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ग्राफ़ीय चिन्ह् – उपभोक्ता आवश्यकताओं को ध्यान में रख कर तकनीकी दिशानिर्देश

Indian Standard

GRAPHICAL SYMBOLS — TECHNICAL GUIDELINES FOR THE CONSIDERATION OF CONSUMERS' NEEDS

ICS 01.080.01:97.020

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BUREAU OF INDIAN STANDARDS MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG NEW DELHI 110002

NATIONAL FOREWORD

This Indian Standard which is identical with ISO/IEC Guide 74 : 2004 'Graphical symbols — Technical guidelines for the consideration of consumers' needs' issued by the International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) jointly was adopted by the Bureau of Indian Standards on the recommendation of the National Mirror Committee of COPOLCO and approval of the Director General, Bureau of Indian Standards under Rule 8(3)C of *BIS Rules*, 1987.

The text of ISO/IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker in the International Standard while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

Indian Standard

GRAPHICAL SYMBOLS — TECHNICAL GUIDELINES FOR THE CONSIDERATION OF CONSUMERS' NEEDS

IMPORTANT — The colours represented in the electronic file of this Guide can be neither viewed on screen nor printed as true representations. Although the copies of this Guide printed by ISO have been produced to correspond (with an acceptable tolerance as judged by the naked eye) to the requirements of ISO 3864-1, it is not intended that these printed copies be used for colour matching. Instead, consult ISO 3864-1 which provides colorimetric and photometric properties together with, as a guideline, references from colour order systems.

1 Scope

This Guide gives procedures for the development of graphical symbols for

- -- public information,
- use in safety signs and product safety labels, and
- --- use on equipment and products.

Such graphical symbols can be included in consumer documentation.

This Guide does not cover road traffic signs and graphical symbols for use in technical documentation.

Rules for the design of graphical symbols are given in International Standards. This Guide brings together information on relevant international reference documents and standards to assist technical committees and designers to follow "best practice" when considering the need for a new graphical symbol.

NOTE This guidance is also applicable at a regional and national level. For example, procedural guidance for CEN technical committees on the preparation of graphical symbols exists in *Guidance — Graphical symbols* in the CEN Business Operations Support System (BOSS). URL <u>http://www.cenorm.be/boss/</u>.

2 Normative references

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

ISO 3864-1, Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and publics areas

ISO 17724, Graphical symbols — Vocabulary

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17724 apply.

4 Relevant international technical committees

4.1 General

The international technical committees responsible for producing International Standards for the development, standardization and registration of graphical symbols covered by this Guide are ISO/TC 145 and IEC/SC 3C. These two committees are responsible for establishing principles for the preparation of graphical symbols and for their standardization.

NOTE In addition, the International Telecommunications Union (ITU-T) covers international symbols to assist users of telephone services.

Technical Committees drafting standards that make reference to graphical symbols, or include signs that contain graphical symbols, should, in addition to following the advice in this Guide, follow the procedures to be found at the relevant committee's website by accessing the URLs given below.

4.2. ISO/TC 145

ISO/TC 145 has three subcommittees:

- SC 1, Public information symbols,
- SC 2, Safety, identification, signs, shapes, symbols and colours, and
- SC 3, Graphical symbols for use on equipment.

The ISO/TC 145 website can be accessed as URL <u>http://www.iso.org/tc145</u>. The website also includes contact details for the committee's secretariat.

4.3 IEC/SC 3C

IEC/SC 3C covers graphical symbols for use on electrotechnical equipment. The secretariat can be contacted at the following URL:

http://www.iec.ch/cgibin/procgi.pl/www/iecwww.p?wwwlang=e&wwwprog=dirdet.p&committee=SC&number=3c

5 Preliminary considerations

5.1 Conveying the intended message

The intended message can include the identification of an object (product or equipment), indication of the status of an object or the appropriate behavioural response from users. Designers of graphical symbols should therefore

- a) identify the nature of the hazard or message to be conveyed and, in particular, whether it relates to the user or only to the equipment, and
- b) decide on the information that needs to be conveyed to the target audience and how this should be done (e.g. is the need for a graphical symbol for public information, for use as a safety sign and product safety label, or for use on equipment and products).

In the cases of graphical symbols for public information and graphical symbols for use on equipment, identification of an object or the indication of a state or operation may be the most important aspects of the message to be conveyed to consumers.

