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Insulating Material

TO ALL WHOM IT MAY CONCERN: USA 112001

Be it known that I, LEE C. JENNE, a citizen of the United States, and resident of Hempstead, in the County of Nassau and State of New York, whose Post Office address is:

105 Elmwood Avenue
Hempstead, New York

have invented certain new and useful improvements in:

INSULATING MATERIAL

of which the following is a specification:

Abstract

This invention relates to the art of insulating material and more particularly to a material to be applied to the walls or ceilings of a chamber for the purpose of condensation control, acoustical control and thermal insulation.

As conducive to an understanding of the invention, it is noted that where a mixture containing asbestos fibers, a clay binder and a water carrier is used for condensation control, acoustical control and thermal insulation, and such mixture is sprayed in conventional manner onto a surface, due to the fact that the mixture is not fully saturated, the dust from the asbestos and clay will permeate the chamber in which it is applied, resulting in a severe health hazard to the workmen.

Where mineral wool is used in place of the

asbestos fibers with an inorganic binder such as sodium silicate, although there is an improvement due to the elimination of the asbestos dust, the sodium silicate which is normally in liquid form causes a mist which is also injurious to the worker.

Where a thermal insulating material is sprayed onto a metal surface and a primary coating of an adhesive or bonding agent such as latex, for example, must first be applied to the metal surface before application of the sprayed insulating material, the operation is of course more time-consuming and costly than if the primary coating was not required.

It is accordingly among the objects of the invention to provide a mixture which may readily be applied by spraying onto a wall surface to provide effective condensation control, thermal insulation and acoustical control without any by-products resulting from the spraying operation such as an inorganic dust or mist containing inorganic materials, which mixture is readily simple to formulate and may be shipped and stored economically without deterioration, even after long periods and which may readily be used in a conventional spraying equipment without modification thereof in any manner, which mixture when sprayed will dependably adhere to various types of wall surfaces such as concrete, galvanized steel, aluminum, painted surfaces and the like and which may be applied even to a metal surface without any primary coating, yet with assurance that the sprayed mixture will securely bond to such metal surface.

According to the invention, these objects are accomplished by the arrangement and combination of elements

hereinafter described and more particularly recited in the claims.

USA 112003

According to the invention, the mixture is composed of a combination of ingredients including mineral wool, an organic binder, a dust control medium such as oil, and a rust inhibitor.

More particularly, the mineral wool is of the type commonly identified in the trade as a white mineral wool and for example may have the following composition:

Ingredient	% by Weight
SiO_2	38.2
FeO	2.0
Al_2O_3	14.5
CaO	29.2
MgO	15.7

It is of course to be understood that the foregoing ingredients and percentages by weights are merely illustrative and any conventional type of white mineral wool may be employed, such as put out by Keene Corporation, or Johns-Manville, Inc. The white mineral wool, which is composed of fibers of various lengths, is formed in conventional manner in the shape of pellets which, according to the present invention have a screen size within the range of 1/4" and 1" mesh and preferably have an average screen size of 3/8" mesh.

The size of the pellets within the given range is critical in that if the pellets are too small the material, when ultimately applied to the surface, will be too dense to provide the desired functions of thermal insulation, accoustical control and condensation control.

If the pellets are too large, due to the spaces therebetween, the resultant coating would not bond effectively to the wall surface with resultant dislodgment of portions thereof as a result of vibration or contact and furthermore the coating would not provide the most efficient combination of condensation control, acoustical control and thermal insulation. Thus, it has been found that with pellets within the size range above noted, the most efficient combination of the desired functions are achieved.

The organic binder that is employed preferably is a wheat starch and is in powdered form which has been treated to prevent mildew and to be vermin proof. The rust inhibitor is preferably sodium nitrite which is also in powdered form. The oil that is employed can be of any suitable type and is preferably a petroleum base oil.

The proportion of each of such elements that may be employed may vary slightly, but it has been found that the most efficient proportion is as follows: USN 11?00!

Ingredient	% by Weight
Mineral Wool	94.5
Wheat Paste	3.0
Sodium Nitrite	1.0
Oil	1.5

A range may be used that varies as follows:

Ingredient	% by Weight
Mineral Wool	between 91 and 97.5
Wheat Paste	" 1.5 " 5.0
Sodium Nitrite	" 0.5 " 2.0
Oil	" 0.5 " 2.0

In preparing the product, according to one preferred embodiment, the mineral wool fibers are collected onto a conveyer belt and continuously advanced in the form of a relatively loose mat in ribbon or sheet form. As the fibers are discharged onto the conveyer belt, the oil is sprayed into the mass of fibers so that when the fibers are on the belt, the relatively loose mat will be impregnated with such oil. Thereupon, strips of powdered wheat paste and sodium nitrite are applied by spraying onto the top surface of the moving mat of oil impregnated mineral wool. After this is done, the impregnated mat with the strips of powdered wheat paste and sodium nitrite is then stirred in conventional manner and blown into a hopper so that there is a complete mixing of the various ingredients. The mixture is then discharged into a standard granulator equipment which forms individual pellets of the desired size, each of said pellets comprising the desired proportions of mineral wool, wheat paste, rust inhibitor and oil. The pellets are then packaged and are ready for subsequent use in the spraying operation.

