# SEMI S1-0308[E]
# SAFETY GUIDELINE FOR EQUIPMENT SAFETY LABELS

This safety guideline was technically approved by the global Environmental Health & Safety Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on December 20, 2007. It was available at www.semi.org in February 2008 and on CD-ROM in March 2008. Originally published 1986; previously published November 2007.

[E] This standard was revised in September 2008 to correct a publication error. Changes were made to § 7. This document replaces SEMI S1-0308 in its entirety.

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## 1 Purpose

1.1 This guideline provides guidance for the content and format of equipment safety labels and gives examples of symbols to use.

1.2 This guideline is intended for use by equipment manufacturers to create safety labels that alert persons to hazards associated with the equipment.

1.3 This guideline is intended to provide a unified international semiconductor-industry-specific safety labeling format.

## 2 Scope

2.1 This guideline is intended to assist in developing safety labels for manufacturing equipment used in the semiconductor industry.

NOTE 1: This guideline may also be used for the design of safety signs for the facilities where semiconductor manufacturing equipment is installed.

NOTE 2: The guidance provided in this document may also be adapted to help communicate safety information in installation instructions, operation and maintenance manuals, and other similar written communication relating to a product. See also ANSI Z535.6, American National Standard for Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials.

NOTE 3: This guideline may also be adapted for the design of computerized user interfaces on equipment.

NOTE 4: In order to present a more consistent user interface, it is recommended that the use of the words DANGER, WARNING, and CAUTION, in such interfaces be limited to the meanings and uses given for them in this guideline.

2.2 This document contains the following sections:

1. Purpose
2. Scope
3. Limitations
4. Referenced Standards and Documents
5. Terminology
6. General Provisions
7. Formats
8. Signal Words
9. Symbols
10. Word Message
11. Colors
12. Placement
13. Translation
14. Related Documents
Appendix 1 — Safety Symbols
Related Information 1 — Minimum Letter Height Calculations
Related Information 2 — Translation of Signal Words



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**NOTICE:** This safety guideline does not purport to address all of the safety issues associated with its use. It is the responsibility of the users of this safety guideline to establish appropriate safety and health practices and determine the applicability of regulatory or other limitations prior to use.

## 3 Limitations

3.1 Various components or assemblies used in semiconductor manufacturing equipment may carry safety labels that are designed and affixed in accordance with other international standards. It is not the intent of this guideline to replace or supersede such labeling requirements.

3.2 Some safety label formats and content are dictated by other applicable standards and guidelines or by law (e.g., laser labeling and chemical hazard communication labeling in certain countries of use). It is not the intent of this guideline to replace or supersede such labeling requirements.

3.3 New safety labels and safety labels that are significantly redesigned should conform to the latest version of SEMI S1. This guideline is not intended to be applied retroactively.

## 4 Referenced Standards and Documents

4.1 *SEMI Standards and Safety Guideline*

SEMI S10 — Safety Guideline for Risk Assessment

4.2 *ANSI Standards*[1]

ANSI Z535.1 — Safety Color Code

ANSI Z535.3 — Criteria for Safety Symbols

ANSI Z535.4 — Product Safety Signs and Labels

ANSI Z535.6 — American National Standard for Product Safety Information in Product Materials, Instructions, and Other Collateral Materials

4.3 *IEC Standard*[2]

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

4.4 *ISO Standards*[3]

ISO 3864-1 — Safety colours and safety signs - Part 1: Design principles for safety signs in workplaces and public areas

ISO 3864-2 — Safety colours and safety signs - Part 2: Design principles for product safety labels

ISO 3864-3 — Safety colours and safety signs - Part 3: Design principles for graphical symbols for use in safety signs

ISO 7010 — Graphical symbols - Safety colours and safety signs - Safety signs used in workplaces and public areas[4]

