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Graphical symbols — Safety colours and safety signs —

Part 2:
Design principles for product safety labels

Symboles graphiques — Couleurs de sécurité et signaux de sécurité —

Partie 2: Principes de conception pour l'étiquetage de sécurité des produits

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 145, *Graphical symbols*, Subcommittee SC 2, *Safety identification, signs, shapes, symbols and colours*.

This second edition cancels and replaces the first edition (ISO 3864-2:2004), which has been technically revised.

It also incorporates the Amendment ISO 3864-2:2004/Amd 1:2011.

A list of all the parts in the ISO 3864 series can be found on the ISO website.

Introduction

There is a need to standardize a system of communicating safety information on products. This document provides layouts for product safety labels that can be used to convey safety information related to the installation, operation, use, maintenance and/or disposal of a product. Product safety labels are not to be used as safety signs on walls in workplaces and public buildings.

This document builds on the system of hazard communication set forth in ISO 3864-1. This document sets forth additional layouts for product safety labels that assist in communicating

a)   the severity level of the hazard, and

b)   supplementary safety information in word or symbolic form.

To assist in the communication of safety information across language barriers, all of the product safety label layouts shown in this document incorporate safety signs. This document includes product safety label layouts that use only safety signs as well as layouts that use additional graphical symbols and text. Product safety labels that include text can be used when some of the necessary safety information cannot be communicated in symbolic form, when the combination of safety sign with text is judged to be more effective or when legal requirements in countries mandate the use of text to communicate safety information. Education is an essential part of any system that provides safety information. Because the amount of safety information necessary to operate or service a product safely may be more than can be conveyed in a product safety label, a product's accompanying documentation (e.g. product literature, installation manual, operation manual, service manual) may supplement the product's safety labels to provide the user with the additional information necessary for safety. A product's user documentation also offers a place to educate users on the meaning of the safety signs and supplementary safety information symbols shown on the product's safety labels (see Annex A).

When a product safety label is to be developed, the hazards associated with the product and their corresponding risks should be evaluated. Many factors are considered when deciding whether or not to warn, whether to warn on the product in the form of a product safety label and/or to warn in user documentation. Such factors include the severity of the risk, the probability of engaging the hazard, the degree to which the risk is obvious and the type of person likely to possibly engage the hazard.

Statutory or regulatory requirements in some countries may differ from some requirements given in this document. To facilitate international standardization of product safety labels, this document should be considered when revising regulations.

Graphical symbols — Safety colours and safety signs —

Part 2:
Design principles for product safety labels

IMPORTANT — The colours represented in the electronic file of this document can be neither viewed on screen nor printed as true representations. Although the copies of this document printed by ISO have been produced to correspond (with an acceptable tolerance as judged by the naked eye) to the colour requirements, it is not intended that these printed copies be used for colour matching. Instead, consult ISO 3864-4, which provides colorimetric and photometric properties together with, as a guideline, references from colour order systems. For the colour orange, see Annex E.

1 Scope

This document establishes additional principles to ISO 3864-1 for the design of safety labels for products, i.e. any items manufactured and offered for sale in the normal course of commerce, including but not limited to consumer products and industrial equipment. The purpose of a product safety label is to alert persons to a specific hazard and to identify how the hazard can be avoided.

This document is applicable to all products in all industries where safety-related questions can be posed. However, it is not applicable to safety labels used

— for chemicals,

— for the transport of dangerous substances and preparations and

— in those sectors subject to legal regulations which differ from certain provisions of this document.

The design principles incorporated in this document are intended to be used by all ISO Technical Committees and anyone designing product safety labels in the development of product safety label standards for their industries or services.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 and safety markings*

ISO 3864-4, *Graphical symbols — Safety colours and safety signs — Part 4: Colorimetric and photometric properties of safety sign materials*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
CAUTION
signal word used to indicate a potentially hazardous situation which, if not avoided, could result in minor or moderate injury

3.2
combination product safety label
combination of product safety sign and/or supplementary safety information and/or hazard severity panel on one rectangular label

Note 1 to entry: A combination product safety label conveys one safety message.

