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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Technical Committee No. 3 Documentation and graphical symbols

Sub-Committee 3B: Documentation

Working draft for the IEC 62079 FDIS

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PREPARATION OF INSTRUCTIONS

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62079 has been prepared by sub-committee 3B: Documentation of IEC technical committee 3: Documentation and graphical symbols, and ISO technical committee 10: Technical drawings, product definitions and related documentation.

The text of this standard is based on the following documents:

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

Annexes A, B, C and D are for information only.

INTRODUCTION

The purpose of this International Standard is to provide a compilation of requirements and methodological rules to be followed when creating instructions for users of products.

Instructions are the means of conveying information to the user on how to use the product in a correct and safe manner. As a means of communication, texts, words, signs, symbols, diagrams, illustrations and audible or visible information are used, separately or in combination.

Depending on product characteristics, complexity, risk and legal requirements, the information for users may be on the product itself or its packaging or in accompanying materials; for example, leaflets, manuals, audio and video tapes, and computer-based presentation, separately or in combination.

No general standard can provide comprehensive information covering each special case. This International Standard, therefore is to be used in conjunction with the requirements of specific product standards or, where no such standards exist, with the relevant requirements of standards for similar products. Users of this International Standard are reminded that some products and the accompanying instructions for their use are subject to statutory regulations that may include special requirements for safety and disposal. This International Standard serves therefore as a frame of reference for future product-specific standards.

TheWhich instructions that will be delivered for a product in many cases results from negotiations between manufacturer/supplier and customer. For such negotiations this standard can serve as a framework listing all possible kinds of instructions.

It should also be mentioned that in many countries the amount of instructions that have to be delivered depends on regional or national legal regulations, e.g. the machine directive of the European Union.

Assessment of the quality of instructions should follow common criteria. This International Standard therefore has informative annexes containing some practical recommendations and a proposed methodology for assessment. The annexes A, B, and C are addressed primarily to experts engaged in such assessment work but they may also be helpful to the Standard's principal target groups named above.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PREPARATION OF INSTRUCTIONS

1 Scope

This International Standard provides general principles and detailed requirements for the design and formulation of all types of instructions that will be necessary or helpful for products of all kinds ranging from small, simple ones, such as a tin of paint, to large or highly complex ones, such as a large industrial installation. It is intended for application by

– product manufacturers, technical writers, technical illustrators, software designers, translators or other people engaged in the work of conceiving and drafting such instructions;

– authorized representatives of the product manufacturer in the country of product installation and/or usage.

It will also be helpful in contract negotiations between product supplier and customer.

This standard does not establish a fixed amount of documentation that has to be delivered together with a product. This would obviously not be possible because this standard has to be valid for all kind of products but the amount of documentation very much depends on the complexity of the product. Therefore this standard lists all possible kinds of instructions one can think of. What this standard does aim to standardize is **how** such instructions are to be prepared.

2 Normative References

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

IEC 60050-191:1990, International Electrotechnical Vocabulary; Chapter 191: Dependability and quality of service

IEC 60073: 1996, Basic and safety principles for man-machine interface, marking and identification - Coding principles for indication devices and actuators

IEC 60204-1: 1997, Electrical equipment of industrial machines - Part 1: General requirements

IEC 60417, (all parts) Graphical symbols for use on equipment

IEC 60617(all parts), Graphical symbols for diagrams

IEC 60664-1: 1992, Insulation coordination for equipment within low-voltage systems, Part 1: Principles, requirements and tests

IEC 60848 : 1988, Preparation of function charts for control systems

IEC 61082-1: 1991, Preparation of documents used in electrotechnology; Part 1: General requirements

IEC 61082-3: 1993, Preparation of documents used in electrotechnology; Part 3: Connection diagrams, tables and lists

IEC 61082-4: 1996, Preparation of documents used in electrotechnology; Part 4: Location and installation documents

IEC 61310-1:1995, Safety of machinery-Indication, marking and actuation – Part 1: Requirements for visual, auditory and tactile signals

IEC 61346-1: 1996, Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations Part 1: Basic rules

IEC 61355: 1997, Classification and designation of documents for plants, systems and equipment

IEC 61506: 1997, Industrial-process measurement and control; Documentation of application software

IEC 81714-2: 1998, Design of graphical symbols for use in the technical documentation of products – Part 2: Specification for graphical symbols in a computer sensible form including graphical symbols for a reference library, and requirements for their interchange

ISO 1000: 1992, SI units and recommendations for the use of their multiples and of certain other units

ISO 3864: 1984, Safety colours and safety signs

ISO 7000: 1989, Graphical symbols for use on equipment

ISO 7001: 1990, Public information symbols

ISO 9241 (all parts), Ergonomic requirements for office work with visual display terminals (VDTs)

ISO 10303-203: 1994, Industrial automation systems and integration. Product data representation and exchange. Part 203: Application protocol: Configuration controlled design

ISO 10628: 1997, Flow diagrams for process plants -- General rules

ISO/TR 12100-1:1992, Safety of machinery -- Basic concepts, general principles for design -- Part 1: Basic terminology, methodology

ISO/DIS 14617 (all parts), Graphical symbols for use on diagrams

ISO/IEC Guide 14: 1977, Product information for consumers

ISO/IEC Guide 50: 1987, Child safety and standards - General guidelines

ISO/IEC Guide 51: 199x (Draft for new edition), Guidelines for the inclusion of safety aspects in standards

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1
change
activity that alters an original, a revision, or supplement of the product, or incorporates a change request into the design, and as a result establishes a new version of the product [ISO 10303-203, modified]

3.2
commissioning
procedures prior to or related to handing over a product ready for putting into service, including final acceptance testing; handing over of drawings, instructions for operation, maintenance and repair; if necessary, instructing personnel

3.3
guard
part of a product specifically used to provide protection by means of a physical barrier [3.22 of ISO 12100, modified]

3.4
harm
physical injury or damage to the health of people or damage to property or the environment [3.1 of ISO/IEC Guide 51]

3.5
hazard
potential source of harm [3.2 of ISO/IEC Guide 51]

3.6
instruction (for use)
information by the producer of a product for the safe and efficient use of the product

3.7
instruction material
any applicable means for the transfer of information containing instructions

3.8
manual
document containing user information, for example: instructions

3.9
maintenance
combination of all technical and administrative actions intended to retain an item or a product in, or restore it to, a useful and safe condition in which it can perform the required function; this includes supervising actions, reconditioning, repairing, adjusting, and cleaning [IEC 60050 191-07-01, modified]

3.10
marking
signs or inscriptions for the identification of the type of a component or device attached by the manufacturer of the component or device and for the designation of certain features of the product for its safe use [3.34 of IEC 60204-1, modified]

3.11
modification
1. changes carried out on products in order to alter or enlarge their intended use.
2. revision of the instructions after a modification of a product.

3.12
protective device
safeguard (other than a guard) which reduces risk (e.g. mechanical trip device, electrosensitive protective equipment, pressure sensitive protective device) [3.23 of ISO 12100]

3.13
repair
part of corrective maintenance in which actions are performed on an item including replacement of worn out parts and reworking of defective or damaged parts or functions. [IEC 60050-191-07-19, modified]

3.14
reasonably foreseeable misuse
use of a product, process or service in a way not intended by the supplier, but which may result from readily predictable human behaviour [3.14 of ISO/IEC Guide 51]

3.15
risk
combination of the probability of occurence of harm and the severity of that harm [3.5 of ISO/IEC Guide 51]

3.16
service
set of functions offered to users by supplier's organization supporting clients with maintenance [IEC 60050-191-01-04, modified]

3.17
skilled person
person with relevant education and experience to enable him or her to perceive risks and to avoid hazards which operation or maintenance of a product can create [IEV 195-04-01 and 3.52 of IEC 60204-1, modified]

3.18
specification
document that states requirements, functionally related characteristics, processes, or rules related to a unique quality that an in-process part, a finished part, or a product shall possess. [4.2.31 of ISO 10303-203]

3.19
supplier
person or organization (e.g. manufacturer, contractor, installer, integrator) that provides products and/or services associated with a product

3.20
user
person or organization with the capability to put into service and/or to apply a product to perform a required function, including a series of actions from cleaning to de-commissioning at the end of product life

NOTE - A user of instructions can benefit from more efficient use of the product, from spending less time in explanatory work before using, repairing or modifying it, and from the reduced incidence of injuries and faults that arise from lack~~ing~~ of knowledge.

