



The 2023 Compliance Issue

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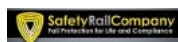
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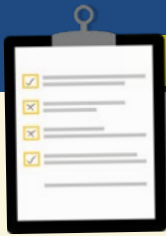
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Specification for the Design, Testing & Utilization of Industrial Steel Cantilevered Storage Racks

“Until 2016 there was not an RMI standard that pertained to the design of cantilevered storage racks. The creation of this standard assists Steel King, and other members of the RMI that manufacture cantilevered storage racks, in the design of it. The standard is referenced by the building codes.” *Steel King Industries, Inc., 800-826-0203, www.steelking.com*

Cantilever racks are customizable storage solutions that can accommodate materials of different sizes and types and heavy loads, like pipes, lumber and furniture. Whether light- or heavy-duty, single-sided or two-sided, cantilever racks give warehouse, distribution center and other facilities managers options that can help them store goods effectively and maximize their available space, both indoors and out. Naturally, these racks must be strong, stable and durable.

ANSI MH16.3-2016 was developed by MHI's Rack Manufacturers Institute (RMI), which is comprised of companies that supply industrial steel storage racks and related structural systems. It is intended to provide useful information and guidance for owners, users, designers, purchasers or specifiers of material handling equipment or systems. It which was developed under the American National Standards Institute (ANSI) Canvass method and approved by the American National Standards Institute (ANSI) on Oct. 8, 2015 and represents suggested design practices and operational requirements for cantilevered storage racks.

According to ANSI, the standard is “advisory only and should only be regarded as a

simple tool that its intended audience may or may not choose to follow, adopt, modify or reject.” As with all ANSI standards, this one does not constitute a comprehensive safety program and should not be relied upon as such.

What the Standard Covers

ANSI MH16.3-2016 applies to free-standing and top-tied cantilevered storage racks made of cold-formed or hot-rolled structural steel members. It also covers cantilevered storage racks with accessories, such as decked shelves, shed roofs and canopies. Applicability to cantilevered storage racks made from either hot-rolled or cold-formed steel is limited.

Included in the Standard

- **General** - ANSI MH16.3-2016 provides information and recommendations about applicable design specifications; integrity of rack installations (owner maintenance; plaque; conformance; load application and rack configuration drawings; multiple configurations; small installations; column base plates, column base, column-base beams and



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anchor bolts: rack damage: racks connected to the building structure: plumbness tolerance: vertical tolerance of arm positions).

- **Loading** - Load combinations for the ASD Method; load factors and combinations for the LRFD Method; vertical loads (free-standing cantilevered columns and top-tied cantilevered columns); impact loads (impact downward, impact upward); horizontal forces; wind loads; earthquake forces (general, equivalent lateral force method, displacement-based method: concurrent forces); snow loads: and other loads.
- **Design Procedures**
- **Design Of Steel Elements And Members** - Cold-formed steel columns (properties of sections; design for flexure; design for compression; built-up members from cold-formed sections; truss-type members from cold-formed sections); hot-rolled steel columns (built-up members from hot-rolled sections and truss-type members from hot-rolled sections); combined compression and bending; and column splices. Splices.
- **Cantilever Arm Design** – General; analysis; bending moments; deflection and connection design.
- **Cantilever Column Design** – General; effective length design method; non-top tied cross-aisle direction; top

tied cross-aisle direction; down-aisle direction; alternate design method; direct analysis method; application of the direct analysis method; capacity; compression flange bracing; cross-aisle deflection; free-standing cantilevered columns; top-tied cantilevered columns; torsional restraint.

- **Cantilever Bracing Design** - Brace members in the down-aisle direction and their connection to the columns.
- **Column-to-base Connections, Column Bases And Base Plates** – General; connections; column base and base plates; slab and subgrade evaluation; anchor bolts (anchor bolt design and periodic inspection of anchor bolt installation).
- **Special Rack Design Provisions** – Overturning
- **Test Methods** - General testing procedures (Test procedure, test results evaluation); perforated stub-column test (test specimen and procedure, evaluation of test results); column-to-base connection test (strength and stiffness, test setup); cyclic test of column-to-base beam connections (general, definitions, test subassembly requirements, essential test variables, testing procedure, material testing requirements, test reporting requirements, acceptance criteria; evaluation of test

results; arm connection test (strength and stiffness, test setup; test procedure, and evaluation of test results).

For More Information

- » ANSI MH16.3-2016; Specification for the Design, Testing and Utilization of Industrial Steel Cantilevered Storage Racks can be ordered from: <https://webstore.ansi.org/standards/mhia/ansimh162016>
- » For information about MHI's Rack Manufacturers Institute (RMI), visit www.mhi.org/rmi.
- » Questions or suggestions intended to improve ANSI MH16.3-2016 can be sent to: MH16.3 Committee, MHI, 8720 Red Oak Blvd., Suite 201, Charlotte, NC 28217 or emailed to standards@mhi.org.

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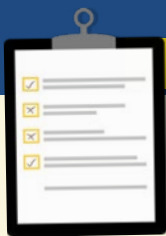
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Safety Requirements for Industrial Scissors Lifts



“Over 20 years ago, Advance Lifts and a number of other leading manufacturers of industrial scissors lifts formed a group that worked on developing the first version of Safety Requirements for Industrial Scissors Lifts. This became known as the ANSI MH29.1 standard. Advance Lifts has continued to be active in the development of the subsequent revisions to the standard and, in 2015, the International Code Council (ICC) incorporated ANSI MH29.1 as a reference standard in section 3001.2 in chapter 30 of the International Building Code (IBC). All of the Advance Lifts scissors lifts products are designed, tested and manufactured to comply with ANSI MH29.1. Consequently, when we ship a product to a customer, we are confident that we are providing them with reliable, durable and safe products. ANSI MH29.1 is a very important part of our company’s business philosophy.” *Advance Lifts, Inc., 800-843-3625, www.advancelifts.com*

About the Standard

This standard applies to industrial scissors lifts that are raised and lowered by means of hydraulic, pneumatic or mechanical actuation. These industrial scissors lifts are intended for commercial applications on firm and level surfaces and may be either stationary or mobile and used to position, feed, transfer, load or unload materials and/or personnel. Industrial scissors lifts are available in a range of capacities, sizes and travels, and include dock lifts, work access lifts and lift tables. (ANSI: https://webstore.ansi.org/preview-pages/MHIA/preview_ANSI+MH29.1-2012.pdf)

This standard does not apply to: (1) Lift tables that do not incorporate scissors type mechanisms. (2) Aerial or work platforms as covered by ANSI/SIA A92. (3) Elevators and equipment covered in ANSI/ASME A17.1, safety code for elevator and escalators (The National Elevator Code). (4) Vertical reciprocating conveyors such as those covered in ANSI/ASME B20.1, Safety Standard for conveyors and related equipment. (4)

Vertical lifts intended for transportation of a mobility impaired person only as covered in ANSI/ASME A18.1 – The Safety Standard for Platform Lifts and Stairway Chairlifts. (5) Automotive vehicle service lifts such as covered in ANSI/ALI ALIS, ANSI/ALI ALOIM, and ANSI/ALI ALCTV. (6) Vehicle transport lifts as covered in ANSI/ASME PALD, Part 17. (7) Performing art lifts such as stage and orchestra lifts. (ANSI: https://webstore.ansi.org/preview-pages/MHIA/preview_ANSI+MH29.1-2012.pdf)

The standard includes responsibilities of manufacturers, owners/users and operators and covers basic principles, inspection and maintenance details, what training should include, workplace inspections and operator warnings and instructions, among other items.

History of the standard

ANSI MH29.1 was developed to provide a comprehensive safety standard and establish a minimum design and performance criteria to ensure the safe application and utilization of industrial

scissors lifts. It is intended to serve as a guide for designers, manufacturers, sellers, installers, equipment specifiers, owners, users and governing bodies of industrial scissors lifts. The newest revision of the standard, MH29.1:2012 was released by Lift Manufacturers Product Section (LMPS) Industry Group of the MHI. It made changes and additions to definitions contained in the standard intended to address confusion and overlap in the earlier version and provide further delineation between industrial scissors lifts and aerial type lifts. The responsibilities of manufacturers, users, owners and operators have been reordered, consolidated

and enhanced. Lastly, the requirements within the standard have been revised where needed to ensure they are stated using mandatory language. This revision contains a new section on operator responsibilities and modifies values related to the indicator bars in the section on platform protection. (ANSI: https://webstore.ansi.org/preview-pages/MHIA/preview_ANSI+MH29.1-2012.pdf)

Select the right equipment for the task

One of the most important ways to ensure safety is to choose the right lift for the application. To do this, it is necessary to take into account:

- **The capacity:** the total weight that will be placed on a unit. In order for a unit



Industrial scissors lifts are raised and lowered by means of hydraulic, pneumatic or mechanical actuation. © Evgeniya M - stock.adobe.com



Industrial scissors lifts are used in a variety of commercial applications.
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to be safe, it must be able to lift its maximum loaded capacity.

- **The nature of the load:** what the load consists of, the weights of the load components, the center of gravity of the load, if it is not centered on the load, and the physical dimensions of the load
- **Means of loading and unloading:** how loads are transitioned onto and off of the lift. These movements determine the “edge loading” and/or “impact” that the structure must sustain and they may contribute to off centered load conditions during the lifting cycle. The most common ways in which loads are transitioned on and off lifts are: rolled on/ rolled off – with a wheeled vehicle or cart; slid on/ slid off – as in sheet feeding operations or conveyor operations; placed on/ picked off – as in stacking operations or crane loading.
- **Travel and lowered height:** Travel refers to the vertical movement of

the unit. Units with excess travel are chosen for some applications, so that longer platforms can be made available.

