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NITROCELLULOSE PROPELLANT POWDER CONTAINING TRIACETATE OF ALKYL-TRIMETHYLOLMETHANE

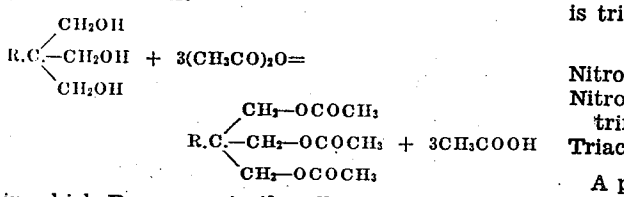
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1 Claim. (Cl. 52—5)

The present invention relates to the acetates of the alkyltrimethylolmethanes prepared by subjecting the alkyltrimethylolmethanes to one of the acetylation methods.

By causing, for instance, an alkyltrimethylolmethane to react with acetic anhydride the corresponding acetate is obtained according to the general reaction:



in which R represents the alkylic radical.

By treating, for instance, trimethylolmethylmethane with acetic anhydride at a temperature of 115–118° C. its quantitative transformation into triacetate of trimethylolmethylmethane is effected.

This compound is a slightly coloured liquid of a density equal to about 1,1 easily deacidified, boiling at about 400° C. under ordinary pressure, and at about 200° C. under 80 mm. of Hg. It may be easily distilled for obtaining the product pure, consisting in a nearly colourless liquid.

All of these products are little soluble in cold water, and soluble in the ordinary organic solvents.

They have the property of dissolving in nitroglycerine, in the aromatic nitroderivatives and in the nitric ethers of the various alkyltrimethylolmethanes. Owing to their property of being unflammable they appear to be particularly adapted for manufacturing powders without volatile solvents in which they have the function of gelatinizing, stabilizing and combustion temperature reducing agents.

They furthermore may be admixed to, and brought into solution with trinitrotoluene, tetryl, tetranitropentaerythrite, trinitrotrimethylentriamine, etc. in order to either partially or totally phlegmatize these products, thus rendering their use advantageous for the production of shells, bombs, etc.

By way of example I indicate hereinafter the composition of a gun powder made without the use of volatile solvents, an ingredient of which is triacetate of trimethylolmethylmethane:

	Percent
Nitrocellulose (11,60–13,00% N)	50–64
Nitroglycerine or nitric ethers of the alkyltrimethylolmethanes	42–28
Triacetate of trimethylolmethylmethane	2–8

A powder of this kind can be directly rolled in usual powder rolling machines or drawn by presses.

It is obvious that the present invention is not limited to the above indicated example, and that the uses of the acetates of the alkyltrimethylolmethanes are not limited to the industries of explosive materials. Their excellent gelatinizing properties, not only of nitrocellulose, but also of the acetylcellulose, show the possibility of their being used for all of the industrial purposes in which nitrocellulose and acetylcellulose have proved useful (lacquers, films, plastic masses, etc.). It is to be kept in mind that in all these uses it may be convenient to introduce, instead of a single acetate, mixtures of two or more acetates of alkyltrimethylolmethane.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

As a new composition of matter, a nitrocellulose propellant powder, containing triacetate of alkyltrimethylolmethane.

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