4 Principles

4.1 Instruction is part of the product

Instructions are an integral part of the delivery of the product. They shall allow and promote correct use of a product.

The content of information of the instructions shall cover all of the expected duties of the user. Therefore the content depends on the kind of delivery. If for example erection and commissioning are included in the delivery, the instructions supplied to the user contain only information on operation and maintenance.

4.2 Minimizing risks

Instructions are an integral part of the safety conception of a product. They shall provide information to avoid an intolerable risk for the user, damage to the product and malfunction or inefficient operation but they are not intended to compensate for design deficiencies. They shall directly help to avoid foreseeable misuse which may lead to hazards, therefore:

– reasonably foreseeable misuse and risks of the product shall be mentioned, and

– adequate warnings shall be given (in accordance with ISO/IEC Guide 51).

NOTE - In most countries the supplier has a legal obligation to include such warnings.

4.3 Special handling

If applicable, requirements for special protective measures shall be given, such as adult supervision or wearing special clothing needed to protect users and bystanders. Also warning notices shall be given if necessary to particular groups such as children and elderly and disabled people (see ISO/IEC Guide 50).

4.4 Special target groups

If some of the instructions are directed only to a specific group of persons (for example for installation, repair or certain kinds of maintenance), those instructions shall be given separately and shall be adequately marked. In some cases, they need not accompany the product.

4.5 Short-life products

For products with a limited safe or effective life, clear information shall be provided on the year of manufacture and/or of expiry.

4.6 Considerations as to the nature of instructions

One or more of the following elements or product characteristics

– risks (see 3.15);

– environmental, legal, or similar requirements;

– the product design (for example: complexity);

– the fact that the user needs the information because usage is not self-evident from the product,

shall be considered and determine whether

– the location of the instructions (4.6.1);

– the chosen media of communication (4.6.2);

– the durability of the instructions (4.6.3);

– the availability of the instructions (4.6.4);

– a user guidance system (4.6.5);

– user training (4.6.6);

are appropriate to the given task.

4.6.1 Location

Instructions - or relevant parts of them - shall be given in one or more of the following ways:

– on the product itself (e.g. by symbols, colours, short text);

– on the packaging (e.g. instructions for unpacking);

– in accompanying documentation (e.g. leaflet or manual) or online-documentation (e.g. CD-ROM, Web, Online-Help-System);

– in accompanying material (e.g. reminder cards, stickers, computer program and display).

Where instructions are complex, it is helpful if certain important messages are given or displayed on the product, for example by means of short reference or reminder cards, stickers, symbols or labels (see also 6.2.4).

4.6.2 Media

It shall be decided which means of communication are adequate in each case, for example :

– graphical symbols;

– text or voice communication;

– leaflets with text and illustrations;

– manuals for users, maintenance staff;

– software-supported user guidance (4.6.5);

– user training course by video/audio (4.6.6), etc.

NOTE - Placing of instructions on the product itself has clear advantages in convenience for the user. But for some products, because of their small size or their shape, or because of the fact that they are partially obscured from view during use, placing some or all of the instructions in accompanying materials may be the best or only solution.

4.6.3 Durability

Depending on the environment at the intended place of application and the expected lifetime of the product the following considerations should be taken in account:

– Instructions on the product shall be permanent and clearly legible throughout the expected life of the product. (see also 6.2.4)

– Instructions given on packaging or in materials accompanying the product (such as leaflets, manuals, data media, etc.) shall be produced in durable form; they shall be designed and made so as to survive frequent use during the expected life of the product in the environment where the product is intended to be used.

4.6.4 Availability of instructions

It can be useful to mark instructions - except those needed only for initial assembly or installation - KEEP FOR FUTURE REFERENCE. Replacement copies of all such instructions should be kept available by the supplier throughout the expected life of the product.

Since packaging is often impermanent and can be destroyed in the unpacking process, the permanent placing of instructions, which need to be kept for future reference, on packaging is generally undesirable. Where this cannot be avoided (e.g. for practical reasons), the advice to keep them for future reference should be clearly noticeable. If only a part of the packaging needs to be kept, because it contains instructions, that part should be easily detachable from the rest of the packaging.

For instructions given on electronic data media measures shall be taken that they are readable during the whole lifetime of the product independent from for example software changes.

4.6.5 User guidance systems

Complex or hazardous systems often have control systems with fail-save functionality because the user is not able to control the whole operating system without the help of an automated control system. It is recommended that such systems provide the user, by a screen or other means, with a user guidance system, which includes adequate warnings of foreseeable unexpected situations.

Where appropriate, the requirements for symbols and audible and visual indications shall apply (see also 6.4 and 6.11).

4.6.6 User training

User training courses may be provided where the documentation alone cannot fulfil the general requirements given in 4.1 because of the complexity of the product or the necessity for more comprehensive user information or, where a sufficient knowledge of the user cannot be expected.

4.7 Creating instructions

4.7.1 Actuality and conformance

4.7.1.1 Relation between instructions and product

The instructions shall clearly relate to the product supplied, therefore they shall repeat the information with which the product is marked, i.e. name and address of the manufacturer, designation of series or type, serial number, and, if applicable, a mark showing that the product conforms to a recognized Standard.

4.7.1.2 Different models of a product

If more than one product variant is addressed by an instruction, the information for a specific variant shall be clearly recognizable.

4.7.1.3 Installation and maintenance support

Information to facilitate installation and maintenance shall include, for example, addresses of the supplier or authorized service stations of that specific product.

4.7.1.4 Consistent identification

Instructions shall be consistent with all other material about the same product issued by the supplier such as advertising or packaging.

4.7.1.5 Units of measurement

Quantities expressed in instructions shall comply with those units of measurement used on the equipment. Quantities will be preferably expressed in SI units (international system of units of measurement)or in derived SI units (see ISO 1000).

4.7.1.6 Optional modules and extras

Instructions concerning optional modules or extras should be kept clearly separated from general instructions and from instructions for other modules or extras (for example by using separate sections, headings, etc.), so that users are not confused by irrelevant information.

EXAMPLE: Products which have optional means for charging rechargeable batteries, and where non-rechargeable cells could be fitted and connected in the battery compartment, will have to be provided with a warning against the charging of non-rechargeable batteries and an indication of the type of rechargeable battery that can be used with the recharging circuit.

4.7.1.7 Special tools, equipment, material

Instructions shall include instructions for interconnecting accessories and other equipment, including indication of suitable accessories, detachable parts and any special materials, as far as appropriate. The instruction shall also contain the name and address of the supplier from whom special tools, materials, etc. and technical assistance can be obtained.

Repackaging instructions shall be provided, if necessary, for replacement, repair, reworking, refilling, etc.

4.7.2 Target group considerations

4.7.2.1 Understandable text

When it is foreseen that a product will be put to non-professional use, the instructions shall be written in a form that is readily understandable by an ordinary person. Unavoidable technical terms and expressions that might be open to misunderstanding by an ordinary person shall have their meaning explained.

4.7.2.2 Signals to be explained

Signals shall be explained such that they can be clearly recognized by the users.