USA 112005

The spraying operation illustratively uses a standard spraying machine such as the type put out by Universal Insulating Machine Company under the designation Self Help Spray. Thus, the pellets are poured into the [illegible] pellets which may tend to stick together so that they will be easily discharged. The machine, through a suitable nozzle, blows the pellets through such nozzle and the nozzle has associated therewith an [illegible]

pellets and encompassing mist is applied against the wall surface, the mist causing the starch particles to become wetted so that they will function as an adhesive to bond the pellets to each other and to the wall surface.

Due to the pelletizing of the mineral wool and the impregnation of the mineral wool, as well as the starch with oil, there will be substantially no dust created during the spraying operation and hence no health hazard to the workmen.

As many changes could be made in the above product, and many apparently widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

new and desire to secure by Letters Patent of the United States is:

USA 112007

1. An insulating material comprising a pellet composed of a white mineral wool and an organic binder.

2. The combination set forth in claim 1 in which said pellet contains a rust inhibitor.

3. The combination set forth in claim 1 in which said pellet contains a rust inhibiter and a lubricant.

4. The combination set forth in claim 3 in which said rust inhibiter is sodium nitrite and said lubricant is a petroleum base oil.

5. The combination set forth in claim 1 in which said organic binder is a wheat starch.

6. An insulating material comprising a mixture of white mineral wool, a wheat starch, sodium nitrite and a lubricating oil, said mineral wool being over 90% by weight of the mixture.

7. The combination set forth in claim 6 in which said mineral wool is in the range of 91.0% and 97.5% by weight, said wheat starch is in the range of 1.5% and 5.0% by weight, said sodium nitrite is in the range of 0.5% and 2.0% by weight and said lubricating oil is in the range of 0.5% and 2.0% by weight.

8. The combination set forth in claim 6 in which said mixture is in the form of a pellet in which said mineral wool is 94.5% by weight, said wheat starch is 3% by weight, said sodium nitrite is 1% by weight and said lubricating oil is 1.5% by weight.

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9. The combination set forth in claim 6 in which said wheat starch is treated to be mildew resistant and vermin proof.

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USE

10. The combination set forth in claim 6 in which each of said pellets is of a screen size within the range of 1/4" and 1" mesh.

11. The combination set forth in claim 6 in which each of said pellets has an average screen size of approximately 3/8" mesh.

SOLE INVENTOR

Declaration, Power of Attorney, and Petition

USA 112009

I, LEE C. JEANE,

declare that I am a citizen of the United States of America,

residing at Eeepstead, County of Nassau and State New York;

that I have read the foregoing specification and claims and I verily believe I am the original, first, and sole inventor of the invention in INSULATING MATERIAL

described and claimed therein; that I do not know and do not believe that this invention was ever known or used before my invention thereof, or patented or described in any printed publication in any country before my invention thereof, or more than one year prior to this application; or in public use or on sale in the United States more than one year prior to this application; that this invention has not been patented in any country foreign to the United States on an application filed by me or my legal representatives or assigns more than twelve months before this application; and that no application for patent on this invention has been filed by me or my representatives or assigns in any country foreign to the United States except as follows:

And I hereby appoint ARTHUR E. COLVIN,

Registration No. 15591,

of 521 Fifth Avenue, New York, New York 10017,

my attorney, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent Office connected therewith.

Wherefore I pray that Letters patent be granted to me for the invention or discovery described and claimed in the foregoing specification and claims, and I hereby subscribe my name to the foregoing specification and claims, declaration, power of attorney, and this petition.

The undersigned petitioner declares further that all statements made herein of petitioner's own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Inventor's full name Lee C. Jeane

(Signature)

Date February 1969.

Post Office address 105 Elwood Avenue, Eeepstead, New York.

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D E S C R I P T I O N

USA 112010

PRODUCT COVERED:

Sprayed fiber known as "Ironed 'K-21' Pyrospray."

COMPOSITION:

The fiber is essentially a blend of mineral wool and wheat paste. The proportions are shown in the table below.

Ingredient	Per Cent by Weight
Mineral Wool	95 - 98
Wheat Paste 5A	2 - 4
Sodium Nitrite	1-1/4 maximum

The mineral wool is manufactured at the plant of Keen, Industrial Insulation Division. It is produced by blowing the molten slag from a cupola into a collector room and thence by falling onto a conveyor belt which makes a continuous pillow 4' wide and from 4 to 6 in. thick.

The conveyor belt feeds a continuous amount of wool beneath continuous feeders which supply a controlled amount of the other ingredients for the finished product.

The material then passes through rollers into a pitcher mill where the material into small particles. The material is then picked up by air into a cyclone and passes through a rotary sieve and dropped into a conveyor belt which leads into the hopper.

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