

# 27

## CLEANSERS AND AUXILIARIES

### 27.1 INTRODUCTION

We all wash our clothes at home and for this use soaps and detergents. If you have watched TV you would know the number of products that are advertised. There are bars and cakes of soap, powders, liquids and flakes for washing, blues and starches for finishing and everyone claims that his product is the best. Aren't you confused at times as to which product you should go in for?

In this lesson we will try to work out the qualities of a soap/detergent and match these with the characteristics of the fabrics, so that you can make a judicious choice of a good detergent and other things needed for laundering any fabric.

### 27.2 OBJECTIVES

After reading this lesson, you will be able to do the following:

- state the characteristics of a good cleanser;
- elaborate the need and characteristics of auxiliaries in laundering the fabrics;
- demonstrate skills in making wise choice of cleansers and auxiliaries.

### 27.3 CLEANSERS

A cleanser is a product that is capable of cleaning.

Another word used in place of cleanser is detergent. So now can you say that-

A detergent is a product which is capable of cleaning.

Detergents can be of two types: soaps and syndets.

- a) A **soap** is a cleanser obtained from mixing of natural oil/fat and waxes.

b) A **syndet** is a cleanser produced synthetically from chemicals.

In your daily life you must have had experience of working with soaps. You must have observed the various properties of soaps. Soaps are good cleansers. But you know syndets are even better. Both the cleansers act by helping penetration of water into the fabric by reducing the surface tension.

But **differences** are there.

- i) As you know that soaps wet the fabric more readily than water but syndets acts even more readily than soaps.
- ii) Also you must have observed that **dissolving** soaps in cold water is more difficult than dissolving it in hot water but syndets are also soluble in hot/warm water.
- iii) Soaps do not have a **distinct smell** but syndets are sweet smelling. Hence clothes also smell nice when washed with syndets.
- iv) You must have observed that your clothes tend to look **dull** after few washes with soap. It is because soap leaves **soapy deposits** on the fabric. This makes clothes look dull in due course of time. Syndets do not leave any deposits on the fabric.
- v) Syndets also make fabrics feel more soft and fluffy than soaps.
- vi) Soaps are cheaper than the syndets but if clothes become dull after few washes, what is the use; Hence syndets are more economical in the long run.

**Experiment:** To test the properties of soaps and syndets.

**Requirements:** Any soap, syndet, a basin/tub/bucket, dirty clothes, water (cold and hot).

**Procedure:** Take any washing soap and syndet and perform the following activities.

- i) Smell the soap and syndet.
- ii) Mix both in cold and also in hot water.
- iii) Wash a dirty white garment with soap and another one with a syndet.

After washing, look for the cleansing action of both the soap and syndet.

#### **Precautions**

- i) The dirty clothes should be equally dirty.
- ii) Do not add too much of soap or syndet and always mix the cleaners thoroughly before adding clothes into it.
- iii) Rinse the clothes thoroughly in running water before drying.

**Conclusions:** See if your observations tally with what you have studied about the characteristics of soaps and syndets.

### **INTEXT QUESTIONS 27.1**

1. Fill in the blanks with the most appropriate word.

- a) A detergent is a \_\_\_\_\_ that is capable of \_\_\_\_\_.
- b) A soap is a product obtained from mixing of \_\_\_\_\_ and \_\_\_\_\_.
- c) A product produced synthetically from chemical is known as a \_\_\_\_\_.
- d) Cleansers help in penetration of water into fabric easy by reducing \_\_\_\_\_.

- e) Soap leave \_\_\_\_\_ on the fabric which makes them look dull in the course of time.
- f) Syndet can easily dissolve in \_\_\_\_\_ water.
- g) Purchase of \_\_\_\_\_ is economical is long run.
2. State whether the following statements are true or false and write the correct response for false statement.
- i) Soaps and syndets are detergents.
- ii) Raw material for all cleansers are available in nature.
- iii) Syndets have deeper penetrating action than soaps.
- iv) Use of syndets makes the fabric appear grey and dull.

## 27.4 AUXILIARIES

What do you do after cleaning the fabric with soap or a syndet? What do you do with your white cottons to 'retain their whiteness'? What do you do to make the cottons more crisp or why do you give your silks for 'Charakh'. So this makes it very clear that besides cleansers there are other things required while laundering which will give new life to your fabrics. Such substances are called auxiliaries. Can you define an auxiliary in laundering? See the following box.

