

Update of ANSI Standards for Warnings and Future Directions

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Update of ANSI Standards for Warnings and Future Directions

I. ANSI Z535 Standard 2011 and 2016 Revisions and Reaffirmations

The American National Standards Institute (ANSI) Committee Z535 produces a series of standards that are broadly applicable to safety information on warning labels, signs, manuals, and other documents. There are six ANSI Z535 standards:

- Z535.1 – Safety Colors
- Z535.2 – Environmental and Facility Safety Signs
- Z535.3 – Criteria for Safety Symbols
- Z535.4 – Product Safety Signs and Labels
- Z535.5 – Safety Tags and Barricade Tapes (for Temporary Hazards)
- Z535.6 – Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials

In 2011, Z535.1 was reaffirmed and Z535.2 through Z535.6 were revised. For 2016, Z535.1 has undergone revision and the other standards are being reaffirmed. There were several changes to Z535.2 through Z535.6 in 2011, as well as a variety of minor revisions. For standards-users not yet familiar with the updates, the following summarizes the changes of the past two revision cycles as well as the expected future direction of the standards and the committee.

II. Safety Colors Standard Updated in 2016 to Improve Harmonization and Usability

Z535.1 was reaffirmed for 2011 (no revisions made), pending publication of a related standard, ISO 3864-4 Graphical symbols – Safety colors and safety signs – Part 4: Colorimetric and photometric properties of safety sign materials (published after 2011 Z535 drafts were balloted). Z535.1 was then revised for 2016 to incorporate relevant aspects of this international standard, to harmonize with safety colors specified in federal regulations for the transportation industry, and to improve the standard’s overall usability. Several informative annexes have been added, including cross-reference tables that include Pantone numbers, CMYK percentages, RGB formulae, and HTML codes for safety colors. Publication of the revised standard is expected shortly.

III. “Safety Instructions” Joins “Danger,” “Warning,” and “Caution”

In 2011, a new signal word category was introduced for product safety signs (Z535.4) and tags and tapes (Z535.5): “SAFETY INSTRUCTIONS or similar words.” While this signal word category was new for these standards, it had previously been used in environmental and facility safety signs (Z535.2).

Historically, Z535.4, Z535.5, and Z535.6 included four signal words: “DANGER,” “WARNING,” “CAUTION,” and “NOTICE” (Figure 1).



Figure 1. Signal words historically included in Z535.4, Z535.5, Z535.6

However, Z535.2 included these four signal words as well as two more flexible categories of signal words: safety instructions and safety equipment location. Unlike the four signal words shown in Figure 1, the exact words used for these categories of signal words vary depending on the circumstances. Several examples of safety instructions (from Z535.2, .4, and .5) and safety equipment location signal words (from Z535.2) are shown in Figure 2.

SAFETY INSTRUCTIONS	SAFETY/FIRE EQUIPMENT LOCATION
SAFE INSTALLATION INSTRUCTIONS SAFE OPERATING PROCEDURES LOCKOUT PROCEDURE SAFE SHUTDOWN PROCEDURE EMERGENCY SHUTDOWN INSTRUCTIONS	EYEWASH FIRST AID EQUIPMENT SAFETY EQUIPMENT

Figure 2. Safety instructions and safety/fire equipment location signal word examples

The 2011 (reaffirmed for 2016) editions of Z535.2, Z535.4, and Z535.5 include “SAFETY INSTRUCTIONS or similar words.” These three standards use nearly identical definitions of how to use this category of signal words, based on the now-updated definition and description used in Z535.2:

4.11.5 SAFETY INSTRUCTIONS or similar words: Indicates a type of safety sign, or a separate panel on a safety sign, where specific safety-related instructions or procedures are described. More definitive signal words are encouraged, where practical (*e.g.*, SAFE SHUTDOWN PROCEDURE, SAFETY OPERATING PROCEDURE, BOILER SHUTDOWN PROCEDURE, LOCKOUT PROCEDURE, EMERGENCY SHUTDOWN INSTRUCTIONS). The safety alert symbol shall not be used with this classification of signal word. This signal word may also be used as a heading for a safety instruction panel incorporated into a hazard alerting sign to convey lengthy instructional information. See Sections B3.3.6 and B7.

The “safety equipment location” signal word category (which also now includes “fire equipment”) will continue to appear only in Z535.2, as this category is generally not expected to be needed for product safety signs or temporary tags and tapes.

The new signal word category has several implications for choosing and using signal words for product warnings:

- Other signal words are selected on the basis of risk (probability and severity of harm) (see Figure 3). However, “safety instructions” signal words may be used for any level of risk when lengthy instructions are provided. For example, in Figure 5, the “safety instructions” could be used in combination with a “DANGER,” “WARNING,” or “CAUTION” signal word.