4.7.2.3 Specific user instructions

If some of the instructions are directed to a specific group of users, such as adults supervising children, those instructions shall be given separately (see also 4.4 and 5.2).

4.7.2.4 Different instruction documents

Different kinds of instruction documents may be required. For example, for a car a guide for maintenance by the user and a workshop manual for a service agency. The same situation should be taken into consideration in case of division of labour, e.g. routine maintenance tasks carried out by the user, and repair tasks that require someone with adequate training or a trained technician with tools and adequate documentation.

4.7.3 Languages

4.7.3.1 General

When deciding on the language or languages of an instruction, the expected audience (target groups of the instruction) should be kept in mind. The languages for~~In which languages~~ instructions ~~have~~ to be delivered normally ~~is~~ are subject to contractual negotiations.

If more than one language is to be used, each language should be readily distinguished from the other(s), and efforts should be made to keep the translated text and the relevant illustration together.

It is preferable to provide separate instructions for different languages, for example as separate leaflets or manuals or as a separate section or page.

NOTE 1 - In many countries it is a legal requirement that information for users are given in the official language(s) of the country in which the product is to be used.

NOTE 2 - Depending on the target group of the instructions and the intended use of the information, different languages may be used for different instructions (e.g. instructions for maintenance, operation, disposal, etc.).

4.7.3.2 Using explanatory symbols

Because of the limited space generally available, giving instructions on a product may present problems in relation to languages, especially when the country where the instructions will be used has more than one official language. It may also be impossible to know the country of sale at the time of manufacture. These problems may be solved

- by the use of graphical symbols (see 6.4), provided they are clearly understandable by users,
- by the use of numerals, with the explanation of their meaning in the appropriate language(s) given in accompanying texts,
- by using certain words or abbreviations (for example, STOP, MAX./MIN.) which have become internationally acceptable.

4.7.3.3 Text adjacent to illustrations

Text and illustrations which need to be read and seen together should be adjacent. Where needed, illustrations shall be reproduced in each language. Where the design of the illustration can accomodate multiple languages for the caption of identified parts, then separate illustrations are not necessary. Captions to illustrations shall be written only in the language of the adjacent text (see also 6.3.2)

4.7.3.4 Proper translations (Quality of translations)

Where instructions are translated from the original language to others, all steps in the process, including checking and proof-reading, should be carried out by competent technical linguists.

5 Content of instructions

5.1 General

The following subclauses deal with the content of instructions in terms of requirements and recommendations. Some of the requirements and recommendations are:

– necessary for all products (e.g. 5.2.b), 5.2.e)),

– product specific (e.g. 5.5, 5.10.2),

– for specific tasks (e.g. 5.9.1, 5.11.3).

– for large and complex products, machinery and installations only (e.g. 5.9.4, 5.14).

For persons involved in specific tasks (e.g. transportation, installation, maintenance) specific instructions shall be prepared in separate documents.

5.2 Identification and specification of the product, general warnings

Depending on the type of product, the specification sheet(s) shall provide the customer with the identification of the product and a general overview of requirements, performance and capacity by including the following information as applicable:

a) product identification by reference designation, serial number, name, model, and/or type;

b) the name/mark of the supplier of the product; if appropriate, telephone and fax numbers and E-mail address should also be included;

c) location of the identification details on the product;

d) description of the type of user, for example if usage is restricted to skilled persons only, and typical staffing requirements for normal operation;

e) the intended use of the product, the main function and the range of applications;

f) limitations of use under climatic conditions of operation and storage (e.g. temperature limits, restriction of usage in explosive atmospheres, humidity, outdoor operation), if not mentioned in 5.5;

g) overall dimensions, mass, capacity, performance data;

h) supply data for power, gas, water and other consumables such as detergents, lubricants, cleaning material, and fuses (fuse type, rating and characteristics);

i) energy consumption and conditions, class of protection (when Class II equipment, marking with symbol IEC 60417-5172, when Class III equipment, marking with symbol IEC 60417-5180), and IP code;

j) amount of noise, gas, waste water, etc. under specific conditions of operation;

k) electromagnetic compatibility (EMC);

l) general information on personal protective equipment (e.g. clothing, protection goggles) and on hazards to particular groups of persons, if not mentioned in 5.5 or 5.10.6;

m) advice on safe disposal if not mentioned in 5.9.3, 5.10 or 5.15.3;

n) any warranty conditions (e.g. expiry date, expiration after modifications not provided by the supplier) if not provided in a separate document.

o) clear warnings, in words and/or symbols, of any hazard arising from the use or disposal of the product or its by-products;

p) warnings against reasonably foreseeable misuse;

q) warning if emission of radiation represents a hazard (e.g. laser, microwaves, ultra-violet, ultrasonic);

5.3 Identification of instruction documents

Instructions shall have a unique identity designation including:

a) identity number;

b) date of issue;

c) revision index and date of revision, if applicable;

d) name of the publisher of the instructions with address if different from 5.2 b).

NOTE - Furthermore a title or name of the document should be given. For document retrieval purposes, classification attributes such as a document kind designation in accordance with IEC 61355 should be added in order to facilitate the retrieval of such documents if stored in a document management system. Other classification attributes, e.g. keywords, may also be considered.

The instructions shall state whether or not they apply to any modification of the product. If appropriate, the methods of modifying the product or implementations by the user including changes to the instructions shall be given (see 5.4).

5.4 Modification of products

Instructions to the user, describing permissible modifications of the product, shall be sufficiently detailed and clearly described and illustrated to allow the user to modify the product correctly to ensure continuous safe and efficient operation.

If the product is modified after it has been accepted for use, for example in case of:

– contractual agreements between supplier and user; or

– safety deficiencies that require a recall of products;

it is recommended that appropriate modifications are applied to the instructions.

5.5 Safety notes

In addition to the general warnings in the product specification, recommendations for safe application and/or safety notes shall be given in the appropriate subclauses of specific instructions, e.g. for installation, operation, maintenance, and decommissioning.

Examples of specific safety notes are given hereafter.

Warnings about hazards and restrictions on use (for example**: NOT SUITABLE FOR BATHROOMS OR SIMILAR WET AREAS**) shall be clearly visible on the specification sheet of the user instructions, in promotion leaflets and at the point of sale (see also ISO/IEC Guide 14).

If personal protective equipment is required to use the product safely, clear advice shall be given, and this information shall be prominently displayed on the packaging as well as on the product the point of sale.

NOTE - If instructions are necessary to make a reasoned purchasing decision in choosing between products, these instructions or their relevant parts should be available at the point of sale. This product information should include warnings mentioned in this standard, such as the need for protective clothing and warnings to parents on restrictions of use by children.

5.6 Intended environment

The limits and deratings for operating and, if applicable, test conditions under specified physical environmental conditions shall be given. Examples are:

– ambient air temperature limits for operation and storage;

– humidity and seawater conditions;

– altitude above sea level;

– contaminants and pollution degree (see IEC 60664-1), and explosive gases, sawdust, etc.;

– vibration, shock, and bump;

– advice such as: «FOR INDOOR USE ONLY».

5.7 Declaration of conformity

Where applicable, the instruction material should contain a document or a note in which the manufacturer attests that the product complies with legal or contractual requirements, (e.g. a "Declaration by the manufacturer" or a "Declaration of conformity"), and, when required, a reproduction of the test mark from an independent test institute.

5.8 How to use the instruction materials

a) Importance of the materials

A note shall be included to draw the user's attention to the importance of

– regarding the instruction materials as part of the product;

– keeping them for the life of the product;

– passing them on to any subsequent holder or user of the product;

– if applicable, ensuring that any amendment received is incorporated in the document.

b) If a complex product contains several subsystems or subsidiary products, details of these and their safe use shall be given for each system. The instruction materials shall indicate which of the different functions of the product correspond to the different parts of the instructions. Each of those parts shall have its own unambiguous identification.

