
# ANSI Z535.3-2007

# American National Standard

## Criteria for Safety Symbols


**ANSI Z535.3-2007**
Revision of
ANSI Z535.3-2002

American National Standard

# Criteria for Safety Symbols

Secretariat:

**National Electrical Manufacturers Association**

Approved October 9, 2007
Published November 5, 2007

**American National Standards Institute, Inc.**

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Published by

**National Electrical Manufacturers Association**
**1300 North 17th Street, Rosslyn, VA 22209**



Printed in the United States of America

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# Contents

Page



## Annexes

**Foreword** (This foreword is not part of American National Standard Z535.3-2007.)

In 1979, the ANSI Z53 Committee on Safety Colors was combined with the ANSI Z35 Committee on Safety Signs to form the ANSI Z535 Committee on Safety Signs and Colors. This committee has the following scope:

> To develop standards for the design, application, and use of signs, colors, and symbols intended to identify and warn against specific hazards and for other accident prevention purposes.

Six subcommittees were created and assigned the tasks of updating the ANSI Z53 and Z35 Standards, and writing three new standards. The six standards include:

- ANSI Z535.1, Safety Colors [ANSI Z53.1-1979 was updated and combined into this standard in 1991];
- ANSI Z535.2, Environmental and Facility Safety Signs [ANSI Z35.1-1972 and Z35.4-1972 were updated and combined into this standard in 1991];
- ANSI Z535.3, Criteria for Safety Symbols [new in 1991];
- ANSI Z535.4, Product Safety Signs and Labels [new in 1991];
- ANSI Z535.5, Safety Tags and Barricade Tapes (For Temporary Hazards) [ANSI Z35.2-1974 was updated and combined into this standard in 1991];
- ANSI Z535.6, Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials [new in 2006].

Together, these six standards contain information needed to specify formats, colors, and symbols for safety signs used in environmental and facility applications (Z535.2), product applications (Z535.4), temporary accident prevention tags (Z535.5), and product accompanying literature (Z535.6). All three types of signs have provisions for an optional center symbol panel containing a graphic depiction of the message in the message panel, using the safety symbol criteria contained in this standard.

This ANSI Z535.3 standard was prepared by Subcommittee Z535.3 on Criteria for Safety Symbols.

This foreword and all of the Annexes are considered to be informative and not an official part of this standard. In the vocabulary of writing standards, the word “informative” is meant to convey that the information presented is for informational purposes only and is not considered to be mandatory nor proscriptive in nature. The body of this standard is “normative,” meaning that this information is considered to be mandatory or proscriptive.

The ANSI Z535.3 standard was first published in 1991 and revised in 1998. The 1998 revision refined and added substance to the structure of the 1991 version. (Deppa et al., 1997) The forty-one referents in the original ANSI Z535.3 Standard were selected because they addressed some of the most common, general, or critical hazards. The ANSI Subcommittee Z535.3 on Criteria for Safety Symbols reassessed the symbol examples illustrating these referents, both to assure that the symbols had passed comprehension testing, and to improve the depiction of these symbols in the standard. Further, the ANSI Z535 Committee recognized that this finite set of referents addressed only a fraction of the hazard referents for which safety symbols are needed. Since the Committee's philosophy was not to alter the scope of referents in the standard, their approach to meeting the need for new symbols was twofold: 1) provide the guidance necessary to create legible, standardized symbols; and 2) provide general procedures for comprehension testing symbols. Therefore, the 1998 revision contained the following changes:

Safety Symbol Example and Depiction Changes. Non-passing symbols were 1) replaced with passing symbols or deleted, or 2) in the case of borderline comprehension, moved from the body of the standard to an annex. These changes resulted from researching the symbol testing results and determining that some symbols had not passed the required 85% recognition testing. The subcommittee had non-passing and non-tested symbols comprehension tested, along with other symbol alternatives that address the same referents, in an attempt to identify symbols that could pass the comprehension testing for those referents.

Surround shapes were discouraged from use with most symbols, except for prohibition and the safety alert symbol. Illustrating the symbols in the 1991 version with surround shapes mislead users to think that surround shapes were preferred, when in fact, a surround shape competes with the actual symbol for the available space.

It was clarified that color generally should be used only for the red prohibition symbol and red fire related symbols. The 1991 version was misleading in that it appeared to mandate symbols with background colors.

Test references were added so potential users could access testing details to determine whether previous testing is analogous to their situation or whether they may need to retest before using a symbol on their product.

Addition of Safety Symbol Creation Guidelines. In order to encourage both good symbol design and a degree of consistency between existing and new symbols, the revision included expanded guidelines for the creation of new symbols for new referents.

