



## UNIT 4: LAUNDRY

Laundry is an area designated for cleaning, ironing and finishing dirty linen, uniforms and guest laundry of the hotel. This area is equipped with suitable machinery and has skilled & trained manpower to deal with fabrics.

### Activities in a Laundry

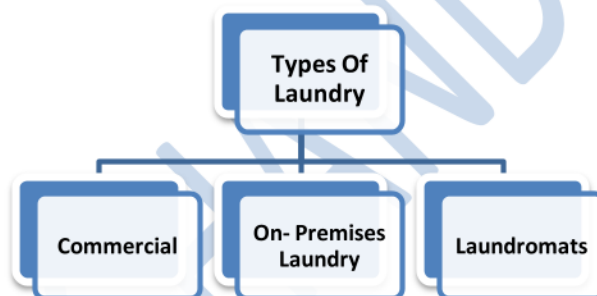
1. Washing, Drying & Ironing of all hotel linen, uniforms and guest laundry.
2. Dry cleaning of any of the above article that cannot be washed.
3. Stain Removal from all fabrics.

These activities require –

- Skilled manpower
- High costs – (Machinery, Energy, Water, Chemicals, Labour)

### TYPES OF LAUNDRIES

A hotel may operate its laundry services through the following types of laundries:



#### a) Commercial/Off-site/Contracted laundries

These cater to hotels on contract basis. The contract specifies

- The rate of laundering different articles of linen
- Time taken for laundering
- Charges for special treatment etc.

Usually soiled linen are laundered and given back to the hotel within 24-48 hours. The laundries may hold back 3-5% of linen for stain removal and other treatments. Contract laundries are a good option if hotel does not want to make a heavy investment in setting up its own laundry or has space constraints.

### Advantages

- No capital outlay
- Little technical expertise required
- Labour costs are saved
- No maintenance charge
- Work load of house-keeping department decreases
- No space is required to set up laundry



### Disadvantages

- Less control over standards
- Delivery and collection delays
- Higher stocks required as it takes longer time for the whole process to complete a single laundry cycle, including transportation
- Loss of article may increase
- Extra cost for special treatment
- Can not cover emergency requirement.

### b) On-premises/on-site/in-house laundry

An on-premises laundry (OPL) is hotels own laundry, situated on its premises. It may be run by the management or managed on contract. Many hotels make the heavy investment to provide quality service to the guest. More care is taken while laundering in-house since it is the responsibility of the hotel. Services are also faster. A maximum time of 8 hours time is taken to return the laundered article. However a contingency plan must be made, to be implemented in case of equipment failure.

### Advantages

- Par stock is reduced.
- Better supervision and control over standards.
- Proper care is taken while laundering articles so longer life for linen.
- Fewer chances of pilferage and losses
- Less stock is required as the cycle is quicker
- Can cover emergency requirement
- Laundry is a part of capital asset.

### Disadvantages

- The initial investment is high
- Higher labour cost
- Technical expertises are required
- High cost of maintenance, repairs and overheads
- Space is required to set up the laundry

### c) Laundromats

These are self service laundries usually found in motels, hostels or apartment complexes. Laundromats may be utilised by the coin slots to pay by the load or by making a fixed monthly payment. In some resorts a long staying guest can use the service.

## PLANNING AN OPL

The decision of whether to include a laundry on the premises should ideally be made during the initial planning



stages for the facility. If this is not done, considerable costs may be incurred to change the plumbing and electrical systems later. Hot water, cold water, steam, gas large sewer drains and water lines are essential plumbing considerations.

The layout of the laundry in terms of positioning machines should be such that there is an easy flow of traffic. Paying close attention to entries, exits, columns, drainage locations, exhaust areas, ventilation, and machinery access is necessary. Separate the soiled- and clean-laundry handling areas as much as possible to prevent recontamination of clean articles.

**Location** The laundry should, if at all possible, be easily accessible from the linen room & staff elevators so that heavy bundles of laundry can easily be transported from one location to another. It should be located away from guest areas, however, because of vibration and humidity problems anticipated in a laundry.

**Size** The rule of thumb for hotel laundries is 7 sq ft per room (not including storage). For soil storage, 1 cubic foot for every 3.6 kg (up to a height of 4 feet) usually allotted, though it is difficult to state an optimum size because of individual institutions' needs.

**Ventilation** This is essential to exhaust moisture-laden air from the dryers, out of the laundry room. Laundry rooms also require adequate ventilation through regular doors or windows to take in a supply of fresh air equal to the amount of air removed from the room through exhaust fans or similar.

**Equipment selection** Laundry equipment must be considered in relation to initial cost, life expectancy, maintenance, and depreciation. Overhead costs of utilities such as electricity, water, and gas need to be considered. Generally it is wise to install two washers instead of one because:

- It takes less time to accumulate a full load for a smaller machine.
- There will be some back-up if one machine needs servicing.
- Small, odd lots can be handled more efficiently.
- It will be possible to wash two different kinds of goods concurrently, for example, heavily soiled uniforms and lightly soiled sheets.
- Small machines impose less of a shock load on the hot-water and electrical systems.

**Doors** These need to be large enough to initially get the equipment into the room as well as to effectively enter and exit with utility carts and/or laundry baskets. Swing doors are good for cart movement. They should have windows for safety and bumpers or guards to protect their appearance.

**Ceilings** They should be impervious to moisture and have good sound-absorption properties (acoustics).

**Floors** These are very important in a laundry. They should be level concrete slabs capable of supporting the heavy cleaning machines. The floor around the machines should be sloped and there should not be any low spots in the floor where water can pool.