5.9 Preparing the product for use

If parts of the product are delivered long before they have to be installed and have to be stored until they are required (e.g. for large machinery installations), instructions shall provide information needed to prevent damage during unpacking, quality checking and storing.

Therefore, such instructions shall contain the necessary information about transportation (see 5.9.1), storage (see 5.9.2), installation (see 5.9.3) and commissioning (see 5.9.4). (See IEC 61082-1 and IEC 61082-4).

Small or simple products need a part of these instructions only.

5.9.1 Transportation

– dimensions, mass value(s), position of the centre(s) of gravity;

– indications for transport handling (e.g. drawings indicating gripping points for lifting the equipment);

5.9.2 Storage

– storage conditions of the product;

– packaging, repackaging and unpacking instructions, including details of the measures to be taken to protect and preserve the product during transit and storage;

– packaging or inventory checklist

5.9.3 Installation

- procedures for unpacking (provided outside of packaging), methods for the removal of transport and packaging restraints, equipment transit clamps, and for the removal and safe disposal of protective and preservative packaging;
- inventory checklist;
- fixing/anchoring and vibration damping requirements;
- type and mass of foundation block or similar base;
- specifications of noise, vibration, radiations, gases, vapours, dust emitted by the product; provisions against emissions, e.g. recommended ventilation, damping elements, etc.;
- minimum space needed for use, maintenance and repair;
- a layout plan;
- installation plan showing the location of the components (see IEC 61082-1);
- interconnection diagram/table (see IEC 61082-1);
- methods of connection of water, hydraulic and pneumatic fluid, and permitted pressures;
- assembly and mounting conditions;
- permissible environmental conditions (temperature, humidity, vibration, shock, bump, electromagnetic radiation, etc.);
- instructions for connecting the product to the power supply particularly describing protection against electrical overloading, permitted variation of voltage and frequency, recommendations for preventing unauthorised access and use during installation;
- advice on preparations for waste removal/disposal;

5.9.4 Commissioning

Instructions for commissioning are provided especially for large and highly complex products and for large industrial installations. The purpose of such instructions is to provide the user with the information needed for initial setting-up of the product. These instructions should contain for example:

- download program, software instructions according to IEC 61506.
- checking instructions.
- checks to be performed before connection and before first operation;
- details of specifications to apply to acceptance, inspection and performance tests

5.10 Operating instructions

The user of the product shall be provided with information regarding normal and safe operation / functioning. As appropriate, this should be completed by information regarding automatic and remote controlled products, exceptional functions / situations, indications to be observed, protection of persons and instructions for fault detection.

5.10.1 Normal and safe operation

The instruction material shall contain applicable information relating to the product itself:

- detailed description of the product, its fittings, its guards and/or protective devices;
- comprehensive range of applications for which the product is intended, taking into account variations of the original machine if appropriate;
- ~~information~~ warnings about reasonably forseeable misuse;
- information about residual risks which could not be eliminated by the risk reduction taken by the supplier;

– information about particular risks which may be generated by certain applications, by using certain fittings, and about additional protective measures which are necessary for such applications;

– when required for portable hand-held and hand-guided machinery, information regarding vibration;

– modes and means for stopping the product's operation;

– process flow diagrams or function diagrams, see IEC 61082-1;

– descriptions of manual controls;

– instructions for setting and adjustment;

– instructions for re-starting after an intervention;

– diagrams showing the main functions of the product and especially the safety functions;

– how to use provisions against noise, vibration, radiation, gases, vapours or dust emitted by the product ;

– recommendations for waste removal;

– description of the initial operations required to bring the product to full working performance, with details of checks, methods of setting adjustable controls and what the setting should be;

– maintenance tasks within the capability of the user during normal use;

– identification and treatment of malfunctions;

– details of any techniques that are likely to be new to users, for example with regard to information technologies;

– storage of the product after use;

5.10.2 Automatic and remote controlled products

User guidance systems shall provide the user in on-line mode with additional information on the operational state of the product. For example

– full information supplied in typical operation;

– information supplied when the system has automatically switched to safe operation mode before an intolerable hazardous situation has been reached;

– the current state of operation so that the user is made aware of this automatically guided function;

– what to do when the control system itself has failed;

– instructions how to manage fault situations;

NOTE – For software documentation for user guidance systems refer to IEC 61506.

5.10.3 Exceptional functions/situations

The user shall receive all necessary information about

– modes and means for emergency stop;

– measures to be taken in case of an unexpected interruption of power, cooling, etc.;

– instructions for fault identification and location, and for re-starting after an intervention;

– type of fire-fighting equipment to be used;

– warning about possible emission/leakage of hazardous substance(s) and ,if possible, indication of means to counteract their effects or to regain the initial state.

5.10.4 Indications to be observed

Instruction materials shall provide information about indications and warning devices to be recognized by the users. In particular, indications emitted before the occurrence of an intolerable hazardous situation shall be readily understandable and unambiguous. Additional information in the instruction materials should explain:

– warning indications;

– indications for fault identification and location;

– indications showing normal condition;

– warning symbols appearing on the product.

5.10.5 Instructions for fault detection

Aids for fault diagnosis procedures such as functionally identified maintenance system (FIMS), fault step diagnosis (FSD), fault step and algorithms, or, in complex systems, fault trees and computer-based fault diagnosis should be considered within the instructions.

Usually, the fault location and diagnosis should be limited to those tasks that the user could reasonably be expected to undertake. the following information should be provided:

– list of indications for fault identification and location;

– list of indications showing normal conditions;

– description of built-in diagnostic systems to aid fault detection, when applicable;

– drawings and diagrams enabling maintenance personnel to carry out their task rationally (especially fault detection tasks);

– instructions for noting malfunctions of equipment, noting abnormal symptoms and indications, and recording operation of alarms and trips;

– instructions for starting standby or alternative systems, and for shutting-down and isolating malfunctioning units;

– name, address, telephone number etc. of the supplier or others from whom technical assistance can be obtained.

5.10.6 Protection of persons

If necessary, instruction materials shall provide

– information relating to personal protective equipment which is to be used; and

– recommendations about preventive measures which have to be taken by the user (special protective devices, protective distances, safety signs and indications, etc.).

– possible symptoms, with details of any medical remedies including first aid procedures;

– training that is required.

5.11 Maintenance instructions

5.11.1 General

The type of maintenance instructions provided for unskilled persons for «do it yourself» (DIY) maintenance shall be clearly separated from instructions for skilled persons. Maintenance instructions for skilled persons relating to maintenance operations which require a specific technical knowledge, operation or particular skills shall be carried out exclusively by skilled persons (maintenance staff or a trained technician).

It is recommended to prepare a documentation for the latter separated from that for unskilled persons.

5.11.2 Maintenance instructions for unskilled persons

If the user of the product can perform some maintenance operations without harm to the user, other people or to the product, the instruction material shall provide a list of possible maintenance operations with appropriate illustrations, and all other information described in this International Standard. Such instructions can be accompanied by information as to

- the nature and frequency of maintenance operations;
- preventive maintenance, maintenance schedules, and inspections necessary for safety;
- clear indications of whether or not the user can attempt the maintenance or troubleshooting himself, or should call a qualified person;
- safety precautions;
- regular checking of warning devices;
- the cleaning method shall be given in sufficient detail, in cases where cleaning or decontamination is required. The instructions shall identify the materials to be used for cleaning if wrong materials or an inappropriate procedure could cause an immediate hazard, or a hazard resulting from corrosion, or other weakening of safety related structural parts;
- the name, address, telephone number etc. of the supplier or others from whom technical assistance may be obtained.

