3M

Technical Data Bulletin OH&ESD

205 - 3M™ H-700 Hard Hat with Uvicator™ Sensor

Published: November, 2011

How does the 3M ™ Uvicator™ Sensor work to address hard hat degradation due to ultraviolet light?

Many plastic materials will degrade over time. Some factors that can cause this degradation are: mechanical (e.g. stress, abrasion, flexure, etc.), chemical (e.g. acids, alkalizes, solvents, etc.), radiation (e.g. gamma, x-ray, sunlight, etc.) and temperature extremes or fluctuations.

One way to delay this degradation is to put additives into the plastics. However, there is a limit to the amount of additives that can be added to the plastic without affecting the desirable properties of the plastics.

Many of the plastics that are used in making hard hats are subject to these degradation factors. One example is degradation due to extended and cumulative exposure to sunlight, particularly the ultraviolet portion of sunlight. Given that many wearers of hard hats often work outside, ultraviolet light degradation is a major concern for them. Until now, hard hat wearers used subjective methods (i.e. observing for cracks and chalking and flexing the hard hat while listening for cracking sounds) to determine if their hard hats had been exposed to too much ultraviolet light. If performed frequently enough, these subjective checks suggest when a hard hat should be replaced.

The Uvicator sensor is an objective means of helping to provide an easily observable indication that the hard hat has approached the threshold of ultraviolet light over-exposure.

The Uvicator sensor is a patented ultraviolet light exposure indicator. It is a plastic disc that has been infused with a unique pigment that gradually changes color upon cumulative exposure to ultraviolet light.

The disc has a tapering thickness from top to bottom. This tapering thickness assists the observer in seeing a gradual color change as the hard hat with the Uvicator sensor is exposed to ultraviolet light. Initially the disk is a uniform red color. Over time, as the disc is exposed to ultraviolet light, the disc will gradually turn white, starting from the bottom towards the top. When the white color reaches the top of the disk it is time to take the hard hat out of service.

Please be aware that the sensor does not eliminate the need for periodic hard hat inspections. Factors other than ultraviolet light, such as mechanical, chemical, ionizing radiation, and temperature extremes also degrade the hard hat material over time and can lead to dangerous hard hat conditions.

3M recommends that a regular head protection replacement program be implemented by employers to address the service life of hard hats.

Replace the hard hat immediately if any signs of wear, damage, abuse or degradation are noticed, even if the Uvicator sensor has not changed color.

Read and follow instructions for use, care and limitations of the H-700 series hard hats with Uvicator sensor.

For more information, please contact:

3M Occupational Health and Environmental Safety Division (OH&ESD)

In the U.S., contact:
Customer Care Center
1-800-328-1667
Technical Assistance
1-800-243-4630
Internet
www.3M.com/PPESafety

In Canada, contact:
Customer Care Center
1-800-364-3577
Technical Assistance
1-800-267-4414
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www.3M.com/CA/occsafety

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