

# American National Standard

## **ANSI/PMMI B155.1-2016**

### ***Safety Requirements for Packaging and Processing Machinery***

**Secretariat and Standards Developing Organization**

**PMMI The Association for Packaging and Processing Technologies  
11911 Freedom Drive, Suite 600  
Reston, VA 20190-5629, USA**



The Association for Packaging and Processing Technologies

Approved as an American National Standard on November 18, 2016

**American National Standards Institute, Inc  
1899 L Street, NW, 11th floor  
Washington, DC 20036**



## AMERICAN NATIONAL STANDARD

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Published by:

**PMMI The Association for Packaging and Processing Technologies**  
**11911 Freedom Drive, Suite 600**  
**Reston, VA 20190-5629, USA**

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**ANSI/PMMI B155.1-2016**

Revision of ANSI/PMMI B155.1-2011

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## 0 Foreword

(This foreword is not part of the requirements of American National Standard ANSI/PMMI B155.1-2016)

This standard was promulgated by The Association for Packaging and Processing Technologies (PMMI) as a voluntary standard to establish safety requirements for machinery.

The first version of this standard was approved by the PMMI membership on 27 September 1972. It was approved as an American National Standard by ANSI on 6 August 1973. The standard has been reviewed and revised with subsequent approvals by the ANSI Board of Standards Review in 1979, 1986, 1994, 2000, 2006, 2011 and 2016.

This version of the standard has been harmonized with international (ISO) and European (EN) standard ISO 12100. Suppliers meeting the requirements of ANSI/PMMI B155.1-2016 may simultaneously meet the requirements of ISO 12100.

The B155.1 standard can be associated with the ISO "A-B-C level" structure as described immediately below, and as shown in Figure 1 below.

**Type-A standards** (basis standards) give basic concepts, principles for design, and general aspects that can be applied to machinery.

**Type-B standards** (generic safety standards) deal with one or more safety aspects or one or more types of safeguards that can be used across a wide range of machinery.

**Type-C standards** (machinery safety standards) deal with detailed safety requirements for a particular machine or group of machines.

This B155.1 standard on general safety requirements common to packaging and processing machines is primarily an "A-level" standard in that it applies to a broad array of packaging and processing machines and contains very general requirements. However, in many areas it also contains very specific requirements typical of a type-C standard.

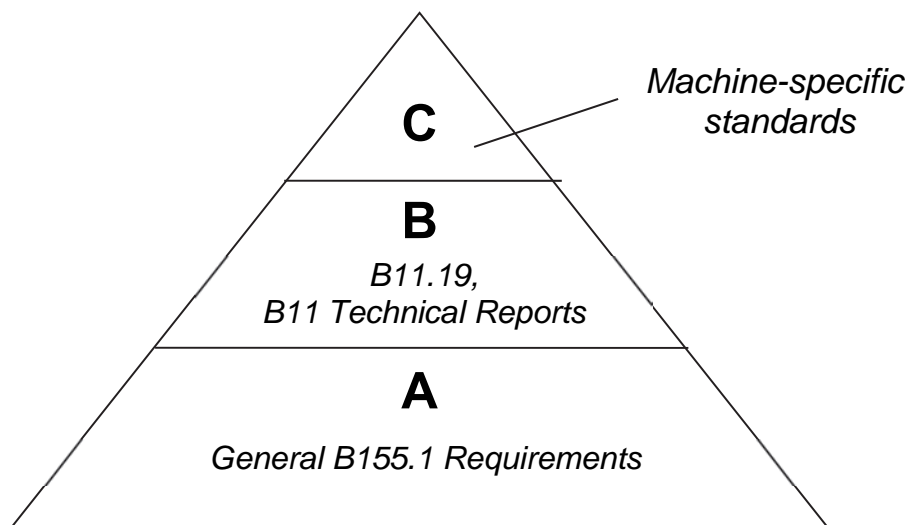


Figure 1 - A / B / C Organization of Standards

This standard is intended for readers with differing levels of familiarity with standards and the risk assessment process. The requirements of the machine specific ANSI standards are grouped according to those that apply to the supplier (i.e., manufacturer, rebuilder, modifier) and user. Some are shared between the supplier and user and are so indicated.

The objective of the B155.1 standard is to eliminate injuries to personnel packaging and processing systems by establishing requirements for the design, construction, reconstruction, modification, installation, set-up, operation and maintenance of packaging and processing machinery systems. Responsibilities have been assigned to the supplier, the user and the user personnel to implement this standard. This standard is not intended to replace good judgment and personal responsibility. Personnel skill, attitude, training and experience are safety factors that should be considered by the user.



“Safe” is the state of being protected from recognized hazards likely to cause serious physical harm. There is no such thing as being *absolutely* safe, that is, a complete absence of risk, and therefore there is no machinery, including packaging and processing machinery, that is *absolutely* safe in the sense of being completely devoid of all conceivable risks. All machinery contains hazards, and some level of residual risk. However, the risk associated with those hazards should be reduced to an acceptable level. To achieve this goal, senior management should allocate appropriate personnel, time and resources to permit the risk assessment process to be successfully completed. Senior management holds the ultimate responsibility to determine the level(s) of acceptable risk.

