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BITUMINOUS SATURANT

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12 Claims. (Cl. 196—152)

This invention relates to a bituminous saturating material for fabrics, such as cotton-covered insulated wires, and the like.

It is a primary object of the invention to provide a material for this purpose which will have high penetrating qualities at a sufficiently low viscosity to permit saturation of the fabric without the necessity of employing extremely high saturating temperatures.

It is a further object to provide a saturant formed of the usual bituminous materials available at petroleum oil refineries and which will remain in a stable homogeneous condition until it is applied and which thereafter will adequately protect the fabric against weathering for a long period of time.

The preferred saturant for this purpose is composed of a major proportion of cracked residuum and a lesser proportion of asphaltic residuum, the mixture being cut back with raw asphaltic residuum, herein referred to as fuel residuum, this material being a solvent for the base mixture and itself having good weatherproofing qualities. The proportions for the base materials may comprise from 40% to 90% of cracked residuum and from 60% to 10% of asphaltic mixing stock. The base may be cut back with from 2% to 25% or more of the fuel residuum. The cracked residuum which is employed is the usual pressure tar constituting the residuum from commercial pyrolytic cracking operations. The asphaltic residuum referred to herein may be the residue from petroleum oil distillation equipment which operates at less than cracking pressures and temperatures. The residuum from vacuum stills operating on naphthene base crude is preferred.

It is preferred to preliminarily reduce the cracked residuum to a viscosity of from 70 to 90 (Furol) at 210° F. by steam reduction and to air-blow the asphaltic material constituting the mixing stock for several hours at a temperature of between 400° and 500° F. The base, formed of the mixture of cracked residuum and asphaltic residuum, is then air-blown at from 400° to 500° F. to a melting point of from 120° to 150° F. before the addition of the fuel residuum.

The following is given by way of example of a preferred form of the material and the process of preparing the same. A quantity of cracked residuum was steam reduced at from 500° to 550° F. to a viscosity of 70 to 90 (Furol) at 210° F. 85% of this steam reduced material was mixed with 15% by weight of an air-blown asphaltic residuum constituting the mixing stock. The base of the mixing stock was a residuum from a naphthene base crude produced in a vacuum tube still and testing 45 (tenth millimeters) penetration at 77° F. The mixing stock was in some cases air-blown alone to reduce the penetration and increase the melting point, but this is not essential. The mixture was thereafter air-blown at a temperature of approximately 460° F. to a melting point (ball and ring) of from 131° to 133° F. This blended product was then transferred to storage and cut back with from 5% to 8% by volume of a raw or untreated relatively light or fluid asphaltic residuum. Care was taken thereafter to maintain the temperature of the finished product at not over 300° F., as, for example, while being drawn off into containers for transportation.

Samples of the finished product produced as above have substantially the following characteristics,—melting point (ball and ring) 130° to 135° F., penetration at 77° F. 20 to 30 (tenth millimeters), viscosity (Stormer) at 280° F. 85 to 105 R. P. M.

The addition of the raw fuel residuum to the air-blown product, during the final stages of the preparation of the material, affords a higher penetration at 68° F. and 32° F. than it would otherwise have. It also gives the product greater pliability and materially increases the penetrating qualities of the saturant at the elevated temperatures, 300° F., e. g., at which it is applied to such materials as the woven cotton covering of insulated wire. The cracked residuum gives the product a substantially heavier gravity and a lower viscosity at elevated temperatures, the viscosity being a critical factor of materials for the purposes of the present saturant. It is unnecessary to add to the saturating material, produced in accordance with the present invention, any other diluents or solvents nor to add the usual undesirable materials for decreasing the viscosity, such for example, as wax tailings. A sufficient quantity of asphaltic residuum is present to render the mixture homogeneous and to give the final product the body and weathering characteristics necessary where the coated product is to be exposed.

The methods of determining the penetration, melting point, viscosity, etc., referred to herein are the standard tests approved by the A. S. T. M.

While there are shown and described specific and preferred examples of the saturating material produced in accordance with the present invention, it will be understood that these are by way of example only and that the invention is to be limited only as set forth in the appended claims.