**Walls** These should be constructed of a material that is durable, moisture-resistant, and insulating. Windows





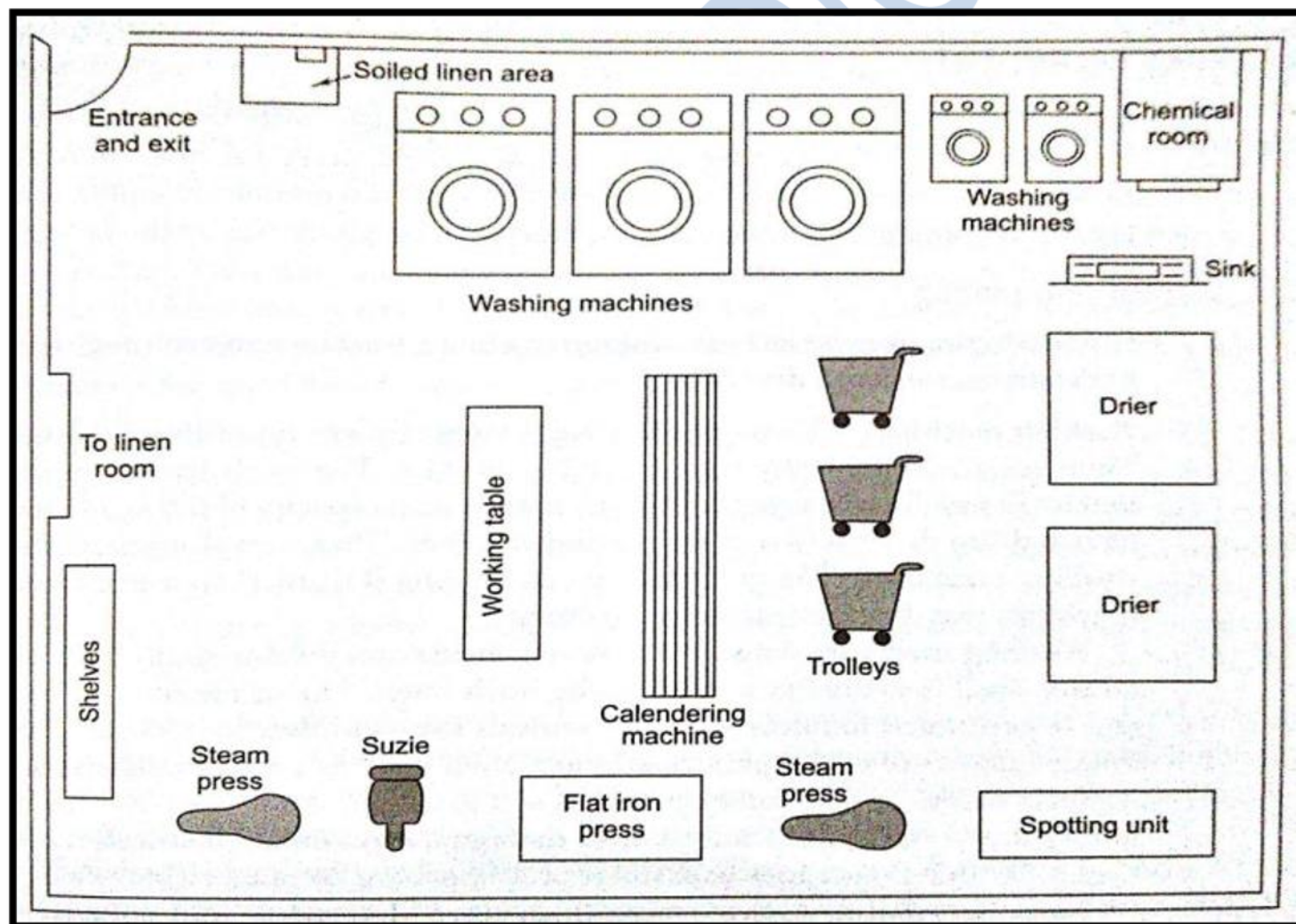
should be avoided so that the wall space can be used for storage shelves and bins; however, if they are required, care should be given as to their placement in order to eliminate glare. Windows should be located high on the wall.

**Placement of Machinery and work areas** Allow at least 18 inches between any two machines. Provide at least a 2-foot space between the back of a machine and the wall. The spotting unit should be located in a well-ventilated area.

**Labour** Skilled and trained manpower is required to handle laundering articles and laundry machines.

**Other costs** Costs of laundry aids such as soap, bleach, detergents, and other chemicals should be estimated and consideration should be given as to how bulk quantities of these supplies will be stored. Decisions have to be made as to who will maintain and supervise the laundry and what workforce will be utilized.

## LAYOUT OF LAUNDRY







In the sample layout, the dirty linen comes in laundry through adjoining linen room. Moving clockwise, it is first sorted and then washed / drycleaned in the machines. Non-iron articles are then moved to dryers. The ironing articles are moved to various ironing machines like calendar, suzie, steam press or flat iron press. The articles are then folded and stored in shelves. Clean articles are then sent to linen room for issues. Any article which is stained is specially treated at spotting unit before being washed / drycleaned.

## LAUNDRY EQUIPMENT

Laundering equipment are expensive and heavy duty. Most of the machines require a connection of water supply, electricity and a drain. Thus the placement of the machines is usually permanent in the laundry

1. Washing machines those used in hotel laundries are typically of the tumbler type. Their capacities typically vary from 7 to 200 kg. The wash barrels of those used in hotels are usually of stainless steel. Machines with a capacity of 100 kg or more generally have a drum that has two or three compartments. These are also referred to as 'tunnel washing machines'. The unit may be end-loading or front-loading. These machines may work on steam or electricity.

Washing machines consist of a motor, inside and outside shells, and a casing. The outside shell is stationary and holds the wash water. The inside shell holds the laundry and is perforated to allow water for various cycles to flow in and out. The machine's motor rotates either the perforated inner shell (on wash-wheel washers) or an agitator (agitator washers). The rotating shell or agitator helps the detergent to break up soil on fabrics in the wash cycle and remove detergents and other chemicals during the rinse cycles.

Most automatic washing machines have detergent- and solution-dispensing capabilities. In other machines, an operator adds detergent and solutions manually through hoppers or ports. Washing machines should have at least five ports—two for detergents and one each for bleach, sour, and softener.

### 2. Washer-cum-centrifuge and extractor

These machines range in capacities from 7 to 300 kg. They may be operated on steam or electricity or even a combination of the two. These washers have extraction capabilities as well. The motor spins the inside shell rapidly to remove most of the excess water after washing is completed. Such washers eliminate the need for hydro extraction.

### 3. Hydro-extractors

These are large centrifuges, ranging from 7 to 70 kg. The basket is made up of stainless steel. They are electricity operated. Cloths from washers are put into hydro extractors to remove about 50-75 percent of excess water and cloths are ready for pressing.

### 4. Dryers

These are units of tumbler-type equipment meant to remove moisture from damp, tightly packed linen by tumbling them in a rotating cylinder through which heated air is passed. These are generally used on no-iron linen and towels as these linen do not require pressing.

Loading is generally done from one end. To ensure the dryer's energy efficiency, air flow must be continuous. Most dryers have an internal lint-removal mechanism. Preventive maintenance should be carried



out for dryers regularly. Dirt or lint clogging the air-supply vents should be cleaned out twice daily. The ducts should be checked regularly for leaks and the lint containers should be emptied regularly.

## 5. Pressing Equipment

Pressing equipment use heat / steam to remove creases from the linen or fabrics. There are many specially designed pressing equipment as following:

- a) **Flat-bed presses** These are available in various sizes and can be heated by electricity or steam. A foot control helps in operating the press. Some are available as twin presses and rotate from front to back horizontally. An article of linen is put under one press and then this is sent behind while another article is put under the press. This is sent behind in its turn as the first one comes forward. The first garment, which has now been pressed, is removed while the second is being pressed, and a third is inserted in its place. In this way, there is no waste of time or space; else the operator would have to handle two machines simultaneously and keep moving between the two.
- b) **Calenders / Flat work ironers** These are large presses meant primarily for bed sheets, bedcovers, table cloths, and similar articles. They consist of a series of rollers in pairs, connected by a number of narrow conveyor belts. The speed of the rollers is adjustable. The sheet is fed in manually. The sheets can also be folded automatically in some calenders, which are fitted with an additional gadget for the purpose.

Temperatures for ironing different fabrics

Fabric	Safe ironing temperature
Linen	200°C
Cotton	180°C
Wool	160°C
Silk	160°C
Nylon	160°C
Polyester	160°C
Acrylic	120°C
Rayon	120°C
Modacrylic	No ironing

### c) Steam presses

This equipment uses the steam and heat to press clothes. The neatly folded cloths are sandwiched between two plates. One plate referred to as the 'Head' which gets hot and another plate referred to as 'Buck' through which steam is passed. Steam presses have additional attachments like the cuff and collar press.

