



the basics

of professional cleaning



The Basics of Cleaning Actions

What is Cleaning?

Simply stated, cleaning is the removal of unwanted soil from a given surface.

- There are two basic issues to be considered when selecting cleaning products and techniques:
 - a) The type of soil
 - b) The type of surface to be cleaned
- i.e. A caustic cleaner may be suitable for the removal of petroleum based oily soil from a concrete floor or for stripping floor finish from a resilient floor, however, it would result in disaster if it was used to clean a painted surface or to remove excess body oil from the skin.

The Basics of Cleaning Actions

Soil Identification

Soils are categorized into two basic types:

- a) Organic Soil** : dirt, oil, grease, food spills, blood, etc.
- b) Inorganic Soil** : calcium, magnesium, rust, etc.

Surface Identification

Surfaces too can be categorized into two basic types:

- Resilient
- Non-Resilient

The Basics of Cleaning Actions

Essentially, there are four ways that the act of cleaning may take place:

1. **Cleaning by Solvency:**

This process of cleaning involves applying a solvent solution to oil laden soil. Given that enough time is allowed, the soil particles are dissolved by the solvent and distributed equally throughout the solution. The solution is then removed from the surface along with the soil. This method of cleaning is effective for organic based soils only. The solvent used is most often organic in nature i.e. varsol, chlorinated solvents, D-limonine etc.

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2. Cleaning by Detergency:

This process involves applying a detergent or soap based solution to the soiled surface and allowing time for penetration. Soil particles are lifted from the surface and suspended in the solution until they are removed from the surface. This process is effective on most organic soils. Water is usually used as the carrying agent and the pH of the solution is sometimes acidic but is most often neutral to alkaline. These solutions also contain surfactants, soil suspenders wetting agents, water softeners and other agents.

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3. Cleaning by Chemical Reaction:

This process involves applying a chemical based solution to soil conditions not effected by solvent or detergent. The chemical, usually an acid causes a reaction with the soil particles changing the composition and rendering it non-adherent to the surface. This system of cleaning is effective for the removal of non-organic insoluble soils such as magnesium, calcium, iron etc. from such surfaces as sinks, toilets, urinals, shower walls and fountains.

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4. Cleaning by Mechanical Action:

This process can be as simple as sweeping debris from a floor or as complex as sandblasting the exterior of a building. Although it is possible to use this technique alone when performing a cleaning task, usually the assistance of a chemical program will in most cases increase the efficiency of the task and produce a better end result.

Cleaning Techniques

Cleaning Techniques can be divided into a few categories:

- **Immersion or Soaking** - Basic
- **Spray & Wipe** - Basic
- **Brushing or Wiping** - Basic
- **Vapour Degreasing** - Specialty*

** Uses large volumes of chlorinated solvents for the removal of organic soils from metal surfaces.*

Cleaning Techniques

- **Electrocleaning** - Specialty*

**Uses an alkaline detergent in conjunction with electricity passed through a caustic solution. This process is often used for removal of carbons from metal surfaces.*

- **Ultrasonic Cleaning** - Specialty*

** Generally a non-chemical based system, however, sometimes a surfactant is used to enhance the procedure. This system is often used for cleaning blinds, jewelry and dentures.*

- These categories are closely related to cleaning actions and as for the basic types, are self-explanatory.
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pH – What is it? Why does it matter?

- **pH – ‘Presence’ or ‘Power’ of Hydrogen.** Measures by way of the pH scale, the relative alkalinity or acid of all liquids except solvents. (Solvents effectiveness are rated using their K.B. value)
- The pH scale is a logarithmic scale. This means that each time the pH value of a liquid is increased or decreased by a value of 1, it's intensity of alkalinity or acidity is multiplied by 10 from the previous number.
- The pH of the solutions we use on a daily basis have a significant impact on both the task and the surface we are cleaning. i.e. By using a high pH cleaner to clean a finished floor or a painted wall, we deteriorate the protective coating. That is why floor strippers have a high pH and general purpose cleaners have a low pH.

pH – What is it? Why does it matter?

pH Scale

14-	10,000,000
13-	1,000,000
12-	100,000
11-	10,000
10-	1,000
9-	100
8-	10
7-	1
6-	10
5-	100
4-	1,000
3-	10,000
2-	100,000
1-	1,000,000
0-	10,000,000

- When stripping floor finish from a floor, a high pH stripping solution is used. This process leaves an alkali residue on the floor and leaves the floor with a high pH (HOT FLOOR). The floor must then be neutralized using an acid based neutralizer to bring the pH closer to neutral (7). Ideally, the pH of the floor should match the pH of the sealer or finish to be applied. Before continuing, the floor should be tested by using pH indicator paper.
- There are several aspects of the cleaning industry that are affected by pH and the basics of the pH scale should be considered before taking on any cleaning task.

Cleaning Agents

- As you can see, there are several different types of cleaning solutions and they are made up from several different ingredients. For the most part, Synthetic detergents are used today instead of soap. The main reason for this advancement is that soap leaves more of an alkali residue than synthetic detergents do. Synthetic detergents (SYNDETS) also provide equal or better cleaning and are less harmful to the environment.

Cleaner/Degreaser

+
d-limonene
or
butyl cellusolve

Germicidal Detergent

+
phenol
or
quat

Cleaning Agents

Basic Ingredients of a SYNDET

Surfactant (s)

Anionic, Cationic, Non-Ionic, Amphoteric

Builder (s)

Phosphate, Caustic, Metasilicate

Chelating Agents

Water Softeners

Diluent

Water, Salt, Soda, Ash

Neutral Cleaner

+
builder

Stripper

+
ammonia, amine or
M.E.A. (Monoethanolamine)

Cleaning Agents

Basic Ingredients - Surfactants

Surfactants (Surface Active Agent)

Surfactants are the soil suspenders, emulsifiers, wetting agents, ect. Lowers the surface tension of water.

There are four basic types:

1. Anionic

Negatively charged. Used where mildness and high foam is required i.e. dishwashing, hand cleaners and carpet cleaners.

2. Cationic

Positively charged. Used in Quaternary Germicides, anti-static agents and fabric softeners.

Cleaning Agents

Basic Ingredients - Surfactants

3. Non-Ionic

Neither positive or negative charge. Typically used in hard surface cleaners where low to moderate foam is required.

4. Ampheteric

Either positive or negative charge depending on what it is combined with limited applications mostly in germicides.

Cleaning Agents

Basic Ingredients

Builder (s)

A builder is a phosphate, caustic, metasilicate etc. that increases or builds the pH of a cleaner.

Chelating Agents

The chelating agent or sequestrant is simply a water softener and is used to make the product effective in hard water.

Diluent

The diluent is the carrier or vehicle. In liquids it is usually water and in powders it may be salt or ash.



The Cleaning Wheel