**NOTICE:** Unless otherwise indicated, all documents cited shall be the latest published versions.

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1 American National Standards Institute, Headquarters: 1819 L Street, NW, Washington, DC 20036, USA. Telephone: 202.293.8020; Fax: 202.293.9287. New York Office: 11 West 42nd Street, New York, NY 10036, USA. Telephone: 212.642.4900; Fax: 212.398.0023; http://www.ansi.org

2 International Electrotechnical Commission, 3 rue de Varembé, Case Postale 131, CH-1211 Geneva 20, Switzerland. Telephone: 41.22.919.02.11; Fax: 41.22.919.03.00; http://www.iec.ch

3 International Organization for Standardization, ISO Central Secretariat, 1 rue de Varembé, Case postale 56, CH-1211 Geneva 20, Switzerland. Telephone: 41.22.749.01.11; Fax: 41.22.733.34.30; http://www.iso.ch

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## 5 Terminology

5.1 *harm* — physical injury or damage to health of people, or damage to equipment, buildings or environment.

5.2 *hazard* — condition that has the potential to cause harm.

5.3 *panel* — area of a safety label having a distinctive background color which is different from other areas, or which is delineated by a line, border, or margin. See Figures 3 and 4 for examples of panel placement.

5.4 *safety alert symbol* — a specific symbol (see Figure 1) that indicates a potential personal injury hazard.

**(A) for use with DANGER signal word** (white triangle, red exclamation mark and red background).

**(B) for use with WARNING signal word** (black triangle, orange exclamation mark)

**(C) for use with CAUTION signal word** (black triangle, yellow exclamation mark).

**(D) and (E) for use with DANGER, WARNING or CAUTION signal words** (yellow background, black border and black exclamation mark. (E) has a yellow border around the black border).

**Figure 1**
**Safety Alert Symbols for Signal Word Panel Use**[5]

5.5 *safety label* — a sign, label, or decal that provides safety information.

5.6 *signal word* — the word that calls attention to the safety label and designates a degree or level of hazard seriousness.

5.7 *surround shape* — a geometric configuration that is placed around a symbol and which conveys additional safety information.

5.8 *symbol* — a graphical representation, either abstract or representational, of a hazard, a consequence of engaging a hazard, or a method to avoid a hazard, or some combination of these ideas.

NOTE 5: Some label design standards use the term "pictorial" in the same sense as this guideline uses the term "symbol."

5.9 *target audience* — the audience to be advised of the hazard.

## 6 General Provisions

6.1 Safety labels should communicate information about specific hazards. Safety labels should be simple, direct, and understandable by the target audience.

6.2 *Content* — Safety labels should communicate:

6.2.1 The seriousness of the hazard (indicated by the signal word);

6.2.2 The nature of the hazard (e.g., type of hazard) or the probable consequence of engaging the hazard; and

6.2.3 How the hazard can be avoided.

6.3 See Figure 2 for examples of how this information can be communicated on a safety label.

5 Reprinted from ANSI Z535.4-2007, Section 4.10 American National Standard for Product Safety Signs and Labels by permission of the National Electric Manufacturers Association.

