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BITUMINOUS WATERPROOFING MATERIAL

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2 Claims. (Cl. 106—280)

This invention relates to bituminous waterproofing materials and particularly bituminous waterproofing materials that may be used in the preparation of sheets, boards or shingles of any desired thickness, size or shape.

Bituminous shingles or sheets or other waterproofing materials that have been used to make coverings weatherproof are generally prepared by saturating a base of fibrous material and applying thereto a coating of plastic or mastic material at an elevated temperature to make the covering waterproof and as a wearing surface coating adding such material as powdered slate, granulated mineral aggregate or other hard, weather-impervious ingredients. The application of heat is generally required, both in applying the bituminous material to the pre-saturated fibrous material and also when adding the mineral material to make the wearing surface more impervious to the weather.

An object of this invention is to prepare a plastic material that may be shaped into sheets, boards or shingles of any desired thickness, size or shape. Another object of this invention is to prepare a plastic material that may be applied to the pre-saturated fibrous material without the application of heat. A further object of this invention is to prepare a plastic cement that may be used for plastering, caulking, and waterproofing windows, basement walls, etc.

Another object is to prepare a bituminous plastic cement that is suitable for use as a lap cement in built-up roofing to replace the present straight or mineral-filled asphalts that are used hot, or in the form of cutbacks. Another object is to prepare a plastic cement for siding building board coatings, where a mixture of the plastic cement and the flux oil is spread out in the form of a film of suitable thickness into which mineral matter in any desired form may be embedded or admixed and a plastic cement may be used for flooring or roofing material that may be applied either by troweling or gunning with pretreated mineral matter applied on it, after which it may be rolled out.

According to this invention, pulp, pulverized wood bark, or other carbonaceous material, either in a fairly dry state or containing up to about 90% of water, is mixed with a liquid asphalt produced by fluxing 20 to 50 penetration straight reduced cracking coil tar asphalt with cracking coil distillate having an end point of about 420° F. The amount of liquid asphalt added is that required to saturate the pulp, pulverized wood bark or carbonaceous material. Sufficient of the liquid asphalt is added to produce a tacky mass fluffy in appearance. Into this tacky mass is then added a hard, brittle asphalt having a softening point ranging from 250° to 300° F. The temperature maintained during the mixing of the tacky mass and the brittle asphalt is about 400° to 600° F. The mixing and heating is continued until substantially all volatile matter is eliminated. The mass is then allowed to cool and pulverized into a non-tacky fine powder. The proportions of the tacky mass and the brittle asphalt used may be varied from 40% to 70% of the tacky mass and 60% to 30% of the brittle asphalt, the percentages being controlled by the desired consistency of the final mixture, as determined by softening point or other suitable consistency measure. The amount of liquid asphalt added to the pulp or carbonaceous material generally ranges from 10% to 30% by weight. The brittle asphalt used is one having a softening point of at least about 250° F.

The preferred brittle asphalt is prepared by straight reducing an asphaltic crude residual or a cracking coil tar to about 200° F. softening point, after which the material is oxidized to the desired softening point which is from 275° to 375° F. It has been found according to this invention that if the asphaltic residual is cracking coil tar and the softening point of this type of residual is raised directly by oxidizing to a softening point more than 200° F. higher, the resulting product becomes almost entirely insoluble or non-amalgamating in any type of flux oil. This is shown in that the more oxidized a tar residue is, the less soluble it becomes in chloroform, carbon tetrachloride or even in carbon bisulphide. The preferred high softening point brittle asphalt that is used according to this invention is that which had its softening point raised about 100° F. by oxidation, although asphalts that had their softening points raised 150° F. or more but not over 200° F. may be used.

The liquid asphalt used may contain substantial quantities of volatile distillates, that is, from 15% to 45% of a gasoline may be used, which gasoline is removed either by the application of heat or by slow evaporation at ordinary temperatures before or when the final mixture of waterproofing material is being prepared. The proportions of liquid asphalt with the pulp or carbonaceous material in combination to the brittle asphalt used may be varied considerably, that is, from 10% up to 90% of the brittle asphalt, although the preferred range of brittle asphalt used is about 40% to 60%.

Alternately, the filler, which may be pulpy carbonaceous filler or likewise a mineral filler, or a mixture of both, is mixed with powdered brittle asphalt such as described above at an elevated temperature above the melting point of the asphalt, then chilled and reduced to fine powder. This fine powder is then combined with a mineral oil flux and used in the preparation of a building composition or waterproofing composition.

The powdered mixture thereby prepared is then suitable for use. It may be added to a fibrous material that had been pre-treated or pre-saturated with a flux oil and amalgamated by the application of pressure. It will likewise combine with untreated fibrous material. A mixture of this powdered asphalt and granulated mineral matter may be applied to the fibrous material in the same manner. If desired, this powdered material may be applied as a roofing coating and amalgamated by rolling at ordinary temperatures or by application of superficial heat with torch or hot irons. Where it is used as a flooring, a light rolling would be sufficient as traffic would finally amalgamate the ingredients. It is especially suitable for use in waterproofing sidings, that is, it may be mixed with sufficient flux oil to obtain a mass of any desired plasticity and then applied to the side walls by means of a trowel. If it is desirable to paint this side wall, it may be advisable to incorporate powdered sulfur into the mass which will exert a vulcanizing effect and therefore overcome the tendency of the flux oil that may have been used to bleed out.

I claim:

1. A bituminous waterproofing material composed of a fibrous pulpy material, a mineral flux oil, a 20 to 50 penetration cracking coil tar asphalt, a distillate having an end point of about 420° F. and a brittle asphalt having a softening point of 250 to 375° F. which had been oxidized from 200° F.

2. A bituminous waterproofing composition according to claim 1 in which a brittle asphalt is a straight reduced cracking coil tar which had been oxidized from 200° F. to a softening point not over 375° F.

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