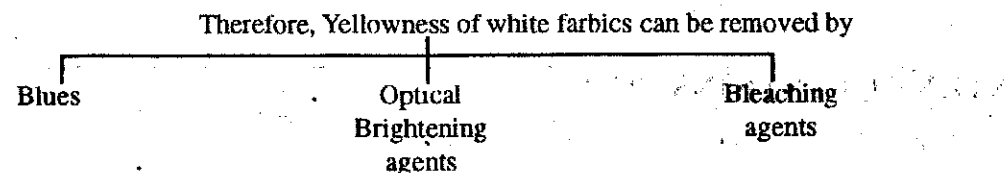
Products other than the cleansers required to give good finish to the fabric during the process of laundering are known as Auxiliaries.

Can you now list some of the auxiliaries in laundering ?

These are

- Blues
- Optical brightening agents
- Chemical bleaches
- Stain removing agents
- Stiffening agents.

Have you ever noticed that after 2-3 wears and washings your white cottons and linens lose whiteness and get a yellowish tint. You probably apply blue to counteract the yellowness of the fabric. You should know that besides blues you can also use bleaching agents and optical brightening agents.



### A. BLUES

**A blue is defined as a Chemical used as a fabric whitener.** It is obtained from chemical, vegetable and mineral sources and is available in market in form of powder or liquid. There are many types of blues and their colour varies from violet to blue to bluish green.

What happens when you dissolve blue in water? if you have not tried, try and do this activity.

When you dissolve the blue in water you get two results. Some blues are:

(i) Soluble others are

(ii) Insoluble

### i) Soluble Blues

These are soluble in water. These are actually dyes and marketed in great variety by manufacturers. These are easy to prepare and apply. These are widely used in large scale laundries.

These are available in concentrated solution or in powder form. These are easily removed through rinsing as these are soluble in water. Some examples of this type are: Methylene blue, and Indigo.

### ii) Insoluble Blues

These are insoluble in water, but when put in water and shaken, produce an evenly suspended mixture. They produce an even colouring on the fabric with good absorbing power. These are safe and not harmful to the fabrics. These are also available in solution or powder form. Remember blue particles suspend evenly in water. If water is allowed to stand, the particles settle down. Therefore wherever blue has to be applied.

— it should be applied just before the last rinse,

— the blue water should be mixed thoroughly before putting fabric into it.

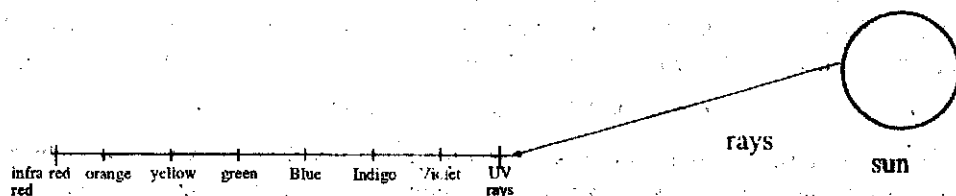
This will help to avoid formation of blue speckles on the fabrics and help in even application of blue, eg., ultra marine blue and prussian blue.

## B. OPTICAL BRIGHTENING AGENTS/FLOUROSCENT BRIGHTENING AGENTS (OBA'S/FBA'S)

Have you ever read the contents or list of ingredients written on the packet of syndet. Though all of them will not be having it so go to the market and try to study the various contents on the packet of the syndet. You will come across OBA or FBA. Also in the market ask specifically for OBA's, they are available with very famous brand names.

*Optical brightening agents are colourless dyes. They are flourescent compounds which give very bright colours when applied to the fabric and dried in the sun.*

These OBA's absorb light from the ultraviolet region and reflect back in the visible region. This reflected light has the effect of counteracting the yellowness thus brightening the whiteness of the fabric. All clothes start looking whiter than white. There is no chemical action so it has no harmful effect on fabrics.