Test Procedure Changes. Multiple choice tests were discouraged since these tests are typically less accurate than open-ended testing in measuring the subjects' comprehension of symbols, primarily because they limit the range of answers allowed.

Testing safety symbols in context was encouraged, since using words or pictures to convey where a label would be located is a fairer test of a symbol, than testing without giving context.

Progressive testing was described and encouraged to screen out poor symbols early, thereby limiting resource expenditures prior to full open-ended testing.

Information on how to conduct comprehension tests was improved and expanded, including providing detailed guidance and actual examples of test administration materials.

In revising the ANSI Z535.3 Standard, work to revise the symbol examples and to rewrite the testing procedures was carried out simultaneously. During this process, the subcommittee received valuable feedback not only on the symbols being tested but also on the problems and features of the test methodologies themselves. Lessons learned from each test iteration were used to improve test procedures and clarify test instructions. As a result, in addition to thoroughly-tested symbol examples, this revision provides well-tested procedures for evaluating symbols. The subcommittee believes that these ANSI Z535.3 Standard improvements facilitate the creation of symbols with improved legibility and consistency that are reliably comprehension tested.

In the 2002 revision, only minor revisions were made. In the 2007 revision, the safety alert symbol was expanded to harmonize with color alternatives that are contained in the International Organization for Standardization (ISO) 3864-2:2004 "Graphical Symbols - Safety Colours and Safety Signs - Part 2: Design Principles for Product Safety Labels." In Annex A, "Principles and Guidelines for Graphical Design of Safety Symbols," guidance was expanded and more figures were added to illustrate the principles and guidelines presented. No significant changes were made to Annex B, "General Procedures for Evaluating Candidate Symbols." In Annex C, "Safety Symbol Examples," guidance was also expanded. Not only were safety symbols moved from the normative body of this standard to this informative Annex, but also added were information symbols related to fire safety and safe condition that are contained in the ISO 7010-2003 standard, "Graphical Symbols - Safety Colours and Safety Signs - Safety Signs Used in Workplaces and Public Areas." A newly created Annex D "Informative References" contains references relocated from the body of the standard.

See the ANSI Z535-2006 Safety Color Chart for the purpose of viewing accurate colors. Due to the differences in color printing technologies and color monitors, the appearance of colors in this document may not be accurate.

This standard was processed and approved for submittal to ANSI by the Accredited Standards Committee on Safety Signs and Colors, ANSI Z535. Committee approval of this standard does not necessarily imply that all committee members voted for its approval. At the time of approval, the ANSI Z535 Committee had the following members:

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Richard Olesen, Vice Chair
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| *Organization Represented:* | *Name of Representative:* |
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| American Welding Society | August F. Manz |
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|---|---|
| Underwriters Laboratories | Richard Olesen |
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**Subcommittee Z535.3 on Criteria for Safety Symbols, which developed the standard, had the following members:**

**Shelley Waters Deppa, Chairperson**
Paul Orr, Secretary

L. Dale Baker, L. Dale Baker & Associates
Lewis Barbe, World Safety Organization
Robert Cunitz, System Safety Society
Shelley Waters Deppa, Safety Behavior Analysis, Inc.
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**AMERICAN NATIONAL STANDARD** **ANSI Z535.3-2007**

# Criteria for Safety Symbols

## 1 Introduction

The U.S. population is multi-ethnic, highly mobile, and derived from a multiplicity of social and educational backgrounds, with different reading skills and word comprehension. These factors complicate the effectiveness of word-only signs. Effective safety symbols have demonstrated their ability to provide critical information for accident prevention and for personal protection. Signs with safety symbols can promote greater and more rapid communication of the safety message, and therefore, greater safety for the general population. An initial set of such selected safety symbols is presented here. Methodologies for designing and evaluating safety symbols for additional applications are also presented.

## 2 Scope and purpose

### 2.1 Scope

This standard provides general criteria for the design, evaluation, and use of safety symbols to identify and warn against specific hazards, and to provide information to avoid personal injury.

### 2.2 Purpose

It is the purpose of this standard to promote the adoption and use of uniform and effective safety symbols for safety communication. The standard also provides a procedure for evaluating image effectiveness in communicating the intended message, as well as considerations for graphic design of safety symbols.

## 3 Application

### 3.1 Intent

This standard is intended to provide guidance in selecting safety symbols to alert persons to hazards and to provide general safety messages. This may include applications and information associated with products, the immediate environment, and workplaces.

### 3.2 Existing American National Standards

There are a number of existing American National Standards which are recognized for particular industries or specific uses. Compliance with such a standard may be considered for such particular industries or uses. It is not the intent of this ANSI Z535.3 standard to replace existing standards or regulations, which are uniquely applicable to a specific industry or use. It is the intent to encourage adoption of this standard in subsequent revisions of other standards and regulations.