- **Platform size**
- **Speed requirements:** In most cases, the standard speed of a lift model is satisfactory for most applications.

Consulting with a manufacturer will help determine the right lift for an application.

For more information

- » Details about ANSI MH29.1-2020: Industrial Scissors Lifts are available at: <https://blog.ansi.org/ansi-mh29-1-2020-industrial-scissors-lifts/>.
- » OSHA has an eTool that contains information about how to safely use, position and maintain scissor lifts. You can access it at: <https://www.osha.gov/etools/scaffolding/scissor-lifts/>

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Advance Lifts was founded in 1974 and quickly became the leading dock lift manufacturer in the country. Over the years our product lines expanded to include production scissors lift tables, tilters, turntables, dumpers, work access lifts, and mezzanine access lifts. Since the beginning “engineering excellence” has been the trade mark of Advance Lifts products. Over the last decade, we have intensified our research and development program and the value gap between our products and our competitors has increased significantly. Through our R and D efforts Advance Lifts has developed our patented “Platform Centering Device” which is now standard on all of our In-Plant production tables and greatly reduces the single greatest cause of lift wear. Our “Ultra High Cycle” lift is the industries only scissors lift with a 3,000,000 cycle warranty. We also have designed a positioning control system for production scissors lifts with a repeatable accuracy of $\pm .030$ ". The point of all this research is to provide customers with superior value and service. Some of our breakthroughs can be applied to many of our standard products, while others are reserved for custom high performance applications.

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Respiratory Fit Testing Methods

“A standard for carrying out the proper way to carry out fit testing was long overdue and has been immensely helpful in the field of respiratory protection. At OHD, we commend those who further our mission of protecting the world’s workforce.” – *Dr. Stephanie Lynch, PhD, OHD, LLP, Product Manager, Occupational Health Dynamics (OHD). 205-980-0180. www.ohdusa.com*

Over 3 million United States employees, in approximately 1.3 million workplaces, are required to wear respiratory protection.

A fit test is conducted to verify that a respirator is both comfortable and correctly fits the user. Fit test methods are classified as either qualitative or quantitative. A qualitative fit test is a pass/fail test that relies on the individual’s sensory detection of a test agent, such as taste, smell or involuntary cough (a reaction to irritant smoke*). A quantitative fit test uses an instrument to numerically measure the effectiveness of the respirator. The benefits of a fit test include better protection for the employee and verification that the employee is wearing a correctly fitting model and size of respirator. Higher than expected levels of exposure to a contaminant may occur if the respirator has a poor face seal against the user’s skin, which can result in leakage.

Fit testing uses a test agent, either qualitatively detected by the wearer’s sense of taste, smell or involuntary cough (irritant smoke) or quantitatively measured by an instrument, to verify the respirator’s fit. The intent of fit testing is to evaluate sealing surface leakage. Other sources of

leakage may contribute to the total leakage detected.

About the Standard

The purpose of this standard is to provide clear and consistent guidance with regard to the respirator fit testing components of an effective respiratory protection program.

The respirator fit test itself is simply one facet of fit testing. An effective program requires much more, including a qualified person to perform the fit test. This standard provides guidance on exactly what knowledge and skills are necessary in order to perform as a qualified fit test operator.

This standard contains information to aid program managers and fit test operators in preparing to perform a proper fit test. This includes guidance regarding potential interference from other personal protective equipment with the respirator, detailed information on respirators used for fit testing, selection of respirators prior to fit testing and other considerations that must be met if the fit test is to be effective.

A single fit test exercise protocol cannot model all workplace activities encountered by respirator users. Recognizing this, the standard provides flexibility regarding fit test exercise protocols.

Exercises may be selected that are more representative of actual workplace activities, including repeated respirator donning.

Included in the Standard:

- Qualifications of a Fit Test Operator
- Medical Evaluation
- Training for Respirator Wearers
- Interference Concerns
- Frequency of Fit Tests
- Respirators Used for Fit Testing
- Choosing the Respirator
- Test Requirements Common to All Fit Tests
- Required and Elective Fit Test Exercises
- Duration of Fit Test Exercises
- Record Keeping
- Training Records of Fit Test Operators
- Required and Elective Fit Test Exercises
- Exercise Description
- Evaluation Form for Respirator Fit Test Operator

Good to Know

- According to the CDC’s National Institute for Occupational Safety and Health¹, a successful fit test only qualifies an employee to use the specific brand/make/model and size of respirator that he or she wore during that test.

Respirator sizing is not standardized across models or brands. For example, a medium in one model may not offer the same fit as a different manufacturer’s medium model.

- Facial hair that lies along the sealing area of a respirator, such as beards, sideburns or some mustaches, will interfere with respirators that rely on a tight facepiece seal to achieve maximum protection. A common misconception is that human hair can act as a crude filter to capture any particles that are in the airstream between the sealing surface and the user’s skin. However, facial hair is not dense enough and the individual hairs are too large to capture particles like an air filter does; nor will a beard trap gases and vapors like the carbon bed in a respirator cartridge. Therefore, the vast majority of particles, gases and vapors follow the air stream right through the facial hair and into respiratory tract of the wearer. In fact, some studies have shown that even a day or two of stubble can begin to reduce protection.

For More Information

- » This standard is available at: <https://webstore.ansi.org/Standards/ASSE/ANSIAIHAASSEZ88Respirator>

¹ <https://www.cdc.gov/niosh/docs/2018-129/pdfs/2018-129.pdf?id=10.26616/NIOSH-PUB2018129>

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Hand Protection Classification

“As a manufacturer that focuses on cut resistant gloves, the 2016 standard helped close the gaps between cut levels, particularly the A4 and A5 ranges. The addition of four more cut levels helped us to develop products specific to end-user needs that had not been previously met.” *Armor Guys, 310-504-1380, www.armorguys.com*

Hand injuries are not only more common than other types of workplace injuries; on average, they require a longer average recovery time than all other injury types combined. According to the Bureau of Labor Statistics¹, there were 102,350 occupational hand injuries across all injuries that resulted in days away from work in 2021. Manufacturing accounted for 36,660 of those, followed by 3,300 in natural resources and mining, and 2,790 in agriculture, forestry, fishing and hunting.

About the Standard

The tremendous number of hazard-specific work gloves available today can make selection challenging. Technological developments have produced high-performance materials and composite yarns that - together with improved manufacturing processes - create ultra-tough, highly specialized hand protection. ANSI/ISEA 105-2016 is a voluntary global standard that manufacturers can use as a basis for testing and classifying their products. Those classifications, in turn, enable managers to sort through the options and choose the gloves best suited to the applications, environments and hazards to which their workforce will be exposed. Note: hand protection covered under this

standard includes gloves, mittens, partial gloves or other items covering the hand (or a portion of the hand) that are intended to provide protection against, or resistance to, a specific hazard.

The standard addresses the classification and testing of hand protection for specific performance properties. Gloves are classified to a performance level ranging from 0 to 6 based upon their performance when evaluated against defined industry test methods for:

- Mechanical protection (cut-resistance, puncture resistance and abrasion resistance).
- Chemical protection (permeation resistance, degradation)
- Other performance characteristics such as ignition resistance and vibration reductions

A revised version of this standard was issued in 2016. One of the major changes: an expanded 9-Level Classification for cut-resistance, including the use of a single test method for testing in an effort to provide consistent meaning of the ratings from the end-user perspective (and to embrace the approach used in international standards). ANSI also increased the

range of cut resistant protection levels. Other updates include the incorporation of a needlestick puncture test, recognizing that this is a common potential exposure for the medical, sanitation and recycling industries.

Testing Protocols

- **Cut resistance** to glass, knives, sheet metal, bladed tools and other sharp objects is tested using the ASTM F2992-15 test method and TDM (Tomodynamometer) cut test machine. A straight-edge blade is run over the material used in protective clothing until it cuts through. Multiple iterations are performed, using new blades and different loads. The resulting resistance ratings range from A1 (very minor cuts) to A9 (highest cut danger).
- **Abrasion resistance** is tested using the Taber Abrasion equipment following the ASTM D3389-10 and D3884-09 test methods.
- **Puncture resistance** tests material with a hypodermic needle under pressure, following the ASTM F2878 test method.
- **Chemical protection** testing is in accordance with the ASTM F 739 method, in which a piece of the exterior side of glove material is exposed for a period of time to a certain chemical, and the interior side is examined at intervals to determine if the material has been permeated.

- **Flame resistance** testing is performed per the methodology provided in ASTM F1358-16.
- **Heat resistance** is tested in accordance with ISO 17493:2016.
- **Conductive heat resistance** of cut resistant gloves are tested per ASTM 1060-08.
- **Vibration reduction** testing is done according to ANSI S2.73-2002 / ISO 10819:2013 and results in only pass or fail classifications.

