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PYROTECHNIC COMPOSITIONS

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6 Claims. (Cl. 52—23)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates generally to pyrotechnic compositions, and more particularly it has reference to a composition in which an insoluble soap is employed as a waterproofing agent for the purpose of prolonging its storage life.

The problem of increasing the stability of pyrotechnic compositions is especially important in the case of tracer ammunition where the composition is exposed to the moist air in the cartridge case. Propellant powders in current use contain approximately 1% moisture, and in a closed space, the air in contact with the powder contains enough moisture to produce a relative humidity of 70% to 90%. When easily oxidized metallic fuels are present in the composition, such as magnesium, deterioration may be rapid enough to render the ammunition useless within a few years.

I have found that pyrotechnic compositions will show a marked resistance to the effects of humid air when they include a small quantity of an insoluble soap. For example, a composition containing approximately 10% magnesium and 90% barium peroxide will be almost completely stable in air of 90% relative humidity if from 0.5% to 2.5% zinc stearate is included. Zinc stearate, however, is only one of many insoluble soaps which may be used for this purpose. Some of the better known are stearates of aluminum, lead, magnesium, calcium, copper, and iron. Such soaps can also be made from oleic or palmitic acids. These latter soaps are soft, due to a lower titre of the fatty acid and are consequently not satisfactory for use with pyrotechnics.

Examples of compositions which have remained stable in storage tests, are as follows:

	Percent
Magnesium	20
Barium peroxide	76
Aluminum stearate	4
Magnesium	24.
Barium peroxide	73.5
Magnesium stearate	2.5
Magnesium	5 –25
Barium peroxide	75 –95
Zinc stearate	0.5–10

The zinc soap is of more suitable density and, therefore, can be more easily blended with other ingredients. It is preferred for pyrotechnic use.

I claim:

1. A pyrotechnic composition comprising

	Percent
Magnesium	5 –25
Barium peroxide	75 –95
Zinc stearate	0.5–10

2. A pyrotechnic composition comprising

	Percent
Magnesium	5 –25
Barium peroxide	75 –95
An insoluble soap	0.5–10

3. A pyrotechnic composition comprising

	Percent
Magnesium	5 –25
An alkaline earth peroxide	75 –95
An insoluble soap	0.5–10

4. A pyrotechnic composition comprising

	Percent
A metallic fuel	5 –25
An alkaline earth peroxide	75 –95
An insoluble soap	0.5–10

5. A pyrotechnic composition containing a metallic fuel, an alkaline earth peroxide and an insoluble soap.

6. A pyrotechnic composition containing a metallic fuel and an insoluble soap.

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