3.3
DANGER
signal word used to indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury

3.4
general warning sign
safety sign used to signify a general hazard

Note 1 to entry: The general warning sign is standardized/registered as ISO 7010-W001.

Note 2 to entry: This safety sign can be used to draw attention to a product safety label (see Figure A.5).

3.5
harm
physical injury and/or damage to health or property

[SOURCE: ISO/IEC Guide 51:2014, 3.1, modified]

3.6
hazard
source of potential harm

[SOURCE: ISO/IEC Guide 51:2014, 3.2, modified]

Note 1 to entry: The term hazard is generally qualified in order to define its origin or the nature of the expected harm (e.g. electric shock hazard, crushing hazard, cutting hazard, toxic hazard, fire hazard, drowning hazard).

3.7
hazard severity panel
area of a combination or multiple product safety label that communicates the category of risk associated with a hazard

Note 1 to entry: This panel contains the general warning sign, the corresponding colour and an optional signal word (see Table 2).

3.8
multiple product safety label
product safety label that contains two or more safety signs on the same rectangular label and, if used, the supplementary safety information and/or the hazard severity panel

3.9
product safety label
label on a product that informs the observer of one or more potential hazards and describes the safety precautions and/or actions required to avoid the hazard(s)

Note 1 to entry: It communicates a hazard, a hazardous situation, a precaution to avoid a hazard and/or a result of not avoiding a hazard.

3.10
residual risk
risk remaining after risk reduction measures have been implemented

[SOURCE: ISO/IEC Guide 51:2014, 3.8]

3.11
risk
combination of the probability of occurrence of harm and the severity of that harm

[SOURCE: ISO/IEC Guide 51:2014, 3.9, modified]

3.12
safety colour
colour with special properties to which a safety meaning is attributed

3.13
safe viewing distance
distance a person can be from the product safety label while still able to read the label accurately and have the opportunity to follow the product safety label's message

3.14
signal word
word that calls attention to a product safety label and designates a category of risk

3.15
supplementary safety information panel
safety information symbol or safety information text whose main purpose is to provide additional clarification

Note 1 to entry: A supplementary safety information panel typically communicates hazard consequence or hazard avoidance information.

3.16
target audience
person(s) to whom the product safety label is intended to convey its safety information

3.17
tolerable risk
level of risk that is accepted in a given context based on the current values of society

[SOURCE: ISO/IEC Guide 51:2014, 3.15, modified — Note 1 to entry deleted.]

3.18
WARNING
signal word used to indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury

4   Purpose of safety colours

4.1   General

There are two basic purposes for using a specific safety colour on a product safety label:

a)   the use of colour rapidly draws attention to the product safety label so that it is easily noticed;

b)   the safety colour coding serves to identify and give meaning (through training and/or repeated exposure) to the product safety label as a whole and to its component parts.

Only safety colours in accordance with ISO 3864-4 colorimetric and photometric specifications shall be used, in addition to the colour orange which shall only be used on a WARNING hazard severity panel.

Table 1 specifies the colorimetric and photometric properties of the colour orange. Annex E provides references from colour order systems for the colour orange.

Table 1 — Chromaticity coordinates and luminance factor for the colour orange for ordinary materials

Coordinate	Chromaticity coordinates of corner points determining the permitted colour area: Standard illuminant D65 CIE 2° Standard observer				Luminance factor
	1	2	3	4	β
x	0,603	0,538	0,508	0,563	≥ 0,21
y	0,397	0,382	0,412	0,436	

4.2 Contrast colours

Contrast colours shall be in accordance with ISO 3864-1. The contrast colour for orange is black.

4.3 Use of colour

When a geometric shape is used around a graphical symbol, the shape's corresponding safety colour shall identify the type of safety information to be conveyed by the graphical symbol (e.g. warning, prohibition or mandatory action, see ISO 3864-1).

When a hazard severity panel is used, colour shall be used to identify the hazard severity panel's corresponding level of risk (see Table 2).

