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(54) **Cellulosic tissue paper including cotton fibers and process for its production**

(57) Tissue paper, composed of cellulose fibers further including cotton fibers according to the following percentage composition (expressed by weight): from 40% to 60% of short-fiber cellulose, from 35% to 45% of long-

fiber cellulose and from 5% to 15% of cotton fibers, process for its production and its use as toilet-paper.

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Description

[0001] The present invention refers to a cellulosic paper including cotton fibers and to a process for the production thereof.

[0002] In particular, the present invention provides the addition of cotton fibers in a paper product of the tissue kind, that is a throwaway paper for hygienic, sanitary and household products, in particular realized for products such as toilet-paper, tissue handkerchiefs, kitchen towels, provided with characteristics of particular softness and absorbency.

[0003] It is known that in the tissue paper field, the consumers require even more high quality products, being the softness of paper the more appreciated aspect.

[0004] Presently, the softness of the tissue paper is obtained by selecting the cellulose fibers, which will form the end-product, and by means of their particular processing.

[0005] According to the present invention it has been surprisingly revealed that it is possible to mix together cellulose fibers and cotton fibers, properly selected, obtaining a tissue paper provided not only with higher softness, but even with improved characteristics of strength and thickness.

[0006] One of the main objectives of the present invention is that of providing a tissue paper having improved qualitative characteristics than the corresponding products on sale in the market. In particular, the paper according to the present invention gives at touch a particular "velvet" effect.

[0007] Another objective of the present invention is that of providing a process for the production of said paper, which can be used in a production-plant of cellulosic paper of the pre-existent tissue kind, not involving modifications to the apparatuses for treating cellulose fibers for the production of this kind of paper, but placing by their side other specific apparatuses devoted to pre-treatment of selected cotton fibres for obtaining a mix of cotton fibers to be added to the mix of cellulose fibers only in the last phase of fibers mixing, immediately before the formation of paper sheets.

[0008] These objectives, according to the present invention, are achieved providing a paper incorporating cotton fibers having the characteristics as disclosed in claim 1 and a process for its production as disclosed in claim 5.

[0009] Further characteristics of the paper and of the process of the present invention are envisaged in the respective dependent claims.

[0010] The invention will be disclosed herewith in the following illustrative and non-limiting description with particular reference to a few illustrative

examples.

Example 1

[0011] A number of cotton fibers of 1,2 mm of length and 20 μm of diameter have been selected.

[0012] Inside a high-density pulper, a mix of cotton fibers and water has been prepared. By means of the pulper mixing device, the mixture has been mixed up to the point that the fibers have been properly hydrated and separated and a suspension has been obtained.

[0013] The obtained suspension has been successively depurated from eventual impurities passing through an epurator of dense paste and into a screen.

[0014] Finally, to ensure homogeneity to the mixture, eliminating eventual agglomerates of fibers not minced by the pulper, an adequate de-pasting apparatus has been used.

[0015] Separately, a cellulosic mixture of conifer long-fibers and eucalyptus short-fibers has been prepared, according to the cleaning and refining steps of a known process for the production of paper.

[0016] The mixture of cotton fibers as previously illustrated has been mixed together with the cellulosic mixture, obtaining a mixture with the following percentage composition (expressed by weight); 10% of cotton, 40 % of conifer long-fibre cellulose, 50% of eucalyptus short-fibre cellulose.

[0017] The percentage of cotton to be put in the cellulosic mixture has been measured in continuous by means of electronic devices driven by an automatic control system, which ensures the respect of all the working parameters of the whole process.

[0018] The mixture so obtained has been therefore mixed up to the point to show characteristics of homogeneity and it has been successively treated according to the known phases for manufacturing continuous paper rolls.

[0019] In particular, by a mixture provided with a conventional apparatus having a light of 2,70 m, a paper with improved characteristics of softness and strength than those of a tissue paper obtained in the same apparatus by a feedstock composed only of cellulosic fibers has been obtained.

