The fabric comprises pigmenting steps comprising dyeing processes using pigments obtained from plants or plant parts and the use of a selected vegetable solution in a dyeing process. The dyeing processes are performed at least one dyeing process with the vegetable dye solution at 60°C according to the selected material or the fabric product. The vegetable dye solution contains at least one natural vegetable dye and a solvent that is a vegetable solution selected from the group composed of denim, gabardine and velvet or the warp or rope used in the production of this fabric.
PROCESS RELATED TO COLOURING OF THE COTTON TEXTILE

RAW MATERIALS AND PRODUCTS BY MEANS OF USING

VEGETABLE DYE SOLUTION

Technical Field

The invention is related to the process related to colouring of the cotton textile raw materials and products by means of using vegetable dye solution comprising colour pigments obtained from the plants in the nature without using chemical substance.

The invention is specifically related to the process related to colouring cotton fabrics such as denim, gabardine and velvet and the warps and ropes used in the production of these fabrics by means of using vegetable dye solution obtained by means of boiling the parts of the plants comprising colour pigment in the hot water.

Background Art

Ecological textile products are the products that are produced by paying regard to the environment in all the process steps from the fiber state until the finished product is made, not harming the user in the usage step and recyclable after usage or transformable to nonhazardous products to the environment.

Although the products presented in the name of "organic products" to the consumer in the present technique are started to be produced by the organic cotton fiber, the dying of these fabrics are made commonly by some synthetic dyes hazardous for the environment; thus the fabric obtained is not 100% natural.

For example, in the patent application no RO1 13169 in the literature, a composition and process used for dying the 100% cotton textile products in grey correctly by the anionic dyes is disclosed.

The patent application no JP6016961 is related to a dye mixture comprising azo dye and kinoftalon dye, dye composition comprising that dye mixture, a method for dyeing the polyester in the form of textile product, and a method for dying the polyester in the form of textile product by means of printing directly.

The chrome dyestuff giving dyeing too bright and with low wet light fastness among the dyestuff used in dyeing the fabrics are quite dangerous for health, even carcinogenic. Also, the colour of the dyestuff used for the environment gains
importance. More dyestuff, in other words, more chemical substance and water is needed to be used for dyeing a textile product in dark colours. This has quite hazardous effects for the environment and human health.

The reactive dyestuff used frequently in the textile industry is also very hazardous. For example in the patent application no KR20040090767, a reactive dye composition used for dyeing the cellulose/nylon fabrics to black is disclosed. The reactive dyestuff having high light fastnesses and bright colours can react with the proteins and result in allergy.

As a result, the requirement for the processes nonhazardous for the environment and human health developed so as to eliminate the disadvantages in the present technique and for dyeing the textile raw materials such as fabric and yarn and the inadequacy of the present solutions have entailed to make a development in the related technical field.

**Object of the Invention**

By making way out of this case of the technique, the object of the invention is to meet the increasing demand for the fabrics and textile products produced without giving harm to the environment in the world being polluted day by day; and to enhance the concept of eco-sensitive social responsibility.

Another object of the invention is to eliminate the damages that the chemical substances and the chemical processes used in the dyeing processes in the textile sector give to the environment.

Another object of the invention is to provide obtaining of new colour and effects not achievable by the dye compositions comprising chemical substances used in dyeing processes in the textile sector and the processes.

Another object of the invention is to provide the textile products produced to be 100% natural when organic cotton is used.

So as to achieve the said objects; the invention developed is a process related to colouring of the cotton textile raw materials and products by means of using vegetable dye solution; intended to comprise the process steps of;

- Boiling the parts of the plants having colour pigment in hot water
Obtaining vegetable dye solution by the colour pigments in the plants mixing into the water

- Subjecting the cotton textile raw material/product pre-washed and dried to at least one dyeing process with the vegetable dye solution related to the colour tone desired.

In a preferred implementation of the invention, the said cotton textile raw material/product is a cotton fabric selected from the group composed of denim, gabardine and velvet or the warp or rope used in the production of this fabric.

In a preferred implementation of the invention, the said dyeing process is made at 60°C temperature.

In a preferred implementation of the invention, the parts of the said plants comprising colour pigments are selected from the group composed of roof, body, leaf, flower, fruit and rind of fruit.

In a preferred implementation of the invention, the parts of the said plants comprising colour pigments are rind of pomegranate, rind of green walnut, green walnut leaf, camomile flower or mint leaf.

In a preferred implementation of the invention, the parts of the said plants comprising colour pigments are boiled in the water at 95°C temperature.

In a preferred implementation of the invention, salt and at least one wetter substance are added into the said vegetable dye solution and ferrous sulphate is added as connector for obtaining grey colour in the dyeing.

In a preferred implementation of the invention, after the process of boiling the parts of the plants comprising colour pigment in hot water, the plant sediments and the dye solution are resolved.

In a preferred implementation of the invention, the vegetable dye solution is concentrated by being evaporated in the evaporator so as to obtain different tones of the same colour before the process of dyeing.

