



USA Standards

MAKING SAFETY THE TOP PRIORITY


ANSI/ISEA Z89.1: 2014 American National Standard for Industrial Head Protection

The Occupational Safety and Health Administration (OSHA) guidelines state that employees shall wear protective hard hats when working in areas where there is a potential for injury to the head from falling objects. Protective hard hats designed to reduce electrical shock hazard shall be worn by each

employee when near exposed electrical conductors which could contact the head. The performance criteria for head protection is provided in the American National Standards Institute (ANSI) Z89.1 American National Standard for Industrial Head Protection, updated in 2014.

- TYPE I** - Hard hats are designed only to withstand top impacts.
- TYPE II** - Hard hats designed to withstand impacts from the top and the side.
- Class C** - Conductive Hard Hat = the hard hat will not protect the wearer from electrical hazards.
- Class G** - General Hard Hat = hard hat that can withstand an electrical current up to 2,200 volts.
- Class E** - Electrical Hard Hat = hard hat that provides the highest level of electrical protection, withstanding currents up to 20,000 volts.

Hard hats classification and markings based on ANSI Z89.1: 2014

Classification	Marking	Definitions
IMPACT TYPE	TYPE I	TYPE I Hard hats designed to reduce the force of impact resulting from a blow only to the top of the head
	TYPE II	TYPE II Hard hats designed to reduce the force of impact resulting from a blow to the top or sides of the head
ELECTRICAL CLASS	Class G (General)	Class G Hard hats designed to reduce the danger of contact with low-voltage conductors. Tested at 2,200 volts
	Class E (Electrical)	Class E Designed to reduce the danger of contact with conductors at higher voltage levels. Tested at 20,000 volts
	Class C (Conductive)	Class C Hard Hats intended to provide no protection against contact with electrical hazards
OPTIONAL REQUIREMENTS	Reverse Donning	 - Hard hats which can be worn frontward or backward. They pass all hard hat testing requirements, whether worn frontward or backward
	Lower Temperature	LT Hard hats meet all testing requirements of the standard when preconditioned at a temperature of -30°C (-22°F)
	High Visibility	HV Indicate that the hard hat meets all testing requirements of the standard for high visibility colors. This includes tests for chromaticity and luminescence
	Higher Temperature	HT Hard hats meet the performance criteria after being preconditioned to higher temperatures of 140°F(60°C)

EN 397: 2012 Industrial Safety Hard Hats

- Mandatory tests:**
- Impact:** Energy spread to the head form must not exceed 5 kN after the fall of an object of 5 kg at 1m high.
 - Penetration:** The tip of the test mass used (3 kg

from 1m height) must not come into contact with the skull.

- Flammability:** The hard hat is exposed to a flame and it must not burn with flame emission more than 5 seconds after removal of the flame.

Impact and penetration tests are performed at room temperature, +50 °C and at -10°C.

- Optional tests:**
- Resistance at extreme temperatures:** Testing impact and penetration are performed at +150 °C, -20 °C or -30 °C temperatures.
 - Electrical properties:** Protects against a short accidental contact with electric leads under voltage up to 440 V.