### d) Collar-and-cuff presses

This press consists of three spring-loaded bucks that are firmly padded. The collar and cuffs of a shirt are placed on these. Head has the shape same as buck, when pressed over the buck applies uniform pressure on the collar and cuffs.

### e) Sleeve presses



These are primarily two types, one giving the sleeve top crease and other circular and so resulting no crease. In both cases, the sleeves are fitted onto the buck and are moved into the sleever cabinet. Here air fills into the sleeves, pressing them against the head and removing all wrinkles.

f) Steam cabinets

These are boxes in which linen such as curtains, blankets and bedspreads may be passed through them. The steam effectively removes the wrinkles from these articles. However, operating steam cabinets is time consuming and a worker is required to hang individual articles in the box.

g) Steam-air garments finishers/Suzie/genies

This consist of an open-mesh nylon air form bag that shapes garments such as dresses and jackets with a gentle cushion of steam and hot air to restore them to an as good as new appearance. The garment is draped on the form, then steam and air timers are pre-set. A foot switch starts the steam cycle. Penetrating steam softens and relaxes the garment fibers. Just before the steam cycle ends, the blower automatically starts and the air bag expands gradually to gently shape, dry, and set the finish of the garment.

h) Hand/flat irons Hand irons fall into two categories—those using an external heat source and those heated by electricity (the electric iron). The former are box-type irons using heavy charcoal or coconut shells. Another type of iron using an external source of heat is made of heavy cast iron and faced with polished steel. They weigh about 8—10 kilograms and are heated over a stove.

6. Ironing board to be used with hand-held irons, the ironing board should be well padded and smooth. It should be covered with a firm, white, woven cover stretched firmly and fastened well. It should stand firm and be of the correct height—75 cm from the ground is generally comfortable. It typically has a tray of asbestos on the right-hand side, on which a hot iron can be safely rested.

7. Folding Machines

Folding machines do not fold the linen as such, but aid the worker in doing so. The machines hold down one end of the linen to be folded so that the worker can fold it more easily.

8. Spotting Units

These consist of a spotting board, a spotting gun, and a steam attachment A board is a table that is partly solid and partly perforated. This surface is hard, smooth and made of marble, stainless steel or some other material that is resistant to acids, alkalis, and other spot-cleaning agents used. Dabbing and brushing of stains is done on the solid area of the table. Doing this on the perforated area can damage the fabric.

During operation, the spotting gun is held vertically above the stain and at least 10 cms away. Steam is shot through the stain and the cleaning agent used gets flushed out from the fabric.

9. Dry-cleaning Equipment

These are similar to washing machines of the tumbler type. They are available wide range of capacities. They are steam-powered or electrically operated, carry out washing, extraction, drying, and deodorizing in a continuous process. Solvent filtration and distillation are carried out in a closed system.

10. Carts, Trolleys, and Sacks

These are used for the transfer of clean linen from the laundry to the linen room and from the linen room to the floor pantries, and so on. Linen carts and trolleys are usually made of steel.





Laundry sacks may or may not be mobile. They may be made of wicker, fiberglass or plastic. A very popular choice is the one made of tough cotton, with drawing strings which can be washed frequently.

### LAUNDRY AIDS / LAUNDRY CHEMICALS:

Laundry 'aids' are the materials used to improve laundering results (bleaches, optical whiteners) or to accomplish specific functions or effects (soaks, stain removers, softeners, stiffeners).

The important laundry agents or aids are

1. Water
2. Laundry soaps
3. Detergents
4. Stiffening agents
5. Softening agents
6. Optical whiteners
7. Bleaches
8. Antichlor
9. Alkaline agents
10. Acid agents
11. Organic solvents
12. Absorbents

### WATER

- Referred to as universal solvent
- Primary agent in cleaning process
- Does not wet the surface properly if used by itself due to high surface tension. Therefore has to be supplemented with soap / detergent.
- Water may contain calcium and magnesium ions which makes it hard. Hard water prevents cleaning action of soap and does not let soap form a micelle.
- Water which contain more than 60ppm (parts per million) of calcium and magnesium is called hard water.
  - a) Less than 60ppm – soft water
  - b) 60-120ppm – moderately hard water
  - c) 120-180ppm - hard water
  - d) More than 180ppm - very hard water

### SOAP

Soap is technically also a type of detergent and is the most widely used fabric cleaner. "Soaps" are the sodium salts of fatty acids and are made by reacting natural oils with sodium hydroxide or another caustic alkali. All soaps contain water, but not more than 30 per cent in good soaps. Other additives are also included to give the soap specific properties. For instance, naphtha and a little mineral oil, such as paraffin oil, may be added to enhance the cleansing properties of the soap and help in the removal of grease.



## DETERGENTS

Soap-free detergents have properties similar to soap—such as foaming, wetting, and cleaning—but they are able to make soluble salts out of the calcium, magnesium, and other metal salts that make water 'hard' and render ordinary soap insoluble. Detergents and soaps act by lowering the surface tension of water. The presence of surfactants helps to lower the surface tension, which in turn helps the detergent solution to penetrate grease and dirt deposits on the fabric. Many additives are added to detergents to make them heavy-duty performers.

Differences	Soap	Detergent
		
Made from	Natural materials	Synthetic materials
Formation	Alkali and fatty acid	Alkali and sulphuric acid
Effectiveness in hard water	No effective in hard water due to formation of scum.	Effective in hard water. Do not form scum in hard water
Environmental impact	Easily broken down by bacteria	Not easily broken down by bacteria

## FABRIC STIFFENERS

A certain amount of crispness in fabrics gives them a fresh look and is obtained by using stiffeners. Commonly term **starching** is used for process, even though the stiffening agents may be something other than starch.

Stiffening is carried out for following purpose:

- To impart crispness to the fabric
- Stains and dust remains on the fabric and do not penetrate into the fabric
- To facilitate stain and soil removal

Stiffening agents

CATEGORY	TYPE	NAME
Natural	Starches	Maize, wheat, rice, potato, arrowroot
	Gums	Arabic, locust beans, agar
	Glues	Gelatin, albumin, casein
Modified natural	Cellulose derivatives	Carboxymethyl cellulose(CMC), hydroxymethylcellulose, methyl cellulose
	Gums	Meyprogum, indalca
	Glues	soyabean
Synthetic	Vinyl	Polyvinyl alcohol, polyvinyl ethers
	Acrylic	Polyacrylic acids, polyacrilamides

## FABRIC SOFTENERS

- Fabrics tend to start feeling harsh after repeated laundering due to build up of salts present in water on fibres of the fabric.



- Softeners coat the fibre of the fabric & make them softer and fluffier.
- Softening prolongs the life of the fabric.
- Softeners also act as bacteriostats.
- Too much softener, however decrease the absorbency.
- Fabric softeners are added with soaps in the final wash cycle.
- E.g. Quarternary Ammonium Compounds (QUATS)

## OPTICAL WHITENERS

- White fabrics tend to yellow after repeated use and laundering.
- This yellowish tinge can be masked by using optical whiteners.
- Bleaching is not optical whitening since it whitens the fabric by destroying the colouring matter.
- Optical whiteners mask the yellowish tinge.