5.11.3 Instructions for maintenance and troubleshooting for skilled persons

Such instructions should include information concerning

- the nature and frequency of inspections;
- safety precautions and warnings for maintenance carried out on running or live equipment;
- information for fault diagnosis and identification
- instructions for repair and adjustments;
- description of built-in diagnostic systems to aid fault finding, when applicable;
- drawings and diagrams enabling maintenance personnel to carry out their task rationally (especially fault finding tasks);
- regular checking of warning devices;
- The cleaning method shall be given in sufficient detail, where a cleaning or decontamination process and the materials used for that could cause an immediate hazard, or a hazard resulting from corrosion or other weakening of structural parts.
- description of all predictable tasks performed at specific intervals to be consolidated in the form of maintenance schedules and, if necessary, master schedules;
- the name, address, telephone number etc. of the supplier or others from whom technical assistance can be obtained.

5.12 List of spare parts

The purpose of the list of spare parts is to provide the user with a means for identifying all parts that may need to be referred to for the operation or maintenance of the product. The following information should, if appropriate, be provided for each part:

- its name and identification, in the form used throughout the instruction material provided and in commercial transactions;
- the supplier's part/type and version numbers as well as the name, reference and version numbers for branded parts, if different from the above;
- an illustration of the part and its position, preferably in exploded view;
- the recommended amount of spare parts;

– parts required to be replaced several times during the expected life of the product shall be identified, examples: batteries, dust filters, brake shoes, and other consumables;

– the source of supply as well as an alternative source of supply for spare parts;

– parts for which there is a refurbishing service available provided by the manufacturer or elsewhere shall be identified;

– for complex products, a list showing where individual parts are used;

– if a certain spare part can be used in different places of the product, these places should be identified in accordance with IEC 61346-1;

– the year of expiration for the spare parts availability guarantee if not given in a separate document.

NOTE - It may be reasonable to put guarantee questions into a separate document especially when they vary between different sales channels or countries.

The supplier shall specify all parts which are required to be examined or supplied exclusively by the supplier or an agent.

For products using specific parts, such as batteries or fuses, the specific type shall be stated.

The name, address, telephone number etc. of the supplier or others, from whom spare parts, worn-out parts, materials, etc. and technical assistance can be obtained should be provided.

5.13 Instructions for special tools, equipment and materials

5.13.1 Special tools and equipment

Instructions for any special tools, items, or equipment not necessarily used in normal operation but under special conditions, should be separated from the general instructions.

Instructions shall include descriptions of interconnections with accessories and other equipment, including indication of suitable accessories, detachable parts, and any special materials.

5.13.2 Materials

The name, address, telephone number etc. of the supplier or others, from whom special tools, materials, etc. and technical assistance can be obtained shall be provided.

Repackaging instructions shall be provided, if necessary, for replacing, repairing, reworking, and refilling the product.

Consumables, cleaning material, lubricant products and repair kits shall be identified, if appropriate.

5.14 Instructions for repair and replacement of parts

Instructions for repairing and replacing parts shall provide the user with the information necessary

– to repair the equipment and/or to replace damaged, worn-out or aged parts;

– to carry out tests that have to be performed after replacing an essential part.

In special cases, instructions to set up a suitably equipped workshop and organisation staffed with trained persons or technicians (see 5.1.10 and 5.2.5) may be helpful.

5.15 Taking the product out of operation (decommissioning)

Instructions shall contain information relating to taking the product out of operation and taking further steps (destruction, recycling, disposal).

5.15.1 Destruction

Instructions should cover information, separately or in combination, on destruction of the product and/or any waste materials with due regard to safety and environmental considerations, as far as it is relevant.

5.15.2 Recycling

Where specific procedures are necessary for a safe disassembly of the product, and similarly for recycling or disposal of waste materials, this shall be specified; these procedures shall be specified in accordance with the product standard if one exists.

5.15.3 Disposal

Instructions shall convey important messages to the user about aspects relating to waste disposal and environmental considerations.

If any hazardous substance is specified or supplied together with the product, the necessary information on its constituents and the correct disposal procedure shall be given with due regard to safety and legal requirements.

5.16 Table of contents, index and other lists, definitions, and meta-syntax

5.16.1 Page numbering

If instructions comprise more than one page, the pages shall be numbered. If possible, each page shall also indicate the total number of pages, e.g. 1 of 10 or 1/10.

5.16.2 Table of contents

Instructions that exceed four pages shall have a table of contents.

Headings appearing in the table of contents shall be the same as those used in the text.

5.16.3 Index

If instructions are lengthy and complex, an index of keywords presented in alphabetical order should be included and be referenced in the table of contents.

5.16.4 List of controls

For complex appliances a separate list of user controls and indicators (such as manual controls, dials, gauges or lights) shall be provided.

5.16.5 Definition of technical terms

Unavoidable technical terms and abbreviations not readily understandable by the intended target group shall be explained. The definition clause shall also include terms that might be open to misunderstanding, e.g. "user" or "service".

Consistent terminology shall be used in all parts of the instruction material, whether on the product itself, on the packaging, or in accompanying material.

5.16.6 Definition of symbols

If signs (pictograms) and symbols are not readily understandable or not unambiguous, they shall be defined, especially with regard to the applications in the safety functions of the product.

5.16.7 Explanation of presentation conventions

All presentation conventions used in instruction material, e.g. specific typeface for actions to be carried out by the user or specific pictograms for warning notices, which are not readily understandable by the intended target group, shall be explained.

6 Presentation of instructions

6.1 Communication principles

6.1.1 Following standard communication principles

In order to achieve the best results, those responsible for the design and formulation of instructions shall apply the communication principles "FIRST READ, THEN ACT" to the likely sequence of events in use of the product. The sequence of text in leaflets, manuals, and other instruction materials shall follow the procedure step by step.

In cases where the reader of instructions needs to react quickly (for example, when using fire extinguishers), only a minimal thought process shall be necessary in order to understand the instructions.

6.1.2 Continuously improved understanding

Where sequential operating procedures must be followed for safe and correct use of the product, the instructions shall enable and encourage the user to follow a continuous learning and understanding process. Particularly useful means of promoting this process include illustrations, tables, flow-charts etc. (see 6.3, 6.4, 6.5, 6.6 and 6.7).

6.1.3 Basic functions first

Instructions for a product intended to perform several different and independent functions shall start with the basic or normal functions and deal later with other functions.

6.1.4 Simple and brief

Information shall be as simple and as brief as possible, and shall be expressed in consistent terms and units with a clear explanation of unusual technical terms.

6.1.5 Anticipating user questions

The instructions should anticipate the user's questions WHERE? WHO? WHAT? WHEN? HOW? WHY? and provide answers to them.

6.1.6 Headings and notes in the margin

Short and informative headings and/or marginal notes shall guide users through the text and help them locate the information they require.

6.1.7 One sentence, one command

One sentence shall contain one command only, or at most a small number of closely related commands.

6.1.8 Style

The writer shall use a style that is clear, direct, and unambiguous. For example,

– use the verbs in the active voice rather than the passive;
– be assertive by using commands rather than weaker forms;
– use action verbs rather than abstract nouns;
– speak directly to users rather than saying what they might do.

Examples

Principles	Recommended	Deprecated
Use the active voice	Turn off power.	Be sure that the power has been disconnected
Be assertive	Do not remove tabs.	You should not remove the tabs.
Use action verbs	Use, keep, avoid	Utilisation, maintenance, avoidance
Speak directly	Pull black lever toward you.	Users will pull the black lever away from the machine.

6.1.9 Standardized phrases and signs

Where appropriate, the use of standardized phrases, and/or safety signs or graphical symbols should be considered in order to convey important messages such as warnings.

6.1.10 Ergonomic principles

Especially instruction material presented using electronic media, for example on-line or on-screen documentation, shall fulfil ergonomic requirements as stated in ISO 9241-1 to ISO 9241-17.

