



Oberon Company division of Paramount Corp

*“Innovative Safety Equipment Specialist”*

## **ARE HARD HATS / CAPS ARC RATED?**

The answer is NO. There is no standard test method to arc rate a hard hat/cap.

ANSI Z89.1 2003 defines a hard cap as “a helmet without a full brim which may include a peak” and a hat as “a helmet with a full brim”. We will use the term hard hat as meaning both. ANSI Z89.1 2009 has dropped the two definitions but both models are tested the same. ANSI Z89.1 does include a flammability test, but it does not require an FR (flame resistant) material to pass the test. The ANSI Z89.1 test method is more of an ignition test, and is less severe than the flammability test used for flame resistant fabrics.

For the ANSI test method, the flame from a Bunsen burner is held horizontally 2mm from the helmet surface (not at an edge). The flame is held at a chosen point for 5 seconds (+1 –0 seconds). At the end of that time the flame of the Bunsen burner is removed, and the hard hat inspected for any visible flame. This test is quite different than the ASTM D6413 vertical flame test done to test FR fabrics. The fabrics are held vertically and the flame applied to the bottom edge for 12 seconds. For fabrics, the after flame and the char length is measured.

Oberon tests our hat not only to ANSI Z89.1 2009 but also the assembled arc face shields or arc hoods with hard hats are tested in accordance with ASTM F2178. So as an assembly (test requires as sold product to be tested) our arc shields and hoods are arc rated. The sensors are only measuring the shield or window design. There are 4 sensors, each eye, mouth and under the chin. There are no sensors to measure the hard hat.

Beyond Hazard Risk Category 2\*, the worker, per NFPA 70E and CSA Z462, should use a hood. Could a hard hat above Category 2 be ignited? That would not be use of proper PPE. If someone does not do a proper hazard assessment and is not in proper PPE when exposed to a high level arc, they not only will get seriously burned but also could have the hard hat or parts of it melt or ignite. Several reported incidents with hard hat melting or burning were probably caused by the flames coming up from burning non-FR clothing.

Oberon has tested our 12 cal arc face shield mounted on the ASTM F2178 test head backwards. What we wanted to see was if the face shield would direct the force of the arc into the face shield and cause burns to the face. Not only did we not see burns register on the sensors, the exposed hard hat (no longer behind the face shield and its side shield extenders) did not catch on fire.