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COMPOSITION OF MATTER

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This invention relates to a composition of matter. More particularly it relates to a new type of fluxed or cut-back tar product that involves the use of a petroleum distillate or other relatively low-boiling aliphatic hydrocarbons and mixtures of hydrocarbons as the major fluxing agents for the tar.

It has long been the practice to flux coal tars and other tars with lower-boiling oils of the same chemical nature so that the tars could be applied at atmospheric temperature in certain types of road construction and for other purposes. The use of the fluxed tar greatly facilitates the application and spreading of the tar especially where there is no source of heat available at the site of construction or application. After application of the fluxed tar the flux is intended to evaporate rapidly, leaving the original tar to act as a binding material or protective coating. Sometimes the usual types of tar distillate oils available for fluxing actually do not evaporate at sufficiently rapid rates and at such times the use of more rapid evaporating fluxes would be advantageous. Lower-boiling aromatic oils such as benzene, toluene, the xylenes or solvent naphthas, are not used generally because of their high cost. The usual type of tar flux is often limited in quantity.

Petroleum distillates are available in large quantities and at small cost. By taking various fractions of a petroleum distillate, fluxes of varying evaporation rates are obtained. Thus, by using petroleum distillates as fluxes some of the difficulties encountered at times in the use of fluxed tars are eliminated. Many types of petroleum distillates, however, are not compatible with tar. Some petroleum distillates, when added to tar, cause sludging to take place immediately in the tar. Other petroleum distillates, while they do not sludge tar immediately, do not form stable solutions with the tar and separation takes place in the mixtures on standing. It is an object of the present invention to make possible the preparation of fluxed tar products which will remain stable and homogeneous for a long period of time containing petroleum distillates or other relatively low-boiling aliphatic hydrocarbon oils, having the characteristics mentioned above as the major fluxing agent. This is accomplished by mixing with petroleum distillate material a material of relatively low boiling point which predominates in compounds aromatic in nature or having tar solvent characteristics similar to those of aromatic compounds and using

this combination of substances as the flux for the tar.

The hydrocarbons of the lighter fractions of petroleum are, as is generally known, aliphatic in nature. On the other hand, the compounds comprising the common lower-boiling fractions of the petroleum distillate such as gasoline, naphtha and kerosene which are used in commerce and industry, vary in chemical constitution which to a large extent depends upon the source of the petroleum, the refining process and any additional treatments which they may have been given. If the petroleum distillate has not been subjected to any cracking process in most cases it will consist principally of paraffinic hydrocarbons with varying amounts of naphthenes and unsaturates such as olefins. Ordinarily, a petroleum distillate of this nature will contain only relatively small quantities of aromatic hydrocarbons. In addition, large quantities of gasoline, naphthas and kerosenes are being produced by cracking crude petroleum and the higher boiling petroleum distillates. The percentage of paraffinic, naphthenic, unsaturate and aromatic compounds in such cracked products differs widely, depending upon the type of material cracked, the type of cracking process, the temperature employed in the cracking process and other factors. Ordinarily, these products from cracking processes differ from petroleum distillates produced without cracking in that they contain smaller amounts of paraffinic compounds and larger but varying amounts of naphthenes and unsaturates. The aromatic content of such cracked products is also variable but usually is greater than that of an uncracked distillate and at times is considerable in extent. However, for the purpose of the present invention the petroleum distillates that are particularly referred to are those which contain principally the paraffinic hydrocarbons, or contain other combinations that prevent them from being compatible with tar.

The boiling range of the petroleum distillate or other hydrocarbon oils aliphatic in nature to be used in the tar flux is, of course, dependent largely upon the rate of evaporation desired. A fluxed tar having very quick setting-up properties can be obtained by using the type of petroleum distillate known to industry and commerce as gasoline. This material would have an initial boiling point of substantially 20° C. (70° F.) to substantially 60° C. (140° F.) and an end point of substantially 180° C. (350° F.) to substantially 230° C. (450° F.). The specific gravity may

vary from 45° to 61° Bé. The paraffinic hydrocarbons may be in the range from pentane to undecane. In cases where there may be a fire hazard involved in the manufacture or the use of the fluxed tar a topped gasoline known to the industry as naphtha may be used without seriously affecting the setting-up properties of the fluxed tar. This material would have an initial boiling point of substantially 60° C. (140° F.) to substantially 115° C. (240° F.) and an end point in a similar range as that of the usual gasoline.

