

ANSI / SPI B151.27-2013

American National Standard for Plastics Machinery Safety Requirements for the Integration of Robots with Injection Molding Machines

Secretariat and Accredited Standards Developer
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d/b/a SPI – The Plastics Trade Industry Association
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American National Standards Institute



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Foreword

(This foreword is not part of American National Standard ANSI/SPI B151.27-2013)

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.

This standard is a revision of *American National Standard for Plastics Machinery – Robots Used with Horizontal Injection Molding Machines – Safety Requirements for the Integration, Care, and Use*, ANSI/SPI B151.27-2003. This revision is intended to provide greater clarity and to update requirements to reflect changes in technology. Directly and materially affected parties who are interested in participating as a member of the American National Standard consensus body for this standard are requested to contact The Society of the Plastics Industry, Inc., 1667 K Street NW, Suite 1000, Washington, DC 20006. Suggestions for improvement of this standard will be welcome at the same address.

The project on Safety Requirements for Injection Molding Machines was initiated under the Robot Safety Section of the Equipment Council (formerly the Machinery Division), and the Safety Committee of the Processors Council (formerly the Molders Division), of the Society of the Plastics Industry, Inc (SPI).

Both councils of the SPI have long been concerned with operator safety on plastics processing equipment. Accordingly, the councils have established a single Robot Safety Committee charged with the task of establishing necessary standards.

A standard addressing the integration, care, and use of robots used with injection molding machines is complicated by the variety and sizes of machines and robots manufactured and in use and by virtually infinite combinations of parts being produced, production methods used, and operating conditions existing in industry today.

The primary objective of this standard is to minimize hazards associated with machine and robot activity by establishing requirements for the integration, care, and use of these machines.

To accomplish this objective, the committee decided to approach the problem of integration safety from three different directions:

- eliminate recognized hazards by design criteria;
- establish standard approaches to design so that robot integration from competitive suppliers will have similar operational characteristics;
- safeguard the point of operation to protect the operator from recognized hazards.

To assist in the interpretation of these requirements, responsibilities have been assigned to the supplier, the remanufacturer, the modifier, and the user.

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 or the machine-specific (type-C) standard to implement risk reduction measures (protective measures) for appropriate risk reduction.

Consensus for adoption of the 2013 edition of this standard and approval of the revision of this standard was achieved by use of the Canvass Method.

At the time this standard was revised, the Robot Safety Committee of the Society of Plastics Industry, Inc., which is responsible for this standard, had the following members:

D. Royce, Chairman (Wittmann Battenfeld)	S. Antonio, Krauss-Maffei
D. Felinski, Committee Secretary (SPI)	T. Doyle, Industrial Safety Integratration
J. Dalzell, Secretariat (SPI)	S. Glover, Zeiger Industries
	M. Greenhalgh, Yushin America, Inc.
	J.Healy, Sepro America
	L. Keller, Milacron
	S. Kendrick, Sepro America
	S. Khalil, Instant Engineering, Inc.
	M. Lessig, Engel
	L. Mills, S.A.F.E. LLC
	E. Sowders, Toyota
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American National Standards

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Explanation of Standard Format

American National Standard ANSI/SPI B151.27-2013 uses a two-column format to provide for specific requirements and supporting information.

The left column, designated "Standard Requirements," is confined solely to these requirements and is printed in bold type.

The right column, designated "Explanatory Information" contains only information that is intended to clarify the standard. This column is not part of the standard. Where supplementary photographs or sketches are required, they are designated as "Illustrations."

Operating rules (safe practices) are not included in either column unless they are of such a nature as to be vital safety requirements that are equal in weight to other requirements, or unless they are guides to assist in compliance with the standard.

American National Standard for Plastics Machinery –

Safety Requirements for the Integration of Robots with Injection Molding Machines

STANDARD REQUIREMENTS

EXPLANATORY INFORMATION

(Not a normative part of ANSI/SPI B151.27-2013, American National Standard for plastics machinery – *Safety Requirements for the Integration of Robots with Injection Molding Machines*)

1 Scope, purpose, and exclusions

1.1 Scope

The requirements of this standard shall apply to all robots used on or within the guarded area of Injection Molding Machines (IMMs).

Machinery 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.

1.2 Purpose

The purpose of this standard is to establish safe practices and procedures for the integration and use of robots operated within the guarded area(s) of the IMMs.

E1.1

In developing the requirements of this standard, the committee used the risk assessment process. A list of hazards typical of this machinery appears in clause 6. 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 Annex reference material. 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 this machinery 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 additional information on the risk assessment process.