ASME B20.1-2024
(Revision of ASME B20.1-2021)

Safety Standard for Conveyors and Related Equipment

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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FOREWORD

The first edition of the Safety Standard for Conveyors, Cableways, and Related Equipment was sponsored by the National Conservation Bureau and The American Society of Mechanical Engineers (ASME). It was approved by the American Standards Association [now known as the American National Standards Institute (ANSI)] as American Standard B20.1-1947.

In 1950, the Sectional Committee B20 was reorganized under the sponsorship of the Accident Prevention Department of the Association of Casualty and Surety Companies and ASME. The following four Subcommittees were formed to make specific recommendations for revisions:

Subcommittee No. 1: Scope and Intent

Subcommittee No. 2: Nomenclature and Definitions

Subcommittee No. 3: Portable Conveyors

Subcommittee No. 4: Conveyors in General

The definitions section was based on the conveyor industry dictionary, Conveyor Terms and Definitions, as prepared by the Technical Committee (now the Engineering Conference) of the Conveyor Equipment Manufacturers Association (CEMA).

The second edition of this Standard, dated April 1955, was submitted in draft form to the Sectional Committee for approval and distributed to industry in general for criticism and comment. Approval was then given by the Sectional Committee, the sponsors, and the American Standards Association. The Standard was designated as American Standard B20.1-1957 on December 4, 1957.

In 1967, the third edition of the Safety Standard for Conveyors and Related Equipment was submitted in draft form to representatives of industry for comment. It was subsequently approved by the Sectional Committee, the sponsors, and ANSI for issuance as American National Standard B20.1-1972 on February 17, 1972.

The fourth edition of the Safety Standard for Conveyors and Related Equipment was undertaken in 1973 to assist the Office of Safety and Health Standards, U.S. Department of Labor, which indicated interest in the Standard.

A change in format from a specification standard to a performance standard was deemed necessary. Simply stated, the Standard describes what end result should be achieved without the limiting specification usually given by a design and without the inclusion of finite material selection or dimensions.

The fourth edition was subsequently approved by the B20 American National Standards Committee, the Secretariat, and ANSI for issuance as American National Standard B20.1-1976 on June 14, 1976.

In accordance with the policy of ANSI, the B20 Committee began working on a revision of B20.1-1976 in February 1980. The fifth edition was approved by the B20 Committee, the sponsor (ASME), and ANSI for issuance as American National Standard B20.1-1984 on March 13, 1984.

Per the procedures outlined and implemented in the fifth edition, the sixth edition was approved by the B20 Committee, the sponsor (ASME), and ANSI for issuance as American National Standard B20.1-1987 on March 11, 1987. The seventh edition was approved for issuance as an American National Standard on March 26, 1990. The eighth edition was approved for issuance as an American National Standard on August 9, 1993.

The ninth edition was a compilation of changes from the 1993 edition, B20.1a-1994, and B20.1b-1995. It was approved for issuance as an American National Standard on May 23, 1997.

The 2000 edition was a compilation of changes from the B20.1a-1997 and B20.1b-1998 addenda. It was approved for issuance as an American National Standard on December 14, 2000.

Following approval by the B20 Committee and ASME, and after public review, ASME B20.1-2003 was approved by ANSI on October 9, 2003. The 2003 edition was a revision to ASME B20.1-2000.

ASME B20.1-2006 was approved by ANSI on September 7, 2006. The 2006 edition was a revision to ASME B20.1-2003.

ASME B20.1-2009 was approved by ANSI on February 2, 2009. The 2009 edition was a revision to ASME B20.1-2006.

ASME B20.1-2012 was approved by ANSI on March 28, 2012. The 2012 edition was a revision to ASME B20.1-2009.

ASME B20.1-2015 was approved by ANSI on September 9, 2015. The 2015 edition was a revision to ASME B20.1-2012.