The range of the hydrocarbons may be increased if desired by using kerosene which ordinarily includes the range of paraffinic hydrocarbons from nonane to octadecane. A kerosene fraction of petroleum may overlap a gasoline fraction and vice versa. Kerosene generally distills from substantially 150° C. (302° F.) to substantially 300° C. (570° F.) and its specific gravity may be from substantially 31° Bé. to substantially 48° Bé. The combined fractions of gasoline and kerosene give satisfactory results and in fact any one of the lighter petroleum distillates or special fractions therefrom may be used as conditions demand. Stoddard's solvent, a petroleum fraction, has been found to give improved results when used as described in this invention. The initial boiling point of this latter material is substantially 150° C. (300° F.) and its end point is substantially 205° C. (400° F.) to 210° C. (410° F.).

A wide variety of tar distillates and other aromatic oils may be mixed with the petroleum distillate in order to make it compatible with tar. The desired result can be accomplished by the use of benzene, toluene or the xylenes or a combination of these three. The product called solvent naphtha, either crude or refined, and boiling from substantially 100° C. to substantially 300° C. can be used. The distillates from coke oven tar, horizontal retort tar, vertical retort tar, oil tars such as water gas tar, or a combination of any of these distillates may be used to advantage. The boiling range of these distillates varies considerably at times, and such variations must be considered. Ordinarily these distillates have initial boiling points of substantially 150° C. to substantially 235° C. and in most cases at least 80 percent of the distillates will have been removed at a vapor temperature of 355° C. The predominating characteristics of all these oils in the light of the present invention is their high content of aromatic compounds and in fact, any aromatic oil boiling over a considerable range between 80° C. and 400° C. with the major portion of the distillate boiling below 300° C. can be used to bring about the desired result. In addition, close cut fractions or individual compounds taken from these oils may be used to advantage. In such cases the fractions or compounds should not have boiling points substantially greater than 300° C.

However, the material to be used with the petroleum distillate is not limited to tar distillates or aromatic oils and compounds. The petroleum industry is, by the use of new refining processes and chemical treatments, developing new solvents and fluxes which have solvent characteristics very similar to those of the aromatic oils. Certain of these oils, such as the hydrogenated naphthas, or special fractions thereof, may be used to advantage to accomplish the objects of the present invention. Up to the present time, however, no specially treated petroleum

product has been developed that has the same efficiency as the better aromatic oils for modifying the characteristics of the untreated petroleum distillate.

Various tars and types of tars may be fluxed by means of the new flux set forth above. The invention may be used to advantage with both high temperature coke oven tars and low temperature tars. Other coal tars that may be used include blast furnace tar, horizontal retort tar, and vertical retort tar. Other types of tars such as water-gas tars and oil gas tars including residual tars, residuum tar, Bunker C tar and Pintsch gas tar or mixtures of any of these tars and other tars may be used. By residuum tars or residual tars is meant the condensates resulting from pyrogenous treatment of residual oils, for example, cracker residues, in gas manufacturing processes. Each of these tars, on the addition of the certain types of petroleum distillates or other aliphatic hydrocarbon oils mentioned, either exhibits sludging tendencies or does not form stable and homogeneous mixtures with the petroleum distillates. And yet, the addition of the proper amount of distillates or oils of aromatic nature to the petroleum distillate modifies that petroleum distillate so that a good fluxed tar can be obtained by its use. At times it is the practice to add varying percentages of asphalt to the tars mentioned above or to combinations of these tars. The special flux described herein can be used to advantage with these tar-asphalt combinations also.

A number of procedures have been developed to change some of the characteristics of tar in order to meet certain economic exigencies and construction problems. It is the custom, at times, to add certain materials designated in the industry as "fillers" such as powdered coal, lamp-black, limestone dust, or similar materials, to the tar, thereby modifying its characteristics to some extent by increasing the solids content. Other procedures involve the partial oxidation of the tar by air blowing or by treatment with oxidizing chemicals at various temperatures in order to obtain a bituminous material having certain special characteristics. Such oxidations involve not only the oxidation of the tar itself but also the partial oxidation of a tar oil by such means as just described, the partially oxidized oil then being combined with a tar pitch to produce a bituminous material having special characteristics. Special tars are prepared at other times by adding tar oils of certain boiling ranges such as creosote oils or its fractions to the tar, either crude or refined, so as to bring about changes in the characteristics of the tars. Other special tars are prepared by distilling the tar to a pitch and then dissolving the pitch in tar oils having certain boiling ranges such as creosote oils or its fractions. The tar oils mentioned in the last three cases are not to be considered as fluxes because ordinarily their boiling ranges are above those of fluxing oils. In other cases, tars of higher consistency are sometimes obtained by adding pitch to the tar, either crude or refined. At times, the tar residuals obtained from the hydrogenation of tar or its derivatives or products of similar chemical nature may be used for construction purposes. Whenever any of these various modifications of tar or modified forms of tar are intended to be fluxed the use of the special flux as outlined may be used to advantage within the limitations described herein.

