METHOD FOR REFRESHENING ITEMS OF CLOTHING

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ABSTRACT

Refreshing sheet and method for using it to restore stretched, wrinkled, or odorous garments to wearability without actual laundering. Sheet is a polyester/polyamide microfiber textile sheet with long loop pile on one side and density of 300 grams per square meter. Refreshing sheet is saturated with plain water and tumbled in a rotary dryer along with dry garments for ten to twenty minutes. The refreshing is accomplished by the generated steam and the massaging action of the slightly abrasive loops.
METHOD FOR REFRESHENING ITEMS OF CLOTHING

FIELD OF THE INVENTION

[0001] The present invention relates to the care and cleaning of garments, and more particularly to the restoration of garments that are wrinkled, stretched out of shape, odorous, or slightly soiled, without the use of laundry compositions and using very little water.

BACKGROUND OF THE INVENTION

[0002] Articles of clothing preferably look and smell fresh when they are put on to be worn. “Fresh” garments have either no odor, or a slight pleasant odor. Fresh garments show no stains or spots of soil, and no wrinkles or creases. Fresh garments also should have the texture and drape appropriate to the fabric, such as a crisp surface in the case of many cotton or linen garments or a soft drape in the case of many silk or rayon fabrics. The lines of a fresh garment should be smooth and not show bags or bulges at the knees, seat, or elbows.

[0003] After wearing one time, clothing may not be too dirty to wear again, but it may not look or smell desirably fresh. For example, the clothing may have picked up unwanted odors by proximity to cigarette smoke or another person’s perfume. Or for another example, some parts of a garment may have been stretched out of proportion to the rest of the garment, as often happens at the knees of blue jeans or elbows of a long-sleeved knit shirt. Or for another example, the back of a skirt or front of slacks may be deeply wrinkled from sitting.

[0004] The two obvious alternatives are either to go ahead and wear the non-fresh garment, or to launder the garment before wearing it again. Potential disadvantages of wearing a garment known to be non-fresh are apparent.

[0005] Disadvantages of laundering a garment that is not truly dirty are several: the inconvenience of waiting for the garment to be ready to wear, the environmental and financial costs of laundering garments after each wearing or even after long storage, and the gradual damage to garments caused by the laundering process.

[0006] Washing and drying clothes frequently does as much damage to them as the actual wearing of them, especially in the case of fragile garments that are worn only in clean, safe surroundings. The detergents, bleach, or other additives to the washing process can change the color of the garment and weaken the fibers. Even contact with liquid water can harm certain garments by rinsing out some of the dye or by creating “water spots.”

[0007] The agitation of a washing machine or even of hand laundering causes mechanical damage such as weakening of threads, pulling of seams, and small tears. Being dried in a heated clothes dryer from a fully-wet state causes stiffening or shrinkage of some types of fiber and breakdown of others. Drying a full load of laundry in a dryer may require the garments to be exposed to heat in the range of 150 to 220 degrees F. for 45 minutes or more. Drying on a clothes line outdoors can result in mechanical damage by hanging heavy, wet garments with clothes pins and the sunlight may bleach some fabrics and cause others to yellow.

[0008] The lint that accumulates in washing machines and in dryers is evidence of the stress the garments have been put through. Clothes do need to be laundered when dirty, but it is wasteful to do so simply because they are not optimally fresh.

[0009] This, when possible, it is better for clothing not to be wet with liquid water. Steam is a gentler medium for de-wrinkling and odor removal, especially when used in a carefully controlled process. Unfortunately, special devices for using steam to freshen clothing are often expensive and may require lengthy hands-on time for the user.

[0010] There are various time-honored methods for restoring garments that are wrinkled, stretched, or have odor. Wrinkled clothing is often hung on a hanger and placed in a bathroom before a person takes a hot steamy shower. The disadvantage of this method is that it is not very effective. It may relieve an overall rumpled appearance, but does not affect sharply creased wrinkles. Because gravity provides the straightening force, this method works best on very heavy garments such as wool coats.

[0011] Garments with unwanted odors may be hung in fresh, moving air so that the odor gradually dissipates. The disadvantage of this method is that it is very slow and uncertain. A garment that seems to smell fresh after a few days of airing may nevertheless release stale or mildewed odor during wear. If the material causing the odor has more affinity for the textile fiber than for air, no amount of airing will completely remove the odor.

