

**ANSI / SPI B151.29 – 2014**

***American National Standard for Plastics Machinery***

# **Safety Requirements for Vertical Clamp Injection Molding Machines**

**Secretariat and Accredited Standards Developer**  
**The Society of the Plastics Industry, Inc.**  
d/b/a SPI – The Plastics Trade Industry Association  
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**by the American National Standards Institute**



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## Foreword

### (This Foreword is not part of American National Standard ANSI/SPI B151.29-2014)

The primary objective of this standard is to minimize hazards to personnel associated with machine activity by establishing requirements for the manufacture and use of these machines. To accomplish this objective, the committee decided to approach the problem of machine safety as follows:

The committee developed a list of hazards typical of VCIMM and listed these in clause 6 of this standard. For each hazard identified within the scope of the standard, the committee assessed the potential severity of injury related to the hazard, the frequency of exposure to the hazard, and possible avoidance. This process involved discussion among the committee, and resulted in the recommended preventive control measures included in clauses 7 through 10 inclusive and additional Annex reference materials. Compliance with this standard is considered to adequately control hazards identified in clause 6. Other hazards not listed in clause 6 that can occur with VCIMMs may require additional risk reduction measures not included in this standard.

This standard is a revision of American National Standard ANSI/SPI B151.29-2003 - Safety Requirements for the Manufacture, Care, and Use of Vertical Clamp Injection Molding Machines. The standard was revised because:

- some paragraphs required modification for clarity and intent;
- additional details on electrical requirements were added;
- additional explanatory material and illustrations were added;
- additional definitions were required;
- some paragraphs required modification and other paragraphs were added to conform more closely to changes in technology.

To assist in the interpretation of these requirements, responsibilities have been assigned to the supplier, the remanufacturer, the modifier, and the user. The project on safety requirements for the manufacture and use of vertical clamp injection molding machines was initiated under the auspices of the Injection Molding Committee of the Machinery Division, and the Safety Committee of the Molders Division, of SPI: The Plastics Industry Trade Association. Both divisions of the SPI have long been concerned with operator safety on plastics processing equipment. Accordingly, each of the divisions has established a standards development committee charged with the task of establishing necessary standards.

A standard treating the manufacture and use of vertical clamp injection molding machines is complicated by the wide variety and sizes of machines manufactured and in use, and by the virtually infinite combinations of parts being produced, the production methods used, and the operating conditions existing in industry today.

### Effective Date

The following information on effective dates is informative guidance only, and not a normative part of this standard. This committee recognizes that some period of time after the approval date on the title page of this document is necessary for suppliers and users 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.

This committee recommends that suppliers complete and implement design changes for new machines and machinery systems within 18 months of the approval of this standard.

The committee recommends that users evaluate whether existing machinery and machinery systems have acceptable risk within 18 months of the approval date of this standard using generally recognized risk assessment methods. If the risk assessment shows that modification(s) is necessary, refer to the requirements of this standard to implement risk reduction measures (protective measures) for appropriate risk reduction.

The ANSI/SPI B151.29 is considered a “type-C” standard. SPI standards can be associated with the ISO “A-B-C level” structure as described below:

- **Type-A standards** (basis standards) give basic concepts, principles for design, and general aspects that can be applied to machinery (e.g., ANSI B11.0; ANSI/ISO 12100);
- **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 (e.g., ANSI B11.19; ISO 13849-1);
- **Type-C standards** (machinery safety standards) deal with detailed safety requirements for a particular machine or group of machines.

Suggestions for improvement of this standard will be welcome. Inquiries with respect to the application of, or substantive requirements of, this standard should be addressed to the Society of the Plastics Industry, Inc., 1667 K Street, NW, Ste. 1000, Washington, DC 20006. The Injection Molding Standards Development Committee of the Machinery Division, and the Safety Committee of the Molders Division, was responsible for this standard and had the following members:

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America Safety and Energy  
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Milacron  
Maruka USA  
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## Explanation of the format of this American National Standard, and ANSI /SPI B151 conventions

This ANSI B151.29 – 2014 American National Standard uses a two-column format to provide supporting information for requirements. The material in the left column is confined to “Standards Requirements” only, and is so captioned. The right column, captioned “Explanatory Information” contains information that the writing committee believed would help clarify the requirements of the standard or to provide examples or additional reference information. This column is not a normative part of the standard as it contains no requirements and should not be construed as being a part of the requirements of this American National Standard.

As in all American National Standards, the term “SHALL” denotes a requirement that is to be strictly followed in order to conform to this standard; no deviation is permitted. The term “SHOULD” denotes a recommendation, a practice or condition among several alternatives, or a preferred method or course of action.

Similarly, the term “CAN” denotes a possibility, ability or capability, whether physical or causal, and the term “MAY” denotes a permissible course of action within the limits of the standard.

To achieve uniform interpretation, it is imperative to read and understand the definitions (clause 3) of this standard.

**B151 conventions:** Operating rules (safe practices) are not included in either column of this standard unless they are of such nature as to be vital safety requirements, equal in weight to other requirements, or guides to assist in compliance with the standard. The B151 standards generally do not use the term “and/or” but instead, preferentially use the term “OR” which is used as an inclusive disjunction, meaning ***one or the other or both***.

Suggestions for improvement of this standard are welcomed. They should be sent to:

**SPI: The Plastics Trade Industry Association**  
**1667 K Street NW, Suite 1000**  
**Washington, DC 20006 - Attention: B151 Secretariat.**

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## American National Standard for Plastics Machinery

# Safety Requirements for Vertical Clamp Injection Molding Machines

### STANDARD REQUIREMENTS

### EXPLANATORY INFORMATION

(Not a normative part of American National Standard B151.29-2014 – Safety Requirements for Vertical Clamp Injection Molding Machines)

## 1 Scope, Purpose, and Application

### 1.1 Scope

The requirements of this standard shall apply to Vertical Clamp Injection Molding Machines (VCIMMs) that process plastic materials and inject said material into a mold(s) held closed by a vertically acting clamp.

VCIMM suppliers and users shall use the risk assessment process in the manufacture, care, and use of the machinery.

Deviations from the requirements of this standard shall be based on a documented risk assessment.

Safety requirements for the use of ancillary equipment or molds for VCIMM are not covered by this standard.

### 1.2 Purpose

The purpose of this standard is to identify and address known hazards to personnel working on, or adjacent to, a VCIMM.

### 1.3 Application

The user shall ensure that the use of a VCIMM shall be in conformance with the requirements of clause 9.

### E1.1

In developing the requirements of this standard, the committee used the risk assessment process. A list of hazards common to VCIMMs appears in clause 6 of this standard. For each hazard identified within the scope of the standard, the committee assessed the potential severity of injury related to the hazard, the frequency of exposure to the hazard, and possible avoidance. This process involved discussion among the committee, and resulted in the recommended risk reduction measures included in clauses 7 through 10 inclusive and additional reference material in the annexes. Compliance with this standard is considered to adequately control hazards identified in clause 6. Other hazards not listed in clause 6 that can occur with VCIMMs should be evaluated using the risk assessment process and may require additional risk reduction measures not included in this standard.

See ANSI B11.0 for comprehensive information on the risk assessment process.