The consistency of the bituminous base pre-

pared from any of the above mentioned tars or combination of tars or tar-asphalt mixtures intended for use in manufacturing fluxed materials varies considerably depending upon the purpose for which the fluxed material is intended. In the case of a road primer, a light tar or somewhat viscous tar may be used as the base, enough flux being added to obtain a material having a predetermined viscosity. For the surface treating of roads and for other uses the bituminous base usually is of a higher consistency, the consistency varying usually from a float test of substantially 50 seconds to substantially 400 seconds at 32° C., depending upon the special problem at hand, and enough flux is added to these bases to reach certain consistency limits. Other types of construction and uses demand bituminous bases of even higher consistencies ranging from those described for surface treating up to and including the softer pitches. As pitches there may be included either hard or soft pitches. The new flux described herein can be used to advantage in any of these cases.

It is obvious, from the many factors involved, that no exact figures can be given for the proportions of petroleum distillate or similar oils to aromatic or similar oils, but that the proportions will vary with the problems to be solved and conditions at hand. The proportion will depend, first, upon the type and nature of the petroleum distillate used. A petroleum distillate containing a high percentage of paraffinic compounds and a small percentage of aromatic compounds will require a larger amount of aromatic oils than a petroleum distillate containing a somewhat smaller percentage of paraffinic compounds and a fair percentage of aromatic compounds. The type of tar will have some influence. In addition to the type of tar, the consistency of the tar has influence on the proportion; this is so because the lower boiling aromatic compounds in the tar base itself have an effect on the stability and homogeneity of the petroleum distillate-fluxed tar. For instance, the flux for a light tar base intended for road priming will not require as high a percentage of aromatic oils to be added to the petroleum distillate as a flux to be used with a heavy tar base intended for patching on roads because the base in the former case will contain a higher percentage of lower-boiling aromatic compounds than the latter base. Then too, the type of aromatic oil itself has some influence in determining the proportion. In one of the cases studied it was found that a larger proportion of a certain type of solvent naphtha was required with a certain petroleum distillate than of a certain type of coal tar neutral oil with that same petroleum distillate in order to obtain comparable results. However, the source and characteristics of the different usable types of oils are so variable that it is not possible to state definitely that any one type is superior to the rest, but in general an aromatic oil with an appreciable percentage distilling to substantially 300° C. may be expected to be slightly better than a lower boiling aromatic oil.

Aside from the variables introduced by the chemical and physical characteristics of the materials involved there are other factors that may be of influence in determining the ratio of petroleum distillate to aromatic oils. In some cases satisfactory mixtures could be obtained using 5 parts of tar oil and 95 parts of petroleum distillate as flux, but at the same time it was somewhat difficult to effect mixing, a continued mix-

ing action and relatively high temperature being necessary. In some cases it may be more practical to increase the proportion of aromatic oils to some extent over the minimum point and thereby make the blending operation less difficult. In other cases where economics and availability of tar oil distillates are of more importance than the rate of set-up of the fluxed tar the proportions of aromatic oil may be varied above the minimum point to suit the conditions. In such cases a commercial gasoline may be used and the proportion of higher boiling aromatic oils can be adjusted above the minimum point so that the fluxed tar can meet certain specifications as to flash point.

In case of petroleum distillates which, by themselves, cause formation of sludge in tar, the following blending procedure may be advantageous. The petroleum distillate is mixed with the aromatic oil such as described above and then the resulting product is mixed with the tar to be fluxed. In cases where the petroleum distillate does not sludge the tar immediately but is not capable of forming stable and homogeneous mixtures with the tar it may be more expedient to add the aromatic oil to the tar first thereby allowing it to be more thoroughly liquid at a lower temperature, thus reducing the fire hazard incident to the blending operation. In this second case, no particular procedure is deemed to be essential.

The following examples illustrate the present invention.

