

UNITED STATES PATENT OFFICE

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PRIMING MIXTURE

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2 Claims. (Cl. 52—2)

This invention relates to ammunition priming mixtures, and contemplates the provision of a novel fuel ingredient for such mixtures.

The field of available priming mixture fuels has been substantially limited by the elimination of the corrosive oxidizer, potassium chlorate, from modern non-corrosive mixtures. Potassium chlorate is extraordinary in that it contains a large quantity of oxygen which it yields with great facility at a comparatively low temperature, but is subject to the great disadvantage that it deposits a highly corrosive residue in a gun barrel. The replacement of potassium chlorate by non-corrosive oxidizers, such as barium nitrate, lead nitrate and lead peroxide, which contain less oxygen or yield their oxygen only at a high temperature, has made desirable the use of fuels which possess a great affinity for oxygen, or for other reasons are more efficient in extracting oxygen from somewhat sluggish oxidizers.

Prior to the present invention, metal powders have been regarded as unsuitable priming mixture fuels on account of the slowness of their combustion and/or the high temperature necessary to initiate combustion. The present invention comprises the discovery that certain metal powders function with great efficiency as the fuels of priming mixtures, particularly non-corrosive mixtures. For this purpose, a powder of the metal zirconium is especially desirable. This substance by itself is an excellent priming mixture fuel, and it has been thus used in mixtures having approximately the following composition:

	Per cent
Mercury fulminate.....	approximately 40
Barium nitrate.....	approximately 29
Zirconium.....	approximately 8 to 10
Glass.....	approximately 20
Gum.....	approximately 1

It is to be understood that the proportions of the ingredients of this mixture are subject to

substantial variation. It is sometimes desirable to use additional fuels, such as antimony sulphide and/or lead sulphocyanate. For example in the above mixture antimony sulphide may be present in quantities up to about 6%, the zirconium content being proportionately reduced.

Moreover, other oxidizers than barium nitrate, and other combustion initiators than mercury fulminate, may be used. For example, a mixture showing very satisfactory sensitiveness and priming capacity, and extraordinary stability under storage in an atmosphere of high humidity, is as follows:

	Per cent
Guanylnitrosaminoguanilyltetracene.....	3 15
Lead trinitroresorcinate.....	27
Lead nitrate.....	40
Zirconium.....	7
Antimony sulphide.....	14
Lead sulphocyanate.....	9 20

Both the ingredients and the proportions may be substantially varied.

The present invention constituting the first use of metal powder, particularly zirconium powder, in ammunition priming mixtures, the appended claims are to be broadly construed.

What is claim is:

1. An ammunition priming mixture containing substantially:

	Per cent 30
Guanylnitrosaminoguanilyltetracene.....	3
Lead Trinitroresorcinate.....	27
Lead Nitrate.....	40
Zirconium.....	7 35
Antimony sulphide.....	14
Lead sulphocyanate.....	9

2. An ammunition priming mixture containing lead trinitroresorcinate, guanylnitrosaminoguanilyltetracene and zirconium. 40

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