

A DEEP DIVE INTO CLEANING CHEMICALS

By Johan le Roux: Technical Manager, Tsebo Cleaning and Hygiene Solutions

What does clean mean?

Every day we are confronted with cleaning activities.

Cleaning is the process of removing dirt and grease found on items, objects and surfaces. Cleaning is required at home, at work, in schools, restaurants, hotels, on modes of transportation, and especially in hospitals. The more people or animals frequent a place, the more it will require regular cleaning. Cleaning products play an essential role in our daily lives. They remove dirt and spots, and even bacteria, from our clothes and surfaces. Ever thought about what goes into cleaning products to ensure that they are effective? Let us delve into the history and chemistry of cleaning products.

History of cleaning chemicals

Evidence suggests that ancient Babylonians understood soap making as early as 2800 BC. Archaeologists found soap-like material in historic clay cylinders typical of that era. These cylinders were inscribed with what is understood as “fats boiled with ashes” (a soap making method). Records also show that ancient Egyptians bathed regularly. The Ebers Papyrus, a medical document from about 1500 BC, describes combining animal and vegetable oils with alkaline salts to form a soap-like material used for treating skin diseases, as well as for washing. Many other ancient civilisations also used early forms of soap. Soap got its name from an ancient Roman legend about Mount Sapo, a mountain near Rome where animals were sacrificed. Rain would wash down the slopes, mixing with animal fat and ashes, which then resulted in a clay mixture found to make cleaning easier.

Chemistry of cleaning products

Ever seen a water droplet sitting on a surface? This is because water has a property called surface tension. This tension causes water to form a bead on the surface of objects like glass or fabric. You can witness surface tension at work by placing a drop of water onto a countertop. The drop will not spread but will instead hold its shape. To clean dirt, water needs to reach the surface. Water is only able to penetrate any surface if surface tension is reduced. To achieve this, we combine certain chemicals to form a cleaning detergent; a substance or a mixture containing soaps and/or surfactants (any organic substance or mixture) intended for washing and cleaning processes.

Surfactants

Surfactants provide the bulk of the cleaning power in cleaning chemicals, but other ingredients are also needed to make the most effective products possible. These ingredients help the surfactant work better on diverse types of soil. It is also important to know that some surfactants are particularly good at removing specific soils and may not be suitable for others. Many cleaning products include two or more surfactants in the formula. The choice of surfactants determines where the product will be used to clean.

Builders

Builders are another important group of ingredients that contribute to the effectiveness of cleaning products. Builders provide a helping hand to surfactants. They are found in a number of products. However, you need less of them than you do surfactants.

Solvents

Liquid cleaning products are solutions (chemicals dissolved in a liquid). Solvents are chemicals that help ingredients stay mixed and give cleaning products the proper consistency for easy use. In addition, organic solvents can help prevent liquid products from freezing in cold climates. Without solvents, a product tends to be very thick. This might be good in some instances, e.g., a bar of soap. But in other products, we want the liquid to be able to pour out of the bottle. Adding solvents decreases the viscosity, meaning the liquid will move faster when poured out. The solvent also ensures that we do not end up with a separated solution.

Fragrances

Fragrances are a group of ingredients that give the cleaning product a pleasant smell. Not all products contain fragrances. Typically, a small amount can make a significant difference in smell. In many cases, the fragrance usually influences consumers' choice of which product to purchase. A fragrance usually combines many different substances. These ingredients may be natural compounds from materials such as flowers, fruit, trees, plants or nuts, and natural essential oils, or it may be synthetic compounds. Lavender and lemon are the two most common fragrances found in cleaning products.



Preservatives

Just as it is important to prevent food from spoiling, cleaning products also need to be preserved. Adding a small amount of a preservative protects the product from microorganisms.

pH Adjusters

Every cleaning product needs to be 'balanced' to enable it to work well and be gentle on one's skin. Chemists use pH adjusters to ensure a product is safe to use. The amount of pH adjusters used depends on the other ingredients in the formula.

Dyes

Dyes are sometimes used to give a product a specific colour, which could make it appealing to a consumer.

Thickeners

Thickeners give detergents the correct proportion of thickness, ensuring it flows out of a bottle slowly enough to avoid spills.

Foam enhancers

Foam enhancers help create suds or bubbles. While not necessary for effective cleaning, many people perceive bubbles to mean that a product is working properly. More recently, a new form of cleaning chemicals comprised of environmentally friendly bacteria and enzymes, that perform any cleaning function just as well as their predecessors, was introduced to the market.* To ensure products are safe for human usage, as well as the environment, there are many regulatory bodies responsible for monitoring the manufacturing and quality of these products. Tsebo does not purchase or use any chemicals that have not been certified by reputable regulatory bodies. Next time you spot a Tsebo cleaner at work, rest assured that we did our research to ensure we have the best product fit for the purpose.

** These will be discussed in one of our future editions.*