METHOD OF PREPARING PLUTONIUM MONONITRIDE

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Claims. (Cl. 23—344)

This invention is concerned with a method of preparing plutonium mononitride and in particular with a process that produces a non-pyrophoric plutonium nitride when it is exposed to a normal or air atmosphere.

A plutonium nitride compound that is non-pyrohoric is extremely difficult for the reaction between plutonium hydride or plutonium metal powder to have 100% conversion to the plutonium mononitride. They therefore decided to vacuum treat the partially reacted plutonium mononitride powder at the elevated temperature of about 800° C. so as to decompose any residual plutonium hydride that might be present, and (2) introducing additional nitrogen gas at this elevated temperature into the reaction chamber so as to complete the nitriding of any unreacted plutonium metal. Therefore, this invention should be understood to be limited only as is indicated by the appended claims.

What is claimed is:

1. A method of preparing nonpyrophoric plutonium nitride, said method consisting of heating a powder, selected from the group consisting of at least one of plutonium metal and plutonium hydride, up to about 300° C. to 600° C. in a nitrogen atmosphere and within a closed vessel, said powder then being heated further to a temperature of about 800° C., evacuating the vessel and further heating at about 800° C. while any gaseous products that are evolved are removed through a vacuum system and then reacting the resulting outgassed powder with additional nitrogen at temperatures up to 800° C.

2. The method of claim 1 in which the nitrogen is

3. The method of claim 1 in which said powder is essentially plutonium metal.

4. The method of claim 1 in which the nitrogen is maintained under pressure during the initial heating step.

References Cited by the Examiner


References Cited by the Applicant


L. DEWAYNE RUTLEDGE, Primary Examiner.

BENJAMIN R. PADGETT, Examiner.

S. TRAUB, Assistant Examiner.