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## MAKING PAINTS, PLASTICS, AND THE LIKE

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This invention relates to improvements in processes and compositions useful in making paints, plastics and the like, and to the resulting products.

More particularly the invention in part relates to improvements in compositions and processes similar to those disclosed in the Zaisser Patent No. 2,178,770, issued November 7, 1939.

In said patent there is disclosed, among others, a dry compound, for making paints and plastics of which the base or principal ingredient is powdered mineral pitch, the compound before use being dissolved in a suitable cold solvent. Before the invention of said patent, an important drawback to such compounds was that when the dry compound was stored or shipped, the powdered pitch coalesced and caked, making it difficult to dissolve in the solvent, and when the paint was ready-mixed and shipped or stored in cans, the pitch separated from the solvent and caked in the bottom of the bucket in which it was stored or shipped.

These difficulties were overcome by the invention of said patent by mixing with the dry powdered mineral pitch a suitable dry comminuted non-coalescing aggregate or, filler material such for instance as asbestos and other substances of which examples are given in lists #1, #2, #3 and #4 of pages 1 and 2 of said patent. These dry filler materials were mixed with the dry powdered mineral pitch in sufficient quantity to prevent coalescence of the particles of pitch together during storage or shipping, but not enough to destroy the value of the functions of the pitch.

In general said aggregates of the patent are insoluble in the solvent and do not contribute to the paint or plastic certain valuable functions of the pitch. To increase the availability of pitch functions in the final product of said patent, it is necessary to increase the proportion of pitch in the mixture; but this is not enough to cause the pitch in the mixture to coalesce. On the other hand, if too much of the aggregate of the patent is mixed with the pitch, not enough pitch is provided in the resulting mixture to furnish the proper binding function and other valuable functions of the pitch. Thus it is seen that in said patent there are upper and lower limits to the amounts of the pitch or aggregate that can be used, and corresponding limits to the resulting advantages of these. Also, the cost of the product of said patent increases with any increase in the amount of mineral pitch.

A particular object of the present invention

and the invention of said Zaisser patent is to provide a durable, economical, waterproof, anti-corrosive, alkali and acid proof paint or plastic including natural or steam distilled asphalt which may be safely conveniently and economically prepared and mixed by the user in very small, medium and large quantities at usual room or atmospheric temperature without the use of special apparatus or fire or heat to aid in mixing, all of the mixing processes herein being without the aid of heat. The use of heat to aid mixing is not always convenient, uneconomical and cumbersome for small quantities, and the use of fire in work of this kind is hazardous.

Some of the objects of the present invention are to provide a non-coalescing dry composition including asphalt or mineral pitch in which it is possible to extend the possible limits of the amounts of the pitch and aggregate and to provide more of the valuable functions of both the pitch and the aggregate within these limits, and to decrease the amount of necessary mineral pitch in the composition and thereby decrease the cost of the resulting product.

To these ends, in the present invention certain bitumens which, unlike mineral pitch do not coalesce when in pulverized form, and which have the property of preventing the dry pulverized mineral pitch from coalescing have been substituted for part, and sometimes all of the mineral pitch or the filler aggregate of the patent.

In developing the present invention it has been found that certain non-coalescing bitumens such as coal tar pitch, gas tar pitch, oil tar flake pitch, and also uitaite (gilsonite) and similar hard coal-like asphalts, when pulverized, are flakey and unlike mineral pitch, do not coalesce, and when mixed in certain quantities, which may be very small, with the pulverized mineral pitch, even in quantities as small as 5 to 10% by volume, prevent the mineral pitch from coalescing. The mineral pitch herein referred to may be asphalt distilled by steam heat, hot air, or direct heat.

At the same time, the coal tar pitch or uitaite when thus mixed have under certain circumstances the function of adding valuable functions of their own to the composition, and/or enhancing or increasing the valuable functions of the asphalt pitch, so that smaller amounts of the latter may be used.

Various formulas for the new composition are given below; but in general the new dry composition may be made by intimately mixing about 1 to 7 parts by volume of a pulverized mineral

pitch and about 1 to 2 parts of a pulverized barrier material such as uintaite and/or coal tar pitch with a dry finely divided filler material or aggregate as mentioned in the patent or below. Said dry composition may be stored or transported without caking or melting, as the barrier material or materials and/or the filler materials prevent this.

Before use, said composition is intimately mixed with a solvent such as a petroleum oil in which said mineral pitch, and the barrier materials in the presence of the mineral pitch, are soluble, to form a flowable mass ready to be applied by brush, trowel or otherwise depending upon the amount of solvent used. The composition then hardens by evaporation of the solvent. The proportion of the mineral pitch to said barrier or barrier and filler materials is such that the mineral pitch in cooperation with said barrier materials causes the mass to give good impervious surface protection. The barrier material alone or with the filler material serves the multiple function of retaining the pitch evenly distributed in the dry mixture during storage and shipment, mechanically separating the fine dry pitch particles during storage and shipment to prevent the compacting of the mineral pitch particles together. The filler material if present serves to give body to the flowable mass and final hardened product. The barrier materials contribute properties of their own to the final product, and also to an extent enhance the effect of the mineral pitch.

