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STABILIZED CYCLONITE

Milton Heins Wahl, Woodbury, N. J., assignor to
E. I. du Pont de Nemours & Company, Wilmington,
Del., a corporation of Delaware

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1 Claim. (Cl. 52—5)

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The present invention relates to detonating explosive compositions adapted to military and/or commercial use.

Certain existing explosive compositions of this type exhibit a marked tendency to undergo autocatalytic decomposition.

An object of the present invention is a new and improved explosive composition of this type. Another object is such a composition characterized by freedom from autocatalytic decomposition. Other objects will be apparent from the detailed description of my invention in the following.

I have found that the foregoing objects are accomplished by employing a composition comprising cyclotrimethylenetrinitramine and an organic base having a dissociation constant lower than 1×10^{-5} .

The foregoing explosive may be employed as well in mixtures or blends with certain fusible nitrated organic compounds such as pentaerythritol tetranitrate tetryl, ethylene dinitramine, ethylene dinitramine tetranitrate, nitromannite and trinitrotoluene.

The following will serve as illustrations of organic bases that come within the scope of the invention. I find it preferable to use an amount of the organic base within the range of 0.1% to 4.0% of the explosive content:

Base	Dissociation Constant
Urea	1.5×10^{-14}
Alpha-naphthylamine	9.9×10^{-11}
Beta-naphthylamine	$2. \times 10^{-10}$
Pyridine	3.3×10^{-9}
Phenylenediamine	3.3×10^{-10}
o-Toluidine	3.3×10^{-10}
Diphenylamine	$1. \times 10^{-14}$
Sym-diphenyl-dimethyl urea	$1. \times 10^{-14}$
Sym-diphenyl-diethyl urea	$1. \times 10^{-14}$
Thiourea	1.1×10^{-13}
Acetanilid	4.1×10^{-14}
Dicyandiamid	$1. \times 10^{-14}$

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While the foregoing bases are all applicable under the invention, I find that diphenylamine and the diethyl dialkyl ureas are particularly advantageous.

The compositions of my inventions may be prepared in any convenient manner. I find the invention particularly advantageous in the case of cast mixtures, wherein the composition is exposed to elevated temperatures during preparation. The invention is applicable also however in the case of simple mechanical mixtures, pressed or unpressed, or mixtures obtained by coprecipitation from solvents.

The amount of the base used is preferably within the range of 0.1% to 4.0%, based on the weight of the explosive composition. A smaller amount than 0.1% is insufficient to effect the freedom from autocatalytic decomposition if the resulting composition, while the use of more than 4.0% would lower the strength of the resulting explosive compound, and tend to desensitize the composition.

In manufacturing cast explosives according to the invention, the base preferably will be added when the explosive composition is in a molten condition.

Those engaged in the manufacture and/or use of military detonating explosives, and commercial explosives as well, will appreciate that the art has been advanced in the development of the compositions of the present invention which are characterized by freedom from autocatalytic decomposition to an extent not hitherto possible.

I intend to be bound only by the following patent claim.

I claim:

An explosive composition comprising cyclotrimethylenetrinitramine and between 0.1% and 4.0% of an organic base having a dissociation constant lower than 1×10^{-5} .

MILTON H. WAHL.