

Strengthen Your Business with Technical Standards

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NPE2024, The Plastics Show

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INDUSTRY ASSOCIATION



The Association for Packaging
and Processing Technologies

PMMI Technical Services



The Association for Packaging
and Processing Technologies

- Assisting members and companies navigate industry standards and regulatory requirements and changes
- Looking for issues that may impact members 3-5 years to come
- Leading in writing industry standards that impact members
- Developing tools to assist engineering design teams – *Packsafe*
- Training engineers to know and meet industry requirements
- Improving general industry knowledge of the standards process
- *Helping today, Preparing for tomorrow*

The B151 standards series

- 10+ individual standards
 - IMM
 - Winding / unwinding
 - Extrusion
 - Granulators
 - ...
- Type C standards

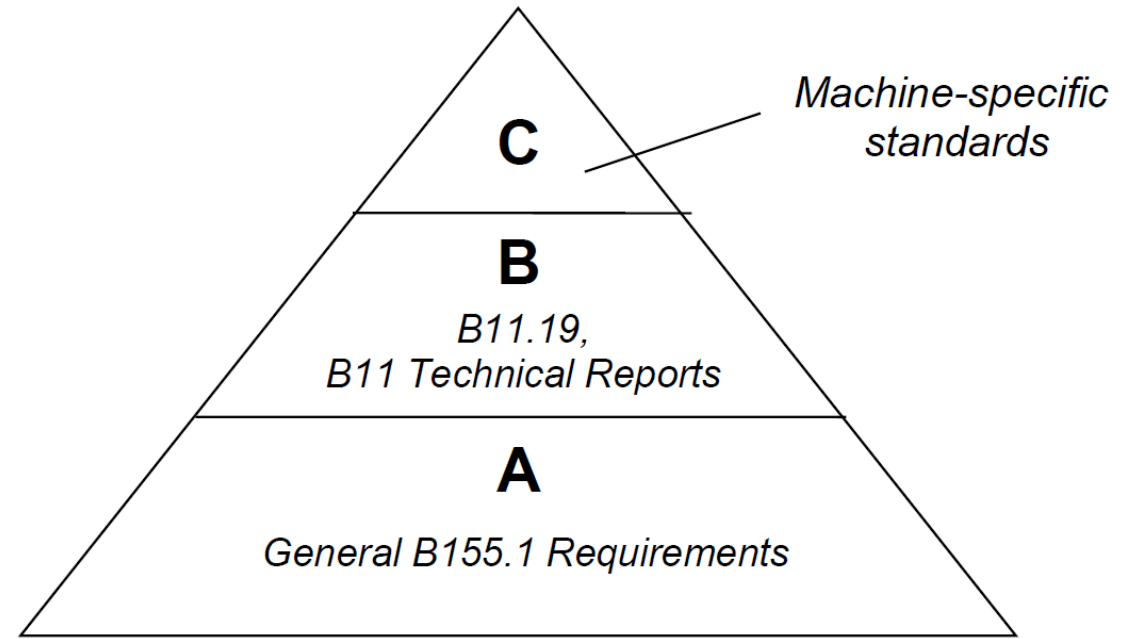
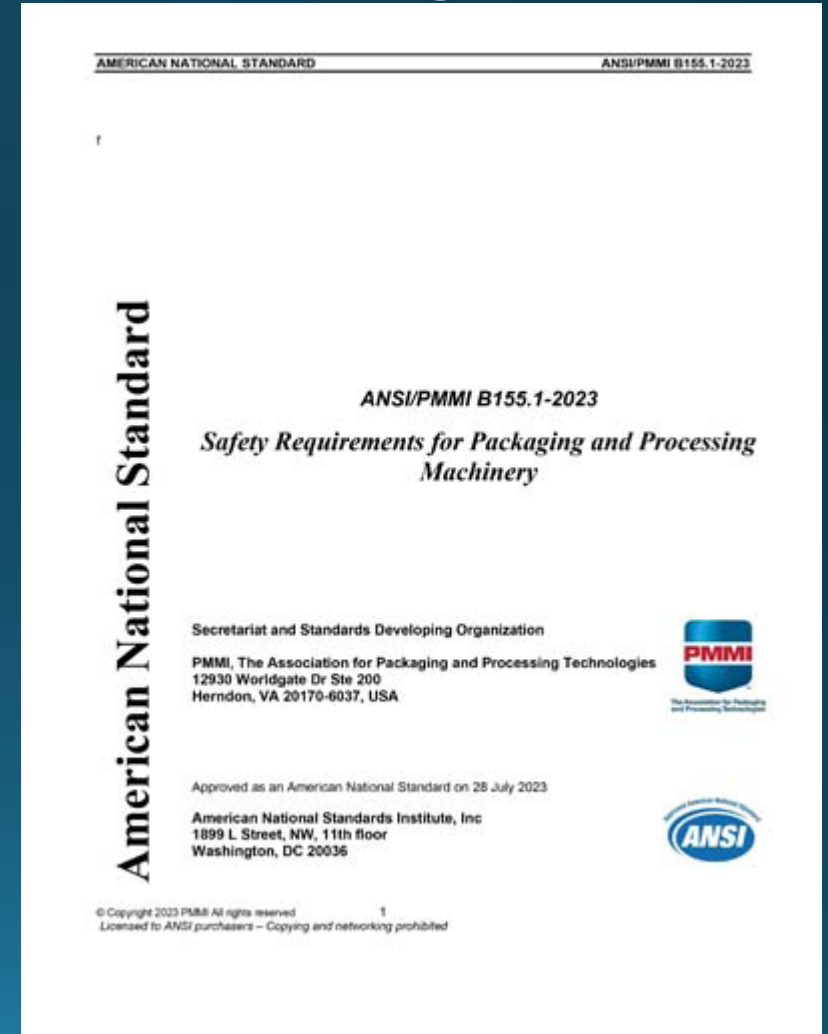


