



CLEANERS & DEGREASERS **EFFECTIVE CLEANING FUNDAMENTALS**

Cleaning is a common process required in most of the activities we perform. While the task is fairly simple, understanding key fundamentals can help our efforts become much more effective.

Effective cleaning involves three principles: chemical action, mechanical action, and time. We'll explore each of these fundamental principles and some common industrial applications in detail. By the way, these fundamental principles work at home as well as on the job.

Chemical Action

Our first challenge in cleaning is matching the chemical to the task. Using a strong chemical for light applications can cause harmful consequences to the surface or item being cleaned. On the other hand, using a mild chemical for a tough application will cause excessive effort (mechanical action) and time.

One way to gauge cleaners and degreasers is by their pH. Technically, pH is the concentration of hydrogen ions in a water-based solution. A practical definition of pH is the acidity or alkalinity of that same solution. pH is measured on a scale of 1 to 14, 1 being a very strong acid, 7 being neutral or the same as water, and 14 being extremely alkaline. This scale will help us recommend a suitable product for the customer's application.

Solvent-based cleaners and degreasers do not have a pH and are commonly classified by their KB value. KB is the acronym for Kari-Butanol and is a test of a solvent's power to dissolve a specific rubber in a specific test condition. A numeric value is the result of the test and can range from 1 to 400. The low numbers indicate the solvent did not dissolve the rubber quickly or efficiently, while high values reveal that the test solvent dissolved the rubber to a high degree. These KB values give us a relative understanding of the solvent's cleaning power.

Mechanical Action

The second fundamental we need to consider is mechanical action - the force of movement a product will receive during its application. Mechanical action comes in many forms, floor scrubbers, brushes, mops, hand brushes, hand wipes, buffers, power washers, and in the case of aerosols, the rate the product is delivered from the can. Knowing the type of mechanical action that will be used for a customer's application will give us a better chance to make the right product recommendation.

Time

This principal of cleaning is the most ignored and abused of the three. Time is essential for the chemical action to work. How many times have we seen a chemical placed on a soiled surface and immediately wiped away? By removing the chemical too quickly we've wasted some of the cleaner's power as well as part of its value. Did you know that a disinfectant's ability to kill 100% of bacteria and germs is time dependent? How many times have we seen disinfectants applied and wiped away quickly? The next time you have a chance to read the label on a disinfectant, note that it requires 3 to 20 minutes of contact to kill bacteria and germs. Also note that the surface must remain wet during that time for the disinfectant to be effective. Recommend using the hottest water possible to increase the disinfectant's power and efficacy.





Since we're speaking of disinfectants, let's clear up some confusing terms that you may encounter. Disinfectant, germicide, bactericide, and sanitizer are common terms heard when talking about killing bacteria. The terms disinfectant, germicide and bactericide are synonymous – they all kill 100% when used according to directions. Sanitizers are different; they kill only up to 99% of the bacteria present.

Again, time is often ignored in the cleaning process. Of course when a situation dictates a very quick cleaning process, we compensate by using stronger cleaning agents and/or higher mechanical force. The opposite is also true; when time isn't a critical consideration we can use a milder cleaning product, which usually translates to a lower cost product. This is important to keep in mind when recommending products to our customers.

Let's look at some examples of common cleaning processes in the industrial workplace.

Restrooms - Common restroom cleaning surfaces include toilet bowls, counters, sinks, floors and mirrors. Bowl cleaners are traditionally acid cleaners (low pH of about 1.5 to 3.0) that remove stains and scale from porcelain. Many bowl cleaners are EPA-registered, which is required for disinfectant products that kill 100% of bacteria and germs. For bowls with heavy scale and stain build-up, we would recommend cleaners with a high acid percentage (10% or greater). For normal maintenance, a lower acid percentage is sufficient. Remember, these products are very strong and should be used with proper safety measures and equipment. Since they are so strong, they should be confined to the porcelain bowl. They can destroy metals, chrome, baked enamels and plastics if used for cleaning.

Walls, counters, sinks, and floors can be cleaned with general-purpose disinfectants. We should recommend a top-down process. Clean the highest points first to avoid having dirty cleaner run down over already clean surfaces. We recommend products based on fragrance (pine is common) and customer budget.

Glass cleaners are obvious for mirrors and are usually selected based on scent (lemon has become popular) and budget.

Plant floors - Understanding the application method for a plant floor before recommending a cleaner is critical. Is it a mop and bucket combination or a high-speed floor scrubber? Each method requires a different product. Butyl cleaners are known for their ability to clean grease, oil, and lift truck tire marks. Butyl cleaners range in pH from 9.0 to 13+, with the higher pH products being more aggressive than the lower. A mop and bucket requires a more aggressive cleaner because of the lighter mechanical force versus the power floor scrubber. In contrast, a power scrubber needs a less aggressive cleaner so that it doesn't remove the floor's sealer or coating. The floor scrubber also requires a cleaner that has low foaming characteristics, so its pick-up tank does not overflow.

That brings us to dilution. Our instinct is that if a little is good, more is better. That's not true for cleaning products. Dilution ratios are specific to avoid harmful effects of being too strong or aggressive. We should always recommend that our customers use the proper dilution ratio for a given application. Manufacturers will list the ratios on the label or product data sheet.

Electrical Motors - A preventative maintenance-cleaning schedule is critical for motors since they tend to be magnets for dust, dirt, debris, grease and oil. Dirty motors will run hotter, less efficient and, if left unattended, will fail. Aerosols offer the most efficiency when cleaning motors due to the mechanical force of their delivery rate of the solvent. We should recommend fast evaporating, non-flammable products with high dielectric strength to service motors that can't be removed from service for normal cleaning.





When motors are cleaned in the repair shop, flammability and dielectric strength are less critical, therefore we should ask our customers where their motors are cleaned before recommending a product. Flammable products tend to be less expensive for our customers.

Circuit Boards, Contacts and Relays - Again, aerosols are the most practical products for cleaning these delicate parts. Just the natural oils from our hands can cause malfunctions. Here we want to recommend products that are plastics safe and have lower KB values, less than 50 as a rule of thumb. It is important to recommend testing any product on a non-essential part before general use. Today we deal with more types of plastics than ever and ensuring no harmful effects such as crazing or deformation is important. Recycled plastic is a perfect example - we don't know the composition, therefore it is important to test before general use.

New Technologies

The technologies of cleaning products are constantly advancing. For example, non-butyl, neutral pH cleaner degreasers with the same or better cleaning power as their traditional counterparts are now available. This type of product is particularly helpful where disposal regulations are tight and pH is a major factor for liquid down drains. It also eliminates the worker skin contact issues that high pH cleaners cause. For example, Sprayon Neutra-Force is an alternative to butyl cleaners that carries no chemical charge and contains no caustics, alkali, phosphates, silicates, petroleum solvents, or butyl ethers.

There are also numerous advances in packaging technology where non-pressurized, trigger spray products are available in an aerosol container. This packaging technology eliminates issues of pressurized containers and their disposal while still providing the convenience of an aerosol package. By using an aerosol can, products are available that are normally too aggressive for plastic containers.

Clearly, the field of cleaners and degreasers is as innovative as any other industry. And as environmental concerns and advanced technology continue to demand progress, the capabilities of products will continue to expand. With a clear understanding of fundamental cleaning methodologies, however, these innovations will be somewhat effortless to incorporate into your selling regiment.

Written by Russell Mays, Senior Product Manager, Krylon Products Group