For More Information

- » Get the standard at: <https://isea.wpengine.com/resources/shop/>
- » The International Safety Equipment Association (ISEA) has developed an on-line tool to help manufacturers, material suppliers and test labs accurately calculate the glove's cut-resistance classification outlined in the standard. Access it at: <https://selectsafety.net/cut-resistant-glove-levels/>

¹ <https://www.bls.gov/iif/nonfatal-injuries-and-illnesses-tables/case-and-demographic-characteristics-table-r2-2020.htm>

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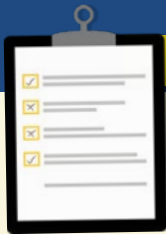
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Standard for Dropped Object Prevention Solutions



“At Guardian we are committed to providing 360 degrees of height safety. Ensuring tools and equipment are secure is a critical part of our mission to keep everyone on the jobsite safe. The ANSI/ISEA 121-2018 standard is the platform upon which we build our industry leading Dropped Object Prevention line.” *Guardian, 1-800-466-6385, www.guardianfall.com*

Each year on U.S. worksites, falling objects cause thousands of injuries ranging from minor (like cuts and bruises) to major (broken bones, paralysis and death). The greater the drop height, the greater the landing force. According to a Dropped Object Prevention Scheme¹ (DROPS) calculator shared by the National Institute for Occupational Safety and Health (NIOSH)², an object weighing only one pound can cause serious to severe injuries if it falls 300 feet. A ten-pound object falling the same height can be deadly. Measuring tapes, hammers and other hand tools, loose material, bricks, small parts and cans of paint are among items that fall on construction sites, at oil and gas facilities and in other industrial locations. In a well-publicized 2014 incident in Jersey City, New Jersey, a worker dropped a tape measure while unclipping it from his belt. The item fell 50 floors – at an estimated 140 miles an hour – and killed another worker who was at ground level. In addition to employees, bystanders and other individuals are also at risk from injury due to falling objects.



About the standard

ANSI/ISEA 121-2018, American National Standard for Dropped Object Prevention Solutions, establishes minimum design, performance, testing and labeling requirements for solutions that reduce dropped objects incidents in industrial and occupational settings. Dropped objects include hand tools, instrumentation, small parts, structural components and other items that have to be transferred and used at heights. These objects have the opportunity of becoming dropped objects potentially resulting in struck-by injury or fatality or damage to equipment. This standard focuses on preventative solutions actively used by workers to mitigate these hazards. It was developed by the

International Safety Equipment Association's (ISEA) Dropped Objects working group, in conjunction with industry stakeholders. It is the first of its kind to address equipment used to tether and/or contain hand tools, components, structure and other objects from falling from at-heights applications.

Hard hats and other types of protective equipment can help minimize the severity of a falling objects' impact. More prevention-focused measures, like netting and toe boards are also used. However, ANSI/ISEA 121-2018 is aimed at more active prevention practices and outlines four categories of equipment used to carry them out:

- Anchor attachments
- Tool attachments
- Tool tethers
- Containers

The scope of this standard includes tethering systems subsequently installed to the tools and anchors after original manufacture. The primary tools (hand tools, fasteners, power tools) and primary anchors (human body, lifts, structure) are considered native ends to the system and are specifically excluded from this standard.

This standard does not address passive preventative solutions such as netting, barricades and toe boards, nor does this standard address protective solutions for dropped objects that minimize damage from falling objects including head protection, foot protection and eye protection.

This standard also does not address hoisting or lifting requirements for material handling.

Effective Safety Practices

- Have workers remove personal items and tools from pockets that are not sealed.
- Unless it is necessary for the task in progress, move all material away from a leading edge.
- Require workers in high-risk areas to wear hard hats.
- Install toe boards where needed.
- Use barricades and signage to prevent non-workers from entering a worksite where the possibility of dropped objects exist.
- When working at height, have tools and other objects secured.



For More Information

- » Copies of the standard can be purchased online from ISEA: <https://bit.ly/2LkwxQV>

¹ DROPS is a global initiative focused on preventing dropped objects. Learn more at: www.dropsonline.org

² www.cdc.gov/niosh/construction/pdfs/how-heavy-is-deadly-final-508.pdf



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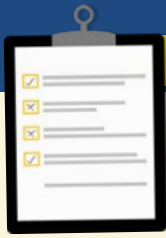


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Standard for Safety Glasses: Eye & Face Protection

“Reducing recordable injuries starts with seeing potential hazards in the workplace. That’s why Walman Optical Safety Eyewear uses advanced technology to manufacture and test every pair of prescription safety eyewear produced in our U.S. optical laboratories to adhere to ANSI Z87.1 standards. We believe that safety eyewear is a required medical device that must be precisely fit and measured to each employee and we support the responsibility companies have to keep its workforce safe and healthy with simple, customized programs. We pair only functional and fashionable ANSI Z87-2+ safety frames with cutting-edge optical products like digital lenses, anti-fog coatings and blue light filtering lenses to enhance productivity, health and safety in your company.” *Walman Optical, 844.401.7702, www.walmanopticalsafetyeyewear.com*

ANSI/ISEA Z87.1-2020, American National Standard for Occupational and Educational Personal Eye and Face Protection, prescribes the design, performance specifications and marking of safety eye and face products, including millions of safety goggles, spectacles, face shields and welding helmets worn by workers in a variety of manufacturing and processing facilities, utilities and transportation, university and research laboratories, and other occupational settings.

ISEA (International Safety Equipment Association) serves as the Secretariat of Accredited Standards Committee Z87 on Safety Standards for Eye Protection. ISEA administers the operating procedures of the committee, in accordance with the Essential Requirements proscribed by the American National Standards Institute (ANSI) and is responsible for the issuance of interpretations related to ANSI/ISEA Z87.1.

Updates to the Standard

To ensure professionals are aware of and understand innovations in eye and face protection design, the ISEA has updated the American National Standard for eye and face protection. The enhanced standard reinforces the emphasis on matching the protector to the hazard and includes other enhancements that might address the evolving needs of workers, particularly those engaged in specific tasks or applications.

The latest, 2020 version includes testing, performance and marking criteria for lenses with anti-fog properties. Fogging can impede a wearer’s ability to perform work safely; the standard helps employers enable solutions that minimize potential harm created by the continuous adjusting (or removing) of eyewear that provides protection from impact, splash or other hazards.

Why Standard Updates are Important

Approximately 2,000 eye injuries occur every day at work in the U.S., according to the Centers for Disease Control (CDC). Proper face and eye protection can reduce injuries and allow for safe operation during potentially dangerous tasks.

In consideration of specific applications, i.e., first responders and military personnel, the current 2020 version includes criteria and requisite markings for protectors offering relaxed optics as an option to the long-standing requirements.

These applications that may not require the stringent optical criteria historically imposed and needs to be balanced against often competing needs or protections that go hand-in-hand with specific tasks. ANSI/ISEA Z87.1-2020 provides for relaxed optics as an option which might not be appropriate for laboratory environments or industrial applications.

Certain other updates address the emergence of innovative product designs, which past editions did not include. For example, changes in transmittance allowances to recognize the unique properties of wrap lenses and expanded welding filter shades are included in the update.

In addition, clarifications have been made throughout the updated standard to provide consistency in testing execution. Examples include applying dark-state tolerances for automatic darkening welding filters or determining the minimum coverage area with respect to the specified head form.

Mark of Protection

Because workers in almost every industry are subject to hazards that can cause temporary or permanent eye and face injury, ANSI/ISEA Z87.1-2020 is incorporated into OSHA regulations for PPE. Products conforming to the standard are widely used in the U.S., and many workers look for the “Z87” marking on safety glasses and other eye/face protection devices. When a worker sees the Z87 marking, they can rest a little more easily and know they have the latest, best protection for their eyes.

ADDITIONAL RESOURCES:

- » The ANSI/ISEA Z87.1-2020 standard can be purchased at ANSI’s webstore: <https://webstore.ansi.org/standards/isea/ansiiseaz872020>
- » For more information on Eye & Face Protection from ISEA, visit: https://safetysafetyequipment.org/worker_protections/eye-face-protection/

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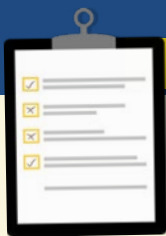
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To reduce recordable injuries in the workplace, we use the leading optical technology and testing to precisely manufacture prescription safety eyewear that meets the ANSI/ISEA Z87.1-2020 Standard for Safety Glasses: Eye & Face Protection and OSHA regulations.



Baling Equipment - Safety Requirements for Installation, Maintenance and Operation



“American Baler is dedicated to meeting or exceeding safety demands, including the ANSI standard for balers. Our Head of Engineering sits on the ANSI committee. Our balers were the first to achieve Category 3 safety standards on all models. Our customers demand the safest balers, and we lead the way!” *American Baler, 800-843-7512, www.americanbaler.com*

Whether they are vertical or horizontal, auto-tie or closed-door, balers offer tremendous versatility when it comes to condensing and compressing materials and turning them into bales that are easy to transport. This equipment is essential in industries where fast and efficient compacting is needed for cardboard, steel cans, newspaper, auto parts, aluminum and other kinds of scrap metal, packaging foam and textiles. The features that make balers so useful harbor some hazards, which are addressed by ANSI Z245.5-2013. This standard revises safety requirements with respect to the installation, operation, maintenance, service, repair, modification and reconstruction (where applicable) of baling equipment covered by ANSI Z245.5-2008, Baling Equipment - Safety Requirements. The requirements of this standard apply to balers rated at 600 volts or less, for outdoor or indoor use, and are employed in accordance with the manufacturer’s written installation, operation and maintenance instructions and procedures. A companion standard, ANSI Z245.51-2013 establishes safety requirements for the design and construction of commercial baling equipment commonly used in recycling, solid waste disposal and raw materials handling. Both these standards

taken together revise and replace ANSI Z245.5 -2008.

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus and other criteria for approval

have been met by the standards developer. Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be

made toward their resolution. The use of American National Standards is completely voluntary.

What Is and Isn’t Covered

The requirements contained in this standard pertain to new balers as produced by the manufacturer. New requirements and revisions are not intended to be retroactive for balers manufactured to comply with



earlier revisions of this standard. Refer to the approved edition of ANSI Z245.5 in effect at the time of manufacture for those requirements.

The requirements contained in this standard are *not* intended to apply to other components of end-use applications where a baler is part of a designed system.