Example I.—The gasoline used in this case caused immediate sludging when added by itself to a tar. However, by mixing as low as 10 parts by volume of water gas tar light oil with 90 parts by volume of this gasoline, a flux was obtained which formed a stable and homogeneous mixture with the tar. In this case 16 parts by volume of the special flux were used with 84 parts by volume of the tar. The tar used was a refined coke oven tar having a consistency by float test at 32° C. of approximately 180 seconds.

Example II.—The gasoline used in this case did not sludge tar when added by itself, but the resulting mixture was not stable and homogeneous. The gasoline was mixed with water gas tar light oil in the proportion of 90 parts by weight of the gasoline to 10 parts by weight of the light oil. This special flux was added to a tar having a float test of 80 seconds at 32° C. in the proportion of 10 parts by weight of flux to 90 parts by weight of tar, producing a mixture which was quite fluid at atmospheric temperature. The mixture was still homogeneous at the end of the eight months' storage.

Example III.—The petroleum distillate used in this case was a naphtha having an initial boiling point of 218° F. The tar used was a coke oven tar having a float test of 167 seconds at 32° C. Upon the addition of the straight naphtha to this tar the mixture became non-homogeneous in a short time. A flux was prepared containing 17.5 parts by weight of crude solvent naphtha and 82.5 parts by weight of petroleum naphtha and added to the tar in the same proportions as in Example I (16 to 84). The resulting fluxed tar was still homogeneous after months of storage. Slightly better results were obtained by using the same proportion of a coal tar neutral oil in place of the crude solvent naphtha, although the flux composed of 10 parts by weight of the neutral oil and 90 parts by weight of the petroleum naphtha was not quite good enough to produce a stable

fluxed tar. The fluxed tar containing the larger amount of neutral oil was very satisfactory. Further tests with these same combinations show that no difference in results is obtained if the two ingredients in the flux are mixed together before adding to the tar or if the petroleum product is added first or the coal tar oil first.

Example IV.—This example is given to show that two petroleum distillates having boiling ranges of the same order can give different results when used as a flux for tar. Two fluxed tars were prepared in this case using the same tar and tar oil distillate. The petroleum distillates were both naphthas having boiling ranges of the same order and neither of them were capable of causing immediate sludging of the tar when added by themselves. The special fluxes in each of the fluxed tars were composed of 10 parts by weight of tar oil distillate and 90 parts by weight of the individual petroleum naphtha, and 16 parts by weight of the flux were used with 84 parts by weight of the tar in each case. The tar used was a refined coke oven tar having a consistency by float test at 32° C. of approximately 180 seconds. After standing one week the fluxed tar containing the first naphtha had become non-homogeneous while the other fluxed tar containing the second naphtha was still satisfactory. The naphtha employed in the satisfactorily fluxed tar showed a lower aniline point than the other naphtha, the lower aniline point indicating a higher proportion of carbocyclic compounds.

Example V.—A viscous distilled coke oven tar was used as the base in this case. A flux composed of 80 parts by weight of petroleum naphtha and 20 parts by weight of neutral coal tar oil was added to the tar in the proportion of 20 parts by weight of flux and 80 parts by weight of tar. The fluxed tar was quite liquid at atmospheric temperature and proved to be stable on standing for a long period of time.

Example VI.—A medium consistency tar base prepared from residuum tar was used in this case. The flux consisted of 90 parts by weight of the same gasoline referred to in Example II, and 10 parts by weight of water gas tar light oil and 10 parts by weight of the resulting flux were used with 90 parts by weight of the tar. A stable and fluid fluxed tar was produced by this combination.

Example VII.—This example is given to show that by using a flux consisting principally of petroleum distillates it is actually possible to effect a saving in the amount of flux used for any one purpose over that which would be required if the usual tar flux had been used. The same tar base was used in each case given below but the fluxes were different as indicated. The tar base was a crude coke oven tar having an Engler specific viscosity of 77.8 at 50° C. and a specific gravity at 25° C. of 1.177. The fluxes were added to the four tar batches in amounts sufficient to produce viscosities of the same order.

