Unit-6

Cleaning Science
Objective

➢ Feature of good cleaning agent.

➢ Different types of cleaning agent
Main points

➢ Types of cleaning agent.

➢ Application of cleaning agent.
CLEANING SCIENCE

➢ By cleaning we mean removal of dust, dirt, stain and other unwanted substances from the surface.

➢ Dust settled on surface can be removed by normal dusting but when dust comes in contact with grease, oil or moisture then cleaning agents are required.
CLEANING METHODS

➢ Washing e.g. water and cleaning agent
➢ Friction using an abrasive. For e.g. sandpaper
➢ Static electricity by using a mop sweeper.
➢ Suction using a vacuum cleaner
➢ Force using a pressurized water.
➢ Sweeping before dusting
➢ Damp dusting( only after dust has settled down)
➢ Mopping by using hot & clean water and a neat mop.
TYPES OF CLEANING AGENTS

➢ **1) WATER**: It is the simplest and the most common form of cleaning agent. Its cleansing property is not effective due to high surface tension hence it has to be used in conjunction with a detergent. It’s cleansing property is also reduced due to hardness in water.

➢ **HARD WATER**: Hardness in water is caused by the presence of calcium and magnesium ions in water. If water contains more than 60 ppm (parts per million) of calcium & magnesiuim, it is called as hard water.
TYPES OF HARDNESS

➢ TEMPORARY HARDNESS: It is caused by the presence of bicarbonates of calcium & magnesium in water. This can be removed by simply boiling the water.

➢ PERMANENT HARDNESS: It is caused by presence of sulphates & chlorides of calcium & magnesium.
REMOVAL OF HARDNESS

➢ **ALKALI METHOD**: The alkali calcium hydroxide is used to remove the hardness.

➢ **LIME SODA METHOD**: In this method, sodium carbonate & calcium hydroxide both are used.

➢ **SEQUESTERING AGENTS**: For e.g. sodium hexa-metaphosphate. These agents react with calcium & magnesium ions forming complex salts.

➢ **PERMUTIT OR ION EXCHANGE PROCESS**: Zeolites are hydrated silicates of sodium & aluminium. During the ion exchange process, hardness is totally removed.

Gautam Singh, Hospitality Trainer, 07830294949
DETERGENTS

➢ They are the cleaning agents used in conjunction with water.
➢ They are of two types:

➢ SOAPY DETERGENTS
➢ SYNTHETIC DETERGENTS (non soapy).
PARTS OF DETERGENT

➢ **ACTIVE INGREDIENTS**: In soapy detergents, the active ingredients are obtained from natural oil & fats. The active ingredients in synthetic detergents are the surface active agents or surfactants obtained from petrochemicals.

➢ **BUILDERS**: A builder is a compound that has no surface active properties but increases the efficiency of the detergent.

➢ **ADDITIVES**: Added to the detergent, these may be bleaching agents, blueing agents, fluorescent brighteners and so on.
TYPES OF DETERGENTS

3. LIQUID SYNTHETIC DETERGENTS:
They are light duty detergents used on light soiled clothes or light soil on floors. They do not contain any bleaches or oxygen for oxidation.

4. POWDERED SYNTHETIC DETERGENTS:
They have multiple properties in the sense that the ingredients can be varied for multi-purpose. Hence they can be used for washing floors, tiles, fabric & are available in packs.
TYPES OF DETERGENTS

1. **SOAPS:**
   Made by the process of saponification wherein fat or oil is subjected to alkali treatment.
   It is an anionic surfactant & are more effective in soft water. Scum formation takes place in hard water and is not easily rinsed away.
   In hotels it is available in 25g. To 50 g. packs.

