Quadrant II – Notes

Programme: T.Y.B.Sc (Hons) Home Science

Subject: Textiles and Clothing

Course Code: GE15

Course Title: Textiles: Care and Conservation

Unit II: Materials and Practices in Care

Module Name: Whitening Agents

Module No: 10

Name of the Presenter: Charlotte Facho

---

10 Ways to Whiten Clothes Without Using Any Bleach

Whites are the hardest color to keep looking bright and new after just a few months' time. Your sweat and oils quickly become stains, and colors from other clothes will eventually bleed into the fabric, discoloring your bright whites into something merely whitish. But before you reach for the bleach, the ultimate chemical cleaner, try some a few of these safer, less-toxic DIY solutions out instead.

1. **Use a Citrus Soak**

Instead of sending your white laundry into the washer to get clean, whiten your yellowed items with a citrus soak. Martha Stewart recommends boiling your whites with lemons or lemon juice, turning up the heat until the water bubbles and then letting them soak for about an hour. You can also add lemon juice to your regular wash cycle and achieve similar results.

2. **Brighten with the Power of the Sun**

Once your whites are freshly washed and wet, skip the dryer cycle. Instead of making them suffer through a super high heat, lay them out in the sun to naturally whiten them. According to Keeper of the Home, the sun will bleach your clothing without the smell and danger of bleach. If you've ever left something out in the sun for a long period of time, you know just how whitening its rays can be.

3. **Add White Vinegar**

Get your whites white once again by adding a dose of white vinegar during the wash cycle. White vinegar even softens fabric, bringing brightness and comfort back to your clothes.

4. **Create a Baking Soda Soak**

With a homemade mixture of water and baking soda, you can whiten your whites without any additives in your washing machine. Combine four liters of water with one cup of baking soda, and drop in your white laundry. Let it soak, and your clothes will be fresh and clean once finished.

5. **Try Dishwasher Soap**

A secret whitening tool is hiding in your kitchen: dishwasher soap. According to Apartment Therapy, eco-friendly dishwasher detergent works to whiten whites as well as other DIY methods. Simply blend a bit in with your regular laundry detergent, and run your whites through their regular wash cycle.

6. **Break Out the Aspirin**

Aspirin, a great aid for headaches and all other aches, breaks down the gunk that's yellowed your whites. Dissolve five white aspirin pills in water, and add your clothes to the mix. Let them soak a while, and then toss them into your washer. Be sure to stay away from the colored varieties of aspirin, though, or your whites could come out with a colorful tinge.

7. **Add in a Bit of Blue**

Though it might sound counterintuitive, Grandparents.com suggests that adding blue coloring to your white laundry can counteract the yellow stains that this color tends to attract. Look for a bluing agent at your local grocery store (or on Amazon), and carefully follow the directions on the bottle. The original source warns that it's a bad idea to directly pour the agent on your clothes or add it to your detergent because you might end up with dyed blue clothing.

8. **Try Whitening with Borax**

A little bit of borax can work to increase the effectiveness of your usual laundry detergent, making it more effective at restoring cleanliness and color. It's also an addition that removes residue from stains and also softens the water.

9. **Skip the Detergent**

With each load of laundry and each trip through the wash, your whites become laden with detergent and residue from dryer sheets—and these additions to your once-bright clothes

can create that yellow tint. Good Housekeeping suggests sending your whites through a simple, detergent-free cycle with a small amount of ammonia to eliminate all accumulated residue.

10. Brighten with Hydrogen Peroxide

A common item in medicine cabinets, hydrogen peroxide can breathe new life into your dulled whites. According to PopSugar, it's an oxidizer that dissolves residue and brightens whites in a manner similar to common store-bought whitening agents.

(1) BLUEING COMPOUNDS-LAUNDRY WHITENING AGENTS

White fabrics often loose their original, sparkling whiteness and develop a yellowish tint

1-incomplete washing 2-deposition of iron or lime particles from soap on fabrics

3-the reappearance of natural colouring of the original fibres

Such clothes / garments absorbs more in the region of violet, indigo and blue and hence reflects less of these colours. There is more yellow rays in the reflected light due to which the garment looks yellow

When a blueing agent is applied on such surfaces it absorbs some of the yellow rays from the incident light and therefore the reflected light becomes deficient in yellow rays and the balance of colours required to produce white light is restored. Thus a white effect is produced by a subtraction process.

BLUEING COMPOUNDS

1- ULTRA MARINE BLUE—natural ultra marine blue is obtained from the mineral Lapis Lazuli which is semi precious stone. The synthetic is manufactures from Kaolin, sodium carbonate, sodium sulphate and sulphur. These are mixed together. Charcoal and rosin is used to reduce the sulphate to sulphite. The final product is a double silicate of sodium or aluminium together with sodium sulphate

UMB is tied in a piece of muslin and squeezed in cold water for the needed depth of shade The article immersed in the prepared solution. UMB is not completely soluble in water and remain as suspended particles. Any blue water retained in pockets or other bag shaped parts is shaken out. The articles moved constantly and not allowed to rest in the bath then removed and dried.

2-PRUSSIAN BLUE-this is Ferric ferrocyanide. A mixture of iron sulphate with potassium ferrocyanide. Not very suitable for use ,as it leaves rust marks on the fabric after ironing

3-ANILINE BLUE -the soluble blues are aniline dyes. Bluish purple is the common shade and it gives a whitish appearance .Are available as concentrated solutions or as powders.

They are easy to prepare, control and apply producing an even colour and leaving no sediment, so widely used by power laundries.