Number	Flux parts by weight	Parts by weight of base	Parts by weight of flux	Sp. visco. at 40° C.
1.	75% gasoline. 25% benzol.	85.0	15.0	26.2
2.	75% gasoline. 25% water gas tar light oil.	83.6	16.4	25.6
3.	100% water gas tar light oil.	81.6	18.4	26.4
4.	75% Stoddard's solvent. 25% water gas tar light oil.	82.5	17.5	25.5

It is impractical to state ranges of proportions of the constituents of a flux or the ratios of various combinations of such constituents suitable for the various tars. In any instance, if a given combination of gasoline with aromatic hydrocarbon produces a sludge or precipitate, or in other words produces a nonhomogeneous mixture when mixed with a given tar exhibiting such tendencies when only aliphatic hydrocarbons are added thereto, it is possible to increase the proportion of aromatic hydrocarbon in the flux and with the flux thus prepared obtain a homogeneous fluxed bitumen product.

Industrial applications for this invention are both numerous and varied in nature. The invention finds advantageous application in all types of fluxed tars used for road construction or maintenance purposes. It will be economical in many cases to use this special flux for road primers and by using petroleum distillates of different distilling ranges the results obtainable can be varied to suit the needs. Fluxed tars used for surface treatment and mixed-in-place work will give improved results by preparing them with the proper type of this new flux. Cold patch road tars which consist of a heavy distilled tar and a light flux and also other fluxed, heavy tars will prove to give more satisfactory results when prepared using this new flux. The invention will find application in the manufacture of coal tar paints, although in this case a much smaller percentage of petroleum distillate will have to be used in the flux than was the case in the specific examples for road tar fluxes cited above. It should be noted that this new flux is actually a universal flux for bituminous materials and as such will eliminate the necessity of keeping large stocks of different types of flux where different types of fluxed bitumens are manufactured or used. Its universal fluxing properties lead to applications in other fields than those mentioned above. By employing the proper proportions and ingredients in this new flux, its use can be extended by including it in a universal primer for underground pipes, in roof coatings, roof cements and other such materials.

In view of the above it can be seen that it is entirely feasible to modify the characteristics of petroleum distillates and similar aliphatic hydrocarbon oils in the manner described herein so that they may be used for the fluxing of tars and tar products and that many advantages arise from the use of the petroleum distillates for these purposes.

The tars or pyrogenous distillates referred to in the description of the present invention may be defined as black to dark-brown bituminous condensates which yield substantial quantities of pitch when partially evaporated or fractionally distilled. The pitches referred to are black or dark-brown solid cementitious residues which gradually liquefy when heated and which are produced by the partial evaporation or fractional distillation of the above tars.

What I claim is:—

1. A composition of matter comprising a substantially homogeneous, stable, flowable, pyrogenous distillate tar product consisting of pyrogenous distillate tar or tars selected from a group consisting of coke oven tar, gas-works retort tar, low temperature tar, blast furnace tar, water gas tar, and oil gas tar; and a fluxing liquid containing aromatic hydrocarbon oil originating from coal tar and a preponderant proportion of aliphatic hydrocarbon oil originating from petroleum oil,

the said tar product being substantially free from sludge that forms when aliphatic hydrocarbon oil alone is added to the said pyrogenous distillate tar and the said tar product being maintained substantially permanently in its homogeneous, stable condition by the said aromatic hydrocarbon oil.

2. A composition of matter comprising a substantially homogeneous, stable, flowable, pyrogenous distillate tar product consisting of pyrogenous distillate tar or tars selected from a group consisting of coke oven tar, gas-works retort tar, low temperature tar, blast furnace tar, water gas tar, and oil gas tar; and a fluxing liquid containing aromatic hydrocarbon oil originating from coal tar and a proportion of gasoline greater than that of the said aromatic hydrocarbon oil, the said tar product being substantially free from sludge that forms when aliphatic hydrocarbon oil alone is added to the said pyrogenous distillate tar, and the said aromatic hydrocarbon oil being present in sufficient amount to maintain the said tar product substantially permanently homogeneous and stable.

3. A composition of matter comprising a substantially homogeneous, stable, flowable, pyrogenous distillate tar product consisting of pyrogenous distillate tar or tars selected from a group consisting of coke oven tar, gas-works retort tar, low temperature tar, blast furnace tar, water gas tar, and oil gas tar; and a fluxing liquid containing aromatic hydrocarbon oil and a proportion of aliphatic hydrocarbon oil, of the boiling range of kerosene, greater than that of the said aromatic hydrocarbon oil, the said aromatic hydrocarbon oil originating from coal tar, the said aliphatic hydrocarbon oil originating from petroleum oil, the said tar product being substantially free from sludge that forms when aliphatic hydrocarbon oil alone is added to the said pyrogenous distillate tar, and the said aromatic hydrocarbon oil being present in sufficient amount to maintain the said tar product substantially permanently homogeneous and stable.

