

INTERNATIONAL
STANDARD

ISO
9244

First edition
1995-05-15

**Earth-moving machinery — Safety signs
and hazard pictorials — General principles**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

*Engins de terrassement — Signaux de sécurité et de danger — Principes
généraux*

ISO 9244:1995

<https://standards.iteh.ai/catalog/standards/sist/c04e14e5-de63-4d86-ae79-0b055f4d8c22/iso-9244-1995>



Reference number
ISO 9244:1995(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote.

International Standard ISO 9244 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee 2, *Safety requirements and human factors*.

iteh STANDARD PREVIEW
(standards.iteh.ai)
<https://standards.iteh.ai/catalog/standards/sist/c04e14e5-de63-4d86-ae79-0b055f4d8c22/iso-9244-1995>

© ISO 1995

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Introduction

ISO 9244 was developed by TC 127/SC 2 to provide a truly International Standard for safety signs and hazard pictorials used on earth-moving machinery. Safety signs are used internationally to alert the equipment operator to hazards that may be encountered in the use and maintenance of the equipment. These hazards are typically created by functional components, where the hazards cannot be designed out or guarded. These hazards are often machine-dependent and are best by a specific safety sign rather than a general or generic approach.

The provisions of ISO 9244 cover safety signs that satisfy legal requirements in the European Community, in the United States, and in other parts of the world. Two of the formats included in ISO 9244 are consistent with prEN 5099-1 and EC Directive 89/392/EEC. The other two formats in ISO 9244 are consistent with the USA national standard on safety signs (ANSI Z535.4) and meet the requirements of American products liability law.

A selection of hazard pictorials and guidelines for the development of new hazard pictorials are included in informative annexes. Additional hazard pictorials may be added to the annexes at a later date, and other pictorials may be developed and used as appropriate.

<https://standards.iteh.ai/catalog/standards/sist/c0-4c14e5-d663-4d86-ac79-0b055f4d8c22/iso-9244-1995>

iTeh STANDARD PREVIEW
This page intentionally left blank
(standards.iteh.ai)

ISO 9244:1995

<https://standards.iteh.ai/catalog/standards/sist/c04e14e5-de63-4d86-ac79-0b055f4d8c22/iso-9244-1995>

Earth-moving machinery — Safety signs and hazard pictorials — General principles

1 Scope

This International Standard establishes general principles for the design and application of safety signs and hazard pictorials permanently affixed to earth-moving machinery as defined in ISO 6165. This International Standard outlines safety sign objectives, describes the basic safety sign formats, specifies colours for safety signs, and provides guidance on developing the various panels that together constitute a safety sign.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6165:1987, *Earth-moving machinery — Basic types — Vocabulary*.

3 Objectives of safety signs

3.1 The objectives of a safety sign are to

- Alert persons to an existing or potential hazard
- Identify the hazard

— Describe the nature of the hazard

— Explain the consequences of potential injury from the hazard

— Instruct persons about how to avoid the hazard

3.2 In achieving these objectives, a safety sign should be distinctive on the equipment, should be in a clearly visible location, should be protected to the greatest extent practicable from damage and obliteration, and should have a reasonably long life expectancy.

3.3 Safety signs and hazard pictorials can be located on the machine or in operating service instruction manuals. Safety signs and hazard pictorials located on the machine shall be located near the location of the hazard or the control area to prevent the hazard.

3.4 Care shall be taken to prevent excessive need/use of safety signs and hazard pictorials on the machine, because overuse can reduce their effectiveness.

NOTE Experience has indicated that the effectiveness of safety signs and hazard pictorials is reduced when they begin to exceed approximately 7 in number.

3.5 Safety signs and hazard pictorials can be used in operator and service instruction manuals to highlight areas requiring special care. Their use in manuals is not subject to the recommendation in Clause 3.4.

4 Formats for safety signs

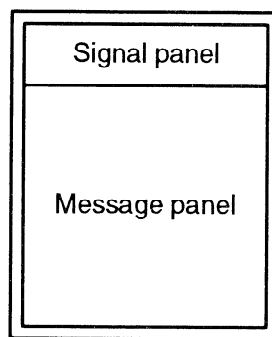
4.1 A safety sign is composed of a border surrounding two or more rectangular panels that convey information about hazards associated with operation of a product.