Table 2 — General meaning and use of colours in hazard severity panels

Background colour of panel	Contrast colour	Meaning/Use	Hazard severity panel illustration with or without signal word
Red	White	High level of risk	⚠ **DANGER** ⚠
Orange	Black	Medium level of risk	⚠ **WARNING** ⚠
Yellow	Black	Low level of risk	⚠ **CAUTION** ⚠

NOTE 1   The safety sign incorporated in these hazard severity panels is the general warning sign W001 specified in ISO 7010.

NOTE 2   An outer yellow border to the general warning sign may be added.

5   Hazard severity panels

5.1   General

If the level of hazard severity is to be indicated, a hazard severity panel shall be added to the top of the combination or multiple product safety label. When hazard severity panels are used, they shall be rectangular in shape and, as given in Table 2, shall contain the following elements:

a)   the general warning sign;

b)   the hazard severity panel colour;

c)   the signal word, which is optional.

5.2   Layout of hazard severity panels

The hazard severity panel shall contain the general warning sign. When a signal word is used, it is placed to the right of the general warning sign and, together, centred in the hazard severity panel. When a signal word is not used, the general warning sign is centred in the hazard severity panel (see Table 2).

Signal words shall appear in upper case and bold fonts.

See Annex B for standardized signal words in other languages.

6 Type and layout of product safety labels

6.1 General

A product safety label shall comprise of one or more safety signs. In addition, a product safety label may be accompanied by one or more supplementary safety information panels and a hazard severity panel. Supplementary safety information panels shall consist of either text or a supplementary safety information symbol.

Product safety labels shall conform to one of the following seven basic types:

a) single safety sign;

b) single safety sign used with a separated supplementary safety information text panel;

c) single safety sign used with a separated supplementary safety information text panel which includes a hazard severity panel;

d) combination product safety label not incorporating a hazard severity panel;

e) combination product safety label incorporating a hazard severity panel;

f) multiple product safety label not incorporating a hazard severity panel;

g) multiple product safety label incorporating a hazard severity panel.

NOTE 1   Examples of product safety labels are given in Annex C.

NOTE 2   Development considerations for product safety labels are given in Annex D.

6.2 Single safety sign

When a product safety label is comprised of a single safety sign, the layout of the product safety label shall use the shape and colour of a safety sign as defined in ISO 3864-1 (see Figure 1).

Products generally require more than one safety sign to communicate both hazard identification and hazard avoidance information. Thus, safety signs are generally used together; either combined on a multiple product safety label or used individually (e.g. a warning sign placed next to a mandatory action sign and/or a prohibition sign). See ISO 3864-1 to determine the proper layout and colours for warning, mandatory action and prohibition safety signs.

| Warning | Prohibition | Mandatory action |

Figure 1 — Layout of safety signs as defined by ISO 3864-1

6.3 Safety sign used with a separated supplementary safety information text panel

Product safety labels may be used together with a supplementary safety information panel containing additional information that supplements or clarifies the meaning of the safety sign. The shape of the supplementary safety information panel shall be rectangular.

The supplementary safety information panel shall be placed below or beside the safety sign (see Figure 2).
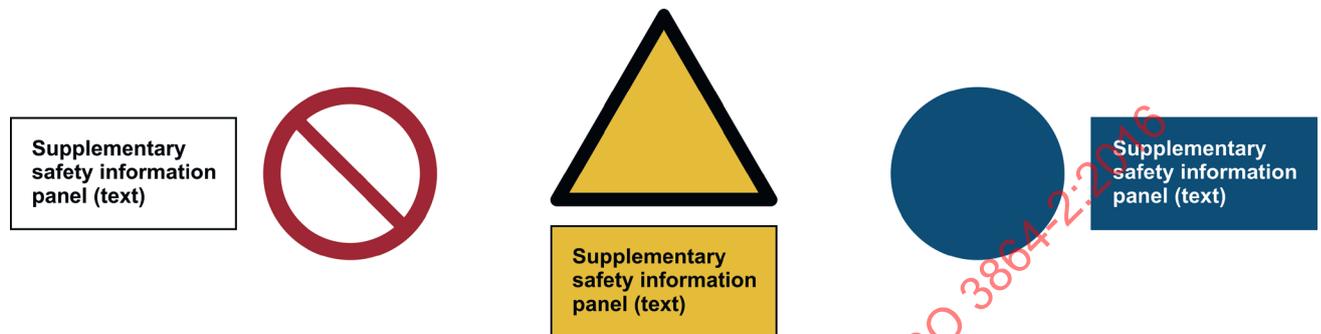
Figure 2 — Layout of safety signs used together with a separated supplementary safety information text panel