4. A composition of matter comprising a substantially homogeneous, stable, flowable, pyrogenous distillate tar product consisting of pyrogenous distillate tar or tars selected from a group consisting of coke oven tar, gas-works retort tar, low temperature tar, blast furnace tar, water gas tar, and oil gas tar; and a fluxing liquid containing a relatively low-boiling distillate of pyrogenous distillate tar and a proportion of a relatively low-boiling aliphatic petroleum product greater than that of the said low-boiling distillate of pyrogenous distillate tar, the said tar product being substantially free from sludge that forms when aliphatic hydrocarbon oil alone is added to the said pyrogenous distillate tar, and the said low-boiling distillate of pyrogenous distillate tar being present in sufficient amount to maintain the said tar product substantially permanently homogeneous and stable.

5. A composition of matter comprising a substantially homogeneous, flowable tar product consisting of an aliphatic hydrocarbon oil originating from petroleum oil and having a boiling point range within the boiling point ranges of gasoline, petroleum naphtha, and kerosene; an aromatic hydrocarbon oil originating from coal tar and having a boiling point range of substantially 80° C. to substantially 400° C. the major portion thereof boiling below 300° C., the said aliphatic hydrocarbon oil being present in greater proportions than the said aromatic hydrocarbon oil; and pyrogenous distillate tar or tars select-

ed from a group consisting of coke oven tar, gas-works retort tar, low temperature tar, blast furnace tar, water gas tar, and oil gas tar; the said aromatic hydrocarbon oil being present in an amount sufficient to inhibit precipitation of constituents of tar and sufficient to maintain the said product stable over a longer period than is possible in the absence of the said aromatic hydrocarbon oil.

6. A composition of matter comprising a stable homogeneous pyrogenous distillate tar product having as a flux a combination of aliphatic hydrocarbon oil originating from petroleum oil and aromatic hydrocarbon oil originating from coal tar, the combined oils having solvent characteristics approaching those of aromatic oil compounds alone, and containing a preponderant proportion of aliphatic hydrocarbon material which when added without the aromatic hydrocarbon material forms an unstable, non-homogeneous product with pyrogenous distillate tar or tars of the group consisting of coke oven tar, gas-works retort tar, low temperature tar, blast furnace tar, water gas tar, and oil gas tar, but which when added to such tar with the aromatic hydrocarbon material forms a substantially permanently stable fluxed tar product substantially free from sludge.

7. A composition of matter comprising a fluxed bituminous product containing constituents of pitch of pyrogenous distillate tar or tars selected from a group consisting of coke oven tar, gas-works retort tar, low temperature tar, blast furnace tar, water gas tar, and oil gas tar; and a mixture containing aliphatic hydrocarbon oil of relatively low boiling point and originating from petroleum oil, and an aromatic hydrocarbon oil of relatively low boiling point and originating from coal tar, the said mixture containing a major proportion of the said aliphatic oil, and the said bituminous product being substantially free from precipitate that forms when aliphatic hydrocarbon oil alone is added to the said pitch.

8. A composition of matter comprising a fluxed bituminous product containing modified pyrogenous distillate tar or tars, the said tar or tars selected from a group consisting of coke oven tar, gas-works retort tar, low temperature tar, blast furnace tar, water gas tar, and oil gas tar; and a mixture containing aliphatic hydrocarbon oil of relatively low boiling point and originating from petroleum oil, and an aromatic hydrocarbon oil of relatively low boiling point and originating from coal tar, the said mixture containing a major proportion of the said aliphatic oil, and the said bituminous product being substantially free from precipitate that forms when aliphatic hydrocarbon oil alone is added to the said modified tar.

9. A composition of matter comprising a fluxed bituminous product containing pyrogenous distillate tar or tars selected from a group consisting of coke oven tar, gas-works retort tar, low temperature tar, blast furnace tar, water gas tar, and oil gas tar; and containing asphalt, a relatively low-boiling aliphatic hydrocarbon oil originating from petroleum oil, and a relatively low-boiling aromatic hydrocarbon oil originating from coal tar, the said aliphatic hydrocarbon oil being present in greater proportion than the said aromatic hydrocarbon oil, and the said bituminous product being substantially free from precipitate that forms when aliphatic hydrocarbon oil alone is added to the said tar.

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