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PRODUCTION OF SUGAR CANE WAX

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2 Claims. (Cl. 260—412.5)

This invention relates to the recovery of the hard wax found in the filter residues obtainable in sugar cane refining, and aims to provide a rapid, economical one-step method for recovering from such residues high yields of a hard wax which is an acceptable substitute for carnauba wax.

In my copending application Serial No. 421,075, filed November 29, 1941, I have disclosed that such a wax can be obtained from sugar cane residues by purifying the soft waxy material obtained from sugar cane by conventional processes, such as are disclosed in the Bunker U. S. Patent No. 1,309,999, issued July 15, 1919. The resultant hard wax has a melting point of about 75° to 78° C., an acid number of about 25 to 30, a saponification number of about 50 to 60, and an iodine number of about 30 to 35, and an acetyl value of about 10 to 15; the values obtained vary only slightly from those tested from batch to batch, indicating that the product is a true natural wax, such as beeswax, carnauba wax, or the like.

I have now discovered that the wax is recoverable in goods yields directly from the crude so-called "muds" obtained in the filtration of sugar solutions obtained from sugar cane, by extracting the muds, preferably dried, with a solvent of the class consisting of lower alkyl ketones and lower alkyl acetates and propionates, in which the alkyl groups contain a maximum of five carbon atoms.

These solvents are all characterized by the fact that they are solvents for fats, retaining them in solution at all normal temperatures; they are, however, non-solvents for the sugar cane wax at temperatures of the order of 15° C., while dissolving the wax at temperatures approximating the solvent boiling points.

In the practice of my invention, the pulverized dried muds are digested with four or more parts by weight of solvent, at temperaturres above 50° C., preferably approximating or approaching the boiling point of the solvent, for a sufficient period of time to insure complete solution of the waxy and fatty materials. The solution is then separated from the mud, chilled to about 15° C., and the precipitated wax separated from the solution. The resultant wax has the same chemical and physical constants as that obtained by the two-stage procedure.

Among the solvents which may be used are acetone, methyl ethyl ketone, methyl isobutyl ketone, methyl amyl ketone, diisopropyl ketone, and methyl, ethyl, propyl, butyl and amyl acetates and propionates. Of the solvents, I prefer to use those having boiling points not in excess of 120° C.; I find that the higher boiling solvents are somewhat more difficult to recover from the wax, and that discoloration of the wax may occur with them unless great care is taken in the recovery operation.

As typical of my invention, 1000 parts by weight of dried filter press cake obtained from the filtration of defecated sugar cane juices may be used. Quantitatively, this mud contains about 70 parts of wax, and about the same amount of fatty matter. It is digested with 5000 parts of boiling isopropyl acetate, in a digestor provided with a reflux condensor, for one hour. The digested mud is filtered hot, and the filtrate cooled to 15° C. At 35° C., wax begins to precipitate; by the time the batch reaches 15° C., precipitation is complete. Filtration of the precipitated wax is followed by removal of solvent; the yield of wax is 61 parts.

It is important that the chilling operation be carried to about the 15–20° C. zone. If chilling is not carried to about 20° C., precipitation is incomplete; while reduction of the temperature substantially below 15° C. results in precipitation of the soft fatty matter, the inclusion of which renders the wax less desirable for use as a carnauba wax replacement.

I claim:

1. The method of extracting a hard wax directly from sugar cane muds which comprises heating the mud with not less than 4 parts by weight, based on the dry mud, of a solvent of the class consisting of lower alkyl acetates and lower alkyl propionates, the alkyl groups of which have from one to five carbon atoms, at a temperature above 50° C., whereby the wax and fatty matter in the mud dissolve substantially completely, separating the solution from the mud, chilling the solution to a temperature approximating 15 to 20° C., whereby the hard wax is precipitated while the fatty matter remains in solution, and separating the wax from the solution.

2. The method of claim 1, in which the solvent is isopropyl acetate.

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