Figure 1 – A / B / C Organization of Standards

ANSI B155.1 *Safety requirements for packaging and processing machinery*

- Type A standard
- Revision of 2016 standard
- Clarified Responsibilities of machinery Suppliers and Users
- Improved content for Control Systems
- Content on Legacy (existing) machinery
- Improved definitions / terms
- Impacts both Suppliers and Users
- Published July 2023



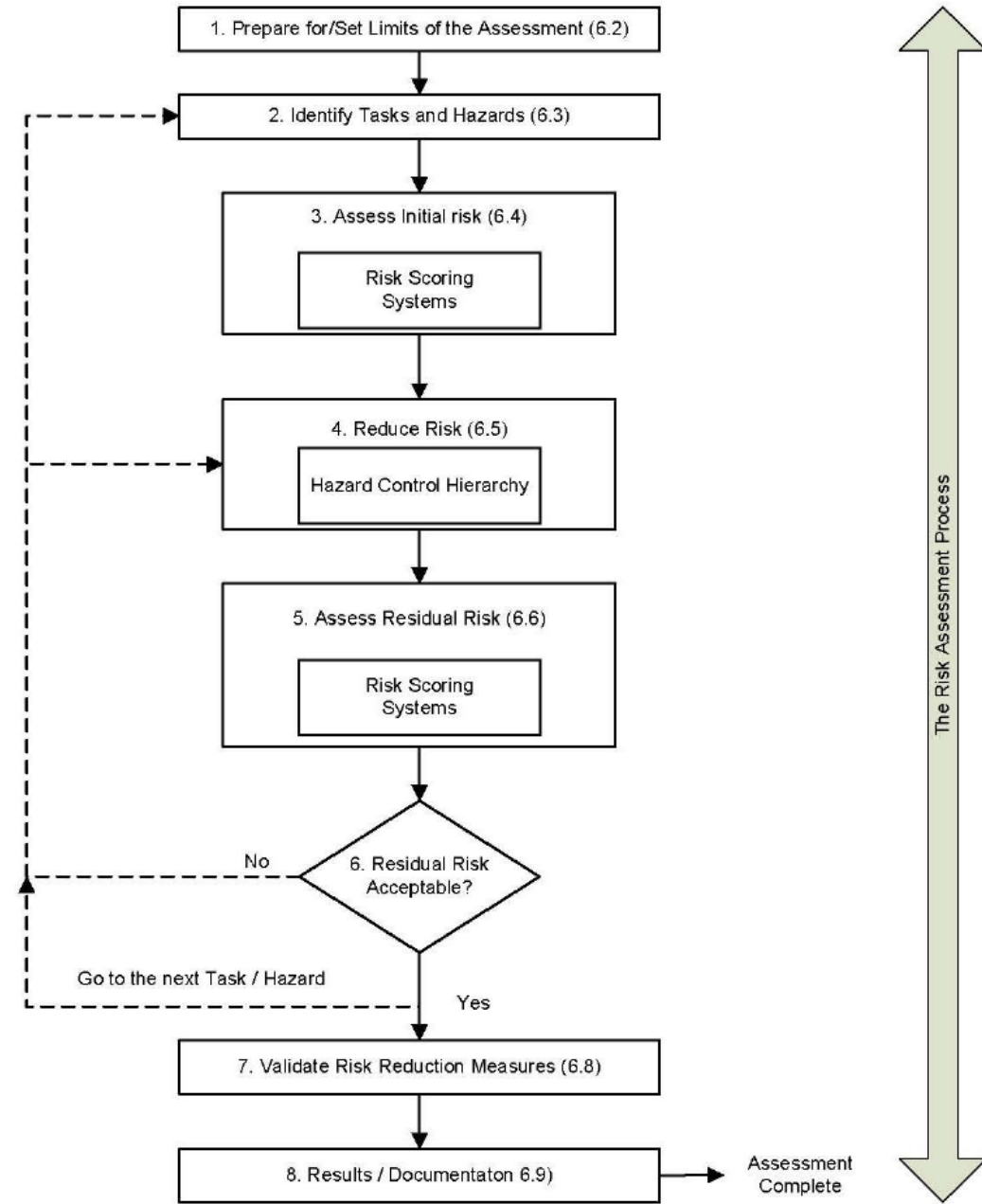
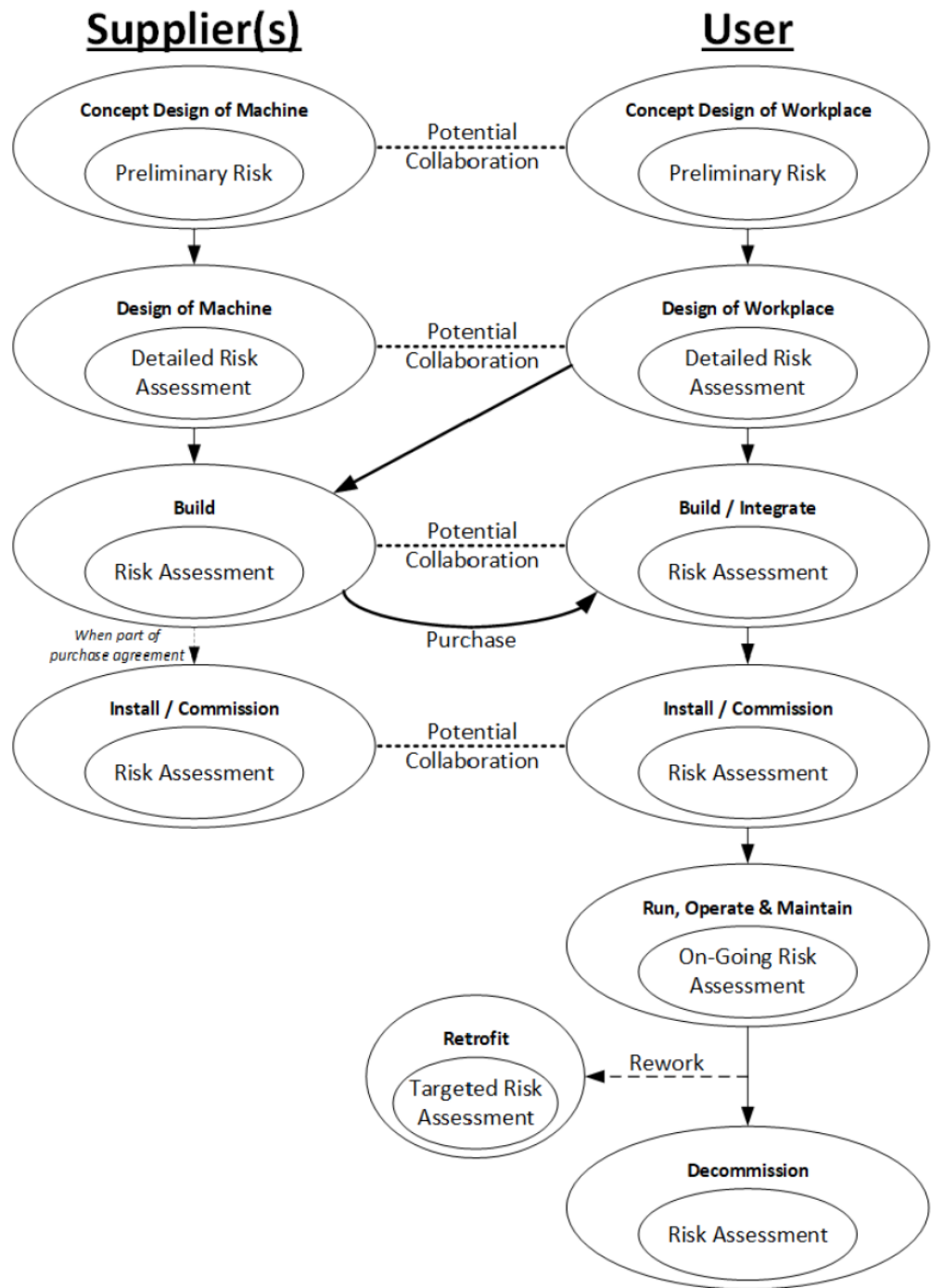