I claim:

1. A saturant for weatherproofing fabric comprising a base embodying 50% to 90% of steam reduced cracked residuum, 50% to 10% of air-blown asphaltic mixing stock, cut back with from 2% to 10% of relatively light asphaltic residuum.

2. A saturant for weatherproofing fabric comprising a base embodying approximately 85% of steam reduced cracked residuum and 15% of air-blown asphaltic mixing stock cut back with a small quantity of relatively light untreated asphaltic residuum.

3. A saturant for weatherproofing fabric comprising a base embodying over 50% of steam reduced cracked residuum and less than 50% of air-blown naphthene base fuel residuum, cut back with from 2% to 10% of relatively light untreated asphaltic residuum.

4. A saturant for weatherproofing fabric comprising an air-blown mixture embodying 50% to 90% of steam reduced cracked residuum, 50% to 10% of air-blown asphaltic mixing stock, cut back with from 2% to 10% of relatively light asphaltic residuum.

5. A saturant for weatherproofing fabric comprising an air-blown mixture of steam reduced cracked residuum and asphaltic residuum to which there has been added from 2% to 10% of an untreated relatively light asphaltic residuum, and having substantially the following characteristics, melting point (ball and ring)—130° to 135° F., penetration at 77° F.—25 to 30 and a (Stormer) viscosity at 280° F.—85 to 105 R. P. M.

6. The process of forming a saturant for weatherproofing fabric comprising steam reducing a quantity of cracked residuum, air-blowing a quantity of asphaltic residuum, mixing approximately 85% of said reduced cracked residuum with approximately 15% of said air-blown asphaltic residuum and thereafter adding from 2% to 10% of raw asphaltic residuum.

7. The process of forming a saturant for weatherproofing fabric comprising steam reducing a quantity of cracked residuum, air-blowing a quantity of asphaltic residuum, mixing a major proportion of said reduced cracked residuum with a minor proportion of said air-blown asphaltic residuum, air-blowing said mixture and thereafter adding a quantity of raw asphaltic residuum.

8. The process of forming a saturant for weatherproofing fabric comprising reducing cracked residuum to increase the viscosity thereof, air-blowing asphaltic residuum from the vacuum distillation of a naphthene base crude oil, mixing said reduced cracked residuum with said air-blown asphaltic residuum and diluting said mixed materials with a small proportion of raw asphaltic residuum.

9. The process of forming a saturant for weatherproofing fabric comprising reducing cracked residuum to a Furol viscosity of 70 to 90 at 210° F., air-blowing an asphaltic residue to a penetration at 77° F. of 40 to 60, mixing and blending said reduced cracked residuum and air-blown asphaltic residuum and adding to the mixed materials raw asphaltic residuum for reducing the viscosity and increasing the penetrating qualities of the mixture.

10. The process of forming a saturant for weatherproofing fabric comprising reducing cracked residuum to a Furol viscosity of 70 to 90 at 210° F., air-blowing an asphaltic residue to a penetration at 77° F. of 40 to 60, mixing and blending approximately 85% of said reduced cracked residuum with 15% of said air-blown asphaltic residuum and adding to the mixed materials from 2% to 10% of raw asphaltic residuum for reducing the viscosity and increasing the penetrating qualities of the mixture.

11. The process of forming a saturant for weatherproofing fabric comprising reducing cracked residuum to a Furol viscosity of 70 to 90 at 210° F., air-blowing an asphaltic residue to a penetration at 77° F. of 40 to 60, mixing and blending approximatley 85% of said reduced cracked residuum with 15% of said air-blown asphaltic residuum, blowing said mixture to a melting point of from 120° to 150° F. and adding to the mixed materials from 2% to 10% of raw asphaltic residuum for reducing the viscosity and increasing the penetrating qualities of the mixture.

12. The process of forming a saturant for weatherproofing fabric comprising steam reducing cracked residuum, air-blowing an asphaltic residuum, mixing and blending said residua by adding a major proportion of said reduced cracked residuum to a minor proportion of said asphaltic residuum and air-blowing the mixture at an elevated temperature and thereafter cutting back said air-blown mixture with a relatively small proportion of a petroleum product having high solvent qualities for said residua.

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