This standard was processed and approved for submittal to ANSI by the Accredited Standards Committee Z245 on Equipment, Technology and Operations for Wastes and Recyclable Materials. It was developed by American National Standards Institute Accredited Standards Committee Z245 Subcommittee 5 on Balers and approved by Accredited Standards Committee Z245.

Baler Safety Recommendations

Most baler-related fatalities occur when workers are caught in or crushed by the

powerful compacting rams in baling or compacting machines, according to data analyzed by the National Institute for Occupational Safety and Health (NIOSH). These incidents generally involve situations in which employees entered a compactor to clear a material jam, fell into the path of the ram, or reached into the machine while it was operating. Material jams are common, and cause the compacting ram to stop moving. Employees may not understand that these machines are still turned on, and can resume operating suddenly. NIOSH baler safety recommendations include:

- A baler should be de-energized while being unjammed, maintained or repaired. Lockout tagout (LOTO) controls should be used to prevent the machine being turned on again inadvertently. LOTO tags should be prominently displayed, so that other

employees know that the machine is temporarily out of operation.

- Machine guards with safety interlocks should be added to balers, so that the machine will immediately cease operating if an employee tries to gain access to the ram or the ram area.
- Standard procedures for dealing safely with jams should be established and communicated to all employees. They should include having machine operators account for the presence of co-workers before activating the equipment.
- Platforms incorporating stairs and railings should be provided near the opening of feed chutes to provide safe access for clearing jams.
- Employers should train their employees to recognize the hazards of working near balers and compactors, and to be familiar with safe working procedures.

- No one under the age of 18 should be allowed to operate a baler, except for the exemption under U.S. labor standards that allows workers aged 16 and 17 to load de-energized scrap paper balers and cardboard box compactors, as long as the equipment is turned off, the switch is locked in the “off” position.

For More Information

- » The standard may be purchased at: <https://webstore.ansi.org/standards/eia/ansiz2452013-1506110>
- » A NIOSH Alert: “Preventing Deaths and Injuries While Compacting or Baling Refuse Material,” (DHHS (NIOSH) Publication No. 2003-124), is available at <https://www.cdc.gov/niosh/docs/2003-124/>.

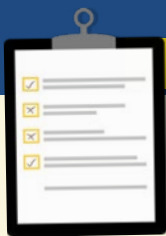


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- EASY MAINTENANCE
- OPTIONAL REMOTE POWER PACK FOR TIGHT OVERHEAD

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American National Standard for Emergency Eyewash and Shower Equipment

“Haws Services is a warranty and services provider for all brands of emergency shower and eye/face wash products to ensure your emergency equipment is ANSI-compliant and functioning properly. From start-up and commissioning to annual inspections and preventative maintenance, Haws Services’ experts specialize in emergency equipment.” *Haws, 888-640-4297, hawesco.com*

ANSI Z358.1-2014 establishes minimum performance and use requirements for eyewash and shower equipment for the emergency treatment of the eyes or body of a person who has been exposed to hazardous materials. It covers the following types of equipment: emergency showers, eyewashes, eye/face washes and combination units. This standard also includes performance and use requirements for personal wash units and drench hoses, which are considered supplemental to emergency eyewash and shower equipment. This revision updates ANSI Z358.1-2009 and was prepared by the Emergency Eyewash and Shower Group of the International Safety Equipment Association, whose members are thoroughly knowledgeable in the design, installation and use of this important safety equipment.

Inadvertently coming into contact with toxic chemicals, corrosives, hydrochloric acid, ammonia and sulfuric acid can leave a worker with a serious burn injury or even a permanent disability, like blindness. According to the U.S. Bureau of Labor Statistics (BLS)’s Number of non-fatal occupational injuries and illnesses involving days away from work by event or exposure leading to injury or illness

and selected nature of injury or illness, private industry¹, there were 9,180 incidents of exposure to harmful substance through skin, eyes or other exposed tissue in 2020. If an incident does occur and a worker’s eyes or body come into contact with hazmat, the timely use of emergency showers and eyewash stations can help prevent injuries or reduce the severity of injuries.

ANSI/ISEA Z358.1-2014, written and published by the International Safety Equipment Association (ISEA), an ANSI-accredited standards developing organization, establishes minimum performance and use guidelines for eyewash and shower equipment for the emergency treatment of the eyes or body of someone who has been exposed to hazardous materials. Although OSHA’s 1910.151(c) regulation states that “suitable facilities for quick drenching or flushing of the eyes and body shall be provided” in work areas where employees may be exposed to injurious materials, the agency refers to ANSI Z358.1 as a source of guidance.

Key Provisions of the Standard

- The standard covers emergency showers, eyewashes, eye/face washes and

combination units. For all this equipment, the flushing liquid’s velocity and quantity should be controlled, and a control valve should be simple to operate and go from off to on in one second or less. The valve should also be resistant to corrosion.

- Emergency showers and eyewashes should deliver tepid flushing fluid. However, there are certain



circumstances in which a facilities safety/health advisor should be consulted for optimum temperature. Tepid fluid is considered 16-38 degrees Celsius (60-100 degrees Fahrenheit).

- The shower or eyewash station should be highly visible and accessible, in a location that takes no more than ten seconds to reach.

Best Practices

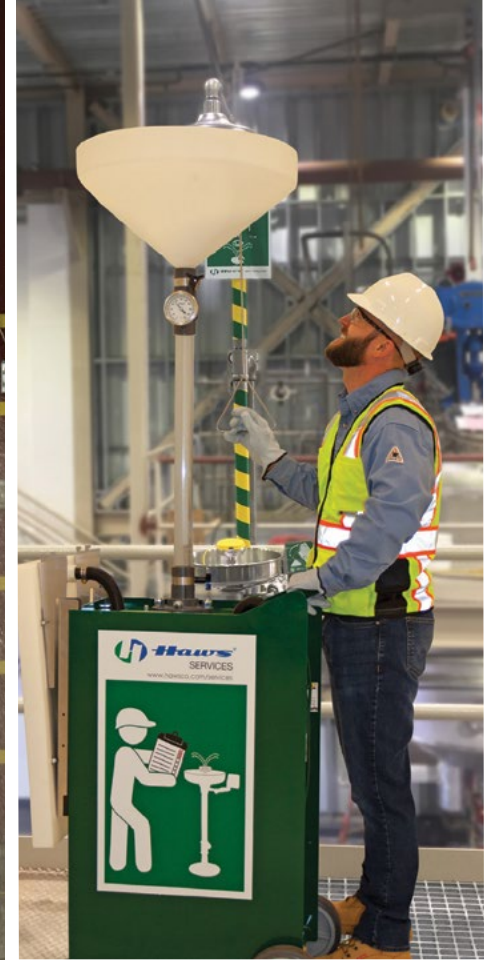
- In the event of hazardous material being splashed in the eye, the eye should immediately be flushed with gently flowing, potable water for at least 15 minutes.
- The eye should be forcibly held open to ensure effective rinsing behind the eyelids, and the injured worker should move his or her eyes side-to-side and up and down during rinsing.
- Contact lenses should be removed.
- In the event of hazardous material coming into contact with the skin, the affected area should be thoroughly rinsed with water for at least 15 minutes.
- Contaminated clothing should be removed and safely disposed of.
- In both cases, medical treatment should be sought after emergency procedures are completed.

For More Information

» ANSI/ISEA Z358.1-2014 is available on the ANSI Webstore at: <https://webstore.ansi.org/standards/isea/ansiiseaz3582014>

¹ www.bls.gov/iif/nonfatal-injuries-and-illnesses-tables/case-and-demographic-characteristics-table-r31-2020.html

ON-SITE EMERGENCY EYE/FACE WASH AND SHOWER ANSI COMPLIANCE SERVICES



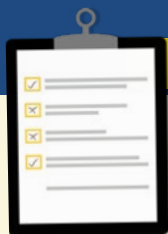
Haws® provides the most comprehensive service offering in the market today with in-depth, on-site evaluation and testing of your emergency eye/face wash and showers against ANSI Z358.1 requirements. With detailed reporting, gap identification and mitigation recommendations performed by experienced ANSI compliance experts, our team will work with your facility to make sure your equipment meets the annual standard.

ADDITIONAL SERVICES INCLUDE:

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- Reliable product commissioning for new and existing systems
- Extensive ANSI Z358.1 competent person training to help your team better understand the importance of compliant equipment



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Fall Protection Systems and Falling Object Protection - Criteria and Practices



“Safety Rail Company manufactures the SRC360 Mobile Railing System, a free-standing, non-penetrating railing system that complies with OSHA 1910.28 and 1910.29, qualifying as a passive barrier system between the worker and fall hazard. This engineered, fall-protection system ranks high in OSHA’s hierarchy of controls when addressing fall hazards. Engineered solutions are the most favored course of preventative action over implementing some sort of administrative or PPE protocol for controlling worker exposures. Passive barrier systems do not require significant training or compliance protocols associated with administrative or active fall protection solutions. In low-slope, commercial roofing applications, the SRC360 is an ideal solution for fall hazard areas and can be left in place permanently to protect all trades that access the roof.” *Safety Rail Company, www.safetyrailcompany.com, 888-434-2720*

It’s no secret that falls from heights are a leading cause of serious work-related injuries and deaths. OSHA attributes the majority of the 13 or so workplace fatalities that occur in U.S. every day to falls. To help prevent this type of incident, employers, property owners and managers must

set up work areas to prevent employees from falling off of overhead platforms, elevated work stations or into holes in the floor and walls.

