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PITCH COMPOSITION

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This invention relates to a composition of matter and more particularly to a pitch composition especially adapted for use as a protective coating for surfaces which are exposed to weathering such as those of pipe lines, roofs, etc. More specifically, the invention relates to substantially homogeneous mixtures of pitch and filler which have higher melting points than the corresponding untreated pitches.

One object of this invention is to provide a toughened pitch composition which will not bleed or run at the highest temperatures encountered in use and on the other hand, will not break or shatter at low temperatures which may be encountered at times. Coal tar and oil tar pitches have heretofore been used for coating and surfacing but present the difficulty that if the melting point of the pitch is made sufficiently high to overcome flow when exposed to maximum summer temperatures, the pitch will be excessively brittle when exposed to low temperatures, i. e. winter temperatures. According to the Manhayfer Patent No. 1,112,817 of October 6, 1914 the surfacing and coating properties of pitch are improved by intermingling infusorial earth of kieselguhr therewith in such quantities and proportions as to render the finished product plastic. While infusorial earth pitch mixtures represent a substantial improvement over untreated pitch, it has been found that the earth clings together in lumps and it is difficult to homogeneously disperse it in the pitch. Also, infusorial earth may contain water of hydration which causes foaming when the earth is mixed with hot pitch.

According to my invention, mica is mixed with pitch to produce a toughened-pitch composition. Mica is less expensive than infusorial earth, does not cause foaming when mixed with pitch, remains in suspension without an appreciable tendency to settle out, is flaky in structure and has great tensile strength so that when admixed with pitch it imparts binding strength to the mixture and thus prevents breaking and shattering thereof at low temperatures.

A commercial mica readily obtainable on the market as such may be used and preferably ground mica of from 60 to 100 mesh is admixed with pitch to form this improved composition. I have found that satisfactory and improved results may be obtained with a ground white mica having the following mesh composition:

Percent retained on 28 mesh	0.1
Percent passing 28 mesh retained on 48 mesh	13.8
Percent passing 48 mesh retained on 60 mesh	11.2
Percent passing 60 mesh retained on 80 mesh	11.7
Percent passing 80 mesh retained on 100 mesh	13.0
Percent passing 100 mesh retained on 150 mesh	10.9
Percent passing 150 mesh retained on 200 mesh	6.5
Percent passing 200 mesh	31.8
Loss	1.0
Total	100.0

The mica of the above mesh composition is known as a No. 80 mica.

By the term "pitch" as used herein is meant a residue obtained from the distillation of tars and oils, such as coal tar pitch, and this term includes pitches obtained from coke oven gas and water gas tar, oil tar, pine tar, cannel tar, asphalt and the like.

The mixture of pitch and mica is preferably prepared by first melting the pitch and then adding from 10 to 30% mica thereto, agitating the pitch while adding the mica and agitating the mixture of pitch and mica preferably by a suitable mechanical agitator or stirred until a substantial homogeneous mixture of pitch and mica is formed. It will be noted that the resultant mixture is made by admixing a major proportion of pitch with a minor proportion of mica, in the particular embodiment disclosed 10% to 30% mica. A pitch of sufficiently high initial melting point to give a mixture of the desired melting point is of course used as the starting pitch. A pitch of lower melting point may be distilled in the usual manner to remove distillate oils until the resultant

pitch is of the desired melting point and then the resultant pitch may be mixed with mica of from 60 to 100 mesh to form the desired mica-pitch mixture. I have found that a part of the mica may be replaced by asbestos without deleteriously affecting the surfacing and coating properties of the mixture. Preferably, however, mica is used as the sole filler for the pitch.

The following tabulated properties of mica-pitch compositions and infusorial earth pitch compositions involving the same starting pitch will serve to indicate the greater efficiency of mica in raising the melting point of pitch:

Example No.	Composition	Melting point pitch mixture
1	75% pitch, 25% mica	198° F.
2	72% pitch, 28% mica	189° F.
3	75% pitch, 25% infusorial earth	153° F.
4	71.5% pitch, 28.5% infusorial earth	167° F.