Figure 4 – The Risk Assessment Process

Requirements

1. New machinery
2. Repair / Rebuild / Refurbish
3. Reconfigure / Relocate
4. Modify / Remanufacture

Table 1 – Requirements for new and existing machinery

Scenario and Description	Requirement
1. New Machinery / System (created utilizing new or used components)	Perform a risk assessment to confirm the risks are at an acceptable level. Comply with current applicable standard(s). Check the risk reduction measures meet the requirements of the risk assessment. Test all safety functions for proper functionality.
2. Repair / Rebuild / Refurbish Machinery	
2.1 Utilizing components that <i>do not</i> change the function of the component or the safety performance of the machinery	No risk assessment required. Comply with applicable standard(s) existing at time of manufacture or initial installation. Check component meets the requirements of the original design and is installed correctly. Test the affected safety functions for proper functionality.
2.2 Utilizing components that <i>do</i> change the function of the components or the safety performance of the machinery	Perform a risk assessment to determine the impact to the machine and to confirm the risks are at an acceptable level. Comply with current applicable standard(s) on any new hazards. Check component meets the requirements of the new design and is installed correctly. Test all potentially impacted safety functions for proper functionality.
3. Reconfigure / Relocate Existing Machinery (existing machinery is relocated or layout is reconfigured)	Perform a risk assessment on any hazards created by the new layout or change in spatial configuration to confirm the risks associated with the reconfigured or relocated machinery are at an acceptable level. Comply with current applicable standard(s) on any new hazards associated with relocation or reconfiguration. Conform to the requirements in applicable standards existing at the time of manufacture or initial installation for other (pre-existing) hazards. Check the risk reduction measures meet the requirements of the risk assessment. Test all safety functions for proper functionality.

Packsafe 9



- Guidance on structuring an assessment
- Enhanced Control System Assessment
- New Alternative Methods for the control of hazardous energy
 - Ability to make use of new technologies to control energy
 - Control vs isolate
 - In lieu of LOTO
 - Ability to comply with ANSI Z244.1
- Upgrade today! www.designsafe.com

designsafe Report

Application: Cartoner Sample Analysis

Description: Sample analysis of a horizontal continuous motion manually loaded cartoner

Product Identifier:

Assessment Type: Detailed

Limits: SAMPLE ANALYSIS ONLY.
Manually loaded continuous motion cartoner 12Inch pitch carton flights.
Carton size:
Minimum - 3 x 1 x 5
Maximum - 8 x 3 x 12

Maximum speed 45 cartons per minute
Painted machine intended for a dry environment

Sources: ANSI/PMMA B155.1, technical drawings, experience, similar but smaller cartoneer

Risk Scoring System: ANSI B11.0 (TR3) Two Factor

Analyst Name(s): Jo Engineer, Pat Operator, Chris Maintenance

Company: XYZ Packaging International

Facility Location: Anywhere, NY

Guide sentence: When doing [task], the [user] could be injured by the [hazard] due to the [failure mode].

Item Id	User / Task	Hazard / Failure Mode	Initial Assessment		Risk Reduction Methods /Control System	Final Assessment		Status / Responsible /Comments /Reference
			Severity Probability	Risk Level		Severity Probability	Risk Level	
1-1-1	operator load / unload materials	mechanical : pinch points from rollers	Serious Likely	High	interlocked barriers constructed of polycarbon, safeguard the upper and lower sections of the machine, warning label(s) /CS-01 guard door package	Serious Unlikely	Medium	Complete [4/18/2016] /Review PMMA B155.1 standard for clarification
1-1-2	operator load / unload materials	ergonomics / human factors : lifting / bending / twisting	Moderate Likely	Medium	standard procedures, job rotation	Moderate Unlikely	Low	Action Item Jeff H. /look into lift assist table/device
1-2-1	operator clear jams	mechanical : pinch points from rollers	Serious Likely	High	interlocked barriers constructed of polycarbon, safeguard the upper and lower sections of the machine, warning label(s) /CS-01 guard door package	Serious Remote	Low	Complete [4/18/2016]