6.2 Legibility

6.2.1 Print type and size

The type and size of on-the-product information, of printed material and of computerized information shall be as clear and as large as practicable to ensure the best possible legibility.

For continuous text in printed instructions (for example leaflets or manuals or other instruction material), type sizes not less than 9 point[1] shall be used.

The minimum line spacing shall be not less than 120 % of the type size (see also Annex I of ISO/IEC 81714-2).

———————

[1] By "point" is meant: Pica point

For headings in printed matter or other instruction material and for on-the-product instructions, or for other short messages which the user needs to consult often, the type size shall be not less than 12 point.

6.2.2 Vertical view plane

The location of on-the-product instructions and the angle between their surface and the vertical view plane shall be such that they can be easily read and understood by users from their positions as they use the product.

6.2.3 Maximum brightness contrast

Brightness contrast - the difference between the percentage of light reflected from the background and the percentage of light reflected from the print - shall be as great as possible.

Subject to the above parameters, minimum type sizes and minimum requirements on brightness contrast may be specified in product standards.

NOTE 1 - The contrast should normally be at least 70 %. Good quality black print on white paper provides a contrast of about 80 %.

NOTE 2 - Brightness contrast can be reduced and legibility impaired by printing on both sides of insufficiently opaque paper.

6.2.4 Instructions on the product's surface

If instructions are incorporated in the surface material of the product itself, e.g. engraved or embossed lettering, figures or symbols on metal, glass or plastic, the advantages of such methods in durability, reduction of separate parts, etc., should be weighed against a possible disadvantage in legibility which is generally inferior to that of good printing (see also 4.6.3.1).

6.2.5 Standards

National standards may contain detailed information on more parameters relating to legibility, and especially on the relation between type size and reading distance. These should be consulted and considered when producing instruction material.

6.3 Illustrations

6.3.1 Quality of pictures

Attention shall be paid to quality and clarity, whether photographs, line drawings or other media are chosen.

6.3.2 Illustrations supporting text

Whenever appropriate, text and illustration shall be used together, each supporting the other. For example, illustrations should be supplemented with written details enabling manual controls (actuators) to be located and identified.

6.3.3 Following sequence of operation

If a sequence of operations is being described, text and illustrations shall follow the same sequence. Illustrations shall be placed as close as possible to the text to which they refer.

6.3.4 Illustrations with captions

Illustrations shall be supplemented with captions providing written details, locating and identifying controls, sub-units, etc.

6.3.5 One illustration, one item of information

One illustration shall provide only the information needed for the related function.

6.3.6 Additional pictures for user convenience

Illustrations or detailed part(s) of illustrations should be repeated in the relevant part(s) of instruction material(s) as needed to assist the user.

6.3.7 Fold-out

Subject to the recommendations in 4.3 and 4.4, illustrations, tables or flow-charts which fold out may be placed on pages of the leaflet or manual, so that they can be seen adjacent to different pages of text at different times; but it has to be taken into consideration that a frequently used fold-out made of paper will soon wear out.

6.4 Graphical symbols

The graphical symbols presented in instructions shall follow recognized standards.

6.4.1 Using standard symbols on the product and in instructions

Graphical symbols used on equipment and detachable parts and reproduced in instructions shall comply with internationally recognized standards, for example IEC 60417-1, ISO 7000 or ISO 7001.

6.4.2 Explanation of symbols

Symbols, pictograms and markings placed on the product itself or in accompanying materials shall be explained in the instructions for use. The instruction shall clearly indicate which of the product functions are covered by the symbols appearing on the product.

6.4.3 Symbols in diagrams

Graphical symbols used in diagrams shall comply with internationally recognized standards, for example IEC 60617 and ISO 14617.

6.5 Tables

Frequently, tables are used in instruction material in order to present the information to the user in a more convenient form.

- Information shall be presented in the form of tables where this will enhance understanding.
- Tables shall be presented adjacent to the relevant text.
- Tables or parts of tables should be repeated in the relevant part(s) of instruction material(s), as needed to assist the user.

6.6 Charts and Diagrams

The instruction manual or other written instructions for machines shall contain additional information relating to the machine itself, for example charts or diagrams of safety functions and information about electrical equipment (see clause 18 of IEC 60204-1) and drawings and diagrams enabling maintenance personnel to carry out their task rationally (especially fault finding tasks).

6.7 Flow-charts and flow diagrams

Where a specific sequence of operations is necessary for safe and correct use of the product, a flow-chart may be helpful to the user. Flow-charts or flow diagrams should be presented adjacent to the text to which they belong. Presentation and graphical symbols should follow internationally recognized standards, for example ISO 10628 or IEC 60848.

6.8 Electronic media, Audio, Video

Electronic media (also called: multimedia) instructions, such as training, maintenance and repair instructions shall follow the requirements of this Standard concerning for example languages, legibility and illustrations. Environmental conditions such as light and noise shall be taken into account.

Electronic media instructions shall follow the order of the sequential operations the user has to carry out. Instructions provided by a video/audio system shall have the spoken or written text synchronized with the video animation sequence.

The duration of sequences and the information content shall not exceed the user's ability to assimilate such information.

If complex information is to be explained (e.g. difficult handling procedures for maintenance and repair tasks), an animation sequence may reduce the amount of visual information to the basic features needed.

Therefore electronic media shall have:

- a clear structure in menu guidance and operating buttons;
- a navigation system based on the user’s convenience, e.g. like the help system of software products with graphical user interface, i.e. with hyperlinks, an index, a table of contents and full text search facility;
- an appropriately restricted vocabulary taking into account the likely competence of potential users;
- a history function so that the user can navigate for example one step backwards or forwards;
- cross references linking related information (also called hyper-links);
- different search mechanisms (index-search, keyword-search, fulltext-search);
- a hard-copy function to support the purely electronic media instruction, if necessary;
- advertising, if any, kept clearly separate from the instructions.

6.9 Bringing warning notices into prominence

6.9.1 Making text conspicuous

Instruction text for safety-related issues shall be emphasized by the use of larger and/or different type-face, or type size (see 6.2) by use of colours (see 6.10), graphical symbols (see 6.4) or other means of making it conspicuous. In cases of doubt whether particular instructions are related primarily to safety or to fitness for purpose, considerations dealing with safety shall be given precedence.

6.9.2 Design of written warning notices

In the formulation and design of warning notices the following shall be taken into account, in order to achieve maximum effectiveness:

– limit the text and/or illustrations to the essential;

– make the location, content and style of the warning conspicuous in accordance with 6.2;

– ensure that the warning is visible to the user and to any other people exposed to hazards, from their position during use, and at the right time;

– explain the nature of the hazard and, if appropriate, its causes;

– provide clear guidance on what to do;

– provide clear guidance on what to avoid;

– use clear language, graphical symbols and illustrations and provide the user with a compilation of symbols and illustrations that have been used to bring warning notices into prominence;

– warnings repeated too frequently and false alarms reduce the effectiveness of necessary warnings.

6.9.3 Signal words for alerting

Under consideration by ISO TC 145 SC 2.

6.9.4 Permanence and visibility

Warning notices for special hazards leading to an increased risk when the instructions for safe use have not been followed shall be permanently attached to the products so that the message continues to be clearly visible by users during the expected life of the product.

When using colours for safety warnings, considerations dealing with permanence throughout the expected life of the product shall be taken into account (see also 6.10).

6.9.5 Giving warnings prominence

Warnings about hazards or restrictions on use (for **example NOT SUITABLE FOR CHILDREN UNDER AGE OF THREE YEARS**) are crucial for safety and shall be given prominence at least equal to other instructions and documents issued with the product.

6.10 Colours and colour coding

If used effectively, colours can be an important communication tool for instruction materials.

