Patented July 17, 1934 1,967,062

UNITED STATES PATENT OFFICE

1,967,062

WATERPROOF ASBESTOS SHEET AND METHOD OF PRODUCING SAME

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No Drawing. Application December 19, 1931, Serial No. 582,184

3 Claims. (Cl. 91—68)

An object of this invention is to produce a waterproof, fireproof sheet, comprising asbestos as the base fiber, adapted for many uses such, for instance, as a gasket material where the sheet may be supported by a metallic backing; as an insulating board or the like.

The steps involved in the preparation of a waterproof, fireproof asbestos sheet according to the present invention are essentially, first, to select an extremely waterproof substance as a sizing material, and second, to hold the combustible material in the sheet to a very low percentage, preferably below 15%. Further, inasmuch as an asbestos sheet containing low percentages of sizing material may be relatively soft and flimsy, it is desirable to produce a stiffening binder of such a nature in combination with the waterproofing agent as to retain as much as possible the waterproof qualities.

In one embodiment of preparing a sheet according to the invention, I may mix in a beater engine the following ingredients:

	Pounds
Asbestos fiber, approximately	2,000
Oleic acid (emulsified) approximately	60
Formaldehyde-treated glue gel approximately	40

These ingredients are thoroughly mixed and about 100 pounds of aluminum sulfate or other precipitating agent in water solution may be then added and the beating continued until all of the precipitated metallic soap and glue have been thoroughly smoothed out. The stock is then run off on a suitable paper machine, either of the wet machine type which produces individual sheets, or of the continuous type to produce continuous lengths. Instead of aluminum sulphate, I may use any other precipitating agent such, for instance, as sulphuric acid, iron sulphate, magnesium sulphate, or acid metallic salts.

Any desirable method of precipitating the size on the fibers may be used within the contemplation of this invention.

One method of preparing the emulsified oleic acid size is to heat approximately 300 pounds of water to about 125° F., dissolve completely therein about three pounds of technical caustic soda or similar alkali, making a solution of less than 1% alkali, and slowly add, with stirring, about 30 pounds of oleic acid or similar saponifiable fatty acid. This is then thoroughly agitated, preferably with live steam, and when the temperature has been increased to about 175° F. the product will be a thin cream-colored liquid equivalent to about 10% oleic acid concentration. Mechanical agitation may be substituted for steam agitation.

The glue gel may be made as follows:

About 20 pounds of glue may be dissolved in approximately 350 pounds of water at about 160° F. with stirring. Then about 1 pound of 40% formaldehyde solution may be added thereto with stirring. The mixture may then be allowed to cool, whereupon a soft gel is produced, which may be broken up and added to the beater. The use of the glue in gel form is for the purpose of retention of the glue in the fibers.

The board produced by the above method, using materials substantially in the proportions specified, is highly waterproof, highly heat and fireproof, and is suitable for many uses, for instance, as a gasket material where these properties are desirable, and as an insulating material. The stiffness and waterproof qualities of the sheet may be varied by varying the proportions of these ingredients. For instance, if it is desired to make a less stiff sheet than would be made by the above proportions of ingredients, the proportion of glue might be decreased. Likewise, if it is desired to increase the waterproofing properties of the structure, additional size may be used.

Other fatty acids such as those of vegetable or animal oils may be used in place of oleic acid, and other stiffening agents such as alkaline casein, alkaline shellac, alkaline phenolic resins, and the like, preferably in soft gel form so as to secure maximum efficiency, may be used in place of the formaldehyde-treated glue.

If desired, small percentages of vegetable fiber, less than 10% relative to the asbestos fiber, may be mixed with the asbestos for improving the strength or paper making qualities of the composition.

As far as I am aware, it is new to produce an asbestos base containing a fatty acid size to an organic stiffening agent wherein the proportion of combustible material is lower than 15%.

I claim as my invention:

1. A fibrous base comprising asbestos containing a waterproofing fatty acid size and an organic stiffening agent uniformly distributed throughout the thickness of the base wherein the proportion of combustible material is lower than 15%, said agent being capable of substantially retaining the waterproof qualities of the base.

2. A waterproof, fireproof fibrous base comprising asbestos containing a waterproofing fatty acid size and an organic stiffening agent comprising formaldehyde treated glue gel.

3. A waterproof, fireproof fibrous base comprising asbestos containing a waterproofing fatty acid size and an organic stiffening agent comprising formaldehyde treated glue gel, wherein the proportion of combustible material is lower than 15%.

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