[0012] Conventional freshening processes include commercial products, mainly various pads or sheets that hold a chemical compound for relaxing wrinkles in clothing, often with an additional deodorizing chemical. The treated pad or sheet is tumbled with the garments in need of freshening in a rotary dryer. These conventional processes are more effective against general wrinkling than hanging the garment in the bathroom, but are of very little value in returning stretched garments to their original shape.

[0013] Disadvantages of such treated pads or sheets include: the softening chemicals used are not effective for all fabrics and may damage or spot some fabrics; a long tumble in the dryer may be required, thus not saving much energy over actually laundering the garment; the softening chemicals may give a fabric that is intended to be crisp a less-desirable soft texture; and some persons are allergic or sensitive to softening or deodorizing chemicals and do not wish to use them.

[0014] Conventional sprays of deodorizing chemicals are intended to remove odors from garments. The deodorant is sprayed on to the garment and the garment must hang in fresh air until the spray dries. Such sprays may leave behind a tell-tale odor themselves, which may be nearly as undesirable as wearing the non-fresh garment without treatment. Deodorant chemicals can leave temporary spots even on washable garments. These sprays are not effective against wrinkled or stretched garments.

[0015] Similarly, sprays of relaxing chemicals are applied to garments, which are then stretched and pulled to release the wrinkles. This pulling on the fabric tends to stretch the entire garment, rather than return it to its original size and shape.

[0016] Such sprays do not deodorize garments. If wrinkle relaxing and deodorizing chemicals were combined, the resultant spray would still not help stretched-out garments.

[0017] A very popular and traditional method of restoring non-fresh garments is to tumble them in a heated clothes dryer along with a dampened bath towel, that is, a sheet of terry cloth or “Turkish toweling” that is around 50 by 60 inches. The water in the towel becomes steam in the heated dryer and the steam encourages the fibers of the garment to return to
their original locations in the weave or knit of the textile. It is hoped the steam will also carry away a portion of unwanted odors.

One disadvantage of this "bath towel" method is that if the towel is dripping wet, the process takes a long time. The garment is itself moistened by the water escaping the towel, and the garment needs to be re-dried. This longer drying time may be inconvenient for a person in a hurry and it causes increased wear damage to the garment. The dripping water can cause water spotting on susceptible fabrics.

The degree of deodorizing and de-wrinkling achieved with the bath towel method is slight, at best. Also, if a long tumble with heat is needed to achieve the desired results, certain stains or odors may be "set in" and made difficult to remove even with conventional laundering.

Another disadvantage of the bath towel method of restoring non-fresh clothes is that soaking, then wringing out, a standard bath towel is an awkward job, even beyond the strength of some people.

Further disadvantages include that bath towels tend to lose lint in the dryer, which may stick to the garment supposedly being made ready for wear; that using towels in this manner damages the towels; that a wet bath towel tends to roll into a ball in the dryer such that steam is liberated slowly; the loops of a cotton bath towel’s pile do not provide any cleaning action; and that an ordinary bath towel does not necessarily hold enough water to accomplish the desired degree of treatment.

Therefore, it is apparent that a good method of "refreshing" garments is needed, by which is meant a method for restoring non-fresh clothing to wearability. Such a method should be safe and do little or no damage to most fabrics; should save substantial water, cost, and energy compared to conventional laundering; should be reliably effective and quick; should be convenient and easy for anyone to use; and should not use chemicals that cause allergy or irritation. Further, a method of refreshing garments should address wrinkles, stretching out, and odor because all these conditions often require remediation before a non-fresh garment should be worn.

**SUMMARY OF THE INVENTION**

The present invention is a method for refreshing garments, which makes use of a specialized "refreshing sheet." The method of refreshing garments is intended to make non-fresh, but not heavily soiled, garments fresh enough to wear again.

The preferred embodiment of the refreshing sheet of the present invention is a flat sheet of microfiber textile with a long pile texture on one side. The sheet is about 76 cm by 76 cm in area with a density of about 300 grams per square meter.

The microfiber textile is similar to that often used for detailing autos, but less dense. The textile material preferably does not include surfactant, fabric softener, or any other additive that can be dissolved in water or rub off onto the garments to be refreshed.