In a preferred implementation of the invention, the process of evaporating in the evaporator is made at 60°C temperature and 0.2 - 0.3 bar pressure.
Detailed Description of the Invention

The invention is related to the process related to colouring of the cotton textile raw materials and products by means of using vegetable dye solution comprising colour pigments obtained from the plants in the nature without using chemical substance.

Preparing the Vegetable Dye Solution:

The parts of the plants such as root, body, leaf, flower, fruit or rind of fruit comprising colour pigment are put in the appropriate boilers in filtered bags and the dye solution is obtained by means of boiling at 95°C and providing the colour pigments to permeate into the water. Also, ferrous sulphate as connector is added at the rate of 10% in weight so as to obtain the grey colour. Apart from that, preferably salt and wetter substances are added.

Then the filtered bags are taken out of the solution; and the dye solution and plant sediments are resolved. So as to obtain the different tones of same colour (such as lighter and darker colour) in dyeing, the dye solution obtained is concentrated by means of evaporating at 0.2 - 0.3 bar pressure and at low temperatures like 60°C; and the opportunity to dye in different colour concentrations is provided.

In the coverage of the invention, rind of pomegranate, rind of green walnut, green walnut leaf, camomile flower or mint leaf are preferred as colorant vegetable material.

Example - 1: Dye solution is obtained by boiling 420 kg of rind of pomegranate in the 95°C water in 2700 litres of water for one hour. It is concentrated at the rate of 1/3 in the evaporator. Therefore, the soluble solid substance rate (bricks) is increased to 15 bricks from 5 bricks.

Example - 2: Dye solution is obtained by means of boiling the mixture of 600gr/l rind of pomegranate, 50gr/l of salt, 20gr/l of ferrous sulphate and 10gr/l of wetter substance in 95°C water for one hour. It can be concentrated in the evaporator depending on the demand.

In the coverage of the invention, cotton fabrics such as denim, gabardine, velvet and etc. as the cotton textile raw material and product and the warp yarns are dyed as rope or warp.
Dyeing Process:

The ropes undergone of the pretreatment pool comprising soda are undergone of prewashing in the prewashing pools and are subjected to drying in the drying tambours so as to enter to the dyeing in the dryness to be 8% moist. The desired drying is provided by the ropes being kept on the drying tambours having 110°C surface temperature for nearly 90 seconds. The ropes obtained by means of using piled yarns in the rope wrapping section are subjected to the dyeing process at 60°C in the dyeing pool. The increasing of colour deepness is provided by means of making the same dyeing process subsequently in 1, 2 or 3 dyeing pools preferred according to the colour tone desired.

The ropes are opened in the rope opening and transformed into texturing warder's beam by being assembled in the sizing. The fabric textured in the texturing is induced to the quality control by means of using the processes of combusting, giving exhaustion, twisting and conventional sanfor without chemicals by using water not comprising chemical substance and the heat treatment at 110°C for 30 seconds in the end.

Effect can be given to the final product transformed into textile products such as trousers, coat and etc. in the garment after quality control by means of using physical stone washing and ozone.

The protection coverage of this application is defined in the claims section and certainly it cannot be limited to what has been described above by the object of exemplifying. It is clear that an innovation of a technical expert may be used in changing sections in form; and similar configurations may be used in different areas in the similar object. Therefore, it is obvious that such configurations will lack of the criteria of innovation and especially exceeding the background art.
CLAIMS

1. A process related to colouring the cotton textile raw materials and products without using chemical substance; wherein it comprises the process steps of;
   - Boiling the parts of the plants having colour pigment in hot water
   - Obtaining vegetable dye solution by the colour pigments in the plants mixing into the water
   - Subjecting the cotton textile raw material/product pre-washed and dried to at least one dyeing process with the vegetable dye solution related to the colour tone desired.

2. A process according to Claim 1; wherein the said cotton textile raw material/product to be the cotton fabric selected from the group composed of denim, gabardine and velvet or warp or rope used in the production of this fabric.

3. A process according to Claim 1; wherein the said dyeing process is made at 60°C temperature.

4. A process according to Claim 1; wherein the parts of the said plants comprising colour pigment to be selected from the group composed of root, body, leaf, flower, fruit and rinds of fruit of the trees.

5. A process according to Claim 4; wherein the parts of the said plants comprising colour pigment to be rind of pomegranate, rind of green walnut, green walnut leaf, camomile flower or mint leaf.

6. A process according to Claim 1; wherein the parts of the said plants comprising colour pigment to be boiled in the water at 95°C temperature.

7. A process according to Claim 1; wherein salt, at least one wetter material and ferrous sulphate as connector so as to obtain grey in the dyeing to be added into the said vegetable dye solution.

8. A process according to Claim 1; wherein the plant sediments and dye solution to be resolved after the process of boiling the parts of the said plants comprising colour pigment in hot water.
9. A process according to Claim 1; wherein the said vegetable dye solution to be concentrated by evaporating in the evaporator before the process of dyeing.

10. A process according to Claim 9; wherein the evaporation process in the said evaporator to be made at 60°C temperature and 0.2 - 0.3 bar pressure.