For purposes of the present invention, pulverized uintaite and similar natural asphalts, having a melting point as high as 300 degrees F., and pulverized coal tar pitch having a melting point as high as 250 to 300 degrees F. have been found satisfactory under ordinary circumstances, though extremes of temperature and climate and particular circumstances may make other melting points suitable. The particles of such dry pulverized or powdered natural asphalts and the coal tar pitch alone or mixed with each other do not coalesce or mat under ordinary conditions, and are easily pourable, and they have the property when intimately mixed, even in small quantities, with pulverized mineral pitch of preventing the coalescing of the mixture. Even 5% by volume of the pulverized coal tar pitch or uintaite to 95% of the pulverized mineral pitch will render the mixture non-coalescent, and the dry mixture remains pourable.

The proportion of pulverized coal tar pitch may be increased up to 66⅔ percent by volume mixed with 33⅓ percent mineral pitch, and the uintaite may be increased up to 75% by volume mixed with 25% of the mineral pitch, without destroying the binding properties of the composition, in which cases the composition takes on more of the properties and characteristics of the substance of the higher percentage. Conversely, the percentage of the mineral pitch may be increased to 95% by volume, in which case the composition takes on more of the characteristics of the mineral pitch.

These compositions may be stored and shipped in dry powder form in cheap non-air-tight containers of cloth, paper or other material, and may be mixed at the point of use with a suitable solvent or solvents, such as are mentioned in the patent or hereinafter, to produce easily brushable paints, or with less solvent, to produce roof cements and easily flowable or stiffer mastic

easily applied with a trowel or otherwise, and are suitable for covering walls and the like.

Or the solvent may be added at the factory and the product shipped in suitable containers, such for instance as sealed cans in the same manner as ready mixed paints.

Fillers from small amounts up to 50% by volume may be added to 100% of the mixture of mineral pitch with the uintaite and/or coal tar pitch or to either of the two latter or a mixture of the two. Fillers as in lists #1, #2, #3 and #4 of said patent and the like are suitable. Pulverized limestone mixed with natural asphalt or coal tar pitch in a suitable solvent overcomes brittleness. This composition with suitable solvents also provides a product suitable for adhering fabrics, leather, felts, etc. to wood, metal or masonry.

Hard coal tar pitch and natural asphalts, for example, "uintaite" are brittle and I overcome this brittleness effectively, using pulverized materials as described and claimed herein. A mixture 1 part limestone 2 parts natural asphalt added to a ½ to 1 part No. 5 fuel oil gives a pliable product of trowel consistency and constant resiliency. Said mixture liquified with a ½ to 1 part kerosene makes a tough filler. In both instances the brittleness is removed by the limestone which also greatly lowers the cost, and the product is highly dielectric.

The hard coal tar pitch and natural asphalt mixture, when liquified with kerosene to gun-applicable consistency becomes a non-shrinkable filler. Solvents may be kerosene or Nos. 2, 3, 4, and 5 fuel oil. Brushable coatings may be made by adding more of the solvent.

Natural asphalts and hard coal tar pitch in applicant's compositions are waterproof and highly resistant to alkali acids and are non-brittle.

The natural asphalt with the limestone as above described is not costly, and therefore very valuable and much needed in building construction, as it is practically indestructible; while cut back asphalt asbestos mastics in use since 1908 have been found to have totally disintegrated. The uintaite and coal tar pitch are practically indestructible. Low cost of the gilsonite-limestone mix makes its or their use possible everywhere. Asbestine (magnesium silicate) may be added for brushability; Portland cement or hydrate of lime may be added for toughness; for cheapness and bulk may be added sand, sawdust, rice hulls, grain hulls, and ground corn cobs; for insulation may be added ground cork and shredded paper, cardboard or straw. Sand, gravel and slag are useful in plastics in the repair or making of side walks and roads. With any of the mixtures, solvents similar to those of the patent may be used. For quick setting, gasolene is suitable. Kerosene is less quick setting. To cause slow setting and to give hardness, toughness, flexibility and ductility, No. 1, 2, 3, 4 and/or 5 fuel oil may be used alone or mixed with kerosene, benzine, coal tar solvents, naphtha and the like.

Turpentine increases elasticity in the final product. Tetra chloride of carbon alone or added to other solvent quickens solvency.

The mineral pitch or the fuel oil has the function of overcoming the brittleness of the coal tar pitch.