Safety standards for lockout and tagout procedures are published in ANSI/ASSE Z244.1-2016, Control of Hazardous Energy — Lockout/Tagout and Alternative Methods, and OSHA Standard 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout). The use of recommendations and guidelines as published by CEMA, Safety Label Brochure No. 201 and Application Guidelines for Vertical Reciprocating Conveyors, published by the Conveyor and Sortation Systems

(CSS) of the Material Handling Institute in conjunction with ASME B20.1 is encouraged, as are the above-mentioned standards.

The values stated within this Standard are in both SI and U.S. Customary units, with the latter placed in parentheses. These units are essentially interchangeable, and, depending on the country, as well as industry preferences, the user will determine which values are to be regarded as the standard.

Safety codes and standards are intended to enhance public safety. Revisions result from committee consideration of factors such as technological advances, new data, and changing environmental and industry needs. Revisions do not imply that previous editions were inadequate.

ASME B20.1-2018 was approved by ANSI on June 22, 2018. The 2018 edition was a revision to ASME B20.1-2015.

ASME B20.1-2021 was approved by ANSI on July 16, 2021. The 2021 edition was a revision to ASME B20.1-2018.

ASME B20.1-2024 was approved by ANSI on August 7, 2024. This 2024 edition is a revision to ASME B20.1-2021.

ASME B20 COMMITTEE
Safety Standard for Conveyors and Related Equipment

(The following is a roster of the committee at the time of publication of this Standard.)

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H. E. Rodgers, *Vice Chair*
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General. ASME codes and standards are developed and maintained by committees with the intent to represent the consensus of concerned interests. Users of ASME codes and standards may correspond with the committees to propose revisions or cases, report errata, or request interpretations. Correspondence for this Standard should be sent to the staff secretary noted on the committee's web page, accessible at https://go.asme.org/B20committee.

Revisions and Errata. The committee processes revisions to this Standard on a continuous basis to incorporate changes that appear necessary or desirable as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published in the next edition of the Standard.

In addition, the committee may post errata on the committee web page. Errata become effective on the date posted. Users can register on the committee web page to receive e-mail notifications of posted errata.

This Standard is always open for comment, and the committee welcomes proposals for revisions. Such proposals should be as specific as possible, citing the paragraph number, the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent background information and supporting documentation.

Cases. The committee does not issue cases for this Standard.

Interpretations. Upon request, the committee will issue an interpretation of any requirement of this Standard. An interpretation can be issued only in response to a request submitted through the online Inquiry Submittal Form at https://go.asme.org/InterpretationRequest. Upon submitting the form, the inquirer will receive an automatic e-mail confirming receipt.

ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Standard requirements. If, based on the information submitted, it is the opinion of the committee that the inquirer should seek assistance, the request will be returned with the recommendation that such assistance be obtained. Inquirers can track the status of their requests at https://go.asme.org/Interpretations.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME committee or subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Interpretations are published in the ASME Interpretations Database at https://go.asme.org/Interpretations as they are issued.

Committee Meetings. The B20 Standards Committee regularly holds meetings that are open to the public. Persons wishing to attend any meeting should contact the secretary of the committee. Information on future committee meetings can be found on the committee web page at https://go.asme.org/B20committee.

INTRODUCTION

Accidents resulting from the manual handling of materials have been reduced by the use of conveying and other forms of mechanical handling equipment. A further reduction in the accident rate can be gained by following safe practices in the design, construction, installation, operation, and maintenance of such equipment.

The design and installation of conveyors and conveyor systems should be supervised by qualified engineers. Likewise, the operation and maintenance of conveyors and systems should be supervised by trained personnel.

The purpose of this Standard is to present certain guides for the design, construction, installation, operation, and maintenance of conveyors and related equipment.

Those portions of this Standard relating to maintenance and operation procedures are fully as important as those relating to design and installation. The best design features may be negated by faulty maintenance and operating practices. It is important that operating and maintenance personnel be instructed in recognizing hazards and pertinent safety precautions.

Operation and maintenance instructions in this Safety Standard are intended for general applications. The equipment manufacturer and/or installer should be consulted for specific operating or maintenance instructions.

ASME B20.1-2024
SUMMARY OF CHANGES

Following approval by the ASME B20 Standards Committee and ASME, and after public review, ASME B20.1-2024 was approved by the American National Standards Institute on August 7, 2024.