OSHA requires that fall protection be provided at elevations of four feet in general

industry workplaces, five feet in shipyards, six feet in the construction industry and eight feet in longshoring operations. In addition, fall protection must be provided when working over dangerous equipment and machinery, regardless of the fall distance.

1910.29 separates low-slope roofs into three zones. (A low-slope roof is defined as a roof that has a slope of less than four inches of fall over 12 horizontal inches.) Fall protection options are based upon the distance that the work is being performed from the edge of a roof, including:

- **Zone 1:** For work being performed more than 15 feet from the edge
- **Zone 2:** For work being performed between six feet and 15 feet from the edge
- **Zone 3:** For work performed less than six feet from the edge

Key Provisions

1910.29 contains very specific requirements for a variety of fall protection structures, including guardrails (top edge height of top rails, strength criteria, where midrails must be installed, screen and

mesh specifications, etc.); Guardrail systems at hoist areas and holes; handrail and stair rail systems (measurements, finger clearances, surface types and dimensions of handrails); cages, wells, and platforms used with fixed ladders (design, construction and maintenance to permit easy access to, and egress from, the ladder that they enclose).

Employers must:

- Guard every floor hole into which a worker can accidentally walk (using a railing and toe-board or a floor hole cover).
- Provide a guard rail and toe-board around every elevated open sided platform, floor or runway.
- Regardless of height, if a worker can fall into or onto dangerous machines or equipment (such as a vat of acid or a conveyor belt) employers must provide guardrails and toe-boards to prevent workers from falling and getting injured.

Other means of fall protection that may be required on certain jobs include safety harness and line, safety nets, stair railings and hand rails.

For More Information

» Details of the standard, can be found on the OSHA website at: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.29>

The Numbers

Citations regarding this standard by Federal OSHA for inspections during the period October 2021 through September 2022:

Citations	Inspections	Penalty	Industry Classification
103	76	\$330,692	Total for All Industries
24	22	\$80,346	Manufacturing (part 2 of 3)
15	11	\$25,777	Manufacturing (part 3 of 3)
8	6	\$35,580	Wholesale Trade
8	4	\$37,241	Administrative and Support and Waste Management and Remediation Services
7	5	\$33,829	Manufacturing (part 1 of 3)
7	4	\$11,602	Retail Trade (part 1 of 2)
5	3	\$7,977	Accommodation and Food Services
4	4	\$7,977	Transportation and Warehousing (2 of 2)
4	2	\$23,618	Other Services (except Public Administration)
4	2	\$20,502	Construction
4	2	\$10,744	Transportation and Warehousing (1 of 2)

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OSHA 29 CFR 1910.28(b); 1910.29(b)

**SAFETY RAILINGS/
FOR ROOF PERIMETERS**



OSHA 29 CFR 1910.28(b)(3)(iv)

**ROOF HATCH GUARDS/
FOR OPEN HOLES**



OSHA 29 CFR 1910.29(b)(13)(i)(ii)

**FIXED LADDER ACCESS/
FOR LEADING EDGES**



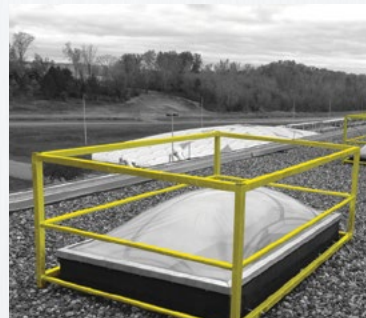
OSHA 29 CFR 1910.28(c)(1)

**GUARDRAILS/
FOR FALLING OBJECTS**



OSHA 29 CFR 1910.28(b)(13)(i-iii)&(A)

**WARNING LINES/
FOR DESIGNATED AREAS**



OSHA 29 CFR 1910.28(b)(3)(i)(A-B)

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(Note: OSHA standards cited are intended as an initial reference point. Other OSHA standards may also apply.)



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Foot Protection

“OSHA’s Foot Protection standard is foundational to what we do. For 100 years, Lehigh has been an innovative supplier of safety footwear. This quality standard is at our core and has even inspired us to expand beyond protection from the accidental injury to wellness protection from long-term debilitating foot and body ailments.” *Lehigh CustomFit, 1-800-444-4086, LehighCustomFit.com*

With more than a hundred moving parts, including bones, muscles, tendons and ligaments, the foot is easily one of the most complex structures in the human body. It makes all kinds of movement possible, from walking and running to jumping and climbing. Additionally, it is essential for balance. This combination of intricacy and functionality makes the foot especially vulnerable to injury during many kinds of activities, including the performance of workplace tasks. According to

the U.S. Bureau of Labor Statistics (BLS), approximately 120,000 workers annually suffer from toe, foot and ankle injuries that result in an average of six days away from work. Some 22.3% of these cases were fractures or sprains/strains. Being struck by an object, run over by a vehicle or punctured by a metal item accounted for a large percentage of the injuries. The most common occupational foot injuries are:

- Broken foot
- Puncture wounds

- Amputation of toes or feet
- Foot sprain
- Burns
- Cuts and lacerations
- Hypothermia

OSHA 1910.136 requires employers to ensure that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, or when the use of protective footwear will protect the affected employee from an electrical hazard, such as a static-discharge or electric-shock hazard, that remains after the employer takes other necessary protective measures. To that end, OSHA stipulates that protective footwear must comply with any of the following consensus standards:

- ASTM F-2412-2005, “Standard Test Methods for Foot Protection”
- ASTM F-2413-2005, “Standard Specification for Performance Requirements for Protective Footwear”
- ANSI Z41-1999, “American National Standard for Personal Protection — Protective Footwear”
- ANSI Z41-1991, “American National Standard for Personal Protection — Protective Footwear”

Protective footwear that the employer demonstrates is at least as effective as protective footwear that is constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

Types of Foot Protection

The footwear industry has – and continues to – design and manufacture innovative shoes, boots and materials with which to make them, in order to be able to offer footwear that corresponds to specific hazards or combinations of hazards. Whether workers are performing tasks or spending time in environments that pose puncture, crush, electric shock, moisture or other type of risk, there is sure to be a safety boot or shoe that will fit their needs. The industry has also seen a move toward lighter-weight materials and ergonomic designs, so that workers who must wear them during long shifts will enjoy a higher degree of comfort. Slip resistant soles can help prevent slip and fall injuries.

For More Information

- » The standard is available at: www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.136
- » For recommendations about foot safety and comfort at work, visit: www.ccohs.ca/oshanswers/prevention/ppe/foot_com.html

The Numbers

Citations regarding this standard by Federal OSHA for inspections during the period October 2021 through September 2022:

Citations	Inspections	Penalty	Industry Classification
28	28	\$115,093	Total for All Industries
6	6	\$18,504	Manufacturing (part 3 of 3)
5	5	\$30,201	Transportation and Warehousing (2 of 2)
5	5	\$15,198	Manufacturing (part 2 of 3)
3	3	\$6,827	Wholesale Trade
2	2	\$15,695	Construction
2	2	\$2,425	Arts, Entertainment and Recreation
2	2	\$2,052	Retail Trade (part 1 of 2)
1	1	\$13,052	Professional, Scientific and Technical Services
1	1	\$11,140	Administrative and Support and Waste Management and Remediation Services
1	1	\$0	Real Estate and Rental and Leasing

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Hand Protection

“The OSHA 1910.138 statute is instrumental in defining that the proper glove protection should be chosen when hazards are present. This selection process is a complex one when consumers realize the multiple hazards that a workforce can be exposed to, along with the vast amount of hand protection options in the market. At SHOWA, resources for consumer inquiries for hand protection selection is a top priority so consumers receive the proper recommendations for the hazard/s at hand. Regardless of the hazards, SHOWA is always there to make sure that our customers have the correct hand PPE option for their workforce to get any job done.” *Brian Moseley, R&D Technical Manager, SHOWA Group. 1-800-241-0323, www.showagroup.com*

The human hand is an extraordinarily complex extremity, capable of performing a broad range of movements. Thanks to its array of muscles, tendons and ligaments, the hand can perform fine motor tasks and big movements by extending fingers, flexing, turning the palm upward or downward, gripping and grasping items. Because of the vital role that hands play in the workplace – and elsewhere – they are often exposed to hazards, and thus susceptible to injuries. These include cuts and lacerations, finger and hand amputations, fractures, burns, punctures, crush injuries and nerve damage.

Key Provisions

OSHA 1910.138 Hand Protection is one of the agency’s more succinct regulations:

1910.138(a)

General requirements. Employers shall select and require employees to use appropriate hand protection when employees’ hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns;

thermal burns; and harmful temperature extremes.

1910.138(b)

Selection. Employers shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions

present, duration of use, and the hazards and potential hazards identified.