Two types of optical whiteners are laundry blues and fluorescent brightening agents (FBA)

### Laundry Blues

These are actually blue dyes soluble in water, they are added to white fabric and makes to appear whiter.

### Fluorescent Brightening Agents (FBAS)

- These are colourless chemical compounds that have tendency to absorb light of shorter wavelength, and re-emit the light of longer wavelength.
- These chemicals are called white dyes and fluoresces.

## BLEACHES

These are chemicals capable of whitening fabrics and removing stains by destroying pigmented matter. They also disinfect and deodorize. Their action of combating yellowing and discolouring is due to a chemical reaction—it is generally oxidation, but may sometimes be reduction.

### Types of bleach

Bleaches can be classified into the following categories:

#### a) OXIDIZING BLEACHES

These bleaches release oxygen, which combines with the stains to form a colourless compound. The bleach should be left in contact with the fabric only until the stain is removed, or else the fabric will be weakened.

e.g. Open air and sunlight

▶ Sodium hypochlorite (Javelle water).

Sodium chlorite

Hydrogen peroxide

Bleaching powder (calcium hypochlorite)

#### b) REDUCING BLEACHES

Reducing bleaches work by removing oxygen from colouring matter of the stain.

**e.g.** Sodium hydrosulphite

Sodium bisulphite

Sodium thiosulphate





**Overbleaching** – The overbleaching of cotton and linen during laundering is one of the main causes general weakening of the fabrics. The fibres then become brittle and harsh, emitting a distinct 'crackle' when rubbed together. To guard against overbleaching, always use a bleach of known strength. Keep the temperature below 60°C (140°F) and add measured quantities of dilute bleach gradually. Chlorine bleach especially should not be used at temperatures above 71°C (160°F).

#### The right way to bleach

- Never use bleach directly on fabric Never pour bleach, whether liquid or powder, directly onto the fabric. It must first be diluted in a small container and then added to the water in the tub before the fabrics are immersed. Some bleaches may be used in the wash cycle during laundering. Some manufacturers recommend that the bleach be used together with the detergent. Others recommend pre-soaking the fabric in bleach for 10-15 minutes. Hot water and agitation help to dissolve the bleach and hasten its action.
- Use the right amount of bleach Bleach should be used according to the manufacturer's directions or as per the guidelines given above. All measurements should be precise.
- Wash off thoroughly Washing the fabrics thoroughly after bleaching is important because if the bleach remains in the fibres, the fabric will weaken.

#### ANTICHLORS

These are used during the after-wash/bleach rinse to ensure that all the chlorine in the bleach has been removed. Polyester fibres especially tend to retain chlorine and are typically treated with antichlor when chlorine bleach is used. E.g. sodium bisulfite, potassium bisulfite, and hydrogen peroxide.

#### ALKALINE AGENTS/ALKALINE BUILDERS

- Most laundry detergents are alkaline in nature.
- Soften the water for effective cleaning
- Helps in removing acidic stains
- Remove grease / oily soiling.
- E.g. Washing soda, Borax, Ammonium hydroxide
- Weak alkalis should be used for delicate fabrics, wool etc while a little stronger agent can be used on cottons.

However, washing soda should be used with care. If used in excess, the wash solution becomes alkaline, injuring fabrics. Washing soda also tends to make white clothes yellowish and fades prints. It is hard on the skin too.

#### ACID AGENTS / LAUNDRY SOURS

- These are useful for neutralizing alkalis and for stain removal. Mild acids used to neutralize any residual alkalinity in fabrics after washing and rinsing are called 'sours'. E.g. oxalic acid, salt of lemon, acetic acid, oleic acid etc



- Acetic acid - This is one of the most important acids in use in the laundry. A weak solution of vinegar is used as a steeping bath to remove excessive bluing agents and as a neutralizing agent. Treatment with a weak solution of acetic acid during the final rinse will not only fix colours, but in many cases also gives added brightness to the colours.

## ORGANIC SOLVENTS

- Solvents are applied to the most delicate fabrics either to remove stains or to dryclean them. They do not injure the fibres or the colour of the fabrics. They are used as spot-cleaning agents. E.g. Cleaning benzene ( $C_6H_6$ ) or petrol, Carbon tetrachloride ( $CCl_4$ ), methylated spirit, paraffin, turpentine etc
- Acetone This is a useful solvent for many stains. Acetone is an effective spot cleaning agent for stains caused by cosmetics, nail polish, lipstick, paint, varnish and shoe polish. Acetone is highly inflammable. Also, it should not be used on acetate fabrics as it readily dissolves them.
- Turpentine ( $C_{10}H_{16}$ ) This solvent is more expensive than paraffin. It has a distinctive smell and is both inflammable and volatile. It acts as a solvent for grease, varnish, paint, and printer's ink. It is also useful for cleaning rubber rollers. It's one disadvantage is its odour, which may be removed by dry-cleaning again. The advantage with turpentine is that it is safe on acetate.

## ABSORBENTS

These are substances suitable for removing grease spots from all fabrics and for the general cleaning of light-coloured fabrics that are evenly soiled. They absorb and help to reduce the intensity of stain. Some examples of absorbents are common salt, bran, fuller's earth, powdered magnesia, and French chalk.

## LAUNDRY PROCESS

The laundry process may be divided into the following stages:

1. Pre-washing
2. Actual wash
3. Rinsing
4. Hydro-extraction
5. Finishing

### Pre-washing

The following steps are there in prewashing stage.

#### Collecting of soiled linen

- The GRAs strip the linen from the beds and bath areas and put them directly into the soiled linen bags on the room attendant's cart.
- Linen should never be piled up on the floor where they may get walked on and soiled further and get damaged.
- F&B linen are also placed in hampers for delivery to the linen room.

#### Transporting soiled linen to the laundry

- Soiled linen should be sent to laundry as soon as possible so that stains do not set in.
- Large hotel have linen chutes that run down the entire height of the building to the laundry's soil and sort area.



**Sorting** The soil and sort area should be large enough to store the day's worth of laundry without slowing down other activities in the laundry. The articles are sorted out according to the following parameters:

- Degree of soiling – Stained, Unstained, heavily soiled, medium soiled and lightly soiled.
- Colour and fastness of dyes
- Fibre type
- Linen that need repair are separated and sent to tailor for mending before washing.
- Monogramming of new linen must be carried out before washing
- Condemned linen are sorted out and cut down before washing.
- Pockets are emptied and folds are checked

#### Weighing and loading

Each machine has a specific loading instruction that will have to be followed.

Each type of linen item has a known weight, so these are counted into piles until the appropriate total weight is reached. For instance, if the bed-sheet is known to weigh 500 g and the capacity of each compartment is 25 Kg, then 50 sheets are counted out for each compartment.

#### Actual wash

Whatever the type of machine used, for maximum efficiency it must be operated according to the manufacturer's instruction.