6.4 Safety sign used with a separated supplementary safety information text panel which includes a hazard severity panel

Product safety labels may be used together with a supplementary safety information panel that incorporates both a hazard severity panel and additional information in the form of text that supplements or clarifies the meaning of the safety sign. The shape of the supplementary safety information panel shall be rectangular.

Figure 3 — Layout of safety sign with a separated supplementary safety information text panel which includes a hazard severity panel with optional signal word

6.5 Combination product safety label not incorporating a hazard severity panel

Combination product safety labels combine the safety sign with the supplementary safety information on one rectangular label. On combination product safety labels, the supplementary safety information may be communicated by either text or a supplementary safety information symbol.

Black borders may be used on combination product safety labels to separate the safety sign and the supplementary safety information panel.

Supplementary safety information on combination product safety labels shall be placed below or beside the safety sign (see Figure 4).
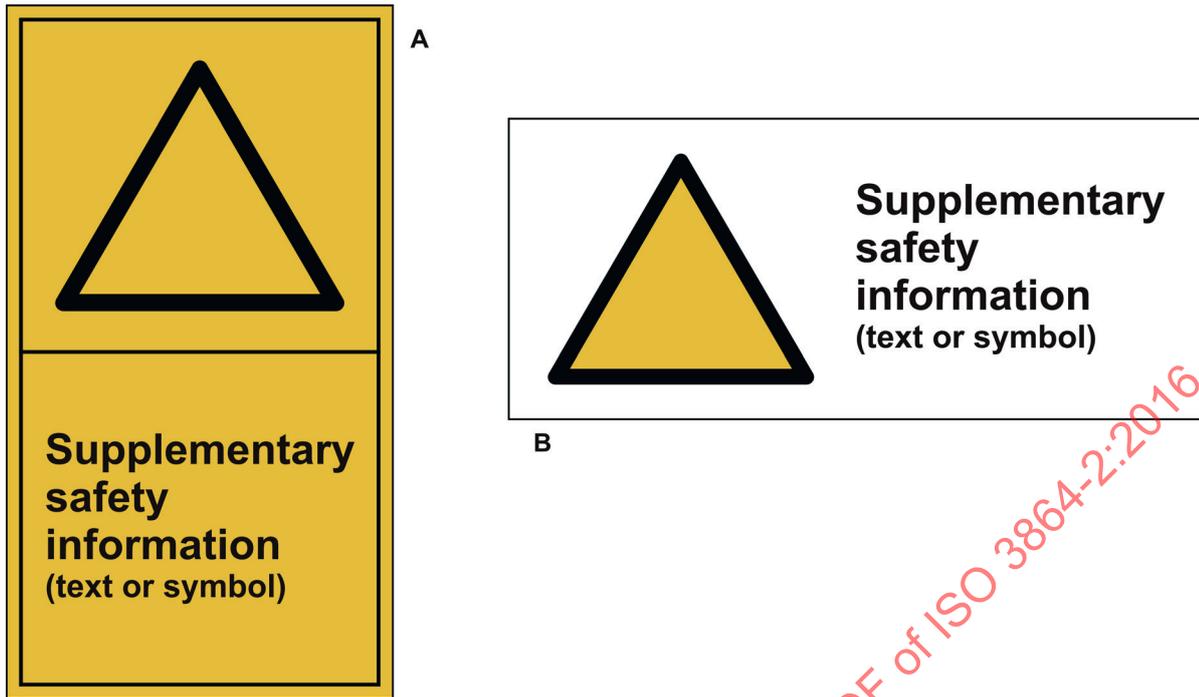
EXAMPLE A   Vertical layout with overall colour and borders.

