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PRACTICE AMMUNITION

The invention relates to practice ammunition including a marking agent .

In the use of practice ammunition of this kind - such as practice shells and practice bombs - it is important to mark the impact site so as to obtain optimum practice results. To this end, the practice ammunition comprises a head with a chamber containing a marking agent, preferably a powder having a reddish colour. The head is made of a material which when striking a target will burst and release the coloured powder. The powder is scattered within some radius about the impact site, thus marking it optically. However, the coloured powder is visible only under conditions of sufficient brightness; under low light or at night it will not be visible unless powerful night viewing equipment is used.

It is the object underlying the invention to provide for practice ammunition of the kind herein at issue a marking agent which is visible in a satisfactory manner under inclement weather conditions also.

In accordance with the invention, this object is attained by the features set forth in patent claim 1.

In accordance with the invention, the inventive marking agent comprises a plurality of chemical components each contained in a separate compartment included in the practice ammunition. As the partitions between the compartments break up, the components are mixed and react with each other. The end products of this chemical reaction, or the properties of these end products, constitute the optical marking.

The chemical components are contained in a plurality of compartments dimensioned to receive amounts thereof suitable to obtain the desired chemical reaction. The compartments are separated by means such as partitions, which may have predetermined breaking points therein.

The partitions provided between the compartments holding each chemical component may be broken up by the projectile impacting the target, causing the head to burst. Accordingly, the chemical reaction will be initiated by the components being mixed with each other at the target site, causing the latter to be marked by the aforesaid release.

In the case of practice projectiles fired from rapid-fire guns, for example, the partitions may be broken up by the initial acceleration as the practice projectile is fired, causing the chemical reaction to be initiated right after the cartridge is fired. With the components appropriately selected, the reaction may climax at the impact site so that the latter will be visible under low light conditions or at night as well.

In the case of twist-stabilised practice projectiles, the latter have a rotation about their longitudinal axis imparted thereto by a helical guide rail inside the firing device. The centrifugal forces so generated may be used to break up the partitions between the compartments holding the various components and to so initiate the chemical reaction for the marking agent.

The duration of the chemical reaction, as well as the frequency and the brightness of the emitted light, may be adjusted within broad ranges by properly selecting the chemically reactive components. The reaction may produce a flash-like luminous effect in order to simply identify the impact site of the practice ammunition, for example, or a sustained luminous effect in order to enable the trajectory of the practice ammunition to be optically tracked, for example.

The present invention preferably uses starting materials which when chemically reacted emit light in the visible or infrared ranges. If emitted in the infrared range, the marking light may be observed with night viewing equipment.

In a preferred embodiment of the invention, the practice ammunition comprises a hood covering the compartments holding the various chemical components, said hood bursting as the projectile strikes a target and thus causing the marking agent to be released.

The aforesaid hood may consist of a transparent material. In cases where the partitions break up immediately following the firing of the practice ammunition, enabling the chemical reaction to take place, the luminous effect may be utilised to make the entire trajectory of the practice ammunition optically visible.

The invention is illustrated and explained in greater detail in the following description of an exemplary embodiment thereof, having reference to the drawing.

Fig. 1 shows a longitudinal section through practice ammunition in the form of a practice cartridge comprising an inventive practice projectile and a case receiving the latter;

Fig. 2 shows a longitudinal section through a practice projectile according to another embodiment of the invention.

Fig. 1 shows a practice projectile 1 received in a cartridge case 2. The head of practice projectile 1 has a hood 3 consisting of a transparent material - such as a plastics material - and covering a first compartment 4 and a second compartment 5. The two compartments are placed one on top of the other and are separated from each other by an intervening partition 6. The first compartment

is filled with a first chemical component 7 such as an oxidant and the second compartment is filled with a second chemical component 8 such as a reducing agent.

When the partition is broken up by the force of the acceleration generated during firing, for example, the chemical reaction of the two chemical components causes chemoluminescently produced light to be emitted which is visible through the transparent hood while the projectile is flying. On striking the target, the hood bursts, causing the end products of the reaction to be scattered in the vicinity of the impact site, whereby the emitted light marks that site optically and is visible from great distances.

Fig. 2 shows an inventive practice projectile 1 in which the head and its transparent hood 3 are designed to include a first compartment 4 holding a first chemical component 7 and a second compartment 5 holding a second chemical component 8, said compartments placed in a side-by-side longitudinal relationship. The compartments are separated longitudinally by a partition 6, which may be broken up by the centrifugal force produced by the twist of a twist-stabilised practice projectile, for example, to enable the chemical reaction constituting the marking means to take place.

In both cases, the partitions may be provided with predetermined breaking points 11 shown schematically only in the drawing.

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PATENT CLAIMS

1. Practice ammunition comprising a head adapted to burst when the practice cartridge strikes a target and holding a marking agent for optically marking the impact after the head has burst, characterized by the marking agent comprising a plurality of chemical components (7, 8) each contained in a separate frangible compartment (4, 5), said components being mixed as compartments (4, 5) break up and chemically reacting with other, whereby said reaction causes the optical marking to be produced.
2. Practice ammunition as in claim 1, characterized in that compartments (4, 5) break up when practice ammunition (1) strikes its target.
3. Practice ammunition as in claim 1, characterized in that compartments (4, 5) are designed to be broken up by the initial acceleration and/or by the centrifugal forces generated in case a twist-stabilised practice ammunition (1) is used.
4. Practice ammunition as in any one of the preceding claims, characterized in that the partitions between compartments (4, 5) have predetermined breaking points (11) therein.
5. Practice ammunition as in any one of the preceding claims, characterized in that the optical marking radiates light in the visible range.
6. Practice ammunition as in any one of the preceding claims, characterized in that practice ammunition (1) comprises a burstable hood (3) for covering compartments (4, 5).



7. Practice ammunition as in claim 6, characterized by hood (3) consisting of an optically transparent material.

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