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TREATMENT OF RAYON

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This invention relates to a new method of treating rayon cloth, resulting in a new fabric and a method of producing it. The fabric is, in substance, plisséd rayon.

Plisséd cotton is well known, but so far as we are aware, rayon plisséd in the usual way, when washed or stretched, will at once lose its crinkled effect. The product of our invention will not lose its plissé character even after repeated washings or the stretching which an ordinary garment suffers.

Rayon cloth, which may be either spun or filament type rayon, which has been bleached, dyed or printed in the usual maner, is first run through a padding solution in a hydraulic mangle at 13 to 15 tons pressure. The padding solution contains a urea formaldehyde resin solution of the penetrative type, of a low degree of polymerization. Suitable resin may be made by mixing

60 lbs. formaldehyde
30 lbs. urea
2 lbs. 10 oz. aqua ammonia 30° Beaumé

This is heated to the boil for one minute in a still and then diluted with cold water, by running it into 92 pounds of water. The catalyst is then added, which may be one gallon of a saturated ammonium dihydrogen phosphate solution $(NH_3)H_2PO_4$.

This mixture is preferably made up fresh for each batch of cloth and after the cloth has been padded through it, the cloth is dried on a tenter at a speed of 30 to 50 yards per minute, depending on the weight of the cloth.

The resin treated cloth is then baked on a festoon type dryer in order to set or polymerize the resin and make it water insoluble. This baking is done by heating the treated cloth to 300° F. for three minutes. Any extraneous matter or unset resin is washed out and the cloth neutralized with a warm soda ash solution. The cloth is finally dried on the tenter frame to the proper width for the subsequent plissé printing operation.

The rayon cloth which has been treated with the urea formaldehyde resin as above described is then run through a suitable plissé printing machine which may be like those well known for plisséing cotton. We prefer to print the cloth with a printing mixture containing British gum or other thickener and strong caustic soda. We have found suitable for rayon, a mixture containing 127 lbs. of Corn Products Company's #187 British gum which has been previously boiled up to a volume of 200 gallons with 94° Tw. caustic soda. The speed through the printing machine is approximately 50 yards per minute. The cloth is then passed directly through a steam chamber containing a saturated steam atmosphere. The caustic soda contained in the gum mixture causes the cloth to crinkle up, giving the plissé effect. In order to develop the plissé to its full extent, the slightly moist cloth after passing through the steam chamber, should be allowed to stand loosely in boxes for at least two or three hours.

The cloth is then run through a series of reel washers in order to remove all excess caustic soda and is finally centrifuged to remove excess water and dried on a festoon dryer and then framed to its finished width.

The above described process is the so-called direct caustic printing for plisséing cotton goods, but the rayon can also be plisséd by other methods. For example, the resin treated cloth as previously described, can be printed with a resist gum and, after drying the cloth, then padded through a strong caustic soda solution.

Still another method for plisséing the resin treated rayon cloth is by the two roller method of caustic printing. In this case, one roll prints parallel stripes of resist gum while the other prints the caustic soda, the two rolls being so fitted that the caustic stripe falls between alternate stripes of resist gum.

These alternate methods are well known among textile printers for plisséing cotton cloth, but we find that the so-called direct method of caustic printing is the most satisfactory for producing a crinkle on rayon.

It is believed that drawings are not necessary to the description of the present invention, since machines suitable for carrying out the treatment are well known to those familiar with the art.

We claim:

1. The method of making a crinkled rayon fabric which comprises padding the cloth with a urea formaldehyde solution which will penetrate the fibres of the cloth, squeezing the cloth to force the resin into its fibres, setting the resin by heat, washing the cloth and then applying caustic soda and a thickener to selected areas of the cloth, to give the cloth a plissé effect.

2. The method of making a crinkled rayon fabric which consists of padding the cloth with a urea formaldehyde solution which will penetrate the fibres of the cloth, squeezing the cloth to force the resin into its fibres, setting the resin by heat, washing the cloth and then printing British gum and caustic soda on selected areas only of the cloth, steaming the cloth and washing

out the caustic soda and excess of British gum, to give the cloth a plissé effect.

3. The treatment of rayon fabric to impart a plissé effect thereto which comprises applying to the entire fabric a urea formaldehyde resin of the penetrative type, rendering said resin insoluble within and throughout the fabric, and applying caustic to selected areas of the resin treated fabric.

4. The treatment of rayon fabric which comprises applying to the entire fabric a urea formaldehyde resin, setting said resin within the fabric by heat, printing caustic soda on selected areas only of the cloth and washing the cloth, whereby a plissé effect is imparted to the cloth.

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