Determine the right washing programmes –

- ✓ T: Temperature
- ✓ A: Agitation
- ✓ C: Chemicals
- ✓ T: Time
- Duration Heavily soiled linen requires more time than lightly soiled linen. The rate at which soil is removed is not constant either, and must be taken into account. It is highest at commencement of the wash cycle and gradually becomes less as time passes.
- Temperature Generally the laundry workers should choose the lowest possible temperature to do the job effectively so as to save energy. However some detergents and chemicals work properly only in hot water.
- Agitation this is scrubbing action of a machine.
  - Too little agitation –inadequate washing.
  - Too much agitation – damage on fabric
- Chemicals what chemical will work the best on fabrics will have to be decided.
- Hardness of water Hard water contains salt that mix with soap and some synthetic soil detergents form a sticky substance called 'Soap Curd' which is deposited on the laundry making articles stiff.
- Number of wash cycles Several shorter washes are better than one long one. More soil can be removed with freshly made up suds.

#### Wash cycle

The typical wash cycle consists of nine steps:

Flush (1½-2 min.) this dissolves and dilutes water soluble salts to reduce the soil load for upcoming suds





steps. Items are generally flushed medium temperature and high water levels.

Break (4-10 min.) A High alkaline 'break' product (Soil- removal) product is added , which may be followed by additional flushes. The break cycle is usually carried out at medium temperature and low water levels.

Suds (5-8min) this is the actual wash cycle in which detergent is added. The articles are now agitated in hot water at low water levels.

Intermediate rinse/carryover suds (2-5 min.) This rinse cycle removes soil and alkalinity to help the bleach work more effectively later. It rinses linen at the same temperature as the suds cycle.

Bleach (5-8min) Bleach, if used, is added to hot water at low water levels. Bleach kills bacteria, whitens fabrics, and removes stains.

Rinse (1<sup>1</sup>/<sub>2</sub>-3 min.) Two or more rinse at medium temperature and high water levels used to remove detergent and soil from the linen.

Intermediate extract (1<sup>1</sup>/<sub>2</sub>-2 min.) This high-speed spin removes the leftover detergent and soil from the linen, usually after the first rinse step. This cycle should not be used immediately after the suds step because it could drive back into the fabrics. It should also not be used on no iron linen.

Sour/Softener/Starch/Sizing (3-5min.) softener and sours are added to condition fabrics. This cycle is run at a medium temperature and low water level. Starches are added to stiffen fabrics.

Final extract (2-12min.) A high speed spin removes most of the moisture from the linen. The length of the spin depends on the type of fabrics, extractors' capacity, and extractor speed.

### Rinsing

This is done using hot and cold water which are usually recovered and recycled from the earlier steps during the last rinse step in order to save water.

### Hydro-extraction

Extraction removes at least 50% of the water in the rinsing process and thereby reduces the weight of the laundry load to a minimum and prevents pronounced creases from setting into the fabrics. It also reduces the drying time.

### Finishing

This stage in the laundry cycle consists of the following processes:

- Drying Items that are dried after hydro extraction generally include towels and some no- iron linen. Drying should be followed by cool down period to prevent the hot linen being damaged or wrinkled by rapid cooling and handling. After cooling linen should be folded immediately to prevent wrinkles.
- Ironing
  - Sheet, pillow cases, table cloths and napkins directly go into flatwork irons.
  - Towels do not need Ironing
  - Guest laundry and uniforms are finished on various steam presses.
- Folding This can be done by hands or machines. Folding personnel must also inspect the linen, putting aside those needs to be laundered again. This step should be considered as quality control step.
- Storing After folding items are stacked. There should be enough storage space for at least one par linen
- Transferring Fresh, laundered linens are usually transferred linen room and then to their areas of use.



## GUEST LAUNDRY – VALET SERVICE

One of the primary roles of the laundry is to provide valet service to the guest. A valet service indicates to the guest that the hotel has laundry facility either in-house or outsourced. It is now an international practice to provide valet service.

A valet is one who on call, fetches soiled linen from guest and returns them either washed or dry cleaned as per the demands of the guests. In hotels that contract out laundry service, the valet service is provided by housekeeping. The house telephone directory in the room would list a number for valet service. That telephone connection may fall at the laundry desk attendant's table or the housekeeping control desk.

### Procedure of valet service

#### COLLECTION OF GUEST LAUNDRY

1. Guest calls the laundry desk
2. Desk attendant takes down the name and room number
3. Desk attendant alerts the valet who proceeds to the room
4. Valet knocks the door announcing 'valet service'
5. Valet may enter the room if guest invites  
(Hotel provides laundry bags found in the wardrobe. Two laundry lists are there one for washing and another for dry cleaning and pressing)
6. The guest counts the items and fills the "guest count" column
7. The valet proceeds to tally the garments and with the laundry list by physically counting them.
8. This figure he puts in "hotels count" column
9. In case of discrepancy, he brings it to the notice of the guest.
10. He also checks the garments for tear, stains or spots to avoid any complaint by the guest when clothes are received back. He may offer to repair small tears as a part of service
11. While filling the list valet prices each item and writes it in the total sum payable
12. Valet checks for the type of service required. Whether normal, urgent or express
13. Should the guest require some particular service, the valet must inform the extra charges.

Guest who leaves the laundry in the room and before leaving for some work

#### He may inform the laundry desk

- Valet will request the room attendant to open the room to collect the laundry.
- He will again tally the laundry with the guest count
- In case of discrepancy, he must call the guest and inform the same

#### Guest may not inform the laundry desk

- Room attendant calls the laundry desk when he/she enters to clean the room.
- The valet will follow the procedure above.

#### DELIVERY OF GUEST LAUNDRY

- Valet will deliver the laundry folded packed or on hangers as requested.
- Follow the procedure to enter the room
- He normally carries the laundry for all the guests who requested for normal service.
- If guest is not there, he will request the floor room attendant to open the room.



- He will leave the laundry on the bed or the hung ones in the wardrobe.
- If laundry closes after evening shift – task of delivering the laundry will be given to bell boy
- If guest checks out without collecting the laundry – it will be treated as lost and found

A sample Hotel laundry list

Laundry List			
Guest name..... Room number.....			
To be returned ____ Today ____ Tomorrow ____ Express service			
Required on ____ Hangers ____ Folded			
articles	Item count	Laundry Charges in Rs	Total Amount
Coat		200.00	
Trouser		65.00	
Shirt		45.00	
Dress		55.00	
			Guest Signature _____

### PREPARATION OF HOT AND COLD FACE TOWELS

**HOT FACE TOWELS** are offered to a guest on arrival at a hotel or restaurant to wipe the face in cold climates.

**COLD FACE TOWELS** are offered for the same purpose in hot or humid climates.

In many hotels, the preparations of hot and cold face towels are the responsibility of the house keeping department but same responsibility can be given to F&B department – Butler service in some hotels.

#### PREPARATION OF COLD FACE TOWELS

1. Take a fresh face towel.
2. Pour chilled water into a bowl.
3. Add a few drops of aromatic oil (selected as per the hotels standards) to chilled water.
4. Dip the folded towel into the cold water with a pair of tongs.
5. Take the towel out of the water and squeeze out most of the water.
6. Roll up the face towel and place it on ice cubes in an ice box or in a refrigerator.
7. Present the towels to the guest from a tray/salver when required, using a pair of tongs to offer it.

