

GLOWMARK

Tactical imaging

GlowMark in collaboration with Tactical Imaging has created an internal building navigation system for first responder's which integrates incident command with a simple to follow standard involving physical "Tac-Tags" placed at strategic locations within a building or structure. As we have been developing this process we have been looking at and studying various reflective materials that will be visible to the fire fighter or police officer who must enter a darkened building. As part of that research we have evaluated the performance of the GlowMark materials under various conditions we have compiled a brief synopsis of our case study findings.

We tested GlowMark for its ability to remain visible in complete darkness for long periods of time. We also tested their visibility from distances at various points in time, and we tested the ability of the material to retain its glow even after the plastic material surrounding it had melted.

Glow in the dark duration test

In order to test the visibility of the material over a long duration in complete darkness several arrows were exposed to different light sources and kept in total darkness for up to 48 hours. We found that in general the GlowMark markers were still glowing, although they had degraded at around the 22 hour point. This test evaluated the performance of the material when exposed to several different light sources. Each was exposed to the light source for up to 20 minutes prior to being put into a sealed darkness testing box. At each point the box was opened in a totally darkened interior room in order to ensure that the material was not exposed to light from another source. Our results are as follows:

We tested materials exposed to: Direct Sunlight – (the best performance overall)

High candle power halogen spot light – next best performance

Standard light bulb – slightly less performance than the halogen light

Fluorescent light - about on a par with the light bulb

In general each of the tested markers remained visible for more than 20 hours with various levels of "fading" thereafter depending upon the light source used.

- The final observation showed that at some point between 22 hours and 48 hours the glow faded from all tested materials.

Distance visibility test

At each point in the testing we measured the distance at which the material was "distinctly visible". The term distinctly visible means that we could not only see the glow, but that the shape and configuration of the arrow was clearly seen. As you can imagine for our purposes it is not enough to just see that "something is glowing" we must see it distinctly. For the first 9 hours we could clearly make out the arrows from distances of about 12 meters ranging down to 3 meters. After about 9 ½ hours we did notice that the distance at which the material was *distinctly visible* dropped to about 1 ½ meters where it remained until our last test at about 22 hours.

Temperature resistance test

Due to the use that we are anticipating for the material, we wanted to test the point at which the plastic lens would melt and how the material would perform under those conditions. We found that the plastic material began to melt at about 140 degrees Fahrenheit with a complete degradation of the material (melted to the point that you could not detect a distinct shape) at about 170 degrees Fahrenheit.

Conclusion

To our surprise the material underneath kept glowing for up to 14 hours even with the plastic lens having been destroyed. The ability to see the material from the same distance away was degraded but it did continue to glow and was still visible.



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Thank you for your co operation.

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