



MAKING SENSE OF HARD HAT CERTIFICATIONS

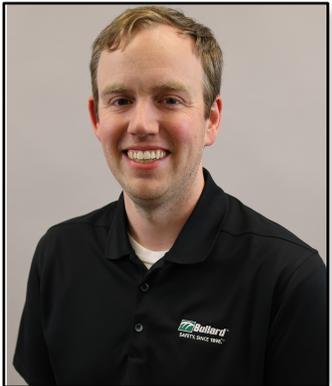
TODAY'S SPEAKER

Stacey Simmons, QSSP



- National Sales Manager, USA, Canada, Central and South America
- Completed OSHA-30 hours + QSSP trained
- Product Chair of Industrial Safety Equipment Association's (ISEA) Head Protection Committee
- Has been with Bullard since October 2014

Matt King



- Global Product Portfolio Manager - Head & Face Protection
- Member of Industrial Safety Equipment Association's (ISEA) Head Protection Committee
- Has been with Bullard since March 2017

SAFETY IS IN OUR DNA



IT'S TRUE...

SAFETY STARTED WITH A HARD HAT

EDWARD W BULLARD INVENTED
THE HARD HAT IN 1919.

Today, the Bullard company protects
millions of workers worldwide with
so much more than just hard hats.

AGENDA

- Definitions
- Backdrop to Standards
- USA Standards
- Other Standards
- Q&A



DEFINITIONS



WHAT IS ANSI?

American National Standard Institute:

The American National Standards Institute is a private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States.



WHAT IS ISEA?

International Safety Equipment Association:

ISEA has set the standard for personal protective technologies, supporting the interests of its member companies who are united in the goal of protecting the health and safety of people worldwide. ISEA is a recognized leader in the development of ANSI-accredited safety equipment standards, in the U.S. and around the world.





BACKDROP TO STANDARDS

USA HEAD PROTECTION STANDARDS

- The US Market follows ISEA Z89.1 standards for Head Protection
- ISEA member groups made up of manufacturers write the standards for the US
- OSHA typically adopts these standards and enforces them
- Standard are typically updated in a 5-year cycle based on market needs to ensure workers are going home safe at the end of the day
- Based on consensus within the ISEA working group, between changes and time for public review, 5 years comes very quickly



What's included in ISEA Z89.1 standard?

- Within the Z89.1 standard there are types, classes, and optional standards
- Types refer to what type of protection you are receiving
- Classes refer to electrical ratings
- Optional standards are in addition to minimum requirements what else the helmet might meet





HELMET TYPES AND CLASSES

TYPES: TYPE I & TYPE II

- Type I
 - Reduce the force of impact from a blow only to the top of the head.
- Type II
 - Reduce the force of impact from a blow to the top or sides of the head.



HARD HAT CLASSES

- Class E (Electrical)
 - Tested to 20,000 volts
- Class G (General)
 - Tested to 2,200 volts
- Class C (Conductive)
 - Not intended to provide electrical protection



OPTIONAL STANDARDS

JUDY
Construction Co.
Cynthiana, KY



SAFETY. SINCE 1898.™

OPTIONAL STANDARDS: TYPE I & TYPE II

- Low Temperature (LT)
 - Helmets are conditioned to -25° F
- High Temperature (HT)
 - Helmets are conditioned to 140° F
- Reverse Donning 
 - Suspension inserted forward and backward
- High Visibility (HV)
 - Color meets chromaticity and luminance factors



TESTING REQUIREMENTS

TESTING REQUIREMENTS

30 Samples of helmet are tested

- Samples are conditioned half at hot half at cold
 - Minimum testing is 0 degrees for cold & 120 degrees for hot at two hours
 - Optional LT/HT is -25 degrees for cold & 140 degrees for hot at four hours

Once helmets have been conditioned appropriate amount of time, they have a battery of test conducted including:

- Force impact
- Force penetration
- Electrical Insulation
- Flammability

Testing/Pass Fail Criteria ISEA Type I

Force Transmission:

- The maximum transmitted force shall not exceed 4450 N for a single value or an average of 3780 N for the samples tested.

Apex Penetration:

- The striker shall not come in contact with the head form.

Testing/Pass Fail Criteria ISEA Type I, cont.