Hand Injuries

According to the U.S. Bureau of Labor Statistics¹ (BLS) there were 102,350 nonfatal hand injuries in private industry involving days away from work in 2020, along with 37,300 arm injuries and 28,410 wrist injuries. The BLS

days-away-from-work data is also available for specific industries. The following figures reflect the numbers of hand injuries in 2020 per 10,000 full-time workers:

- All industries - 10.5
- Greenhouse, nursery and floriculture production - 28.5
- Manufacturing - 17.9
- Natural resources and mining - 20.2
- Animal production and aquaculture - 44.4
- Forestry and logging - 7.8
- Construction - 14.2 (residential building construction was 25.3)
- Specialty trade contractors - 14.7

The Numbers

Citations regarding this standard by Federal OSHA for inspections during the period October 2021 through September 2022:

Citations	Inspections	Penalty	Industry Classification
87	85	\$195,536	Total for All Industries
24	23	\$57,625	33 / Manufacturing (part 3 of 3)
16	16	\$17,986	32 / Manufacturing (part 2 of 3)
8	7	\$3,480	42 / Wholesale Trade
7	7	\$13,363	72 / Accommodation and Food Services
6	6	\$23,488	31 / Manufacturing (part 1 of 3)
5	5	\$20,986	44 / Retail Trade (part 1 of 2)
4	4	\$3,546	81 / Other Services (except Public Administration)
3	3	\$6,324	23 / Construction
3	3	\$3,575	56 / Administrative and Support and Waste Management and Remediation Services
2	2	\$16,235	62 / Health Care and Social Assistance

¹ www.bls.gov/iif/nonfatal-injuries-and-illnesses-tables/case-and-demographic-characteristics-table-r2-2020.htm



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- Building equipment contractors - 11.3
- Manufacturing - 19.7

Employers are responsible for providing their workers with all the personal protective equipment (PPE) required to carry out their jobs safely – including gloves. There are glove types to address virtually every kind of workplace hazard that employees' hands may be exposed to: fabric gloves coated with latex, nitrile, polyurethane and PVC; latex and nitrile gloves that protect against oils, solvents, chemicals, grease and biohazards; leather gloves that shield hands from sharp objects, abrasive surfaces and

heat; and gloves designed specifically to resist punctures, impact and vibrations. A thorough hazard assessment will identify the particular hazards present in the workplace. A successful hand protection program will take into account:

- Protection levels
- Dexterity requirements, so that the wearer is able to perform the necessary tasks
- Size and fit

Gloves that have sustained significant wear and tear should be discarded.

For More Information

» OSHA offers an overview of PPE at: www.osha.gov/personal-protective-equipment. Click here to learn about who pays for PPE: www.osha.gov/personal-protective-equipment/payments



"The OSHA 1910.138 statute is instrumental in defining that the proper glove protection should be chosen when hazards are present. This selection process is a complex one when consumers realize the multiple hazards that a work force can be exposed to along with the vast amount of hand protection options in the market. At SHOWA, resources for consumer inquiries for hand protection selection is top priority so consumers receive the proper recommendation for the hazard(s) at hand. Regardless of the hazard(s), SHOWA is always there to make sure that our customers have the correct hand PPE option for their workforce to get any job done."

Brian Moseley - R&D/Technical Manager: Showa Group



Need assistance in choosing your hazard glove PPE solution? Contact us today!

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Hazard Communication

“OSHA’s Hazard Communication Standard was aligned with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) in order to improve the safety and health of workers who handle or are exposed to hazardous chemicals. Ensuring that hazardous chemicals are labeled properly is an important component of creating a safe working environment and staying compliant with OSHA.” *Avery Products Corporation, industrial@avery.com, www.avery.com/industrial*

This standard is intended to ensure that the hazards of all chemicals produced or imported are classified, and that information concerning the classified hazards is transmitted to employers and employees. Its requirements are consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3. The transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which may include:

- The development and maintenance of a *written* hazard communication program for the workplace, including lists of hazardous chemicals present.
- Labeling of containers of chemicals in the workplace, as well as of containers of chemicals being shipped to other workplaces.
- Preparation and distribution of safety data sheets to employees and downstream employers.
- Development and implementation of employee training programs regarding hazards of chemicals and protective measures.

Key Provisions

- Chemical manufacturers or importers must classify the hazards of chemicals

which they produce or import, and all employers must provide information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, safety data sheets, and information and training. This applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

- Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced.
- Employers shall maintain copies of any safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a safety data sheet as soon as possible for sealed containers of hazardous chemicals received without a safety data sheet if an employee requests the safety data sheet, and shall ensure that the safety data sheets are readily accessible during each work shift to employees when they are in their work area(s).
- Employers shall ensure that employees are provided with information and training to the extent necessary to protect them in the event of a spill or leak

of a hazardous chemical from a sealed container.

About Safety Data Sheets and Labels

Safety Data Sheets (SDS) are a primary source of information regarding chemical hazards and handling. They provide information about the hazards of working with a chemical and procedures that should be used to ensure safety. SDS have been standardized under the Globally Harmonized System (GHS) of Classification and Labeling Chemicals system, which provides a consistent and agreed upon criteria for the classification of chemical hazards. SDS may still vary in information, for example one manufacturer might provide the GHS Hazard codes (H-codes) and their associated hazard statements, while another may choose to omit the GHS H-codes. Note: if the SDS only has the hazard statement, this can be translated to the corresponding H-code. The SDS includes information such as the properties of each chemical; the physical, health and environmental health hazards; protective measures; and safety precautions for handling, storing and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well).

Labels must contain symbols that provide immediate recognition of the hazards as well as instructions on how to safely handle the chemical. They must contain the name, address and telephone number of the chemical manufacturer, importer or other responsible party; a product identifier; a signal word that indicates the level of severity of the hazard; hazard statements that describe the nature of the hazard(s) of a chemical; precautionary statements; and a pictogram. OSHA enforces the use of eight pictograms; Health Hazard; Flame; Exclamation Mark; Gas Cylinder; Exploding Bomb; Flame Over Circle; and Skull and Crossbones.

For more information:

- » Visit OSHA’s website for Frequently Asked Questions about HCS: www.osha.gov/hazcom/faq
- » OSHA also offers a Brief about SDSs. It is available at: www.osha.gov/sites/default/files/publications/OSHA3514.pdf

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Duty to Have Fall Protection

“Complying with OSHA Fall Protection 1926.501 doesn’t have to be overwhelming. Gorbel has trained experts to help you develop a comprehensive fall protection plan. Gorbel and your local dealer can help you define your fall protection program, identify fall hazards and determine whether eliminating, preventing or controlling falls is your best solution. After installing a solution, your dealer can train your employees, inspect and maintain all fall arrest equipment and continuously audit the program for compliance.” *Gorbel, 800-821-8066, info@gorbel.com.*

Year after year, OSHA’s fall protection standard makes the top ten most-cited-standards list. The agency’s focus on this regulation stems from the fact that falls are one of the most common causes of work-related injuries and deaths. Falls that send employees to the hospital – or the morgue – can occur from overhead platforms, elevated workstations or through holes in floors and walls.

According to the U.S. Bureau of Labor Statistics (BLS)¹, there were 645 fatal occupational injuries involving falls to a lower level in 2020; 63 falls through a surface or an existing opening and 36 falls from a collapsing structure or from equipment.

OSHA requires that fall protection be provided at elevations of four feet in general

industry workplaces, five feet in shipyards, six feet in the construction industry and eight feet in longshoring operations. In addition, the agency requires that fall protection be provided when working over dangerous equipment and machinery, regardless of the fall distance.

Key Provisions

To prevent employees from being injured from falls, employers must:

- Guard every floor hole into which a worker can accidentally walk (using a railing and toe-board or a floor hole cover).
- Provide a guard rail and toe-board around every elevated open sided platform, floor or runway.
- Regardless of height, if a worker can fall into or onto dangerous machines or equipment (such as a vat of acid or a conveyor belt) employers must provide guardrails and toe-boards to prevent workers from falling and getting injured.
- Other means of fall protection that may be required on certain jobs include safety harness and line, safety nets, stair railings and handrails.

The use of warning lines, designated areas, control zones and similar systems are

permitted by OSHA in some situations and can provide protection by limiting the number of workers exposed. Whether conducting a hazard assessment or developing a comprehensive fall protection plan, thinking about fall hazards before the work begins will help the employer to manage fall hazards and focus attention on prevention efforts. If personal fall protection systems are used, particular attention should be given to identifying attachment points and to ensuring that employees know how to properly use and inspect the equipment.



For More Information

» A Fall Protection Training Guide² from The Labor Occupational Health Program (LOHP) at UC Berkeley is available via Electronic Library of Construction and Occupational Safety and Health (ELCOSH). The guide to fall protection training includes questions to ask, subjects to cover and a sign-off form.

The Numbers

Citations by Federal OSHA for inspections during the period October 2021 through September 2022:

Citations	Inspections	Penalty	Industry Classification
5,200	5,054	\$33,385,872	Total for All Industries
5,075	4,939	\$32,405,119	Construction
31	28	\$370,224	Wholesale Trade
27	26	\$172,826	Manufacturing
17	13	\$100,452	Administrative and Support and Waste Management and Remediation Services
14	14	\$151,934	Utilities
6	6	\$22,310	Real Estate and Rental and Leasing
6	5	\$34,220	Retail Trade
5	5	\$18,854	Professional, Scientific and Technical Services
4	4	\$9,236	Other Services (except Public Administration)
3	2	\$16,602	Transportation and Warehousing

¹ <https://www.bls.gov/news.release/pdf/cfoi.pdf>

² <https://tinyurl.com/yc2mwhn8>

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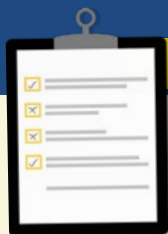
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Standard for Electrical Safety in The Workplace



“OSHA requires protective measures to prevent worksite injuries. DuraLabel recommends adding arc flash labeling to your overall safety and visual communication program. Arc flash labeling does not eliminate the requirement for work permits, training and planning when working on energized equipment. Effective hazard communication improves personnel safety, plant productivity and efficiency.” *Graphic Products, Inc., 1-888-326-9244 (U.S./Canada), www.graphicproducts.com*

Considered the benchmark for safe electrical design, installation and inspection to protect people and property from electrical hazards, NFPA 70E was originally developed at OSHA’s request. It includes information about arc flash incident energy, lockout/tagout procedures and personal protective equipment (PPE) that can mitigate the risk of an electrical injury. Since the 2018 update, NFPA 70E has included an arc flash assessment tool that helps users determine safe work practices, an arc flash boundary and the appropriate PPE—if an arc flash hazard exists.