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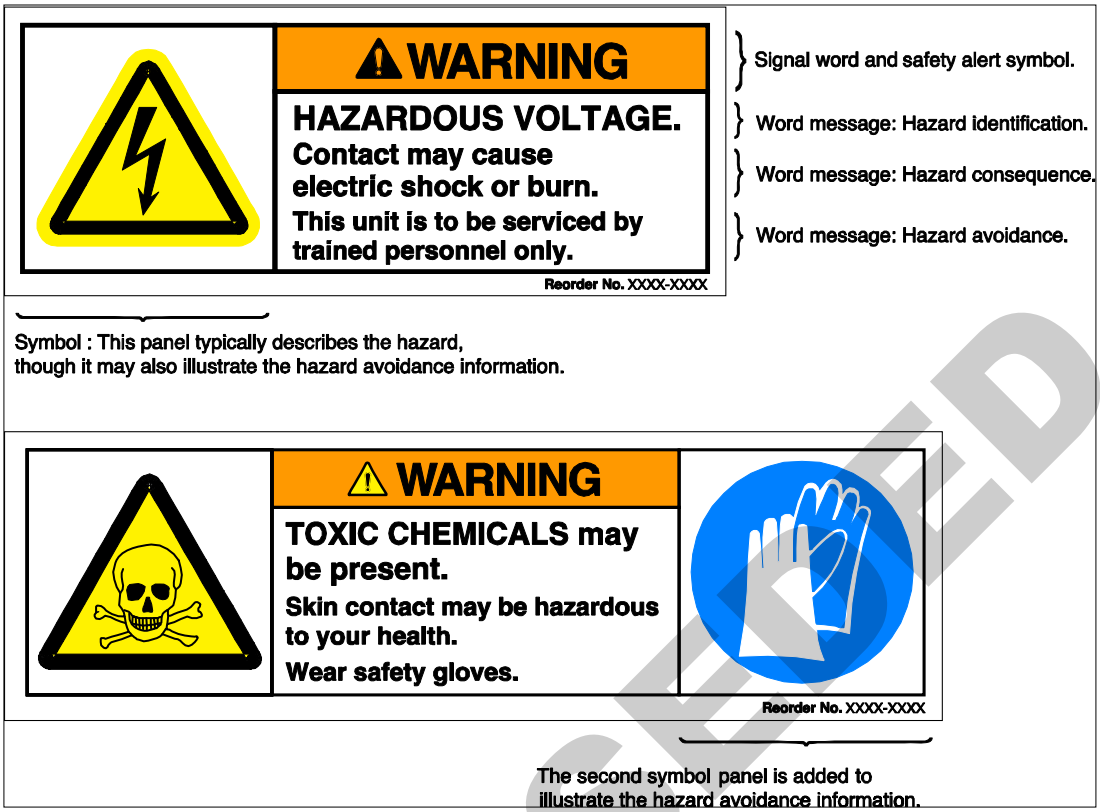


(Note that the order and content of the word message is flexible.)

**Figure 2**
**Examples of How Product Safety Labels Communicate Content**

6.4 *Identifier* — Safety labels should have a unique identifier (e.g., a part number) printed on the label, to facilitate ordering replacement labels from the equipment manufacturer.

NOTE 6: If a safety label becomes illegible, the user may want to replace it.

6.5 *Durability* — Safety labels should have a reasonable useful life. Determination of reasonable useful life should take into consideration the expected life of the product and the intended environment of use.

NOTE 7: Two factors that may be used for judging useful life are color stability and legibility when viewed at a safe viewing distance. Legibility is affected by letter height.

## 7 Formats

7.1 Safety labels should consist of at least three panels: signal word panel, word message panel, and symbol panel. Figure 3 provides examples of some possible horizontal and vertical formats incorporating these panels.

EXCEPTION 1: A symbol panel is not necessary for labels that indicate only potential property damage hazards.

EXCEPTION 2: When space limitations exist, such as under guards or on small parts, for safety labels whose target audience is maintenance or service personnel, symbol-only formats with surround shapes (i.e., no signal word, word message, or symbol panels; see Figures 8, 9, and 10) may be used. In this case, borders around the surround shapes should be used. Alternatively, for the same situations, a safety label may be used that has a signal word panel and a word message panel but does not have a symbol panel.