EXAMPLE B   Horizontal layout without overall colour and without borders.

Figure 4 — Examples of layouts of combination product safety labels without a hazard severity panel

6.6   Combination product safety label incorporating a hazard severity panel

In combination product safety labels with a hazard severity panel, the hazard severity panel shall be placed at the top of a vertical label or above the supplementary safety information panel on a horizontal combination product safety label.

Black borders may be used on combination product safety labels to separate the safety sign and the supplementary safety information panel and the hazard severity panel (see Figure 5).
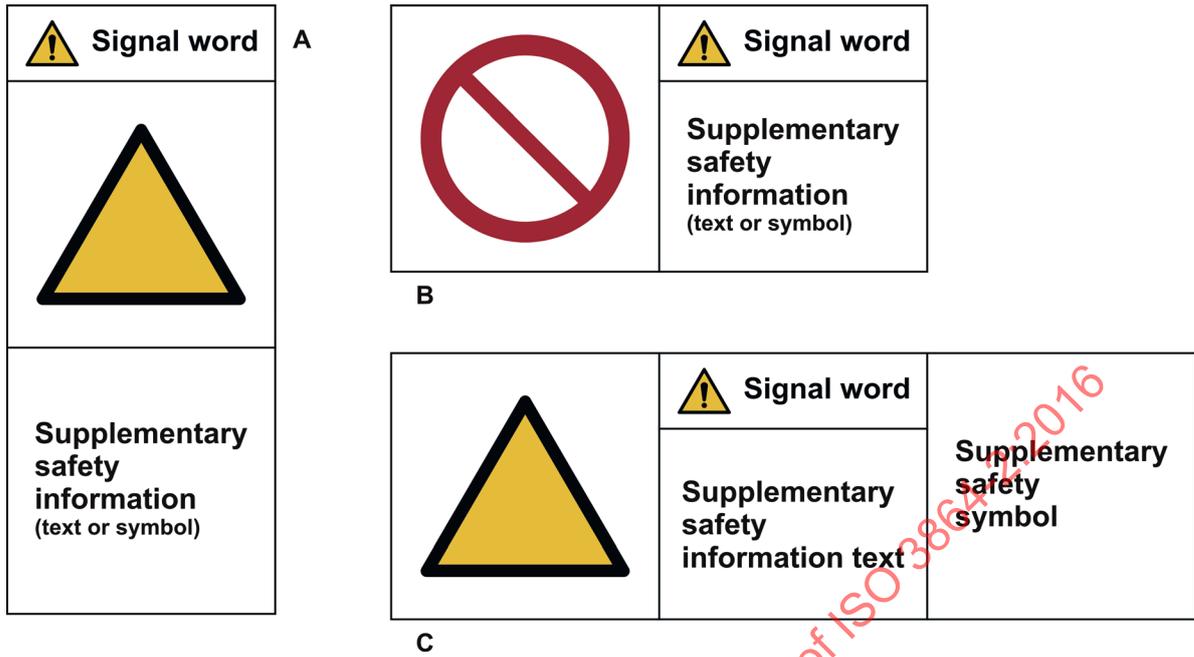
EXAMPLE A   Vertical layout.
EXAMPLES B and C   Horizontal layout.

Figure 5 — Examples of layouts of combination product safety labels with a hazard severity panel that incorporates an optional signal word

6.7 Multiple product safety label not incorporating a hazard severity panel

Multiple product safety labels contain two or more safety signs and the supplementary safety information panel on the same rectangular label.

