

**ANSI/PMMI B155.1-2011**

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# **American National Standard**

*Safety Requirements for  
Packaging Machinery and  
Packaging-Related Converting Machinery*



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**Packaging  
Machinery  
Manufacturers  
Institute**

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**ANSI/PMMI B155.1-2011**

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*Safety Requirements for  
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Packaging-Related Converting Machinery*

Secretariat and Standards Developing Organization

**Packaging Machinery Manufacturers Institute**  
11911 Freedom Drive, Suite 600  
Reston, VA 20190-5629, USA



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Leading solutions.*

Approved March 2, 2011

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## 0 Foreword

(This foreword is not part of the requirements of American National Standard ANSI/PMMI B155.1-2011)

This standard was promulgated by the Packaging Machinery Manufacturers Institute (PMMI) as a voluntary standard to establish safety requirements for packaging machinery and packaging-related converting 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 and 2006.

This version of the standard has been harmonized with international (ISO) and European (EN) standards by the introduction of hazard identification and risk assessment as the principal method for analyzing hazards to personnel and achieving a level of acceptable risk. This version of the standard is a major revision that integrates the requirements of ISO 12100 parts 1 and 2, and ISO 14121 (now ISO 12100), as well as U.S. standards. Suppliers meeting the requirements of ANSI/PMMI B155.1-2011 may simultaneously meet the requirements of these ISO standards.

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

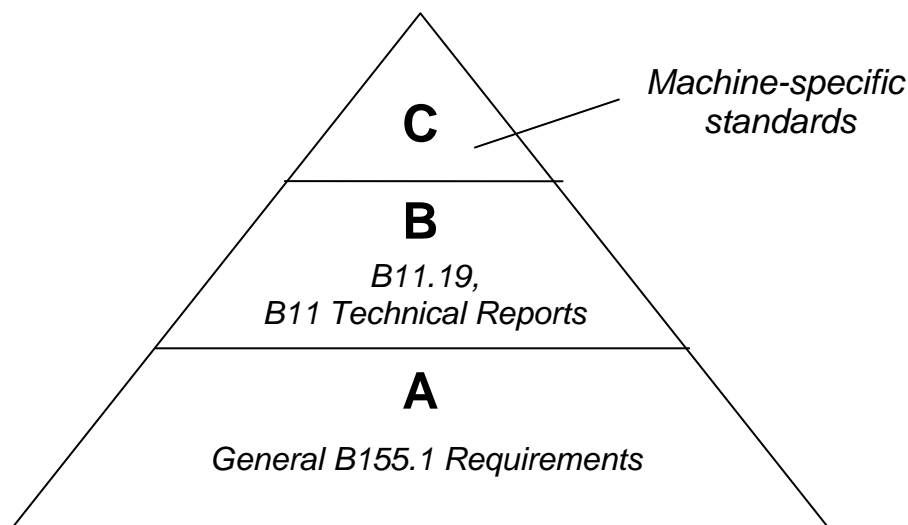


Figure 1 - A / B / C Organization of Standards

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 from packaging systems by establishing requirements for the design, construction, reconstruction, modification, installation, set-up, operation and maintenance of packaging 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 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 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 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;
- Documentation of the risk assessment.

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*.

### 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 machinery within 6 months of the publication of this standard.

The committee also recommends that users confirm that packaging machinery has acceptable risk within 6 months of the publication date of this standard. If the risk assessment 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

The requirements of this standard apply to new, modified or rebuilt industrial and commercial machinery which perform packaging functions for primary, secondary and tertiary packaging. Also included are:

- the conveying machinery used within the packaging functions;
- coordination of the packaging functions that take place in sequence on the production line;
- packaging related converting machinery.

*Informative Note:* See Annex A for a list of example packaging machinery.

This standard does not apply to packaging 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 packaging machinery. These procedures include requirements for documenting conformance to this standard and the risk assessment results.

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

## 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. Deviations from the requirements of the referenced standards shall be based on a documented risk assessment demonstrating acceptable risk. 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.

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

NFPA 70-2008 *National Electrical Code*

NFPA 79-2007 *Electrical Standard for Industrial Machinery*

ANSI Z136.1-2007 *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 Z535.4-2007 *American National Standard for Product Safety Signs and Labels*

ANSI Z535.6-2006 *Product Safety Information in Product Manuals, Instructions and Other Collateral Materials*

ANSI/ASSE Z244.1-2003 (R2008) *Control of Hazardous Energy – Lockout/Tagout and Alternative Methods*

ANSI/ASME B20.1-2009 *Safety Standards for Conveyors and Related Equipment*

ISO 13850 2006 *Safety of machinery. Emergency stop. Principles for design (EN ISO 13850 2008)*

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

ISO 4414 2010 *Pneumatic Fluid Power. General Rules Relating To Systems*

UL 508A 2010 *Industrial Control Panels*