#### PREPARATION OF HOT FACE TOWELS

1. Take a fresh face towel.
2. Pour hot water into a bowl.





3. Add a few drops of aromatic oil (selected as per the hotels standards) to hot water.
4. Dip the folded towel into the cold water with a pair of tongs.
5. Take the towel out of the water and squeeze out most of the water.
6. Roll up the face towel and place it on steam-heated warming equipment.
7. Present the towels to the guest from a tray/salver when required, using a pair of tongs to offer it.

## STAIN REMOVAL

A stain is a spot or localized discoloration left on fabric by reaction with or absorption of a foreign substance. Stain removal or spot-cleaning is a skill that demands attention, specific techniques, and long experience. The two main factors to be borne in mind while attempting to remove a stain are:

1. The composition and colour of the fabric.
2. The nature and age of the stain

### General Procedure for Stain Removal

Follow the steps given below for removing stains from fabric:

1. Identify the stain.
2. Classify the stain.
3. Select the reagents to be used.
4. Select the procedure to be used.
5. Proceed step by step to remove the stain

### Identification of Stains

For removal of known stains, the first step is to identify the stain. This helps in selecting the reagents and procedures to be adopted for their removal. Different stains show different characteristics. Stains may be identified based on their colour, texture, or odour.

#### Colour

The colour of the stain generally gives a strong clue as to what the stain is. For instance, a red stain may be due to ink, tomato, lipstick, rouge, nail polish, blood, or some medicine. A yellow stain may be caused by turmeric, a medicine, gravy, or mangoes. Blue or black marks may be ink stains.

#### Texture

By touching the surface of the stain, a clue may be obtained. For instance if the stain is hard to the touch, it may be egg. A soft stain could be oil, ghee, lipstick, or any grease-based stain. Sticky stains may be glue or gum, paint stains usually have smooth feel. The visual texture or appearance of the stain also gives some clue to the kind of stain. Wax and paint stains build up on the surface of the fabric. Oils and fats cause translucent stains.

#### Smell

If the surface of the stain is rubbed with the fingers and then the finger and the stain are smelt, it might be helpful in identifying the stain. For instance, egg, perspiration, medicine, food, perfume, and so on have characteristic odours.



## Classification of Stains

Stains may be classified into different groups and a single stain may fall into more than one class.

Based on depth –

- a) Absorbed stain e.g. fruit juice
- b) Built-up stain e.g. chewing gum
- c) Compound stain e.g. curry

Based on source –

- a) Animal stain e.g. (mostly protein) blood, eggs, milk, meat, perspiration, urine
- b) Vegetable stain e.g. tea, coffee, juices, fruit, tomato, wine
- c) Grease stain e.g. oil, paint, varnish, paraffin, ghee, oil, butter
- d) Mineral stain e.g. medicines, rust, ink
- e) Natural dyes e.g. Heena, betel leaf, tobacco, coffee
- f) Artificial dyes e.g. water colours, hair dyes, markers
- g) Sugar solutions e.g. syrups, soft drinks, jams, jellies

Based on chemical property

- a) Acidic stain e.g. perspiration, urine (fresh) vinegar
- b) Basic stain e.g. perspiration, urine (old)

Micellaneous

Some stains such as mud, mildew, and scorching do not fall into any of the above classes.

## General instructions and precautions

These are some things to keep in mind for stain removal.

- All stains should as far as possible be removed while still fresh. If immediate treatment of the stain is not possible, it must be removed before the garment is washed.
- Known stains should be treated with specific reagents meant for their removal. If the nature of the stain is unknown, it should be treated first by the least harmful method, passing on from one process to the next more active until an effective reagent is reached: The sequence mentioned below may be followed:
  1. Soak in cold water.
  2. Soak in warm water.
  3. Try to bleach in the open air if time permits.
  4. Treat with a cold alkaline solution.
  5. Treat with a hot alkaline solution.
  6. Treat with a cold acidic solution.
  7. Treat with a hot acidic solution.
  8. Treat with oxidizing bleach.
  9. Treat with reducing bleach.
  10. In the event of the stain still persisting, which is unlikely, repeat steps (4) and (7).
- The nature and texture of the fabric should be borne in mind while selecting the reagent for stain removal.
- Old stains are difficult to remove and may be soaked in glycerin to soften.
- The reagent and the fabric should stay in contact with each other for the minimum time required for effective stain removal.
- The reagent bottle should be tightly capped after each use.



- The room should have good ventilation.
- After stain removal, the reagent must be neutralized. An acidic solution is neutralized with an alkaline one and vice versa. A thorough rinsing with clean water is essential after each treatment.
- Shortcuts should be avoided.

### Principles of Stain Removal

Nature of the stain	Principle of removal
Acidic	Neutralization with alkali followed by leaching out.
Basic	Neutralization with acid followed by leaching out.
Protein	Digestion with enzyme protease.
Mineral	Oxidation or reduction (bleaching) followed by washing
Fats and oil	Any one of the following processes: <ul style="list-style-type: none"><li>• Saponification.</li><li>• Absorption by absorbent powder.</li><li>• Dissolution in solvent.</li></ul>
Grease	Any one of the following processes: Absorption by an absorbent powder. <ul style="list-style-type: none"><li>• Dissolution in a solvent.</li><li>• Emulsification</li></ul>
Natural dyes and pigments	Oxidation (bleaching).
Synthetic dyes and pigments	Any one of the following processes: <ul style="list-style-type: none"><li>• Acidification followed by reduction.</li><li>• Oxidation in acidic medium.</li><li>• Reduction followed by oxidation.</li><li>• Oxidation followed by reduction</li></ul>
Sugar solution with colouring matter	Solubilization of sugar and reduction of colour
Miscellaneous	Each of these stains requires a special treatment.

### Classification of stain removal procedures

Stain removal procedures may be classified in the following ways:

1. By mode of action
2. By mode of application

By mode of action Stain-removal procedures fall into following categories according to the mode of action of the stain-removal agent:

- Solvent action  
Here water or an organic solvent are able to dissolve out the stain.
- Mechanical and emulsifying action  
This dislodges the stain without dissolving it.





- Chemical action  
Where oxidation or reduction reactions render an insoluble stain-colourless and soluble, they can then be washed out of the fabric.
- Digestion  
Here enzyme-containing products are used as pre-soaks or in detergent to break down the stain into soluble substances that can be leached out.

By method of application According to the method of application of the stain removal agent, the process may be classified as follows:

- Dip method  
The stained area of the fabric is immersed in the stain-remover solution. This is the ideal method when the stain is large or if there are many spots spread across the fabric.
- Steam method  
Stains on wool, silk, or any coloured fabric can be removed by steaming. The stained area is saturated with steam by spreading the cloth over; basin half-filled with hot water into which a small amount of the appropriate remove agent has been placed.
- Sponge method  
The stain-removal agent is applied on the stained area of the fabric with a sponge. This is the most frequently used method of stain removal.
- Absorption method  
In the absorption method, the soiled part of the fabric is placed on a sheet of blotting paper. The absorbent powder is spread on the soiled area; rubbed in lightly, and allowed to adsorb or absorb the grease. This method can also be carried out by applying a paste of the absorbent powder, letting it sit, and then scraping off the paste.

### Spotting

Laundries may employ specialists known as 'spotters' who are responsible for stain removal. Spotters have in depth knowledge of fabrics and dyestuffs. They know about the action of various chemicals on stains, fabrics, and dyes. They also have the skills and techniques required to handle various chemicals and remove stains from different types of fabrics without damaging the material.