Black borders may be used on multiple product safety labels to separate the safety signs and the supplementary safety information panel (see Figure 6).
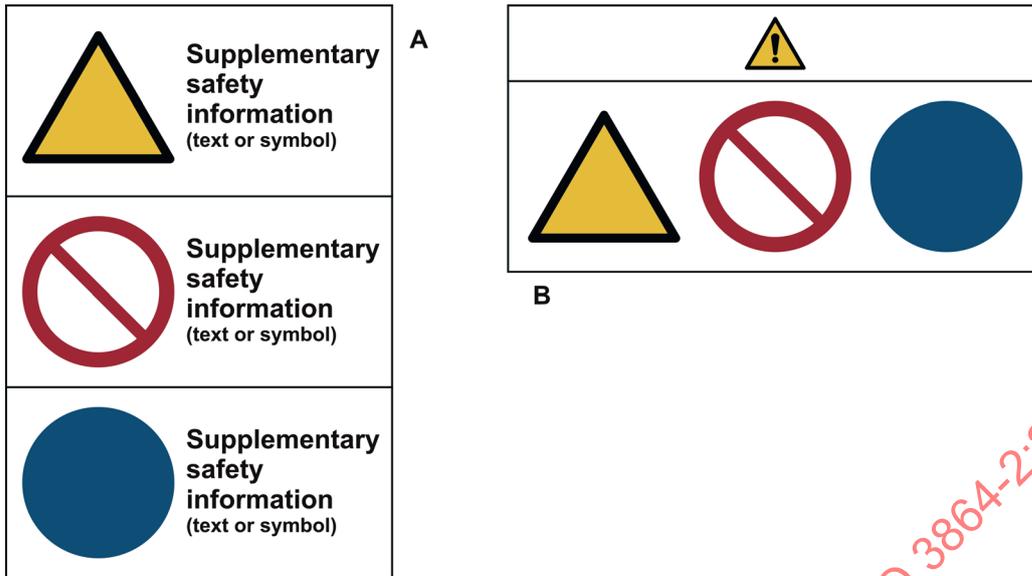
EXAMPLE A   Without hazard severity panel.
EXAMPLE B   With hazard severity panel without signal word.

Figure 6 — Examples of layouts of multiple product safety labels

6.8   Multiple product safety label incorporating a hazard severity panel

As with combination product safety labels, use of a hazard severity panel is optional for multiple product safety labels. If a hazard severity panel is used, it shall be selected from Table 2 considering the residual risk involved. When multiple hazards are described on a multiple product safety label, and the hazards are categorized at different levels of risk, the hazard severity panel shall correspond to the hazard having the highest level of risk.

There are a variety of layout options for multiple product safety labels so that product manufacturers may choose which format best suits their product and their product users.

Black borders may be used on multiple product safety labels to separate the safety signs, the supplementary safety information panels and the hazard severity panels (see Figure 6).

Annex A
(informative)

Guidelines for increasing the recognition of product safety label components

A.1 General

It is important that the meaning of a product safety label be clearly understood by those who use or service the product. To increase the understanding of a product's safety labels, product manufacturers are strongly encouraged to incorporate information that will help people understand the meaning of the product's safety labels in their product's user documents (e.g. operation manuals, instructions, safety literature, service manuals, etc.). Point of sale information is also to be encouraged within the retail environment. In addition to reproducing the product safety labels in the product's accompanying documentation, reproduction of the following applicable component definitions will assist in the objective of educating the product user so that subsequent recognition of this document's definitions for the component parts of a product safety label is achieved.

A.2 Graphical symbols

A product safety label always includes a graphical symbol within the geometric shape of a safety sign (see A.3) and if the product safety label has a supplementary safety information symbol, it appears in a rectangular panel. Design criteria for graphical symbols used in safety signs are given in ISO 3864-3. The meaning of the safety signs and supplementary safety information symbols used on the product's safety labels should be explained in the user documentation. This enables the viewer to better understand the meaning of the graphical symbols, making future recognition of the safety signs and supplementary safety information symbols more instantaneous. Additional information may also be added in other types of collateral literature to explain the product's safety signs and supplementary safety information symbols.

A.3 Geometric surround shapes

When used, Figures A.1, A.2 and A.3 and their captions should be reproduced in the user documentation:

A black graphical symbol inside a yellow triangle with a black triangular band defines a safety sign that indicates a hazard.