In the case of graphical symbols used in safety signs and product safety labels, the critical issue is to communicate the appropriate message in one or more of the following categories:

- prohibition;
- -- mandatory action;
- warning;
- safe condition/escape route/safety equipment;
- location of fire equipment.

5.2 Risk assessments

In many cases, the nature of the safety issues to be addressed will be identified by a formal risk assessment. The procedures for carrying out risk assessments may be set out in national standards or codes of practice. These may be specified in national legislation.

5.3 Target audience

Consider any particular communication needs of the target audience (e.g. children, older people and people with special requirements) and act accordingly. This may entail using concepts that will be familiar to the target audience and taking into account, for example, limited comprehension and visual acuity.

NOTE ISO/IEC Guide 71 provides guidance on the needs of older persons and persons with disabilities.

It will often be the case that particular graphical symbols will be designed for use in locations that are both a workplace and an area open to the general public. In such situations, the population will comprise both people who would normally be expected to have received training in health and safety matters and untrained members of the general public. One such example is an office building where visitors are admitted: the office workers will have received training relating to their place of work, whereas visitors will not. It is important to ensure that the latter group is taken into account when graphical symbols are designed for such locations.

Identify and make provision for any cultural or ethnic prohibitions that are relevant and ensure they are acted upon. Be very conscious of cultural sensibilities when designing graphical symbols for international use.

Make sure that a graphical symbol does not have an unintended or ambiguous meaning. In this context, the use of letters in graphical symbols should be avoided unless there is confidence that the meaning of such a graphical symbol will be universally understood.

5.4 Check for existing symbols that convey the same meaning

Ascertain whether a graphical symbol suitable for the intended purpose already exists in an International Standard (see Table 1). If a suitable symbol exists, it shall be used. In any field of application, an established graphical symbol should only be used to convey one message.

6 Designing a new graphical symbol

6.1 Basic procedures

If a suitable symbol does not exist, follow the design, comprehension and standardization procedures set out in the relevant International Standards (see Table 2).

Where a graphical symbol is to be used in a safety sign or product safety label, it is essential that the safety colours for the sign or label be in accordance with ISO 3864-1.

6.2 Context of use

6.2.1 For designers of graphical symbols

It is important for those designing graphical symbols and safety signs to understand the context of use in order to guide design decisions. In particular, the activities being performed by the consumer and the details of the physical, ambient and socio-cultural environment should be identified in line with human-centred design principles (see, for example, ISO 13407).

Critical context-of-use factors may include the following:

- the environment where the graphical symbol, or graphical symbol/sign combination (which may be accompanied by supplementary text) will be used;
- -- viewing distance;
- illumination and ambient lighting conditions (which may include emergency situations);
- relationship in use to other symbols.

6.2.2 Installation and use of graphical symbols and safety signs

Context-of-use factors also need to be taken into account when graphical symbols and safety signs are being applied or installed in practice. Discussion of the following examples is beyond the scope of this Guide, but the examples are included to emphasize the fact that an otherwise excellent, well-researched and designed graphical symbol may lose its effectiveness if poorly reproduced or used in an inappropriate way.

Therefore, in order to maximize the effectiveness of a graphical symbol, it may be necessary (depending on the type of graphical symbol and the application) to take account of the following additional factors:

- avoidance of excessive and inappropriate use of colours;
- possible confusion between the background colours and safety colours;
- the contrast between the graphical symbol and its background;
- ---- size;
- properties of materials and construction (e.g. reflectivity and durability);
- the effect of the technology used to reproduce graphical symbols;
- location (e.g. high, low) and clear lines of sight;
- --- lighting (both of the sign and its surroundings);
- the need to use supplementary text to improve comprehension,
- the level of gloss which can affect the ability of some people to read signs;
- the needs of those with vision impairments, including colour blindness.

7 Relevant International Standards

7.1 International Standards for graphical symbols and safety signs

To check whether a graphical symbol for the intended purpose already exists, reference should be made to the standards given in Table 1 as appropriate.

Table 1 — International Standards that list standardized and registered graphical symbols and safety signs

Type of graphical symbol/sign	International Standard		
Public information symbols	ISO 7001		
Safety signs	ISO 7010		
Graphical symbols for use on equipment	ISO 7000 IEC 60417		

Examples of standardized and registered graphical symbols and safety signs are given in Annex A.

7.2 International Standards for design principles and requirements for graphical symbols

When designing a new graphical symbol, refer to the standards in Table 2 as appropriate.