This standard guides packaging and processing machinery suppliers and users through a risk assessment process designed to ensure that reasonably foreseeable hazards are identified and corresponding risks are reduced to an acceptable level. In this standard the terms “acceptable” and “tolerable” are used as synonyms. Although engineers have long applied an informal risk assessment framework, this standard introduces a formal method to conduct and document the risk assessment process.

This standard identifies some preparations that need to be made before a risk assessment begins, and presents the basic risk assessment process in a step by step approach to assist in achieving this goal.

The outcome of completing the risk assessment process should be:

- Packaging and processing machinery ready to ship, install or use with risks reduced to an acceptable level;
- Awareness devices, warning labels, instruction manual(s) and information for operation and maintenance; and
- Documenting the results of the risk assessment process.

This standard does not use the term “and/or” but instead, the term “or” is used as an inclusive disjunction, meaning one or the other or both.

### **Normative requirements**

The normative requirements appear aligned to the left margin. To meet the requirements of this standard, machinery suppliers and users must conform to these normative requirements. These requirements typically use the verb “shall.”

### **Informative Notes**

*The informative or explanatory text in this standard appears indented, in italics, in a reduced font size and colored blue (for those with electronic or color printed versions), all of which are in an effort to provide a visual signal to the reader that this is informative text, not normative text, and is not to be considered part of the requirements of this standard; this text is advisory in nature only. The suppliers, the users and the machines themselves are not required to conform to the informative text. The informative text is presented in this manner in an attempt to enhance readability. Informative annexes contain guidance but do not contain requirements.*

### **Effective Date**

The following information on effective dates is informative guidance only, and is not a normative part of this standard. The committee recognizes that suppliers and users will need some period of time, after the approval date on the title page of this document, to develop new designs, or modify existing designs or manufacturing processes in order to incorporate the new or revised requirements of this standard into their product development or production system.

The committee recommends that suppliers complete and implement design changes for new packaging and processing machinery within 6 months of the publication of this standard.

The committee also recommends that users confirm that packaging and processing machinery has acceptable risk within 6 months of the publication date of this standard. If the risk assessment process shows that modification(s) is necessary, refer to the requirements of this standard to implement risk reduction measures for appropriate risk reduction.

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## 1 Scope and Purpose

### 1.1 Scope

This standard specifies basic terminology, principles and a methodology for achieving safety in the design and the use of machinery. It specifies principles of the iterative process of risk assessment and risk reduction to help designers, integrators and users of machinery in achieving this objective. These principles are based on knowledge and experience of the design, use, incidents, accidents and risks associated with machinery. Procedures are described for identifying hazards and estimating and evaluating risks during relevant phases of the machine life cycle, and for the elimination of hazards or the provision of sufficient risk reduction. Guidance is given regarding the documentation and verification of the risk assessment process.

*Informative Note:* As used in this standard, 'machinery' includes both packaging and processing machinery as defined in clause 3.

The requirements of this standard apply to new, modified or rebuilt industrial and commercial:

- processing machinery used to produce food, beverage and pharmaceutical products;
- packaging machinery that performs packaging functions for primary, secondary, and tertiary (transport / distribution) packaging;
- coordination of the packaging functions that take place on the production line; and
- packaging-related converting machinery.

The standard does not include packaging or processing machinery used by retail consumers.

### 1.2 Purpose

This standard describes procedures for identifying hazards, assessing risks, and reducing risks to an acceptable level over the life cycle of the machinery. These procedures include requirements for documenting conformance to this standard and the results of the risk assessment process.

*Informative Note:* See clause 6 for additional information on the risk assessment process.

Deviations from the requirements of this standard shall be based on a documented risk assessment demonstrating acceptable risk. The requirements of this standard shall not inhibit innovation provided acceptable risk is achieved.

## 2 Normative References

The following standards contain provisions which constitute additional requirements of this American National Standard and are incorporated into this standard by reference. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

*Informative Note:* For additional information see Annexes H, K, L, M and N.

ANSI B11.19-2010 *Performance Criteria for Safeguarding*

NFPA 70-2014 *National Electrical Code*

NFPA 79-2015 *Electrical Standard for Industrial Machinery*

ANSI Z136.1-2014 *Standard for Safe Use of Lasers*

ANSI A1264.1-2007 *Safety Requirements for Industrial Fixed Stairs, Floor and Wall Openings and Industrial Railings and Toe Boards*

ANSI A14.3-2008 *Safety Requirements for Fixed Ladders*

ANSI Z535.4-2011 *American National Standard for Product Safety Signs and Labels*

ANSI Z535.6-2011 *Product Safety Information in Product Manuals, Instructions and Other Collateral Materials*

ANSI/ASSE Z244.1-2016 *The Control of Hazardous Energy – Lockout, Tagout and Alternative Methods*

ANSI/ASME B20.1-2012 *Safety Standards for Conveyors and Related Equipment*

ISO 13850 2015 *Safety of machinery. Emergency stop. Principles for design (EN ISO 13850 2008)*

ISO 4413 2010 *Hydraulic Fluid Power. General Rules Relating To Systems*