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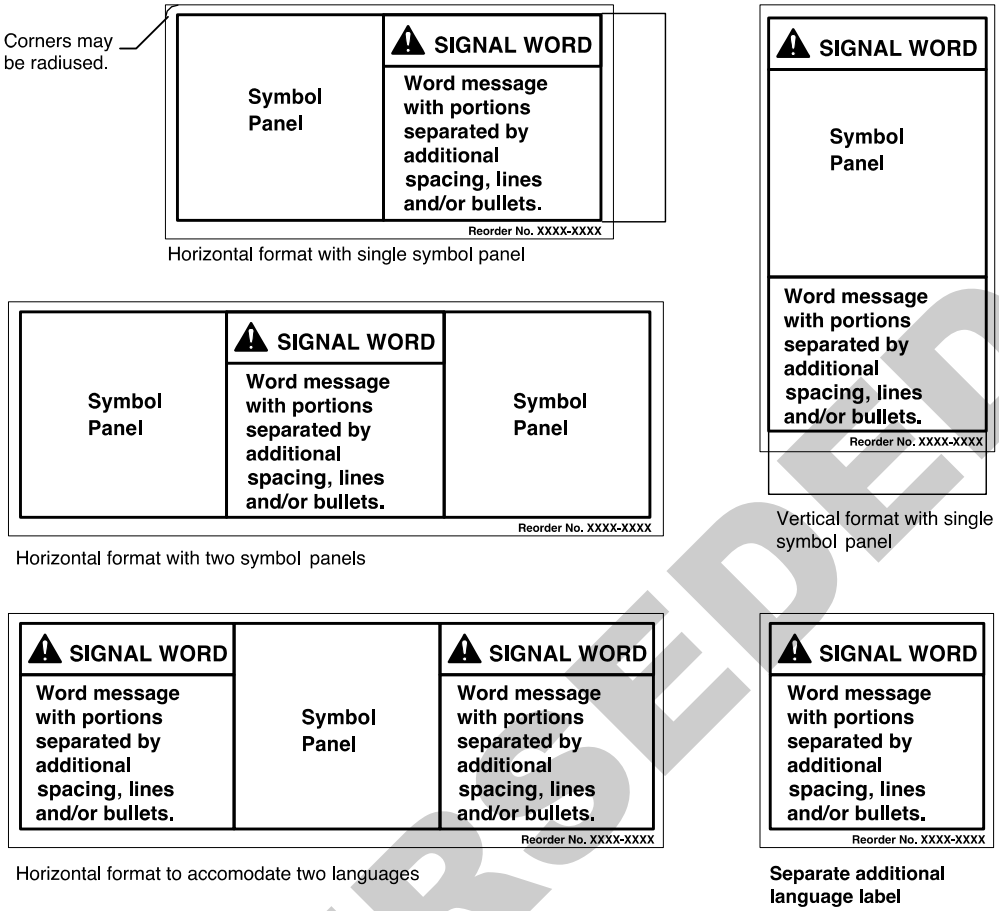


**Figure 3**
**Examples of Format Options for Product Safety Labels**

7.2 *Multiple Hazard Formats* — More than one hazard may be conveyed on a single safety label (see Figure 4 for examples).

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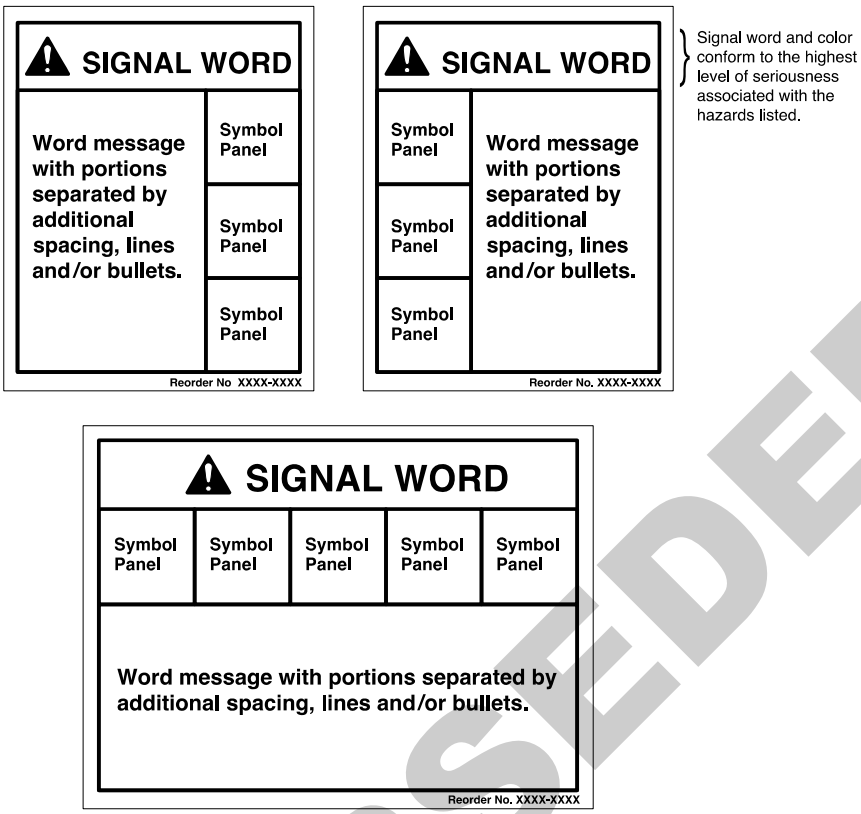


