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3,489,591

METHOD OF MAKING RADIATION RESISTANT FABRIC

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2 Claims

ABSTRACT OF THE DISCLOSURE

A method of making a fabric capable of withstanding a radiant energy pulse of a nuclear detonation comprising coating an insoluble fiber with a solution of lanthanum oxide and polytetrafluoroethylene and, after drying, weaving said coated fiber into a finished fabric.

BACKGROUND OF THE INVENTION

The present invention relates to a method of coating a water insoluble fiber which can then be woven into either a garment or a cover to provide protection from a nuclear detonation.

Various methods have been heretofore devised to produce fabrics that will resist radiation. In U.S. Patent 2,788,291, entitled "Radiation Resistant Fabric," which issued Apr. 9, 1957, to Joseph M. Stertz, a method of treating fabrics to make them resistant to radiation is provided which includes coating a fabric with a solution of lead sulphur dioxide with a bonding agent of glucovinyl resinate. The leaded solution is prepared by melting the lead and adding sulphur dioxide in the proportions of substantially 80 percent lead, 12 percent sulphur dioxide, and 8 percent aluminum. Several coatings of the solution may be applied and the radiation resistance is proportional to the number of coatings.

Another type of cloth that will provide protection from radiation is disclosed in U.S. Patent 2,857,525, which issued Oct. 21, 1958, to William S. Ferdon. The cloth is comprised of shingle-like members or scales composed of an outer fabric layer, an inner fabric layer, and between the two layers is sandwiched a layer of lead foil.

SUMMARY OF THE INVENTION

The present invention relates to an improved method of making a radiation resistant material by coating a fiber prior to weaving said fiber into a fabric. The fiber is coated by dipping into a mixture of lanthanum oxide, polytetrafluoroethylene and distilled water. The coated fiber is then dried in an air oven at an elevated temperature and, after drying, the fiber is woven into a finished fabric.

It is therefore a general object of the present invention to provide an improved method of making a fabric which will provide protection from radiant energy.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

A water insoluble fiber, such as glass, rayon, or nylon is coated with a radiation resistant solution of 6.0 to 8.5 parts lanthanum oxide (La_2O_3), 1.5 to 4.0 parts polytetrafluoroethylene and 100 parts of distilled water. The lanthanum oxide, polytetrafluoroethylene, and distilled water are dispersed with a Waring blender or similar mixing apparatus. The textile fiber is then dipped in an agitated bath of the radiation resistant solution and, after coating, the fiber is dried in an air oven at a temperature of between 300 and 400 degrees F. The coated fiber is then woven into a finished fabric which can then be made into a garment or cover. In a test of a finished fabric, the fabric was found to offer protection from a 2000 degree C. radiant energy pulse for a period of at least 2 seconds.

It should be understood, of course, that the foregoing disclosure relates to only a preferred embodiment of the invention and that numerous modifications may be made therein without departing from the spirit and the scope of the invention.

What is claimed is:

1. A method of making a radiation resistant fabric comprising:

coating a water insoluble fiber with a mixture of from about 6 parts to about 8.5 parts lanthanum oxide (La_2O_3), from about 1.5 to 4 parts polytetrafluoroethylene and about 100 parts of distilled water, then drying said coated fiber in an air oven at a temperature of between 300° and 400° F., and then weaving said fiber into a finished fabric.

2. A method of making a radiation resistant fabric as set forth in claim 1 wherein said fiber is selected from the group consisting of glass, rayon, and nylon.

References Cited

UNITED STATES PATENTS

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