ASME B20.1-2024 includes the following changes identified by a margin note, **(24)**.

Page	*Location*	*Change*
1	2	Updated
1	4	Definition of *qualified person* revised
7	5.2	Subparagraph (d) revised
7	5.3	Subparagraph (a) revised
8	5.11.2	Subparagraph (c)(2) added, and subsequent subparagraph redesignated
9	5.17	Added
11	6.8.3	Subparagraph (b) revised
12	6.13	Subparagraph (h) revised

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SAFETY STANDARD FOR CONVEYORS AND RELATED EQUIPMENT

1 SCOPE

This Standard applies to the design, construction, installation, maintenance, inspection, and operation of conveyors and conveying systems in relation to hazards. The conveyors may be of the bulk material, package, or unit-handling types, where the installation is designed for permanent, temporary, or portable operation.

This Standard shall apply, with the exceptions noted below, to all conveyor installations.

This Standard specifically excludes any conveyor designed, installed, or used primarily for the movement of people. This Standard does, however, apply to certain conveying devices that incorporate within their supporting structure workstations or operator's stations specifically designed for authorized operating personnel.

This Standard does not apply to conveyors for which specific standards are already in effect, or to equipment such as industrial trucks, tractors, trailers, automatic guided vehicles, tiering machines (except pallet load tierers), cranes, hoists, power shovels, power scoops, bucket drag lines, trenchers, platform elevators designed to carry passengers or an operator, manlifts, moving walks, moving stairways (escalators), highway or railroad vehicles, cableways, tramways, dumbwaiters, material lifts, industrial scissors lifts, pneumatic conveyors, robots, or integral machine transfer devices. Some of the foregoing have specific standards.

The provisions of this Standard shall apply to equipment installed 1 yr after the date of issuance.

(24) 2 REFERENCES

The following list of codes and standards have been cited as references in this Standard. Reference to them does not constitute inclusion of the complete text of such codes or standards as a part of this Standard.

This Safety Standard for conveyors is supplementary to any law or code covering fire or health regulations.

ANSI/ASSP Z244.1. Personnel Protection — Lockout/Tagout of Energy Sources — Minimum Safety Requirements. American National Standards Institute.

Application Guidelines for Vertical Reciprocating Conveyors. Conveyor and Sortation Systems.

ASME A17.1/CSA B44. Safety Code for Elevators and Escalators. The American Society of Mechanical Engineers.

ASSE Z590.3. Guidelines for Addressing Occupational Hazards and Risks in Design and Redesign Processes. American Society of Sanitary Engineering.

CEMA 102. Conveyor Terms and Definitions. Conveyor Equipment Manufacturers Association.

CEMA Technical Report 2015-01. Conveyor Equipment Manufacturers Association.

MIL-STD-882. System Safety. Department of Defense, Defense Logistics Agency.

NEMA Z535.4. Product Safety Signs and Labels. National Electrical Manufacturers Association.

NFPA 70. National Electrical Code. National Fire Protection Association.

NFPA 79. Electrical Standard for Industrial Machinery. National Fire Protection Association.

OSHA Standard 29 CFR 1910.147. The Control of Hazardous Energy (Lockout/Tagout). Occupational Safety & Health Administration.

3 INTENT

The intent of this Standard is to provide for safe operation and maintenance of conveying equipment.

4 DEFINITIONS[1] (24)

accessible: applies to hazardous objects not guarded or isolated and likely to be contacted inadvertently.

actuator: a device that initiates the action of controls or controllers and is manually operated. The actuator may be a push button, toggle switch, foot pedal, hand lever, handset timer, or any other device that performs the described function.

antirunaway: a safety device that stops a declining, inclined, or vertical conveyor and thus prevents it from moving away in the event of a mechanical or electrical failure.

apron pan: one of a series of overlapping or interlocking plates or shapes that, together with others, form the conveyor bed.

[1] Many definitions were extracted from the latest revision of CEMA 102. For definitions of terms other than those defined in section 4, refer to this publication.