2. **SYNTHETIC DETERGENTS: (soapless):**
   They have replaced soaps because they have good emulsifying power as well as suspension power.
QUALITIES OF A GOOD DETERGENT

➢ Should have a good wetting power by reducing the surface tension of water.
➢ Should have a good emulsifying power in breaking down fat & grease.
➢ Should have a good suspension power i.e. dirt once removed should not get back to the fabric.
➢ Should be soluble in all forms of water.
➢ Should be effective over a wider range of temperature.
QUALITIES OF A GOOD DETERGENT

➢ Should be bio-degradable.
➢ Should not damage fabric or effect hand.
➢ Should clean with minimum agitation.
➢ Should easily rinse away.
DIFFERENCE BETWEEN SOAP & DETERGENT

SOAP
➢ Ph value is 8
➢ Lather formation takes place in soft water.
➢ Good at removing greasy dirt.
➢ Good at suspending dirt.
➢ Does not dissolve properly in cold water.

DETERGENT
➢ Ph value is 6-7
➢ Can lather well in hard water also (synthetic detergents)
➢ Not very good at removing dirt.
➢ Excellent in suspending dirt.
➢ Easily dissolves in water at all temperatures.
DIFFERENCE BETWEEN SOAP & DETERGENT

SOAP
➢ Scum formation in hard water.
➢ Lathers well in soft water.
➢ Not good at stain removal
➢ Yellowing of white fabrics

DETERGENT
➢ Unaffected by hard water.
➢ Lathers in other forms of water also.
➢ Good at stain removal.
➢ Retains whiteness of white fabrics.

Gautam Singh, Hospitality Trainer, 07830294949
ABRASIVES

➢ Cleaning depends on the rubbing or scratching properties of the material. E.g. sand paper, feldspar, calcite. If possible, fine abrasives should be used. In a scale of 1 to 10, which shows 1 as talk and 10 as diamond, feldspar has hardness of 6 and calcite as 3.

➢ FINE ABRASIVES : For e.g. filtered chalk, jeweller’s rouge.

➢ MEDIUM ABRASIVES: For e.g. scouring powder.

➢ HARD ABRASIVES: sand paper, steel wool.
SOLVENTS

➢ These chemicals are used for removal of grease, dry-cleaning of fabrics & stain removal. The room should have proper ventilation because they have a strong odour.

➢ Solvents are inflammable.

➢ They are strong chemical agents hence used in small amounts.

➢ They are volatile hence stored in air tight containers.

➢ Examples: Carbon tetrachloride, Methylated spirit, Per-chloro-ethylene, Turpentine oil, Acetone, White petrol, Amyl acetate.
➢ The pH scale measures how acidic or basic a substance is. It ranges from 0 to 14.
➢ If a pH is lower than 7 it indicates the solution is an acid.
➢ If it is above 7 it is a base or Alkaline.
➢ If a pH is a 7 it is neutral. Scientists use a pH number to show the strength of an acid or base. A pH is measured by dipping litmus into solution such as water or other substances.
CLASSIFICATION OF CLEANING AGENTS

➢ ACID CLEANERS
➢ ALKALI CLEANERS:
➢ NEUTRAL CLEANERS:
ACID CLEANERS

➢ They include cleaning agents with Ph value below 7.
➢ They are used for cleaning toilets & removing stains from baths & washbasin.
➢ They vary in strength with weak acids such as acetic acid (pH 3) to strong acids such as hydrochloric acid (pH 1).
ALKALI CLEANERS

➢ (pH above 7).
➢ They are good at removing grease stains.
➢ Since they are strong, rubber gloves should be worn.
➢ Caustic soda based alkalis are used to clear blocked drains. E.g. baking soda (sodium bicarbonate), washing soda (sodium carbonate), caustic soda (sodium hydroxide), Liquid ammonia, hydrogen peroxide.
NEUTRAL CLEANERS

➢ (pH 7).
➢ Include common/general purpose detergents for washing dishes, damp dusting, mopping & routine cleaning tasks.
POLISHES

➢ Polishes are meant to provide protection to surface against dirt, stain, finger marks & scratches.

➢ They create an attractive sheen on the surface.

