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(54) **METHOD FOR MANUFACTURING PURE-WOOD-PULP DUAL-LAYER SOLUBLE PAPER TOWEL**

(57) Disclosed is a method for fabricating a pure wood pulp dual-layer soluble paper towel, wherein imported bleached needle bush and broad-leaved wood pulp boards are applied, the fabricating method sequentially comprising steps of: slurry dispersing, mixing raw materials, beating, web section forming, dehydration and drying, winding the formed sheet, and cutting and folding to output paper. The added fiber active beating enzyme facilitates the fiber to absorb water to swell and to fibrillate, thereby enhancing the beating degree; the formed sheet has a longitudinal-to-transverse tension ratio ranging from 1.8 to 2.4, guaranteeing that the base paper has a strong break-resistance capacity when being

stretched. Additionally, the water content of the sheet is controlled between 7% and 7.6% per square meter, which offers an optimum water content, such that the base paper does not easily generate static electricity; moreover, the base paper has a strong tensile strength, flexibility, and folding durability, such that it is not easily curled, warped, or wrinkled. The present disclosure achieves a high tensile force and the base paper satisfies the water-soluble requirement well. The paper towel according to the present disclosure may not only satisfy the need of wiping dry a wet hand, but also may be directly disposed in a toilet or sewer without causing clog.

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Description

FIELD

[0001] The present disclosure relates to a method for fabricating a pure wood pulp dual-layer soluble paper towel.

BACKGROUND

[0002] Paper towels on the market are mainly high-grammage single-layer paper towels applied to places such as toilets and medical facilities, which require that the product have properties such as high tensile force, high wet strength, and high burst strength. Such paper towels cannot be directly discarded in a sewer, but has to be disposed in a dustbin for collective processing. Besides, conventional paper towels have many inconveniences when being used in special toilets on planes and high-speed trains; if such type of products are directly disposed in a plane toilet, the toilet might be clogged and the device might be damaged.

SUMMARY

[0003] An objective of the present disclosure is to provide a method for fabricating a pure wood pulp dual-layer soluble paper towel so as to solve the technical problem in the prior art that disposal of paper towels easily causes clog.

[0004] To achieve the objective above, the present disclosure provides the following technical solution: a method for fabricating a pure wood pulp dual-layer soluble paper towel, wherein imported bleached needle bush and broad-leaved wood pulp boards are applied, the fabricating method sequentially comprising steps of:

Step 1: subjecting the imported bleached needle bush and broad-leaved wood pulp boards to slurry dispersing via a hydropulper to form a long-fiber pulp and a short-fiber pulp, wherein a 0.3~0.6ml fiber active beating enzyme is added during the pulp dispersing process;

Step 2: subjecting the slurry-dispersed long fiber pulp obtained from step 1 to a beating treatment via a disc refiner, wherein the beating degree for the long-fiber slurry is 23~26°SR; subjecting the slurry-dispersed short-fiber pulp to be disintegrated via a high-frequency disintegrator; and mixing the long-fiber pulp and the short-fiber pulp, wherein the long-fiber pulp accounts for 60~70% and the short-fiber pulp accounts for 30~40%.

Step 3: beating the pulp mixture obtained from step 2 by a refiner, wherein the beating degree is accurately controlled in a range from 28°SR to 33°SR, available for paper forming by the paper machine;

Step 4: conveying the pulp prepared in step 3 to the web section of the paper machine via a flow conveying segment so as to form a sheet, wherein the J/W ratio is set between 0.87~0.93, and the formed sheet has a longitudinal-to-transverse tension ratio ranging from 1.8 to 2.4;

Step 5: subjecting the formed sheet obtained from step 4 to high-speed centrifugal dehydration and high-temperature drying treatment, wherein surface wrinkling of the sheet is controlled between -14% and -18%, and the water content of the sheet in each square meter ranges from 7% to 7.6%;

Step 6: winding the formed sheet treated after step 5 and cutting the formed into bobbins of paper with different widths;

Step 7: subjecting each of two bobbins of paper cut in step 6 to an unwinder frame, subjecting respective guide roller surface layer to a gluing machine, and subjecting an under layer to a decorative embossing roller and then to a compound embossing roller; further, longitudinally cutting the two bobbins of paper and then subjecting them to a N-shape folding machine to output folded paper; finally, packaging the folded paper by a unit packaging machine into a finished product.