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Why the Standard Matters

Electrical hazards are present in many types of workplaces, but many workers are unaware of the nature and severity of those hazards. Both those who work with electrical directly and those who work with it indirectly risk injuries from arc blast, electric shock, electrocution and fatal falls from height caused by contact with electrical energy.

OSHA says the following hazards are the most frequent causes of electrical injuries: path to ground missing or discontinuous, contact with power lines, lack of ground-fault protection, equipment not used in manner prescribed, and improper use of extension and flexible cords.¹

According to the Electrical Safety Foundation International (ESFI), there were 126 electrical fatalities in and 2,220 non-fatal electrical injuries involving days away from work in 2020.² Construction and extraction; installation, maintenance and repair; building and grounds cleaning and transportation and material moving were the top occupations involving electrical fatalities. A third of electrical fatalities occurred in workers who were 25 – 34;

21% involved those in the 34 – 44 age range; 18% in the 45-54 age range; 17% in workers aged 55 – 64 and 7% in workers between the ages of 20 – 24. The median number of days away from work for non-fatal electrical injuries in 2020 was three. Electrical shocks accounted for 1,610 of the non-fatal electrical injuries while burns accounted for 620.

Standard Requirements:

- Whenever possible, turn off electrical power during the work being done and verify that it stays off until the task is completed. This can be done by: individual qualified employee control; simple lockout/tagout or complex lockout/tagout.
- When it is necessary to work “live” near exposed energized parts, a live work permit that describes the work to be performed and why it must be performed should be signed by the customer, engineers or other person in charge.
- For shock protection, three shock hazard boundaries should be determined: limited approach, restricted and prohibited. These boundaries help identify who should be allowed (i.e., only qualified persons can enter

the restricted approach boundary) and when workers must use voltage-rated rubber gloves and fiberglass tools.

- The flash protection boundary (FPB) must also be determined. Anyone working closer than 48 inches to live parts must wear PPE to protect against arc flash. This may include overalls, jackets and vests made of material that blocks heat energy and that has non-conductive hardware.
- The Hazard/Risk Category (HRC) must be determined, based on tables provided by the standard. Determine Hazard/Risk Category (HRC). The HRC level helps electrical workers select the correct type of PPE to wear, based upon the task they are performing live.
- Workers must wear appropriate PPE whenever they are performing tasks within the FPB, whether or not they are actually touching the live equipment.

For More Information

» NFPA 70E is available at: www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=70E

¹ www.osha.gov/electrical

² www.esfi.org/workplace-safety/workplace-injury-fatality-statistics/

WATCH OUT

3 WAYS TO PREVENT ELECTRICAL INJURIES

1 FLOOR MARKING

Communicate hazards and safety boundaries with floor tape and signs from DuraLabel Pathfinder



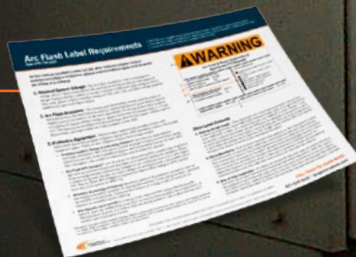
2 WARNING SIGNS

Create clear, OSHA/NFPA compliant signs with LabelForge PRO labelling software and DuraLabel Printers




3 TRAINING

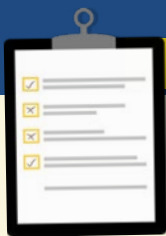
Free guides with expert advice to build, update, and deploy visual safety communication.



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DuraLabel®



Standard on the Fundamentals of Combustible Dust



“Proper housekeeping is a powerful and essential line of defense against many types of workplace hazards, and combustible dust is no exception. NFPA 652 recommends cleaning methods, such as vacuuming, but also outlines specific design requirements to ensure the equipment can meet the demands of collecting combustible dust. In the absence of a formal OSHA rule, NFPA 652 is vital to guiding our manufacturing customers on how to identify, measure and most importantly, choose the proper industrial vacuum to safely mitigate their combustible dust risk.” *Nilfisk, 800-989-2235, www.nilfisk.us.*

About the Standard

NFPA 652 provides installers, contractors, engineers, facility managers, code enforcers, inspectors and environmental health and safety (EHS) personnel the information necessary to manage combustible dust safely in any industry. (It also directs users to NFPA standards relevant to specific industries or commodities.) NFPA 652 includes definitions, general requirements, hazard identification, performance-based design options, process hazards analysis and hazard management: mitigation and prevention.

The hazard identification chapter discusses responsibility; screening for combustibility or explosibility; self-heating and reactivity hazards; combustibility and explosibility tests and sampling. The chapter on performance-based design option covers risk component and acceptability; performance criteria; design scenario and evaluation of proposed design.

Dust Hazards Analysis (DHA) information addresses methodology. The chapter on management systems refers to retroactivity; operating procedures and practices; housekeeping; hot work; personal protective equipment; inspection,

testing and maintenance; training and hazard awareness; contractors; emergency planning and response; incident investigation; management of change; documentation retention; management systems review and employee participation. Chapter 9, Hazard Management: Mitigation and Prevention, addresses Inherently Safer Designs; Building Design; Equipment Design; Ignition Source Control; Pyrophoric Dusts; Dust Control and Explosion Prevention/Protection.

Why the Standard is Important

Combustible dust-fueled fires and explosions kill and injure workers in the U.S. every year, in the food, chemical, paper, pharmaceutical, metal processing and other industries. According to the U.S. Chemical Safety Board (CSB), which investigates workplace incidents, 119 workers were killed and 718 injured in 281 combustible dust incidents that occurred between 1980 and 2005. In more recent statistics, the NFPA notes that there were 50 dust-related incidents in the U.S. between 2008 and 2012. Among the incidents investigated by the CSB:

- A 2017 combustible dust explosion at the Didion Milling Company facility in Cambria, Wisconsin that killed

five employees and injured 14 others. (There was a total of 19 employees working on the night of the incident.)

- A 2008 explosion and fire at the Imperial Sugar refinery northwest of Savannah, Georgia that caused 14 deaths. Thirty-eight other employees were injured, some with serious and life-threatening burns. The CSB determined that the explosion was fueled by massive accumulations of combustible sugar dust throughout the packaging building.
- A flash fire in 2012 at a U.S. Ink/Sun Chemical Corporation ink manufacturing facility in East Rutherford, New Jersey. Of the seven workers who were injured, three sustained third-degree burns.
- Three combustible dust incidents that occurred over a six-month period during 2011 at the Hoeganaes facility in Gallatin, Tennessee, resulting in fatal injuries to five workers.

Changes Are Coming

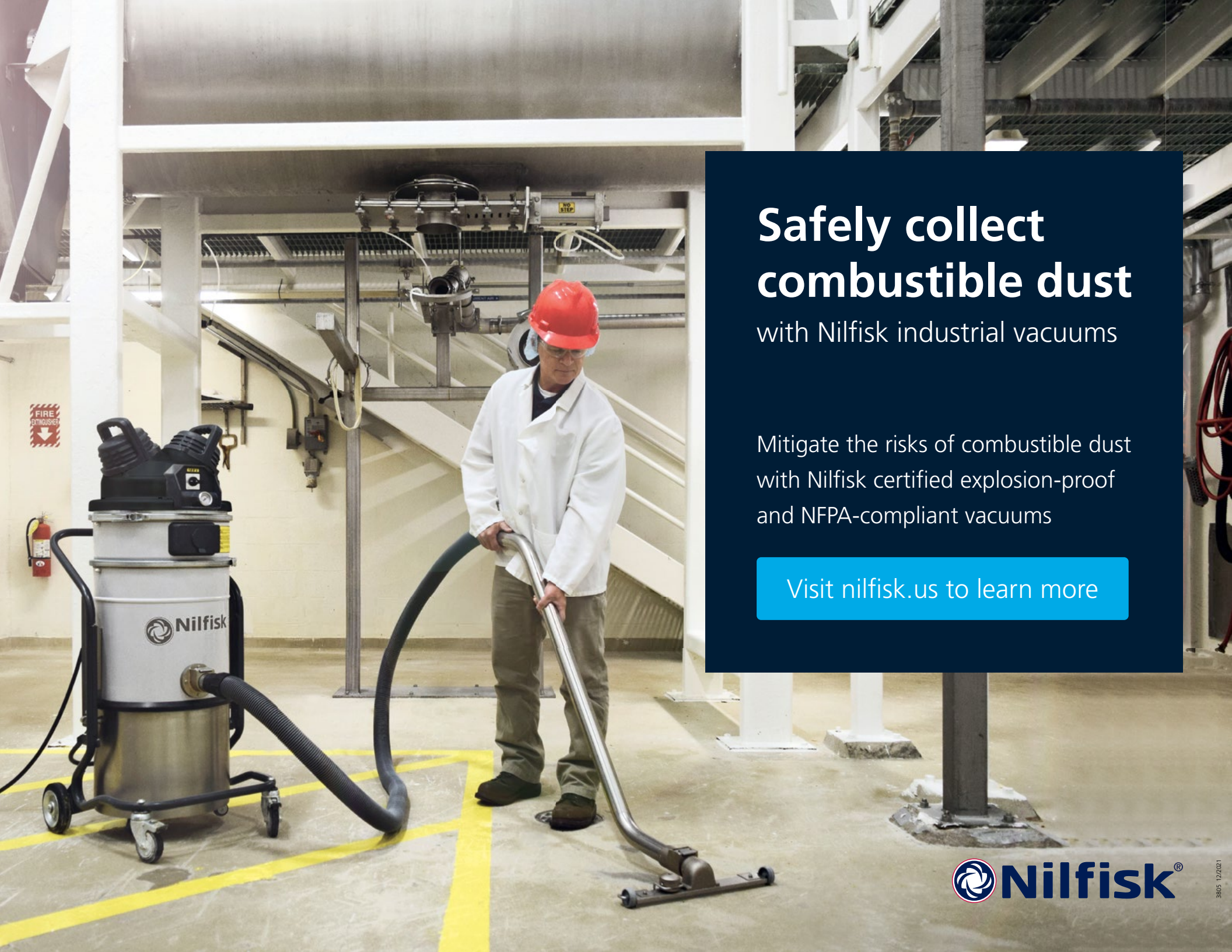
NFPA 652 is regarded as the primary standard for combustible dust control. However, it will no longer exist as a stand-alone standard once the organization that issues it, the National Fire Protection Agency, rolls out a new standard, NFPA

660. To be completed sometime in 2023 and scheduled for a 2024 publication, NFPA 660 will consolidate NFPA 652 and commodity-specific standards that address combustible dust hazards and control. These include ones for agricultural and food processing facilities; combustible metals; exhaust systems for air conveying of vapors, gases, mists and particulate solids; the prevention of fire and dust explosions from the manufacturing, processing and handling of combustible particulate solids; the prevention of sulfur fires and explosion; and the prevention of fires and explosions in wood processing and woodworking facilities.