Visible region (which we are able to see as colours of rainbow)

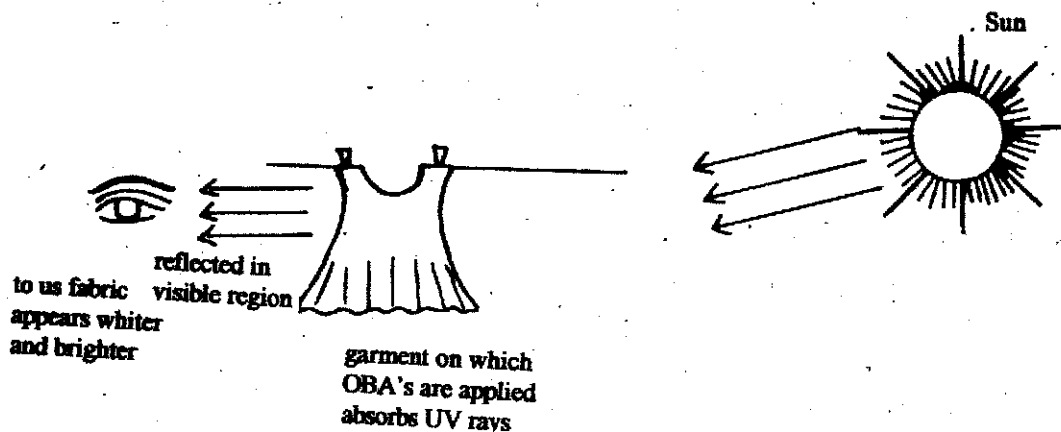


Fig. 27.1

### C. CHEMICAL BLEACHES

You must have seen on television various advertisements of bleaches. Do you know what are these, what is their composition and how they make fabric whiter and brighter? So let's study about bleaches. Bleaches can be defined as

*A bleaching agent is any material or compound that whitens or brightens the fabric through chemical action. This action may be oxidising or reducing.*

These bleaches help in removing colouring matter from fabrics. There are also used as stain removal agents.

Bleaches are of two types:

- Oxidising bleaches.
- Reducing bleaches.

#### a) Oxidising bleaches

These bleaches leave an almost permanent effect. These are used widely for application on vegetable fibres like cotton and linen.

Examples of oxidising bleaches are:

- i) sun light
- ii) moisture
- iii) Javelle Water (Sodium hypochlorite  $\text{NaOCl}$ )

This is used only on cotton or linen and should always be diluted before use. The fabric should be in bleach till the stain is removed. Further, the fabric should be rinsed to remove any remaining bleach in the fabric as it may harm the fabric by weakening it.

#### iv) Potassium permanganate ( $\text{K}_2\text{MnO}_4$ ) and Oxalic acid

Used for stains caused by dyes, mildew, perspiration and ink. The brown stains (which may be caused due to any reason like rust, or stains caused due to paan, can easily be removed by oxalic acid and by combination of  $\text{KMnO}_4$  and oxalic acid.

v) Sodium Bisulphite ( $\text{Na}_2\text{S}_2\text{O}_4$ )

Useful for removing dye stains. These are few of the most common oxidising agents.

vi) Hydrogen Peroxide ( $\text{H}_2\text{O}_2$ )

It is a universal bleach applied on both vegetable and animal fibres. Therefore it is a safe bleach for the silks, woolens, rayons as it has no harmful effect on animal fibres. But bleach may lead to rotting of the fabric if not rinsed properly and allowed to dry within the fabric. Always store  $\text{H}_2\text{O}_2$  in dark bottles, otherwise they do not remain effective.

## b) Reducing Agents

Reducing agents are less strong in action than oxidising bleaches and are applied on animal fibres like wool and silk. These bleaches do not have permanent effect on the fabric. You must have observed that when you buy a pure wool or silk pure white in colour, after sometime they turn slightly yellowish. Have you ever thought as to why this happens.

This happens because wool and silk are animal fibre, on them are applied reducing bleaches to make them pure white and when these fabrics come in contact with air slowly and gradually they turn yellow and loose their bleaching effect.

Examples of reducing bleach

- i) Sodium Hydrosulphate
- ii) Sodium Bisulphate.