Table 2 — International Standards for design principles and requirements for graphical symbols

Type of graphical symbol/sign	International Standard		
Public information symbols	ISO/TR 7239		
Safety signs	ISO 3864-1, ISO 3864-2, ISO 3864-3 ISO 17398		
Graphical symbols for use on equipment	IEC 80416-1, ISO 80416-2, IEC 80416-3, ISO 80416-4		

NOTE Further standards of interest are listed in the Bibliography.

8 Evaluating the comprehensibility of safety signs (including product safety labels) and public information symbols

It is accepted that the best way to assess the effectiveness of a graphical symbol in conveying the intended message is by some form of controlled and impartial evaluation using individuals representing the target audience.

Such an impartial evaluation should include the following:

- a) the careful and consistent preparation of test specimens of graphical symbol variants for use in a testing procedure;
- b) objective and informed selection of a group of people representative of the target audience; age, gender and any special needs should be considered in the selection process, and respondents should be from more than one country and culture;
- c) consistent administration and invigilation of the test procedure;

d) validation and recorded analysis of the test data.

ISO 9186 sets out procedures for evaluating the comprehensibility of graphical symbols.

9 Validation, standardization and registration of graphical symbols

The purpose of validation, standardization and registration is to ensure that graphical symbols and safety signs

- conform to the relevant design principles,
- do not duplicate symbols that already exist,
- have met acceptable comprehensibility criteria, where appropriate, and
- can be entered into a database for subsequent retrieval.

The procedures for the validation of graphical symbols vary depending on their type and intended use. Information on these procedures and on how graphical symbols may be submitted to the relevant committee for validation and registration can be obtained by accessing the appropriate committee website as indicated in Clause 4.

Information on these procedures is also set out in the ISO/IEC Directives and, in particular, in Annex SQ of the ISO/IEC Directives Supplement — Procedures specific to ISO, and in Annex J of the ISO/IEC Directives Supplement — Procedures specific to IEC.

Annex A

(informative)

Examples of standardized and registered graphical symbols and safety signs



ISO 7001-0011 Stairs (public information)



ISO 7001-0033 Cable car, large capacity (public information)



ISO 7010-W007 Warning, obstacles (warning)



ISO 7010-P002 No.smoking (prohibition)



ISO 7010-F001 Fire extinguisher (fire safety)



NOTE The examples from ISO 7010 illustrate the shapes, colours and basic types of safety sign as specified in ISO 3864-1

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Bibliography

ISO/IEC International Standards

- [1] ISO 3864-2, Graphical symbols Safety colours and safety signs Part 2: Design principles for product safety labels
- [2] ISO 3864-3, Graphical symbols Safety colours and safety signs Part 3: Design criteria for graphical symbols used in safety signs
- [3] ISO 6309, Fire protection Safety signs
- [4] ISO 7000, Graphical symbols for use on equipment Index and synopsis
- [5] ISO 7001; Public information symbols
- [6] ISO 7010, Graphical symbols Safety colours and safety signs Safety signs used in workplaces and public areas
- [7] ISO/TR 7239, Development and principles for application of public information symbols
- [8] ISO 9186, Graphical symbols Test methods for judged comprehensibility and for comprehension
- [9] ISO 13407, Human-centred design processes for interactive systems
- [10] ISO 17398, Safety colours and safety signs Classification, performance and durability of safety signs
- [11] ISO/IEC 80416-1, Basic principles for graphical symbols for use on equipment Part 1: Creation of symbol originals
- [12] ISO/IEC 80416-2, Basic principles for graphical symbols for use on equipment Part 2: Form and use of arrows
- [13] ISO/IEC 80416-3, Basic principles for graphical symbols for use on equipment Part 3: Guidelines for the application of graphical symbols
- [14] ISO 80416-4, Basic principles for graphical symbols for use on equipment Part 4: Supplementary guidelines for the adaptation of graphical symbols for use on screens and displays (icons)
- [15] IEC 60417, Graphical symbols for use on equipment

ISO/IEC Guides

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Guide 71, Guidelines for standards developers to address the needs of older persons and us with disabilities

ITU-T Recommendations

- [17] ITU-T Recommendation F.910 (02/95), *Procedures for designing, evaluating and selecting symbols, pictograms and icons*
- [18] ITU-T Recommendation E.121 (07/96), Pictograms, symbols and icons to assist users of the telephone service

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This Indian Standard has been developed from Doc No.: SPCAD 01 (005).

Amendments Issued Since Publication

Amend No. Date of Issue Text Affected

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