

PERSONAL PROTECTIVE EQUIPMENT

holes through the shell and shall contain no metal parts, either in the shell, suspension, or accessories

General Service and Fireman Service hats or caps are designed to withstand a minimum electrical test voltage of 2,200 volts AC (rms), 60 cps, for one minute with leakage current not in excess of 3 milliamperes. Nonconductive utility service head protectors must withstand an electrical test voltage of 20,000 volts AC (rms), 60 cps, for three minutes, with leakage current not in excess of 9 milliamperes. When tested to breakdown, they shall not fail below 30,000 volts.

Class A, B, and D hats and caps are designed to transmit a maximum average force of not more than 850 pounds when subjected to a 40 ft-lb impact load. For Class C hats and caps, the impact load is 24 ft-lb.

Nonconductive hats also are designed to have a burning rate of less than 3 in./min with an absorption rate of less than 0.5 per cent (by wt) of moisture in 24 hr immersion in water. When used properly, these hats will greatly reduce exposure to electric burn injuries as well as to falling objects.*

The American Standard *Safety Code* Z21 (see earlier footnote) specifies the weight for all but Class D hats and caps shall not exceed 15 oz, complete with suspension but exclusive of winter liner or chin strap. The Edison Electric Institute specification AP-1 (see earlier footnote) calls for a minimum weight of 15½ oz for nonconductive headgear.

A hat with a brim all around provides the most complete protection for the head, face, and back of the neck. For confined spaces where the brim is in the way, the cap type is frequently preferred. This type may also be equipped with lugs to support the welding mask if a welder works on construction jobs or in other places which expose him to head injury.

Metal hats do not afford as high a degree of impact resistance as do plastic hats but because of their lighter weight they are preferred by some workers. They should never be used where electrical hazards or substances that are corrosive to aluminum are present.**

Class B insulating hard hats and caps should be inspected before each usage for

cracks, signs of impact, and rough treatment. Liners are available so that protective hats may be worn with comfort in cold weather (Fig 36-3c).

At least every 30 days, hard hats (particularly the sweatbands and cradles) should be washed in warm soapy water or suitable detergent and then rinsed thoroughly. Before used hats are reissued to other employees, they should be scrubbed and disinfected.

Formaldehyde, modified phenolics, hypochlorite, or quaternary ammonium compounds in proper strength can be used to disinfect hard hats. Cleaning and disinfecting solutions and powders are available which combine both operations. Hats should be thoroughly rinsed with clean water and then dried. (Rinsing is not necessary when quaternary ammonium compounds are used as their disinfecting properties continue on and they are usually nonirritating.) Do not use steam or solvents for cleaning and disinfecting, except on aluminum hats.

Many companies make use of colored hard hats to identify different working crews. Many colors are available; some colors are painted on and others have the color molded in. Before painting a hat, consult with its manufacturer so that a coating can be chosen which will not only last but which will not reduce the dielectric properties or attack and soften the shell material. Lighter colored hats are cooler to wear in the sun or under infrared energy sources.

Once broken, the crown of a hard hat cannot be effectively repaired, but the sweatband and cradle can be repaired or easily renewed if worn or badly soiled. An adequate number of crowns, sweatbands, and cradles should be stocked as replacement parts.

Various types of leather, fabric, and elastic chinstraps are available. Often hats are

*Edison Electric Institute, 750 Third Ave., New York City. *Specifications for Electrical Workers Insulating Safety Headgear*. AP-1-1961.

**American Standards Association, *op cit*.