified computer-generated model, although this will not normally be used in the detailed TPD for manufacturing purposes.

The importance of this stage cannot be over-emphasized. Clear understanding of the purpose and function intended for the eventual product, knowledge of the requirements of the available manufacturing methods and awareness of relevant verification procedures, will help to ensure that the degree of complexity of the specification is appropriate and adequate.

It is not the aim of this standard to attempt to instruct or constrain the design process.

It is, however, of the greatest importance that the designer presents the product of his design process, i.e. the TPS containing the technical, product specification, in a manner that avoids ambiguity and any risk of misunderstanding or misinterpretation. For this reason, it is imperative that the designer be familiar with the requirements of this standard and aware of the increased precision that its use can bring.

For these and many other reasons, management of the overall design process can be complex and the following standards might be found to be of assistance in this field.

- BS 5760-14 *Reliability of systems, equipment and components — Part 14: Guide to formal design review.*
- BS 5760-23 *Reliability of systems, equipment and components — Part 23: Guide to life cycle costing.*
- BS 7000-1 *Design management systems — Part 1: Guide to managing innovation.*
- BS 7000-2 *Design management systems — Part 2: Guide to managing the design of manufactured products.*
- BS 7000-10 *Design management systems — Part 10: Glossary of terms used in design management.*
- BS 8444-3 *Risk management — Part 3: Guide to risk analysis of technological systems.*

6 Types of documentation

COMMENTARY AND RECOMMENDATIONS

6.1 General

The technical product document should, if practicable, be of a type listed in one of the following standards, and should be prepared in accordance with any corresponding recommendations in the following standards.

- BS 5070-1 *Engineering diagram drawing practice — Part 1: Recommendations for general principles.*
- BS ISO 7573 *Technical drawings — Item lists.*
- BS ISO 10209-1 *Technical product documentation — Vocabulary — Part 1: Terms relating to technical drawings: general and types of drawing.*

6.2 Combined drawing

A combined drawing should display an assembly, item list and constituent details, drawn separately but all on the same drawing.

6.3 Diagram

The function of a system, or the relationship between component parts, may be depicted in a diagram employing simplified representations, as recommended in the following standards.

- BS EN ISO 3952-1 *Kinematic diagrams — Graphical symbols — Part 1.*
- BS EN ISO 3952-2 *Kinematic diagrams — Graphical symbols — Part 2.*
- BS EN ISO 3952-3 *Kinematic diagrams — Graphical symbols — Part 3.*
- BS EN ISO 3952-4 *Technical drawings — Simplified representation for kinematics — Part 4: Miscellaneous mechanisms and their components.*
- BS 5070-1 *Engineering diagram drawing practice — Part 1: Recommendations for general principles.*
- BS 5070-3 *Engineering diagram drawing practice — Part 3: Recommendations for mechanical/fluid flow diagrams.*
- BS 5070-4 *Engineering diagram drawing practice — Part 4: Recommendations for logic diagrams.*
- BS EN 61082-2 *Preparation of documents used in electrotechnology — Part 2: Function-oriented diagrams.*

6.4 Document list — Drawing list

A document list should consist of a list of all graphical representations and selected specifications required to build the assembly from which it derives its title and primary identifier.

7 Relationships

COMMENTARY AND RECOMMENDATIONS

The careful targeting of TPDs to known or intended users will greatly assist the accuracy with which the specification is converted into the final product. While precision and avoidance of ambiguity should always be paramount, the means employed to convey this information should always be seen to match the capability, or potential capability, of the available or achievable manufacturing facility. Specification beyond this level is unlikely to produce satisfactory results and will often prove expensive, both in terms of the cost of the over-specification itself and in terms of inadequate or unacceptable product.

8 Presentation media

8.1 General

The presentation of the drawings shall conform to the following standards.

BS EN ISO 5457	<i>Technical product documentation — Sizes and layout of drawing sheets.</i>
BS EN ISO 7200:2004	<i>Technical product documentation — Data fields in title blocks and document headers.</i>

NOTE BS EN ISO 7200:2004 implements ISO 7200:2004 without change. This revision was developed to extend the scope of the standard to include TPS presented wholly or in part in the form of meta-data. Throughout its development, the United Kingdom expressed strong reservation as to the completeness of its content, particularly with regard to the omission of certain elements of the 1984 version still considered to be valid, but was unable to achieve consensus in support of their restoration. For this reason, BS 8888 includes (see 8.2) the requirement to apply certain additional standards as part of the application of BS EN ISO 7200:2004, all of which are already cross-referenced from BS 8888. These requirements are not in conflict with the provisions of the revised BS EN ISO 7200:2004 and do no more than restore these missing elements. Particular attention is drawn to Figure 1 and Figure 2 of BS EN ISO 7200:2004, which are provided by way of example but are not wholly correct in that the text is in lower case. These examples should be viewed in conjunction with the relevant clauses of BS EN ISO 3098 (all parts) and BS EN ISO 6428.