➢ Before applying polish, the surface should be dried and cleaned to remove any dirt. A thin layer of polish should be applied. Excess polish makes the surface sticky.

➢ Buff the polish with rags or dusters preferably one with a napped surface.
POLISHES (CONTD.)

➢ Polish should be done in a well ventilated room. Before applying fresh polish, the older polish should be removed from the surface.

➢ High speed emulsion polish require the use of floor polishing machines.

➢ Furniture polish can be paste, cream, liquid, spirit based or water.
CLASSIFICATION OF POLISHES

POLISHES

METAL POLISHES
- Paste
- Cream
- Liquid
- Spray-On

FURNITURE POLISH

FLOOR POLISH
- Spirit/Solvent Based
- Water Based
- High-Speed Emulsion Polish

LEATHER POLISH

Gautam Singh, Hospitality Trainer, 07830294949
FLOOR SEALS

➢ Floor seals are applied to floors which form a thin layer of plastic or a semi permanent finish that acts as a protective layer.

➢ They are grouped as PERMEABLE, SEMI-PERMEABLE & IMPERMEABLE.

➢ Impermeable seals should not be used on wooden or cork floors as moisture naturally found on these floors will get entrapped and may disintegrate the floor.

➢ Impermeable seals may be used on PVCs, thermoplastic tiles & rubber floors.
FUNCTIONS OF FLOOR SEALS

➢ Floor seal increases the shelf life of the floor by reducing the wear & tear due to usage.
➢ They improve on the appearance of the floor & also provide attractive gloss.
➢ They do not allow any dirt, stain to penetrate.
➢ Maintenance of the floor is reduced as it forms a protective coat over the floor.
TYPES OF FLOOR SEALS

➢ OLEO RESINOUS SEALERS
➢ ONE POT PLASTIC CLEANERS
➢ TWO POT PLASTIC CLEANERS
➢ PIGMENETED SEALER
➢ WATER BASED SEALERS.
➢ SILICATE DRESSINGS
OLEO RESINOUS

➢ They are clear, solvent based cleaners used on wood, cork floors.
➢ They consist of oil, resins & solvents.
➢ They not only impart gloss to the surface but also penetrate the floor.
ONE POT PLASTIC SEALERS

➢ Also called one can sealers.
➢ They impart gloss to the surface but do not penetrate it hence used on wood, cork etc.
➢ Three types of one plastic seals are:
   ➢ A. Urea formaldehyde resin with an acid catalyst.
   ➢ B. Oil modified polyurethane.
   ➢ C. Moisture cured polyurethane.
TWO POT PLASTIC SEALERS

➢ It consists of two components. One component is the base which may be formaldehyde or polyurethane & the second component is the accelerator or hardener.

➢ The two components are kept separate & when required they are mixed in recommended proportions otherwise the sealer is not effective & it becomes patchy.
PIGMENETED SEALERS

➢ These sealers contain colour pigments which not only impart colour but also strengthen the sealer.

➢ They are used in concrete, wood, magnesite, asphalt & stone floors.

➢ They are of following types:
  A. One-pot synthetic sealers
  B. Two pot poly-urethane.
WATER BASED SEALERS

➢ They are composed of acrylic resins (made from a particular organic acid) & a plasticizer.
➢ They penetrate the pores on the floor surface to provide a plastic skin.
➢ They may be used on marble, terrazzo, magnesite, PVCs, stone tiles.
SILICATE DRESSINGS

➢ They consist of a base of sodium silicate dissolved in water.
➢ Sodium silicate reacts with the lime in concrete floors to form insoluble calcium silicate.
➢ Water evaporates & the silicate forms a layer of silicate glass on the surface.
➢ Used on concrete & stone floors.
Review

➢ Application

➢ Features

➢ Classification
Exercise

➢ What is the characteristic of good cleaning agent?

➢ Classify different cleaning agent used in Hospitality Industry?

➢ What is oleo resinous?
Thank you
LINK

➢ www.youtube.com