A black graphical symbol inside a red circular band with a red diagonal bar defines a safety sign that indicates that an action shall not be taken or shall be stopped.
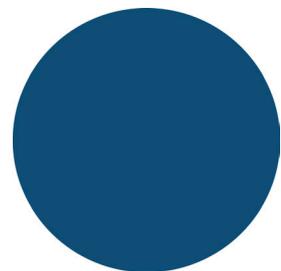
A white graphical symbol inside a blue circle defines a safety sign that indicates that an action shall be taken to avoid a hazard.

Figure A.1 — Warning   **Figure A.2 — Prohibition**   **Figure A.3 — Mandatory action**

A.4 Hazard severity panels

When used, the meaning of the different hazard severity panels as defined in this document should be explained in the user documentation. Training is necessary to increase understanding of the multi-tier hazard classification system. The following panels may be used for this purpose.

 indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

 indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Figure A.4 — Meaning of hazard severity panels

The use of the signal word is optional (see 5.1 and Table 2).

A.5 General warning sign

When used, the meaning of the general warning sign should be explained in the user documentation. Where literature accompanying a product refers to potential hazards, the general warning sign may be used alone or in combination with the proper signal word to form a hazard severity panel and to draw attention to the level of the hazard. The following illustration may be used for this purpose.

 This is the general warning sign. It is used to alert the user to potential hazards. All safety messages that follow this sign shall be obeyed to avoid possible harm.

Figure A.5 — Explanation of the general warning sign to be found in manuals

Annex B
(informative)

Translation of signal words

B.1 General

Table B.1 gives various translations for the three signal words DANGER, WARNING and CAUTION.

Table B.1 — Translation of signal words

Language	DANGER	WARNING	CAUTION
Chinese	危险	警告	注意
Danish	FARE	ADVARSEL	FORSIGTIG
Dutch	GEVAAR	WAARSCHUWING	VOORZICHTIG
English	DANGER	WARNING	CAUTION
Finnish	VAARA	VAROITUS	HUOMIO
French	DANGER	AVERTISSEMENT	ATTENTION
German	GEFAHR	WARNUNG	VORSICHT
Greek	ΚΙΝΔΥΝΟΣ	ΠΡΟΕΙΔΟΠΟΙΗΣΗ	ΠΡΟΣΟΧΗ
Italian	PERICOLO	AVVERTIMENTO	ATTENZIONE
Japanese	危険	警告	注意
Korean	위험	경고	주의
Norwegian	FARE	ADVARSEL	FORSIKTIG
Portuguese	PERIGO	ATENÇÃO	CUIDADO
Russian	ОПАСНОСТЬ	ПРЕДУПРЕЖДЕНИЕ	ВНИМАНИЕ
Spanish	PELIGRO	ADVERTENCIA	ATENCIÓN
Swedish	FARA	VARNING	OBSERVERA
Thai	อันตราย	คำเตือน	ข้อควรระวัง
Turkish	TEHLİKE	UYARI	DİKKAT

Annex C
(informative)

Examples of product safety labels

There are several choices to make when designing a product safety label that conforms to this document including the following:

— to use only ISO 7010 safety signs, either individually or placed together on a multiple product safety label;

— to add supplementary safety information text to the ISO 7010 safety signs;

— to add a hazard severity panel;

— to add supplementary safety information symbols;

— to use borders in various ways to separate label components.

The illustrations shown in Figure C.1 are intended to give the designer of the product safety labels some visual examples of the options for developing label formats according to the principles given in this document.

Figure C.1 illustrates several approaches for communicating safety information for a product. The use of two or more safety signs communicates both hazard identification and hazard avoidance information:

— A: Example of a product safety label according to 6.1 a);

— B: Example of a product safety label according to 6.1 a);

— C: Example of a product safety label according to 6.1 a);

— D: Example of a product safety label according to 6.1 f);

— E: Example of a product safety label according to 6.1 b);

— F: Example of a product safety label according to 6.1 d);

— G: Example of a product safety label according to 6.1 c);

— H: Example of a product safety label according to 6.1 e);

— I: Example of a product safety label according to 6.1 g);

— J: Example of a product safety label according to 6.1 g);

— K: Example of a product safety label according to 6.1 g);

— L: Example of a product safety label according to 6.1 d).