8.2 Application of BS EN ISO 7200:2004

The application of BS EN ISO 7200:2004 shall be extended to include relevant provisions of the following standards.

BS EN ISO 3098-0	<i>Technical product documentation — Lettering — Part 0: General requirements.</i>
BS EN ISO 3098-2	<i>Technical product documentation — Lettering — Part 2: Latin alphabet, numerals and marks.</i>
BS EN ISO 3098-3	<i>Technical product documentation — Lettering — Part 3: Greek alphabet.</i>
BS EN ISO 3098-4	<i>Technical product documentation — Lettering — Part 4: Diacritical and particular marks for the Latin alphabet.</i>
BS EN ISO 3098-5	<i>Technical product documentation — Lettering — Part 5: CAD lettering of the Latin alphabet, numerals and marks.</i>
BS EN ISO 3098-6	<i>Technical product documentation — Lettering — Part 6: Cyrillic alphabet.</i>
BS EN ISO 6428	<i>Technical drawing — Requirements for microcopying.</i>
BS ISO 10209-1	<i>Technical product documentation — Vocabulary — Part 1: Terms relating to technical drawings: general and types of drawings.</i>

COMMENTARY AND RECOMMENDATIONS ON CLAUSE 8

8.3 Format

Drawing sheets and other documents should be presented in one of the following formats:

- a) landscape: intended to be viewed with the longest side of the sheet horizontal;
- b) portrait: intended to be viewed with the longest side of the sheet vertical.

8.4 Orientation marks

Any orientation mark should be in the form of a triangular arrowhead located on the centring mark and adjacent to and pointing towards the intended position of the drawing user.

8.5 Metric reference graduation

Any metric reference graduation (scale bar) should be figure-less, have a minimum length of 100 mm and be graduated at 10 mm intervals. It should be located symmetrically about a centring mark, near the frame and within the border. It should have a maximum width of 5 mm and the continuous strokes should be of 0.5 mm maximum thickness (see Figure 1).



Figure 1 — Metric reference graduations

9 Scales

Scales shall conform to the following standard.

BS EN ISO 5455 *Technical drawings — Scales.*

10 Lines, arrows and terminators

10.1 Lines

Lines shall conform to the following standards, as appropriate.

BS EN ISO 128-20	<i>Technical drawings — General principles of presentation — Part 20: Basic conventions for lines.</i>
BS EN ISO 128-21	<i>Technical drawings — General principles of presentation — Part 21: Preparation of lines by CAD systems.</i>
BS ISO 128-22	<i>Technical drawings — General principles of presentation — Part 22: Basic conventions and applications for leader lines and reference lines.</i>
BS ISO 128-23	<i>Technical drawings — General principles of presentation — Part 23: Lines on construction drawings.</i>
BS ISO 128-24	<i>Technical drawings — General principles of presentation — Part 24: Lines on mechanical engineering drawings.</i>
BS ISO 128-25	<i>Technical drawings — General principles of presentation — Part 25: Lines on shipbuilding drawings.</i>

10.2 Arrows and terminators

Arrows and terminators composed of lines shall conform to the following standard.

BS ISO 129-1	<i>Technical drawings — Indications of dimensions and tolerances — Part 1: General principles.</i>
--------------	--

NOTE BS ISO 129-1 was close to publication at the time this standard was approved.

11 Lettering

11.1 General

Lettering shall conform to the following standard.

BS EN ISO 3098-0 *Technical product documentation — Lettering — Part 0: General requirements.*

Lettering shall also conform to the following standards, as appropriate.

BS EN ISO 3098-2 *Technical product documentation — Lettering — Part 2: Latin alphabet, numerals and marks.*

BS EN ISO 3098-3 *Technical product documentation — Lettering — Part 3: Greek alphabet.*

BS EN ISO 3098-4 *Technical product documentation — Lettering — Part 4: Diacritical and particular marks for the Latin alphabet.*

BS EN ISO 3098-5 *Technical product documentation — Lettering — Part 5: CAD lettering of the Latin alphabet, numerals and marks.*

BS EN ISO 3098-6 *Technical product documentation — Lettering — Part 6: Cyrillic alphabet.*

11.2 Notes

When a landscape-format drawing sheet is used in its normal orientation, with the title block at the bottom right-hand corner, notes shall be lettered parallel to the long side of the sheet. When a landscape-format drawing sheet is used in portrait orientation, the title block shall be located at the left-hand side and notes shall be lettered parallel to the short side of the sheet.

COMMENTARY AND RECOMMENDATIONS ON 11.2

Placement

Notes of a general nature should, wherever practicable, be grouped together and not distributed over the drawing. Notes relating to specific details should appear near the relevant feature, but not so near as to crowd the view.

Underlining

Underlining of notes is not recommended. Where emphasis is required, larger characters should be used.