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## INTEXT QUESTIONS 27.2

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1. Tick (✓) mark the most correct answer.
  - a) Products which give good finish to the fabric are:
    - i) blues
    - ii) OBA's
    - iii) stiffening agents
    - iv) auxillaries
  - b) Blues are applied on to the fabric to
    - i) give blue colour to clothes
    - ii) remove yellowness
    - iii) clean the fabric
    - iv) all of the above.
  - c) Blues are obtained from
    - i) vegetable sources
    - ii) chemical sources
    - iii) mineral sources
    - iv) all of the above
  - d) These blues produce an even colour on the fabric
    - i) soluble
    - ii) methylene blue

- iii) insoluble blue
- iv) both soluble and insoluble.
2. Fill in the blanks with appropriate words
- Ultramarine blue is a \_\_\_\_\_ blue.
  - OBA is a \_\_\_\_\_ dye and a \_\_\_\_\_ compound gives very bright colour when applied to the fabric and dried in the \_\_\_\_\_.
  - OBA's do not cause any \_\_\_\_\_ effect on the fabrics because there is no chemical action.
  - OBA's absorb the \_\_\_\_\_ of sun and reflect them in the \_\_\_\_\_ region thus making fabric whiter than white.
3. State whether the following are true or false and write the correct response for the false statement.
- Yellowness of the white fabric can be removed by using laundry auxiliaries.
  - Since insoluble blues are not soluble in water they do not produce an even blueing of the fabric.
  - Bleache whitens or lightens the fabric by chemical action.
  - Sunlight and moisture have bleaching effect on the fabric.
  - Sodium bisulphate can be safely applied on animal fibres.
4. Give one word for the following statements.
- A chemical compound which is capable of removing colouring matter from fabric making them whiter and brighter.
  - Javelle water can only be applied on this type of fibre.
  - A bleaching agent which is used to remove brown stains from the fabric.
  - A bleaching agent which can be safely applied on animal as well as vegetable fibre.
  - Pure white wool and silk turn yellow in colour in due course of time due to application of this bleach.

#### D. STAIN REMOVING AGENTS

We have already discussed one stain removing agent in this lesson. Can you recall — yes, the bleaches. But besides this there are other stain removing agents also. In this section we will talk about different things which help in removing any stains or unwanted marks. They include :

##### a) Acidic Reagents

- Oxalic acid** – used to remove stains of rust, ink. It is poisonous and bottle should be labelled.
- Salt of lemon**– Prepared by action of oxalic acid on potassium. It is also poisonous.
- Acetic Acid**– has vinegar like smell. A few drops used in final rinse of coloured fabrics especially silk, brightens the colour and improves the sheen of the material. It is also used to remove over blueing.

iv) **Vinegar** – Most satisfactory solvent for medicine, varnish and grass stain. Can be used in place of acetic acid.

#### b) Alkaline Reagents

i) **Borax (Suhaga)** – Safe to use for animal fabrics as it is a mild alkali. It has some bleaching action and it is used to bleach cotton and linen fabrics yellowed by age. Borax is also used in starch to give bright finish to the fabrics. It is available in powder form.

ii) **Ammonia** – mild alkali, used as a substitute for Borax for washing new woollens. It neutralises acid.

#### c) Grease Removers

i) **Grease solvents** – dissolve the grease and thus facilitate its removal. They are in liquid form and inflammable so should be used away from flame, used for grease stains.

##### Examples

- **Carbon tetra chloride ( $CCl_4$ )** – extremely volatile and is a solvent for paints. It can be used on all fabrics.

- **Acetone** – effective reagent for stains caused by cosmetics - lipstick, nail polish, shoe polish etc.

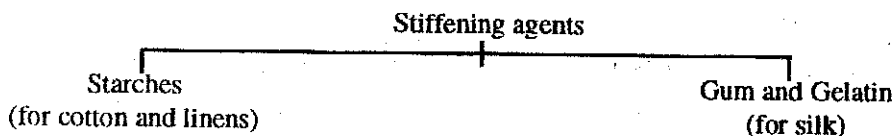
- **Methylated Spirit** – Poisonous and can be used for removing scaling wax, silver nitrate etc. But it is not a very effective solvent.

ii) **Grease absorbants** – They absorb grease and then remove it. They are dry and powder like eg. bran, fuller's earth and french chalk.

#### E) STIFFENING AGENTS

What do you do with your cotton shirts and duppattas? What do you understand by the term 'Charakh'? Yes, you apply stiffening agent on these to give more stiffness, crispness and shine to the fabrics. Beside this, they also make fabrics resistant to dirt and dust. Do you apply the same stiffening agents on all kind of clothes?

Yes, stiffening agents differ according to various fabric types. These are:



All fabrics do not require stiffening agents.

#### a) Starches

Now can you define a starch?