To practice the method of the present invention, articles of dry clothing are placed in a rotary dryer. The refreshing sheet is saturated with clean water such that it is very moist but water does not drip out.

The moist refreshing sheet is then spread over the dry garments in the dryer. The dryer is turned on to allow the garments to tumble with the refreshing sheet in a temperature of 150 to 220 degrees Fahrenheit, or what is typically found in a dryer on "high" temperature setting. The water in the moist refreshing sheet is evaporated into the atmosphere inside the dryer to create a uniformly hot steamy environment around the garments.

The combination of warm steamy air and the massaging action of the refreshing sheet remove odors, superficial dirt, wrinkles, and return stretched out portions to their original shape within about 15 minutes.

Other features and attendant advantages of the invention will become more apparent upon a reading of the following detailed description.

**DETAILED DESCRIPTION OF THE INVENTION**

The present invention is a method for using a "refreshing sheet" to refresh garments or other fabric articles. The method of refreshing garments is intended to make non-fresh, but not heavily soiled, garments fresh enough to wear again.

The method makes use of a specialized refreshing sheet that carries a large load of water for generating steam, and that is composed of a blend of microfibers in a preferred weave for massaging the garments.

The sheet is composed of a microfiber textile with a deep pile texture on one side. By "microfiber" is meant a textile made up of fibers that are less than one denier. The fibers used to produce the sort of pile fabric of the preset invention are often multiply slit lengthwise, with other fiber inserted into the slits, as is known in the art. Because the added fibers do not fit perfectly into the slits, this leads to fibers that are intrinsically porous, that is, having interior voids. Also, it produces fibers that have lengthwise "ribs" that produce a mild degree of abrasiveness.

The nominal composition is 75% polyester and 25% polyamide.

Portions of the fibers are looped above the main woven body of the fabric, creating a long pile texture on one side of the refreshing sheet. In the preferred embodiment of the refreshing sheet of the invention, the elongate loops making up the pile are about 4-5 millimeters in length. Each loop is one yarn composed of many microfibers bundled together, but not twisted tightly into a thread. Thus, the loops have a much fuzzier profile than the loops of Turkish tufting. Each loop is itself a simple loop, not further twisted as in the case of Turkish tufting.

The opposite side of the refreshing sheet, in an exemplary embodiment, has a short nap texture, that is, is made up of loops about 1 mm in length.

The refreshing sheet is hemmed or otherwise finished around the periphery to stop the edges from raveling.

The density of the weave (thread count) and the length of the pile filaments combine to yield a mass-per-area density of 300 grams per square meter (gsm) for the textile of the preferred embodiment. This density of microfiber sheet allows a bit of light to pass through when it is held up before a light source such as a light bulb. Microfiber textiles with densities ranging from 200 to 400 gsm were tested in the development of the present invention and 300 gsm was found to be optimal.

The refreshing sheet is able to hold about seven times its own mass in water without dripping, due to the high surface area created by the pile texture and the microporosity of the individual microfibers. By "hold water without dripping" is meant that water does not readily drip from the
saturated refreshing sheet either by the force of gravity or by the mild squeezing force exerted such as by holding the refreshing sheet in the hands.

[0039] By distinction, cotton towels made of Turkish toweling, also known as terry cloth, typically have a density of 500 to 600 gsm, with especially luxurious towels having even greater densities.

[0040] Terry cloth towels are composed of long-staple cotton fibers, such as Egyptian cotton, which is believed to have a smooth silky feel and sheen. Examined closely, each loop of the toweling pile is a smooth thread formed into a loop that is twisted three or four times.

[0041] Somewhat contrarily to the absorbing function of a towel, the long smooth fibers of long-staple cotton are not especially intrinsically absorbent. However, for the function of rubbing wet sensitive skin, the smooth fibers are desirable. This is why cotton Turkish towels typically are large and have high density.

[0042] A bath-sized Turkish towel thus weighs a pound and a half or two when dry, and perhaps double that when wet. The refreshing sheet, in contrast, weighs only a few ounces dry and perhaps three pounds wet.

[0043] Conventional cotton terry cloth towels glide over most person’s skin smoothly without abrasion or snagging. By contrast, the refreshing sheet is made up of such fine fibers that it snag and catches on otherwise unnoticed roughnesses of the skin. This property would be quite annoying if the refreshing sheet were used for drying a person’s skin, but this tendency to cling to microscopic features is desirable when the refreshing sheet is used according to the present method.

