

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 with 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 the latter 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.

US 5 018 450 discloses a practice projectile in which the marking agent is contained in a burstable hood at the head of the practice projectile. The marking agent has chemical components contained in separate frangible compartments which are mixed and react chemically as the compartments burst when the practice projectile strikes its target, said chemical reaction causing the optical marking to be produced. A practice projectile of this kind will make its impact visible at night as well.

DE-AS 11 99 660 discloses a practice projectile to be fired from a barrel-type weapon and also having a marking agent comprising chemical components contained in a plurality of separate frangible compartments. In this projectile, these compartments are designed to burst when the projectile leaves the

muzzle; this will cause the practice projectile to come apart and to eject from the muzzle of the barrel a mushroom-shaped cloud of smoke visible from a great distance. The firing of live ammunition will thus be simulated in a more realistic manner.

It is the object underlying the invention to improve on practice ammunition of the kind explained above including a chemically reactive marking agent and to enable its trajectory to be observed, if desired. In accordance with the invention, this object is attained by the features set forth in patent claim 1.

In accordance with the invention, the compartments containing the chemical components are broken up as early as in the initial and/or the twist acceleration phases. The compartments are individually contained in a hood made of an optically transparent material and located at the head of the practice projectile; on impact, the hood will burst and release the marking agent to identify the impact site. At the same time, the optically transparent hood enables the marking - such as the thermoluminescent effect of the chemically reacting components - to be perceived along the entire trajectory of the practice projectile. The chemical components are selected to produce a sustained luminous effect lasting for an extended period of time, enabling the practice projectile to be optically tracked along its entire trajectory, and additionally to mark the impact site.

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 preferably produces sustained luminous effects so that the trajectory of the practice ammunition may be optically tracked, and so that the impact site will be marked.

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.

Document CH 381 565 discloses a practice projectile comprising a transparent hood at the head thereof which will burst on impact, said hood containing a marking material such as a coloured powder. However, this optically transparent hood is intended only to recognize the colour of the powder so as to distinguish various types of projectiles, such as practice projectile and live ammunition. It is not possible with like designs to track the trajectory of the projectile.

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 arranged one on top of the other and are separated from each other by a partition 6 therebetween. 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 chemoluminescent 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 is designed to be broken up by the centrifugal force produced by the twist of a twist-stabilised practice projectile, for example, to enable the chemical reaction to take place which constitutes the marking means. In both cases, the partitions may be provided with predetermined breaking points (not shown).

CLAIMS

1. Practice ammunition comprising a head designed to burst when the practice cartridge strikes a target and to receive a marking agent optically indicating the impact after the head has burst, said marking agent contained in a burstable hood (3) at the head of the practice projectile and comprising a plurality of chemical components each received in a separate frangible compartment, said components being mixed and reacting chemically with each other as the compartments break up, causing the optical marking reaction to be produced, characterized in that compartments (4, 5) are adapted to be broken up by the initial acceleration and/or by centrifugal forces if a twist-stabilised practice projectile (1) is used, and in that hood (3) consists of an optically transparent material to enable the trajectory of practice ammunition (1) to be tracked.
2. Practice ammunition as in claim 1, characterized in that the optical marking is visible in the infrared range.

3. Practice ammunition as in claim 1, characterized in that the optical marking emits light in the visible and infrared ranges.
4. Practice ammunition as in any one of the preceding claims, characterized in that compartments (4, 5) are separated by partitions, said partitions having predetermined breaking points therein.