Electrical Insulation:

- Samples are inverted and filled with tap water up to the Static Test Line (STL) and then the water level is adjusted to the same level on the outside of the helmet.
- Sample helmets are subjected to 20,000 VAC for a duration of 3 minutes. The voltage is increased to 30,000 VAC to determine if the samples exhibit burn-through. The maximum allowable current leakage shall not exceed 9 milliamperes.

Flammability:

- A single sample is subjected to a 1-inch inner flame from a Bunsen burner. The after-flame and/ or afterglow shall not exceed 5 seconds.

ISEA Type II Additional Testing

In addition to meeting the Type I testing criteria, if a helmet is a Type II rated, additional conditions and tests are required, including hot, cold and wet + front, rear, right and left sides.

Impact Attenuation:

- The maximum acceleration shall not exceed 150 g's.

Off Center Penetration:

- The striker shall not make contact with the head form as a result of the test.



OTHER STANDARDS

STANDARDS Outside the USA

- Outside the USA there are standards that are derived around the world most notable are the Canadian and European Head Protection Standards
 - Canada's head protection standard is CSA Z94.1
 - Europe's head protection standard is EN 397
- There are some commonalities in all three USA, Canada, and Europe standards, but each bring something different to the table
- For example, USA standards focus solely on performance of the product whereas EN standards have a focus on performance **AND** how the product is constructed

STANDARDS Outside the USA., cont.

- Europe also has another standard called EN12492, which is a mountaineering helmet standard.
- Side-impact clauses from the EN12492 mountaineering helmet standard have become popular within the past few years in the USA.

EN12492 Versus ISEA Z89.1 Type II

- EN12492 side impact requirements offer a lower level of protection compared to ANSI Z89.1 in the following areas:
 - a. Less impact energy: 24.5 J vs. 30.65 J
 - b. Less restrictive force limit: 10,000 N vs. 7,355 N (150 Gs)
 - c. Less aggressive impact surface: flat anvil vs. hemispherical anvil
 - d. Less impact protection at helmet base: 60° from vertical vs. dynamic test line
- In short because a helmet meets EN12492 it does not automatically meet ISEA Z89.1 Type II. These standards are different in testing as well as force energy transmission.



WHAT TO KNOW WHEN SELECTING A HARD HAT

How to Identify a Hard Hat/Safety Helmet

- Per the ISEA Z89.1 standard as with other standards around the world, helmets must be marked/labeled appropriately to which standards they meet
- These markings are usually embossed directly in the hat or on the manufacturer warning label (as shown)
- This label is showing that it is ISEA Z89.1 Type I, Class E&G, LT/HT reverse donning as well as meets CSA Z94.1 Type I, Class E&G and reverse donning



How to Select a Hard Hat/Safety Helmet

First and foremost, conduct a head protection risk assessment at your work site.

- What impacts to the head are your workers exposed to? Top? Side? Both? Danger of dropped objects? Potential for slips, trips and falls on the same level? You want to match safety helmets to the risks exposed.

Look for flying objects that could strike workers in the head, and identify:

- Blunt force trauma falls
- Surface liquids that could cause slips
- Exposed sharp edges
- Electrical hazards and employees who work on exposed energized conductors

How to Select a Hard Hat/Safety Helmet, cont.

- Look for records of head injuries or near misses for which safety helmet use would have provided protection.
- Understand standards the difference between Type I, Type II and EN12492 and what protection that each one affords you.

Frequently Asked Questions

- **When should I replace my hard hat?**
 - Replacement is determined by best practices by manufacturer. Generally, a hard hat has 5-year service life but should be tested daily to identify any cracking. A hard hat should be replaced immediately if it suffered any type of impact.
- **When should I replace my suspension?**
 - Replacement is determined by best practices by manufacturer, generally 12-18 months is change frequency for these parts.
- **Is there a standard for chin straps?**
 - In the ISEA Z89.1 standard there is an optional chin strap standard which only applies to Type II helmet if the chin strap is installed by the manufacture when delivered to the customer.

THANK YOU FOR JOINING US!

QUESTIONS & ANSWERS

HOW TO CONTACT US:

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Customize hard hats to your specifications: BuildYourBullard.com