[0044] To practice the method of the present invention, articles of dry clothing are placed in the drum of a conventional rotary dryer with electric or gas heating. It has been found that three typical garments, such as shirts, pants, or skirts, is a preferred amount of loading to use with one refreshing sheet (of the preferred dimensions of 30 inches by 30 inches) in a standard household dryer. It is envisioned but not yet proven that larger loadings may be refreshed satisfactorily by using multiple refreshing sheets or a single sheet of greater area, particularly in a commercial-sized rotary dryer.

[0045] The refreshing sheet is saturated with clean water such that it is very moist but water does not drip out. This may be done by submersing the refreshing sheet in water, such as in a sink or dishpan, or by running water from a faucet over the refreshing sheet while squeezing the refreshing sheet. Then, the excess water is removed by gently lightly squeezing or wringing the refreshing sheet while holding the sheet out of the standing or running water.

[0046] The refreshing sheet should be held a few moments to ensure that water does not drip out. If excess water drips, the refreshing sheet should be squeezed or wrung again. However, it is not necessary or desirable that the refreshing sheet be squeezed or wrung out with great force. This will remove too much water and possibly damage the microfibers.

[0047] The saturated refreshing sheet is then spread over the garments in the dryer. The dryer is activated such that the garments tumble with the refreshing sheet in the drum of the dryer in an air temperature of 150 to 220 degrees Fahrenheit, or what is typically found in a dryer on “high” temperature setting. The water initially held by the moist refreshing sheet is evaporated into the atmosphere inside the dryer to create a uniformly hot moist environment around the garments.

[0048] The heated tumbling is allowed to continue for 10 to 15 minutes to produce a desired degree of refreshing; but no longer than 25 minutes to avoid heat damage to the refreshing sheet or garments. Garments are preferably removed from the rotary dryer immediately at the end of the 10 to 15 minute process time and are folded, hung up, or worn.

[0049] The refreshing sheet should be fully air dried in ambient temperature after use. It should be washed by itself in mild detergent or soap, preferably after two uses, to remove accumulated odors or soil. The fibers making up the refreshing sheet will eventually degrade. The refreshing sheet must be replaced when it becomes ineffective.

[0050] The reason for spreading the refreshing sheet over the dry garments is twofold: first, so that the entire refreshing sheet is immediately available to the heat of the dryer in order to create a hot steamy atmosphere as quickly as possible, and secondly to assure that the refreshing sheet mingles and tumble with the garments and is not rolled into a ball in the dryer.

[0051] It has been found by testing that a refreshing sheet composed of the microfiber textile, described in detail above, is fairly resistant to being wadded into a ball, as compared to conventional Turkish towels. It is believed that this is partly due to the 300 grams per square meter (gsm) density that allows passage of air through the pile and partly due to the mild abrasive quality of the microfibers, which causes the refreshing sheet to cling very slightly to the garments. A strong clinging force between refreshing sheet and garments is not desirable, because the refreshing sheet might cling to single garment the entire process cycle instead of moving from one garment to another.

[0052] Thus, the initial spreading of the refreshing sheet is sufficient to ensure that the refreshing sheet does not ball up. By contrast, if one tries to practice this method with a wet Turkish towel, the towel is very likely to ball up and simply agitate back and forth in the bottom of the drum of the rotary dryer instead of tumbling among the garments as the drum rotates. The failure of Turkish toweling to tumble well is believed to be due to the density of the Turkish toweling and the smoothness of the cotton fibers.

[0053] The refreshing sheet tumbles with the garments and the pile filaments stroke the surfaces of the garments, pulling away odors and slight soil. Microfibers have greater surface area and are internally porous, as compared to conventional textile fibers. The foreign materials on the garments that are responsible for odors or visible spots will be drawn toward the microfiber and sequestered.

[0054] Textiles of the same fiber composition but different density were found to vary greatly in their performance of the function of refreshing garments. Textile sheets with a density around 300 gsm allowed conversion of most of their retained water into steam within an exemplary 12-minute cycle of tumbling in a heated dryer but were still very hot and steamy at the end of the 12-minute cycle.