### Removal of common stains

Stain	Method of removal
Ball point ink	Rub lightly with cotton swab soaked in denatured spirit or methylated spirit. An old ballpoint-ink stain may be soaked in glycerine to soften it and then treated.
Betel leaf(paan)	Bleach with potassium permanganate (the fabric turns brown). Then soak in oxalic acid or sodium bisulphite (till brown colour disappears). Launder.
Blood	Soak in cold water and salt for about an hour. Then transfer to lukewarm water containing an enzyme detergent. Soak for 30 minutes. Launder.



	OR Soak the stain in acetic acid for about 2 hours. Rub gently. Neutralize with ammonia solution.
Candle wax	Scrape off surface wax with a blunt knife. Place the stain between two sheets of tissue paper or blotting paper and press with warm iron.
Chewing gum	Apply ice to the stain. Remove surface gum with a blunt knife. Allow to soak in ice-cold water for a few minutes. Launder.
Chocolate, cocoa	Treat as for blood.
Coffee, tea	Pour boiling water over the stain. Apply borax solution and allow to dry. Pour boiling water over it. Launder.
Curry (turmeric and oil)	Apply soap and then bleach in sunlight. When dry, if the stain has not disappeared, wet it and put it back in sunlight again. OR Wash with soap and water. Put in the sun to bleach. Apply borax. Soak in potassium permanganate. Bleach with Javelle water.
Dye	Steep the fabric in water. Wash with soap. Treat with ammonia. Treat with acetic acid. Bleach with Javelle water if required.
Egg	Soak in enzyme detergent or in warm salt solution. Launder.
Fruit , juice	White fabrics may be bleached with sodium hypochlorite. Coloured fabrics may be soaked in warm borax solution. Then launder. OR Apply starch paste on the stain and leave for one hour. Rub off the paste. Pour boiling water over it. Rub borax and salt over the stain. Pour boiling water over it.
Ghee, oil	Rub French chalk on the stain and brush off. Repeat if required. Wash with soap and warm water. If the stain still remains, wash with a solvent.
Grass	Steep in methylated spirit. Bleach if required. Launder.
Grease	Dab with swab soaked in a solvent. Launder with hot water.
Rust	A patented rust remover may be used or the stain may be soaked in cold 1 % oxalic acid for about 15 minutes. Rinse in dilute borax solution and then launder.
Sealing wax	First use methylated spirit to soften the stain. Then remove with perchloroethylene. Launder.
Tar	First scrape off surface excess with a blunt knife. Lay on clean cloth and rub with oil and grease. Launder in hot water.

Stain	Method of removal
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Gum, glue	Steep in hot water containing a few drops of glycerine. Launder in hot water.
Henna	Soak in warm milk for half an hour. Launder.
Ice cream, milk	Rinse through with cold water and launder or apply petrol or carbon tetrachloride. Launder.
Ink (blue and black)	Hold under running water to remove as much of the ink as possible. Then treat using one of the following methods: Apply lime juice and salt and leave 30 minutes and launder. OR Soak in sour milk or curd for 30 minutes and launder OR Steep in dilute oxalic acid for 10 minutes and rinse thoroughly in dilute borax solution. Launder.
Ink red	Wash the stain with soap and water. Steep in borax solution. Treat as for dye stain if still remains.
Iodine	For fresh, wet stain, apply starch paste and leave it to absorb the stain. For a dry stain, steep in 1 % sodium thiosulphate solution. Afterwards, in both cases, launder as usual
Lipstick	Soften the stain by working glycerine into it. Apply methylated spirit. Launder.
Make-up (mascara)	Sponge with denatured alcohol or petrol or ammonia. Launder in hot water.
Medicine	Steep in warm water. Wash with soap and water. Steep in oxalic acid. Wash with borax solution. Steep in methyl alcohol. Bleach.
Mildew	Soak the stain in dilute potassium permanganate (1 % solution) for 15 minutes. Rinse in cold water once. Dip in warm 1 % solution of sodium bisulphite till the brown colour of the potassium permanganate disappears. Launder. OR Brush mildew off the fabric. Wash with soap and water. Bleach in the sun. Soak in lime juice. Spread salt over it. If the stain persists, bleach with Javelle water.
Mustard	Scrape off excess mustard. Work a little perchloroethylene into stain. Allow to dry. Soak in water and vinegar. Flush with water. If stain persists, bleach for 10 minutes in hydrogen-peroxide solution to which a drop of ammonia has been added. Launder.
Mud	Allow the garment to dry and dust off as much of the mud as possible, then soak the stain in an alkaline bath (20 g/litre of sodium carbonate) for a couple of hours. Launder. OR Brush off the mud when dry. Wash with soap and water. If the stain remains, treat with potassium permanganate and oxalic acid. Bleach with Javelle water.
Nail polish	Place the stain against a clean absorbent towel and dab with a cotton swab soaked





	in acetone or a mixture of acetone and amyl acetate or a commercial nail polish remover. After a few dabs, shift the stain to a clean area of the towel. Repeat till the stain-disappears. Launder. This process cannot be followed for acetate fabrics.
Paint, varnish	Follow the same process as for nail polish, but as remover, use turpentine or kerosene or denatured spirit.

Stain	Method of removal
Perfume	Do not let the stain age. Wash immediately, preferably in hot water. A weak solution of acetic acid or ethyl alcohol helps. Bleach if required.
Shoe polish	Sponge with liquid detergent. Steep the stain in carbon tetrachloride or turpentine. If the stain is old, soften with glycerine first. Bleach if required.
Soot	Apply starch paste and launder
Perspiration	Soak in 1% oxalic acid for 10 minutes. Rinse through with water and soak for 10-minutes in hydrogen peroxide.

### DRY-CLEANING

This is the cleaning of fabrics in a substantially non-aqueous liquid medium. Dry-cleaning removes oils as well as many water-soluble and some insoluble materials with the help of detergents and various other agents. The term 'dry-cleaning' is misleading. It suggests that the cleaning is done using dry materials only, whereas the fact is that in addition to dry powders, liquids such as petrol, benzene, and so on are also used. Unlike laundering, dry-cleaning does not cause swelling of the fibres and so does not lead to shrinkage, wrinkles, and bleeding of colours. Dry-cleaning is thus a safe method for cleaning delicate textiles. It was earlier known as 'French cleaning' or 'chemical cleaning' and is based on the principle that most of the dirt or soiling matter is held to the fabric by grease. When this grease is removed, the dirt is removed along with it.

#### Advantages

- Dry-cleaning cleans clothes for which laundering is not suitable.
- It causes no shrinkage (which is often seen in laundering).
- Dry-cleaning does not flatten the pile of fabrics.
- Finishes are retained even after dry-cleaning.
- Colours do not bleed on dry-cleaning.
- Stains are more readily removed by dry-cleaning.

#### Disadvantages

- Dry-cleaning is expensive compared to laundering.
- Many dry-cleaning solvents are harmful to health if inhaled for long durations.
- After cleaning with solvents, a certain unpleasant smell tends to be retained by the articles.

