United States Patent Office

3,663,553

Patented May 16, 1972

3,663,553

DI-SILVER AMINOTETRAZOLE PERCHLORATE

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No Drawing. Filed Feb. 12, 1969, Ser. No. 798,775
Int. Cl. C06c 1/00; C07f 1/10
U.S. Cl. 260—299 1 Claim

ABSTRACT OF THE DISCLOSURE

A new composition of matter, di-silver aminotetrazole perchlorate, is useful as a primary explosive for initiating secondary explosives such as TNT, HNS, DIPAM, and the like. The compound is stable at 500° F. for upwards of 50 hours.

This invention relates to a new composition of matter.

More particularly, the invention concerns a novel high-temperature stable initiating explosive.

In another aspect, the invention relates to primary explosives useful for igniting secondary explosives.

In still another aspect, the invention concerns methods for initiating secondary explosives.

In manufacturing explosive devices, it is common to construct a so-called "explosive train" which may typically and commonly include an initiator device such as a bridgewire or pyrotechnic initiator, a primary explosive which is fired by the initiator, and a secondary explosive which is fired by the primary explosive. For example, an electric bridgewire may be used to ignite a lead azide primary explosive which, in turn, initiates the detonation of a TNT secondary explosive charge.

The term "primary" and "secondary" explosive are used herein in the common art-recognized sense. Thus, a material which is relatively sensitive to impact, friction and electrostatic forces, which deflagrates or explodes rather than burning, even when unconfined, and which is capable of initiating the detonation of a secondary explosive, is defined as a "primary" explosive. Stated more concretely, a primary explosive requires a relatively low energy input for its initiation, say on the order of 100,000 ergs or less.

By contrast, a "secondary" explosive requires a considerably higher energy input for initiation, especially in the range of one billion ergs or greater, and will not produce a high-order detonation when burned unless suitably confined.

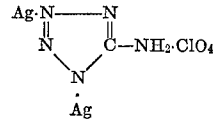
Unfortunately, most of the substances which meet the requirements of a primary explosive are rather unstable, particularly at high temperature. It would therefore be highly advantageous to provide a primary explosive which is stable at elevated temperatures.

I have now discovered the compound di-silver aminotetrazole perchlorate which functions effectively as a primary explosive comparable to lead azide but which is thermally stable at a temperature as high as 500 degrees for upwards of 50 hours.

My novel compound has the empirical formula

$$Ag_2N_5CH_2ClO_4$$

and is believed to have the following structural formula:



According to another embodiment of my invention, I provide methods for initiating secondary explosives such as TNT, HNS, DIPAM and the like in which I employ di-silver aminotetrazole perchlorate as the primary explosive. Explosive trains which initiate the secondary explosive according to the methods herein disclosed can be constructed according to any common art-recognized technique and the precise physical configuration and arrangement of the components of the explosive train are not critical and form no part of the present invention.

The di-silver aminotetrazole perchlorate primary explosives are used in accordance with my invention in quantities and according to techniques commonly employed in the use of lead azide as a primary explosive. The di-silver aminotetrazole perchlorate is easily initiated by typical bridgewire initators or by suitable pyrotechnics in accordance with prior art initiation techniques commonly used for initiating lead azide.

EXAMPLE

This example illustrates a convenient method of preparing the di-silver aminotetrazole perchlorate compound.

A solution of 16.6 g. of silver perchlorate in 32 ml. of water is added to a stirred solution of 8.2 g. or 5-amino-1H-tetrazole in 184 ml. of 70 percent perchloric acid. After the resulting clear solution is allowed to stir for one-half hour, 380 ml. of water is added with continued stirring.

The stirring is continued for an additional half-hour and the solid product is collected on a vacuum filter. Subsequent to thorough washing with water and isopropyl alcohol, respectively, the di-silver aminotetrazole perchlorate product is dried at 150° C. for five hours prior to use.

Having described my invention and the presently preferred embodiments thereof, I claim:

1. Di-silver aminotetrazole perchlorate.

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U.S. Cl. X.R.

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