[0055] Sheets with a density of 325 gsm or higher did not allow heated air to flow through sufficiently. Production of steam and temperature of the sheet after a 12-minute cycle decreased with increasing density. Sheets were still wet at the end of the 12-minute cycle and not much steam was present in the drum of the rotary dryer.
[0056] Sheets with a density of 275 gsm or less dried out too quickly. Retained water and steam in the dryer drum were gone before the end of a 12-minute cycle and the sheet was not hot. The steam did not last long enough, so the refreshing function was performed poorly.

[0057] It has been found that 10 to 15 minutes is the preferred duration of the tumbling in a heated dryer portion of the method of the present invention. For example, 12 minutes of heated tumbling is effective at refreshing most garments but does not produce undue damage to the refreshing sheet or garments.

[0058] Because a relatively low density of 300 grams per square meter (gsm) is the most effective for practicing the method of the present invention, it is clear why cotton towels are not very good for refreshing garments. A cotton towel of this density would have to be impractically large in area to hold sufficient water to generate a large amount of steam for 12 minutes. A cotton towel large enough would fill the dryer drum on its own, leaving no room for garments.

[0059] A more conventional bath towel of at least 600 gsm does not allow passage of hot air, thus releases its retained water as steam too slowly to perform the refreshing function.

[0060] Although particular embodiments of the invention have been illustrated and described, various changes may be made in the form, composition, construction, and use of the refreshing sheet herein without sacrificing any of its advantages. Therefore, it is to be understood that all matter herein is to be interpreted as illustrative and not in any limiting sense, and it is intended to cover in the appended claims such modifications as come within the true spirit and scope of the invention.

We claim:

1. A method for refreshing garments that are wrinkled, stretched out of shape, odorous, or slightly soiled, including the steps of:
   placing dry garments in a rotary clothes dryer;
   providing a suitable refreshing sheet of microfiber textile having a loop pile texture on at least one side;
   saturating the refreshing sheet with water;
   placing the saturated refreshing sheet in the dryer; and
   tumbling the garments and sheet together in the dryer with heat.

2. The method of claim 1, wherein the step of providing a sheet of microfiber textile having a pile texture on at least one side further includes:
   providing a sheet of microfiber textile with a fiber composition in the range of 70 to 80 percent polyester and 20 to 30 percent polyamide.

3. The method of claim 2, wherein the step of providing a sheet of microfiber textile having a pile texture on at least one side and with a fiber composition in the range of 70 to 80 percent polyester and 20 to 30 percent polyamide further includes:
   providing a sheet of microfiber textile having a pile texture on one side with a density of 275 to 325 grams per square meter.

4. The method of claim 2, wherein the step of providing a sheet of microfiber textile having a pile texture on at least one side and with a fiber composition in the range of 70 to 80 percent polyester and 20 to 30 percent polyamide further includes:
   providing a sheet of microfiber textile with one side including pile loops that are two to six mm long.

5. A method for refreshing garments that are wrinkled, stretched out of shape, odorous, or slightly soiled, including the steps of:
   placing dry garments in a rotary clothes dryer;
   providing a refreshing sheet consisting of a sheet of microfiber textile having a pile texture;
   saturating the refreshing sheet with water;
   placing the saturated refreshing sheet in the dryer; and
   tumbling the garments and sheet together with heat sufficient to create steam from the water contained by the refreshing sheet.

6. The method of claim 5, wherein the step of saturating the refreshing sheet with water includes the substeps of:
   immersing the refreshing sheet in standing or running water;
   and
   removing excess water by squeezing or wringing the sheet such that substantially no water drips from the refreshing sheet by the force of gravity.

7. The method of claim 5, wherein the step of placing the saturated refreshing sheet in the dryer comprises:
   spreading the refreshing sheet in a substantially horizontal disposition on top of the garments.

8. The method of claim 5, wherein the step of tumbling the garments and sheet together with heat sufficient to create steam from the water contained by the refreshing sheet comprises:
   activating the rotary clothes dryer to rotate with the garments and the refreshing sheet inside, with controls set such that the air inside the rotary clothes dryer reaches a temperature of 200 to 275 degrees F.

9. The method of claim 5, further including a final step of:
   removing the garments from the rotary clothes dryer after five to fifteen minutes of tumbling with heat.

10. The method of claim 5, further including a final step of:
    removing the garments from the rotary clothes dryer within ten minutes after the tumbling motion of the rotary clothes dryer has stopped.