APPLICATION OF A BLUING AGENT

Dissolve the bluing in the last rinse. If the blue is in powder form, it is better to make a paste of the powder in a little water and add this to the bath.

Care is necessary to add the correct amount of blueing

The clothes should be dipped in the blueing solution

Each item should be dipped well and opened out to ensure even work

The article should be gently squeezed and dried

PRECAUTION IN USING BLUING AGENTS

Blueing should be done when the fabric is free from soap. Thus done at the last or second rinse.

Yellow articles should not be blued since they turn greenish

Over bluing can be undone by treatment with oxalic acid or should be soaked in boiling water for 2-3 minutes and then wrung out and dried

(2) FBAS –LAUNDRY WHITENING AGENTS

Fluorescent Brightening Agents are colour less compounds also known as white dyes. The Fluorescent Brightening agents operate by the phenomena of fluorescence

FBAs have a strong tendency to absorb light of shorter wave length that is in the ultraviolet region (340-370nm) and re-emit light of longer wavelength, that is in the visible range (420-470nm).

This fluorescent light which has a preponderance of blue light adds on to the reflected light which is deficient in blue light, thus restoring the balance of colour and producing a brilliant white effect.

Examples of FBAs –Ranipal (for cotton) and Ranipal-S (for synthetic and blends)

These compounds are absorbed into the fiber and emit a bluish light that covers up yellow tinges. They do so by converting invisible ultra violet rays to visible light. The kind of light source under which fabrics are viewed shows their performance–dazzling white in sunlight and quite different in any other light

Most detergents have FBAs incorporated in them.

(3) BLEACH-LAUNDRY WHITENING AGENTS

Bleaches are chemicals that are capable of whitening fabrics and removing stains by destroying colouring matter. Their action of combating yellowness and discolouring stains is a chemical reaction

Oxidizing Bleaches - these have oxygen as a chief component which is liberated and on contact with the stain forms a colourless compound.

Reducing Bleaches - these remove the oxygen from certain kinds of stains and so reduce them to a colourless compound

(1)HYDROGEN PEROXIDE –(H_2O_2)is a universal bleaching agent .Commercially available as 10 volumes,20 volumes 30 volumes and 100 volumes.it is a colourless liquid used to whiten clothes

(2) SODIUM HYPOCHLORITE –(NaOCL)This is a strong bleaching agent to be used only on white cottons and linens. It is diluted with equal quantity of water and the stained portion is sponged until it turns colourless

(3)SODIUM PERBORATE –($Na_2B_4O_7$) is a universal bleaching agent. It is a white crystalline powder introduced as an oxygen releasing agent in most synthetic detergent powders. It is the per hydroxyl ion which is responsible for bleaching.

(4)SODIUM CARBONATE (NA_2CO_3)widely used in laundry work .It is an alkali used to remove acid stains form bleached cotton and linen. Softening hard water, emulsify grease

BORAX- $Na_2[B_4O_5(OH)_4]\cdot 8H_2O$) occurs naturally and sold as white powder. It is mildly alkaline. Is safely used in bleaching cotton and linen fabrics which are yellowed.These are whitened by boiling in a solution of borax.

(**POTASSIUM PERMANGANATE** ($K_2Cr_2O_7$)-has a high content of oxygen. This enables it to remove stains like perspiration and mildew.

Safe to use on cellulosic and proteinic fibres. One problem with this bleach ,clothes are stained a characteristic brown. This is undone by dipping in a)sodium hypochlorite b)oxalic acid c)hydrogen peroxide

REDUCING BLEACHES

SODIUM HYDROSULPHITE - ($Na_2S_2O_4$)used for bleaching all fibre also delicates like wool and silk. It acts by taking oxygen out of the stain. Useful in removing grass, polish, mildew, ink, and dye stains.

SODUIM BISULPHITE – $NaHSO_3$ is a mild reducing agent. Its bleaching action is due to the formation of sulphur dioxide, which takes oxygen out of the stain. It is used in the proportion of 2 tbsp to one pint of water.

SODIUM THIOSULPHATE –$Na_2S_2O_3$(Hypo) is a bleach for cotton stain removal and whitening

THE RIGHT WAY TO BLEACH

1. Never pour bleach powder or liquid directly on the clothes.

2. Use the right amount of bleach.
3. Wash well after bleaching. If bleach remains on the fabric it will weaken and damage the garments.

Bleaches may be used in the wash cycle in laundering OR pre soak for 10-15 minutes Hot water and agitation bring about quicker release of the bleaching agent and results in stronger action on the laundry

Home Remedy to Whiten Yellowing Clothes

Lemon juice is an excellent bleach that can give white clothes a new glow and you don't risk over-bleaching as would if you used a chemical bleaching agent. Mix half a cup of lemon juice into 1 gallon of hot water. Stir well and soak clothes in it for an hour or even overnight

Baking soda (sodium bicarbonate) is chemically very similar to washing soda (sodium carbonate) and can, therefore, be used similarly. Baking soda is also a natural deodorizer, so your clothes will not only be brighter, but they'll also have a very fresh feeling to them.

Vinegar From bleaching clothes and removing hard-to-lift stains to deodorizing, vinegar can do all these things and much more. To bleach white clothes, make a solution by mixing 1/4 cup of lemon juice with 1/2 cup of distilled white vinegar.

References

1. https://housekeeping.wonderhowto.com/how-to/10-ways-whiten-clothes-without-using-any-bleach-0162473/
2. Noemia D'souza (1988) "Fabric Care"New Age International Publishers,pg18-25
3. Susheela Dantyagi (1959) "Fundamentals of textiles and their Care", The Indian Women Writers Cooperative Publishing Society