Primary Industry Machinery Standards to Know

	US / ANSI	International ISO
Machinery	ANSI B11.0*	ISO 12100
Packaging machinery, risk assessment	ANSI B155.1*	ISO 12100
Electrical (harmonized)	NFPA 79	IEC 60204-1
Industrial robots (identical)	ANSI/ISO/RIA R15.06	ISO 10218-1 & -2
Safeguarding / risk reduction measures	ANSI B11.19*	Various ISO 13850 ISO 13851 ISO 13855 ISO 13857 ISO 14119
Control Systems	ANSI B11.26 provides examples	ISO 13849-1* & -2
Control of hazardous energy	ANSI Z244.1*	ISO 14118
Warning labels	ANSI Z535.4	ISO 3864-2
Application specific standards (conveyors, ovens, hygienic design, plastic machinery...)		
* Primary document		

Keeping up with Industry Standards

- ISO 12100 – TC199, WG5 *Safety of machinery*
- ISO 13849-1 TC199, WG8 *Control systems*
- ISO 13849-TR2 *Validation*
- ANSI B11.0 *Safety of machinery*
- ANSI B11.26 *Functional safety*
- ANSI B11.19 *Safeguarding*
- ISO 11161 / ANSI B11.20 – *Machines integrated into a system*
- ISO 10218-1 & -2 – *Industrial Robots*
- B151.1 *Injection Molding Machines*
- R15.08 – *Mobile Robots*

Why use standards?

- Safer machinery
- Reduced liability
 - Making company defensible
- International alignment
 - Build/buy one machine, ship anywhere
- Competitive advantages
 - No more Apples to Bananas
- Clear responsibilities between suppliers and users
- Better machinery designs



Updates: New Machinery Regulation

- Released in the EU on 29 June 2023
- US had no direct input
- Technical Services provided indirect input on proposed changes
 - Via Dept of Commerce
 - Via other industry networks / colleagues
- AI in the New Machinery Directive
 - Started as a very onerous requirement
 - Now a more reasonable result
- 20 January 2027 application date (42 months transitional period)
- Machinery Directive applies up until 19 January 2027

I

(Legislative acts)

REGULATIONS

REGULATION (EU) 2023/1230 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**of 14 June 2023****on machinery and repealing Directive 2006/42/EC of the European Parliament and of the Council and Council Directive 73/361/EEC**

Key Changes

- Increased legal certainty, uniform application
- Digital instructions for use and declarations
- Provisions for AI when used for safety functions
- Cyber-security related provisions for safety control systems (protecting hardware and software)
- Increased requirements for autonomous and remotely controlled machinery
- Additive printing now under Machinery Regulation





- Substantial modification flowchart
 - Anticipate addition of new safety devices and allow for it, does not result in a substantial modification
- Tracing log, versions of the safety software
- New requirement for power supply or interruption of communication network shall not lead to a hazardous situation
- Dimensioned for use of rescue equipment

ANSI Z244.1 Hazardous Energy Control

- Fall 2024 revision
- OSHA is involved and engaged
- Alternative Methods to LOTO are key aspect
- Energy is controlled but not isolated →
- Risk assessment is required
- Risk based solutions
- Requires some homework
- OSHA is expected to issue a new rule updating 1910.147 from 1989



Technical Training for Engineers

- Risk assessment process
- Control Systems & Functional Safety
- Alternative Methods to LOTO
- CE marking
- What is required by the standards
 - National
 - International
- At your site
- www.pmmi.org



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MEDIA GROUP

BUSI

Risk Assessment Workshops

Upcoming Workshops

NOVEMBER 1 - 2, 2024

Risk Assessment Workshop

PACK EXPO International
Chicago, IL

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Free Training Course!



The Association for Packaging
and Processing Technologies



TECHNICAL STANDARDS DEVELOPMENT

- **Introduction to Standards Development**
- Developed as part of a grant with the Department of Commerce
 - Market Development Cooperator Program
- How standards can assist in meeting business objectives
- Interactive learning
- Being used in several graduate engineering programs
- Visit www.pmmi.org

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