The following tabulated properties of mica-pitch composition serve to emphasize the differences between mica-pitch compositions and corresponding untreated pitches:

Example No.	Composition		Melting point pitch (untreated)	Melting point mica-pitch mixture	Slide in 7 hours at 70° C.
	Mica	Pitch			
5	Per cent 21.4	Per cent 78.6	125° F. (known as paving pitch).	187° F.	½"
6	18	82	125° F. (known as paving pitch).	146° F.	1¾"
7	18	82	143° F. (known as roofing pitch).	167° F.	1 1/16"
8	21	79	143° F. (known as roofing pitch).	187° F.	5/16"
9	20	80	165° F. (known as water gas tar pitch).	180° F.	21/32"

It is evident from the foregoing that mica incorporated in pitch raises the melting point a considerable extent, to wit, 62° in the case of Example 5 involving a paving pitch having a melting point of 125° F.; 21° in the case of Example 6 involving a paving pitch; 24° in the case of Example 7 involving a roofing pitch of the melting point of 143° F. and having 18% mica incorporated therein; 44° in the case of Example 8 involving a roofing pitch of 143° F. melting point and having 21% mica incorporated therein and 15° in the case of Example 9 involving a water gas tar pitch having a melting point of 165° F. and having 20% mica admixed therewith. It will be noted that the physical characteristics of the mica-pitch composition is dependent upon the particular pitch used and the amount of mica admixed therewith. Further, the preferred composition disclosed herein consists only of two ingredients, to wit, pitch and mica.

The mica-pitch mixtures described herein have been found particularly valuable as a coating medium for pipe lines and metals generally, to prevent corrosion and also as a surfacing or coating medium for the purpose of building roofing, particularly for steep built-up roofing where the tendency of the pitch to flow must be slight. This composition may be applied to pipes or metals by dipping the pipes or metals into a bath containing the mica-pitch mixture or by wiping the mica-pitch composition onto the material or article to be coated or by any other suitable means such as spraying and the like.

The property of the mica pitch mixture to become freely fluid at elevated temperatures, i. e., at temperatures somewhat above the melting point of the mica pitch mixture, renders the mixture as hereinabove indicated particularly suitable for application to pipes or metals by dipping, wiping, pouring, or spraying processes. The mica pitch composition at temperatures below the melting point is substantially solid but upon being heated to somewhat above the melting point becomes freely fluid, forming a liquid which is substantially homogeneous throughout and which I have found is admirably suited for purposes of coating or enameling metal.

The melting point of the mica pitch mixture may be determined by any of the known methods but preferably is determined by the ring and ball method, A S T M standard method D-36-26.

While preferred embodiments of this invention have been described, it will be understood that this invention is not to be limited by the disclosure herein but only by the scope of the appended claims.

I claim:

1. A mica pitch composition having a melting point higher than the pitch and comprising a major proportion of pitch and a minor proportion of mica substantially homogeneously admixed with the pitch, the composition being freely fluid at temperatures somewhat above its melting point.

2. A mica pitch composition having a melting point higher than the pitch and comprising a major proportion of coal tar pitch and a minor proportion of mica, the mica being substantially homogeneously admixed throughout the pitch.

3. A mica pitch composition having a melting point higher than the pitch and consisting of a minor proportion of ground mica substantially homogeneously admixed with a major proportion of pitch, the composition containing in the neighborhood of at least 10% mica.

4. A mica pitch composition having a melting point higher than the pitch and consisting of a minor proportion of ground mica substantially homogeneously admixed with a major proportion of coal tar pitch.

5. A mica pitch composition having a melting point higher than the pitch and comprising at least approximately 10% mica substantially homogeneously admixed with a major proportion of pitch which has a melting point above approximately 125° F.

6. A mica pitch composition having a melting point higher than the pitch and comprising in the neighborhood of at least 10% ground mica substantially homogeneously admixed with coal tar pitch which has a melting point above approximately 125° F.

7. A mica pitch composition having a melting point higher than the pitch and comprising in the neighborhood of at least 10% ground mica of below 100 mesh substantially homogeneously admixed with coal tar pitch which has a melting point above approximately 125° F.

8. A mica pitch composition having a melting point higher than the pitch and comprising from 10 to 30% of ground mica substantially homogeneously admixed with pitch.

9. A mica pitch composition having a melting point higher than the pitch and consisting of from 10 to 30% of ground mica substantially homogeneously admixed with pitch.

10. A mica pitch composition having a melting point higher than the pitch and comprising from 10 to 30% of ground mica substantially homogeneously admixed with coal tar pitch which has a melting point above approximately 125° F.

11. A composition of matter consisting of approximately 20% of ground mica and coal tar pitch substantially homogeneously admixed therewith.

12. A composition of matter consisting of approximately 20% of ground mica of from 60 to 100 mesh and coal tar pitch which has a melting point of approximately 140° F. substantially homogeneously admixed therewith.

13. A composition of matter suitable for coating consisting of approximately 20% mica of approximately 80 mesh substantially homogeneously admixed with 80% of coal tar pitch of approximately 140° F. melting point.

In testimony whereof I have hereunto set my hand.

CLARENCE R. ECKERT.