**Figure 4**
**Examples of Multi-Hazard Safety Label Formats**

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## 8 Signal Words

8.1 The signal words for safety labels are DANGER, WARNING, CAUTION, and NOTICE.

8.1.1 DANGER is the signal word used to indicate a hazardous situation that, if not avoided, will result in death or severe injury. This signal word is to be limited to the most extreme situations.

8.1.2 WARNING is the signal word used to indicate a hazardous situation that, if not avoided, could result in death or severe injury.

8.1.3 CAUTION is the signal word used to indicate a hazardous situation that, if not avoided, could result in moderate or minor injury. It may be used without the safety alert symbol as an alternative to NOTICE.

8.1.4 NOTICE is the signal word used to indicate a hazardous situation that, if not avoided, could result in property damage. The safety alert symbol should not be used with this signal word. As an alternative to NOTICE, the word CAUTION without the safety alert symbol may be used.

NOTE 8: SEMI S10 contains examples of ways to categorize severe, moderate, and minor injuries.

8.2 The signal word is placed in the signal word panel.

8.2.1 For DANGER, WARNING, and CAUTION signal words, the safety alert symbol (see Figure 1) is located immediately to the left of and on the same level as the signal word (see Figure 6).



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**Figure 5**
**Signal Word Panels[5]**

8.2.2 The safety alert symbol should not be used to alert persons to property-damage-only hazards (see Figure 7).

NOTE 9: The term "property-damage-only" is used in order to align with ANSI Z535.4. "Property-damage-only" is used therein to refer to damage excluding personal injury.

**Figure 6**
**Signal Word Panels for Property-Damage-Only Hazards**

8.2.3 When multiple hazard situations are addressed on one safety label, and the hazards are classified at different levels of seriousness, the signal word corresponding to the greatest hazard level should be used.

8.3 Translation of the signal words is optional. If the signal words are translated for any specific country or region, the appropriate translations in Related Information 2 should be used.

## 9 Symbols

9.1 Symbols are graphic representations chosen to convey specific safety messages.

9.2 The symbol panel should contain the safety label's symbol(s).

9.2.1 More than one symbol panel may be used on a safety label.

NOTE 10: See also § 7.2.

9.2.2 More than one symbol may be used in each symbol panel.

9.3 Symbols may be used to clarify or supplement a portion of a safety label's word message.

NOTE 11: In some cases, symbols may replace the word message. See the exception to § 10.2.

9.4 A symbol should represent one or more of the following:

- the nature of the hazard.
- the potential consequence of engaging the hazard.
- actions to be taken to avoid the hazard.
- actions that are prohibited to avoid the hazard.

9.5 Symbols should be compatible with the safety label's word message.

NOTE 12: It is preferable to use the symbols shown in Appendix 1.

NOTE 13: For additional information on symbol design, see Annex A of ANSI Z535.3.

9.6 Symbols should be shown in their appropriate surround shape as defined in § 9.10.

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