4.2 There are four standard formats for safety signs:

- two-panel safety sign: signal panel, message panel (see 4.4);
- three-panel safety sign: signal panel, pictorial panel, message panel (see 4.5);
- two-panel safety sign: pictorial panel, message panel (see 4.6);
- two-panel safety sign: two pictorial panels (see 4.7).

4.3 A vertical configuration is usually preferred, although a horizontal configuration is acceptable. Final choice of safety sign format and configuration should be determined by whichever alternative is judged to communicate most effectively, by the geographical and language areas where the product will be marketed, by legal requirements, and by the space available for the safety sign.

4.4 Two-panel safety signs: signal panel, message panel. See figure 1. The signal panel contains the safety alert symbol and one of the three signal words (CAUTION, WARNING, DANGER). The message panel contains a text message that describes the hazard, explains the consequences of exposure to the hazard, and instructs how to avoid the hazard.



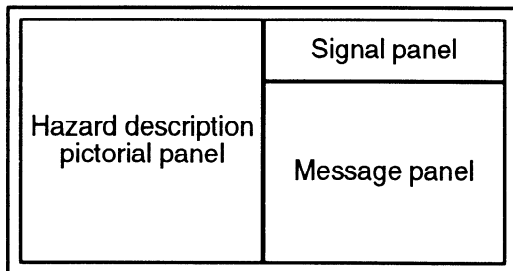
Vertical configuration

Figure 1 — Two-panel safety signs: signal panel, message panel

4.5 Three-panel safety signs: signal panel, pictorial panel, message panel. See figure 2. The signal panel contains the safety alert symbol and one of the three signal words. The pictorial panel contains a hazard description pictorial or, in some cases, a combined hazard description and hazard avoidance pictorial. The message panel contains a text message that describes the hazard, explains the consequences of exposure to the hazard, and instructs how to avoid the hazard.



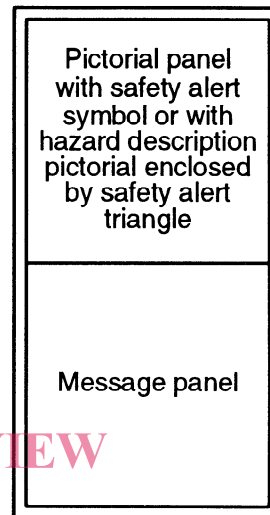
Vertical configuration



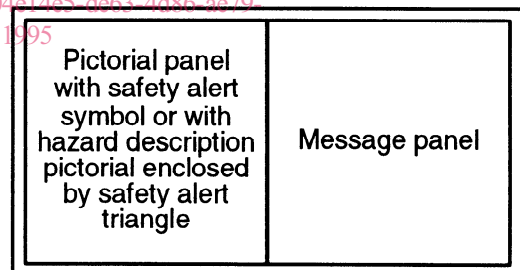
Horizontal configuration

Figure 2 — Three-panel safety signs: signal panel, pictorial panel, message panel

4.6 Two-panel safety signs: pictorial panel, message panel. See figure 3. The pictorial panel contains either a hazard description pictorial enclosed by the safety alert triangle or the safety alert symbol alone. The message panel contains a text message that describes the hazard, explains the consequences of exposure to the hazard, and instructs how to avoid the hazard.



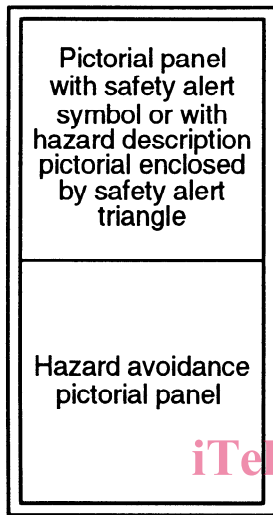
Vertical configuration



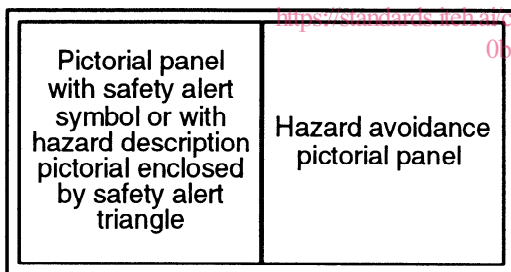
Horizontal configuration

Figure 3 — Two-panel safety signs: pictorial panel, message panel

4.7 Two-panel safety signs: two pictorial panels. See figure 4. The first pictorial panel is the hazard description pictorial panel and contains either a hazard description pictorial enclosed by the safety alert triangle or the safety alert symbol alone. The second pictorial panel is the hazard avoidance pictorial panel and contains a hazard avoidance pictorial.



