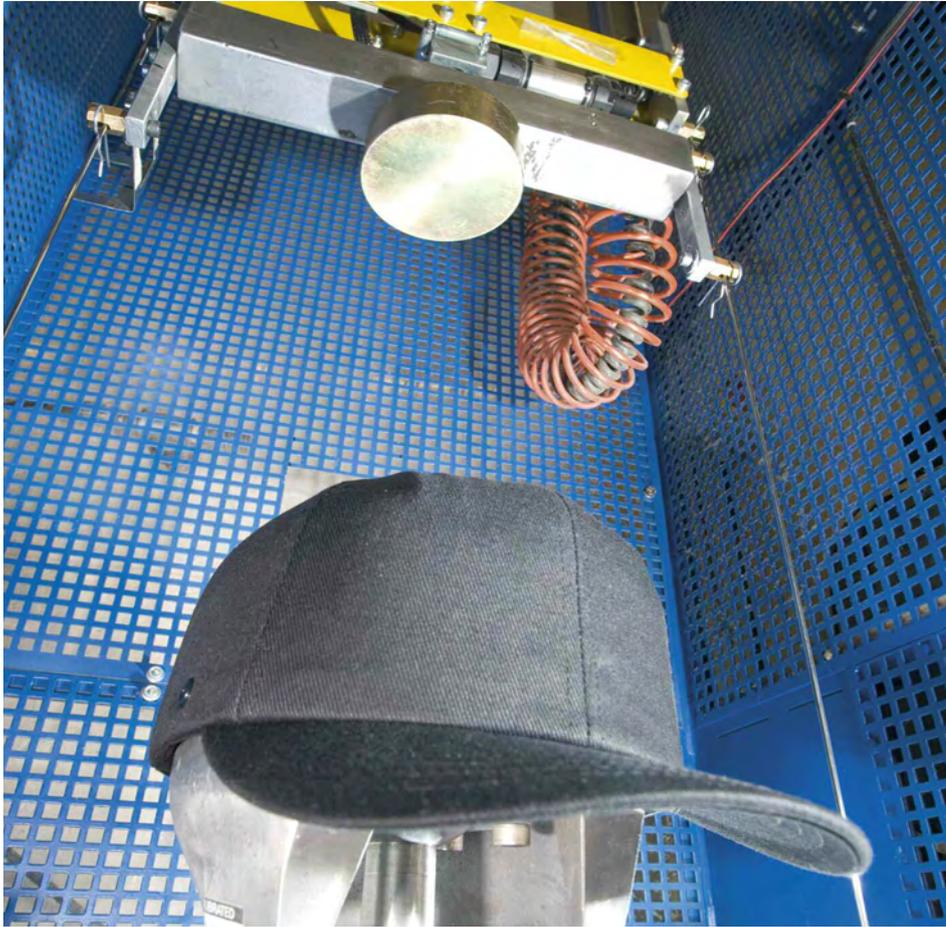


Bump caps

by Nathan Wright



There are many scenarios in which workers are required to wear protective headgear, particularly in industrial and construction industries.

Safety helmets used in these industries are not always practical as they can impair vision or cost too much, especially when the actual risks to the wearer are less severe. In these cases, it can be more appropriate to wear a bump cap.

Bump caps are intended for use when there is a significant risk of impact between the head and stationary objects, such as low ceilings or hanging items. Where there is a significant risk of impact with moving objects of any type, an industrial safety helmet in accordance with BS EN 397:2012 – Specification for industrial safety helmets – should be used.

Essential safety requirements for bump caps are defined in BS EN 812:2012. The tests and requirements within the standard are similar in principle to those in EN 397, but using a lower level of severity to reflect the reduced level of protection associated with the

caps (compared to safety helmets). As with the industrial helmet standard, EN 812 includes requirements for the design of the bump cap as well as essential performance requirements.

Impact test essential

As the primary function of a bump cap is to protect the head against impacts, an impact protection test is included as a mandatory requirement. This is carried out by mounting the bump cap onto a fixed headform and then impacting it with a vertical falling mass (see photograph). The force experienced by the headform is recorded – allowing a maximum transmitted force of 15kN. An impact energy of approximately 12 joules is employed for testing (compared to the 49 joule impact used for industrial helmets). This is achieved by dropping a 5kg hemispherical striker onto the bump cap from a 250mm height. Impacts are carried out

on the front of the bump cap, with the fixed headform tilted at angles of 30° and 60°, and on the rear. This is unlike the industrial helmet standard, where the impacts are carried out on the top of the helmet. This is done to reflect the nature of the impacts on bump caps, which tend to occur from walking or reversing into things.

Impact testing is carried out after conditioning the bump caps at low temperature (-10°C), high temperature (+50°C), water immersion, and artificial ageing (exposing helmets to UV light from a high pressure xenon lamp). The caps are conditioned to replicate years of wear and to establish whether the tested bump cap can perform to the required level under any 'normal' operating conditions, after several years of service.

Resistance to sharp objects

In addition to protection from blunt impacts, bump caps are also intended to provide limited protection against sharp objects. Therefore, the standard also includes a sharp object penetration test. This test involves a falling striker, similar to the impact test, but uses a 500g conical point striker in place of the hemispherical striker. This is dropped from a height of 500mm onto the bump cap. The transmitted force is not measured in this case, but the test requires that the striker should not penetrate the cap and make contact with the headform.

Similarly to industrial safety helmets, bump caps can, optionally, claim protection against very low temperatures (-20°C or -30°C), flame or electrical hazards up to 440 volts. Impact and penetration tests can be carried out after conditioning at -20°C or -30°C to test these claims. Where this is the case and the caps have been tested in these conditions, the bump cap will be marked to inform the user of its suitability.

In Europe, bump caps must be type examined against the European PPE Directive and the CE mark attached before being placed on the market. Usually, such bump caps will be classed as intermediate category PPE. If, however, protection against the optional electrical hazards is claimed, then the bump caps will be classed as complex PPE.

How can SATRA help?

For more information about the testing and certification of bump caps and other PPE products, email ppe@satra.co.uk