[0020] The paper obtained has been tested as toilet-paper, resulting perfectly suitable for the aim.

Example 2

[0021] A number of second-hand cotton fibers have been selected, namely those fibers resulting from a former use in the textile industries. These fibers present a length of about 1,2 mm and a diameter of about 20 μm .

[0022] The fibers selected have been treated as in the example 1.

[0023] Separately, a cellulosic mixture of conifer long-fibers and maple short-fibers has been prepared, according to the cleaning and refining phases of a known proc-

ess for paper production.

[0024] The mixture of cotton fibers and the cellulosic mixture have been mixed, obtaining a mixture with the following percentage composition (expressed by weight): 5% of cotton, 35% of conifer cellulosic long fibers, 60% of acer cellulosic short-fibers.

[0025] The mixture so obtained has been homogenized and successively treated according to the known phases of cellulosic tissue paper manufacturing, obtaining a paper with high characteristics of softness.

[0026] The paper obtained has been tested as toilet-paper, resulting perfectly suitable for the aim.

Example 3

[0027] A mixture of cotton fibers, prepared as in the example 1, has been mixed together with a cellulosic mixture of conifer long-fibers and eucalyptus, maple and acacia short-fibers, prepared according to the cleaning and refining phases of a known process for paper production.

[0028] The resulting mixture had the following percentage (expressed by weight): 15% of cotton, 40% of conifer long-fibers cellulose, 45% of eucalyptus, maple and acacia short-fiber cellulose.

[0029] The mixture obtained has been therefore mixed up to the point to show homogeneous characteristics according to the successive and known phases of production paper rolls, obtaining (even in apparatuses having a light equal to 5,40 m) a paper showing improved characteristics of softness and strength with respect to the tissue paper obtained in the same apparatus starting from a feedstock composed only of cellulose fibers.

[0030] The paper obtained has been tested as toilet-paper, resulting perfectly suitable for the aim.

[0031] The process for the production of a cellulosic paper incorporating cotton fibers according to the present invention is particularly advantageous and functional, involving limited costs of production and of realization, with respect to the known process of tissue paper production.

[0032] The present invention has been disclosed in an illustrative but non-limiting way, according to a preferred embodiment, even though modifications can be applied by the experts in the art, without going beyond the scope of protection, as disclosed in the following claims.

Claims

1. Tissue paper, composed of cellulose fibers further including cotton fibers according to the following percentage composition (expressed by weight): from 40% to 60% of short-fiber cellulose, from 35% to 45% of long-fiber cellulose and from 5% to 15% of cotton fibers.
2. Tissue paper according to claim 1, wherein said cotton fibers have a length equivalent to about 1,2 mm

and a diameter equivalent to about 20 μ m.

3. Tissue paper according to claim 1 or 2, wherein the long-fiber cellulose is conifer fiber.
4. Tissue paper according to any of claims 1-3, wherein the short-fiber cellulose is selected from fibers of eucalyptus, acacia, maple and mixture therefrom.
5. Process for the production of tissue paper as disclosed in claims 1-4, wherein, along with the known phases of preparation of a mix of short and long-fiber cellulose, a mix of cotton fibers is prepared separately through the following phases:
 - separation of the fibrous cotton in particle fibers (pulping);
 - elimination of eventual impurities (epuration)
 - grinding of eventual grumes of remaining fibers (de-pasting process), successively, said mix of cotton fibers being mixed along with said mix of cellulose immediately before the formation of a continuous paper sheet according to the known art.
6. Process for the production of paper according to claim 5, wherein said pulping phase takes place melting the fibrous cotton in the water by mechanical action.
7. Process for the production of paper according to any of claims 5 and 6, wherein said epuration phase takes place through densimetric and/or dimensional separation.
8. Process for the production of paper according to any of claims 5-7, wherein said de-pasting phase takes place submitting the suspension of fibers to a combined mechanical action of bumping and rubbing.
9. Use of the tissue paper as disclosed in claims 1-4 as a toilet paper.