#### The Process of Dry-cleaning



1. **Marking** When soiled garments are delivered for dry-cleaning, they are first sent to the marking area. Here, a piece of white fabric with a number or some other code stamped on it is securely attached to the garment. Every article is marked individually to facilitate identification.

2. **Sorting** The garments then pass on to the sorting area. At this point, if there are any tears or any seams that have ripped open, the garment is sent to the seamstress for mending. Different types of garments are sorted into different hampers so that each hamper contains only one class of garment. E.g.

- White and light-coloured clothes
- Dark-coloured clothes.
- White and light-coloured woollens.
- Dark-coloured woollens.
- Drapery and furniture covers.
- Silks etc

At this stage, pockets are checked, parts of the garment showing an excess of dust or dirt are brushed, and fancy buttons, buckles, and so on are removed.

3. **Application of absorbents** Absorbents are applied to remove grease spots from all kinds of materials; for cleaning light-coloured fabrics such as white lace, white furs, white shawls, and white felts that are evenly soiled; and for articles such as fur and dark-coloured fabrics that cannot be cleaned by solvents alone.

4. **Spotting** Heavily soiled areas of the garment are treated with solvents. Special spotting tables equipped with steam guns, compressed air, and spot-removal chemicals are used. All chemicals used are removed from the fabric.

5. **Cleaning** A load of clothes depending on the capacity of machine is transferred to the dry-cleaning cylinder. Very delicate clothes are placed in a net bag first. An appropriate solvent is circulated through the clothes. The contact time of the clothes with the solvent and the rinse time vary according to the rate of flow of the solvent and according to the type and size of the workload. This can vary from 5 to 45 minutes depending on fabric composition and degree of soiling. The dry-cleaning machine is constructed in such a way as to mechanically agitate the load. Immersion and agitation of the garments in the solvent takes place, loosening the soil and dissolving it out. The drum is also perforated to allow the solvent to flow through. PERC (Per chloro ethylene) is the most common laundering solvent. Some others are Dipropylene glycol tertiary butyl ether (DPTB), liquid silicon etc

6. **Extraction** Excess solvent is removed from the garments by centrifugal action in a revolving perforated cylinder contained in a tumbler. Modern dry-cleaning machines perform the cleaning and the extraction in the same cylinder. Thus, the operators are not exposed to the solvent vapours during the process. In the older dry-cleaning drums, using petroleum, a separate extractor was used.

6. **Drying** After extraction of excess solvent, the garments are dried in a dryer that has a perforated drum enclosed in a tumbler. Hot air is passed through the clothes and is sucked out by an exhaust fan. Garments that might be damaged by tumble-drying are dried in a drying cabinet in which there is a fan.

7.



8. **Filtering and distillation of the solvent** Solvents are expensive and therefore filtered out, distilled, and reused; they are not allowed to evaporate after use. This also reduces fire hazards and health hazards to workers in the laundry.
9. **Inspection** Dried garments are inspected to check that they are perfectly clean. If necessary, they are spot-cleaned a second time. Wet-cleaning may sometimes be carried out at this stage. In this operation, each article is inspected individually. If any spots or stains are seen, the garment is sent back for re-spotting.
10. **Finishing** In this process, the garment is restored as nearly as possible to its original size, shape, feel, and appearance. The clean garments are then pressed.
11. **Packing** Buttons and buckles that had been removed are stitched back on. Finally, the garments are packed in paper or suspended from clothes hangers covered with polythene bags. They are now ready for delivery.

### COMMON LAUNDRY PROBLEMS AND THEIR SOLUTIONS

- **Grayness overall:** Causes are insufficient amount of detergent, low water temperature, or incorrect sorting. To solve, increase the amount of detergent, use a detergent booster or bleach, or increase wash temperature. Sort heavily soiled from lightly soiled items and carefully sort by color.
- **Grayness uneven:** Usually caused by insufficient amount of detergent, too low water temperature, or improper sorting. Sort garments by color and rewash with an increased amount of detergent and hottest water safe for fabric. In future, use sufficient detergent and wash in hottest water safe for fabric.
- **Yellowing:** May be caused by buildup of body soil. Increase the amount of detergent; use a product with detergent booster or bleach safe for fabric; or try both methods at once. In the future, use a sufficient amount of detergent. Use bleach or laundry whiteners if possible.
- **Blue stains:** Detergent or fabric softener may not be dissolving or dispersing. If detergent causes the problem, soak the garment in a plastic container using a solution of 1 cup white vinegar to 1 quart water; soak for one hour; rinse and launder. If you have been using fabric softener, rub stains with bar soap. Rinse and launder.
- **To prevent stains from detergent or fabric softener,** add the detergent and turn on the washer before adding laundry. If using fabric softener, dilute it in water before adding to wash or rinse cycle or to dispenser.
- **Powder residue:** Usually caused by undissolved powdered detergent. Always add detergent before filling tub and adding laundry, or try switching to a liquid detergent.
- **Stiffness or fading:** May be caused by hard water. Use liquid laundry detergent or add a water softener to granular detergent.
- **Lint** is often caused by mixing items that give off lint, such as bath towels with napped corduroy slacks. Avoid this by washing such items separately or with like fabrics.
- **Pilling:** This is a wear problem and a characteristic of some synthetic and permanent-press fabrics. If necessary, use a lint brush or roller with masking tape to remove pills. Adding a fabric softener in the























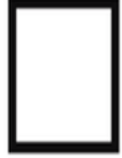






washer or dryer may also help. When ironing, use spray starch or fabric finish on collars and cuffs. Use a medium setting to avoid scorching delicate synthetic fabrics.

- **Shrinking:** Avoid the problem by following care instructions on labels. Shrinking is irreversible. Reduce drying time and remove garments when they are slightly damp, which is especially important for cotton knots.



















### IDENTIFYING TEXTILE / FABRIC CARE LABELS

All quality fabrics carry labels indicating how they have to be cared for and what precautions need to be taken in their care to avoid damage to the fabric. In many countries, care labels on fabrics are mandatory by law. Manufacturers & exporters of garments and other fabrics are required by the importing countries to stitch care labels on fabrics being exported. **A laundry symbol, also called a care symbol, is a pictogram which represents a method of washing, for example drying, dry-cleaning and ironing clothing.**

Symbol used on care labels:

	TEMPERATURE				CYCLES		OTHER	
 MACHINE WASH	 Cold	 Warm	 Hot	 Normal	 Perm. Press	 Delicate	 Do Not Wash	 Hand Wash
	HEAT SETTING				CYCLES		OTHER	
 TUMBLE DRY	 No Heat	 Low	 Medium	 High	 Normal	 Perm. Press	 Delicate	 Do Not Tumble Dry
	DRY							
 DRYING	 Hang Dry	 Drip Dry	 Dry Flat	 Dry In Shade	 Do Not Dry	 Do Not Wring		



 IRONING	TEMPERATURE					
	 Low	 Medium	 High	 No Steam	 Do Not Iron	
 BLEACHING	BLEACH					
	 Any Bleach	 Non-Chlorine	 Do Not Bleach	 Chlorine Allowed	 Non-Chlorine	
 DRY CLEAN	DRY CLEAN					
	 Dry Clean	 Do Not Dry Clean	 Any Solvent	 Any Solvent Except	 Petroleum Solvent	

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