12 Projections

Projections shall conform to one of the following standards:

BS EN ISO 5456-2 *Technical drawings — Projection methods — Part 2: Orthographic representations.*

BS EN ISO 5456-3 *Technical drawings — Projection methods — Part 3: Axonometric representations.*

BS ISO 5456-4 *Technical drawings — Projection methods — Part 4: Central projection.*

BS EN ISO 10209-2 *Technical product documentation — Vocabulary — Part 2: Terms relating to projection methods.*

NOTE BS EN ISO 5456-1, *Technical drawing — Projection methods — Part 1: Synopsis*, contains a survey of the various projection methods.

13 Views

13.1 General

Views shall conform to the following standards.

BS ISO 128-30 *Technical drawings — General principles of presentation — Part 30: Basic conventions for views.*

BS ISO 128-34 *Technical drawings — General principles of presentation — Part 34: Views on mechanical engineering drawings.*

13.2 Auxiliary views

Where true representation of features is necessary, but cannot be achieved on the orthographic views, the features shall be shown in projected auxiliary views. An example is shown in Figure 2.

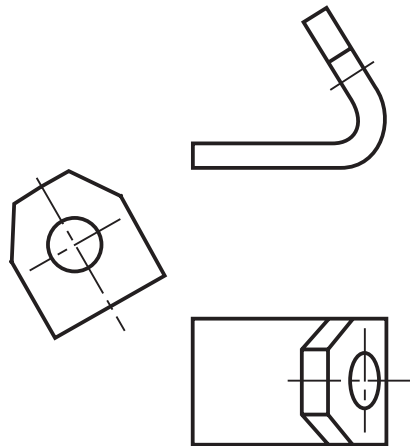


Figure 2 — Auxiliary view showing true shape of inclined surface

14 Sections

Sections shall conform to the following standards.

- | | |
|---------------|--|
| BS ISO 128-40 | <i>Technical drawings — General principles of presentation — Part 40: Basic conventions for cuts and sections.</i> |
| BS ISO 128-44 | <i>Technical drawings — General principles of presentation — Part 44: Sections on mechanical engineering drawings.</i> |
| BS ISO 128-50 | <i>Technical drawings — General principles of presentation — Part 50: Basic conventions for representing areas on cuts and sections.</i> |

NOTE ISO 128-44 and ISO 128-50 contained presentational defects in some figures, which have, unavoidably, been carried forward to the BS implementations. It is stressed that the text of these standards is technically correct and users should, therefore, regard the figures as illustrations only.

15 Item references

Item references shall conform to the following standard.

- | | |
|----------------|--|
| BS EN ISO 6433 | <i>Technical drawings — Item references.</i> |
|----------------|--|

16 Symbols and abbreviations

16.1 General

16.1.1 Abbreviations (text equivalents) shall be the same in the singular and plural. Full stops shall not be used except where the abbreviation forms a word (e.g. NO. as an abbreviation for “number”).

16.1.2 Symbols used for physical quantities and units of measurement shall conform to the following standards, as appropriate.

BS ISO 31-0	<i>Specification for quantities, units and symbols — Part 0: General principles.</i>
BS ISO 31-1	<i>Specification for quantities, units and symbols — Part 1: Space and time.</i>
BS ISO 31-2	<i>Specification for quantities, units and symbols — Part 2: Periodic and related phenomena.</i>
BS ISO 31-3	<i>Specification for quantities, units and symbols — Part 3: Mechanics.</i>
BS ISO 31-4	<i>Specification for quantities, units and symbols — Part 4: Heat.</i>
BS ISO 31-5	<i>Specification for quantities, units and symbols — Part 5: Electricity and magnetism.</i>
BS ISO 31-6	<i>Specification for quantities, units and symbols — Part 6: Light and related electromagnetic radiations.</i>
BS ISO 31-7	<i>Specification for quantities, units and symbols — Part 7: Acoustics.</i>
BS ISO 31-8	<i>Specification for quantities, units and symbols — Part 8: Physical chemistry and molecular physics.</i>
BS ISO 31-9	<i>Specification for quantities, units and symbols — Part 9: Atomic and nuclear physics.</i>
BS ISO 31-10	<i>Specification for quantities, units and symbols — Part 10: Nuclear reactions and ionizing radiations.</i>
BS ISO 31-11	<i>Specification for quantities, units and symbols — Part 11: Mathematical signs and symbols for use in physical sciences and technology.</i>
BS ISO 31-12	<i>Specification for quantities, units and symbols — Part 12: Characteristic numbers.</i>
BS ISO 31-13	<i>Specification for quantities, units and symbols — Part 13: Solid state physics.</i>
BS ISO 1000	<i>Specification for SI Units and recommendation for the use of their multiples and of certain other units.</i>

16.2 Standard symbols and abbreviations

If the terms listed in Table C.1 need to be abbreviated, only the symbols and abbreviations given in Table C.1 shall be used. These symbols and abbreviations shall not be used to represent any other concept.

COMMENTARY AND RECOMMENDATIONS ON CLAUSE 16

Only commonly used and easily understood symbols and abbreviations should be used; others should be avoided and the intended meaning expressed in words. Where symbols are used by convention to represent a system, method or process, they should conform to the appropriate British Standard.