Vertical configuration



Horizontal configuration

Figure 4 — Two-panel safety signs: two pictorial panels

4.8 Variations on these standard formats may be appropriate for some situations.

5 Signal panel

5.1 The signal panel of a safety sign contains the safety alert symbol and one of the three signal words.

5.2 The safety alert symbol for safety signs that contain one of the signal words shall be as shown in figure 5 and shall be used for safety signs that contain one of the three signal words.



Figure 5 — Safety alert symbol for safety signs that contain a signal word

5.3 Safety signs may be classified according to the relative seriousness of the hazard situation by use of the signal word.

5.3.1 There are three signal words: DANGER, WARNING, and CAUTION. The signal word alerts viewers to the existence and relative seriousness of a hazard.

5.3.2 The three signal words are reserved for personal injury hazards. Choice of the signal word is based upon an estimate of the likelihood of exposure to the hazard and of the probable consequences of exposure to the hazard.

— **DANGER.** The signal word DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Safety signs identified by the signal word DANGER should be used sparingly and only for those situations presenting the most serious hazards.

- **WARNING.** The signal word WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Hazards identified by the signal word WARNING present a lesser degree of risk of injury or death than those identified by the signal word DANGER.
- **CAUTION.** The signal word CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. CAUTION may also be used to alert against unsafe practices associated with events that could lead to personal injury.

6 Pictorial panels

6.1 A pictorial panel of a safety sign contains a hazard description pictorial, a hazard avoidance pictorial, or the safety alert symbol alone.

6.2 There are two basic types of pictorials for use on safety signs: hazard description and hazard avoidance.

- **Hazard description pictorial.** A hazard description pictorial presents a visual description of the hazard and, in general, the consequences of not avoiding the hazard.

- **Hazard avoidance pictorial.** A hazard avoidance pictorial presents visual instructions on how the hazard should be avoided.

6.2.1 A well developed hazard description pictorial should clearly identify the hazard and portray the potential consequences of a failure to follow instructions. A well developed hazard avoidance pictorial should clearly identify the actions necessary to avoid interaction of persons with the hazard.

6.2.2 It is possible that both types of pictorial may be combined into a single pictorial, although this generally is quite difficult. Most often, a hazard description pictorial is used. A hazard avoidance pictorial may be used to supplement or to replace the text message.

6.2.3 In a few cases, a pictorial may address more than one hazard. In general, however, avoid addressing more than one hazard by a single pictorial unless the hazards are closely related.

6.3 On two-panel safety signs, the hazard description pictorial shall be enclosed by the safety alert triangle to identify the sign as a safety sign. The safety alert triangle is shown in figure 6.

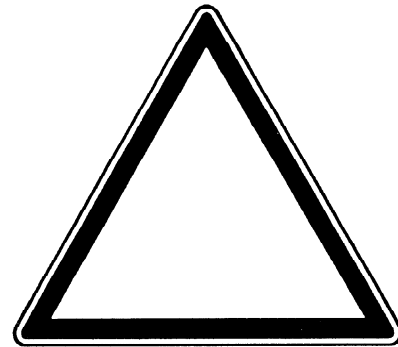


Figure 6 — Safety alert triangle

6.4 If no hazard description pictorial is used inside the safety alert triangle, an exclamation mark is placed within the triangle to create the outline safety alert symbol shown in figure 7.



Figure 7 — Outline safety alert symbol

7 Message panel

7.1 The message panel of a safety sign contains a text message that, either alone or in combination with a pictorial panel, describes the hazard, explains the potential consequences of exposure to the hazard, and instructs how to avoid the hazard.