Coal tar pitch with or without uintaite, mineral pitch and/or any of the above fillers may be

dissolved first in a solvent of the benzol type as a starter, and then mixed with fuel oil such as No. 5 fuel oil. This eliminates brittleness in the final dried paint or mastic, such as has resulted heretofore when the usual solvents were used with coal tar pitch. These compositions when mixed with the solvents may be brushed onto paper toweling or other flexible paper, textile fabric or the like, and when dried form an impervious flexible leather-like product. When the mixed composition is allowed to stand a sufficient length of time after mixing, the solvent does not stain, or pass through to, the opposite side of the paper or other material.

With coal tar pitch mixed with the mineral pitch, formulas in the following proportions by volume have been found satisfactory:

	Parts
A. Coal tar pitch.....	1
Mineral pitch.....	1
Asbestine or asbestos.....	1
B. Coal tar pitch.....	1
Mineral pitch.....	7
Asbestine or asbestos.....	1
C. Coal tar pitch.....	2
Mineral pitch.....	1
Asbestine or asbestos.....	1

In these three formulas it is noted that the volume of asbestos or asbestine is 50% or less of the combined volume of the other two ingredients.

Formula B is rich in mineral pitch and partakes strongly of the characteristics of the mineral pitch. As the coal tar pitch is a waste product and very cheap, Formula C which contains a large proportion of coal tar pitch is very cheap.

With uintaite mixed with mineral pitch formulas in the following proportion by volume have been found satisfactory:

	Parts
D. Uintaite .....	1
Mineral pitch.....	1
Asbestine or asbestos.....	1
E. Uintaite .....	1
Mineral pitch.....	7
Asbestine or asbestos.....	1
F. Uintaite .....	3
Mineral pitch.....	1
Asbestine or asbestos.....	1

Using coal tar pitch, uintaite and coal tar pitch the following have been found satisfactory:

	Parts
H. Uintaite .....	1
Coal tar pitch.....	1
Asbestine or asbestos.....	1
I. Uintaite .....	1
Mineral pitch.....	2
Asbestine or asbestos.....	1
J. Uintaite .....	1
Coal tar pitch.....	1
K. Uintaite .....	1
Coal tar pitch.....	1
Mineral pitch.....	1

Many other useful formulas will readily suggest themselves.

Adding coal tar pitch, which is a waste product and very cheap, decreases the cost of the composition without correspondingly decreasing the

mineral pitch or uintaite characteristics of the composition. It contributes resistance to oxidation, and renders the final product more indestructible and valuable as a covering for Portland cement.

Asbestine (fibrous magnesium silicate), talc or the like is added to furnish reinforcement or body for brush coatings. Asbestos furnishes reinforcement or body for mastics, roof cements, trowel work. Asbestine of 300 mesh is satisfactory.

Valuable functions of the mineral pitch are its resistance to moisture and its binding qualities.

The presence of the coal tar pitch and/or the uintaite in the composition with the mineral pitch enhances the resistance of the composition to attack by wood and vegetable and other acids and alkalies.

The uintaite contributes the function of good electric insulation and renders the composition valuable as an insulation in transformers and for impregnating cables and insulating tape, cementing the tape.

The fineness of the pulverizations mentioned herein may be from 30 to 300 mesh per square inch to suit varying conditions.

It is particularly understood that the term uintaite as used herein covers similar natural asphalts; and in addition to coal tar pitch, oil flake tar pitch may be used. Steam distilled asphalt may be used.

A valuable use of the applicant's composition may be as follows. A paint or plastic made by dissolving coal tar pitch, asphalt and a filler in a suitable solvent and applied to a surface is fused by a blow-torch or by ironing with a hot tool.

The invention claimed is:

1. A dry composition of the class described free of soft asphalt comprising an intimate mixture of dry pulverized coal tar pitch having a melting point of 300 degrees F.; and an as large amount of dry pulverized natural asphalt having a melting point as high as 300 degrees F.; such composition being a 100% bitumen product adapted to be shipped to any climate or stored in ordinary paper bags and to be mixed by unskilled labor while cold, in an ordinary bucket or tank, with a cold petroleum oil in which said asphalt is solvent when cold to make a termite-proof final product.

2. A dry composition of the class described comprising an intimate mixture of pulverized natural asphalt having a melting point as high as 300 degrees F.; and dry pulverized mineral pitch; such composition being adapted to be shipped or stored in paper bags and to be mixed while cold with a cold petroleum oil solvent in which said asphalt and mineral pitch are solvent when cold.

3. A dry composition of the class described comprising an intimate mixture of dry pulverized coal tar pitch having a melting point of about 300 degrees F. together with at least one-fourth as much dry pulverized natural asphalt having a melting point as high as 300 degrees F.; such composition being adapted to be shipped or stored in paper bags and to be mixed while cold with a cold petroleum oil solvent in which said asphalt is solvent when cold.

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