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REMOVAL OF CAUSTIC SODA SOLUBLE SUBSTANCES FROM CELLULOSE-CONTAINING MATERIALS

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This invention relates to the treatment of cellulose-containing materials, and more particularly to a method of producing cellulose-containing solutions of low viscosity.

An object of the invention is to provide a method of ageing the cellulose-containing solution to effect more complete removal of the soda soluble substances contained in various fibres from which cellulose is obtained.

A further object of the invention is to provide a method of treating the material after ageing to remove the soda solubles.

The material from which the cellulose is to be obtained may first be treated with a weak acid solution if desired, or it may be submitted to the action of caustic soda without pre-treatment. The fibre, either with or without the acid pre-treatment is treated with but not dissolved in caustic soda of mercerizing strength, preferably 20° Baumé (1.162 sp. gr.; 14.37% NaOH) to 26° Baumé (1.22 sp. gr.; 19.58% NaOH). The product obtained which may be considered an alkali cellulose is then aged by permitting it to stand for a period of from 1 to 4 days or longer whereby the long cellulose molecule is modified or degenerated by breaking it into a short molecule. The excess soda may be removed from the fibrous material either before or after ageing the alkali cellulose product.

After the product has been aged, and separated from the excess caustic soda, the causic soda content is further reduced by diluting with water. The material and the solution of caustic soda is then boiled to remove any soda solubles present and a final product obtained which may be washed or bleached in the usual manner, as, for example, by washing with water and bleaching with chlorine. The final product is a modified or degenerated cellulose, the cellulose molecule having been shortened, which when nitrated or acetylated and dissolved in common solvents for each will produce a low viscosity solution.

Instead of boiling the material and caustic soda to remove the soda solubles, the soda may be removed after ageing by simply washing the material with water when the presence of soda solubles in the final product is not objectionable.

As an alternative, the cellulose-containing fibres, with or without pre-treatment with acid, may be treated with caustic soda of a mercerizing strength, preferably 20° to 26° Baumé, the product aged by permitting it to stand for a period of from 1 to 4 days or longer, and the soda solubles may then be removed by washing the product with caustic soda of mercerizing strength while in a centrifuge.

In either of the methods above described, the cellulose containing solution of low viscosity may be obtained suitable for use in the manufacture of films, artificial silk, artificial horsehair and the like.

While I have described in detail the preferred practice of my process, it is to be understood that the details of procedure may be widely varied without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. The herein described process which comprises treating cellulose-containing fibres with a solution of sodium hydroxid of mercerizing strength, permitting the product to stand for a period of more than 24 hours, adding water to the mass, and boiling the mass to remove the soluble products produced by the sodium hydroxid treatment therefrom, the excess sodium hydroxid having been previously removed.

2. The herein described process which comprises treating cellulose-containing fibres with a sodium hydroxid solution of from 20° to 26° Baumé strength, permitting the product to stand for a period of more than 24 hours, removing the excess sodium hydroxid therefrom, diluting with water, and then boiling the material and remaining caustic soda to remove the soluble products produced by the sodium hydroxid treatment.

3. The herein described process which comprises treating cellulose-containing materials with a sodium hydroxid solution of from 20° to 26° Baumé strength, permitting the product to stand for a period of from 1 to 4 days, adding water, and then boiling the product

to remove the soluble substances formed by the sodium hydroxid treatment.

4. The herein described process which comprises treating cellulose-containing materials with a sodium hydroxid solution of mercerizing strength, permitting the product to stand for a period of from 1 to 4 days, and boiling it to remove the soluble substances formed by the sodium hydroxid treatment, the excess sodium hydroxid having been previously removed.

5. The herein described process which comprises treating cellulose-containing materials with a sodium hydroxid solution of mercerizing strength, permitting the product to stand for a period of from 1 to 4 days, removing excess sodium hydroxid therefrom, diluting with water, and boiling the product and remaining caustic soda and water to remove the soluble substances formed by the sodium treatment.

In testimony whereof I affix my signature.

HARRY P. BASSETT.