6.10.1 Where to use colour?

The use of colours shall be considered, particularly in relation to controls, components, etc. requiring clear and/or quick identification.

6.10.2 Standard colours

If the use of colours is adopted, it shall be functional, systematic and consistent (see ISO 3864, IEC 60204-1, and IEC 60073).

6.10.3 Perception of colours

It should be borne in mind, however, that about 8 % of men and 0,5 % of women have some form of colour-deficient vision. Therefore, perception of different colours shall never be the only means for understanding instructions.

6.11 Explanation of visual and audible indications

Many products provide the user with visible and audible indications containing information about the operational status of the product.

6.11.1 Application of indications

Visual indications such as flashing lights and audible indications such as bleeps may be used to inform and warn the user. It is important that such indications

- be unambiguous;
- can be clearly seen or heard by the user from her or his position during use;
- be generated in time to allow the user to take action to avoid hazards or malfunctions;
- can be clearly perceived and differentiated from other indications;
- be explained in the instructions on or accompanying the product.

6.11.2 Indication description and checking facilities

These indications shall be so designed and located that they can be easily checked. Warning devices shall be clearly described in any instruction provided on or with the product. If appropriate, the instructions shall prescribe regular checking of these devices.

6.11.3 List of indicating devices

For complex machinery and systems, a separate list of user controls and indicators (such as dials, gauges, or lights) shall be provided.

6.11.4 Standards

Where appropriate, recognized product standards for audible and visible signals shall apply (for coding of signals see for example. IEC 61310-1).

ANNEX A
(informative)

Assessment of instructions for use

A.1 General

Assessment of the quality of instructions should follow common criteria. This International Standard therefore has informative annexes containing some practical recommendations and a proposed methodology for assessment. The annexes A, B, and C are addressed primarily to experts engaged in such assessment work but may also be helpful to the Standard's principal target groups.

Assessment of instructions covers instructions located on the product itself, and/or its packaging, and/or in accompanying materials (e.g. leaflets, handbooks, audio and video tapes, see 4.6.1). In accordance with 4.1 instructions should be assessed as an integral part of the product delivery.

A.2 Methodology

Depending upon the complexity of the product and the importance of conveying relevant information to the user in order to ensure safe and correct use, assessment may take the form of

– desk research;

– interactive panel testing of the product by potential users for products built in series.

A.3 Desk research

Assessment by desk research may be carried out by suitable qualified experts who have no connection with any aspect of the design, production, or marketing of the product and its instructions.

It may be necessary for desk research to be supplemented by independent third-party checking; for example, where provision of information at the point of sale is a requirement (see note in 5.1.4), the actual situation should be investigated by or for the researcher or independent evaluator, rather than relying on any statements by the manufacturer/producer.

Quantitative checks may be carried out on the basis of the non-comprehensive checklist given in annex B.

Qualitative checks may be carried out on the basis of the non-comprehensive checklist given in annex C.

Since both checklists are non-comprehensive, they need to be supplemented and/or amended in accordance with the relevant product standards, or (in the absence of such standards) in accordance with standards dealing with comparable products or functions, or in any other appropriate way.

A.4 Panel testing

Interactive panel testing is a means of finding out how much help the instructions of a product give the users by answering any queries they may have when using it, including queries on safety and environmental aspects. It should establish the extent to which the instructions are complementary to the design, ergonomics and function of the product.

The panel should represent the intended and probable users of a product, taking into account

a) age;

b) sex;

c) health;

d) physical ability/handicaps including height considerations;

e) left-handed or right-handed;

f) education /literacy/technical expertise;

g) previous acquaintance with or ignorance of similar products.

In many cases a panel of five people is sufficient to obtain reliable results. But if there are considerable variations within parameters a) to g) listed above, this number should be increased.

The normal method of recording results is to require the panellists to fill in questionnaires based on the requirements in the checklists given in annexes B and C. Video and audio recording of the tests may help to establish objective ratings of the usefulness of the instructions.

Each test should be supervised by a suitable qualified and independent expert, who should report separately on her/his observations, especially on any problems encountered by the panellists.

A.5 Evaluation

In either desk or panel evaluations, or both, certain requirements may be designated *important* (marked I) or *very important* (marked II).

In many cases the single items to be evaluated may have different weightings, depending on different requirements of products or product groups, which can be defined only for specific purposes.

For an overall panel assessment, each member shall give a final assessment based on her/ his individual experience during the test according to a five point scale (see C.4). The final evaluation of panel tests as described in A.3 should be the responsibility of the supervising expert. She/he should take into account the number and seriousness of the difficulties experienced by the panel in using the product safely and correctly, and the responses to the questionnaire. She/he may develop quantitative or statistical criteria for evaluating these results. These criteria could include weighting of difficulties and complaints in relation to serious matters such as possible injury to the user or damage to the product. The evaluation of panel tests should include a narrative report by the supervising expert.

ANNEX B
(informative)

Compliance checklist, technical review

B.1 General

This checklist is part of the programme for the preparation, submission and acceptance of the instruction material taking into account the technical requirements to operate and maintain a product safely and efficiently. This checklist shall support the technical review of all the instruction material belonging to a product.

B.2 Checklist has to be supplemented

Since the checklist is non-comprehensive, it must be supplemented and/or amended in accordance with the relevant product standard, or (in the absence of such a standard) in accordance with standards dealing with comparable products or functions, or in any other appropriate way. Supplementation may be carried out by qualified technical experts with knowledge of the product design and all aspects of product operation and application.

B.3 Example of checklist for technical review

These compliance checks shall establish whether each requirement in the checklist is

– fulfilled/covered by the instructions being assessed (+)

– not fulfilled/covered by them (-)

– not applicable to them (0)

Importance (see A.5)	Items to be checked	Relevant clauses of Standard	Evaluation (+/-/0)	Comments
	1 Identification	4.7.1		
	1.1 Brand and type designation	5.2		
	1.2 Delivery No., version, type No., etc.			
	1.3 Expiry date			
	1.4 Up-to-date check, e.g. edition of the handbook, coverage of a product version			
	1.5 Address of producer/supplier/service agency			
	1.6 Certification references, marking			
	1.7 Optional modules, extras			
	2 Specification of the product	4.7.2		
	2.1 Functions and range of application	5.2		
	2.2 Safe and correct use			
	2.3 Integrated design of the product and instructions – Instructions are no compensation for design deficiencies			
	2.4 Dimensions – mass - capacity			
	2.5 Performance data and conditions			
	2.6 Supply data for power, water and other consumables (e.g. detergents, lubricants)			
	2.7 Energy consumption and conditions			
	2.8 Emission of noise, gas, waste, radiation, etc. Conditions			

Importance (see A.5)	Items to be checked	Relevant clauses of Standard	Evaluation (+/-/0)	Comments
	2.9 Information on personal protection e.g. clothing, goggles 2.10 Information on dangers to particular groups of persons **2.11** Information on safe disposal			
	3 Preparing the product for use 3.1 Safety precautions before installation 3.2 Unpacking, safe disposal of packaging material 3.3 Installation and assembly (e.g. special tools, space for maintenance, etc.) 3.4 Storage and protection during intervals between periods of normal use 3.5 Repackaging to prevent damage in transport 3.6 Restrictions on operations by non- qualified persons. Separation of instructions to different groups of persons. 3.7 Location of instructions	5.9		
	4 Operating instructions 4.1 Basic functions – Complete for correct, intended use – Complete for safe, intended use – Complete for reasonably foreseeable misuse – Conformity with minimum list in relevant product standard(s) 4.2 Secondary functions (as 4.1 of checklist) 4.3 Optional modules and extras 4.4 Personal protection 4.5 Quick reference instructions – by reminder cards, stickers or labels – by reference to handbook – by user guidance system on display 4.6 Disposal of waste material	5.10		
	5 Visual and/or audible indications 5.1 Explanations provided in instructions 5.2 Warning notices emphasized 5.3 Indications – emitted in time to allow user to take action – clearly seen from user's position	6.9 6.11		