[0005] Preferably, a starch-base strengthening agent is added in the refiner in step 3.

[0006] Preferably, the glue applied by the gluing machine in step 7 is a food-grade compound water-soluble glue.

[0007] In view of the above, the present disclosure offers the following advantages: the present disclosure prepares a paper towel through steps of slurry dispersing, mixing raw materials, beating, web section forming, dehydration and drying, winding the formed sheet, and cutting and folding to output paper; because the raw materials used are imported bleached needle bush and broad-leaved wood pulp boards, the paper towel is made based on plant extracts and pure wood pulp, which offers a soft property and a high moisture degree; therefore, the product is of a high quality. The added fiber active beating enzyme facilitates the fiber to absorb water to swell and to fibrillate, thereby enhancing the beating degree; the formed sheet has a longitudinal-to-transverse tension ratio ranging from 1.8 to 2.4, guaranteeing that the base paper has a strong break-resistance capacity when being stretched. Additionally, the water content of the sheet is controlled between 7% and 7.6% per square meter, which offers an optimum water content, such that the base paper does not easily generate static electricity; moreover, the base paper has a strong tensile strength, flexibility, and folding durability, such that it is not easily curled, warped, or wrinkled. The present disclosure achieves a high tensile force and the base paper satisfies

the water-soluble requirement well. The paper towel according to the present disclosure may not only satisfy the need of wiping dry a wet hand, but also may be directly disposed in a toilet or sewer without causing clog. The present disclosure upgrades the conventional paper towel products and satisfies the use requirement on paper towels in specific environments.

DETAILED DESCRIPTION OF EMBODIMENTS

[0008] A method for fabricating a pure wood pulp dual-layer soluble paper towel, wherein imported bleached needle bush and broad-leaved wood pulp boards are applied, the fabricating method sequentially comprising steps of:

Step 1: subjecting the imported bleached needle bush and broad-leaved wood pulp boards to slurry dispersing via a hydropulper to form a long-fiber pulp and a short-fiber pulp, wherein a 0.3~0.6ml fiber active beating enzyme is added during the pulp dispersing process;

Step 2: subjecting the slurry-dispersed long fiber pulp obtained from step 1 to a beating treatment via a disc refiner, wherein the beating degree for the long-fiber slurry is 23~26°SR; subjecting the slurry-dispersed short-fiber pulp to be disintegrated via a high-frequency disintegrator; and mixing the long-fiber pulp and the short-fiber pulp, wherein the long-fiber pulp accounts for 60~70% and the short-fiber pulp accounts for 30~40%.

Step 3: beating the pulp mixture obtained from step 2 by a refiner, wherein the beating degree is accurately controlled in a range from 28°SR to 33°SR, available for paper forming by the paper machine;

Step 4: conveying the pulp prepared in step 3 to the web section of the paper machine via a flow conveying segment so as to form a sheet, wherein the J/W ratio is set between 0.87~0.93, and the formed sheet has a longitudinal-to-transverse tension ratio ranging from 1.8 to 2.4;

Step 5: subjecting the formed sheet obtained from step 4 to high-speed centrifugal dehydration and high-temperature drying treatment, wherein surface wrinkling of the sheet is controlled between -14% and -18%, and the water content of the sheet in each square meter ranges from 7% to 7.6%;

Step 6: winding the formed sheet treated after step 5 and cutting the formed into bobbins of paper with different widths;

Step 7: subjecting each of two bobbins of paper cut in step 6 to an unwinder frame, subjecting respective

guide roller surface layer to a gluing machine, and subjecting an under layer to a decorative embossing roller and then to a compound embossing roller; further, longitudinally cutting the two bobbins of paper and then subjecting them to a N-shape folding machine to output folded paper; finally, packaging the folded paper by a unit packaging machine into a finished product.