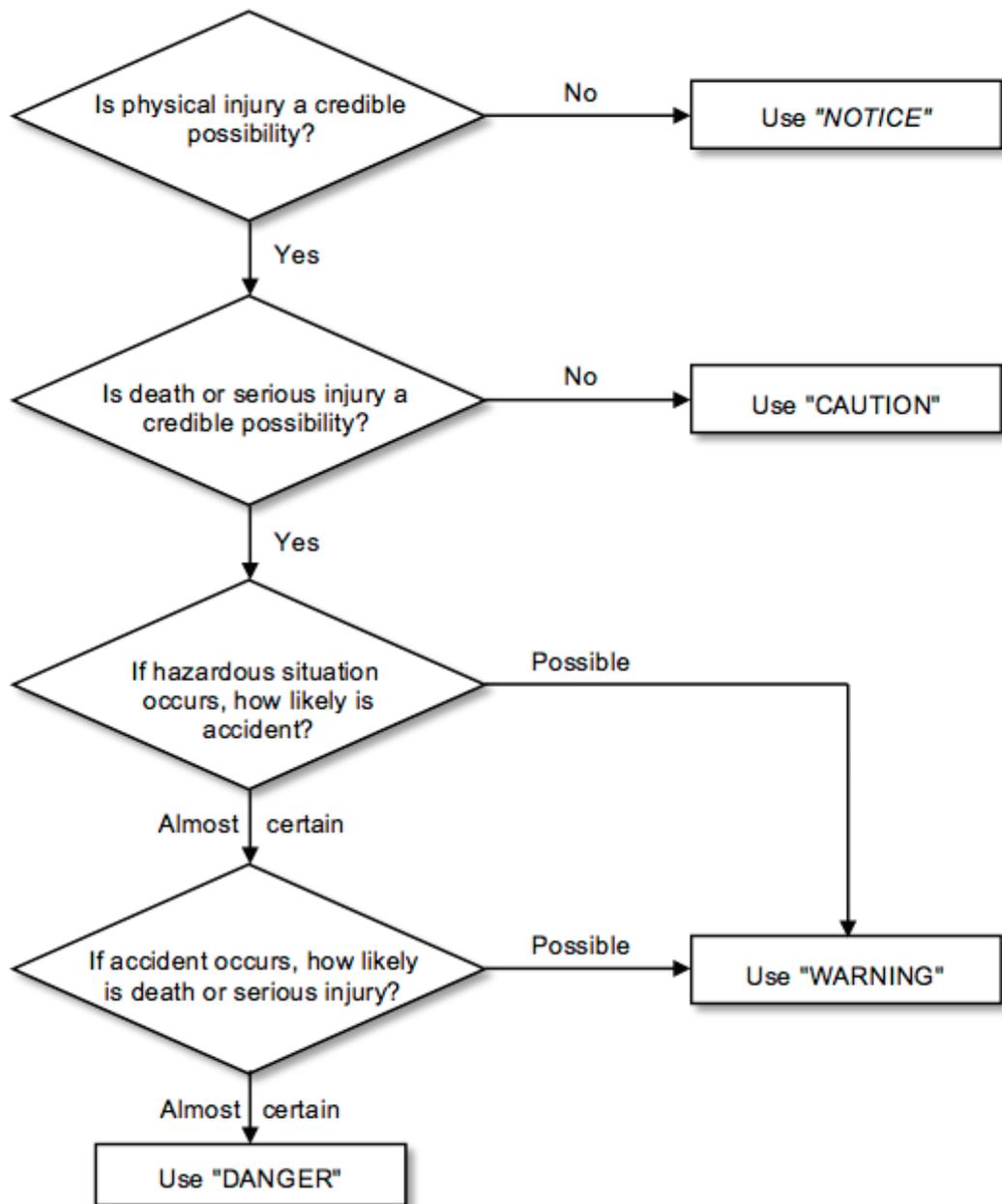


Figure 3. Signal word selection process for “DANGER,” “WARNING,” “CAUTION,” and “NOTICE” (from Z535.2, .4, .5, and .6 annexes)

- Previously, one signal word panel was used for each safety sign (with translations as appropriate). With the 2011 revisions, the safety instructions signal word panel can either be the only one on a safety sign (Figure 4), or it can be used with a safety instructions panel as part of a safety sign with another signal word (Figure 5).