Importance (see A.5)	Items to be checked	Relevant clauses of Standard	Evaluation (+/-/0)	Comments
	6 Maintenance and cleaning	5.11		
	6.1 Safety precautions (e.g. protection of persons, special tools)			
	6.2 Preventive maintenance and inspection necessary for safety			
	6.3 Regular checking of warning devices			
	6.4 Maintenance and cleaning by users			
	6.5 Maintenance and cleaning by qualified persons			
	6.6 Fault diagnosis, repair			
	6.7 Support from agency/manufacturer			
	7 Safety and health information	5.5		
	7.1 General safety regulations summarized at beginning of instruction material			
	7.2 Recognized technical regulations have been observed			
	7.3 Clear guidance on what to do and what to avoid is provided			
	7.4 Safety warnings /cautions	6.9		
	a) correct location:			
	– on product and/or			
	– on packaging and/or			
	– in accompanying material			
	b) if relevant visibility at the point of sale			
	c) correct use of terms			
	d) durability of warnings			
	e) conformity with requirements in relevant product standards			
	7.5 Safety signals			
	7.6 Information on residual risk			
	7.7 Environmental aspects of using the product			
	7.8 Product disposal measures			
	– summarized in a special chapter			
	– repeated in relevant passages of text			
	– disposal/collection points are listed			
	8 Consistency of information			
	8.1 Consistent terminology in all parts			
	8.2 Consistent symbols used on product and in accompanying documents			
	8.3 Consistent warning terms used on product and in accompanying material			

Annex C
(informative)

Evaluation checklist; presentation review

C.1 General

This checklist is part of the programme for the preparation, submission and acceptance of the instruction material, taking into account the requirements of the users, their skills and capabilities. The qualitative check comprises the graphical presentation of the instructions, the type size of the text, the quality of the illustrations, tables, and diagrams. It shall be checked whether the definition of the terms, and the queries that could arise, fulfil the requirements from the point of view of a user.

C.2 Checklist has to be supplemented

Since the checklist is non-comprehensive, it need to be supplemented and/or amended in accordance with the relevant product standard, or (in the absence of such a standard) in accordance with standards dealing with comparable products or functions, or in any other appropriate way. Supplementation of this checklist may be provided by users of the product and experts in publication.

C.3 Example of checklist for presentation review

These checks shall evaluate the instructions being assessed, in relation to each requirement in the checklist, using the following marks:

- very good/excellent (++)
- good (+)
- average (0)
- poor (-)
- very poor (--)
- not applicable/not necessary (#)

Importance (see A.5)	Items to be checked	Relevant clauses of Standard	Evaluation (++/+/0/-/--/#)	Comments
	1 Legibility	6.2		
	1.1 On-the-product information			
	– type-size, depending on reading distance			
	– brightness (normally at least 70%)			
	– instructions incorporated in product material			
	1.2 Handbooks, manuals, leaflets			
	– paper quality (e.g. not translucent);			
	– type-size;			
	– line spacing			
	– use of different type-face/size;			
	– captions easy to read;			
	– brightness contrast;			
	– use of colours;			

Importance (see A.5)	Items to be checked	Relevant clauses of Standard	Evaluation (++/+/0/-/--/#)	Comments
	– general impression of the page is balanced and uncluttered.			
	2 Electronic media (audio, video, multimedia) 2.1 Technical equipment – minimum configuration; – "best result"- configuration. 2.2 User-friendly system access and easy operation – "How to use these instructions"- clause – linear structure in menu guidance and operating buttons; – navigation system eases finding answers to user's questions; – print utility – bookmark option 2.3 User-friendly design – General consistency in titling, high-lighting, fonts, text positioning; – text (spoken and written) corresponds to video animation; – duration of sequence and information quantity per unit does not stress the user's perception – screen design enables the user to pick up necessary information; – optimal topic length (at most 2 screens, paragraphs max. 20 lines long); – complex information broken down into smaller categories with secondary windows or subordinate information; – helpful emphasis by font, font size, highlighting, colour, contrast and graphics; – language appropriate to target group; – graphics, animation and video sequences contribute to the understanding; – the use of colours is consistent, and not system-dependant.	6.8		
	3 Indications – Quantity and clarity of information provided to user – Explanation of signals	6.11		
	~~5~~4 **Text and terms** 4.1 Text, use of words – simple, meaningful, short and intelligible – one sentence, one command not too much information in one sentence – active voice – action verbs – negations are rarely and sensibly used 4.2 Terms used – abbreviations explained at first occurrence	6.1		

Importance (see A.5)	Items to be checked	Relevant clauses of Standard	Evaluation (++/+/0/-/--/#)	Comments
	– technical terms defined at first occurrence – well explained, understandable for ordinary readers – consistent use of terms 4.3 Structure of text – consistently structured – structure follows communication principle – structure from basic to sophisticated operations/functions – meaningful separation between basic product and optional modules – informative headings 4.4 Style of instructions – imperative or infinitive – consistently formulated and structured – as short as possible and detailed as necessary			
	5 Language 5.1 Information given in appropriate language(s) 5.2 Clear differentiation of languages 5.3 Clear connection between text and illustrations 5.4 Clear pronunciation (audio) 5.5 Absence of linguistic errors	4.7.3		
	6 Illustrations 6.1 General quality 6.2 Sufficient number of illustrations to provide clear and specific information 6.3 Illustrations supported by clear and helpful captions	6.3		
	7 Graphical symbols 7.1 Internationally standardized symbols used where possible 7.2 Symbols clearly understandable or explained	6.4		
	8 Figures 8.1 Sized according to purpose 8.2 Clear (i.e. same information - same figure structure) 8.3 Text within figures clearly arranged and consistently used 8.4 Figures and text that belong together shall appear close to each other			
	9 Tables 9.1 Appropriately located 9.2 Clearly set out and informative 9.3 Repeated when necessary	6.5		
	10 Flow-charts 10.1 Provided where applicable 10.2 Supported with clear and helpful captions/text 10.3 Adjacent to the text to which they belong	6.7		
	11 Use of colours	6.10		

Importance (see A.5)	Items to be checked	Relevant clauses of Standard	Evaluation (++/+/0/-/--/#)	Comments
	11.1 Functional 11.2 Clear 11.3 Consistent			
	12 Table of contents/Index 12.1 Appropriate to length and complexity of text 12.2 Headings identical to those in the text 12.3 Clear, consistent and helpful 12.4 Numbered pages 12.5 List of keywords if helpful	5.16		
	13 Trouble-shooting advice 13.1 Checklist of possible faults with repair instructions (paying due regard to safety) 13.2 Clear indication whether or not, users can attempt repair themselves	5.11		
	14 Safety 14.1 Adequate provision against loss and deterioration in expected use possible 14.2 Change management for user documentation organized	4.2, 5.4, 5.5		
	15 Target group (users) 15.1 Target group is mentioned 15.2 Representation of contents is suitable for target group	4.4, 4.7.2		

Annex D
(informative)

Example of a table of contents of a user manual

D.1 General

This annex gives guidance on the selection and sequential arrangement of information in technical instructions in a user manual. An example of an user manual has been taken that includes all instructions for handling a product from its delivery to its disposal that a user is likely to need during the life of the product.

D.2 Restrictions to be observed

An example cannot give comprehensive information covering each individual requirement, therefore each heading listed here has to be checked against the appropriate requirement depending on complexity, risk, legal issues etc. Nevertheless, this example might fulfil user needs for guidance on a standard layout for manuals.

D.3 Table of contents (example)

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