7.2 If a hazard description pictorial adequately portrays the hazard and its potential consequences, one or both of these elements may be deleted from the message panel. If a hazard avoidance pictorial adequately portrays how to avoid the hazard, that element may be deleted from the message panel. If no pictorial is used, the message panel must convey all three elements. When possible, the message should be written in simple sentences not exceeding a few lines.

8 Languages, translations, and multi-language safety signs

8.1 Safety signs that contain a signal word or a text message should be in one of the languages of the country where the product is to be used. Safety signs without text obviously require no language translation. However, products that use no-text safety signs require both of the following:

- A special safety sign that instructs the operator to consult the operator's manual for an explanation of the safety signs applicable to that product.
- Appropriate text messages, corresponding to the no-text safety signs, printed in the operator's manual in the appropriate language.

8.2 Figure 8 shows, as an example, a four-language "Read operator's manual" safety sign in German, French, English, and Dutch. Other language combinations, or a single language, are also permitted, so long as the safety sign includes the language of the geographical area where the product is to be used.



Figure 8 — Example of four-language "Read operator's manual" safety sign for use on products with no-text safety signs

8.3 Figure 9 shows the no-text "Read operator's manual" safety sign. This safety sign may be used as an alternative to a single or multiple language safety sign of the type shown in figure 8.

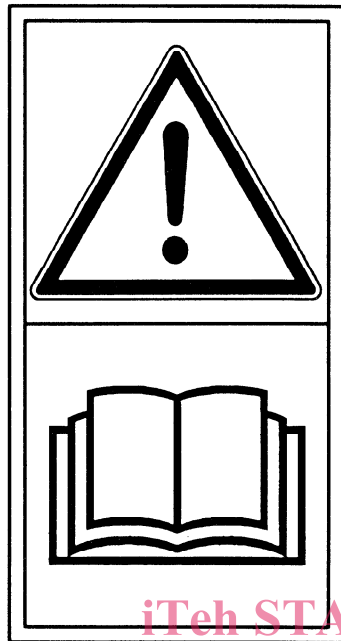


Figure 9 — No-text "Read operator's manual" safety sign for use on products with no-text safety signs

9.1.3 The signal panel of CAUTION signs shall have a black signal word on a yellow background. The safety alert symbol shall have a yellow exclamation mark on a black background (see figure 5).

9.2 Colours of pictorial panel

The colours of the pictorial panels depend on whether the safety sign contains one of the three signal words.

9.2.1 Pictorial panels of safety signs that contain one of the three signal words shall have a black pictorial on a white background.

9.2.2 Pictorial panels of safety signs that contain the safety alert triangle or the outline safety alert symbol shall have a black pictorial on a yellow background.

9.2.3 Other colours (for example, red to indicate fire) may be used to emphasize specific aspects of the pictorial.

9.2.4 If prohibition of an activity is indicated by X or ⊘ or the word STOP (see Annex D, clause D.9), the prohibition indicator shall be red.

9.3 Colours of message panel

The colours of the message panel depend on whether the safety sign contains one of the three signal words.

9.3.1 The message panel of safety signs that contain a signal word shall have white letters on a black background or black letters on a white background.

9.3.2 The message panel of safety signs that do not contain a signal word shall have black letters on a yellow background or black letters on a white background.

9 Colours of safety signs

9.1 Colours of signal panel

The colour of the signal panel depends on the selection of the signal word.

9.1.1 The signal panel of DANGER signs shall have a white signal word on a red background. The safety alert symbol shall have a red exclamation mark on a white background triangle (see figure 5).

9.1.2 The signal panel of WARNING signs shall have a black signal word on an orange background. The safety alert symbol shall have an orange exclamation mark on a black background triangle (see figure 5).

9.4 Colour of border

The colour of the border depends on the selection of the signal word and whether the safety sign contains the safety alert triangle.

9.4.1 The border of DANGER signs shall be red. If necessary to differentiate the safety sign from the colour of the surface on which it is affixed, an additional outside border of white may be used.

9.4.2 The border of WARNING signs shall be orange. If necessary to differentiate the safety sign from the colour of the surface on which it is affixed, an additional outside border of white or black may be used.

9.4.3 The border of CAUTION signs shall be yellow. If necessary to differentiate the safety sign from the colour of the surface on which it is affixed, an additional outside border of white or black may be used.