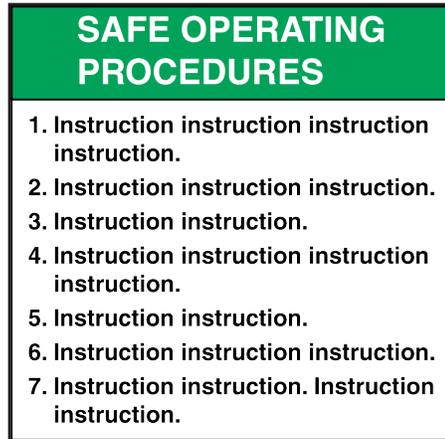


Figure 4. Example format for safety sign with only SAFETY INSTRUCTIONS signal word panel

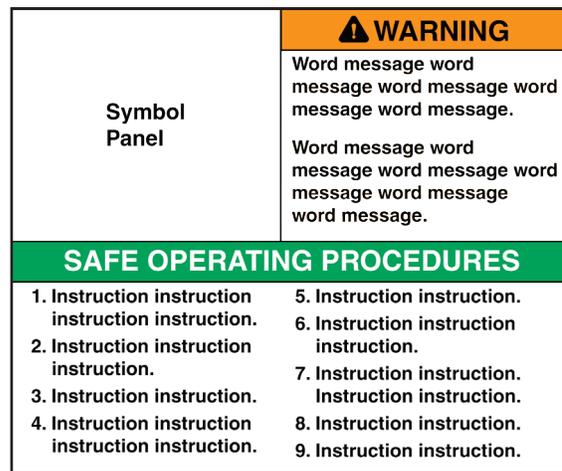


Figure 5. Example format for safety sign with two signal word panels, including SAFETY INSTRUCTIONS

- The specific words in a “safety instructions” signal word panel can be customized to the content of the safety message. The safety instructions category of signal words allows for and, in fact, encourages using specific, meaningful signal words that are customized for the information on the sign. See Figure 6 for examples.



Figure 6. Examples of “SAFETY INSTRUCTIONS or other words” signal word panels with text related to specific safety messages

IV. Updated Definition of the Signal Word “Notice”

The signal word “NOTICE” had previously had a variety of slightly different definitions between standards and years (Figure 7). The 2011 edition included a revised definition that is generally consistent across the Z535 standards and consistent with new definitions of “harm” and “accident” (see next section). Also note that, as mentioned in prior revisions of the standards, “CAUTION” was phased out as an alternative to “NOTICE” as of 2011.

Standard	2006/7 definitions for “NOTICE”
<p>Z535.2 Z535.4 Z535.6</p>	<p>NOTICE: “NOTICE” is the preferred signal word to address practices not related to personal injury. The safety alert symbol shall not be used with this signal word. As an alternative to “NOTICE,” the word “CAUTION” without the safety alert symbol may be used to indicate a message not related to personal injury. ²</p> <p>² <i>It is the intention of the ANSI Z535 committee to eliminate the alternative of using the signal word CAUTION without the safety alert symbol to indicate a hazardous situation not related to personal injury in the 2011 version of this standard. This will assist in making more of a differentiation between safety messages indicating personal injury and messages not related to personal injury.</i></p>
<p>Z535.5</p>	<p>NOTICE tags and tape: NOTICE tags are preferred to address practices not related to personal injury. The safety alert symbol shall not be used with this signal word. As an alternative to “NOTICE” the word “CAUTION” without the safety alert symbol may be used to indicate a message not related to personal injury. ²</p> <p>² <i>It is the intention of the ANSI Z535 Committee to eliminate the alternative of using the signal word “CAUTION” without the safety alert symbol to indicate a hazardous situation not related to personal injury in the 2011 version of this standard. This change is intended to differentiate between safety messages indicating personal injury and messages not related to personal injury.</i></p>
Standard	2011 definitions for “NOTICE”
<p>Z535.2</p>	<p>NOTICE: Indicates information considered important but not hazard-related. The safety alert symbol shall not be used with this signal word. For environmental/facility signs, NOTICE is typically the choice of signal word for messages relating to property damage, security, sanitation, and housekeeping rules.</p>
<p>Z535.4 Z535.5</p>	<p>NOTICE: Indicates information considered important, but not hazard-related (<i>e.g.</i>, messages relating to property damage). The safety alert symbol shall not be used with this signal word.</p>
<p>Z535.6</p>	<p>NOTICE: Indicates information considered important, but not hazard-related (<i>e.g.</i>, messages relating to property damage). The safety alert symbol shall not be used with this signal word. When a signal word is used for messages relating to property damage, NOTICE is the choice of signal word.</p>

Figure 7. Definitions of “NOTICE”

V. Updated Definitions for Basic Safety Terms

The definitions of basic terms like “harm” and “accident” were revised in all Z535 standards in 2011 (Figure 8). Specifically, “property damage” was removed from the definition of “harm” but was explicitly added to the definition of “accident.”

Term	2006/7 definition	2011 definition
Harm:	Death, injury, or property damage.	Any degree of physical injury, including death.
Incident:	An unintended and undesired event that has the potential to cause harm.	An unintended or undesired event.
Accident:	An incident that results in unintended harm.	An incident that results in harm, property damage, or both.