Starch is a well known stiffening agent used in laundry work for cotton and linens.

There are many types of starches. At home you must have made starch sometimes with rice or with arrowroot or to reduce the work you may be using one of the instant starches available in the market.

You may use any starch but to give full customer satisfaction, keep the following points in mind.

i) When applied on the fabric starches should leave it pliable, smooth and glossy.

- ii) The starch should be correctly prepared and applied in correct proportions to achieve the best results (you will read more about starches in proceeding chapter).
- iii) While applying starch, borax should be added in the starch solution. You must have noticed that while ironing a starched garment, the starch sticks to your iron surface. Addition of borax in the starch solution prevents sticking of the starch.
- iv) While applying on blue, violet or black garments some blue can be added in the starch solution to avoid formation of white patches on the dark colour garments.
- v) Starch prepared should be thoroughly mixed in correct proportions in water. There should be no lumps or granules, the starch solution should be homogenous.

#### b) Gum and Gelatin

There are used on fabrics which do not require heavy stiffening and on which starches cannot be applied, like silk, rayon. They are marketed in form of powder and lump form.

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### INTEXT QUESTIONS 27.3

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1. State whether the following statements are true or false and write a correct answer for a false statement.
    - a) Chemical bleach is one of the important stain removing agent
    - b) Salt of lemon is not an acidic stain removing agent.
    - c) Vinegar cannot be used in place of acetic acid.
    - d) Suhaga can be safely applied on linens because it has bleaching action.
    - e) Only borax can be used for washing of woollens because it does not have its substitute.
    - f) Lipstick stain can be removed by methylated spirit.
    - g) Grease removers remove stain by dissolving and absorbing grease.
    - h) Paan stain on your dress can be easily removed by acetic acid.
    - i) Borax can be safely used for washing of woollens.
    - j)  $CCl_4$  is a grease absorbant.
    - k) Stiffening agents can be used to make cotton and silks more stiff and crisp.
  2. Answer the following questions:
    - a) Define stiffening agents and state its various types.
    - b) While selecting and applying starch to you cotton dupatta what all points will you keep in mind?
    - c) How do stiffening of cotton differs from that of silk and rayon?
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## 27.5 WHAT YOU HAVE LEARNT

Dirty garment

↓  
needs a wash

↓  
We need two things for cleaning it perfectly

Soaps

a) Cleansers ✓

Syndets

and

b) Auxillaries

Soluble

— Blues

insoluble

— OBA's

oxidising

— Chemical  
bleaches

Reducing

Acidic

— Stain  
removing  
agents

Alkaline

Grease removers

Starch

— Stiffening  
agent

Gelatin and Gum

Well finished and cleaned garment

## 27.6 TERMINAL QUESTIONS

1. Define cleansers and differentiate between its various types.
2. List some of the most important laundry auxillaries.
3. Differentiate between soluble and insoluble blues.
4. What are FBA's? Explain their action on the fabrics on which they are applied?
5. Explain the action fo bleaches on vegetable and animal fibre and give examples where ever needed.

6. What are stain removing agents? As an experimenter, which reagents will you use to remove stains from your customers garments?
7. List the various reagents used for removing grease from the fabric?
8. Differentiate between grease solvent and grease removers with examples.

### 27.7 ANSWER TO INTEXT QUESTIONS

- 27.1 1. a) cleanser, cleaning b) natural oil/fat, waxes c) syndet  
d) surface tension e) soapy deposit f) cold water g) syndet
2. i) T ii) F (soaps are produced from natural oils and waxes but syndets are synthetically produced) iii) T iv) T
- 27.2 1. a) iv b) ii c) iv d) iii
2. a) insoluble blue b) colourless, fluorescent, sulphur  
c) harmful d) UV rays, visible
3. a) T b) F-insoluble dyes give no effect c) T d) T e) T
4. a) bleaching agent b) vegetable fibre c)  $\text{KMnO}_4$  and Oxalic acid  
d) hydrogen peroxide e) reducing bleach even blueing
- 27.3 1. a) T b) F (It is an acidic stain removing agent)  
c) F (it can be used because it is a diluted form of acetic acid only)  
d) T e) F (Ammonia is its substitute) f) F (Acetone) g) T  
h) F (they are brown stains can thus be removed by  $\text{KMnO}_4$  and oxalic acid)  
i) T j) F (its a grease solvent) k) T