9.4.4 The border of safety signs that contain the safety alert triangle shall be yellow. If necessary to differentiate the safety sign from the colour of the surface on which it is affixed, an additional outside border of white or black may be used.

9.5 Colour of panel separation lines

Any panel separation lines shall be black.

10 Dimensions

Recommended dimensions in millimetres of safety signs are shown in figures 10 through 13. Smaller or larger sizes may be used as required. Proportions may be varied as necessary to provide a sufficiently large signal panel or to provide adequate space for the message panel to be set in a legible typesize.

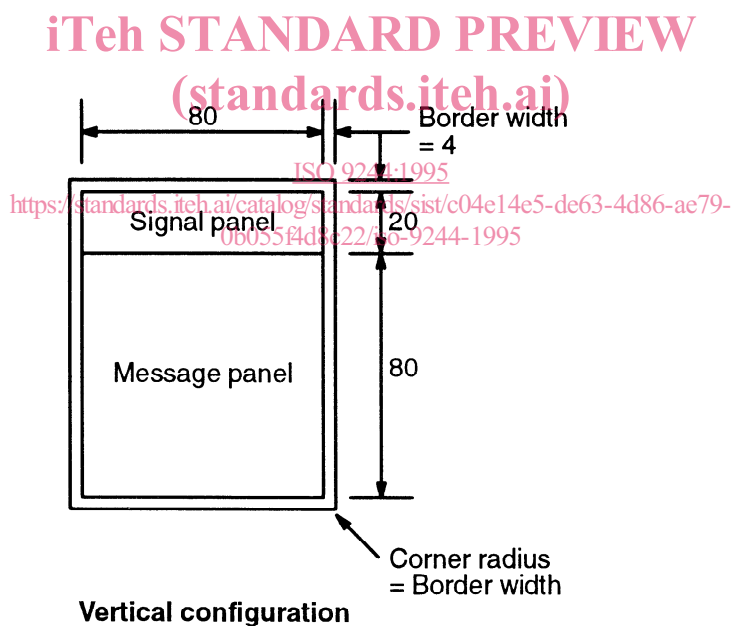


Figure 10 — Recommended dimensions: two-panel format: signal panel, message panel

