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METHOD OF COATING WITH PLUTONIUM ACETYLACETONATE AND COATED PRODUCT

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6 Claims. (Cl. 117-106)

1 This invention relates to the deposition of thin films of plutonium acetylacetonate on metal and other bases and to an article coated with such a film.

Plutonium acetylacetonate and the manner in which it is produced are disclosed in the copending joint application of Jonathan S. Dixon, Joseph J. Katz, and Edwin F. Oriemann, Serial No. 565,999, filed November 30, 1944, entitled "Chemical Process and Composition."

In order to coat material, such as metal or preconfigured articles of manufacture, the plutonium acetylacetonate is volatilized by heating it to an elevated temperature, preferably a temperature of from 160° C. to 175° C. in vacuo, preferably at or below about 10⁻⁵ millimeters of mercury in a suitable apparatus in which the piece of metal or article to be coated is accommodated, the material or article being in chilled condition usually below 0° C. As a result, the plutonium acetylacetonate is condensed on the surface of the material or article and forms a thin adherent film thereon.

As one example, about 10 micrograms of plutonium acetylacetonate was heated to from 168° C. to 170° C. for 40 minutes in an apparatus in which a vacuum of about 10⁻⁵ millimeters of mercury was maintained. A piece of metal foil having approximately 2 cubic centimeters surface area was accommodated in the apparatus and cooled by means of a dry ice-trichlorethylene bath during the forty minute period. As a result, a film of plutonium acetylacetonate containing from 2 per cent to 8 per cent of the amount of plutonium used was condensed on the metal foil.

Such coated foils are useful in ion chambers and similar devices.

By the method herein described, articles of the desired material and configuration can be coated with such a film.

Having thus described the invention, what is claimed is:

1. The method of coating with plutonium acetylacetonate a metal article nonreactive with said plutonium acetylacetonate which comprises volatilizing the plutonium acetylacetonate by the

2 application of heat and subatmospheric pressure and condensing the vapor on said metal article.

2. The method of coating with plutonium acetylacetonate a metal article nonreactive with said plutonium acetylacetonate which comprises volatilizing the plutonium acetylacetonate by heating it from about 160° C. to 175° C. while maintaining it in a vacuum of about 10⁻⁵ millimeters of mercury, and condensing it, while in said vacuum, on said metal article.

3. The method of coating with plutonium acetylacetonate a metal foil nonreactive with said plutonium acetylacetonate which comprises volatilizing the plutonium acetylacetonate by heating it from about 160° C. to 175° C. while maintaining it in a vacuum of about 10⁻⁵ millimeters of mercury, and condensing it, while in said vacuum, on said metal foil.

4. The method of coating with plutonium acetylacetonate a metal article nonreactive with said plutonium acetylacetonate which comprises volatilizing the plutonium acetylacetonate in a high degree of subatmospheric pressure by the application of heat and condensing the vapor on the article.

5. An article of manufacture comprising a metal base nonreactive with plutonium acetylacetonate having thereon a coating of plutonium acetylacetonate.

6. An article of manufacture comprising a metal foil nonreactive with plutonium acetylacetonate said metal foil having thereon a coating of plutonium acetylacetonate.

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REFERENCES CITED

The following references are of record in the file of this patent:

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