

ANSI / ISEA 100-2024

American National Standard for Industrial Bump Caps

Secretariat

International Safety Equipment Association

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American National Standards Institute

American National Standard

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Foreword (This Foreword is not part of ANSI/ISEA 100-2024)

Contusions, lacerations, bruises and other injuries to the head caused by worker generated impact affect thousands of workers each year resulting in significant injury and cost. These types of injuries to the head are commonplace in workplaces where spaces are tight, and equipment and accessories are nearby and overhead. In fact, injuries to the head rank as one of the top recordable injuries in a variety of industries from food processing to air transportation, to automobile/vehicle maintenance to name a few.

A wide variety of products are in the marketplace, and already in use, to help prevent these injuries. Recognizing the importance of this safety hazard, and the benefit of these products from preventing an injury, it is the mission of this group to provide a standard for testing this type of safety equipment.

The International Safety Equipment Association (ISEA), in conjunction with industry stakeholders, has developed ANSI/ISEA 100-2024, a voluntary industry consensus standard that establishes the minimum performance, testing and labeling criteria for industrial bump caps and bump cap inserts used in the workplace.

This standard is not a replacement for products covered by ANSI/ISEA Z89.1, which provide an entirely different level of protection for a variety of similar and different hazards. This standard is limited to the identified scope as noted within and offers further guidance in the appendices that follow. Utilization and use of the equipment outlined in this standard may differ between manufacturers offering it and employers using it.

This standard was processed and approved using consensus procedures prescribed by the American National Standards Institute. This standard was prepared by members of ISEA's Head Protection product group with the following companies as members at the time of the approval of the standard:

- ▶ 3M
- ▶ Bullard
- ▶ Caco America
- ▶ COLTS Laboratories
- ▶ DeltaPlus Group/ERB
- ▶ Ergodyne
- ▶ Gateway Safety
- ▶ Global Glove & Safety
- ▶ HexArmor
- ▶ Honeywell
- ▶ Intertek
- ▶ Ironwear
- ▶ JSP Safety
- ▶ KASK America

- ▶ Koroyd
- ▶ Milwaukee Tool
- ▶ Mips AB
- ▶ MSA Safety
- ▶ OccuNomix
- ▶ Petzl
- ▶ Protective Industrial Products
- ▶ Pyramex Safety Products
- ▶ Radians
- ▶ Studson Safety
- ▶ SureWerx
- ▶ Tozuda

Inclusion in this list does not necessarily imply that the organization concurred with the submittal of the proposed standard to ANSI.

Suggestions for improvement of this standard are encouraged.

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Table of Contents

American National Standard for Industrial Bump Caps 6

- 1. Scope, Purpose and Limitations..... 6
 - 1.1. Scope..... 6
 - 1.2. Purpose 6
 - 1.3. Limitations 6
 - 1.4. Units and Tolerances..... 6
- 2. Compliance 6
 - 2.1. Conformity Assessment 6
 - 2.2. General 6
- 3. Definitions 7
- 4. Performance Levels 8
 - 4.1. Level 1 8
 - 4.2. Level 2 8
- 5. Accessories 8
 - 5.1. Accessories 8
 - 5.2. Chin Strap [Optional]..... 8
- 6. Instructions and Marking 8
- 7. Performance Requirements..... 9
 - 7.1. Requirements for Level I and II Bump Caps 9
 - 7.2. Requirements for Optional Features 9
- 8. Testing Preparation 10
 - 8.1. Test Sample Selection..... 10
 - 8.2. Testing Conditions..... 11
 - 8.3. Preconditioning..... 11
- 9. Headforms 12
 - 9.1. General 12
 - 9.2. Headform Sizes 12
- 10. Test Methods 12
 - 10.1. Force Transmission 12
 - 10.2. Apex Penetration 14
 - 10.3. Flame Resistance 15
- 11. Normative References..... 17

TABLES

Table 1 - Suggested Sizing	18
Table 2 - Schedule of Tests	19

FIGURES

Figure 1 - Labeling Example	20
Figure 2 - Force Transmission Striker	21
Figure 3 - Force Transmission Angles	22
Figure 4 - Typical Force Transmission Test Apparatus	23
Figure 5 - Apex Penetration Striker	24
Figure 6 - Typical Penetration Test Apparatus	25
Figure 7 - Apex Penetration Test Area	26
Figure 8 - Flammability Test Apparatus	27

APPENDICES

Appendix A - Recommendations, Cautions, Use, and Care	28
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American National Standard for Industrial Bump Caps

1. Scope, Purpose and Limitations

1.1. Scope

This standard establishes testing, minimum performance and labeling requirements for bump caps intended to provide protection to a wearer against the effects of striking their head against stationary objects and incurring laceration or other superficial injuries.

Products covered under the scope of this standard are not intended to provide protection from hazards caused by falling or moving objects.

Products not marked as FR have not been tested for Flame Resistance and may not provide protection when exposed to high heat or open flame.

Note: An industrial bump cap should not be confused with an industrial hard hat, as specified in ANSI/ISEA Z89.1.