Although the fundamental requirements in NFPA 652 will be included in NFPA 660, There will be some changes to definitions and clarifications made to accommodate commodity-specific hazards and processes.

For More Information

- » NFPA 652 is available for purchase on the NFPA's website, at: <https://tinyurl.com/269pxry9>

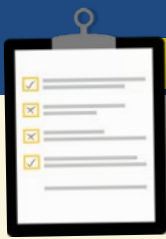


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Conveyors & Related Equipment's Safety Standard

“Until the ANSI/ASME B20.1 code for conveying devices was established, material conveying devices were held to the same ANSI/ASME A17 code requirements as passenger elevators. This made it nearly impossible for inclined and vertical reciprocating conveyor manufacturers to meet code standards and provide a competitively priced product. PFlow worked with state and local officials for nearly a decade to help author ANSI/ASME B20.1. This code standard was instituted in 1981 and explicitly excludes any conveyors designed or installed for the movement of human beings. Excluding the movement of people allows conveying devices to be installed in places where passenger or freight elevators are prohibited and applies. As the vertical reciprocating conveyor founder and industry leader, PFlow can engineer a solution for your specific vertical material movement needs.” *Chuck Cobb, VP-Sales, Marketing & Product Support. PFlow Industries, 414.352.9000, www.pflow.com.*

The American Society of Mechanical Engineers (ASME), an engineering community association whose activities include developing codes and standards, is the body that issued ASME B20.1-2021. The 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.

With noted exceptions (see below), ASME B20.1-2021 applies to all conveyor installations. It specifically excludes any conveyor designed, installed or used primarily for the movement of people. However, it applies to certain conveying devices that incorporate within their supporting structure workstations or operator's stations specifically designed for authorized operating personnel.

ASME B20.1-2021 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 above-mentioned devices have specific standards. The provisions of the standard apply to equipment installed one year after the date of issuance, which was Aug. 31, 2021.



Industries Using Conveyor Equipment

Conveyor belts' ability to load and unload items and to move materials between multiple levels or floors makes them indispensable in many settings. They are used in various industries, including mining, automotive, agricultural, food and beverage, bottling, commercial fishing, manufacturing, warehouse and logistics, and packaging. Conveyors save time and can move objects too heavy for humans to lift and carry. Among conveyor types:

- *Mechanical or hydraulic vertical reciprocating conveyors* (VRC) that can accommodate heavy loads and can be structured as complex multi-level, multi-directional systems that provide horizontal and vertical movement and offer flexible loading/unloading patterns.
- *Belt conveyors* that feature a moving belt turned by pulleys.
- *Chute conveyors* have metal slides down which packages slide to a lower level.
- *Gravity roller conveyors* that use cylindrical rollers and gravity to slide objects downward.
- *Bucket conveyors* scoop material with buckets attached to a belt or location before dumping it out.
- *Ball transfer conveyors* allow objects to be moved in different directions, with the help of rows of metal balls that can turn and rotate.
- *Trolley conveyors* carry loads beneath them.

Hazards of Conveyors

Many injuries associated with conveyors may be caused by operator error. Loose clothing and jewelry can become

trapped in conveyor belts, as can arms, hands and bodies—resulting in broken bones, lacerations, crushing injuries and even amputations. Lack of guarding and lockout/tagout procedures; having belts overloaded or moving at excessive speeds; and failing to properly maintain a conveyor belt are also factors.

In addition to evaluating the space, operational needs, and weight and size of the objects that will be moved by a conveyor, it is important to factor safety into the decision-making process. Dealing with a manufacturer who complies with ASME B20.1; who has a rigorous testing program; and whose research and development professionals keep safety at the forefront of their activities will help ensure safety for employees who work near and/or with conveyors.

Standard's History

In 1947, B20.1 was first published. It is current practice to revise it every three years, to accommodate evolving technology and design developments. The 2021 version revises section 1-3.9, “Gates and

Enclosures,” to indicate that enclosure height requirements apply “unless guarded by location.”

ASME B20.1-2018, the previous edition of this standard, contained the following changes from the previous edition:

- New provisions for tow conveyors
- Specifying warnings for when carts start automatically
- Providing the means to allow the operator to disengage the tow pin from the conveyor pusher without being in front of the cart
- New definitions for mobile hopper railcar/hopper bottom truck unloader conveyor and hold-down wheels
- New guidelines for mobile hopper railcar/hopper bottom truck unloader conveyor
- New guidelines for electrified monorail conveyors used for assembly/inspection/testing processes
- Metric-equivalent values added throughout. An appendix includes specifications for design, installation, commissioning and periodic inspection of vertical reciprocating conveyors

The next edition of this standard will be issued in 2024.

ADDITIONAL RESOURCES:

- » To purchase this standard, visit: <https://tinyurl.com/2p8v7khy>
- » ANSI's blog on why this standard is important: <https://blog.ansi.org/asme-b20-1-2021-safety-standard-conveyors/#gref>



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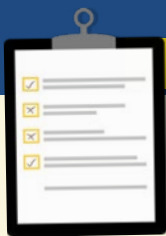
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MATERIAL HANDLING SOLUTIONS



Performance Requirements for Protective (Safety) Toe Cap Footwear

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“Tingley is a leading manufacturer of protective apparel and footwear and steadfastly adheres to the American Society for Testing and Materials (ASTM) F2413-18 for the manufacture, assessment and labeling of safety footwear in terms of the toe cap impact and compression, puncture resistance, electrical hazard resistance and a range of other safety footwear protections. All Tingley footwear meets the specific section of the standard indicated on the ASTM F2413 label applied to the footwear.” *Tingley, www.tingleyrubber.com*

About the Standard

ASTM F2413-18 was issued by ASTM International, formerly known as American Society for Testing and Materials. ASTM International is a standards organization that develops and publishes voluntary consensus technical standards. ASTM F2413-18 addresses the minimum design, performance, testing and classification requirements, and prescribes fit, function and performance criteria for footwear designed to be worn

to protect the wearer against a variety of workplace hazards that can potentially result in injury. It is a resource safety managers and others can use to ensure that the footwear chosen for specific applications, work tasks and environments meets the performance requirements for:

- Impact and compression resistance for the toe area of footwear
- Metatarsal protection that reduces the chance of injury to the metatarsal bones at the top of the foot
 - Conductive properties which reduce hazards that may result from static electricity buildup, and reduce the possibility of ignition of explosives and volatile chemicals; electric shock resistance
 - Static dissipative (SD) properties to reduce hazards due to excessively low footwear resistance that may exist where SD footwear is required
 - Puncture resistance of footwear bottoms; chain saw cut resistance; and dielectric insulation.

Protecting the Foot

The human foot is a marvelous piece of machinery, but its complexity and many moving parts make it prone to injury. The foot's 26 bones, 33 joints and more than 100 ligaments all work together to help you walk, run, climb, jump, balance, dance and...work. Any or all of these activities can be affected if the metatarsal and cuneiform bones, the calcaneum and the Achilles tendon or any other of the foot's components are injured. An injury – and the pain that accompanies it – can be temporary, or, if serious enough, can result in a long-term or permanent disability. Companies who fail to take steps to prevent foot injuries with appropriate footwear for workers will often experience a loss in productivity and the expense of workers compensation claims.

Workplace hazards that potentially endanger the feet include forklifts and other moving vehicles, nails, pallet jacks, unguarded machinery or sharp objects. According to the Bureau of Labor Statistics, there are more than 50,000 nonfatal occupational injuries and illnesses to the foot involving days away from work each year. Feet can be punctured or crushed or suffer from electric shock. Toes may suffer

traumatic amputations, or be amputated following a serious incident.

Good to Know

According to ASTM International:

- Any changes to the original components of safety toe footwear, such as replacing or adding aftermarket footbeds/inserts, could cause failure to any or all parts of this standard rendering the ASTM marking invalid.
- This specification is not applicable to overshoes with safety toe caps or strap-on devices with safety toes.
- This standard does not address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health and environmental practices and determine the applicability of regulatory limitations prior to use.

For More Information

- » The standard is available from ASTM International at: www.astm.org/f2413-18.html. It is also part of the ASTM F2412 / ASTM F2413 – Foot Protection and Performance Package, which is available at: <https://webstore.ansi.org/Standards/ASTM/ASTMF2412F2413FootProtection?source=blog>



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