pyrophoric payload powder that has formed clumps). Further, the mixture of the pyrophoric powder and the anti-clumping agent provides a lower fire risk after impact than powders that contain clumps or compacted portions upon impact. This is due to the fact that the clumps or compacted portions react longer with the air and retain heat longer than the finely dispersed pyrophoric powder.

When selecting an anti-clumping agent, it is important that the agent does not negatively affect the signal to the point where the training round is no longer useful (i.e., the signal is not intense enough in the IR and/or visible spectrums).

It is within the skill of those skilled in the art to determine the optimum amount of anti-clumping agent for a given formulation of pyrophoric powder or pyrophoric powder in association with other additives. It has been found that when an anti-clumping agent is necessary or desirable, typical amounts of anti-clumping agent are from 2 to 50%, preferably from 2 to 20%, by weight of the composition used in the training round (i.e., based on the total weight of the pyrophoric powder payload).

According to an aspect of the invention, there is provided a training munition which contains a projectile that includes a pyrophoric payload contained within frangible hardware, wherein said frangible hardware breaks open when said projectile impacts an impact site, thereby releasing the pyrophoric payload into the environment where said pyrophoric payload contacts air, further wherein said pyrophoric payload comprises pyrophoric powder, small pyrophoric foils, or mixtures of pyrophoric powder and small pyrophoric foils and marks the impact site by generating signatures in at least one electromagnetic radiation wavelength region selected from the group consisting of the visible region, near IR bands, mid-wave IR bands and long-wave IR bands, further wherein said projectile contains no explosive material and said pyrophoric payload further comprises activated carbon powder as an anti-clumping additive.

According to another aspect of the invention, there is provided a training munition which contains a projectile that includes a pyrophoric payload contained within frangible hardware, wherein said payload is dispersed into the environment and contacted with air when said projectile impacts an impact site, further wherein said pyrophoric payload comprises pyrophoric powder and from 2 to 50% by weight of activated carbon powder as an anti-clumping additive and marks the impact site by generating signatures in at least one electromagnetic radiation wavelength region selected from the group consisting of the visible

region, near IR bands, mid-wave IR bands and long-wave IR bands and said projectile contains no explosive material.

According to a further aspect of the invention, there is provided a training munition which contains a projectile that includes a pyrophoric payload contained within frangible hardware, wherein said frangible hardware breaks open when said projectile impacts an impact site, thereby releasing the pyrophoric payload into the environment where said pyrophoric payload contacts air and marks the impact site by generating signatures in at least one electromagnetic radiation wavelength region selected from the group consisting of the visible region, near IR bands, mid-wave IR bands and long-wave IR bands, further wherein said pyrophoric payload comprises pyrophoric powder and from 2 to 20% by weight of activated carbon powder as an anti-clumping additive and said projectile contains no explosive material.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a cross-sectional view of a training round of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is directed to a training munition that contains a projectile that includes a pyrophoric payload that is released from the projectile into the environment upon impact of the projectile with an impact site. Upon release from the projectile, the pyrophoric payload material reacts with the air to create a signal (e.g., IR and/or visible) which marks the impact site. The pyrophoric payload materials may be in the form of thin foils or powder. The pyrophoric foils may be