1.2. Purpose

This standard establishes minimum performance requirements for bump caps designed to provide protection against impact and penetration from worker head strikes against stationary objects, also known as worker generated impacts.

1.3. Limitations

Protective bump caps are designed to reduce the amount of force transmitted to the wearer from worker generated impacts to objects but cannot provide complete head protection from severe impact and penetration. The use of protective bump caps should never be viewed as a substitute for good safety practices and engineering controls. Alterations, attachments, or additions of accessories may affect the performance of the bump cap.

1.4. Units and Tolerances

In this standard, SI units of measurement are followed by an approximate imperial equivalent in parenthesis. Only the SI value shall be regarded as the requirement.

2. Compliance

2.1. Conformity Assessment

Demonstration of conformity to the requirements of this standard shall be in accordance with ANSI/ISEA 125, *American National Standard for Conformity Assessment of Safety and Personal Protective Equipment*. The manufacturer shall select the level of conformity assessment claimed, and such level shall be clearly indicated in any claim, in any form, that references compliance with ANSI/ISEA 125.

2.2. General

Manufacturers shall not claim compliance with any part of the requirements of this standard and shall not use the name or identification of this standard in any statements regarding their respective products unless the product conforms fully to this standard.

3. Definitions

Accessory: Any additional parts for special purposes.

Note: Examples of accessories are chin strap, neck protector, adjusters, external coverings.

Adjuster: Adjustable or self-adjusting component that adjusts the fit or sizing of the bump cap.

Apex: The point on the outer surface of the bump cap coincident with the vertical axis of the headform when the bump cap is mounted in the as-worn position according to the manufacturer's instructions.

Chin strap: Strap which fits under the chin to help secure the bump cap on the head.

Comfort band or sweatband: Accessory to cover at least the inner front surface of the headband, if fitted, to improve wearer comfort.

Component. A functional part of a complete device addressed by the performance requirements of this standard.

Flame resistance: The property of a material whereby flaming combustion is prevented, terminated, or inhibited following application of a flaming or non-flaming source of ignition with or without subsequent removal of the ignition source.

Harness: If fitted, the complete assembly used to maintain an industrial bump cap in correct wearing position on the wearer's head, exclusive of a chin strap or other retention device.

Headband: Part of the harness, if fitted, completely or partly surrounding the head above the eyes at approximately the largest horizontal circumference of the head.

Note: The headband may include an adjuster.

Industrial bump cap: Headgear, hereinafter referred to as a "bump cap," intended to protect the wearer's head against injury caused by striking the head against stationary objects.

Industrial bump cap insert: An industrial bump cap shell designed to be installed into non-protective headwear to protect the wearer's head against injury caused by striking the head against hard, stationary objects.

Manufacturer: The business entity that marks or directs the permanent marking of the components or complete device as compliant with this standard and sells them as compliant.

Permanent: Such as can be expected to remain present and legible throughout the expected service life of the product.

Protective padding: Any material used to absorb the kinetic energy of impact.

Shall: In this standard, use of the word "shall" indicates a mandatory requirement.

Shell: The protective layer of the bump cap or bump cap insert.

Note: The shell may be fitted with external coverings, which may provide a means of maintaining the bump cap on the head.

Should: In this standard, use of the word "should" indicates a recommendation.

Ventilation holes: Holes provided in the shell, and/or external coverings, which can allow circulation of air inside the bump cap.

Wearing height: Vertical distance from the lower edge of the headband, if fitted, (or from the lower edge of the bump cap if there is no headband) to the highest point of the headform on which the bump cap is mounted, measured either at the front (midway between the sides of the headform) and at the side (midway between the front and back of the headform) whichever gives the greater distance.

4. Performance Levels

Industrial Bump caps are described by the level of performance. All bump caps shall meet either Level 1 or Level 2 performance requirements.

4.1. Level 1

Level 1 bump caps, which may include inserts and other styles, are intended to reduce the force of impact resulting from a worker generated impact to the head. Level 1 bump caps are tested for penetration at the apex and a force transmission equivalent to 7.5 J at a single point on the front and at a single point on the back of the crown.

4.2. Level 2

Level 2 bump caps, which may include inserts and other styles, are intended to reduce the force of impact resulting from a worker generated impact to the head. Level 2 bump caps are tested for penetration at the apex and a force transmission equivalent to 12.5 J at two points on the front and at two points on the back of the crown.

5. Accessories

5.1. Accessories

Accessories or replacement components, when installed, shall not cause the bump cap to fail the requirements of this standard.

The entity claiming that an accessory or replacement component, when installed, does not cause the bump cap to fail the requirements of this standard is responsible for providing justification upon request.

5.2. Chin Strap [Optional]

If fitted with a chin strap, straps shall be designed to break away at a reasonably low force to prevent a strangulation hazard.

6. Instructions and Marking

6.1. Each bump cap shall be accompanied by manufacturers' instructions explaining the application(s) of use, proper method of size adjustment and fitting (including, if applicable, reverse wearing) and, guidelines for care and inspection.

6.2. Each bump cap shall bear permanent markings in at least 1.5 mm (0.06 in.) high stating the following information (See Figure 1):