Figure 8. Definitions of basic safety terms

VI. Product Safety Signs in Limited Space

In order to help accommodate product safety signs where space is limited, Z535.4 was modified in 2011 to allow signal word letter heights that are the same as the letters in the message panel. Previously, the signal word letters needed to be 150 percent the size of the majority of text in the message panel. In addition, the standard was clarified to indicate that space limitations are an appropriate reason to refer readers to an instruction manual for more detail, and to indicate that non-rectangular shapes are permitted to use space efficiently.

VII. Other Notable Revisions in 2011

Z535.2 was revised in 2011 to increase harmonization with Z535.4. For example, differences between signal word panel designs and signal word definitions were reduced. In addition, the 2011 editions of these two standards were made more consistent by using similar or identical organization and words where possible. The possibility of fully combining Z535.2 and Z535.4 was discussed at the September 2012 committee meeting. The committee decided to maintain the current separation of these two standards in the interest of maintaining the ease of revision in response to any changes in related international standards or evolving needs, as well as maintaining ease of use for the two user bases.

2011 revisions to Z535.3 primarily affected the annexes. Although annexes are not part of the standard and are not recognized by ANSI, they are included in the physical document. Annex B, General Procedures for Evaluating Candidate Safety Symbols, was updated to include new testing technology and to refine procedures. The 2007 revision’s Annex C, Safety Symbol Examples, was deleted, with some of the symbols integrated into other parts of the standard to serve as illustrations of design principles without implying endorsement of those particular variants.

Other than the revisions discussed above, changes to Z535.4, Z535.5, and Z535.6 in 2011 were largely editorial.

VIII. Future Directions for ANSI Z535—Electronic Media

The Z535 committee has been considering the issue of safety information in electronic media over the past revision cycle. This was introduced with a discussion of the history and future of the committee at the

September 2011 meeting. Z535 committee chair Gary Bell gave a presentation about the history of the ANSI standards and milestones for the committee. This provided a backdrop for Z535.6 subcommittee chair Paul Frantz to discuss the development of that standard.

Charles Burhans then presented research regarding safety information provided via electronic media (e.g., electronic documents, video, webpages, smartphone and tablet applications, etc.). Currently, these media are largely excluded from the scope of the Z535 standards, but the provision of safety information via these media has increased greatly in recent years and is expected to increase in the future. Z535.4 subcommittee chair Steve Hall then discussed the potential applicability of Z535 concepts to electronic media.

At the September 2012 meeting, Mr. Burhans presented and led a discussion about technological developments and potential committee activities concerning these media. At the 2015 meeting, Judi Isaacson and Erica Li presented examples of safety information in websites and online videos and an update on potential applicable elements of current Z535 standards. Potential approaches to standardizing guidance were discussed. The committee decided to consider developing an Annex to Z535.6 addressing electronic media rather than a new standard – work on this Annex is expected to begin in the near future.

IX. ANSI Z535 Publication and Errata Dates

The 2011 revisions of the ANSI Z535 standards were initially published on September 15, 2011. However, due to errors on the part of the publisher, several corrections were required. As a result, one standard was republished and errata were published for others.

In brief:

- Z535.2 underwent an “image replacement” in late October 2011 to correct an error in the table of contents. No corrections were made to the body of the standard; copies purchased prior to the correction are usable.
- **Z535.4 was republished on November 15, 2011** with extensive corrections incorporated. Corrected copies were sent to all prior purchasers of the 2011 standard. Any copy with the September 15, 2011 date should be discarded.
- **Z535.5 errata sheet was published on November 14, 2011** and sent to all prior purchasers of the 2011 standard. Errata were incorporated into copies of the standard distributed after that date – these copies are indicated with “Contains November 14, 2011 Errata” on the inside cover page.
- **Z535.6 errata sheet was published on November 1, 2011** and sent to all prior purchasers of the 2011 standard. Errata were incorporated into copies of the standard distributed after that date – these copies are indicated with “Contains November 1, 2011 Errata” on the inside cover page.
- Z535.1, Z535.3, and the 2011 Color Chart were all published correctly.

The 2016 revision of Z535.1 is expected to be published soon. Publication dates of the reaffirmed Z535.2 through Z535.6 are pending.

X. Acknowledgment

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Z535.4 (2007, 2011), Z535.5 (2007, 2011), and Z535.6 (2006, 2011). All such extracts are copyright of NEMA. All rights reserved. Further information about NEMA and Z535 is available at <http://www.nema.org/standards/z535>. NEMA has no responsibility for the placement and context in which the extracts and contents are reproduced by the author, nor is NEMA in any way responsible for the other content or accuracy therein.

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