

ALIEN PROPERTY CUSTODIAN

HIGH-EXPLOSIVE

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Alien Property Custodian

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HIGH-EXPLOSIVE.

It is well known that pentrite (tetranitrate of pentaerythrite) as well as T₄ (trimethylenetrinitramine) are explosive substances which, owing to their sensitivity to shock and their high melting point, cannot be easily manipulated and are not suitable for use as high-explosives particularly for military applications.

I have now found that the formic ethers of pentaerythrite, and particularly tetraformiate, may conveniently be mixed in variable ratios from 20 to 80% with pentrite and T₄ and form with them explosives which, although maintaining a good deal of their brisant power, acquire a great insensitivity to shock. These explosives heated to a temperature not above 100°, become sufficiently fluid, in order to permit the stuffing of void projectiles.

Example 1.—A mixture of 60 parts of pentrite (melting point 141° C) and 40 parts of tetrafor-

miate of pentaerythrite (melting point 53–54°), is fluid at approximately 80–85° C; it does not explode, even when subjected to the shock of 2 kg from more than 2 m of fall. (Pure pentrite explodes already when subjected to the shock of 2 kg from 30–35 cm of fall).

Example 2.—A mixture of 70 parts of pentrite and 30 parts of tetraformiate of pentaerythrite is fluid at approximately 95°; it does not explode, even when subjected to the shock of 2 kg from more than 2 m of fall.

Equally advantageous is the addition of formic ether of pentaerythrite to mixtures of pentrite or T₄ with other organic explosives having a high melting point; eventually by adding one or more oxidising inorganic salts; and eventually by adding metallic powders suitable of raising the temperature of the decomposition gases.

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