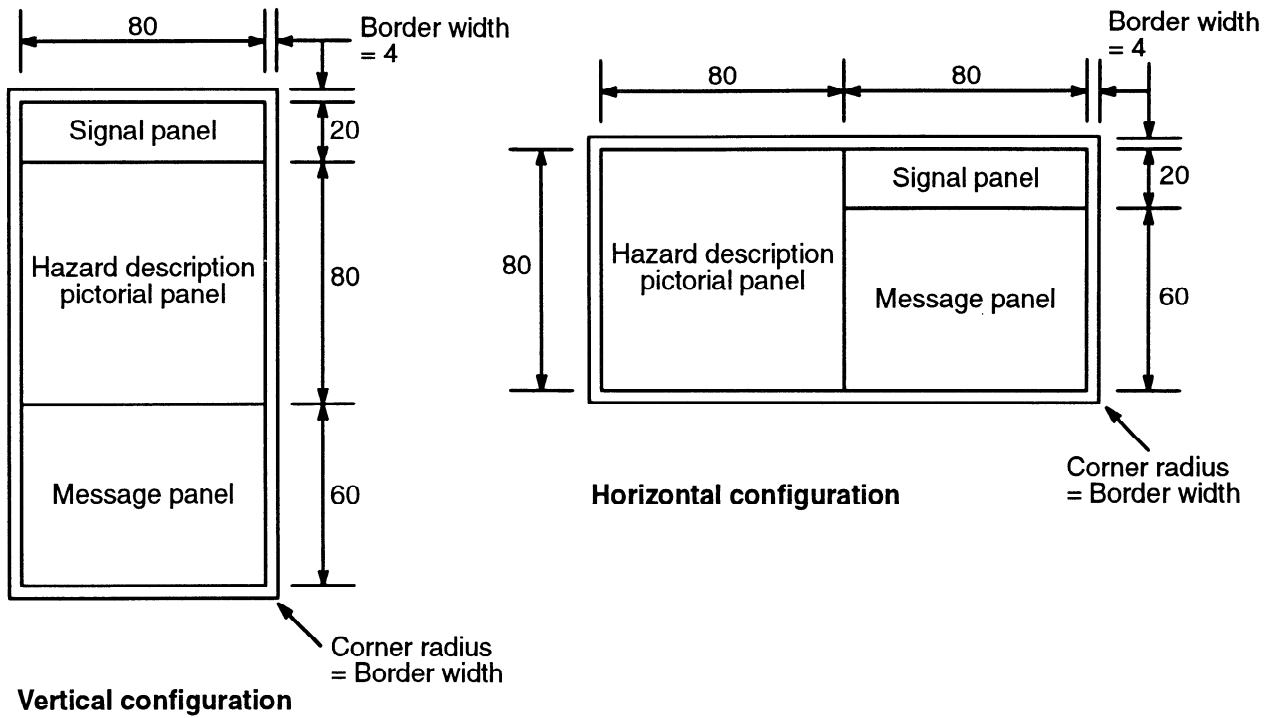


Figure 11 — Recommended dimensions: three-panel format: signal panel, pictorial panel, message panel

(standards.itech.ai)

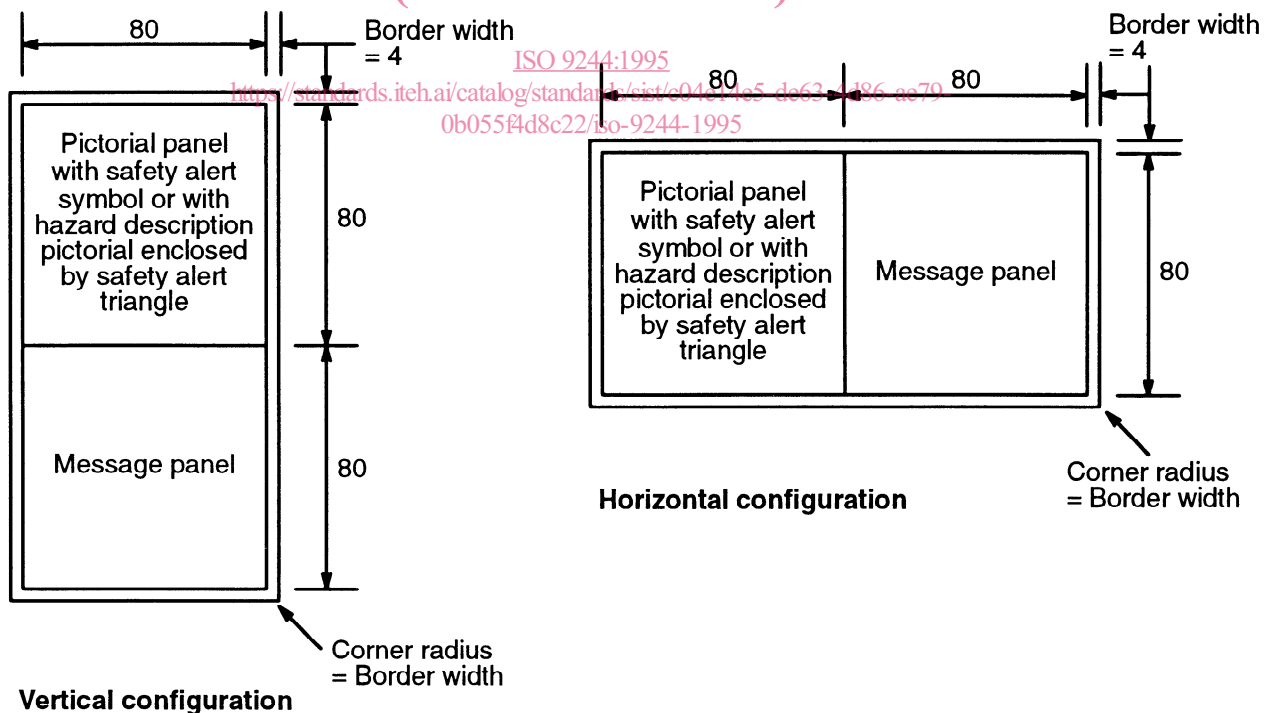


Figure 12 — Recommended dimensions: two-panel format: pictorial panel, message panel