[0009] The present disclosure prepares a paper towel through steps of slurry dispersing, mixing raw materials, beating, web section forming, dehydration and drying, winding the formed sheet, and cutting and folding to output paper; because the raw materials used are imported bleached needle bush and broad-leaved wood pulp boards, the paper towel is made based on plant extracts and pure wood pulp, which offers a soft property and a high moisture degree; therefore, the product is of a high quality. The added fiber active beating enzyme facilitates the fiber to absorb water to swell and to fibrillate, thereby enhancing the beating degree; the formed sheet has a longitudinal-to-transverse tension ratio ranging from 1.8 to 2.4, guaranteeing that the base paper has a strong break-resistance capacity when being stretched. Additionally, the water content of the sheet is controlled between 7% and 7.6% per square meter, which offers an optimum water content, such that the base paper does not easily generate static electricity; moreover, the base paper has a strong tensile strength, flexibility, and folding durability, such that it is not easily curled, warped, or wrinkled. The present disclosure achieves a high tensile force and the base paper satisfies the water-soluble requirement well. The paper towel according to the present disclosure may not only satisfy the need of wiping dry a wet hand, but also may be directly disposed in a toilet or sewer without causing clog. The present disclosure upgrades the conventional paper towel products and satisfies the use requirement on paper towels in specific environments.

[0010] Further, to realize fast water solubility of the base paper, it should be ensured that there are no residuals of wet strengthening agent in the white water system, and the paper forming procedure is performed after the white water of the cleaning system or the shutdown system is completely swapped. The starch-based strengthening agent added in the refiner in step 3 can improve the dry tensile strength. In the present disclosure, the starch-based strengthening agent preferably selects a food-grade modified tapioca starch. The glue applied by the gluing machine in step 7 is a food-grade compound water soluble glue, which may enhance the safety performance during the use process and can avoid pollution to the environment after being discarded; therefore, it achieves a function of environment protection; besides, it may be used normally on a plane.

[0011] Besides the preferred embodiments above, the present disclosure also has other embodiments. Those skilled in the art may make various variations and alter-

nations based on the present disclosure, and such variations and alterations should fall within the scope defined by the appended claims without departing from the spirit of the present disclosure.

Claims

1. A method for fabricating a pure wood pulp dual-layer soluble paper towel, wherein imported bleached needle bush and broad-leaved wood pulp boards are applied, the fabricating method sequentially comprising steps of:

Step 1: subjecting the imported bleached needle bush and broad-leaved wood pulp boards to slurry dispersing via a hydropulper to form a long-fiber pulp and a short-fiber pulp, wherein a 0.3~0.6ml fiber active beating enzyme is added during the pulp dispersing process;

Step 2: subjecting the slurry-dispersed long fiber pulp obtained from step 1 to a beating treatment via a disc refiner, wherein the beating degree for the long-fiber slurry is 23~26°SR; subjecting the slurry-dispersed short-fiber pulp to be disintegrated via a high-frequency disintegrator; and mixing the long-fiber pulp and the short-fiber pulp, wherein the long-fiber pulp accounts for 60~70% and the short-fiber pulp accounts for 30~40%.

Step 3: beating the pulp mixture obtained from step 2 by a refiner, wherein the beating degree is accurately controlled in a range from 28°SR to 33°SR, available for paper forming by the paper machine;

Step 4: conveying the pulp prepared in step 3 to the web section of the paper machine via a flow conveying segment so as to form a sheet, wherein the J/W ratio is set between 0.87~0.93, and the formed sheet has a longitudinal-to-transverse tension ratio ranging from 1.8 to 2.4; Step 5: subjecting the formed sheet obtained from step 4 to high-speed centrifugal dehydration and high-temperature drying treatment, wherein surface wrinkling of the sheet is controlled between -14% and -18%, and the water content of the sheet in each square meter ranges from 7% to 7.6%;

Step 6: winding the formed sheet treated after step 5 and cutting the formed into bobbins of paper with different widths;

Step 7: subjecting each of two bobbins of paper cut in step 6 to an unwinder frame, subjecting respective guide roller surface layer to a gluing machine, and subjecting an under layer to a decorative embossing roller and then to a compound embossing roller; further, longitudinally cutting the two bobbins of paper and then sub-

jecting them to a N-shape folding machine to output folded paper; finally, packaging the folded paper by a unit packaging machine into a finished product.

2. The method for fabricating a pure wood pulp dual-layer soluble paper towel according to claim 1, wherein a starch-base strengthening agent is added in the refiner in step 3.
3. The method for fabricating a pure wood pulp dual-layer soluble paper towel according to claim 1, wherein the glue applied by the gluing machine in step 7 is a food-grade compound water-soluble glue.



EUROPEAN SEARCH REPORT

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 EP 19 21 9087

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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